

Appendix C

Temporary Closure and Final Reclamation Plans

Plan of Operations

Palmer Advanced Exploration Project Haines, Alaska

**Phase II – Underground Exploration
Upland Mining Lease No. 9100759**



CONSTANTINE

Prepared for:
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Table of Contents

| | | |
|------------|---|-----------|
| 1.0 | INTRODUCTION | 1 |
| 2.0 | CARE AND MAINTENANCE FOR TEMPORARY CLOSURE | 4 |
| 3.0 | RECLAMATION PLAN FOR PERMANENT CLOSURE | 8 |
| 4.0 | REFERENCES..... | 16 |

LIST OF TABLES

| | | |
|-----------|---|----|
| Table 1. | Temporary Closure - Cost Summary | 5 |
| Table 2. | Site Cleanup Costs | 6 |
| Table 3. | Biweekly Inspection Costs | 6 |
| Table 4. | Road Barrier Construction Costs | 6 |
| Table 5. | Monthly Reporting Costs..... | 7 |
| Table 6. | Permanent Closure - Schedule | 9 |
| Table 7. | Permanent Closure - Cost Summary | 10 |
| Table 8. | Cost to Deconstruct Fuel Facilities | 11 |
| Table 9. | Cost to Haul PAG Underground..... | 11 |
| Table 10. | Cost to Construct Portal Plug..... | 12 |
| Table 11. | Cost Site Cleanup and Seeding..... | 12 |
| Table 12. | Cost for Facility Removal at Portal..... | 12 |
| Table 13. | Cost for Removal of Surface Pipe..... | 13 |
| Table 14. | Cost for Removing Settling Ponds | 13 |
| Table 15. | Cost for Constructing Road Barrier | 13 |
| Table 16. | Cost for Equipment Mobilization and Demobilization..... | 14 |
| Table 17. | Cost for Post Closure Monitoring and Reporting | 14 |
| Table 18. | Cost for Final Reclamation Report..... | 14 |
| Table 19. | 2022 Equipment Costs..... | 15 |

1.0 INTRODUCTION

This document describes plans for both Temporary Closure and Permanent Closure of the Palmer Exploration Project. The Palmer Exploration Project is being executed to evaluate the technical and economic merits of developing a mine to exploit mineral deposits on the Palmer Property.

The Alaska Department of Natural Resources (ADNR) has requirements for an approved Reclamation Plan prior to initiating exploration project like the Palmer Project.

A significant ADNR requirement of regulation 11 AAC 86.800 is for “statements, maps and drawings setting out the reclamation that will be carried out, including a timetable for each step in the reclamation, an estimate of the cost and a description of the measures to ensure that the debris is disposed of in a sound manner.” Additionally, ADNR also regulates project reclamation and closure planning and the requirement for financial assurances (reclamation bonding) under statute AS 27.19 and regulation 11 AAC 97. Specifically, 11AAC 97.200 sets certain performance standards for reclamation that require a site to be reclaimed to a stable condition relative to erosion (after one year) and to naturally revegetate after 5 years, requires segregation of native topsoils for reclamation and other requirements. Regulation 11AAC 97.210 addresses the removal of buildings, debris and structures on state land, including the option of leaving buildings and structures if the surface owner or land manager approves it. 11 AAC 97.220 requires that openings of all shafts, adits, tunnels and air vents to underground mine workings shall be stabilized and properly sealed to protect the public, wildlife, and the environment. 11AAC 97.240 requires that a miner shall reclaim a mined area that has potential to generate acid rock drainage (acid mine drainage) in a manner that prevents the generation of acid rock drainage or prevents the offsite discharge of acid rock drainage. Additional requirements for the Reclamation Plan are prescribed in regulation 11 AAC 97.300. Reclamation bonding is regulated under 11 AAC 97.400 and requires posting a personal bond accompanied by a letter of credit, deposit of gold or cash under 11 AAC 97.410.

The following Reclamation Plan meets the State of Alaska regulatory requirements for a reclamation plan. Constantine has prepared reclamation plans for both temporary closure and permanent closure scenarios which are described below. This reclamation plan and reclamation cost estimate supersede previous cost estimates included in Constantine’s Phase II Plan of Operations approved by ADNR under Reclamation Plan Approval #J20185690RPA. This updated reclamation plan and cost estimate has been revised to reflect inflationary increases, labor cost increases, and equipment cost increases to the original 2019 cost estimate. Additionally, since the 2019 WMP application, some design changes in the project including a slightly longer access road have occurred. The updated cost estimate is also supported by new independent confirmation about the assumptions for the portal plug design and the amount of funding included in the cost estimate to develop the final design of the portal plug (Langston & Associates, 2022).

Constantine has calculated estimated costs for both the care and maintenance under the temporary closure scenario and reclamation for permanent closure. Constantine intends to post a financial assurance in a form acceptable to the State regulatory agencies prior to initiating any work under this Plan of Operations once the Plan of Operations is approved by the MHT and the reclamation plan is approved by ADNR.

Constantine's estimated cost for the temporary closure scenario is: 1) \$37,474 to stabilize the site and make it ready for Care and Maintenance and install an access road gate, plus 2) \$20,852/year for twice-monthly inspections and monthly reporting for each year that it remains in Care and Maintenance status. Assuming a 3-year duration on Care and Maintenance status, the total cost is estimated to be \$133,831 including indirect costs per ADNR guidance. At the end of 3 years Constantine must either request an extension of the Care and Maintenance status from ADNR or permanently close the site in accordance with the reclamation plan for permanent closure.

