



MATANUSKA-SUSITNA BOROUGH

Office of the Borough Manager

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MEMORANDUM

DATE: March 10, 2021
TO: Mayor and Assembly
FROM: Michael Brown, Borough Manager
RE: Manager's Weekly Post

Feasibility of a Shooting Range at Coyote Lake: Land Management staff have evaluated the Borough owned Coyote Lake property (Parcel ID 19N03E15B003) as a potential location for a shooting range. Pulling from multiple reference sources, staff developed criteria in order to evaluate the location for the development of a shooting range. In addition, staff gathered onsite information through observations and pictures, used GIS software for analysis and map development, and compared this location to other outdoor shooting ranges within the Borough. Staff has concluded that the Coyote Lake property is not an advantageous location for a shooting range. While it may be feasible that a range for specific shooting disciplines could be developed here, the size and type of range that could be developed is quite limiting. The property would be unable to support a rifle range, a pistol range, and a shotgun range. The topographic challenges, (particularly the ADF&G stocked lake in the center of the property), as well as the land encumbrances like the RS2477 Eska Mine Trail right-of-way and the multiple segments of the Knob Hill trail severely limit location, size, and the type of range that could be developed. A detailed analysis with maps and pictures is included as an attachment if further information is desired.

Leachate Hauling: At the last regular Assembly meeting, a member mentioned leachate hauling costs. The Solid Waste Division (SWD) is working toward hauling leachate in-house. There were many tasks to be accomplished before SWD could do this and the price of using a contractor was not significantly more expensive than using in-house equipment and manpower. There were clear synergies with our waste hauling operations we could take advantage of but the value was not there until this year. When we re-bid and awarded our leachate hauling contract starting January 8, the cost went up 46% which opened a window for us to perform this task in-house at a lower price point. That added urgency to the task and SWD has been moving forward more quickly with starting in-house hauling.

The following is what has already been accomplished: Last year we hired drivers holding CDLs and HAZMAT endorsements to move solid waste. These drivers also have the ability to transport leachate. Over the last couple of years, SWD obtained DOT permits for our existing semi-tractor-trailer trucks and added additional equipment needed to perform both transfer station and leachate hauling. We also

Providing Outstanding Borough Services to the Matanuska-Susitna Community

greatly expanded our leachate storage capacity to allow us to spread the hauling out which minimizes surge manpower and equipment requirements. With our CDL drivers and small fleet, it is possible by the end of this summer to begin hauling some leachate using Borough manpower and equipment. During rainy and summer peak season, we will still need a contractor as a backup but we should be able to eliminate our contract in or around the summer of 2022. In the meantime, our plan is to complete steps reducing our need for leachate contract hauling until the contract is no longer necessary.

Perhaps the largest task is preparing an old Borough-owned tanker trailer for safe use on public roadways. The trailer has not been used on the public roadways since 2011. Borough vehicle maintenance personnel lubricated bearings, and repaired or replaced brake and air system components, tires, suspension, lighting, and many other mechanical components. The process of registering the trailer is underway. Developing this capability will also require a leachate pumping station at the landfill to fill the trailer. We believe we have all the equipment necessary to do this. Unlike our contractor's equipment, this trailer cannot be fitted with a pump to pull leachate from our lagoons. Another hurdle we are working is dumping at AWWU. The trailer is a belly dump system, which may not be compatible with AWWU's dump station. Borough staff will be examining options to deal with this problem in the coming weeks.

Another element we are planning to implement is leachate recirculation in the landfill, which means SWD will be taking leachate and pumping or dumping it back into the landfill cell. This process will reduce leachate volumes from 45% up to 90%. The process also creates more landfill gas, including methane, which is one reason we did not do this in the past. Recirculation also requires fully lined landfill cells. Our current landfill cell is not fully lined. Later this summer, when we place the first two layers of waste into Cell 4, we will meet all the conditions necessary to obtain the required ADEC permit and begin recirculation. We believe our recirculation processes will be fully functional with the permit in place by summer of 2022. That will likely put us in a position to eliminate the commercial leachate hauling contract.

Here is our timeline:

March 2021 - Submit ROD permit to ADEC for leachate recirculation on or about March 19

March/April 2021 - Tanker maintenance repairs complete; awaiting registration to drive on road and have tanker PM Service completed

March/April - Truck registered

May 2021 - DOT inspection and certification for over the road with tank integrity repairs completed and satisfactory

June 2021 - Leachate recirculation application reviewed and approved

June/July 2021 - Develop a filling station to pump leachate into tanker

August/September 2021 - Begin hauling leachate

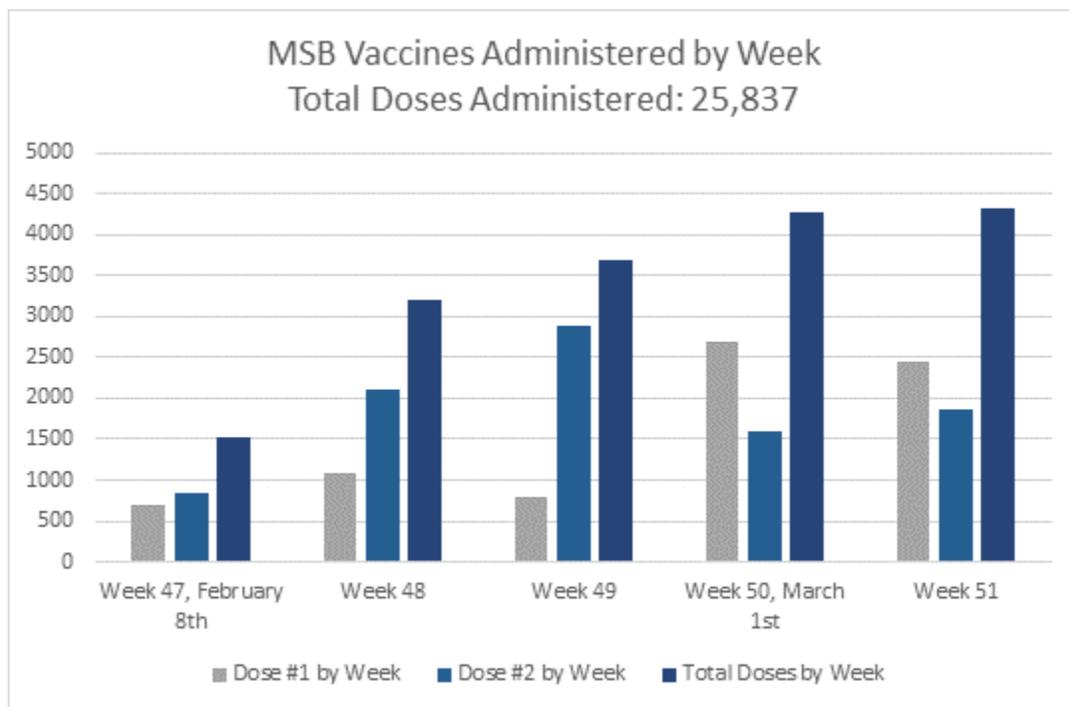
Spring/Summer 2022 - Recirculate leachate

