# Appendix B

# Reclamation Plan

Anarraaq and Aktigiruq Exploration Program

## Phase I – Exploration Access Road and Surface Pad Construction

Prepared for:
Alaska Department of Natural Resources
Alaska Department of Environmental Conservation
Northwest Arctic Borough

Teck

Prepared by:
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**April 2022**

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# ABBREVIATIONS

| | |
|---|---|
| AAC | Alaska Administrative Code |
| ADEC | Alaska Department of Environmental Conservation |
| ADNR | Alaska Department of Natural Resources |
| AS | Alaska Statutes |
| BMP | Best Management Practices |
| CMP | Corrugated metal pipe |
| DMLW | Division of Mining, Land and Water |
| Plan | Reclamation Plan |
| Project | Anarraaq and Aktigiruq Exploration Program |
| RDM | Red Dog Mine |
| SRCE | Standard Reclamation Cost Estimate |
| TAI | Teck American Incorporated |

**Units of Measure**

| | |
|---|---|
| ft | foot/feet |
| $yd^3$ | cubic yards |

# 1 INTRODUCTION, APPLICANT INFORMATION, RECLAMATION REQUIREMENTS & SCOPE OF RECLAMATION PLAN

## 1.1 Introduction

Teck American Incorporated (TAI) is proposing the development of a two-phase exploration program to evaluate the economic and technical feasibility of mining lead-zinc resources identified near upper Ikalukrok Creek and the Red Dog Mine (RDM) in northwest Alaska, known as the Anarraaq and Aktigiruq prospects (See Figure 1). The Project consists of two phases. Phase I proposes the development of the main exploration access road, surface pads, and secondary roads to access the surface pads, and material sites. Phase II will include the construction of surface and underground facilities and other regulated activities associated with the underground exploration program.

TAI is committed to protecting the environment and the people living near the Anarraaq and Aktigiruq Exploration Program (Project) area. As part of this commitment, TAI has developed this Reclamation Plan (Plan) which details the orderly closure of the Project and reclamation of all disturbed areas.

This document presents a comprehensive Reclamation Plan specific to Phase I of the Project including the reclamation of all roads (access and secondary access), surface pads (e.g., laydown pads, camp and portal pads, and vent-raise pads), and material sites. This surface development represents the first phase of a multi-year exploration program. Construction of surface facilities and the underground development in support of this exploration will be permitted later, as Phase II, and the reclamation of those components of the Project will be addressed in a future Reclamation Plan or amendment to this Plan. This Reclamation Plan is limited to describing the reclamation of all components of the Phase I program should the Project not proceed to Phase II for some reason.

This Plan meets all the State of Alaska requirements, as provided by AS 27.19 and 11 AAC 97, for reclamation and reclamation bonding and is intended to present the proposed reclamation activities in sufficient detail for regulatory agency review and approval.

The purpose of this Reclamation Plan is to provide guidelines for implementing reclamation procedures for the roads, surface pads, bridges and material sites associated with Phase I of the proposed Anarraaq and Aktigiruq Exploration Program. These guidelines are based on the best available reclamation technologies.

## 1.2 Applicant Information

### 1.2.1 Corporation Office Completing Application

| | |
|---|---|
| Name: | Leslie Olmstead |
| Manager: | US Lands and Assets |
| Telephone: | (509) 326-4567 |
| Date: | February 2022 |

### 1.2.2 Designated Contact Person

| | |
|---|---|
| Name: | Leslie Olmstead |
| Manager: | US Lands and Assets |
| Telephone: | (509) 326-4567 |

### 1.2.3 Corporate Information

| | |
|---|---|
| Business Name: | Teck American Incorporated |
| Address: | 501 Riverpoint Blvd., Suite 300<br>Spokane, Washington 99202 |
| Telephone: | (509) 747-6111 |
| President: | Shezhad Bharmal |
| Treasurer: | Tammy Nelson |
| Secretary/Vice President: | Trevor Hall |

### 1.2.4 Alaska Registered Agent

| | |
|---|---|
| Name: | C T Corporation Service Company |
| Address: | 9360 Glacier Highway, Suite 202<br>Juneau, AK 99801 |

## 1.3 Alaska Reclamation Requirements

Reclamation of the proposed Phase I Anarraaq and Aktigiruq Exploration project falls under the jurisdiction of the Alaska Department of Natural Resources (ADNR), Division of Mining, Land and Water (DMLW), Mining Section.

Alaska Statute (AS) 27.19, the Reclamation Act, applies to State, federal, municipal, and private land and water subject to mining operations. This statute is administered by ADNR. The Reclamation Act states that "a mining operation shall be conducted in a manner that prevents unnecessary and undue degradation of land and water resources and the mining operation shall be reclaimed as contemporaneously as practicable with the mining operation to leave the site in a stable condition" that allows for the reestablishment of renewable resources on the site within a reasonable period by natural processes. Alaska Administrative Code 11 AAC 97.240 further

states "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."

An approved reclamation plan is required by the State mining regulations 11 AAC 97.300 – 97.350. Pursuant to 11 AAC 97.310(a), miners must submit a proposed reclamation plan that is correct and complete to the best of the miner's knowledge and has been signed and dated by the miner or the miner's designee prior to starting mining operations. The reclamation plan does not become effective until a performance (reclamation) bond is in place. The performance bond amount shall be set at a level not more than an amount reasonably necessary to ensure the faithful performance of the requirements of the reclamation plan. 11 AAC 97 applies to the approval of reclamation plans, reclamation bonding, and the enforcement of reclamation requirements under AS 27.19 for locatable mineral, leasable mineral, and material mining operations on State, federal, municipal, and private land.

Reclamation performance standards are regulated under 11 AAC 97.200-250. The performance standards that are relevant to this project (because of the limited project scope) and addressed in this Reclamation Plan include 11 AAC 97.200, 97.210, 97.240, and 97.250. These regulations address land reclamation performance standards, disposal of buildings structures and debris on State, federal, and private land, acid rock generation, and reclamation of material sites. The reclamation activities described in this Plan will meet the requirements of these regulations.

## 1.4 Scope of Reclamation Plan

This Reclamation Plan is specific to the activities associated with reclaiming roads (access and secondary access), surface pads (e.g., laydown pads, camp and portal pads, and vent-raise pads), material sites and bridges constructed during Phase I of the Anarraaq and Aktigiruq Exploration Program. The general location and components of the Project are shown in Figure 1. This Plan describes the activities required to reclaim all components of the proposed Phase I Project and provides a cost estimate for completing these reclamation activities.

Section 2 of this Plan begins with a brief description of the proposed exploration project and the associated surface components that will be constructed in Phase I of the Project.

Table 1. Applicable State of Alaska Mine Reclamation Requirements

| | |
|---|---|
| "… reclaim areas disturbed by a mining operation so that any surface that will not have a stream flowing over it is left in a stable condition" that "allows for the reestablishment of renewable resources on the site within a reasonable period of time by natural processes." Reclamation to a stable condition entails the:<br>• "return of waterborne soil erosion to pre-mining levels within one year after the reclamation is completed, and that can reasonably be expected to achieve revegetation, where feasible, within five years after the reclamation is completed, without the need for fertilization or reseeding;<br>• segregation of topsoil removed during the mining operation to protect it from erosion, protect it from contamination by acidic or toxic materials, and preserve it in a condition suitable for later use; and<br>• promotion of natural revegetation wherever possible, including redistribution of topsoil where available" | 11 AAC 97.200(a)<br>11 AAC 97.200(a)(1)<br>11 AAC 97.200(a)(2)<br>11 AAC 97.200(a)(3) |
| "reclaim an area disturbed by a mining operation so that surface contours after reclamation are conducive to natural revegetation or are consistent with an alternate postmining land use" | 11 AAC 97.200 (b) |
| "re-establish any stream channel, that was diverted or modified and is no longer stable, in a stable location" | 11 AAC 97.200 (d) |
| "remove, dismantle, or otherwise properly dispose of buildings and structures constructed, used, or improved on state land and remove or otherwise properly dispose of all scrap iron, equipment, tools, piping, hardware, chemicals, fuels, waste, or general construction debris on state land" | 11 AAC 97.210 |
| "… 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" | 11 AAC 97.240 |
| "reclaim material sites in accordance with AS 27.19.020, 11 AAC 97.200, 11 AAC 97.210, and 11 AAC 97.250 as contemporaneously as practicable with mining." The following apply for material site reclamation:<br>• "If site conditions permit, a miner shall proceed cell by cell so that reclamation can and will occur immediately after each cell is mined. Mining by cell means dividing the material site into separate units and mining them in an orderly sequence so that topsoil removed from a newly opened unit can be placed on a unit already mined.<br>• If site conditions require that the entire material site be mined continuously, with the materials being removed layer by layer, the site shall be reclaimed as soon as the mining is completed. | 11 AAC 97.250(a)<br>11 AAC 97.250(a)(1)<br>11 AAC 97.250(a)(2) |
| "…Post a performance bond with the commissioner to ensure complete compliance with AS 27.19, this chapter and the approved reclamation plan, consisting of either:<br>• a corporate surety bond under 11 AAC 97.405; or<br>• a personal bond accompanied by a letter of credit, by a certificate of deposit, or by a deposit of cash or gold, under 11 AAC 97.410" | 11 AAC 97.400(2)<br>11 AAC 97.400(2)(A)<br>11 AAC 97.400(2)(B) |

