U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Glennallen Field Office
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Philip Nute – Right-of-Way
Environmental Assessment
DOI-BLM-AKA-020-2012-0030-EA

Applicant: Philip Nute
Case File Number: AA093313

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1.0 INTRODUCTION

1.1 Summary of Proposed Action

Philip Nute has filed a right-of-way application with the Bureau of Land Management (BLM) Glennallen Field Office for travel across BLM managed lands to access mining claims located on adjacent State of Alaska lands. A right-of-way, 25 feet in width, is requested to transport machinery and equipment in support of mining activity.

1.2 Project Area Description and Land Status

The requested access begins at Mile 61.5 of the Richardson Highway. The legal land description for the right-of-way is the NE ¼ Sec. 18, T. 5 S, R. 3 E., Copper River Meridian. The area is commonly referred to as Mosquito Creek trail. Public lands being crossed are unencumbered BLM lands within the PLO 5150 corridor. The right-of-way would be issued for travel over Mosquito Creek trail for approximately 0.49 miles at which point BLM lands end and State of Alaska lands begin.

Figure 1. Typical Section of Mosquito Creek Trail

The BLM initially prepared a Categorical Exclusion (CX) for this action on the basis that Mr. Nute was requesting a right-of-way on an existing road/trail compatibly developed for his intended uses (BLM CX E.16). The BLM circulated the CX for public review and comment prior to making a decision on the authorization. One public comment letter was received and evaluated.

During that process and prior to a decision on the authorization, the BLM determined that Mr. Nute had not yet demonstrated a valid reason for the requested right-of-way. At the time of his application, he did not have a current Alaska Placer Mining Association (APMA) application on file to develop these claims.

On December 17 2012, Mr. Nute submitted his APMA application demonstrating his intent to mine his claims. Under NEPA, the mining of his claims represents a "connected action" to the issuance of the BLM right-of-way. The mining action cannot or will not proceed but for issuance of the BLM access right-of-way. If the connected non-Federal action (i.e., mining on state claims) and its effects can be prevented by BLM decision-making (i.e., denial of the right-of-way grant), then the effects of the non-Federal action are considered indirect effects of the BLM action and must be analyzed as effects of the BLM action (40 CFR §1508.7 and 40 CFR § 1508.25(c)).

For this reason, the BLM has decided to evaluate the right-of-way and connected mining action using an Environmental Assessment (EA). The EA will help the BLM to determine whether the effects of the proposed action, including the connected action of mining on adjacent State Lands, are significant.

Because of the connected action, this EA will evaluate the effects associated with issuing a right-of-way grant as well as the effects of developing mining claims on State land. Note, however, that the BLM does not have jurisdiction over mine plans for operations occurring on non-BLM lands. Therefore, this EA will present and analyze Mr. Nute's mine plan as proposed in his APMA to the State of Alaska.

1.3 Purpose and Need

The BLM action under consideration is a right-of-way authorization. The need for the action is established by BLM's responsibility under the Federal Land Policy and Management Act (FLPMA) to respond to requests for access across public lands. Consistent with 43 CFR § 2801.2, it is the BLM's objective - or, purpose in considering this action - to provide legal access across public lands in a manner that protects natural resources, prevents unnecessary and undue degradation of public lands, promotes the use of rights-of-way in common (where applicable), and coordinates with other interested parties.

1.3.1 Decision to be Made

The decision to be made is whether to authorize the requested right-of-way and, if authorized, what terms and conditions would apply to the right-of-way authorization.

1.4 Land Use Plan Conformance

The East Alaska Resource Management Plan and Record of Decision (RMP/ROD) of September 2007 provide the overall long-term management direction for lands encompassed by the proposed project. The proposed action and alternatives are consistent with the RMP/ROD. Specifically, the proposed action is consistent with the following decisions in the RMP/ROD:

I. LANDS AND REALTY

I-1: Goals

- Provide a balance between land use (rights-of-way, land use permits, leases and sales) and resource protection that best serves the public at large.

T. TRAVEL MANAGEMENT AND OHV Use

T-1 Goals

- Manage OHV use associated with permitted and development activities to provide for access while protecting resources.

1.5 Other Applicable Laws, Regulations, Policies, etc.

The proposed action would be subject to various laws, regulations, and acts including, but not limited to:

- National Historic Preservation Act as Amended 1992
- North America Wetlands Conservation Act of 1989 (as amended 1990 and 1994)
- Executive Order 11987 of May 1977 (Exotic Organisms)
- Executive 11990 of May 1977 (Protection of Wetlands)
- The Bald Eagle Protection Act of 1940 (as amended 1959, 1962, 1972, and 1978)
- Migratory Bird Treaty Act of 1918 (as amended 1936, 1960, 1969, 1974, 1978, 1986, and 1989)

1.5.1 Alaska National Interest Lands Conservation Act

The BLM is required by Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA) to consider potential impacts to subsistence activities, resources, or access to subsistence activities from project proposals. A complete analysis of Section 810 findings is located on file at the Glennallen Field Office.