Summer/Fall 2022 - Leachate hauling contract terminated

State of Alaska Office of Management & Budget (OMB) Revenues: Director Neil Steininger of the State OMB office will provide a State revenues update at the March 16, 2021 Assembly Meeting under the Manager’s comments. This topic was discussed at the recent strategic planning special meeting.

West Susitna Access: Alaska Industrial Development and Export Authority (AIDEA) staff will provide an update of the West Susitna Access project, phase 2, at the March 16, 2021 Assembly Meeting under the Manager’s comment. Additionally they are in the process of developing the scope for phase 3. AIDEA is tentatively scheduled to return in mid-May for a broader discussion of phase 3.

Vaccination Weekly Update: The biggest thing to note is that the Johnson & Johnson vaccine will be available in Alaska. While it has the same shelf life as the mRNA vaccines, it is a single-shot administration and does not need to be kept ultra-cold, making it easier to transport. Public health’s recommendation is that additional orders be for the Johnson & Johnson vaccine, not the mRNA versions. Additionally, the State announced March 9 that the COVID-19 vaccine is now available for anyone living or working in Alaska who is age 16 or older.



The total for all doses administered for the Mat-Su stands at 25,837. These numbers include the 150 doses given on Friday at the Palmer Senior Center. Our next point of distribution is Tuesday, March 16, 2021 at the Fairgrounds.

Capstone opened its vaccine clinic in the Sears building as well, and they are aiming to deliver a minimum of 250 vaccines a day. Registration online is here: <https://www.covidsecureapp.com/capstonevax.html>

Public Affairs Media Flyover:

Arctic Winter Games

- 2022 Arctic Winter Games is postponed due to COVID-19
<https://www.fortmcmurraytoday.com/sports/local-sports/2022-arctic-winter-games-postponed-because-of-covid-19>

Winter Outdoor Safety

- Brian Davis interview on Big Cabbage Radio
<https://www.radiofreepalmer.org/2021/03/09/back-country-safety-2021-3-9/>
- MSB press release
<https://www.matsugov.us/news/winter-safety>

Schools

- Houston Middle School construction possibly delayed
https://www.frontiersman.com/news/houston-middle-construction-possibly-delayed/article_63baf09e-7ccf-11eb-abe6-57927f230dc8.html

Assembly Business

- Mat-Su Borough amends landfill fees
https://www.frontiersman.com/news/assembly-amends-landfill-fees/article_e25f3ca0-7cd1-11eb-a90f-db5c55ab470e.html
- Assembly hears audit presentation
https://www.frontiersman.com/news/assembly-hears-audit-presentation/article_0703f5e4-7d9c-11eb-a665-7f313d6afb06.html

Resource Devopment

- [Nasdaq.com](https://www.nasdaq.com) refers to the Donlin Gold project as a rare gold project
<https://www.nasdaq.com/articles/3-gold-stocks-to-buy-despite-gold-prices-hitting-10-month-low-2021-03-09>

Other Misc.

- Grants made available for removal of choke cherry trees
http://www.sitnews.us/0321News/030721/030721_chokecherry_trees.html

ATTACHMENT

Feasibility of a Shooting Range (rifle, pistol, shotgun) at Coyote Lake

Summary

The following report will provide preliminary information on the feasibility of a shooting range to be located on Borough owned property known as Coyote Lake (Parcel ID 19N03E15B003). The report provides the criteria and rationale for site selection and specifically highlights the viability of a rifle, pistol, and shotgun shooting range at this location. This report is authored by Land and Resource Management staff and is not an engineering report.

Property Background

Coyote Lake (Parcel ID 19N03E15B003) is a 40-acre Borough owned property located in the southeastern corner of the Jonesville Public Use Area. The parcel is bounded by property owned by Cook Inlet Region, Inc. (CIRI) to the west and south and property owned by the State to the north and east. Access to the property is provided from Eska Strip Mine Trail off of East Eska Mine Road. East Eska Mine Road and road maintenance ends approximately one-quarter mile south of the subject property.

The property is comprised of hilly mixed forest lands, a small plateau like area that is cleared, and a lake known as Coyote Lake. The lake is located nearly in the center of the property and is approximately 2.5 acres in size. The lake is manmade and has been stocked with rainbow trout by Fish and Game. The stocking dates back to 1992 and the lake was most recently stocked in 2020. The rock outcroppings on the north bank of the lake are prolific with fossils.

Eska Strip Mine/Knob Hill trail transects the western portion of the property south to north and is a RS2477 recognized trail. This RS2477 provides access to the Eska Creek Falls trailhead, which is known to be one of the most beautiful hikes in the valley. The RS2477 has a 100' right-of-way and is managed by the Alaska Department of Natural Resources (DNR). There is a process to relocate RS2477 trails through DNR, however, there is no guarantee DNR would entertain an alignment change. The process to move an RS2477 trail can be a lengthy process and take years to accomplish. Staff did not consider the relocation of the RS2477 as part of the analysis for a shooting range at this location. There are also two other segments of the Knob Hill trail on the subject property, one portion runs into the middle part of the property and culminates, and the other segment runs along the northern portion of the property and continues onto State land. The sections of the Knob Hill trails that are contained on Borough lands are managed by the Borough and the Borough has the authority to move these trails as circumstances warrant. The Borough does not have the authority to move the portions of the Knob Hill trail that are on State land nor can the Borough move the portions of the trail from Borough land to State land without authorization. As with the RS2477 relocation process, there is no guarantee DNR would entertain moving the Knob Hill Trail and the process could be lengthy and costly.