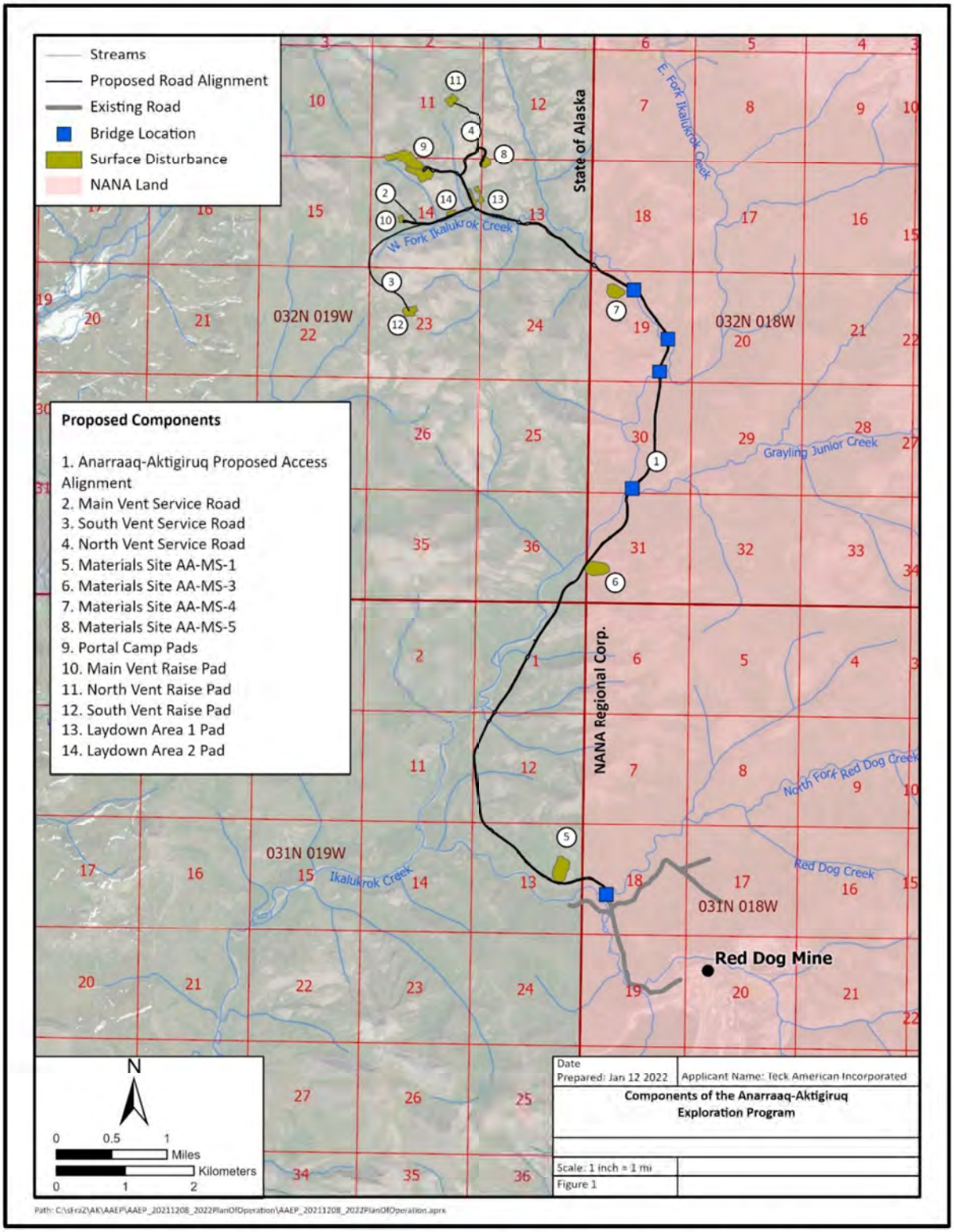



**Figure 1. Components of the Anarraaq and Aktigiruq Exploration Program Included in this Reclamation Plan**

Section 2 also describes the location and land status of the property and the current and proposed access to the site. This section also describes the components and associated surface disturbance in more detail and provides a sequence and schedule for all proposed construction activities.

Section 3 describes the reclamation methods, equipment, and schedule for the removal and reclamation of the access road, secondary roads, surface pads, material sites and bridges, revegetation and topsoil measures, as well as the post-reclamation monitoring that will be conducted by TAI.

Section 4 describes reclamation costs and bonding.

Drawings of the reclamation along the road corridors are included in the SRCE Excel file.

The "Basis of the Reclamation Cost Estimate for the Anarraaq and Aktigiruq Exploration Program" that summarizes and discusses the sources, assumptions, and basis for deriving these costs is included in Appendix I to this Reclamation Plan.

# 2 PROJECT COMPONENTS & OPERATIONS

## 2.1 Project Description

Teck American Incorporated (TAI) is proposing the development of a two-phase exploration program to evaluate the economic and technical feasibility of mining lead-zinc resources identified near upper Ikalukrok Creek and the Red Dog Mine (RDM) in northwest Alaska, known as the Anarraaq and Aktigiruq prospects (See Figure 1). In Phase I TAI will construct the main access road, surface pads, secondary roads to access the surface pads, four material sites, and five bridges over major stream crossings. Phase II will include the construction of surface and underground facilities and other regulated activities associated with the underground exploration program. Phase I is described in more detail in the Plan of Operations Anarraaq and Aktigiruq Exploration Program Phase I – Exploration Access Road and Surface Pad Construction, to which this Reclamation Plan is appended. This Reclamation Plan is limited to describing the reclamation of all components of the Phase I program should the project not proceed to Phase II for some reason.

## 2.2 Location, Land Status, and Property Description

The exploration property is situated in portions of four townships including Township 31-32 North, Range 18-19 West (T31N, R18W; T31N, R19W; T32N, R18W; and T32N, R19W), Kateel River Meridian (Figure 1). There is currently no existing overland access to the exploration area. TAI proposes constructing a single lane exploration access road. The exploration access road for the Project will begin near the terminus of the existing Fish Weir Road below the tailings facility at the Red Dog Mine and extends in a northerly direction for approximately 9.3 miles along Ikalukrok

Creek and the West Fork Ikalukrok Creek to the proposed Aktigiruq and Anarraaq exploration area (See Figure 1). The access road route crosses State land where TAI owns State mining claims (Table 2), but also includes two segments that cross NANA land in T31 and 32N, R18W (Figure 1). NANA will provide written authority to construct the exploration access road segments on their land under a separate agreement between TAI and NANA.

Table 2. Mining Claims included in this Plan

| ADL No. | Claim Name | Location Date | Map Reference MTRS Quarter Section |
|---|---|---|---|
| 725339 | AQ 1021 | 07/Sep/2017 | Kateel River, 32N 19W, 11, SW |
| 725340 | AQ 1022 | 07/Sep/2017 | Kateel River, 32N 19W, 11, SE |
| 725341 | AQ 1023 | 07/Sep/2017 | Kateel River, 32N 19W, 12, SW |
| 725343 | AQ 1025 | 07/Sep/2017 | Kateel River, 32N 19W, 13, NE |
| 725344 | AQ 1026 | 07/Sep/2017 | Kateel River, 32N 19W, 13, NW |
| 725345 | AQ 1027 | 07/Sep/2017 | Kateel River, 32N 19W, 14, NE |
| 725346 | AQ 1028 | 07/Sep/2017 | Kateel River, 32N 19W, 14, NW |
| 725350 | AQ1032 | 07/Sep/2017 | Kateel River, 32N 19W, 15, SE |
| 725351 | AQ 1033 | 07/Sep/2017 | Kateel River, 32N 19W, 14, SW |
| 725352 | AQ 1034 | 07/Sep/2017 | Kateel River, 32N 19W, 14, SE |
| 725353 | AQ 1035 | 07/Sep/2017 | Kateel River, 32N 19W, 13, SW |
| 725354 | AQ 1036 | 07/Sep/2017 | Kateel River, 32N 19W, 13, SE |
| 725355 | AQ 1037 | 07/Sep/2017 | Kateel River, 32N 19W, 24, NE |
| 725358 | AQ 1040 | 07/Sep/2017 | Kateel River, 32N 19W, 23, NW |
| 725359 | AQ 1041 | 07/Sep/2017 | Kateel River, 32N 19W, 22, NE |
| 725390 | AQ 1072 | 07/Sep/2017 | Kateel River, 32N 19W, 36, SE |
| 725391 | AQ 1073 | 07/Sep/2017 | Kateel River, 31N 19W, 1, NE |
| 725392 | AQ 1074 | 07/Sep/2017 | Kateel River, 31N 19W, 1, NW |
| 725401 | AQ 1083 | 07/Sep/2017 | Kateel River, 31N 19W, 1, SW |
| 725402 | AQ 1084 | 07/Sep/2017 | Kateel River, 31N 19W, 1, SE |
| 725404 | AQ 1086 | 07/Sep/2017 | Kateel River, 31N 19W, 12, NW |
| 725405 | AQ 1087 | 07/Sep/2017 | Kateel River, 31N 19W, 11, NE |
| 725412 | AQ 1094 | 07/Sep/2017 | Kateel River, 31N 19W, 11, SE |
| 725413 | AQ 1095 | 07/Sep/2017 | Kateel River, 31N 19W, 12, SW |
| 725415 | AQ 1097 | 07/Sep/2017 | Kateel River, 31N 19W, 13, NE |
| 725416 | AQ 1098 | 07/Sep/2017 | Kateel River, 31N 19W, 13, NW |
| 725417 | AQ 1099 | 07/Sep/2017 | Kateel River, 31N 19W, 14, NE |
| 725425 | AQ 1107 | 07/Sep/2017 | Kateel River, 31N 19W, 13, SW |
| 725426 | AQ 1108 | 07/Sep/2017 | Kateel River, 31N 19W, 13, SE |

The Project area is generally low mountainous terrain with taiga and tundra type biomass, interstitial to rocky outcroppings and talus slopes. Existing soils found within the project disturbance limit include alluvial, colluvial, organic rich (wetland soils), and rock outcroppings (Golder, 2017). Vegetation generally consists of willow, dwarf birch, alder, and other lowland type grasses, lichens, and mosses. Growth media/topsoil is very limited in depth and occurrence and generally only found near the lower slopes. Ephemeral and perennial streams are present throughout the course of the road alignment and exploration project site.

The project is in a Sub-Arctic environment underlain by permafrost. Precipitation in the region is generally low, ranging from 12-15 inches per year including rain and snowfall (HDR, 2017).

Major stream courses found within the project vicinity include Red Dog Creek, Ikalukrok Creek, and East and West Fork of Ikalukrok Creek. Ikalukrok Creek is a major tributary to the Wulik River, converging approximately 30 miles to the southwest. Six major stream crossings are included in the proposed access road design. To avoid or minimize detrimental effects on fish and fish habitat and WOTUS, TAI will install five steel span, truss-supported, bridges where the exploration access road crosses large streams and one stacked culvert crossing. In addition to the bridges, drainage is conveyed in strategically placed corrugated metal pipe (CMP) culverts installed at minor stream crossings and in areas where drainage will be impeded by the road construction.

## 2.3 Proposed Project Components and Construction

As described in TAI's Phase I Plan of Operations for this Project, Phase I will entail the following:

- Constructing ~9.3 miles of exploration access road starting from the Fish Weir Road at the Red Dog Mine and extending along Ikalukrok Creek to the proposed portal pad site.
- Constructing ~3.1 miles of secondary roads to connect the proposed exploration access road to proposed surface pads described below.
- Constructing surface pads (including a camp pad, a portal pad, three vent-raise pads, and two laydown pads).
- Developing two material sites (including blasting and crushing) on TAI owned and operated State mining claims to provide sufficient material for road and surface pad construction, and

  Reclamation, including a reclamation cost estimate for the reclamation of the access road, secondary roads, surface pads, and material sites on State mining claims and NANA land.

For simplicity, project components are broken into three major categories in this Reclamation Plan: 1) the access and secondary roads, 2) the surface pad for laydown areas, camp and portal, and vent-raises, and 3) material sites and discussed in the next subsections. The surface disturbance acreages associated with each component of the proposed project are summarized in Table 3.

Best Management Practices (BMPs) will be implemented to reduce erosion and sedimentation of disturbed areas during construction, operation, and reclamation activities.

Table 3. Phase I Disturbance Summary

| Facility Type | Disturbance Area (Acres)** |
|---|---|
| Access and Secondary Roads | 101.6 |
| Material Sites | 43.5 |
| Surface Pads | 37.2 |
| **Total Disturbance** | **182.3** |

**Values are derived from areas calculated from KUNA and SRK design drawings

### 2.3.1 Exploration Access Road and Secondary Roads

An approximate 9.3-mile access road is required to connect RDM to the proposed Anarraaq and Aktigiruq exploration area. In addition, approximately 3.1 miles of secondary roads are required to access various pads.

All roads are intended to be temporary. The design parameters will support construction traffic and anticipated daily exploration traffic. The design anticipates subsidence of underlying soils along the roadway, requiring maintenance throughout the summer season as the active layer thaws.

Much of the roadway will be constructed as a fill embankment; however, some areas are designed with cut-to-fill or full cut sections (Kuna, 2022). Depth of fill is contingent upon underlying soil stability and grade requirements. Depths of fill range between one (1) foot minimum to ten or more (10+) feet near stream crossings. Depths of cuts range from one (1) to more than twenty (20+) feet in areas of cut along the roadway and borrow areas. Growth media may be found in limited usable quantities and where practical it may be separated and stockpiled for future reuse during reclamation, although vegetation and root mass in this alpine environment is quite minimal.