1.6 Summary of Public Involvement

This EA will be made available for public review for a period of no less than two weeks prior to issuing a decision. The initial notice for this EA was posted on the Glennallen Field Office NEPA Register website on August 28, 2012.

1.7 Issues Identified / Issues Eliminated from Further Analysis

Scoping revealed the following issues in relation to this project

Issues related to the proposed right-of-way:

- How would an improved crossing at Mosquito Creek affect fisheries resources within the creek?
- How would an improved crossing at Mosquito Creek affect hydrology of the creek?
- How would improvements and brushing of Mosquito Creek trail affect the recreational resources of the area?
- How would use of the existing trail by heavy equipment affect cultural resources?

Issues related to the proposed mining activity:

- How would mining activities impact natural solitude, soundscape, and visual resources proximate to the mining area?
- How would mining activities affect water quality in Ernestine Creek?
- How would mining activities affect aquatic resources in Ernestine Creek? For example, would it increase or change sedimentation levels, turbidity, stream morphology, and removal of riparian vegetation.

The following issues were identified but eliminated from further analysis for the reasons provided:

- *Effects to Federally threatened and endangered species*. There are no known occurrences of Federally threatened or endangered species nor habitat for these species in this area.
- *Effects to Subsistence resources and access.* The impacts to subsistence resources and access discussed above would be minimal. There is no reasonably foreseeable significant decrease in the abundance and distribution of harvestable subsistence resources.
- *Effects to Lands with Wilderness Characteristics.* The lands associated with the proposed project do not meet the criteria for Lands with Wilderness Characteristics. Conditions identified in support of this finding include evidence the route was constructed by mechanical means, evidence of regular and continuous motorized use, and determination that the area does not offer outstanding opportunities for solitude or primitive and unconfined recreation. A complete analysis of Lands with Wilderness Characteristics is located on file at the Glennallen Field Office.

2.0 ALTERNATIVES

2.1 Alternative 1 - No Action Alternative

The No Action Alternative would be to deny the requested right-of-way authorization.

2.2 Alternative 2 - Proposed Action Alternative

Right-of-Way
The BLM would grant a 25-foot by 0.49-mile non-exclusive right-of-way across BLM-managed lands to Mr. Nute. The right-of-way would be issued for a period of five years with the option to renew. The right-of-way would allow for overland transport of OHVs, machinery, and mining equipment along Mosquito Creek trail (reference map page 7). Mr. Nute's season of operation would generally be May through October with some variance due to annual snowmelt and freeze-up.

The table below depicts the type, weight, and frequency of use of specific vehicles:

Table I. Proposed Equipment, Equipment Weight and Anticipated Frequency of Use on Right-of-Way.

Vehicle	Weight and PSI	Frequency of Use
TD 15 Dozer	26,000 lbs. 6.5 PSI	Once yearly in/out
Case W 14 Loader x 2	17,500 lbs.	Once yearly in/out
Linkbelt Excavator	28,000 lbs. 5.0 PSI	Once yearly in/out
Wheeled Log Skidder	6,000 lbs.	Once yearly in/out
Shaker Plant	N/A	Once yearly in/out
6X Duece Truck	N/A	Once yearly in/out
Chevy Pickup Truck	N/A	Twice per week
Assorted 4 wheelers	500-700 lbs. 5.0-8.0 PSI	Three trips per week

Brushing (clearing of small vegetation and limbing trees or shrubs) would need to occur along the route to allow for passage of vehicles. Brushing width would typically consist of a 10-12 foot corridor with a slightly larger width along corners of the trail. Approximately 45 feet of vegetation clearing would clear a new trail from the Richardson Highway to the crossing site of Mosquito Creek. This would allow for access to the trail from an existing pullout along the highway.

The Mosquito Creek crossing site would be constructed as a wet or armored crossing. Excavation of the west bank of Mosquito Creek would occur to a depth of 3 feet (to creek bed) with a length of 15 feet to achieve a desired slope of entry and exit from the creek bed. The crossing would be constructed at a 90-degree angle to the creek and filled with material from existing rock and sand bars. Removal of riparian vegetation would not be permitted for this activity. Additionally, for excavation of existing gravel bars, removal of material below current stream bottom would not be permitted.