Prior to Borough ownership, the property was used historically as a strip mine. The majority of the soil composition contained on the property are mine spoils and the constructability of these spoils is unknown at this time.

In 1987 the Borough was a recipient of a Land and Water Conversation Funding grant to build a pavilion on the Coyote Lake property. The pavilion eventually went into disrepair and the remnants were removed from the property in 2018. Land and Water Conversation Funding sites require strict adherence to the standards and requirements of the program and specify that project sponsors must operate and maintain

to acceptable standards the properties or facilities acquired or developed for public outdoor recreation use in perpetuity. If a shooting range were to be developed here, as long as it is open and available to the public, it would be an acceptable use under the Land and Water Conservation Act.

General Considerations

The purpose of a shooting range is to provide a location where people can enjoy various shooting sports in a safe environment. A shooting range should satisfy a number of goals including: recreational shooting sports enjoyment, reasonable cost of construction and operation, and accommodations for safety. Ranges should be designed to prevent injury to personnel and to prevent property damage outside the range from misdirected or accidental firing and ricochets. Outdoor ranges should be remote from other activities, but accessible by road.

General Criteria and Site Specific Analysis for Outdoor Shooting Range Selection

Finding a viable location for a public outdoor shooting range can be a complicated task and requires an in-depth look and analysis of a wide range of factors. Using the *National Rifle Association Range Source Book*, *The Department of Energy Range Design Criteria* publication, and the *Environmental Protection Agency Best Management Practices for Lead at Outdoor Shooting Ranges*; staff developed criteria measures for analyzing sites to determine if a particular location is suitable for a shooting range. The criteria developed, and Coyote Lake site specific analysis for each criteria is outlined below.

Public Safety

- Safety the of public and staff is paramount and takes priority over all other considerations

Unsafe and unlawful shooting practices are a major problem and public safety concern in the Jonesville area. As the community, Borough, and State continue to work on developing a Jonesville Public Use Area Management Plan, because the Coyote Lake property is Borough owned, a shooting range could be developed without the management agreement in place. A range at Coyote Lake could help to alleviate some of the unlawful shooting practices and increase public safety, but without some type of enforcement efforts in other areas of Jonesville, unsafe shooting practices in the surrounding areas are likely to continue.

Regardless of the particular location all aspects of range design, development, implementation, and operation needs to consider and incorporate safety.

Location

- Location of the range should be in an area that is as convenient to the user group as possible

Coyote Lake is generally in an area where many users come to recreate in various fashions including recreational shooting. The surrounding area is not highly populated, but it is probable that the construction of a shooting range would likely draw range users from out of the general area. There are not many public shooting ranges located in the Borough, and Coyote Lake is in close proximity to an area that already attracts a wide range of recreational shooters. It is probable a range would see a high amount of users at this location. Outdoor ranges should be remote from other activities, but accessible by road.

The subject property currently provides recreation opportunities for multiple user groups including motorized and non-motorized uses.

Range Orientation

- Outdoor ranges should be oriented to eliminate firing into the sun. The range should be oriented to the north or slightly to the northeast. The ideal direction is between due north and 25 degrees northeast.

The ideal firing orientation is from south to north. This provides the earliest and latest natural target illumination with the least interference from natural light in the shooter's eyes. Based on the topography, dimensions, and encumbrances of the property; to achieve a south to north firing orientation, the only viable location for a range is the eastern portion of the property which is approximately 15 acres.

Size of range

- An area large enough to accommodate the appropriate shooting disciplines and projectile containment as modified by existing topographic features, and/or additional range features

The property is approximately 975 feet south to north and approximately 1,800 feet east to west. There is an RS2477 trail (Eska Strip Mine/Knob Hill) that has 100' right-of-way and runs from the southwest corner of the property in a diagonal fashion to the north central portion of the property. A waterbody known as Coyote Lake is situated almost directly in the center of the property and is approximately 2.5 acres in size. The topographic features, acreage, rights-of-way, and trails limit the size of shooting range that could be constructed at this location. When you take into account the right-of-way, lake, proper orientation of the range, and the dimensions of property, it essentially only leaves the eastern portion and approximately 15 acres of the 40-acre property as a potential location for a shooting range.

Design

- Design criteria should incorporate specific range requirements along with adequate space, yet provide for future expansion

The topographic features, acreage, right-of-way, and dimension of the property limit what type of shooting range could be designed at this location. These factors also limit what type of expansion could occur if a range were developed here. Based on the aforementioned factors and the shotfall zone required for shotgun ranges (standard is 900 feet), it is unlikely a shotgun range could be developed at this location. With the proper design and surface danger controls, it may be feasible to construct a rifle range and/or pistol range at this location, but the size of these ranges would be limited and it is unlikely there would be space for future expansion.

Type of range

- What type of firearms and what types of shooting activities will occur
- Some examples include: smallbore rifle, big bore/centerfire rifle, pistol, trap, skeet, shooting clays, silhouette, etc.

At a minimum, a shooting range in the Jonesville Public Use Area should include a rifle range capable of handling big bore/centerfire rifles (minimum 100 yards) and a pistol range (minimum 25 yards). Ideally,

a shooting range in this area would also include a shotgun range for trap, skeet, and sporting clays. Based on the topographic features, encumbrances, and the dimensions of the property, a shotgun range of any kind at this location is probably not possible. Standard shotfall zones extend the same distance for all shotgun disciplines and are typically 900 feet from the target.

Range distance

- Distances or firing line to target should conform to standard configurations as traditionally adopted for range construction

Conventional standard distances for big bore/centerfire rifle include 100, 200, 300, 500, 600 yards. (800, 900, and 1000 yards for special long range activities)

Conventional standard distances for outdoor pistol include 50 feet, 25 yards and 50 yards

Clay target distances are determined by how far a target travels before striking the ground. The actual distance at which a shooter breaks the target depends upon shooter ability and technique.

Trap and skeet distances typically vary between 50 and 60 yards.

Sporting clay distances vary as each event is designed to simulate hunting conditions.

The topographic features, acreage, encumbrances, and dimensions of the property limit the distances and types of ranges that could be developed on this property. Based on these factors it is unlikely a rifle range could be developed that is more than 100 yards and a shotgun range of any kind at this location is probably not possible.