Six major stream crossings are included in the proposed access road design. To avoid or minimize detrimental effects on fish and fish habitat, TAI will install five steel span, truss-supported, bridges where the exploration access road crosses large streams, including the first three crossings (Red Dog Creek, Grayling Jr. Creek, and the first Ikalukrok Creek crossing) where the streams are known to support Arctic Grayling and Arctic Char. The West Fork Ikalukrok Creek crossing near the exploration facilities area, will be constructed using fill and large diameter culverts. In addition to the bridges, drainage is conveyed in strategically placed corrugated metal pipe (CMP) culverts installed at minor stream crossings and in areas where drainage will otherwise be impeded by the

road. This reclamation plan incorporates reclamation for the main access road and secondary roads.

### 2.3.2 Surface Pads for Laydown Areas, Camp and Portal, and Vent-Raises

Phase I construction includes development of seven surface pads including: two laydown pads, three vent-raise pads, the camp pad, and the portal pad. This Reclamation Plan addresses reclamation of these pads. Figure 2 illustrates the general arrangement of the proposed portal and camp pads, vent-raise pads, laydown areas and material site AA-MS-5. Cut and fill construction methods will be employed to construct these pads, or as required, using material sourced from the cut or one of the material sites. All surface pads are connected to the exploration access road by secondary roads. The portal pad, camp pad, vent-raise pads, and laydown pads will consist of at least 3 feet of general embankment fill from the material sites, capped with material suitable to create a driving surface. These pads will be constructed on uplands, where settling and thermal instability is not a concern. This reclamation plan incorporates reclamation of the surface pads.

### 2.3.3 Material Sites

Four material sites will be developed to supply material for construction of the access road, secondary roads, and surface pads. In addition, fill material may be sourced from cut areas at the pads and along the roads. The material sites are all on uplands and the material consists of variably weathered shale, chert, quartzite, limestone, and/or limey sandstone. Material will be blasted, excavated, and some will be passed through a stationary grizzly before being hauled for use in road and pad construction. Some material will also be processed through a crusher. Any potentially acid generating (PAG) material that is excavated will be managed in accordance with TAI's approved Construction Rock Handling Plan. Material sites AA-MS-1 and AA-MS-5 are on state land while AA-MS-3 and AA-MS-4 are on NANA land. This reclamation plan incorporates reclamation of all four material sites.

## 2.4 Construction Sequence and Schedule

Construction of the access road is discussed in more detail in the Phase I Plan of Operations. Construction of the exploration access road is anticipated to begin in the winter (January) of 2023 and construction of secondary roads and surface pads will likely extend through 2023.

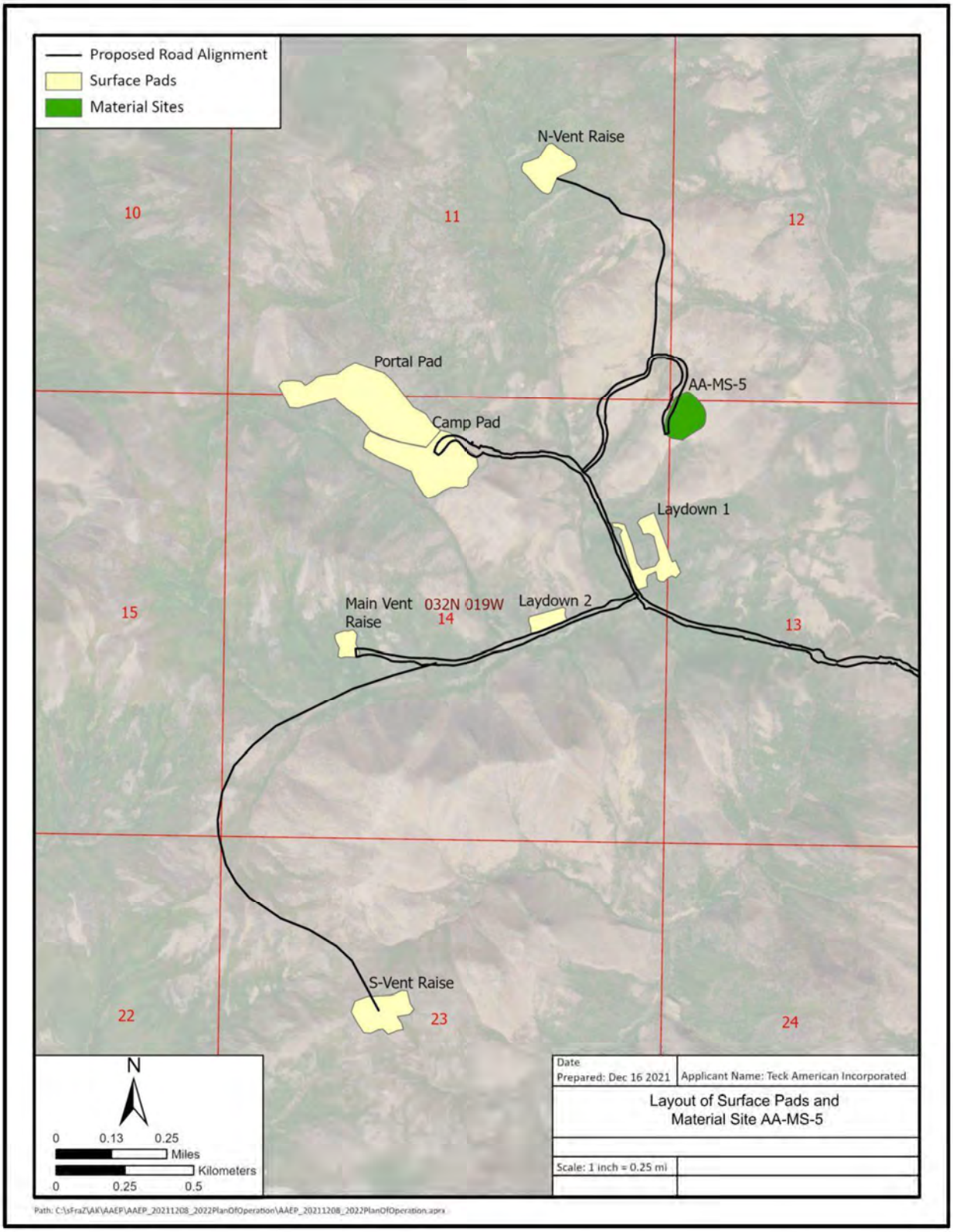



**Figure 2. General Arrangement of the Portal and Camp Pads, Vent-Raise Pads, Laydown Pads, and Material Site AA-MS-5**

# 3 RECLAMATION METHODS & SCHEDULE

TAI is committed to protecting the environment and the people living near the Anarraaq and Aktigiruq Exploration Program area. TAI's reclamation goals in relation to the Phase I Project are to recontour, revegetate, or otherwise stabilize all areas impacted by exploration activities so lands are left in a stable condition that supports the reestablishment of renewable resources within a reasonable period. This would allow the lands to be returned to much the same use they are now. This section describes the reclamation activities that will be completed for the access road, secondary roads, surface pads, and material sites described in Section 2.

In this section, reclamation is divided into three stages:

1. Stage I: Removal of any temporary facilities, equipment, and refuse.
2. Stage II: Reclamation of the access road and secondary roads, surface pads, and material sites and removal of bridges.
3. Stage III: Post-reclamation monitoring.

As previously described TAI is proposing to construct the infrastructure and support facilities for the Anarraaq an Aktigiruq Exploration Program in two phases. This Reclamation Plan describes reclamation activities that would be implemented in the unlikely situation where TAI decided not to proceed with Phase II of the Project. As result it is not possible to discuss a schedule (absolute date) for Phase I reclamation as it will likely be superseded by the Phase II Reclamation Plan within this year. Nonetheless, it is possible to discuss the duration and sequencing of Phase I reclamation if it was to be implemented. In this Reclamation Plan and the accompanying SRCE cost estimate TAI assumes that all Phase I reclamation activities will be performed in a single construction season with complete mobilization of equipment taking place in early summer and demobilization taking place in the late fall. Details of each of the three stages of reclamation are provided in the subsections below.

## 3.1 Stage I: Removal of Temporary Surface Facilities, Fuel, Equipment, and Refuse

During construction, one or more contractors may place modular offices, Conex containers, fuel storage tanks, or other equipment on the site or along the access road to support construction activities. During the initial phase of reclamation, the pads will be cleared of these facilities, equipment, tanks, refuse, etc., to allow the initiation of reclamation of these pads (Stage II). It may be necessary to leave some facilities and equipment in place to support reclamation, but all will be removed prior to that site being regraded and reseeded.

Though none are expected, any fuel-contaminated soils or gravels will be treated in a manner developed and approved in collaboration with the ADEC.

## 3.2 Stage II: Reclamation of the Access Road, Secondary Roads, Surface Pads, and Material Sites

In this subsection the reclamation activities associated with road, bridge and pad removal are discussed. Typical equipment required for this work is listed in Table 4. The cost estimate assumes that all equipment will have to be mobilized to the site in advance of performing the reclamation work described here. Other equipment may be substituted for, or included with, the above equipment list. Equipment needs and uses during reclamation would remain dynamic, as specific conditions require.

Table 4. Typical Reclamation Heavy Equipment List

| |
|---|
| Three Caterpillar bulldozers (D7E, D9T, and D11T) |
| One Caterpillar motor grader (16M3) |
| Three Caterpillar track excavators (325F, 330F, and 349F) |
| Four LeTourneau wheeled loaders (930M, 966M, 988K, and 992K) |
| Caterpillar H120Es and H160Es hydraulic hammers |
| Caterpillar S3050 and S3070 demolition shears |
| Caterpillar G315B and G320B demolition grapples |
| Caterpillar 740C and 776G dump trucks |
| Caterpillar 613E (5,000 gal) water truck |
| Caterpillar 621E (8,000 gal) water truck |
| Caterpillar 777D water truck |
| 20-ton crane |
| Hydroseeder |

### 3.2.1 Access Road

The access road surface will be ripped or scarified, as necessary, to eliminate the effects of compaction, and recontoured to blend with the original topography and provide for positive drainage and promote natural revegetation. The recontoured road surface will be covered with growth media (if available) and re-seeded using the species listed in Tables 5 and 6. In areas where road fill may impound water, the berms and embankment may be removed to facilitate drainage. The reclaimed road will be stabilized to ensure the area will retain sufficient moisture for natural revegetation. In addition, any disturbance caused by thawing permafrost adjacent to the road embankment will be filled to prevent further degradation of underlying soils to the extent practicable for stabilization. Efforts will be made to identify any areas of thermal instability as they develop during construction so they can be mitigated as soon as practical in advance of reclamation activities.

Pull-outs along the entire road alignment and other cleared areas will reclaimed in a manner like the access road and be ripped or scarified and recontoured as needed for drainage, covered with growth media (if available), and seeded following final equipment removal.

Bridges and abutments will be removed and salvaged. Abutment construction materials such as concrete and exposed geotextile fabric will be removed and disposed of properly. Culverts will be removed and salvaged or disposed of properly off site. Any stream channels that were diverted will be re-established in a stable location. Disturbed areas will be ripped or scarified, recontoured, and seeded as necessary following removal off all appurtenances.

Any geotextile fabric exposed during reclamation grading will be excavated back two feet from the surface, cut and disposed of at an approved landfill location.

Figure 3 illustrates proposed reclamation details for the access road while Figure 4 illustrates the proposed details for bridge and culvert reclamation.