Figure 2. Mosquito Creek Crossing

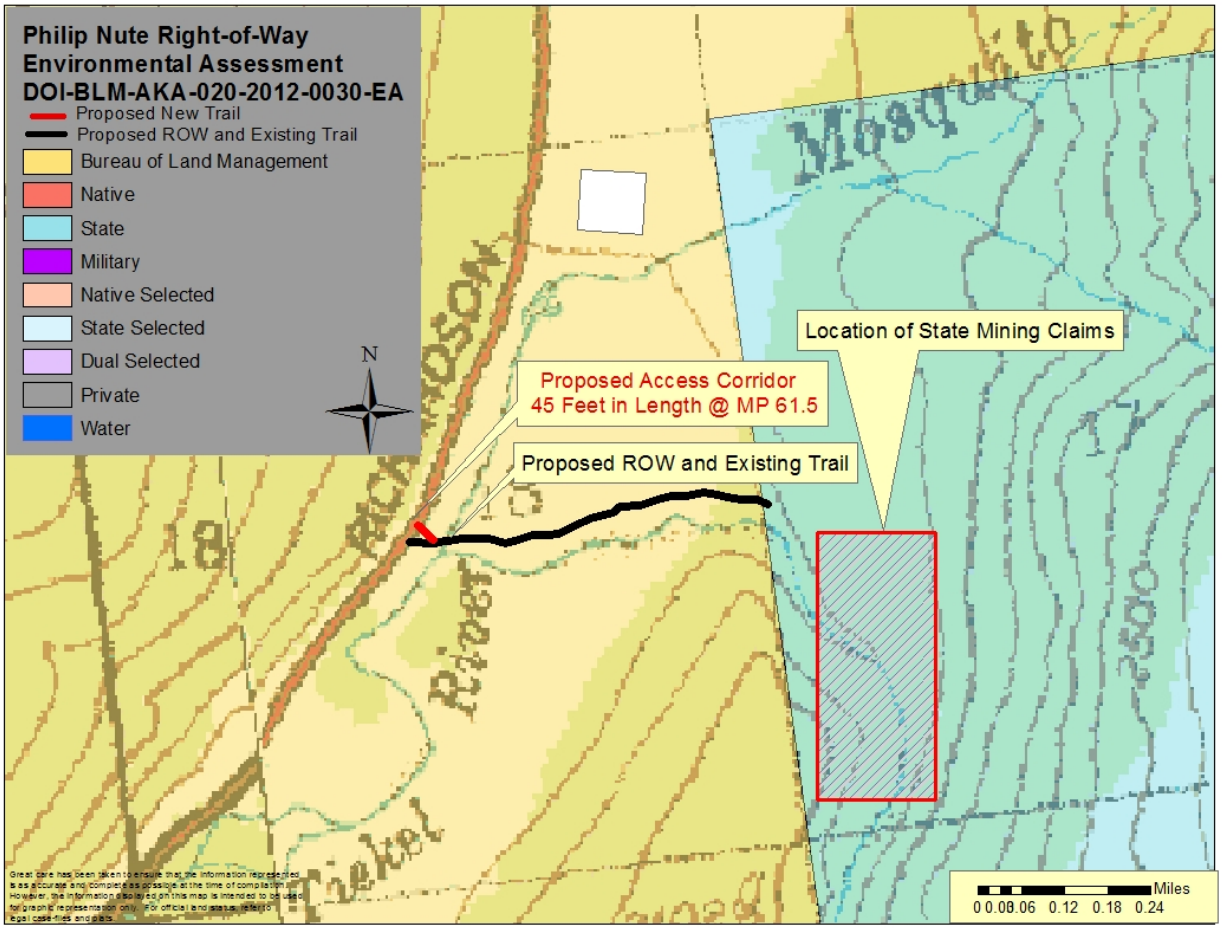

Figure 3. Locator Map, Phillip Nute Right of Way

Mining on State Lands

The mining operation is designed to economically recover gold and complete acceptable reclamation. The layout of the mine is directly related to reclamation procedures. Mining will progress in the following steps:

1. Vegetation, including trees, brush, tundra, etc., will be separated from topsoil and overburden gravel and stockpiled in such a manner as to avoid erosion. Stockpiles will be 100 feet in length, 25 feet in width, and 15 feet tall.
2. Topsoil will be separated and placed next to the vegetation stockpiles. A space will be maintained between the topsoil and vegetation so that the topsoil can be respreads before the vegetation. Each topsoil stockpile will be 100 feet in length, 25 feet in width, and 15 feet tall and located on the left limit of each mining cut
3. Gravel overburden will be used to reconstruct the stream channel and cap ponds. Gravel from each cut will be pushed into the previously mined cut forming a dike for the next recycle pond. The dike will be constructed in such a manner that the largest portion of the pond will be immediately below the processing plant on the left limit. This places the pond sediment away from the reclaimed stream channel. The return portion of the pond will be narrow, the width of the dozer, forcing the fines to settle in the large pond area.