Constantine's estimated reclamation cost for the permanent closure of the site is \$1,271,181. This includes \$553,413 to design and construct a hydraulic portal plug in the development ramp to reduce flows from the portal to de minimis levels. The cost estimate includes indirect costs in accordance with ADNR guidance.

The closure cost estimates include indirect costs in accordance with ADNR guidance. In determining the Indirect rate for each of the 7 categories of Indirect Costs, we referred to the DOWL (2015) report for the discussion of factors affecting the range of indirect costs in each category. In general owing to the low risk (no PAG, predicted good water quality, low project uncertainty, good access, the lack of project complexity, fact that equipment rates already include contractor profit, history of civil contractor experience on site, and the low overall direct cost of the reclamation), and manageable climate the guidance suggests using the lower range of indirect costs, with some exceptions. The following is a discussion of the factors Constantine considered in selecting the indirect costs.

Constantine has requested DNR provide for a phased approach to financial assurance under 11 AAC 97.415 (a). DNR agreed to a phased approach to financial assurance and has allowed Constantine to provide financial assurance for the work completed to date. The next phase of the project would be construction of the underground. Pursuit of underground construction in support of the Waste Management Plan design would require financial assurance for the \$1,271,181 to cover the cost of permanent reclamation of underground construction. Until underground construction is pursued, Constantine proposes maintaining financial assurance in the amount of \$449,803 to reflect 1) temporary closure costs, plus 2) final reclamation costs, minus the line-item costs for portal closure and haulage of any PAG waste rock back underground.

Contractor Profit – ADNR guidelines (DOWL, 2015) recommend a range of 6-10% of direct costs. Most of the reclamation costs for the project are civil works costs and the cost estimate is based on quotes from a local contractor who has performed years of civil work on the project. Contractor profit is already included in the contractor's hourly equipment rates used for the cost estimate. As

a result, Constantine feels that the low end (6%) of the indirect range is appropriate for contractor profit.

Contractor Overhead – ADNR guidelines (DOWL, 2015) recommend a range of 4-8% of direct costs. As with contractor profit, contractor overhead is already built into the contractor's hourly rates for equipment, including the equipment operator, fuel, and repairs. While the guidelines point out that there are often higher overhead costs for smaller projects, our use of local contractor rates negates this idea for the Palmer project. Therefore, Constantine did not choose the lowest value but used 5% for contractor overhead in the cost estimate.

Performance and Payment Bonds - ADNR guidelines (DOWL, 2015) recommend a range of 2.5-3.5% of direct costs. Constantine concluded that the low end of the range was appropriate for the Palmer project owing to the low overall cost of reclamation, the simplicity of the project, past performance of local contractors and the relatively few contractors/subcontractors required to perform the reclamation.

Liability Insurance - ADNR guidelines (DOWL, 2015) recommend 1.5% of labor costs. This is a fixed percentage according to the guidelines.

Contract Administration - ADNR guidelines (DOWL, 2015) recommend a range of 5-9% of direct costs. According to the guidelines this category of indirect costs is to cover the cost of hiring a project management firm to inspect and supervise the reclamation work. The guidelines go on to state that the contract administration amount accepted by the state will be based on size of the bond, project closure complexity and duration of the active reclamation phase. The guidelines also describe factors like access, climate, and mine maturity. On one hand the guidelines say that in general larger projects may require a lower percentage of contract administration costs compared to small or mid-size projects. But on the other hand, the guidelines offer that while scale may warrant lower contract administration costs, project complexity may push these costs to the top of the range. In addition, Constantine already has a project lead (supervisor) built into each of the tasks that comprise the entire reclamation project, including meals and accommodations for the lead. Constantine also included engineering supervision costs in the direct costs for the portal plug. Arguably this is the single component of the reclamation activities that requires engineering support and inspecting. Constantine considered all these factors and concluded that the inclusion of supervision (including support costs) in the cost estimate, lack of project complexity, ease of access, moderate weather, and the general lack of the requirement for inspections of engineered facilities (lack of engineered covers, engineered water management components) all justify using a contract administration value in the lower half of the range (5-9%). Constantine used 6% in the cost estimate.

Engineering Redesign - ADNR guidelines (DOWL, 2015) recommend a range of 3-7% of direct costs. Engineering redesign costs are meant to bring conceptual closure plan designs to ready-for construction designs. The guidelines use scale to mean that bigger mines often have performed more closure design work by the time closure occurs. This is true for more mature mines but not necessarily for immature, complex mines. Reclamation at Palmer is mostly

simplistic recontouring operations and removal of pipe. The only required complicated engineering design is for the portal plug and the direct cost estimate includes \$118,000 specifically for geotechnical studies, engineering design (conceptual to final) and professional engineering management/oversight during entire construction of the portal plug. Owing to the inclusion of geotechnical work, engineering design and professional engineering supervision costs in the direct cost for the portal plug and the otherwise simplistic nature of the reclamation itself, Constantine concluded that 3% is sufficient for engineering redesign component of indirect costs.

Scope Contingency - ADNR guidelines (DOWL, 2015) recommend a range of 6-11% of direct costs. Owing to the narrow scope and simplicity of the reclamation work, and familiarity that local contractors have with the site, Constantine chose 6% for scope contingency.

Bid Contingency - ADNR guidelines (DOWL, 2015) recommend a range of 4-9% of direct costs. The guidelines offer that this contingency might be lower for larger projects where there would be project efficiencies realized over the life of the reclamation project. Constantine believes that the years of experience gained at the site by the few civil contractors in Haines essentially has the same effect. Namely that any of those contractors know how to bid any work at Palmer and make it cost effective for them. Constantine chose 4% for bid contingency.