### 3.2.2 Secondary Roads

Secondary roads leading to or from reclaimed pads will be ripped or scarified, as necessary, to eliminate the effects of compaction, and recontoured as needed to blend with the original topography and provide for positive drainage and promote natural revegetation. Fill material used for construction of the roads will be removed and placed on the uphill side filling in drainage ditches. The embankments will be graded to prevent ponding of water and re-establish drainage patterns. The recontoured road surface will be covered with growth media (if available) and re-seeded using the species listed in Tables 5 and 6. The reclaimed roads will be stabilized to ensure the area will retain sufficient moisture for natural revegetation. BMPs will be maintained and installed as necessary to control erosion and runoff, removal of all culverts and ripping or scarifying the surface prior to reseeding.

Any geotextile fabric exposed during reclamation grading will be excavated back two feet from the surface, cut and disposed of at an approved landfill location.

### 3.2.3 Surface Pads

The surface pads for the vent-raises, portal and camp, and two laydown areas will be graded to discourage ponding of surface water. Any highwall cut faces will be stabilized and left in place. Fill embankments will be reclaimed by pulling the outer crest of the fill over the pad to the highwall, grading to control surface water, and blending with the local topography as much as possible. The recontoured surfaces will be ripped or scarified where compacted, covered with stockpiled growth media (if available), and seeded.

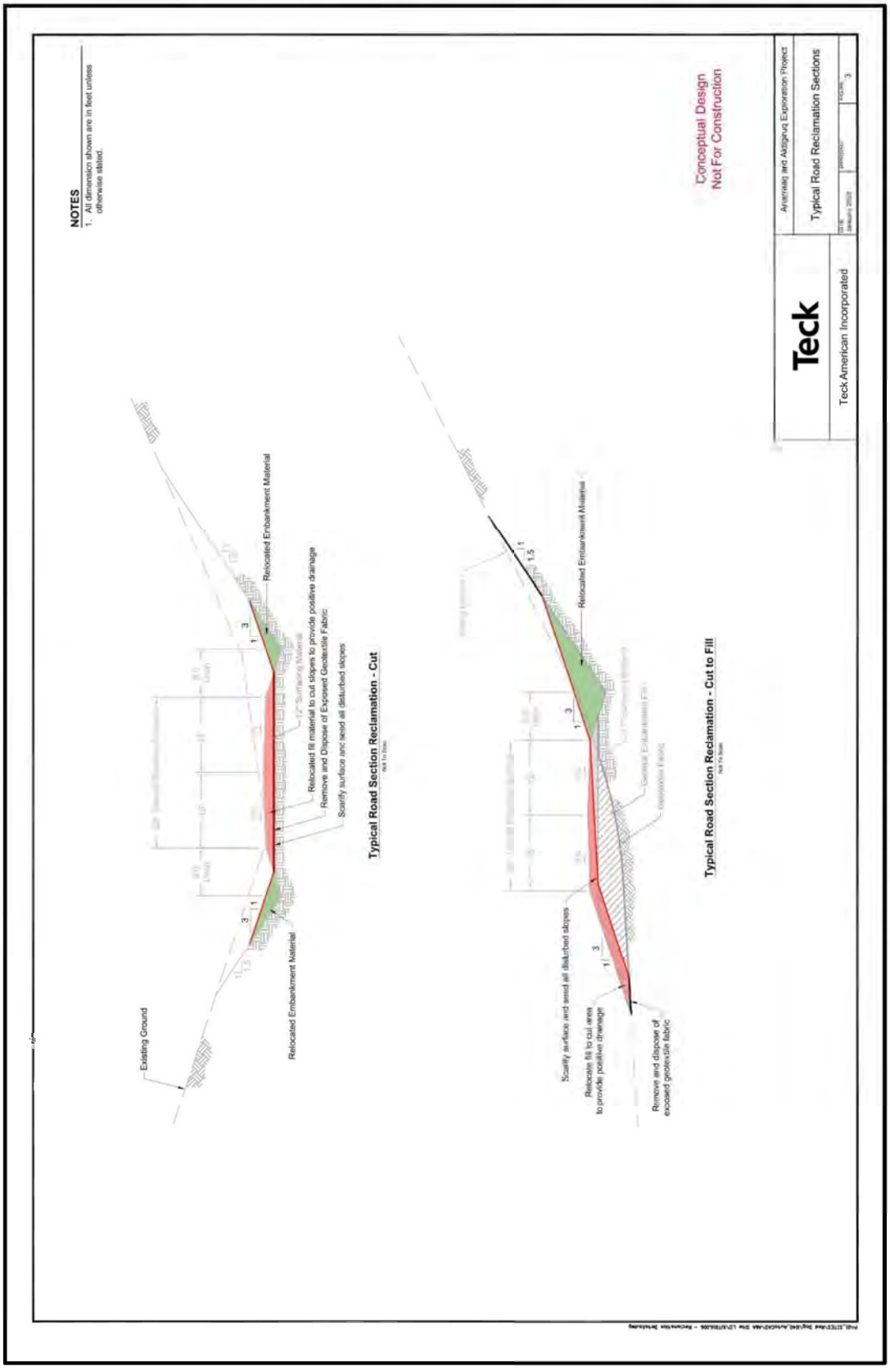



**Figure 3. Typical Road Reclamation Sections**

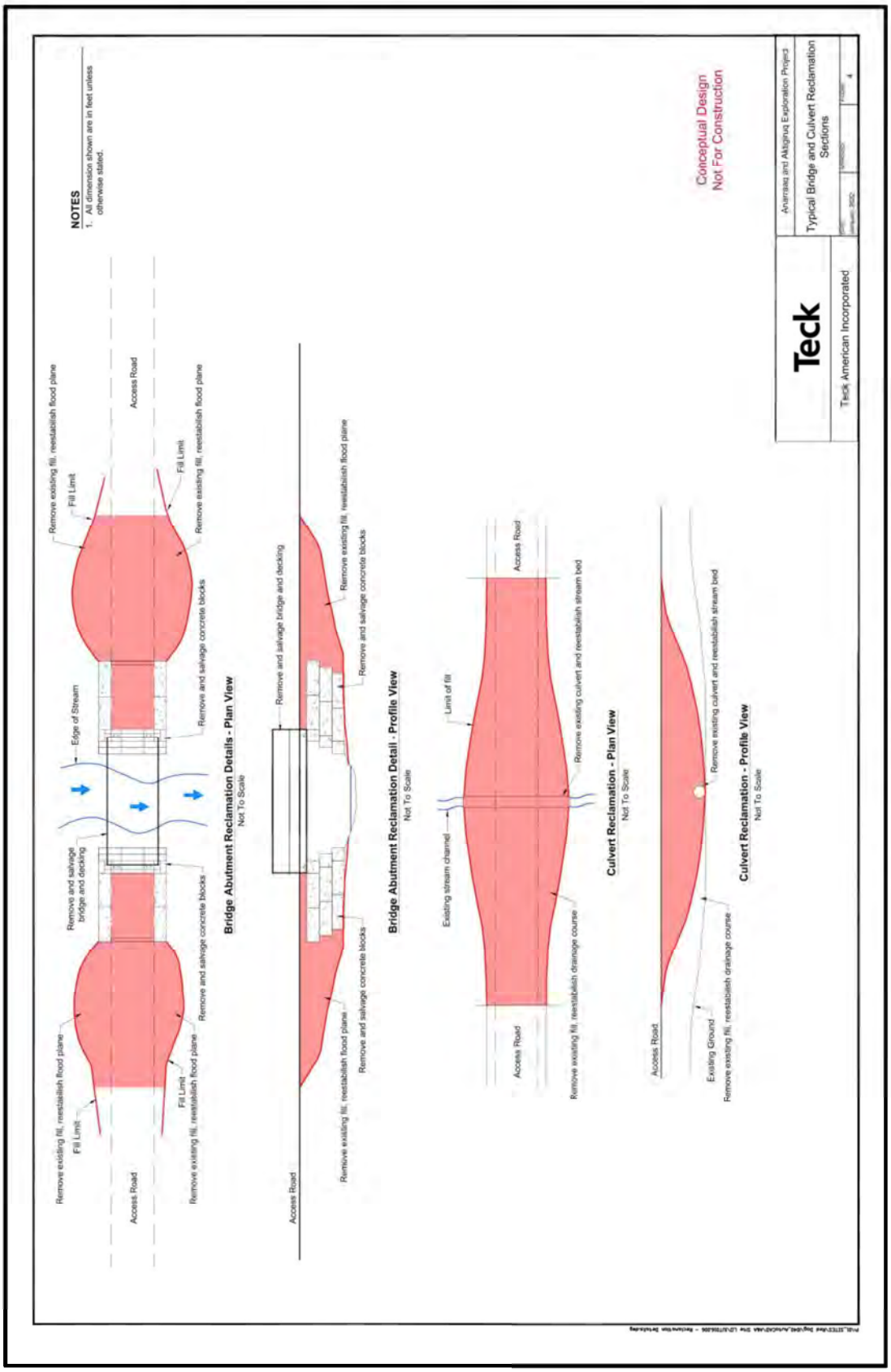



**Figure 4. Typical Bridge and Culvert Reclamation Sections**

### 3.2.4 Material Sites

Four material sites are located along the access road alignment. See Figure 1 for general location. All material sites will be reclaimed when no longer needed for closure materials. The highwall cut faces will remain at developed cut slope angles and left in place. A safety berm consisting of large boulders, or an earthen embankment will be placed along the crest of the highwalls for public safety. Fill embankments will be reclaimed by pulling the outer crest of the fill over the pad to the highwall, grading to control surface water runoff to free drain out of the pits will be established, blending with the local topography as much as practical. The recontoured surfaces will be ripped where compacted, bedrock will be covered with suitable soils conducive to plant recolonization, covered with stockpiled growth media (if available), and seeded. The material sites were selected on the basis of geochemical data that indicate they are likely comprised of non-PAG material. However, at the initial development of each of the material sites, and at any time when mineralized material is identified in a site, TAI will characterize the material as PAG or non-PAG in accordance with the Construction Rock Handling Plan (Handling Plan) approved by ADEC. If significant PAG is identified the site will likely be abandoned and eventually reclaimed. There is no scenario where TAI will develop a site that results in a PAG highwall. Any small volumes of PAG that are excavated to access non-PAG material will be removed to temporary storage at AA-MS-1 in accordance with the approved Handling Plan. Figure 5 illustrates the details proposed for material site reclamation.

### 3.2.5 Revegetation

Disturbed ground will be seeded to encourage an initial vegetative cover to provide stability while native recruitment eventually establishes a longer-term stable cover of native vegetation. For the initial revegetation, the seed mixture recommended for use in the Red Dog Mine Reclamation and Closure Plan (Teck Alaska Incorporated, 2021), will be used for the Anarraaq and Aktigiruq reclamation work. Field trials at RDM have identified plant species for reclamation of specific disturbance-types as outlined in Table 5. The table outlines the native grass cultivars and native forbs appropriate for the reclamation of roads, pads, and quarries and the shrub cuttings and seedlings appropriate for the reclamation of stream banks and other wet areas. Recommended native grass cultivars and forbs are described in Table 6.