4. A stockpile of gravel, 100 feet in length by 25 feet in width, will be placed on the right limit of the mine cuts and used to reconstruct the stream channel in the left limit of the ponds. Coarse tailings will be pushed onto the pond dike and used to cap ponds.

Reclamation activities will progress in the following steps:

1. Ponds will be drained slowly with care taken not to lose sediment.
2. Reestablished streams will not run through reclaimed settling ponds. The stream will be reestablished to the right limit of the ponds. All sediment will be bailed out and a stable stream channel will be established using tailings stockpiled in the center and right limit of the ponds. The flood plain will be wide enough to prevent erosion during high water events. For this stream the reconstructed flood plain will consist of a stream bed 20 feet in width with side banks 20 feet wide. The banks will have a 20:2 foot slope.
3. The remaining tailing stockpiles will be used to cap the large portion of the pond areas to prevent erosion. Final shaping will be done across the slope rather than up and down.
4. Banks of ponds will be flattened out to allow natural revegetation and avoid erosional degradation. The banks will have a slope of 20:1 feet. Topsoil will then be respreads over the tailings. Finally vegetation will be respreads over the topsoil. The vegetation will trap seeds and moisture as well as reduce erosion.

2.3 Right-of-Way Project Design Features and Resource Protection Measures

The following resource-specific project design features and/or protection measures have been identified will be considered in the final Decision Record for incorporation into the requested right-of-way grant:

2.3.1 Stream Crossing Protection Measures

The applicant has requested to construct a ford stream crossing to provide access to a mining claim. Ford crossings have the least detrimental impact on water quality when their use is infrequent. Ford crossings are adapted for crossing wide, shallow watercourses with firm streambeds.

The location was determined on site visit (09/04/2012) by Tim Sundlov and Cory Larson, see Figure 1. The location has been previously used as a crossing by all-terrain vehicles. The crossing is perpendicular to the direction of the flow of the stream, and at the midpoint between the stream meanders (glide section).

Design Guidelines:

- Make the cross-sectional area of the crossing equal to or greater than the natural channel cross-sectional area. Make a portion of the crossing depressed at or below the average stream bottom elevation when needed to keep base flows or low flows concentrated. Match ford shape to the channel cross-section to the extent possible. To the extent possible, the top surface of the ford crossing shall follow the contours of the stream bottom but in no case shall the top surface of the ford crossing be higher than 0.5 foot above the original stream bottom at the upstream edge of the ford crossing. Make the

downstream edge of the ford crossing with a low-flow hydraulic drop less than 0.5 foot above the original stream bottom.

Material Guidelines:

- Use rock of sufficient size (large gravel to cobble - golf ball to baseball size) to resist mobilization by high (bankfull) flows. Bankfull flow is the discharge that fills a stream channel up to the elevation at which flow begins to spill onto the floodplain. Crossings shall be adequately protected so that out-of-bank flows safely bypass without eroding the streambanks or the crossing fill.

Approach Guidelines:

- Blend approaches to the stream crossing with existing site conditions, where possible. Make the approaches stable, with gradual ascent and descent grades which are not steeper than 4 horizontal to 1 vertical (4:1), and of suitable material (large gravel and cobble) to withstand repeated and long term use.

Side Slope Guidelines:

- Make all side slope cuts and fills stable for the channel materials involved. Make the side slopes of cuts or fills in soil materials no steeper than 2 horizontal to 1 vertical (2:1). Make rock cuts or fills no steeper than 1.5 horizontal to 1 vertical (1.5:1).

Width Guidelines:

- The width will be no more than 30 feet wide, as measured from the upstream end to the downstream end of the stream crossing, not including the side slopes.

Maintenance Guidelines:

- Inspect the stream crossing, after each major storm event and make repairs if needed. Remove any accumulation of organic material, woody material, or excess sediment.

2.3.2 Cultural Resources Protection Measures

- The applicant and all associated activities shall remain within the granted 25-foot right of way and the collapsed and standing historic structures at 49-VAL-510 will be avoided by the applicant's equipment under either the Proposed Action or Alternative 3.

2.4 Alternatives Considered but not Analyzed in Detail

An alternative was considered which would construct a plank or bridge type crossing of Mosquito Creek. This alternative was eliminated due to greater probability of hydrological change to the creek, possible associated erosion, and liability incurred with the existence of such a structure.