2.0 CARE AND MAINTENANCE FOR TEMPORARY CLOSURE

There are some situations where Constantine may elect to suspend its activities proposed under this Plan of Operations for periods longer than the seasonal interruptions that are common to mineral exploration. Under any situation where activities at the site will cease for more than 1 year and for up to 3 years Constantine would take the steps necessary to put the site on a Care and Maintenance status and continue to perform all maintenance, monitoring and reporting tasks that are necessary to protect public health and the environment during the temporary closure. Should Constantine decide to suspend activities for more than 1 year it will notify ADNR with 45 days of making that decision. The Care and Maintenance Plan for the temporary closure scenario includes the following key components:

- Continuation of baseline water quality monitoring at select sites,
- Continuation of seasonal underground seepage water quality monitoring at the monitoring point down-gradient of the LAD diffuser as long as water is being discharged through the LAD diffuser,
- Continuation of discharge of underground seepage water through the LAD disposal system,
- Compliance with the SWPPP, including visual inspections and maintenance of storm water BMP's during the ice-free months,

- Installing a barrier at the portal to restrict public access to the underground development ramp,
- Compliance with the SPCC Plan including visual monitoring and management of fuel storage facilities including maintenance of secondary containment vessels when fuel is being stored in site,
- Monthly visual monitoring of site roads, laydown areas and portal pad area during ice-free months for any conditions that warrant repair or other response.

Estimated Temporary Closure costs are described below.

Table 1. Temporary Closure - Cost Summary

| 2024 Temporary Closure - Cost Estimate Summary | | | | | | |
|--|--|------------|-------------|-------------|-------------|------------------------|
| Direct Costs | | | | | | |
| One Time Activities | Recurring Activities | Unit Costs | Year 1 Cost | Year 2 Cost | Year 3 Cost | Cummulative 3-Yr. Cost |
| Direct Costs | | | | | | |
| Site Clean-up, Preparation | | | \$21,612 | | | \$21,612 |
| Construct Access Road Barrier | | | \$15,862 | | | \$15,862 |
| | Biweekly Site Inspection | \$1,407 | \$16,885 | \$16,885 | \$16,885 | \$50,655 |
| | Monthly Reporting | \$331 | \$3,967 | \$3,967 | \$3,967 | \$11,902 |
| Direct Cost Subtotal (3-Years) | | | \$58,326 | \$20,852 | \$20,852 | \$100,030 |
| Indirect Costs | | | | | | |
| | Contractor Profit (6% of Direct Costs) | | | | | \$6,002 |
| | Contractor Overhead (5% of Direct Costs) | | | | | \$5,002 |
| | Performance and Payment Bonds (2.5% of Direct Costs) | | | | | \$2,501 |
| | Liability Insurance (1.5% of Labor Costs) | | | | | \$290 |
| | Contract Administration (6% of Direct Costs) | | | | | \$6,002 |
| | Engineering Redesign (3% of Direct Costs) | | | | | \$3,001 |
| | Scope Contingency (6% of Direct Costs) | | | | | \$6,002 |
| | Bid Contingency (5% of Direct Costs) | | | | | \$5,002 |
| Indirect Costs Subtotal (3-Years) | | | | | | \$33,800 |
| Total Temporary Closure Costs | Duration 3 Years | | | | | \$133,831 |

Table 2. Site Cleanup Costs

| Site Cleanup and Preparation Costs | | | | | | | | |
|---|----------|-----------|--------|-------------|--------|------------|------------|------------|
| Item | # people | \$/day | # days | \$/unit | #units | 2019 total | 2022 total | 2024 total |
| Field Lead | 1 | \$ 720.00 | 5 | | | \$2,250 | \$2,367 | \$3,600 |
| local labor | 1 | \$ 551.00 | 3 | | | \$1,125 | \$1,184 | \$1,653 |
| Incidentals | | \$ 50.00 | 5 | | | \$250 | \$263 | \$263 |
| Equipment Rental (loaders) to stabilize area | | | 3 | \$ 1,925.00 | 1 | \$5,775 | \$6,075 | \$6,075 |
| Mobilization | | | | \$ 3,080.00 | 1 | \$3,080 | \$3,240 | \$3,240 |
| Pickup Rental + fuel | | | 5 | \$ 165.00 | 1 | \$825 | \$868 | \$868 |
| Contingency Road BMP maintenance | | | | | | \$5,620 | \$5,912 | \$5,912 |
| | | TOTAL | | | | \$18,925 | \$19,909 | \$21,612 |
| Three day duration when laborers are cleaning up the site and have an excavator to dress road as needed | | | | | | | | |

Table 3. Biweekly Inspection Costs

| Biweekly Site Inspection Costs | | | | | | | |
|--|--------------------------------|--------|----------|--------|--------------|--------------|--------------|
| | \$/day | # days | \$/unit | #units | 2019 total | 2022 total | 2024 total |
| rental truck +fuel | \$ 165.00 | 1 | | | \$ 165.00 | \$ 173.58 | \$ 173.58 |
| per diem | \$ 100.00 | 1 | | | \$ 100.00 | \$ 105.20 | \$ 105.20 |
| misc. (radio - light batteries, gloves, etc.) | | | \$ 25.00 | 1 | \$ 25.00 | \$ 26.30 | \$ 26.30 |
| Labor costs | \$ 551.00 | 2 | | | \$ 750.00 | \$ 789.00 | \$ 1,102.00 |
| | TOTAL PER TRIP | | | | \$ 1,040.00 | \$ 1,094.08 | \$ 1,407.08 |
| | TOTAL FOR TWELVE TRIPS (1-Yr.) | | | | \$ 12,480.00 | \$ 13,128.96 | \$ 16,884.96 |
| Assumes team of two from Haines, 2X month during 6 snow free months and when access road is passable | | | | | | | |