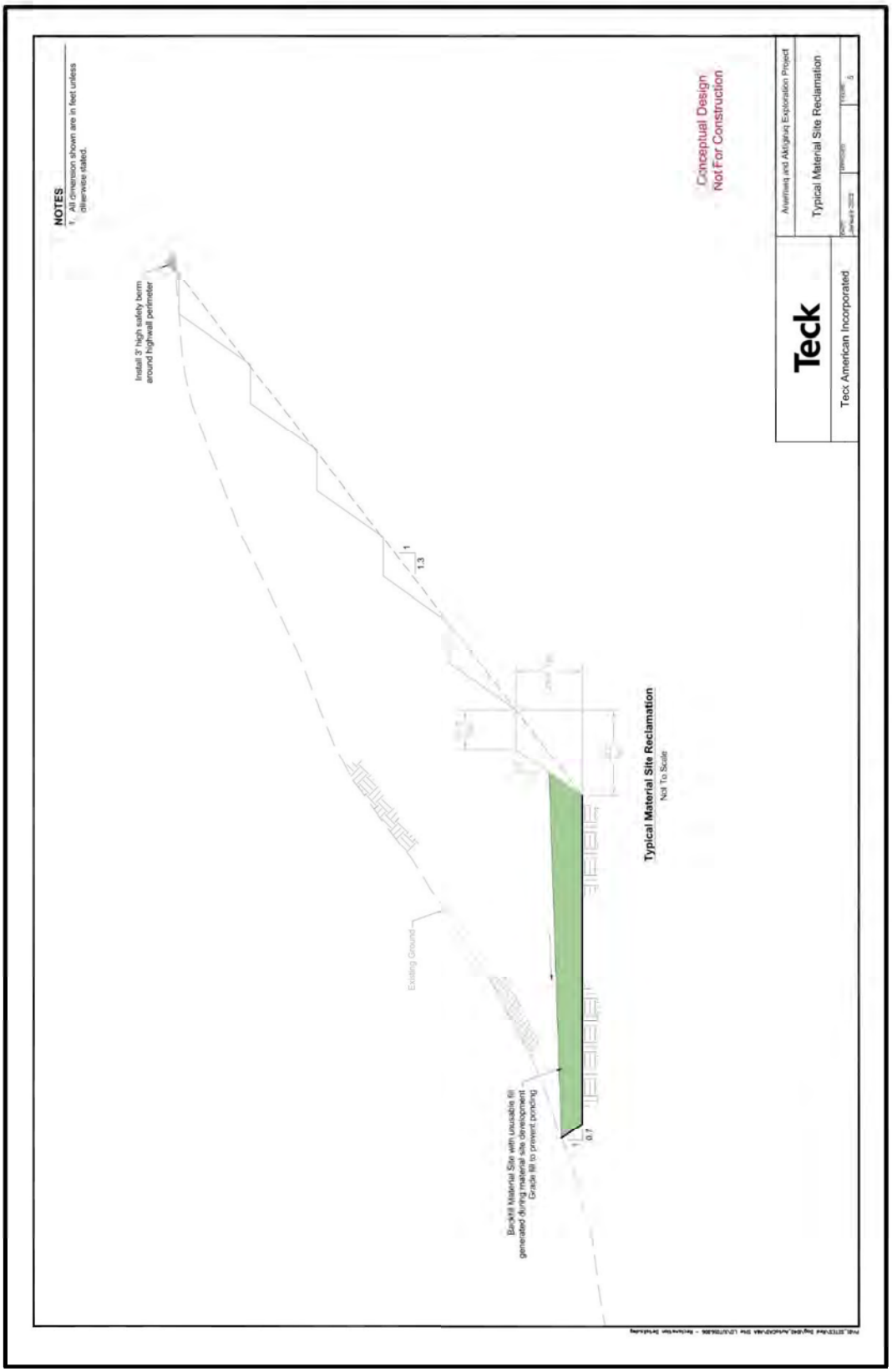



**Figure 5. Typical Material Site Reclamation**

Table 5. Revegetation Recommendations for Infrastructure Areas

| Area | Plant Species | Planting Specifications |
|---|---|---|
| Reclaim roads, laydown areas, pads and quarries | Native grass cultivars<br>Native forbs | (See Table 6)<br>(See Table 6) |
| Banks of streams and other wet areas | Shrub cuttings and seedlings<br>Diamond leaf willow<br>Felt leaf willow<br>Richardson willows<br>Shrub/dwarf birch | <br>Cuttings on one-foot centers<br>Cuttings on one-foot centers<br>Cuttings on one-foot centers<br>80 seeds/yd$^2$ |

Table 6. Proposed Revegetation Species

| Plant Species | | Planting Specifications |
|---|---|---|
| Native-grass cultivars | | |
| Boreal red fescue | *Festuca rubra* | Apply seed at 20 lb/acre (final mixture). Ratio of species will depend on availability but may include predominantly P. alpina for drier areas and D. caespitosa, E. trachycaulus, and C. canadensius for mesic sites. |
| Glaucous tundra bluegrass | *Poa glauca* | |
| Gruening alpine bluegrass | *Poa alpina* | |
| Nortran tufted hairgrass | *Deschampsia caespitosa* | |
| Reed bluejoint | *Calamagrostis canadensis* | |
| Wainwright ("slender") wheatgrass | *Elymus trachycaulus* | |
| Native forbs | | Apply forb seed at 5% of total seed rate in equal parts per species or as available. E.g., if grass seed rate is 20 lb/acre, apply grass at 19 lb/acre and forbs at 1 lb/acre. Mix may include A. alpinus, A. arcticus, E. sibirica, L. arctica, and O. campestris in drier/alpine areas, and A. millefolium, Chamerion spp, and H. alpinum in mesic areas. |
| Alpine sweetvetch (masu) | *Hedysarum alpinum* | |
| Dwarf fireweed | *Chamerion latifolium* | |
| Indian milkvetch | *Astragalus aboriginum* | |
| Low-lying stinkweed | *Artemisia arctica* | |
| Other potential forb species | | |
| Alpine milkvetch | *Astragalus alpinus* | |
| Arctic bladderpod | *Lesquerella arctica* | |
| Boreal yarrow | *Achillea millefolium borealis* | |
| Field oxytrope | *Oxytropis campestris* | |
| Siberian aster | *Eurybia sibirica* | |
| Tall fireweed | *Chamerion angustifolium* | |

As with any seed mix, a degree of flexibility is necessary depending on seed availability and site-specific conditions; and the mix may be modified. The seed mix may change over time depending on factors such as internal and external research, technologic advancements, changes in land

management approach, and commercial availability. The seed mixtures described in Tables 5 and 6 will be purchased commercially and augmented with some local forbs. Seed will be broadcast by hydroseeder, depending on the size and accessibility of areas to be treated. Alternatively, helicopter-seeding may be used to revegetate the whole site, but the cost estimate in Section 6 is based on the hydroseeder method. During revegetation, weed control practices would be implemented to limit the growth and spread of weeds and invasive species and promote the successful re-establishment of native plant species.

The timing of seeding considers the germination of the seed and its establishment. The preferred seeding time is in the spring, immediately following snowmelt and runoff when the soil surface is moist, and temperatures are warming. As a result, the reclamation cost estimate assumes helicopter reseeding in the spring season in the year following site reclamation.

### 3.2.6 Topsoil

11 AAC 97.310(b)(6) includes a requirement for measures for topsoil removal, storage, protection, and replacement. The environment in the Anarraaq and Aktigiruq Exploration Program area is sub-arctic. The entire area is understood to be underlain by permafrost to depths as great as 600 feet. Little soil development is possible under these conditions and most fine-grained soils are high in moisture and generally frozen. During construction of the Phase I roads and pads TAI anticipates that very little salvageable topsoil will be encountered, salvaged and stockpiled. Where thicker soils may exist, it is typically along stream valley bottoms where the soils are frozen with a high moisture content. Construction practice in these permafrost-rich environments is to disturb this soil as little as possible to maintain the existing soil insulating qualities and avoid destabilizing the underlying permafrost. Topsoil that TAI does salvage will be stored opportunistically in select areas, close to where it was removed, and saved for reclamation use.

## 3.3 Stage III: Post-Reclamation Monitoring

By Stage III, all surface disturbances will be stabilized, and acceptable stormwater quality is anticipated. TAI will continue to manage stormwater during Stage I and II reclamation activities. Once Stage I and II reclamation activities are completed and in the absence of any surface instability in reclaimed areas, TAI will file a Notice of Termination (NOT) of the Stormwater Multi-Sector General Permit. Stormwater permit monitoring requirements will cease with the NOT. However, TAI will perform annual flyovers of all reclaimed areas to identify any reclaimed areas that appear to be exhibiting evidence of significant erosion or failure of the initial revegetation effort TAI will be prepared to reseed or hand-dress these areas to stabilize them. TAI anticipates performing the flyovers for the first five years following final reclamation and has included these costs and a contingency cost for addressing areas that require dressing or reseeding.

# 4 RECLAMATION COST ESTIMATE & RECLAMATION BONDING

Proof of financial assurance to pay the cost for reclamation is referred to as a "bond" in this section. Reclamation costs, including direct and indirect costs, have been calculated based on the Reclamation Plan and using the Standard Reclamation Cost Estimator (SRCE). The bond amount would be equivalent to the estimated reclamation costs calculated in accordance with state financial assurance regulations and policy. The State and TAI will negotiate a final bond amount prior to the approval of the Phase I Plan of Operations and initiation of any construction activities. This is an iterative process focused on a review of the estimated reclamation costs in the SRCE model provided by TAI.

The SRCE model includes costs for reclamation of the access road, secondary roads, surface pads, material sites, and post-reclamation monitoring as previously described herein. Reclamation would be completed during the first full construction season following a decision to end exploration activities and reclaim the disturbed areas.

The SRCE model is based on third party implementation of this Reclamation Plan, no recycle or salvage costs recovery credits are included, and it assumes on-site disposal of all equipment and facilities except for hazardous waste, which would be shipped off-site to an appropriate hazardous waste disposal facility.

The "Basis for the SRCE Model" is included in Appendix I. This document summarizes the sources, assumptions, and basis for the unit costs, construction quantities, equipment fleet, and crew productivities and other costs. Drawings that support the SRCE model are included in Appendix II.

Table 7 Summarizes the estimated reclamation costs by major reclamation activity.

Table 7. Reclamation Cost Summary – SRCE Output

| Activity | | Total Cost ($) |
|---|---|---|
| **Direct Costs** | | |
| Access and Secondary Roads | | $905,871 |
| Stormwater Management | | 113,630 |
| Post-reclamation Monitoring | | 10,588 |
| Material Sites | | 133,302 |
| Waste Disposal | | 80,391 |
| Surface Pads | | 368,337 |
| Reclamation Maintenance | | 169,403 |
| G & A | | 855,322 |
| Equipment Idle Time | | 766,646 |
| Mobilization/De-mobilization | | 710,598 |
| **Direct Costs Subtotal** | | **$4,114,089** |
| **Indirect Costs** | | |
| Engineering, Design, and Construction Plan (3%) | | $123,423 |
| Contingency (10%) | | 411,409 |
| Contractor OH and Profit (also includes Liability and Bonding) (14%) | | 575,972 |
| Contract Administration (5%) | | 205,704 |
| **Indirect Costs Subtotal** | | **$1,316,505** |
| **TOTAL RECLAMATION COST** | | **$5,430,597** |

Source: ANQ_ATK_Exp_Rd_Rev_2022_SRCE_V1 20220211

# 5 References

Golder Associates, 2017, Geotechnical Findings and Recommendations for Aktigiruq Road Alignment, Red Dog, Alaska, December

HDR, 2017, Bridge Abutment Conceptual Design, Bridge Crossing Assessment, Red Dog Mine Exploration Road, December 20

Kuna Engineering, 2022, Aktigiruq Exploration Access Road, Red Dog Mine Alaska, (Engineering Road Design Drawings).