The BLM considered an alternative that would have required Mr. Nute to move his heavy equipment in winter months when the ground and stream crossing was sufficiently frozen. This alternative was eliminated from further consideration because it was determined that the

frequency of moving heavy equipment (once yearly in/out) would result in no changes to the effects as described in the Proposed Action.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS

The Proposed Action is located near the confluence of Mosquito Creek and Ernestine Creeks at which point the water regime becomes the Tiekel River. The right-of-way authorization would allow for overland mechanized travel on Mosquito Creek trail. The trail is comprised of compacted, well drained soils and is dry throughout except for the crossing of Mosquito Creek. The existing trail bed ranges from 4-8 feet in width while traversing BLM lands. In the past the trail was maintained at a wider width as evidenced by berms found along the trail. At one time the trail was passable by conventional automobile as there is an older model sedan approximately 0.25 miles in the trail. White spruce, aspen, and cottonwood are present along the trail route as well as a variety of willow and alder species.

Resources affected by the Proposed Action are analyzed in detail below. Where additional mitigation is recommended beyond the *Right of Way Project Design Features and Resource Protection Measures* identified in Section 2.3, individual resources have highlighted these recommendations.

3.1 Fisheries and Riparian Resources

3.1.1 Affected Environment

The riparian vegetation along Mosquito and Ernestine creeks is composed of willow, alder, and grasses. Naturally-vegetated riparian areas perform many beneficial functions for aquatic resources and comprise some of the most important and productive habitat on BLM-managed lands. These riparian functions may be grouped into four broad categories of habitat, water quality, water quantity, and food supply.

The complexity, hydraulic resistance, and stability provided by riparian vegetation to streams affects the size, shape, and distribution of the stream channel and habitat features such as pools, riffles, and undercut banks. The riparian vegetation also helps to maintain the hydrologic connectivity between mainstem stream channels, side channels, tributaries, backwater sloughs, and hyporheic (groundwater) zones.

Water quality functions performed by riparian vegetation includes fine sediment deposition and filtering of containments, thereby reducing erosion and turbidity while maintaining high water quality required by many aquatic organisms. Riparian habitats also provide leaf litter and detritus to rivers and streams supporting the primary production that is the basis of the aquatic food web. An example of a riparian food supply is the detritus (decomposed vegetative matter) from decaying leaves, twigs, etc. which fall into the stream and provide a key energy source fueling the base of the aquatic food chain.

Mosquito Creek is clear-water tributary to the Tiekel River. Glacial water from the Tiekel River back-ups into the mouth of Mosquito Creek upstream 200-300 feet. A natural flood event in Mosquito Creek watershed has caused the channel to severely downcut in some sections. The

current stream channel has created plunge pools with drop heights that may preclude upstream migration for some fish. Fish and riparian habitat inventories have not been completed in Mosquito Creek. However, based on inventories of other streams in the area, it is likely to be used by resident fish species (including Dolly Varden and slimy sculpin) in the area of the proposed right-of-way activity.

Ernestine Creek flows south of Mosquito Creek. There is a glacier at the headwaters of Ernestine Creek and glacial meltwater in the summer months causes Ernestine Creek to be turbid and contain sediment. Fish and riparian habitat inventories have not been completed in Ernestine Creek. However, based on inventories of other streams in the area, it is likely to be used by resident fish species (including Dolly Varden and slimy sculpin) in the area of the proposed mining activity.

3.1.2 Direct and Indirect Effects from No Action Alternative

Under the No Action Alternative, the BLM would deny the requested right-of-way. Subsequently, the mining activity in Ernestine Creek would not occur. Neither transportation of heavy mining equipment across Mosquito Creek nor mining in Ernestine Creek would occur. Under the No Action Alternative, occasional recreation use would continue on this BLM-managed right-of-way. These activities are currently occurring and have not resulted in adverse effects to fisheries and riparian resources in the drainages.

3.1.3 Direct and Indirect Effects from Proposed Action Alternative

Effects of the Proposed Right of Way

The applicant has requested to construct a ford stream crossing to provide access to a mining claim. Ford crossings are adapted for crossing wide, shallow watercourses with firm streambeds. The location was determined on site visit (09/04/2012) by Tim Sundlov and Cory Larson, see Figure 2. The location has been previously used as a crossing by OHVs. The crossing is perpendicular to the direction of the flow of the stream, and at the midpoint between the stream meanders (glide section).

ROWs may affect fish habitat through runoff that may introduce sediment and removal of riparian vegetation. Multiple stream crossings can cause alterations of the streambank's structure and function and may cause the introduction of sediment into the waterway (Weidmer 2002). Frequent stream crossings will cause tire ruts in the stream bed and prevent fish migration.

