# YOAST MINE

Colorado Permit #C-1994-082

## 2019 Annual Reclamation Report

January 1, 2019 to December 31, 2019

*Submitted:* **March 2020**

**YOAST MINE**
**2018 ANNUAL RECLAMATION REPORT**

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## LIST OF MAPS

** Refer to the 2014 Annual Reclamation Report for the following, unchanged maps:*

- *2014 Annual Reclamation Report Topsoil Map*
- *2014 Annual Reclamation Report Planned Reclamation Activities Map*
- *2014 Annual Reclamation Report Chronological Seeding Map*

** Refer to the 2012 Annual Reclamation Report for the following, unchanged maps:*

- *Annual Reclamation Graded Areas Map*
- *Topography Map*

## ATTACHMENTS

2019 Weed Control Logs

## 2019 DISTURBANCE AREA

There were no additional acres disturbed during 2019. The total disturbed area in 2014 (2014 ARR) was calculated at 848.6 acres. A Bond Release Tracking Initiative initiated by Seneca Property, LLC (SP) in 2014 consolidated all previous mapping information in a GIS (Geographic Information System) format, resulting in a corrected disturbance area of 850.5 acres. For 2019, the physical disturbance boundaries and areas are the same as shown on the 2014 Planned Reclamation Map.

## BACKFILLING AND GRADING

No additional areas were backfilled and graded in 2019.

## SOIL AND SPOIL MONITORING

SP is required to monitor soil and spoil handling operations, including salvage, storage, and redistribution of soil/spoil for Yoast Mine. In 2019, no soil or spoil material was salvaged, stored, or redistributed and no soil/spoil sampling or monitoring was conducted.

**Soil Recovery Documentation.** No additional soil or spoil was salvaged during 2019, since no new disturbance occurred.

**2019 Soil Replacement Thickness.** No soil or spoil materials were replaced during 2019.

**Soil Pit - Soil Fertility and Spoil Suitability.** Given that no soil or spoil materials were replaced, no soil fertility or spoil suitability samples were collected or analyzed in 2019.

**Soil Balance.** Given that no additional soil/spoil salvage or replacement occurred during 2019, the previously calculated soil balance remains unchanged. It should be noted that the revised disturbance acreage previously noted does not affect the soil balance carried forward from previous ARR's. Soil/spoil materials have been replaced on all mining disturbance areas not identified for permanent retention to support the approved postmining land use(s). Remaining soil/spoil stockpiles are associated with the identified permanent retention areas.

**Soil Salvage and Storage**. The life-of-mine disturbance area from which topsoil was salvaged (850.5 acres) and the topsoil stockpile sites as of December 31, 2014 are shown on the 2014 Topsoil Replacement map. The stockpile volumes are listed in Table 1, Soil Stockpile Volumes. As of December 31, 2017, there were 36.7 acre-feet of stockpiled topsoil remaining in the mining area.

**Soil Replacement.** No soil was replaced during 2019, therefore the total remaining mine disturbance area is 4.9 acres. Given that this acreage represents areas designated for permanent retention where soil material will not be replaced, the remaining stockpiled soil material will not be utilized, and the soil will remain in the current stockpile configuration.

**Soil Replacement Thickness.** Dividing the stockpiled soil volume available by the remaining disturbance area (designated for permanent retention), the soil material balance provides for a soil replacement depth approximately 7.5 feet for the remaining disturbance areas. This generalized soil balance does not account for any area variations or for permanent facilities not requiring topsoil; it is strictly an area-wide average. The remaining disturbance area essentially corresponds to the mine entrance

road and drainage structures, which if not retained as a permanent feature to support the postmining land use, would be reclaimed.