Table 4. Road Barrier Construction Costs

| Road Barrier Construction Costs | | | | | | | | |
|---|----------|-----------|--------|-------------|--------|------------|------------|------------|
| Item | # people | \$/day | # days | \$/unit | #units | 2019 total | 2022 total | 2024 total |
| Operators | 1 | \$ 600.00 | 2 | | | \$680 | \$715 | \$1,200 |
| local assistant (assume 0.5 day for safety & prep) | 1 | \$ 551.00 | 2 | | | \$750 | \$789 | \$1,102 |
| Equipment Rental (Cat, loaders, welder, etc.) | | | 2 | \$ 1,200.00 | 1 | \$2,400 | \$2,525 | \$2,525 |
| Pickup Rental + fuel | | | 2 | \$ 165.00 | 1 | \$330 | \$347 | \$347 |
| Miscellaneous material, rebar, cement, plate steel | | | | | | \$3,000 | \$3,156 | \$3,156 |
| Same costs for constructing Portal Barrier | | | | | | \$7,160 | \$7,532 | \$7,532 |
| | | TOTAL | | | | \$14,320 | \$15,065 | \$15,862 |
| Main activity is fabricating and installing a gate at the BLM/MHT boundary to keep vehicles out of the MHT lands. There is an option of trenching the road instead but Constantine has successfully installed a gate at the State/BLM boundary and a gate allows MHT to continue to have access to the land while discouraging others to enter. | | | | | | | | |

Table 5. Monthly Reporting Costs

| Monthly Reporting Costs | | | | | | | |
|-------------------------------|---------------------------------|--------|-------|--------|-------------|-------------|-------------|
| | \$/day | # days | /unit | #units | 2019 total | 2022 total | 2024 total |
| professional fees(consultant) | | | | | | | |
| lead | \$ 551.00 | 0.5 | | | \$ 187.50 | \$ 197.25 | \$ 275.50 |
| assistant | \$ 551.00 | 0.1 | | | \$ 37.50 | \$ 39.45 | \$ 55.10 |
| | TOTAL PER REPORT | | | | \$ 225.00 | \$ 236.70 | \$ 330.60 |
| | TOTAL FOR TWELVE REPORTS (1 yr) | | | | \$ 2,700.00 | \$ 2,840.40 | \$ 3,967.20 |

3.0 RECLAMATION PLAN FOR PERMANENT CLOSURE

If Constantine ceases activities at the site permanently, it will perform the following:

- Update its Water Management Plan incorporating underground seepage water quality and quantity data and confirm the need for installation of a hydraulic portal plug in the development ramp to stem the flow of underground seepage water to the surface at the portal. Constantine's base assumption is that it will install a hydraulic portal plug in the development ramp at closure. Constantine has included the estimated costs for the portal plug design and installation in the reclamation cost estimate. In the absence of a need to install a hydraulic plug, Constantine will install a barricade on the portal that will provide a barrier to public and large mammal access.
- Consult with the Mental Health Trust to identify any surface infrastructure that the Trust wants left in place at final closure. Presently Constantine understands the Trust prefers that the access road up to the portal pad remain in place for the long-term. Accordingly, costs for reclaiming the access road on MHT lands are not included in the reclamation cost estimate.
- Remove all surface facilities and appurtenances (buildings, exposed piping, fuel storage facilities, etc.) and materials (supplies, fuel, tanks, debris, explosives, chemicals, etc.), except those that the landowner requests to be left in-place or that are required for long-term monitoring and maintenance.
- Reclaim the disturbed areas (roads, ponds) by recontouring, placing any salvaged soil and reseeding, to provide short-term stability from erosion and encourage long-term re-establishment of native plant species. Constantine will consult with the Alaska Plant Materials Research Center to develop a strategy for revegetation including identifying the appropriate seed mix to use for revegetation disturbed areas. There will not be an effort to reseed the waste rock storage areas owing to the coarse nature of the material. As a practical matter, the glaciofluvial material that overlies bedrock in most of upper Glacier Creek is too immature to have developed an organic topsoil horizon. As a result, little topsoil has been salvaged and Constantine anticipates that it will be reseeding directly onto this glaciofluvial material during reclamation. Undisturbed glaciofluvial material currently supports alder- and devils club -dominated plant communities.
- Leave any facilities that are required for long-term water management in-place, and the ongoing operation and maintenance costs associated with them will be included in an updated financial assurance for the site. Presently Constantine anticipates installing the portal plug to stem the flow of underground seepage water onto the surface and that there will not be any facilities required for long-term water

management. Therefore, we have not included any costs associated with operating or maintaining any water management facilities following reclamation and closure.

- Haul any PAG development rock (none is anticipated) back underground prior to installing the hydraulic portal plug.
- Perform monthly site inspections and reporting during the snow-free months for a two-year period following final closure. The principal purpose of the monitoring is to inspect the portal area and monitor seepage from the portal as a measure of the efficacy of the portal plug in eliminating seepage to de-minimis levels.