Effects of the Proposed Mining Operations

It is difficult to determine the effects to riparian resources because of a significant lack of information in the mining plan of operations and lack of habitat stream surveys for Mosquito and Ernestine Creeks. It appears from the hand-sketches that the proposed mining activity would result in the direct modification and relocation of Ernestine Creek stream channel and result in the destruction of aquatic habitat. Ernestine Creek would be diverted into bypass channels while

21 feet of the original channel is mined and then returned to a newly built channel once mining is complete. It has been common practice to construct stream bypasses and new channels with different geometry and physical characteristics (e.g., flood prone and bankfull widths, bankfull depth, sinuosity, slope, entrenchment, and substrate size) than that of the natural channel. As a result, new channels are often straighter, have a higher gradient, and consequently have more energy than the natural channel.

In addition, the mining reclamation plan does not offer any information on the rehabilitation of instream habitat. New reclamation channels often lack the diversity of habitats (pools, glides, riffles) and cover components (undercut bank, overhanging vegetation, and large woody debris) that enhance the quality of habitat in natural channels.

The reclamation plan states that the streambanks would have a slope of 20:2. Construction of tall, steep slopes that high above the level of the stream should be avoided. Such slopes are characterized by surfaces that are high above the groundwater table, excessively well-drained, have poor moisture retention characteristics, and are consequently highly resistant to natural revegetation.

Wherever practical, slopes should be graded to no more than 3:1 (horizontal to vertical) in order to enhance natural revegetation processes. Revegetation success was significantly lower on slopes exceeding 19 degrees in angle; and revegetation success decreased significantly with increasing height above the stream (USKH 2005). The relationship of revegetation success and height above the stream is tied to the availability of groundwater for plant growth. Subarctic riparian plants have characteristically large, shallow root masses, with most of the roots occurring in the upper 1.5 feet of the soil. Newly constructed floodplain surfaces should slope at about 1 percent toward the channel so that overbank flows will be routed back to the channel rather than cutting a new channel in the floodplain (USKH 2005).

3.1.4 Cumulative Effects

Effects of the Proposed Mining Operations

There was no information available on previous mining operations in Ernestine Creek. Most of the aquatic habitat disturbed from mining activity since 1981 on BLM-managed lands in Alaska remains in an impaired condition. Field evaluations by BLM staff and Carlson and Karle (1997) reveal that reclamation, including re-establishing hydrologically stable drainages; properly functioning floodplains and riparian zones; and a diverse mix of habitat types and cover components, has rarely been realized.

The removal of streamside riparian-wetland vegetation during mining would result in loss or degradation of aquatic habitat until proper functioning condition could be reestablished. In general, the time required for riparian-wetland areas to attain proper functioning condition would be dictated by natural processes and may require decades to centuries before it approximates the structure and function of the original aquatic habitat (NCSU 1998; BLM and Montana Dept. of Environ. Quality 1996; BLM 1988). Therefore, most of the riparian habitat disturbed in the next 20 years would be additive to that lost in the past. If placer mining occurs on previously worked

claims, this would result in setting back aquatic/riparian recovery by the number of years between the previous and future operation.

3.1.5 Recommended Mitigation

Proposed ROW

Tire ruts in the streambed should be repaired with a shovel or hoe, frequently, so possible fish passage is not impeded. Adhere to stream crossing stipulations attached to this EA.

Proposed Mining Operations

Topsoil and organic material that have been stockpiled, these materials should be mixed into the upper 1-1.5 feet of the surface of recontoured tailings. This has been shown to promote rapid riparian revegetation on reclaimed surfaces. Tailings should be graded and smoothed in such a way that the final valley shape looks relatively natural and similar to the pre-mining valley configuration, see above for guidelines. After recontouring is completed, bulldozers should be driven up and down slopes, perpendicular to slope contours, so that the resulting surface texture will help prevent the washing of sediments from slopes, and aid in seed capture and moisture retention.

3.2 Hydrology and Water Resources

3.2.1 Affected Environment

Mosquito Creek is a small clear flowing tributary to the Tiekel River. It initiates out of the Chugach Mountains and flows westward to the east side of the Richardson Highway. Main flows are generated from spring snow melt (late May and early June) and summer season precipitation. Mosquito Creek is a low-gradient stream with a well-defined and moderately incised channel. Riparian vegetation consists of a heavy composition of willows and grasses. Water quality is generally considered to be very good.

Ernestine Creek flows just to the south of Mosquito Creek. It is a glacial stream (with glacial sediment) and also flows from the Chugach in a westerly direction to the East side of the Richardson. Flows for the larger Ernestine Creek are also generated from spring snow melt but also include a large contribution of glacial melt between mid-June to mid-September. Due to the glacial input with higher sediment loads and erosional forces, riparian vegetation, and stream bank stability is somewhat compromised. This is more prevalent at low elevations where loosely compacted sands and silt make up the bank structure.