The soil/spoil material balance as of December 31, 2019 for the remaining life-of-mine is calculated as follows:

Mine Area Summary

| | |
|---|---|
| Total disturbance area | = 850.5acres |
| Areas where soil has been replaced | = 845.6 acres |
| Remaining disturbance area requiring soil | = 4.9 acres |
| Soil in stockpiles (Table 13.1) | = 36.7 ac-ft |
| Mean replacement depth available | = 7.5 feet (90 inches) |

During 2007, topsoil thickness sampling was conducted over the topsoiled area on a 500-ft. grid. Refer to the 2007 Yoast Mine Annual Reclamation Report. The overall average soil replacement depth for the areas reclaimed to date is 21.4 inches. The 21.4 inches is consistent with the premining projections of 21.6 inches.

**TABLE 1 - SOIL STOCKPILE VOLUMES (as of 12/31/2016)**

| Stockpile ID | 2008 Volume (ac-ft) | 2009 Volume (ac-ft) | 2010 Volume (ac-ft) | 2011 Volume (ac-ft) | 2013 Volume (ac-ft) | 2014/2015 Volume (ac-ft) |
|---|---|---|---|---|---|---|
| **A** | 10 | 10 | 10 | 10 | 10 | 10 |
| **B** | 13 | 13 | 13 | 13 | 13 | 13 |
| **C** | 13.7 | 13.7 | 13.7 | 13.7 | 13.7 | 13.7 |
| **D** | 0 | 0 | 0 | 0 | 0 | 0 |
| **E** | 0 | 0 | 0 | 0 | 0 | 0 |
| **F** | 0 | 0 | 0 | 0 | 0 | 0 |
| **G** | 0 | 0 | 0 | 0 | 0 | 0 |
| **H** | 0 | 0 | 0 | 0 | 0 | 0 |
| **I** | 24.3 | 24.3 | 0 | 0 | 0 | 0 |
| **K** | 0 | 0 | 0 | 0 | 0 | 0 |
| **L** | 9.5 | 9.5 | 4.5 | 4.5 | 0 | 0 |
| **M** | 0 | 0 | 0 | 0 | 0 | 0 |
| **O** | 0 | 0 | 0 | 0 | 0 | 0 |
| **P** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Q** | 0 | 0 | 0 | 0 | 0 | 0 |
| **R** | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL** | **70.5** | **70.5** | **41.2** | **41.2** | **36.7** | **36.7** |

## REVEGETATION

**Seeding and Shrub Planting.** 3.4 acres were inter-seeded in the area of the Pond 12 slide in 2014. No additional seeding or shrub planting occurred in 2019. Table 2 is the approved seed mix for upland sites and ephemeral drainages.

**TABLE 2**

**SEED MIX NO. 1 – UPLAND SITES AND EPHEMERAL DRAINAGES**

| Species Name | | Drill Rate* P.L.S. | | Recommended |
|---|---|---|---|---|
| Scientific | Common | lbs/Acre | Seeds/Ft$^2$ | Variety |
| Elymus lanceolatus(dasystachyum) | Thickspike wheatgrass | 0.50 | 1.9 | Critana |
| Elymus lanceolatus (riparium) | Streambank wheatgrass | 0.50 | 1.9 | Sodar |
| Pascopyrum smithii | Western wheatgrass | 1.10 | 2.7 | Rosana |
| Pseudoroegneria spicata spicata | Bluebunch wheatgrass | 0.50 | 1.7 | Goldar |
| Or Elymus wawaensis | | | | Secar |
| Elymus trachycaulus trachycaulus | Slender wheatgrass | 1.10 | 3.8 | San Louis |
| Ceratochloa carinata | Mountain brome | 1.10 | 1.7 | Bromar |
| Dactylis glomerata | Orchardgrass | 0.03 | 0.4 | Paiute |
| Leymus cinereus | Basin wildrye | 1.10 | 4.1 | Trailhead |
| Festuca brachyphylla coloradensis | Alpine fescue | 0.10 | 1.8 | Native |
| Or Festuca idahoensis | | | | Joseph or Nezpurs |
| Or Festuca ovina | Sheep fescue | | | Covar |
| Poa ampla | Big bluegrass | 0.10 | 2.7 | Sherman |
| Poa compressa | Canada bluegrass | 0.05 | 3.1 | Ruebens |
| Stipa viridula | Green needlegrass | 1.10 | 4.4 | Lodorm |
| Medicago falcata | Alfalfa | 0.10 | 0.5 | Travois |
| Balsamorhiza sagittata | Arrowleaf balsamroot | 0.50 | 0.6 | Native |
| Penstemon strictus | Rocky Mtn penstemon | 0.25 | 1.6 | Bandera |
| Penstemon palmeri | Palmer penstemon | 0.10 | 1.4 | Cedar |
| Achillea lanulosa | Western yarrow | 0.10 | 6.4 | Native |
| Lupinus caudatus | Tailcup lupine | 1.00 | 0.6 | Native |
| Virgulaster ascendens | Pacific aster | 0.10 | 6.1 | Native |
| Adenolinum lewisii | Blue flax | 0.50 | 3.3 | Appar |
| Seriphidium vaseyanum | Mtn. big sagebrush | 0.25 | 10.0 | Native |
| Symphoricarpos rotundifolius | Mountain snowberry | 0.50 | 0.9 | Native |
| Purshia tridentata | Antelope bitterbrush | 1.00 | 0.4 | Native |
| Total | | 11.68 | 62.0 | |