Projectile Containment

- Projectile containment will vary in size and design based upon terrain features, range structures, and what type of shooting is occurring
- Some techniques for limiting projectile containment to the range property include: backstops, sideberms and sidewalls, baffles, berms, target placement, topography features, and sloping the floor of the range

Projectile containment is a crucial element of all rifle ranges and there are various way of accomplishing it. Main backstops can be a natural hill or of man-made earthworks. All surface areas where bullets will strike must be rock free soil to a depth of at least 18-24 inches. Some of the natural features of the Coyote Lake property (i.e. hills, embankments) could be a good natural backstop for projectile containment, however, most of these features are in areas of the property not appropriate or ideal for a shooting range. It would take a significant amount of dirt work and most likely a large amount of clean material brought to the site for proper projectile containment features.

Surface Danger Zone (SDZ)

- Means a depiction of the mathematically predicted area a projectile will return to earth either by direct fire or by ricochet. The SDZ is the area extending from a firing point to a distance downrange based on the projectiles fired.
- SDZs should not extend across traveled roads, navigable waterways, railroads, lakes, trails, etc.

- A basic SDZ consists of three parts: impact area, ricochet area, and secondary danger area

Surface danger zones must be established to contain all projectiles and debris caused by firing ammunition. SDZ dimensions are dictated by the types of ammunition, types of targets, and types of firing activities allowed on the range. The property has insufficient distances to properly establish SDZ without the use of engineering or administrative controls. To change the SDZ, baffles can be installed. Partial and full baffle systems consist of the following components: overhead baffles, a canopy shield over firing points, bullet impact berm, side berms, and sidewalls. A fully baffled range must be constructed so all direct fire can be contained within the range. The cost of range development significantly increases when baffles, especially a fully baffled system is needed. MSB 17.68.040(A)(2)(g) requires surface danger zones to be determined by a professional engineer registered in the State of Alaska.

Access

- Is access to the range adequate or are road improvements necessary?
- Vehicular access and parking areas that terminate in close proximity to the actual shooting range is ideal for patrons.

Access to the property is provided from Eska Strip Mine Trail off of East Eska Mine Road. East Eska Mine Road and road maintenance ends approximately one-quarter mile south of the subject property. The unmaintained portion of the road is poor shape. Significant road improvement and maintenance would be necessary to make this road passable for standard vehicles. Depending on where the shooting range would be located, there may be additional access roads that would need to be developed. In addition to improving the road, a parking area or areas would need to be established.

Environmental

- Development a site-specific environmental stewardship plan for managing shooting-associated materials, in accordance with EPA best management practices
- Avoid shooting into/over wetlands and waterways
- Effort should be taken to minimize any adverse impact on the surrounding environment

MSB 17.68.040(A)(2)(f) requires the development of a site specific environmental stewardship plan for managing shooting associated materials in accordance with EPA best management practices. MSB 17.68.050(A)(7) requires that outdoor shooting facilities may not be designed in a manner that directs projectiles into or over waterbodies or wetlands.

Sound Transmission

- No setback distance eliminates sound complaints entirely
- EPA studies indicate noise complaints are likely when there are inhabited dwelling units within one-half mile of the use

The closest residential structure is approximately 875 feet from the southwest corner of the Coyote Lake property. MSB Code requires that firing positions be located at least 1,000 feet from all habitable buildings which are not on the same parcel and that no sound resulting from outdoor shooting facilities is allowed to exceed 90dB(a) as measured at the nearest building within the boundary of the property of the receiving land. When you take into account the right-of-way, lake, proper orientation of the range,

and the dimensions of property, it essentially only leaves the eastern portion and approximately 15 acres of the 40-acre property as a potential location for a shooting range. This area is approximately 2,000 feet from the closest residential structure.

While staff was conducting a site visit, there was gunfire emanating from the southwest of the property. Staff believes the gunfire was occurring near the intersection of E. Jonesville Mine Road and N. Jonesville Mine Road as there were fresh tracks in the snow and an array of shot up targets that were not there when staff drove by on the way to Coyote Lake. This area is more than 1-mile from portions of the Coyote Lake property and the gunfire could be heard clearly and appeared it was occurring much closer than it actually was.

Permitting needs

- What federal, state, and local permits are necessary for the construction and operation the range

Two conditional use permits from the MSB would be required for a shooting range at Coyote Lake. The property falls within the boundary of the Sutton Special Land Use District (MSB 17.27), which requires a permit for indoor or outdoor shooting ranges. A conditional use permit would also be necessary under MSB 17.68 Outdoor Shooting Facilities, which requires public outdoor shooting ranges to acquire a permit before operation. Depending on the development needs of the site, additional permits may be necessary.

Surrounding Land Uses

- Understand what the surrounding land uses are and how a shooting range could affect neighboring property owners

The parcel is bounded by property owned by Cook Inlet Region, Inc (CIRI) to the west and south and property owned by the State to the north and east. There are no residential structures on the adjoining lands. The closest residential structure is located to the southwest, and is approximately 900 feet from the southwest property corner. The surrounding area is sparsely populated and development and habitation is located to the south of the property. The lands to the north and east have intricate trail systems that are used year around for various types of recreation.

Topography

- Does the landscape have any natural features that help or hinder the development of a shooting range
- How much site work will be necessary to prepare the area for development

The topography of this property is one of the biggest challenges for development of a shooting range. With Coyote Lake being situated almost directly in the center of the property, it severely limits where a shooting range could be located because it is not permissible for shooting ranges to shoot into or over a waterbody. The elevation gradually increases from south to north and the terrain is hilly in nature with few flat or level spots. The flattest section, almost plateau like, is south of Coyote Lake and is approximately 2 acres. Significant amounts of dirt work would be needed to prepare the site and a large amount of clean material would likely be needed. The majority of the soil composition is mine spoils as the property was strip mined previously and the constructability of these spoils is unknown at this time.

Comparable - Kenny and Patti Barber Shooting Range

The Kenny and Patti Barber Shooting Range on Maud Road is the most recent public outdoor shooting range constructed in the Borough and can offer some lessons learned on constructing an outdoor shooting range.

The range consists of a 100 yard range and 25 yard range. There are approximately 18 covered firing lanes on the 100 yard range and 10-12 covered firing lanes on the 25 yard range. The range amenities also include a parking area and portable toilets. The range does not have a shotgun area for clay, skeet, or sporting clays. The footprint of the range is approximately 7 acres and there are no residential structures within several miles of the site. The range is open to the public 6 days a week and there is no fee charge for use of the range.