At the confluence of Mosquito and Ernestine creeks is the beginning of the Tiekel River which flows in a southerly and then easterly direction cutting through the Chugach Mountains and emptying directly into the Copper River. For both Mosquito and Ernestine creeks, there are indications of previous human disturbance including: trails; creek crossings; old structures; and miscellaneous solid debris.

3.2.2 Direct and Indirect Effects from No Action Alternative

With the No Action Alternative there would continue to be minimal use of the Mosquito Creek trail and no mining activity on Ernestine Creek. Therefore, water quality and stream bank stability at on both Ernestine and Mosquito creeks would not change.

3.2.3 Direct and Indirect Effects from Proposed Action Alternative

Effects of the Proposed Right-of-Way

Initial bank work would produce short- term increased levels of sediment from bank reshaping and heavy equipment churning. Sediment levels would also increase during and for a short time after vehicle and equipment crossings. Possible stream bank erosion and riparian loss may occur during high-flow periods and be exacerbated by multiple crossing during these periods of high flow.

Effects of the Proposed Mining Operations

The affected stream in the Nute placer mining operation is Ernestine Creek. Direct impact from the proposed operation would result from mechanical placer mining utilizing a TD-15 dozer, 130 Link Belt Excavator, and a W14 Case loader. Equipment would be utilized directly in the stream channel removing stream bank and stream bed for processing through a screen plant. Depending on discharge rates and velocity of water from Ernestine Creek, removal of bed and bank materials would accelerate erosion of disturbed stream banks and immediately increase the amount of sediment entering the stream. The increase in sediment would reduce downstream water quality and potentially negatively impact stream bank stability for downstream users.

It is anticipated that 9,000 cubic yards of material would be processed annually at the mine site. The screen plant process would produce waste water with extremely high Nephelometric Turbidity Unit (NTU) levels. (NTU is a unit used to describe turbidity. Nephelometric refers to the way the instrument, a nephelometer, measures how much light is scattered by suspended particles in the water. The greater the scattering, the higher the turbidity. Therefore, low NTU values indicate high water clarity, while high NTU values indicate low water clarity.) This water would not be acceptable for reentry into the Ernestine Creek without treatment. The mine plan proposes the construction of settling ponds to remedy high sediment. According to State standards, water reentering the stream must be within 5 NTUs of background samples. If there is a mixing zone where settled water re-enters the creek it must be approved through the state and a monitoring protocol must be followed. The construction of settling ponds would require cutting material adjacent to the creek. The combination of cutting and the churning of soil material with large equipment would result again in increases soil erosion and increased sediment inputs into Ernestine Creek. This would again affect water quality and stream bank stability.

The reclamation plans for this proposal include backfilling ponds, reshaping and grading of the banks and flood plain, and replacing top soil and vegetation. It is well understood in Alaska the difficulties in successfully reclaiming a stream resulting in an intact stream channel with stable banks, energy-reducing flood plain, and functional riparian vegetation. Growing seasons are

short which makes reestablishment of riparian vegetation difficult. Winter freeze-up creates thick ice in the channel and sometimes overflow ice on the banks and flood plain which sometimes causes intense erosional forces on the channel during spring break up. Shortly after stream reclamation it may be expected that the newly formed stream banks and flood plain could be lost or damaged due to high stream energy and sediment loads and lack of established stream bank vegetation with rooting capable of holding banks and soils together. The mining plan associated with this proposal shows little planning in regards to stream mechanics and function to help design a new stream channel. For the proposed stream reclamation, because of lack of detailed planning, direct impacts from equipment and stream channel/flood plain destruction, and the Alaska environment and resource characteristics, it can be anticipated there would be bank and floodplain failure and increased erosion and sediment transport.

3.2.4 Cumulative Effects

The Tiekel Block has a long history of mining and many of the streams within the watershed have some history of mining disturbance. As a watershed, mining has had an overall cumulative effect on water quality, stream bank structure and stability, and riparian vegetation. BLM's proposed right of way contributes to the cumulative effects by adding more sediment and stream bank erosion by grading the Mosquito Creek crossing for better access and adding more numerous crossings and added heavy mining equipment. The connected action of the right of way to access state land and development and operation of a placer mine on Ernestine Creek would also add more long-term overall stream sediment, erosion, and loss of riparian vegetation. This is the result of active mining and repeated equipment disturbance directly in the stream channel.