*Broadcast rate is double the drill seeding rate P.L.S. = Pure Live Seed

Granite Seed Co. seedmix did not include:

- *Tailcup lupine – not available*
- *Pacific aster – not available*
- *Mountain snowberry – not available*

**Monitoring/Sampling.** ESCO/Cedar Creek Associates, Inc. conducted revegetation monitoring of permanently revegetated areas during the summers of 2014 and 2015. The second of the required two years of vegetation sampling for Phase III was completed on those areas approved for Phase II and seeded from 2001 to 2004. Years 1 and 2 of the required two years of Phase III vegetation sampling was

completed in 2015/2016 on areas that have received Phase II bond release that were seeded after 2004. Cedar Creek completed a consolidated report for the Phase III sampling, and this information will be incorporated into a bond release application that was submitted in 2019 and is still being processed.

**Weed Control.** A noxious weed survey was completed for the Yoast Mine area in 2019 to determine the need or level of retreatment necessary for areas sprayed in 2018 and to identify any new weed infestations. Canada thistle was the primary target species in all control areas, with lesser activity directed towards areas of hound's-tongue, whitetop, toadflax, kochia, mullien, and thistle. The applied herbicide consisted of a tank mix of Milestone, Activator 90, and 2,4-D, Vista, and Escort XP, dependent on the targeted weed(s). Control areas were sprayed in June and July. See the attached 2019 Weed Spray Logs for the locations and quantities sprayed.

Spot-spraying was used for targeted weed control, reducing potential impacts to adjacent desirable vegetation. The herbicide mix, based on recommendations from the Colorado State Extension Service, was mixed and applied by a contractor, who is a Licensed Commercial Applicator. The weed control areas will continue to be monitored in 2020 for effectiveness and any necessary retreatment.

**Grazing**

Sheep (800 ewes) were moved on to the Yoast reclaim area for 20 days between mid-September and early-October, following completion of the site revegetation success monitoring. This grazing schedule resulted in a total of 107 AUMs for 2019. The areas grazed in 2016 through 2019 are essentially the same as grazing in previous years and are located on the north end of the Yoast Mine.

*Assumptions:*

- Five (5) sheep = 1.0 AUM
- One (1) AUM requires 810 lbs. of forage
- 20 days x 850/5 animal units = 3,400 animal days ÷ 30 days = 114 AUM
- 1,100 lbs/acre x 798 acres = 877,800 lbs of forage available
- 810 lbs x 114 AUMs = 92,340 lbs of forage required
- Therefore; 92,340 ÷ 877,800 x 100 = **10.5**% utilization of the Yoast reclaimed areas