The range is popular with the public and at certain times patrons must wait their turn in order to get a firing lane. In 2020 alone, there were over 37,500 users, approximately 17,770 vehicles, and 1,100 bags of trash generated at the range.

Initial construction cost of the range was approximately \$900,000. This amount was just for the initial construction and does not include upkeep, maintenance, or staffing costs. A lot of the cost of the range was for earthwork and materials. The range has manmade backstops, but there is also a mountain that offers a natural backstop. This natural feature helped to keep the cost of the range down because the range did not have to implement full or partial baffle systems for projectile containment.

Comparing the Maud Road property prior to construction of the shooting range and the Coyote Lake property provides some good insights. The Maud Road property appears to not have had the topographic challenges the Coyote Lake property has, nor did it have an RS2477 trail, multiple other trails, or a stocked lake to contend with.

Conclusion

Land Management staff has evaluated the Borough owned Coyote Lake property (Parcel ID 19N03E15B003) as a potential location for a shooting range. Pulling from multiple reference sources, staff developed criteria in order to evaluate the location for the development of a shooting range. In addition, staff gathered onsite information through observations and pictures, used GIS software for analysis and map development, and compared this location to other outdoor shooting ranges within the Borough.

Staff has concluded that the Coyote Lake property is not an advantageous location for a shooting range. While it is may be feasible that a range for specific shooting disciplines could be developed here, the size and type of range that could be developed is quite limiting. The property would be unable to support a rifle range, a pistol range, and a shotgun range. The topographic challenges, (particularly the ADF&G stocked lake in the center of the property), as well as the land encumbrances like the RS2477 Eska Mine Trail right-of-way and the multiple segments of the Knob Hill trail severely limit where, how big, and the type of range that could be developed.

Literature References:

United States Environmental Protection Agency Best Management Practices for Lead at Outdoor Shooting Ranges, Revised June 2005

National Rifle Association the Range Source Book, A Guide to Planning and Construction, Revised January 2004

U.S. Department of Energy Office of Health, Safety and Security Range Design Criteria

Analysis Maps:

- A. Site Map of Coyote Lake
- B. Site Map of Coyote Lake with hillshade imagery
- C. Site Map of Maud Road shooting range
- D. Site Map of Maud Road with hillshade imagery prior to shooting range
- E. Coyote Lake property with footprint of Maud Road shooting range
- F. Coyote Lake property with footprint of Maud Road shooting range

Photographs of Coyote Lake Area:

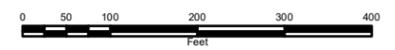
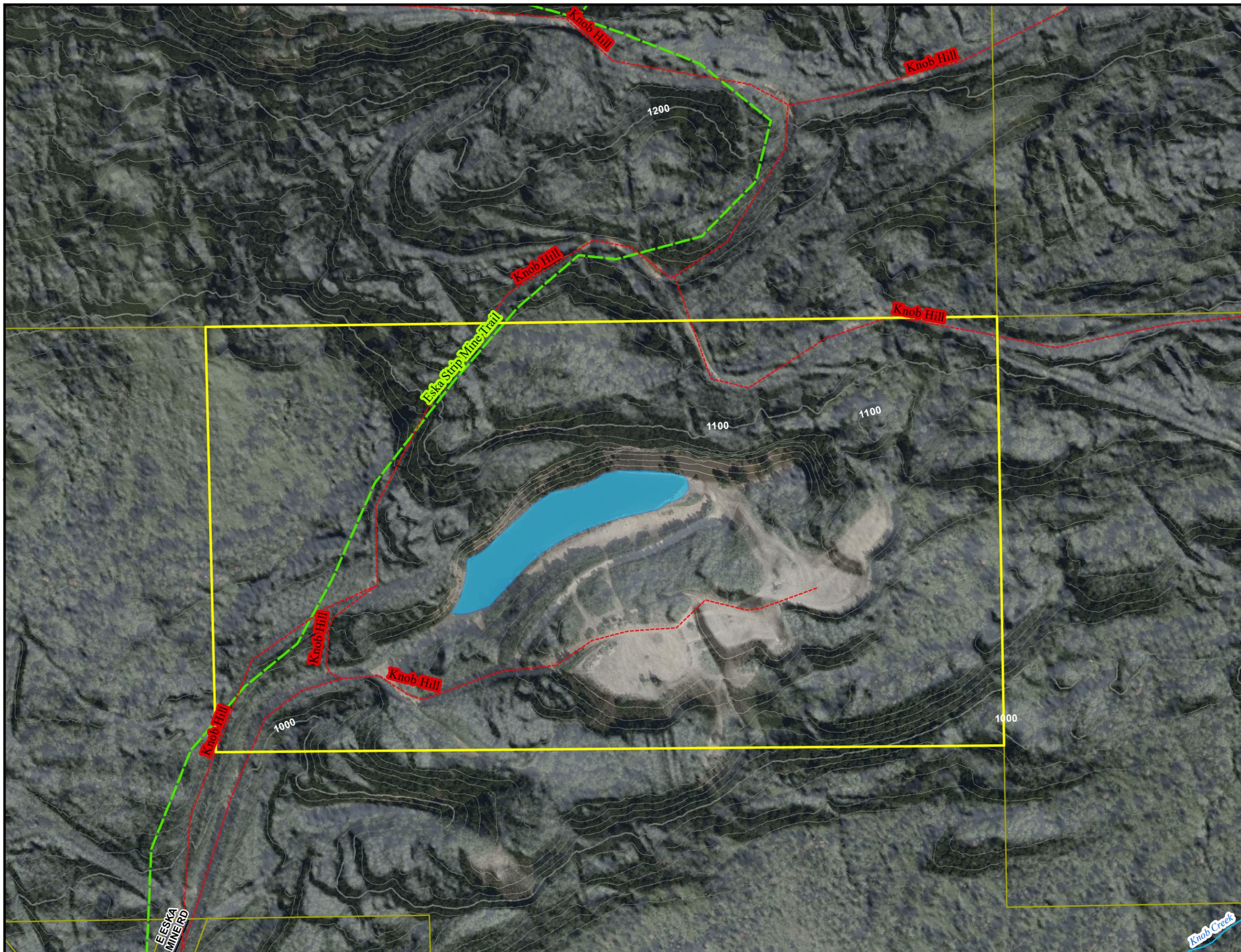
- 1. End of Eska Mine Road (not on Borough land)
- 2. Eska Strip Mine Trail (left) Knob Hill Trail (right)
- 3. Knob Hill Trail (southwest corner of Borough Land)
- 4. Knob Hill Trail (southwest portion of Borough Land)
- 5. South-central property line looking north-east
- 6. South-east portion of property looking north
- 7. South-east property corner looking north
- 8. North-east property corner looking south
- 9. Knob Hill trail split north of property (not on Borough land)
- 10. North-west property corner area looking south
- 11. South-west portion of property looking north
- 12. Looking east at Coyote Lake
- 13. Plateau like area south of Coyote Lake looking east
- 14. Plateau like area south of Coyote Lake looking north
- 15. Plateau like area south-east of Coyote Lake looking west