Teck Alaska Incorporated, 2021, Reclamation Plan, Red Dog Mine, Alaska, USA. September 2021. Teck Alaska Report prepared for State of Alaska Approval, September 84p.

# Appendix I to Reclamation Plan – Basis of SRCE Cost Estimate

# Appendix I

# Basis for Reclamation Cost Estimate

Anarraaq and Aktigiruq Exploration Program

## Phase I – Exploration Access Road and Surface Pad Construction

Prepared for:
Alaska Department of Natural Resources
Alaska Department of Environmental Conservation
Northwest Arctic Borough

Teck

Prepared by:
Teck American Incorporated
501 N Riverpoint Blvd., Suite 300
Spokane, WA 99202

**April 2022**

# Table of Contents



## FIGURES



## TABLES

# ACRONYMS/ABBREVIATIONS

| | |
|---|---|
| ADEC | Alaska Department of Environmental Conservation |
| ADNR | Alaska Department of Natural Resources |
| BLM | Bureau of Land Management |
| G&A | General and Administrative Expenses |
| GET | Ground Engaging Equipment |
| NDEP | Nevada Division of Environmental Protection, Bureau of Mining Regulation and Reclamation |
| NvMA | Nevada Mining Association |
| SRCE | Standard Reclamation Cost Estimator |
| SSoA | Shared Services of Alaska |
| TAI | Teck American Incorporated |

# 1 INTRODUCTION

Teck American Incorporated (TAI) has prepared a reclamation cost estimate for Phase I of the Anarraaq and Aktigiruq Exploration Program (Project) located in northwest Alaska, using the Standard Reclamation Cost Estimator (SRCE). This report describes the basis and assumptions used to prepare the estimate and the modifications made to meet the objectives and requirements of the location. The SRCE file is provided as a separate EXCEL file.

This estimate assumes that all exploration activity ceases, and the areas developed under authorization of the Phase I Plan of Operations Approval from the Alaska Department of Natural Resources (ADNR) are reclaimed at that time.

# 2 RECLAMATION COST BASIS

The estimate was prepared in SRCE Version 2.0. The SRCE is spreadsheet software that was developed as part of a cooperative effort between the Nevada Division of Environmental Protection, Bureau of Mining Regulation and Reclamation (NDEP), the U.S. Department of Interior, Bureau of Land Management (BLM), and the Nevada Mining Association (NvMA) to facilitate accuracy, completeness, and consistency in the calculation of costs for mine site reclamation.

SRCE uses first principles methods to estimate quantities (lengths, areas, and volumes), productivities, and work hours required for various closure tasks based on input from the user. The model is available in the public domain and hosted on the web site: http://www.nvbond.com.

The SRCE model offers key advantages in the estimation of reclamation costs for the following reasons:

- SRCE provides a standardized and systematic methodology for mine Reclamation cost estimates. The routines provided in the model cover different operation units and aspects of mining projects.

- In the absence of a standardized cost estimation model in Alaska, the SRCE provides a defensible approach. SRCE is acceptable to the ADNR and Department of Environmental Conservation (ADEC) for meeting the cost reclamation cost estimated required to meet project bonding requirements.

The SRCE model used is a public-domain version that differs from the Nevada, USA version in some ways. The Nevada version uses parameters specific to the jurisdiction of Nevada that may not be applicable in other locations. The current SRCE model incorporates Alaska-specific costs and procedures as described below.

## 2.1 Reclamation Cost Rates

SRCE requires rates for labor, equipment, and materials as data inputs. These rates are compiled into the Cost Data file which is then loaded to the SRCE.

### 2.1.1 Equipment Rates

Hourly equipment rates were based on estimates developed by SRK using monthly rental rates provided by NC Machinery. Rates for equipment not available at NC Machinery were quoted from, APR Rentals, United Rentals, and Alaska Crane. Rental rates were provided in terms of 4-week increments. The reclamation construction season is expected to span 120 days (4 months), with equipment rental for 6 months to account for mobilization timing of approximately 4 weeks on either side of construction.

The hourly rental rate is based on a 4-week term and a 10 hr/day, 5 day/week schedule. This results in 200 hours per 4-week term. The rental price is divided by 200 hours to derive the estimated hourly equipment rate.

Overhead costs for equipment, such as ground engaging equipment (GET), tires, and major maintenance, are included in the average wear and tear clause of the rental terms as part of the rental rate. The maximum time any one piece of equipment is scheduled to operate per season is approximately 600 hours. The expected lifespan of a tire, for instance, is 4,500-5,000 hours; the anticipated GET rebuild for dozers, loaders, etc. is approximately 7,000-9,000 hours. Therefore, including costs associated with GET or tire replacement is not included in the cost estimate. See User Sheet 3 for approximate equipment hours. An additional 15% of the hourly rate is included for general and incidental maintenance, and an additional 10% of fuel cost is included for lube and preventative maintenance. These additional costs are entered in the Cost Data file under preventative maintenance.

This method of calculating equipment costs is consistent with the SRCE method for calculating hourly rates, and the Caterpillar Handbook for calculating ownership costs. Reclamation activities are estimated to be performed over the course of one constructions season. Equipment idle time, for time in which the equipment is on-site, but not engaged, is calculated at 100% of the base hourly rental rate and is included in the General and Administrative Expenses (G&A) calculations. Idle rental time is a significant cost but is driven by the construction schedule and shipping time for mobilization and demobilization. A more refined construction schedule (i.e., shorter construction period) could result in reduced idle time and cost savings. As a result, the current cost estimate is conservative with regard to idle time.

### 2.1.2 Labor Rates

Labor rates for an independent contractor were built up from base hourly rates presented in Issue 42 (effective September 1, 2021) of the *Laborers' & Mechanics' Minimum Rates of Pay*

(Pamphlet 600), published by the Alaska Department of Labor and Workforce Development. Labor rates not available in Pamphlet 600 were built up from wages available on the Alaska Department of Labor's website. Base hourly rates include standard overtime, benefits, and payroll burden. Labor rates do not include the costs of camp accommodation or flights, which are included separately in the G&A calculation sheet.

### 2.1.3 Material Costs

A fuel unit cost of $5.11 per gallon was used throughout the cost estimate. The estimate is based on the current negotiated fuel price for state contracts delivered to Kotzebue. See Shared Services of Alaska (SSoA) Ultra-Low Sulfur Diesel price. The cost of fuel to Red Dog Port would likely be similar in cost to the delivery to Kotzebue.

Fuel will be delivered to the site via bulk tank during mobilization and is included in both the mobilization and transport to site costs. Storage is assumed to be in tanks at the Red Dog Port and delivery to the site via tanker truck as needed and stored in smaller bulk tanks at the site.

## 2.2 Equipment Productivities

Productivity data and calculations were based on:

- Caterpillar Handbook, Edition 47 for productivity calculations incorporated into the SRCE.
- Means Heavy Construction Handbook for productivity calculations for crew-based activities (e.g., demolition).

# 3 RECLAMATION COST ESTIMATION

## 3.1 Data Provided

The following files were provided to SRK by TAI:

- *Anarraaq and Aktigiruq Exploration Program, Red Dog Mine, Alaska* – Access Road construction drawings prepared by Kuna Engineering (Kuna January 2022).
- Project conceptual site layout drawings for the various pads were prepared by Wood.

## 3.2 Key Cost Assumptions

### 3.2.1 Site Layout and Components

Figure 1 depicts the proposed site layout including roads, surface pads and material sites. Reclamation of all these components is included in the SRCE cost estimate. Table 1 shows the

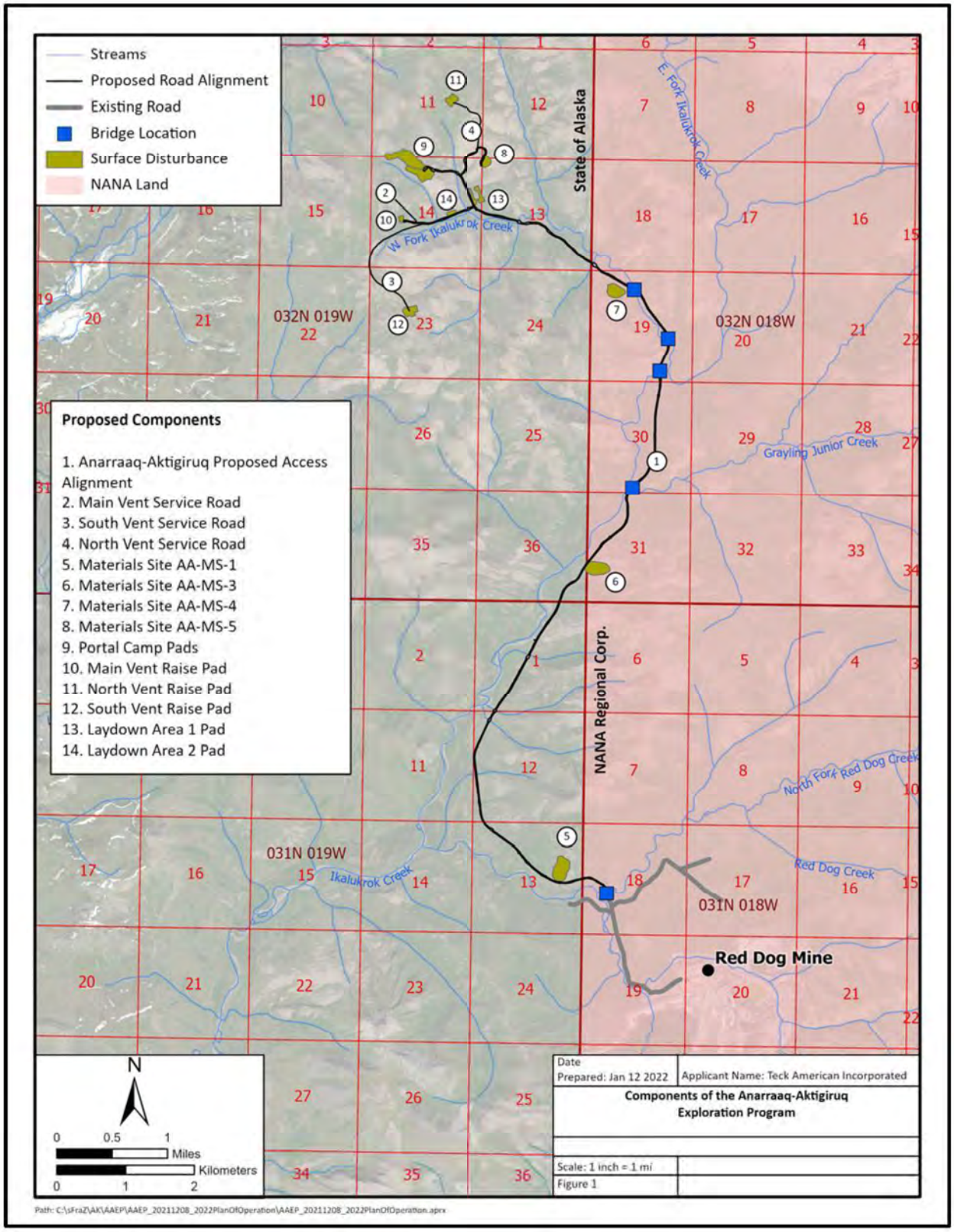



**Figure 1. Components of the Anarraaq and Aktigiruq Exploration Program Proposed in this Plan of Operations**

**Table 1. Surface Acreage Disturbance for Project Components**

| Surface Components | Disturbance (acres) |
|---|---|
| Main Exploration Access Road | 79.4 |
| A A-MS-5 Road | 4.0 |
| Main Vent Raise Road | 4.5 |
| South Vent Raise Road | 9.5 |
| North Vent Raise Road | 4.2 |
| Main Vent Raise Pad | 1.6 |
| North Vent Raise Pad | 1.2 |
| South Vent Raise Pad | 1.0 |
| Laydown Pad 1 | 5.5 |
| Laydown Pad 2 | 2.2 |
| Portal Pad and Camp Pad | 25.7 |
| Material Site AA-MS-1 | 16.0 |
| Material Site AA-MS-3 | 13.0 |
| Material Site AA-MS-4 | 10.0 |
| Material Site AA-MS-5 | 4.5 |
| Total | 182.3 |

surface acreage disturbance for each of the project components that were incorporated in the reclamation estimate. Figures 3, 4 and 5 in the Reclamation Plan illustrate typical sections for reclamation of the roads, culverts and bridges, and material sites respectively.