## CHRONOLOGICAL HISTORY OF REVEGETATION AND BOND RELEASE

As of 2019, all disturbed areas except for 4.9 acres identified as long-term facilities have been backfilled and graded, soil has been replaced, and these areas have been seeded. For the reclaimed areas, 281.7 acres have been approved for Phase I through III bond release, 598.3 acres have been approved for Phase I and II bond release, and 828.0 acres have been approved for Phase I bond release. SP prepared and submitted a partial Phase I and Phase III Bond Release application (SL-06) in December 2016 for 94.9 acres and 277.2 acres, respectively (acres included in the previous totals). The bond release application was reviewed and approved on February 9, 2018. With a reduction in the calculated reclamation liability in conjunction with Permit Renewal RN15-04, and the referenced partial bond release, SP submitted a bond reduction rider to make the appropriate adjustments in bond amount in April 2018. A phase III bond release is currently being reviewed to release 354 acres of areas seeded up through 2007. An addition phase II Bond Release will be submitted to DRMS mid spring for around 230 acres.

## SEDIMENTATION POND SURVEYS

SP is required to monitor sedimentation ponds for sediment storage capacities. Up through 2015, this monitoring was conducted by physically surveying each pond each year. This schedule provided a sediment yield history and gave advanced warning to operations personnel when sediment clean-out work was needed. Also, SP visually inspects each pond, at a minimum, quarterly each year. During these inspections, any significant observed change in sediment storage, or noticeable expansion of the sediment delta at the inlet to the pond, are noted as conditions requiring pond maintenance.

Yearly sediment delivery to the ponds is considerably less than originally calculated, since significant portions of these watersheds have now been revegetated. Given this consideration, a request was submitted and approved to monitor sediment accumulations on a five-year schedule for ponds that flow year-round and to visually inspect any other ponds. The results of the 2015 survey indicate that all ponds have sufficient sediment storage as shown by Table 3, Sediment Pond Capacities. Additionally, all ponds have been discharging in compliance with the approved NPDES/CPDS permit effluent limitations. It should be noted that the measuring flume for NPDES-010 was replaced in August 2015 and the flume for NPDES-012 was leveled and reset.

**TABLE 13.3 SENECA SEDIMENT PONDS - WATER CAPACITY TRENDS**

| Pond ID | Required Capacity[1] (ac-ft) | Current Remaining Water Capacity[2] (ac-ft) | | | | | | | | Decision Reference |
|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | |
| **Y – 010*** | 3.08 | 7.6 | 7.6 | 7.8 | 8 | 8 | 7.7 | 9.2 | 9.2 | TR-37 |
| **Y - 011** | 0.99 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.7 | 3.6 | 3.6 | TR-37 |
| **Y - 011A** | 0.63[3] | NA | NA | NA | NA | NA | NA | NA | NA | TR-37 |
| **Y – 012*** | 0.767 | 0.7 | 0.7 | 1.1 | 0.83 | 1.2 | 1.3 | 1.3 | 1.3 | TR-37 |
| **Y-012A** | | 6.3 | 6.3 | 6.1 | 5.6 | 5 | 4.6 | 4.4 | 4.4 | |
| **Y - 013** | 1.325 | 4.5 | 4.4 | 4.5 | 4.4 | 4.3 | 4.5 | 4.5 | 4.5 | TR-37 |
| **Y - 014** | 1.6 | 10.5 | 7.5 | 7.6 | 7.5 | 7.5 | 7.5 | 7 | 7 | TR-37 |

*(*) Required every 5 yrs – next survey 2020*

*(1) Based on SEDCAD results for a 10yr/24hr storm event.*

*(2) Remaining capacity below principal spillway or orifice.*

*(3) TR 37, page 13-4A.1-A.9 (stock pond)*

## STOCK TANKS & SURGE CONTROL STRUCTURES

There is currently one stock tank in the Yoast area, which is a permanent feature. No new stock tanks or surge control structures were constructed in 2018.

## WILDLIFE MONITORING

Wildlife monitoring was conducted in cooperation with Colorado Parks and Wildlife (CPW) during 2019. The work included:

Monitoring one known Columbian sharp-tailed grouse lek and checking for any new ones – The following summarizes the grouse count for the one established lek in the Yoast area.

Yoast Tree Plot 3 males