Coyote Lake Site Map A

Legend

- Coyote Lake Property
- Parcels
- MSB Trails
- RS2477 Trails
- Waterbodies



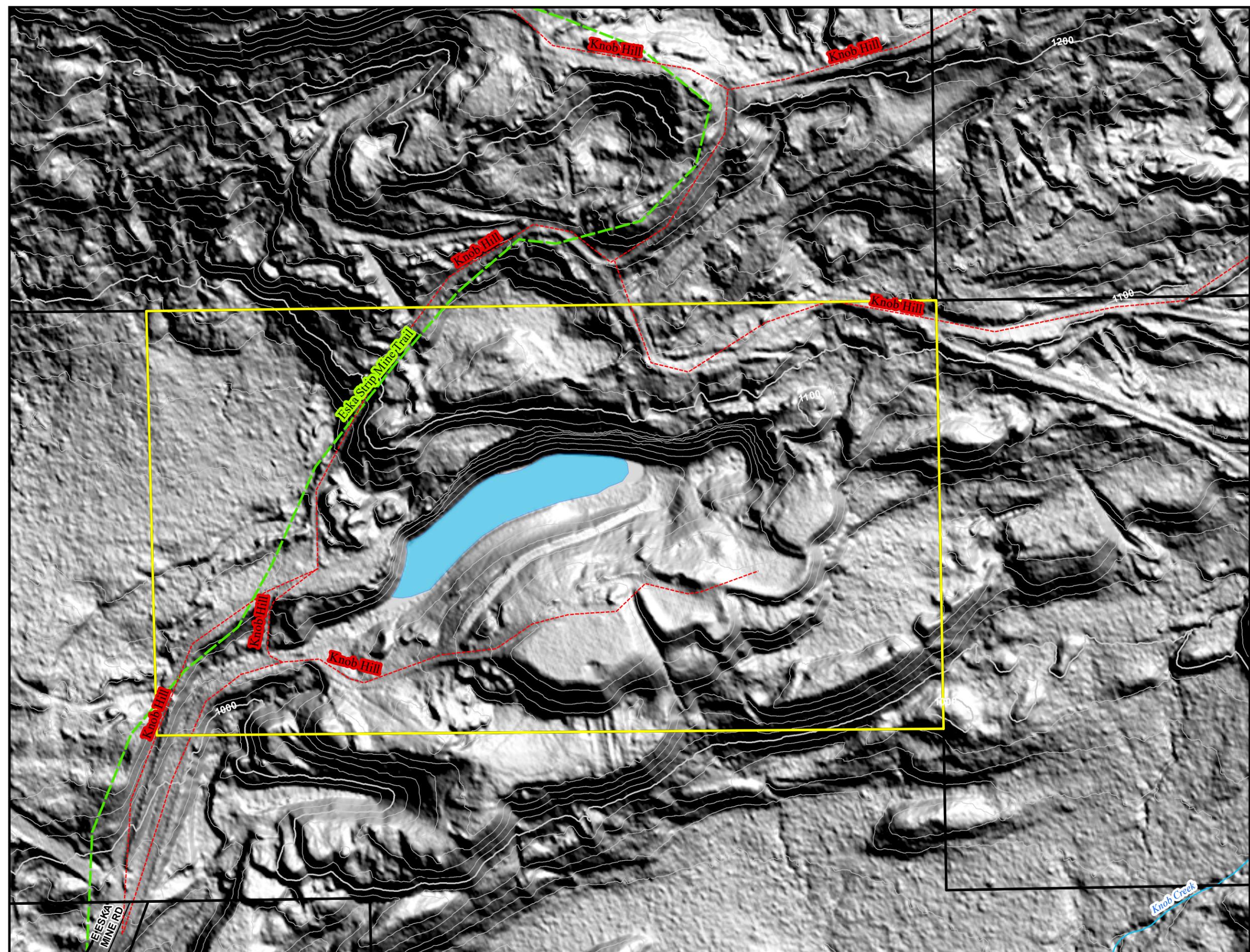
Date: February 2021
Sources: MSB GIS, MSB LRMD, AK DOT
Projection: NAD 83 AK ST PLN Z4
Location: MSB
Author: MSB LRMD



Coyote Lake Site Map B
Hillshade Imagery

Legend

-  Coyote Lake Property
-  Parcels
-  MSB Trails
-  RS2477 Trails



Date: February 2021
Sources: MSB GIS, MSB LRMD, AK DOT
Projection: NAD 83 AK ST PLN Z4
Location: MSB
Author: MSB LRMD