Permanent closure costs are described in the following tables:

Table 6. Permanent Closure - Schedule

| Activity | Wk 1 | Wk 2 | Wk 3 | Wk 4 | Wk 5 | Wk 6 | Wk 7 | Wk 8 | Wk 9 | Wk 10 | Wk 11 | Wk 12 | Wk 13 |
|--|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|
| Equipment Mobe and Demobe | X | | | | | | | | | | | X | |
| PAG Haulage to U/G | | X | | | | | | | | | | | |
| Portal Closure | | | X | X | X | | | | | | | | |
| Site Clean-up, Preparation, Reseed | | | | | | X | | | | | X | | |
| Portal Facility Removal | | | | | | X | | | | | | | |
| Reclaim Ponds | | | | | | | | | X | | | | |
| Fuel Facility Deconstruct | | | | | X | | | | | | | | |
| Construct Road Barrier | | | | | | | | | | | X | | |
| Surface Pipe Removal | | | | | | | | | X | | | | |
| Final Closure Report | | | | | | | | | | | | | X |
| Post Closure Monitoring* | | | | | | | | | | | | | X |
| * Ongoing for next two snow free seasons | | | | | | | | | | | | | |

Table 7. Permanent Closure - Cost Summary

| Permanent Closure - 2024 Reclamation Cost Estimate Summary | | |
|---|--------------------------------------|--------------------|
| Activity | | Cost |
| Direct costs | | |
| | Fuel Facility Deconstruct | \$23,222 |
| | PAG Haulage to U/G | \$45,179 |
| | Portal Closure | \$553,413 |
| | Site Clean-up, Preparation, Reseed | \$37,152 |
| | Portal Pad Facility Removal | \$22,797 |
| | Surface Pipe Removal | \$46,804 |
| | Reclaim Ponds | \$43,296 |
| | Construct Road Barrier | \$10,605 |
| | Equipment Move and Demobe | \$15,215 |
| | Final Closure Report | \$10,911 |
| | Post Closure Monitoring | \$20,136 |
| Direct Costs Subtotal | | \$828,731 |
| Indirect Costs | | |
| | Contractor Profit (6%) | \$49,724 |
| | Contractor Overhead (5%) | \$41,437 |
| | Performance and Payment Bonds (2.5%) | \$20,718 |
| | Liability Insurance (1.5% labor) | \$164,825 |
| | Contract Administration (6%) | \$49,724 |
| | Engineering Redesign (3%) | \$24,862 |
| | Scope Contingency (6%) | \$49,724 |
| | Bid Contingency (5%) | \$41,437 |
| Indirect Costs Subtotal | | \$442,450 |
| Total Permanent Closure Reclamation Costs | | \$1,271,181 |

Table 8. Cost to Deconstruct Fuel Facilities

| Fuel Facility Deconstruct | | | | | | | | |
|--|----------|--------|--------|---------|--------|-----------------|-----------------|-----------------|
| Item | # people | \$/day | # days | \$/unit | #units | 2019 total | 2022 total | 2024 total |
| lead (assume 1 day for prep / move) | 1 | \$720 | 3 | | | \$2,160 | \$2,272 | \$2,390 |
| local labor | 2 | \$551 | 4 | | | \$4,408 | \$4,637 | \$4,408 |
| meals and accomodations for Lead | 1 | \$300 | 3 | | | \$900 | \$947 | \$947 |
| meals | 2 | \$100 | 4 | | | \$160 | \$168 | \$800 |
| Low boy truck to haul empty tanks/liner to town | | | 1 | \$1,650 | 1 | \$1,650 | \$1,736 | \$2,400 |
| Fuel Transfer Truck - charge for defueling tanks | | | 2 | \$500 | 1 | \$1,000 | \$1,052 | \$1,052 |
| Equipment Rental (CAT 312 excavator) | | | 2 | \$1,925 | 1 | \$3,850 | \$4,050 | \$4,050 |
| Pickup Rental + fuel | | | 4 | \$165 | 2 | \$1,320 | \$1,389 | \$1,389 |
| landfill fees for liner disposal | | | | \$500 | 1 | \$500 | \$526 | \$526 |
| Contingency for contaminated soil mitigation | | | | \$5,000 | 1 | \$5,000 | \$5,260 | \$5,260 |
| TOTAL | | | | | | \$20,948 | \$22,037 | \$23,222 |

Main activity is pumping tanks dry, removing bulk tanks, removing containment liner and demolishing the containment. Excavator to lift tanks onto low boy and remove berms, smooth ground

Table 9. Cost to Haul PAG Underground

| PAG Haulage to U/G | | | | | | | | | |
|--------------------------------------|----------|--------|--------|---------|--------|-----------------|-----------------|-----------------|-----------------|
| Item | # people | \$/day | # days | \$/unit | #units | 2019 total | 2022 total | 2024 Total | comments |
| Meals and Accommodations - Proj. Mg | 2 | \$300 | 7 | | | \$4,200 | \$4,418 | \$4,418 | |
| Equipment Rental (CAT 312 excavator) | | | 7 | \$1,925 | 1 | \$13,475 | \$14,176 | \$14,176 | load haul truck |
| Truck - articulated | | | 7 | \$1,450 | 1 | \$10,150 | \$10,678 | \$10,678 | haul to portal |
| Contract Miner Equipment | | | | | | \$10,000 | \$10,520 | \$10,520 | contract miner |
| Contract Miner Labor | | | 7 | \$596 | 1 | \$3,500 | \$3,682 | \$4,172 | |
| Pickup Rental + fuel | | | 7 | \$165 | 1 | \$1,155 | \$1,215 | \$1,215 | |
| TOTAL | | | | | | \$42,480 | \$44,689 | \$45,179 | |

General Plan here is to use Southeast road builders equipment to haul material to portal and contract miners LHD (3 cy) to haul material underground. Assume 4 rounds or 1,000 tons of material or 400 cubic yards (15x15x10=2,250 cubic feet, x 4 rounds=10,000 cubic feet, converts to 400 cubic yards). Assumes contract miner moes to site one week early (for portal plug construction) to make LHD available. Assumes Haul truck can haul 8 yards for 50 loads to portal.

