

# **Rule 908.g(1)A Closure Plan**

**Piceance Energy LLC  
Harrison Creek Water Treatment  
Facility – DAF Unit**

**OA Project No. 014-0465**

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## **Reclamation Plan**

### **Interim Reclamation**

The DAF Unit is being built on the previously disturbed site of the old Delta 212 Water Recycling facility. No additional disturbance will be made outside of this facility.

### **Final Reclamation**

Piceance Energy estimates that the proposed facility will be in operation for an anticipated period of approximately twenty (20) years during development and production of Piceance Energy's Mesa County operations. Upon termination of the development and production activities, the project area will be reclaimed, as outlined below:

- All equipment and structures will be removed. Concrete foundations will be buried in place.
- Piceance Energy will remove all safety and stormwater control features, and other surface objects from the premises.
- Piceance Energy will restore the site to pre-facility conditions by re-contouring and re-vegetating the site. Top soil will be redistributed across the site and will be reseeded with an approved seed mix (see attached seed mix recommendation).
- Piceance Energy will monitor the site to ensure that 70 percent of the pre-existing vegetation is achieved, per the requirements of the CDPHE Stormwater Permit for the site.

### **Seedbed Preparation and Slope Reconstruction:**

Cut and fill slopes will be re-contoured to a slope of 3:1 – 2.5:1 or less in instances where necessary to match the existing natural topography. Following final contouring, all backfilled or ripped surfaces will be covered evenly with topsoil. Re-contouring should form a complex slope with heavy pocking. In areas with slope greater than 3 percent, imprinting of the seed bed is recommended. Final seedbed prep will consist of scarifying/imprinting the topsoil prior to seeding. Imprinting can be in the form of dozer tracks or furrows perpendicular to the direction of slope. When hydro-seeding or mulching, imprinting should be done prior to seeding, unless the mulch is to be crimped into the soil surface. If broadcast seeding and harrowing, imprinting will be done as part of the harrowing. Furrowing can be done by several methods, the most simple of which is to drill seed perpendicular to the direction of slope in a prepared bed. Other simple imprinting methods include deep hand raking and harrowing, always perpendicular to the direction of slope. All compacted areas will be ripped to depth of 18" with max furrow spacing of 2'. Where practicable, ripping will be conducted in two passes at perpendicular direction.

**Topsoil:** Following final contouring, all backfilled or ripped surfaces will be covered evenly with topsoil. The topsoil in the cut slope on the back of the pad will be heavily pocked using the excavator bucket to form an uneven soil surface complex which will aid in revegetation and help with slope stabilization. The fill slope, and remaining disturbed, and reclaimed areas will be track walked to aid in revegetation and slope stabilization. In areas that may not have been disturbed

during the reclamation process or areas of suspected compaction that will be reseeded, measures will be taken to loosen and spread the topsoil. These measures may include scarifying the soil by raking or harrowing the soil.

**Seed Mix:** Seed mix used for reclamation will be taken from the approved seed mixtures identified below:

#### Low-Elevation Salt-Desert Scrub/Basin Big Sagebrush

Common Name	Scientific Names	Form	PLS lbs/acre*
Fourwing Saltbush	<i>Atriplex canescens</i>	Shrub	1.9
Shadscale	<i>Atriplex confertifolia</i>	Shrub	1.5
Galleta	<i>Pleuraphis [Hilaria] jamesii</i>	Bunch	2.5
Alkali Sacaton	<i>Sporobolus airoides</i>	Bunch	0.2
Streambank Wheatgrass	<i>Elymus lanceolatus ssp. Psammophilus, Agropyron riparium</i>	Sod-forming	2.5
Slender Wheatgrass	<i>Elymus trachycaulus, Agropyron trachycaulum</i>	Bunch	1.8
Sandberg Bluegrass	<i>Poa sandbergii, Poa secunda</i>	Bunch	0.3

\*Based on 45 pure live seeds (PLS) per square foot, drill-seeded. Double this rate (90 PLS per square foot) if broadcast or hydroseeded.

#### Pinyon-Juniper Woodland, Mountain/Wyoming Big Sagebrush Shrubland

Common Name	Scientific Name	Form	PLS lbs/acre*
Indian Ricegrass	<i>Achnatherum [Oryzopsis] hymenoides</i>	Bunch	1.9
Galleta	<i>Pleuraphis [Hilaria] jamesii</i>	Bunch	2.5
Bluebunch Wheatgrass	<i>Pseudoroegneria spicata, Agropyron spicatum</i>	Bunch	2.8
Slender Wheatgrass	<i>Elymus trachycaulus, Agropyron trachycaulum</i>	Bunch	3.3
Mutton grass	<i>Poa fendleriana</i>	Bunch	0.6
Sandberg Bluegrass	<i>Poa sandbergii, Poa secunda</i>	Bunch	0.6

\*Based on 60 pure live seeds (PLS) per square foot, drill-seeded. Double this rate (120 PLS per square foot) if broadcast or hydroseeded.