Matanuska - Susitna Borough
Land and Resource
Management Division



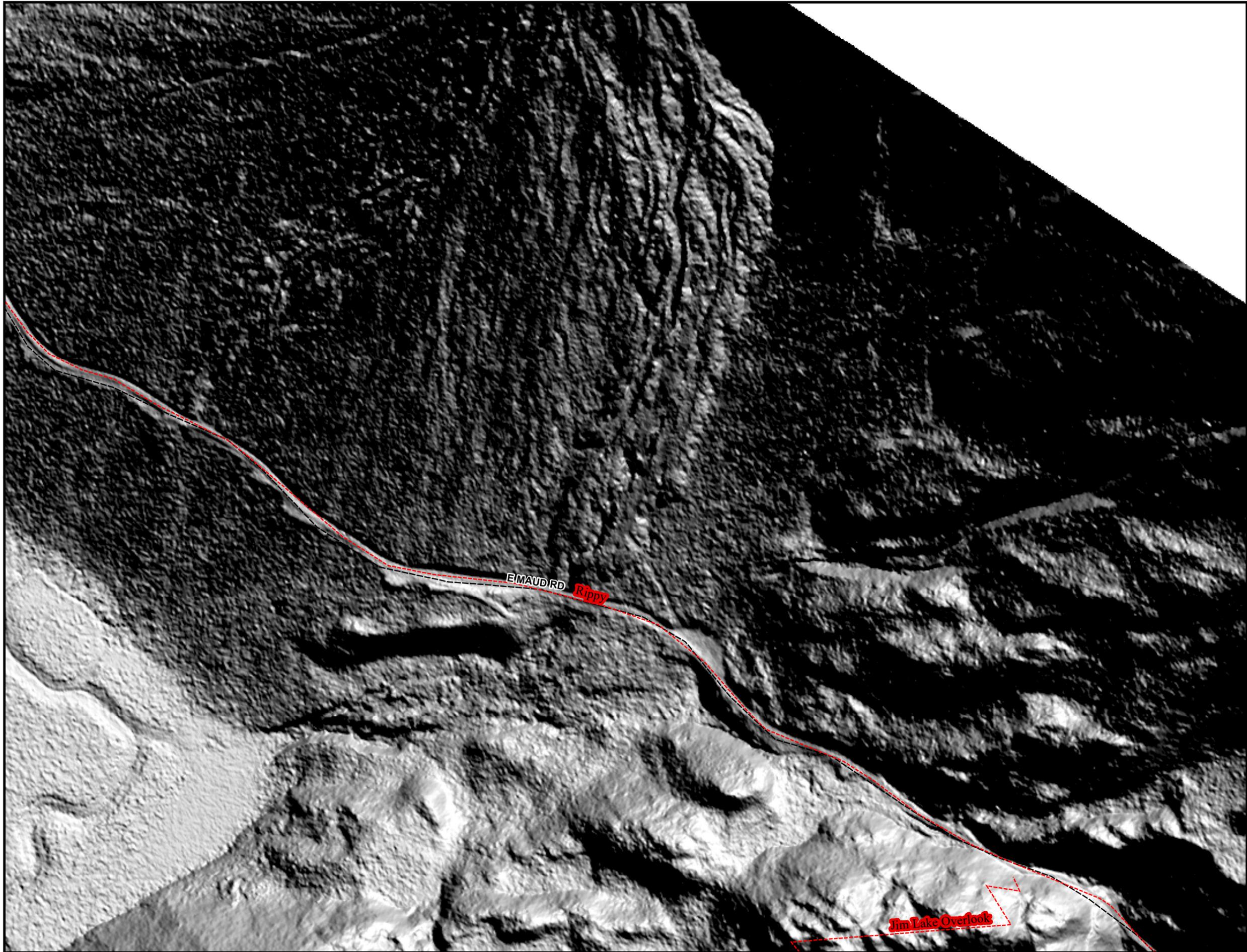
Maud Road Shooting Range
Site Map C

Legend

- MSB Trails
- RS2477 Trails



Date: February 2021
Sources: MSB GIS, MSB LRMD, AK DOT
Projection: NAD 83 AK ST PLN Z4
Location: MSB
Author: MSB LRMD