Table 10. Cost to Construct Portal Plug

| Portal Closure | | | | | | | | | |
|---|----------|---------|--------|---------|--------|------------------|------------------|------------------|---------------------------|
| Item | # people | \$/day | # days | \$/unit | #units | 2019 total | 2022 total | 2024 | comments |
| Project Manager, engineering and construction | 1 | \$1,600 | 30 | \$ - | | \$48,000 | \$50,496 | \$48,000 | |
| Local labor | 2 | \$551 | 21 | | | \$15,750 | \$16,569 | \$23,142 | |
| Plug Design Criteria Studies (hydrology, geochem, geotech, rock mechanics) | | | | | | \$25,000 | \$26,300 | \$26,300 | |
| Conceptual Plug Design | | | | | | \$20,000 | \$21,040 | \$21,040 | |
| Final Plug Design | | | | | | \$20,000 | \$21,040 | \$21,040 | |
| Meals and Accommodations - contract mine crew | 4 | \$200 | 21 | | | \$16,800 | \$17,674 | \$17,674 | |
| Meals and Accommodations - Project Manager | 1 | \$300 | 21 | | | \$6,300 | \$6,628 | \$6,628 | |
| Contract Miner Portal Plug Construction (prep, steel, grouting, shotcrete, bulkheads) | | | | | | \$172,300 | \$181,260 | \$181,260 | contract miner |
| Concrete (yd ³) - delivered to portal and pumped | | | | \$493 | 315 | \$155,358 | \$163,437 | \$163,437 | 10 yd ³ trucks |
| Plug Construction consumable materials (bulkhead lumber, rebar, piping, valves) | | | | | | \$39,208 | \$41,247 | \$41,247 | |
| Pickup Rental + fuel | | | 21 | \$165 | 1 | \$3,465 | \$3,645 | \$3,645 | |
| TOTAL | | | | | | \$522,181 | \$549,334 | \$553,413 | |

Assumption is that contract miner would mobilize to site and provide all U/G equipment and miners to prepare and install the hydraulic portal plug. Based on best engineering practices we estimate head pressures of ~232 psi at the portal requiring a portal plug approximately 30 feet long. Concrete volumes are thus calculated. Concrete costs were provided by Southeast Road Builders (non-bid) and assume 5% product loss and truck transportation from batch plant in Haines. All consumable materials to construct the bulkheads etc are included in line 13. Assumes the power generator at the portal pad is

Table 11. Cost Site Cleanup and Seeding

| Site Prep, Cleanup and Reseed Costs | | | | | | | | |
|---------------------------------------|----------|--------|--------|---------|--------|-----------------|-----------------|-----------------|
| Item | # people | \$/day | # days | \$/unit | #units | 2019 total | 2022 total | \$2,024.00 |
| lead (assume 1 day for prep / demob / | 1 | \$720 | 3 | | | \$3,300 | \$3,472 | \$2,160 |
| local labor | 2 | \$551 | 14 | | | \$10,500 | \$11,046 | \$15,428 |
| Lead meals and accomodations | 1 | \$300 | 3 | | | \$900 | \$947 | \$947 |
| meals | 2 | \$100 | 14 | | | \$560 | \$589 | \$2,800 |
| seed mix (hand cast) | | | | \$10 | 200 | \$2,000 | \$2,104 | \$2,104 |
| Fuel Transfer Truck | | | 3 | \$165 | 1 | \$495 | \$521 | \$521 |
| Equipment Rental (CAT 312 excavator) | | | 6 | \$1,925 | 1 | \$11,550 | \$12,151 | \$12,151 |
| Pickup Rental + fuel | | | 3 | \$165 | 2 | \$990 | \$1,041 | \$1,041 |
| TOTAL | | | | | | \$30,295 | \$31,870 | \$37,152 |

Main activity is excavator for 3 days to dress road, stabilize ditches prior to leaving the site. Two local laborers are available for 13 days to pickup trash and reseed the pond and LAD areas after they are reclaimed.

Table 12. Cost for Facility Removal at Portal

| Portal Pad Facility Removal | | | | | | | | | |
|---|----------|--------|-------------|-------------|---------|--------|-----------------|---------------|---------------|
| Item | # people | \$/day | # days 2019 | # days 2022 | \$/unit | #units | 2019 total | 2022 total | 2024 total |
| lead (assume 1 day for prep / mobe) | 1 | \$720 | 3 | 4 | | | \$3,300 | 4,629 | 2,880 |
| local labor | 2 | \$551 | 3 | 4 | | | \$2,250 | 3,156 | 4,408 |
| Labor - Demolition snow sheds, steel sets | 2 | \$551 | 2 | 3 | | | \$1,500 | 2,367 | 3,306 |
| Meals and accomodations for Lead | 1 | \$300 | 3 | 4 | | | \$900 | 1,262 | 1,262 |
| meals | 3 | \$100 | 5 | 6 | | | \$300 | 379 | 1,800 |
| Fuel Transfer Truck | | | 3 | 4 | \$165 | 1 | \$495 | 694 | 694 |
| Equipment Rental (CAT 312 excavator) - load truck | | | 1 | 2 | \$1,925 | 1 | \$1,925 | 4,050 | 4,050 |
| Articulated truck haul demolition debris to staging | | | 1 | 2 | \$1,595 | 1 | \$1,595 | 3,356 | 3,356 |
| Pickup Rental + fuel | | | 2 | 3 | \$165 | 2 | \$660 | 1,041 | 1,041 |
| TOTAL | | | | | | | \$12,925 | 20,935 | 22,797 |

Main activity is removal of all improvements from the Portal Pad - including generators, connexes, fuel tanks, air compressors and buildings - snow sheds, steel sets, etc. leaving a "naked" portal pad. Stabilization and reseed covered under Site Cleanup tab. Assumes mine contractor removes all of their equipment at their expense - connex, equipment, parts