### 3.2.2 Reclamation Schedule

The SRCE model assumes that all the reclamation work would be completed in one construction season, with a complete mobilization to occur in early summer and demobilization in late fall to avoid shipping delays due to the formation of sea ice which ends the shipping season. Estimated hours were computed by SRCE.

#### 3.2.3 Roads

The roads and drainage ditches will be reclaimed in areas of cut-to-fill and areas of fill as illustrated in the Reclamation Plan drawings. Culverts and bridges will be removed during reclamation to restore natural drainage courses. Figure 3 in the Reclamation Plan illustrates a typical section for the reclaimed roads. The following assumptions were used in the reclamation cost estimate for the roads and culverts:

- Assume roads are regraded in cut sections to reduce erosion potential of 1.5:1 cut slope transitions. Calculation assumes 50% of embankment cut volume is relocated (see Figure
  Assume bridges are resting on concrete blocks consistent with the preliminary design.

- Bridge removal time based on estimated quote from Baily Bridge™ - Disassemble and remove/relocate structure in 4 days plus 2 days for concrete block abutment removal. Crew=6 men + 20-ton crane and backhoe.

- Hauling salvaged abutment blocks, calculated in waste disposal tab, hauling bridge structure included in cost of demo.

### 3.2.4 General and Administration Costs

Reclamation is assumed to completed within one snow free construction season, with all earthwork costs assumed to be completed in 120 days.

- Crew size is estimated at 6 laborers and 3 administration personnel.

- Turnaround time assumes 2-week shifts; and

- Equipment idle time place holder for rates is calculated in User Sheet 3.

### 3.2.5 User Sheets

- User Sheet 1 includes copies of the figures and maps used in the SRCE calculations.
- User Sheet 2 includes a calculation of the total weight of equipment to be mobilized.
- User Sheet 3 is used to estimate the total project hours for equipment as noted above in Section 2.1.1.

### 3.2.6 Indirect Costs

The basis of indirect costs is derived from guidelines provided the ADEC and ADNR (DOWL, 2015). SRCE provides four categories of indirect input values, while the guidelines provide seven separate categories. To input the values into SRCE, some of the percent indirect costs were combined. The summary below lists the indirect percentages applied to the total direct costs.

- Engineering Design and Reclamation Construction Plans are assumed to be 3% of the direct project costs. Engineering design is expected to be minimal.

- A contingency of 10% was applied to all direct costs. This is a combination of both Scope and Bidding contingency for the project.

- Contractor overhead and profit is assumed to be 14%. This is a combined value including profit (6%), overhead (4%), liability insurance (1.5%), and bonding (2.5%).

- A 5% contract administration cost is included.

Table 2 contains a summary of the SRCE model reclamation costs

Table 2. Summary of Reclamation Costs from SRCE Model

| | | |
|---|---|---|
| Engineering, Design and Construction Plan (%): | 3.0% | |
| Contingency (%): | 10.0% | |
| Contractor OH and Profit (CP)(%): | 14.0% | |
| Contract Administration (%): | 5.0% | |
| Show how many years in schedule (10 to 150): | 8 | |
| Show how many operating years in schedule: | 5 | |

| | Facility/Activity Type | Acct Code | Total Cost |
|---|---|---|---|
| | | | $ |
| 1 | Access and Secondary Roads | | 905,871 |
| 2 | Storm Water Management | | 113,630 |
| 3 | Post Reclamation Monitoring | | 10,588 |
| 4 | Material Sites | | 133,302 |
| 5 | Waste Disposal | | 80,391 |
| 6 | Surface Pads | | 368,337 |
| 7 | Reclamation Maintenance | | 169,403 |
| 8 | G & A | | 855,322 |
| 9 | Equipment Idle Time | | 766,646 |
| 10 | Mob/De-mob | | 710,598 |
| | | TOTALS | 4,114,089 |
| | Engineering, Design and Construction Plan | | 123,423 |
| | Contingency | | 411,409 |
| | Contractor OH and Profit | | 575,972 |
| | Contract Administration | | 205,704 |
| | | TOTAL COST | 5,430,597 |

# 4 REFERENCES

Alaska Department of Labor, Laborers' & Mechanics' Minimum Rates of Pay. Effective September 1, 2021. Issue 42.

DOWL, Mine Closure and Reclamation Cost Estimation Guidelines: Indirect Cost Categories, Prepared for Alaska Department of Natural Resources and Alaska Department of Environmental Conservation, 2015.

Kuna Engineering, Aktigiruq Exploration Access Road, Red Dog Mine Alaska, (Engineering Road Design Drawings) 2022.

Caterpillar Performance Handbook (Edition 47).

Means Heavy Construction Cost Data (2016)

Appendix II to Reclamation Plan – Site Reclamation Plan Drawings
to Accompany SRCE Model

# Appendix II

# Site Drawings to Accompany SRCE Model

Anarraaq and Aktigiruq Exploration Program

## Phase I – Exploration Access Road and Surface Pad Construction

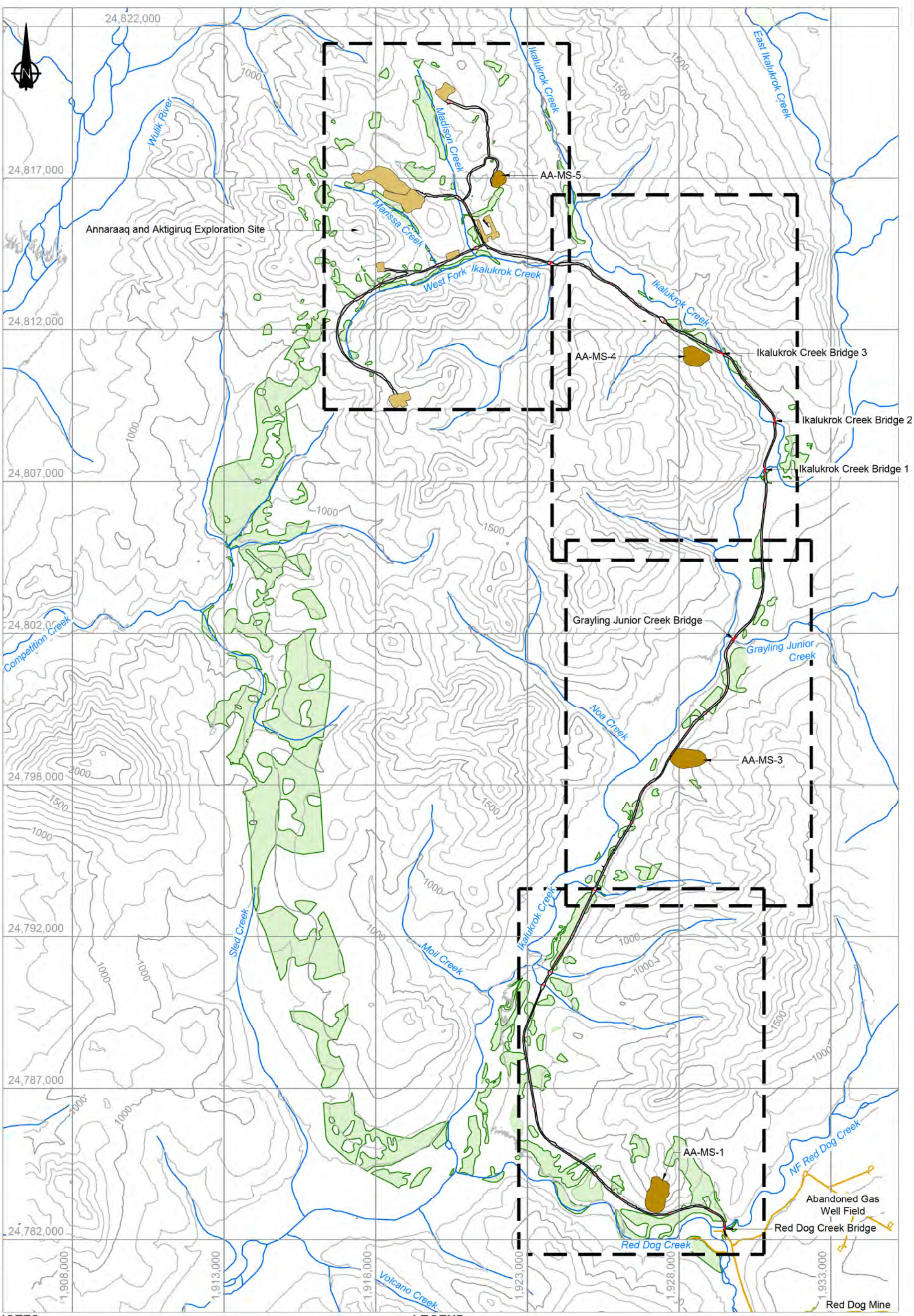
Prepared for:
Alaska Department of Natural Resources
Alaska Department of Environmental Conservation
Northwest Arctic Borough

Teck

Prepared by:
Teck American Incorporated
501 N Riverpoint Blvd., Suite 300
Spokane, WA 99202

**April 2022**

The figures in this appendix support the SRCE model for Reclamation Costs reclamation of the exploration access roads, secondary roads and surface pads as described in the Phase I Plan of Operations for the Anarraaq and Aktigiruq Exploration Program. The same figures can also be found in User Tab 1 in the SRCE Excel file.