Matanuska - Susitna Borough
Land and Resource
Management Division



Maud Road Shooting Range
Hillshade Imagery Prior to
Shooting Range Map D

Legend

- MSB Trails
- RS2477 Trails

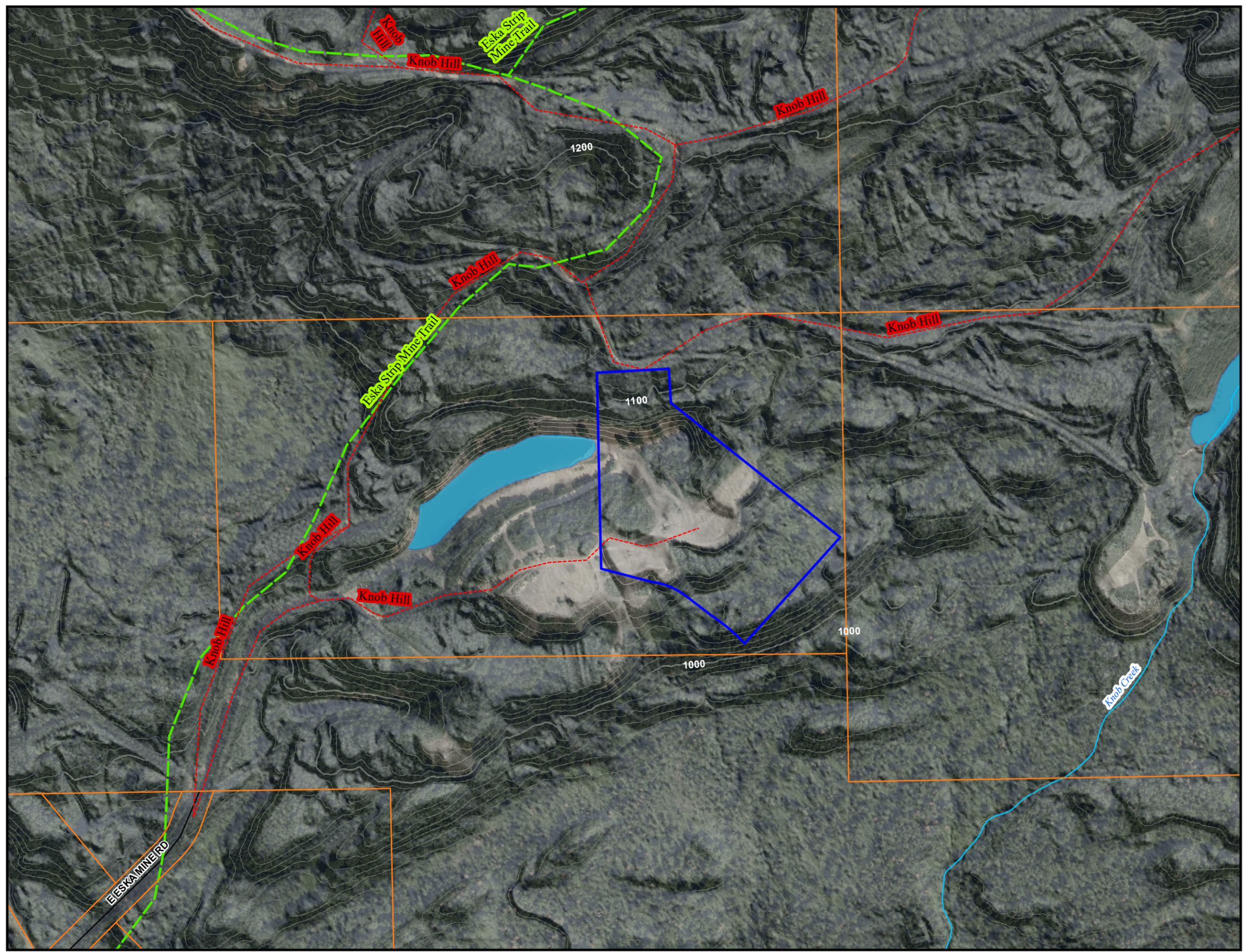


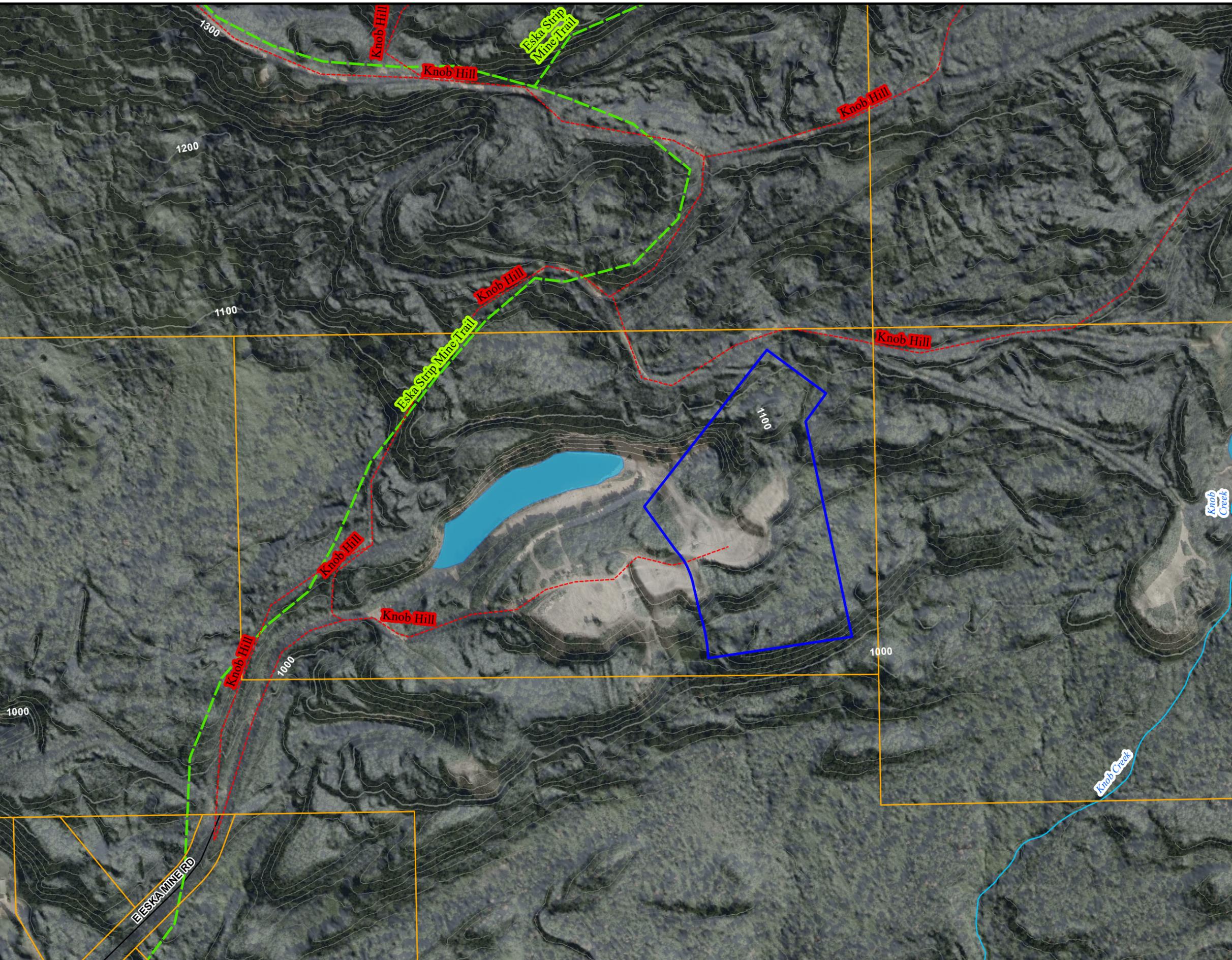
Date: February 2021
Sources: MSB GIS, MSB LRMD, AK DOT
Projection: NAD 83 AK ST PLN Z4
Location: MSB
Author: MSB LRMD



Coyote Lake Property with
Maud Road Range
Footprint Overlay Map E
Legend

-  Parcels
-  Maud Range Footprint
-  MSB Trails
-  RS2477 Trails





**Matanuska - Susitna Borough
Land and Resource
Management Division**



**Coyote Lake Property with
Maud Road Range
Footprint Overlay Map F**

Legend

- Parcels
- Maud Range Footprint
- MSB Trails
- RS2477 Trails



Date: February 2021
Sources: MSB GIS, MSB LRMD, AK DOT
Projection: NAD 83 AK ST PLN Z4
Location: MSB
Author: MSB LRMD



**1.) End of Eska Mine Road
(not on Borough land)**



**2.) Eska Strip Mine Trail (left)
Knob Hill Trail (right)**



**3.) Knob Hill Trail
(southwest corner of Borough Land)**



**4.) Knob Hill Trail
(southwest portion of Borough Land)**



**5.) South-central property line
looking north-east**



**6.) South-east portion of property
looking north**



**7.) South-east property corner
looking north**



**8.) North-east property corner
looking south**



9.) Knob Hill trail split north of property (not on Borough land)



10.) North-west property corner area looking south



11.) South-west portion of property looking north



12.) Looking east at Coyote Lake



**13.) Plateau like area south of
Coyote Lake looking east**



**14.) Plateau like area south of
Coyote Lake looking north**



**15.) Plateau like area south-east of
Coyote Lake looking west**