#### Mixed Mountain Shrubland, Including Oakbrush

Common Name	Scientific Names	Form	PLS lbs/acre*
Thickspike Wheatgrass	<i>Elymus lanceolatus ssp. lanceolatus, Agropyron dasystachyum</i>	Sod-forming	3.4
Bluebunch Wheatgrass	<i>Pseudoroegneria spicata, Agropyron spicatum</i>	Bunch	3.7
Bottlebrush Squirreltail	<i>Elymus elymoides, Sitanion hystrix</i>	Bunch	2.7
Slender Wheatgrass	<i>Elymus trachycaulus, Agropyron trachycaulum</i>	Bunch	3.3
Canby Bluegrass	<i>Poa canbyi, P. secunda</i>	Bunch	0.6
Mutton grass	<i>Poa fendleriana</i>	Bunch	0.6
Letterman Needlegrass	<i>Achnatherum [Stipa] lettermanii</i>	Bunch	1.7
Columbia Needlegrass	<i>Achnatherum [Stipa] nelsonii, Stipa columbiana</i>	Bunch	1.7
Indian Ricegrass	<i>Achnatherum [Oryzopsis] hymenoides</i>	Bunch	1.9
Junegrass	<i>Koeleria macrantha, K. cristata</i>	Bunch	0.1

\*Based on 60 pure live seeds (PLS) per square foot, drill-seeded. Double this rate (120 PLS per square foot) if broadcast or hydroseeded.

**Spruce-Fir Forest, Including Mountain Meadows**

Common Name	Scientific Names	Form	PLS lbs/acre*
Mountain Brome	<i>Bromopsis [Bromus] marginatus</i>	Bunch	5.8
Slender Wheatgrass	<i>Elymus trachycaulus, Agropyron trachycaulum</i>	Bunch	3.3
Letterman Needlegrass	<i>Achnatherum [Stipa] lettermanii</i>	Bunch	3.5
Blue Wildrye	<i>Elymus glaucus</i>	Bunch	4.8
Thickspike Wheatgrass	<i>Elymus lanceolatus ssp. lanceolatus, Agropyron dasystachyum</i>	Sod-forming	3.4
Idaho Fescue	<i>Festuca, idahoensis</i>	Bunch	1.2
Wheeler Bluegrass	<i>Poa nervosa</i>	Sod-forming	0.6

\*Based on 60 pure live seeds (PLS) per square foot, drill-seeded. Double this rate (120 PLS per square foot) if broadcast or hydroseeded.

**Seeding Procedures:** For best results and success, the recommended grass mixture reseeding should be done in late autumn in order to take advantage of natural precipitation for the region. The reseeding rate should be doubled for broadcast application. Preferred seeding method is multiple seed bin rangeland drill with no soil preparation other than simple grading to slope and imprinting and waterbars, where applicable.

Alternative seeding methods include, but are not limited to:

- harrow with just enough soil moisture to create a rough surface, broadcast seed and reharrow, preferably at a 90 degree angle to the first harrow;
- hydro-seeding (most economical in terms of seed cost); and
- hand raking and broadcast followed by re-raking at a 90 degree angle to the first raking.
- These are not the only means of replanting the site. However, these methods have been observed to be effective in similar landscapes.

The prepared soils will be seeded (weather permitting) no more than 24 hours following completion of final seedbed preparation. The seeding will be conducted by means of drilling the prescribed seed at prescribed seeding rate. The seed will be drilled with a common range drill at a depth of 0.25 – 0.5” beneath the soil surface. The seed will be drilled horizontally across the pad faces and perpendicular to the track walking when possible. When slope gradient less than 2.5:1 exists and drilling is not possible from a mechanical and safety standpoint the soils will be broadcast seeded at twice the prescribed amount. The reseeding will be monitored and reseeded as appropriate until the reclamation standards detailed above are met.

**Mulch:** With 24 hours of reseeding (weather permitting) hydromulch will be applied to all reclaimed and reseeded surfaces. Areas where the erosion potential is such that biodegradable blankets will be used will not be hydromulched.

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