Table 13. Cost for Removal of Surface Pipe

| Surface Pipe Removal | | | | | | | | |
|---|----------|--------|--------|---------|--------|-----------------|-----------------|-----------------|
| Item | # people | \$/day | # days | \$/unit | #units | 2019 total | 2022 total | 2024 total |
| lead (assume 1 day for prep / mobe) | 1 | \$720 | 6 | | | \$6,600 | \$6,943 | \$4,320 |
| local labor | 4 | \$551 | 7 | | | \$10,500 | \$11,046 | \$15,428 |
| Meals and accomodations for Lead | 1 | \$300 | 6 | | | \$1,800 | \$1,894 | \$1,894 |
| Meals (lunch daily for crew of 4) | 4 | \$100 | 7 | | | \$560 | \$589 | \$2,800 |
| Low Boy haul pipe to town | | | | \$1,540 | 1 | \$1,540 | \$1,620 | \$2,400 |
| Articulated truck haul pipe sections to staging | | | 2 | \$1,595 | 1 | \$3,190 | \$3,356 | \$3,356 |
| Equipment Rental (CAT 312 excavator) | | | 7 | \$1,925 | 1 | \$13,475 | \$14,176 | \$14,176 |
| Pickup Rental + fuel | | | 7 | \$165 | 2 | \$2,310 | \$2,430 | \$2,430 |
| TOTAL | | | | | | \$39,975 | \$42,054 | \$46,804 |

Main activity is dismantling and removing approx 700 meters of pipe from portal to settling ponds, and from settling ponds to LAD diffuser, plus 300 meters of pipe from portal to percolation trench. Acitivites include small excavator for 7 days to pull, stack pipe, 4 laborers and 2 pickup trucks, plus haulage to town on a low boy for the pipe. Assumes pipe broken into 10 meter pieces comprising 100 pieces.

Table 14. Cost for Removing Settling Ponds

| Pond Reclamation Costs | | | | | | | | |
|------------------------|----------|--------------|--------|---------|--------|-----------------|-----------------|-----------------|
| Item | # people | \$/day | # days | \$/unit | #units | 2019 total | 2021 total | 2022 total |
| Team Lead | 1 | \$720 | 7 | | | \$7,700 | \$8,100 | \$5,040 |
| meals and accomodation | 1 | \$300 | 7 | | | \$2,100 | \$2,209 | \$2,209 |
| CAT D6 | | | 7 | \$1,980 | 1 | \$13,860 | \$14,581 | \$14,581 |
| Excavator CAT 312 | | | 3 | \$1,925 | 1 | \$5,775 | \$6,075 | \$6,075 |
| Fuel Transfer Truck | | | 7 | \$165 | 1 | \$1,155 | \$1,215 | \$1,215 |
| Truck - articulated | | | 7 | \$1,595 | 1 | \$11,165 | \$11,746 | \$11,746 |
| Pickup Rental | | | 7 | \$165 | 2 | \$2,310 | \$2,430 | \$2,430 |
| | | TOTAL | | | | \$44,065 | \$46,356 | \$43,296 |

Main activity is pushing liners into center of ponds, then burying them with clean fill and recontouring the surface to discourage ponding. Truck to haul fill to pond sites included, plus then spreading with the cat. Excavator in estimate primarily to pull liner away from margins into the center of the pond. Final reseed is included on the Site prep, cleanup and reseed sheet. Two pickups are rented for 13-day duration for laborers and lead to use as needed.

Table 15. Cost for Constructing Road Barrier

| Road Barrier Construction Costs | | | | | | | | | |
|--|----------|--------------|--------|---------|--------|----------------|----------------|-----------------|--|
| Item | # people | \$/day | # days | \$/unit | #units | 2019 total | 2022 total | 2024 total | |
| Operators | 1 | \$600 | 2 | | | \$680 | \$715 | \$1,200 | |
| local assistant (assume 0.5 day for safety & prep) | 1 | \$551 | 2 | | | \$750 | \$789 | \$1,102 | |
| Equipment Rental (Cat, loaders, welder, etc.) | | | 2 | \$2,400 | 1 | \$2,400 | \$2,525 | \$4,800 | |
| Pickup Rental + fuel | | | 2 | \$165 | 1 | \$330 | \$347 | \$347 | |
| Miscellaneous material, rebar, cement, plate steel | | | | | | \$3,000 | \$3,156 | \$3,156 | |
| | | TOTAL | | | | \$7,160 | \$7,532 | \$10,605 | |

Main activity is fabricating and installing a gate at the BLM/MHT boundary to keep vehicles out of the MHT lands. There is an option of trenching the road instead but Constantine has successfully installed a gate at the State/BLM boundary and a gate allows MHT to continue to have access to the land while discouraging others to enter.