## NOTES

1. Contours shown at 100ft intervals.

## LEGEND

- Road
- Proposed Pad Footprint
- Wetland
- Material Site
- Bridge

0 30 60

1" = 3000'

## REFERENCE

WGS84 Zone 3N.
LiDAR topography from Teck, February 2018.
The vertical datum is based on NAVD88 Elevations (Geoid12B).
Borrow areas and road footprints provided by Teck, April 2022.

srk consulting

SRK JOB NO.: 1UT016.006
FILE NAME: 1UT016.006 - Site Overview.dwg

Teck

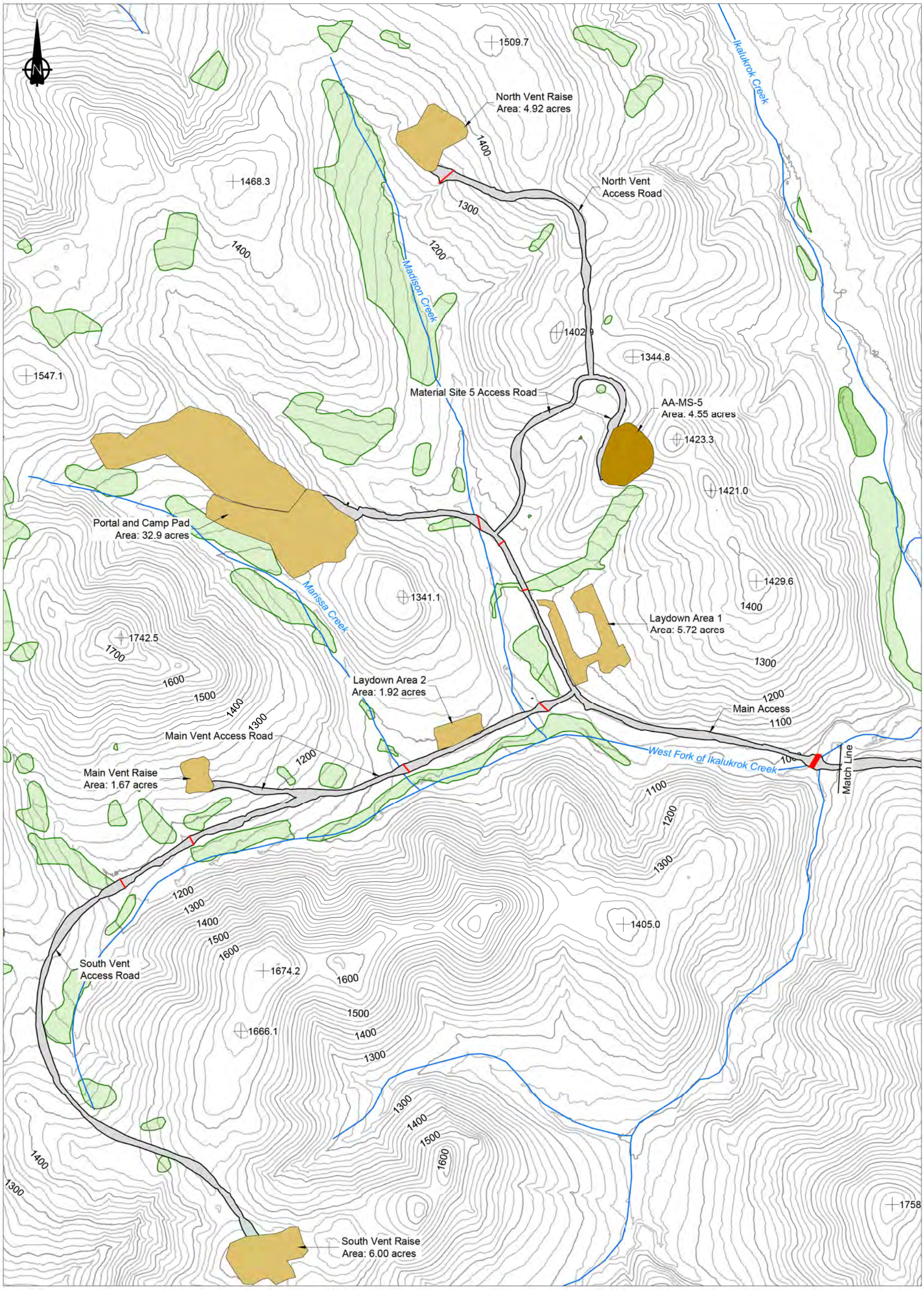
Teck American Incorporated

Anarraaq and Aktigiruq Exploration Program

Reclamation Plan
General Arrangement

| DATE: | APPROVED: | FIGURE: |
|---|---|---|
| April 20, 2022 | | 1 |

C:\Users\sepp\SRK Consulting\VA USPR001085 Aktigiruq Anarraq Closure Estimate Update - 040_Drafting\UT016.006 - Site Overview.dwg




## NOTES

1. Contours shown at 20ft intervals.

## LEGEND

- Road
- Proposed Pad Footprint
- Wetland
- Material Site
- Bridge
- Culvert

0 500 1000

1" = 1000'

## REFERENCE

WGS84 Zone 3N.
LiDAR topography from Teck, February 2018. The vertical datum is based on NAVD88 feet Elevations (Geoid 12B).
Borrow areas and road footprints provided by Teck, April 2022.

srk consulting

SRK JOB NO.: 1UT016.006
FILE NAME: 1UT016.006 - AR LO.dwg

Teck

Teck American Incorporated

Anarraaq and Aktigiruq Exploration Project

Reclamation Plan
Surface Development

| DATE: | APPROVED: | FIGURE: |
|---|---|---|
| April 20, 2022 | | 2 |

C:\Users\sepp\SRK Consulting\WA USPR001085 Aktigiruq Anarraq Closure Estimate Update - 040_Drafting\1UT016.006 - AR LO.dwg

Ikalukrok Creek
West Fork of Ikalukrok Creek
Match Line
Main Access Road
AA-MS-4
Area: 9.90 acres
Ikalukrok Creek Bridge 3
Ikalukrok Creek Bridge 2
Ikalukrok Creek Bridge 1
Match Line
1721.1
1591.9
1758.4
1664.2
1843.5
1715.1
1000
1100
1200
1300
1400
1500
1600
1700
1800

## NOTES

1. Contours shown at 20ft intervals.

## LEGEND

- Road
- Proposed Pad Footprint
- Wetland
- Material Site
- Bridge
- Culvert

0 500 1000

1" = 1000'

## REFERENCE

WGS84 Zone 3N.
LiDAR topography from Teck, February 2018.
The vertical datum is based on NAVD88 feet Elevations (Geoid 12B).
Borrow areas and road footprints provided by Teck, April 2022.

srk consulting

SRK JOB NO.: 1UT016.006
FILE NAME: 1UT016.006 - AR LO.dwg

Teck

Teck American Incorporated

Anarraaq and Aktigiruq Exploration Project

Reclamation Plan
Road Layout and Material Site 4

DATE: April 20, 2022
APPROVED:
FIGURE: 3

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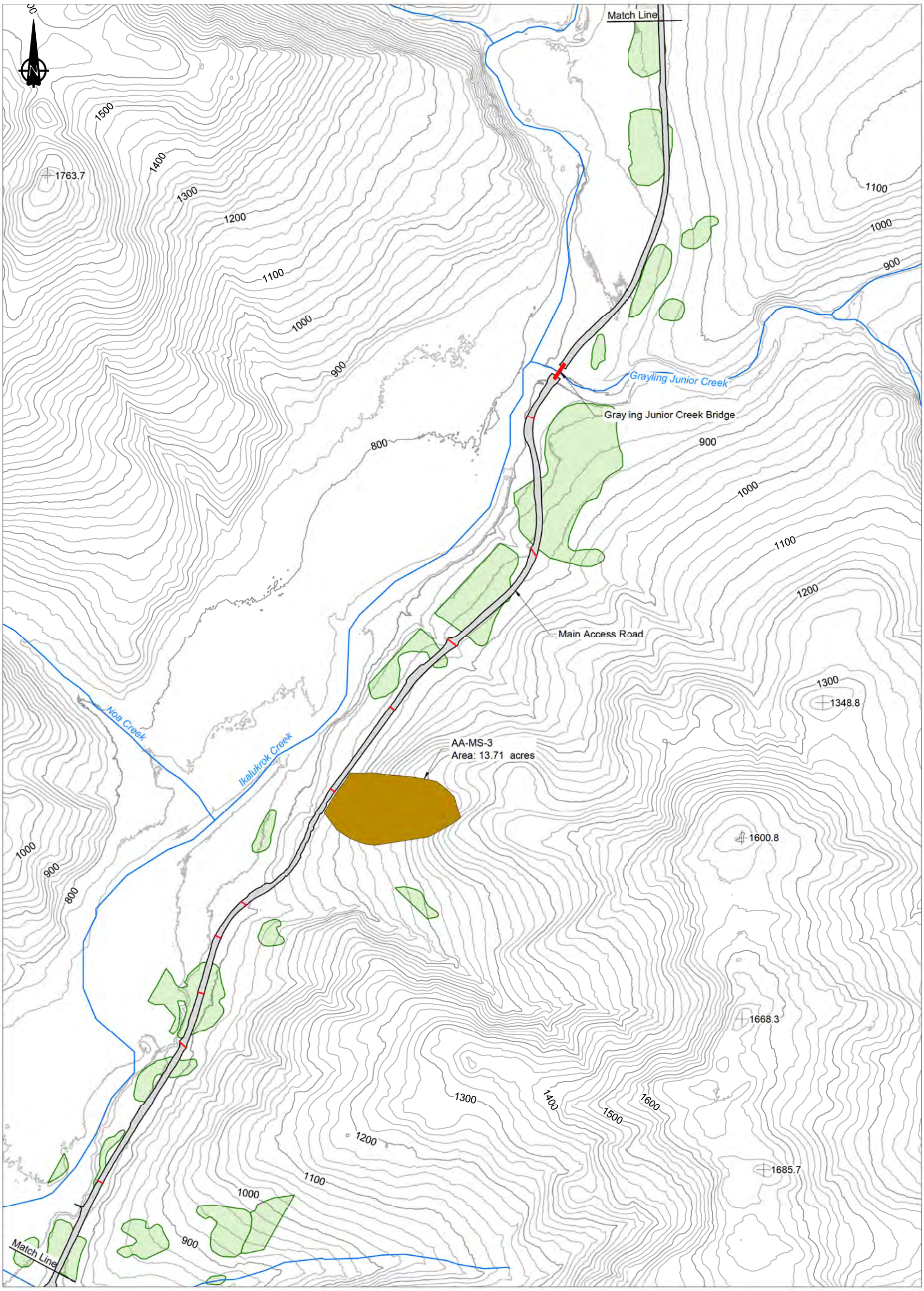


## NOTES

1. Contours shown at 20ft intervals.

## LEGEND

- Road
- Proposed Pad Footprint
- Wetland
- Material Site
- Bridge
- Culvert

0 500 1000

1" = 1000'

## REFERENCE

WGS84 Zone 3N.
LiDAR topography from Teck, February 2018.
The vertical datum is based on NAVD88 feet Elevations (Geoid 12B).
Borrow areas and road footprints provided by Teck, April 2022.

srk consulting

SRK JOB NO.: 1UT016.006
FILE NAME: 1UT016.006 - AR LO.dwg

Teck

Teck American Incorporated

Anarraaq and Aktigiruq Exploration Project

Reclamation Plan
Road Layout and Material Sites 2 and 3

| DATE: | APPROVED: | FIGURE: |
|---|---|---|
| April 20, 2022 | | 4 |

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## LEGEND

- Road
- Proposed Pad Footprint
- Wetland
- Material Site
- Bridge
- Culvert

## NOTES

1. Contours shown at 20ft intervals.
2. Less desirable areas were identified as having limited outcrop mapping information, a high degree of geological complexity or rock units with uncertain or increased potential for metal leaching and/or acid rock drainage. Further geological and geochemical characterization is required to develop quarries in these sites.

## REFERENCE

WGS84 Zone 3N.
LiDAR topography from Teck, February 2018. The vertical datum is based on NAVD88 feet Elevations (Geoid 12B).
Borrow areas and road footprints provided by Teck, April 23, 2018.

Match Line
Ikalukrok Creek
Main Access Road
AA-MS-1
Area: 16.03 acres
Red Dog Creek Bridge
NF Red Dog Creek
To Red Dog Mine
Red Dog Creek
1006.4
966.6
1249.8
1281.2
1381.5
1575.1

0 500 1000.0001
1" = 1000'

| | | |
|---|---|---|
| srk consulting | Teck | Anarraaq and Aktigiruq Exploration Project |
| SRK JOB NO.: 1UT016.006 | Teck American Incorporated | Reclamation Plan<br>Road Layout and Material Site 1 |
| FILE NAME: 1UT016.006 - AR LO.dwg | | DATE: April 20, 2022 · APPROVED: · FIGURE: 5 |

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