Table 16. Cost for Equipment Mobilization and Demobilization

| Equipment Mobe and Demobe Costs | | | | |
|---|---------------------|---------------------|-----------------|--|
| | 2019 RT mobe/demobe | 2022 RT mobe/demobe | | |
| Dozer CAT D6 | \$3,300 | \$3,472 | \$4,043 | |
| Excavator CAT 320 | \$3,300 | \$3,472 | \$4,043 | |
| Loader 980C | \$1,540 | \$1,620 | \$1,886 | |
| Truck 25 ton (articulated) | \$3,080 | \$3,240 | \$3,773 | |
| Invasive Species washdown | \$1,200 | \$1,262 | \$1,470 | |
| Total costs | \$12,420 | \$13,066 | \$15,215 | |
| Main activity is mobilizing equipment from Haines (by road) for the 13 days to complete the site reclamation. Mobe costs come from Southeast Road Builders bid from 2017. Contract miner equipment mobe covered under portal closure costs. | | | | |

Table 17. Cost for Post Closure Monitoring and Reporting

| Post Closure Inspection and Reporting Costs | | | | | | | |
|--|--------------------------------|--------|---------|--------|------------|------------|------------|
| | \$/day | # days | \$/unit | #units | 2019 total | 2022 total | 2024 total |
| rental truck +fuel | \$165 | 1 | | | \$165 | \$174 | \$174 |
| per diem | \$100 | 1 | | | \$40 | \$42 | \$100 |
| misc. (radio - light batteries, gloves, etc.) | | | \$25 | 1 | \$25 | \$26 | \$26 |
| Labor costs | \$551 | 2 | | | \$750 | \$789 | \$1,102 |
| Reporting (to ADNR and MHT) | \$551 | 0.5 | | | \$188 | \$198 | \$276 |
| | TOTAL PER TRIP | | | | \$1,168 | \$1,229 | \$1,678 |
| | TOTAL FOR TWELVE TRIPS (2-Yr.) | | | | \$14,016 | \$14,745 | \$20,136 |
| Assumes team of two from Haines, 1X month during 6 snow free months and when access road is passable for 2 years to inspect portal seepage | | | | | | | |

Table 18. Cost for Final Reclamation Report

| Final Reclamation Report Costs | | | | | |
|--|---------|--------|------------|------------|------------|
| | \$/day | # days | 2019 total | 2022 total | 2024 total |
| lead author | \$1,100 | 8 | \$8,800 | \$9,258 | \$9,258 |
| graphical assistant | \$551 | 3 | \$1,125 | \$1,184 | \$1,653 |
| | TOTAL | | \$9,925 | \$10,441 | \$10,911 |
| Main activity is developing a final report that describes the final reclamation activities with photos and documentation to show the final site configuration and the steps that were taken to get it there. | | | | | |

Table 19. 2022 Equipment Costs

| 2017 Equipment Quote from Local Hanes Contractor | | | |
|---|-------------------------|---------------------|--|
| Add 10% for 2019 Rates | | | |
| Multiply 2019 Rates X 1.052 for 2022 Rates | | | |
| Mobilization Rates: | | unit cost (one way) | |
| Excavator | 320 Size - Cat | \$1,500 /each | (from existing location) |
| | 335 Size - Cat | \$1,700 each | |
| | 345 Size - Cat | \$2,200 each | |
| Loader | | \$1,400 /each | " |
| Dozer | D-6 | \$1,500 /each | " |
| Dozer | D-8T | \$2,000 /each | " |
| Truck | Off-Highway | \$1,400 /each | " |
| Truck | Other | \$300 /each | " |
| 563 Cat Roller/Compactor | | \$1,250 /each | " |
| 12M Cat Grader | | \$850 /each | " |
| Drill | | \$1,200 /each | " |
| on-site vehicle - Dedicated | | \$250 /each | " |
| hydroseeder | | \$450 /each | " |
| SWPPP Container and Storage Container | | \$500 /each | " |
| Mobilization stops at point where invasive species clear limits begin | | | |
| Equipment Rates: | | | |
| Excavator | Model Caterpillar 335 | \$1,950 /day-\$175* | Incl operator/fuel/preventative maintenance |
| Excavator | Model Caterpillar 320 | \$1,850 /day-\$175* | Incl operator/fuel/preventative maintenance |
| Excavator | Model Caterpillar 312 | \$1,750 /day-\$175* | Incl operator/fuel/preventative maintenance |
| Loader | Model Caterpillar 980 C | \$1,800 /day-\$150* | Incl operator/fuel/preventative maintenance |
| Dozer | Caterpillar D8T | \$2,450 /day-\$200* | Incl operator/fuel/preventative maintenance |
| Dozer | Caterpillar D6 | \$1,800 /day-\$125* | Incl operator/fuel/preventative maintenance |
| Truck | 25/30 ton (Articulated) | \$1,450 /day-\$125 | Incl operator/fuel/preventative maintenance |
| Compactor | Caterpillar 563 | \$1,800 /day-\$125 | Incl operator/fuel/preventative maintenance |
| Grader | Caterpillar 12 M | \$1,950 /day-\$150 | Incl operator/fuel/preventative maintenance |
| Drill | Komatsu - John Henry | \$1,600 /day-\$100* | Does not include drill steel/bits/strikers/couplers /caps/powder/primers/powderman |
| Fuel transfers/Truck use for fueling | | \$150 /day | |
| CrewTransport Vehicles | | \$150 /day | Dedicated to Project (Staged @ Camp) |
| Truck/Tractor with lowboy: | | \$200 /hr.-\$150* | Incidental moves |
| Invasive Specie - washdown/control (#2 Wash) | | \$350 /unit | (owner provided system) - SRI can provide |
| Invasive Specie - Initial Wash-down prior to mob. (HNS) | | \$300 /unit | SRI Provided system - HNS |
| Service/Maintenance Truck - Dedicated (invasive) | | \$200 /day | |
| Hydroseeder | | \$500 /load-\$50* | 1100 gallon - 10,000 Sq ft. of coverage - + material cost per below |

4.0 REFERENCES

DOWL, 2015. Mine Closure and Reclamation Cost Estimation Guidelines: Indirect Cost Categories, Prepared for ADNR and ADEC, DOWL Report. 38 p.

Langston & Associates, 2022. Technical Memorandum Re: Decline Bulkhead Analysis, Prepared for Roughstock Mining Services. 12 p.