3.2.5 Recommended Mitigation

1) Consider a 50 foot stream buffer thereby leaving the creek, bed, and bank undisturbed.
2) If there are plans for excess pond water to be drained directly into Ernestine Creek, the mine plan should also include a mixing zone permit from the State of Alaska with NTU exceedance limits and a monitoring/reporting program.
3) Seek professional assistance from a hydraulic engineer for design and reclamation of the stream channel. Stream channel design should consider characteristics such as stream discharge, belt width, meander length, bank/height ratios, bank composition, stream gradient, stream profile, cross sectional information, etc. It should also consider an upstream reference reach for future design and planning.

3.3 Recreational Resources

3.3.1 Affected Environment

The Mosquito Creek trail is a seldom used OHV and hiking trail supplying access to the Ernestine Creek watershed and Chugach Mountains. Recreational use is considered minimal and primarily consists of winter trapping and access to bear-baiting stations. Estimated annual use is 30 visits per year.

3.3.2 Direct and Indirect Effects from No Action Alternative

Under the No Action alternative, the BLM would deny the requested right-of-way and access would not be enhanced or improved. Recreational use and access would remain at current levels estimated at 30 visits per year.

3.3.3 Direct and Indirect Effects from Proposed Action Alternative

Effects of the Proposed Right-of-Way

Effects would include increased recreational use and opportunities within the area. The trail would supply access to a prime bear hunting area, increases the availability and proximity to harvestable firewood, and to a lesser degree would serve as an improved access route to the Chugach Mountains for hiking, berry picking, and sport and subsistence hunting. User displacement is not expected as minimal use occurs presently in the area. Some competition for resources may occur once word gets out of a new "trail" in the area.

Effects of the Proposed Mining Operations

Direct effects include changes to the natural solitude, soundscape, and visual resources in proximity to the mining operations. While mining operations would not occur on BLM lands, the operation of machinery and other heavy equipment would produce non-natural sounds that have the potential to reach BLM-managed lands. A recreational user near the boundary of BLM-managed lands would see visual effects (equipment operating, vehicles, structures) and impacts (disturbed ground, vegetation clearing) caused by mining operations on State of Alaska lands. These effects could alter the experience of recreational users and spur them to seek recreational opportunities in a different area.

Indirect effects of the mining operation consist of the potential for future expansion of mining operations or claims. If valuable minerals are recoverable in an economically feasible manner mining operations and activity could increase on State of Alaska lands which would further contribute to changing the character and recreational experience within the Ernestine Creek drainage.

3.3.4 Cumulative Effects

For recreation resources, the geographic scope for cumulative effect considerations is limited to the immediate Mosquito Creek and Ernestine Creek basins. Ernestine Creek, where the applicant's mining activity would occur, is steep-walled and heavily forested. The topography and vegetation in this drainage help to screen both sound and visual impacts. Equipment movement activities and mining activities would be limited to the summer construction season. Therefore, the temporal scope for cumulative effect considerations is limited to the summer season. Given that the mining activities are confined to the Ernestine Creek drainage in the summer months and recreational use is low, the potential for cumulative effects is negligible.

3.4 Cultural & Paleontological Resources

3.4.1 Affected Environment

The project area contains cultural resources that are both historic and prehistoric in nature. There are no known paleontological resources present in the project area. An archaeological survey of the area conducted in 2009 for a trespass cabin removal project located and recorded both standing and collapsed framed cabins, 49 VAL 510, 50 feet east of the existing trail proposed for this project's right of way (Jangala 2009a; 2009b). The trail was also inspected at the time by the same archaeologist, and no additional cultural resources were located along the proposed trail.

3.4.2 Direct and Indirect Effects from No Action Alternative

There are no anticipated effects from the No Action Alternative, since there are no expected changes in the trail's usage from this alternative.

3.4.3 Direct and Indirect Effects from Proposed Action Alternative

Effects of the Proposed Right-of-Way

The project's proposed right of way passes with 50 feet of 49-VAL-510, a standing historic frame cabin and collapsed historic frame cabin near the end of the right of way, adjacent to Ernestine Creek. However, there is only a small chance of adverse effects from this action since the existing trail and proposed right of way are located outside of the site's boundaries.

Effects of the Proposed Mining Operations

The proposed mining activity would occur within the active stream gravels of Ernestine Creek, which has seen extreme flooding in the last decade as well as annual flooding during spring break up and high rain fall periods. This area is unlikely to contain intact cultural or paleontological resources because of this flooding and stream remodeling. Therefore, there are no anticipated effects to cultural resources due to the proposed mining.

3.4.4 Cumulative Effects

Given that no direct or indirect effects were identified, by definition, this project does not incrementally contribute to cumulative effects.

4.0 CONSULTATION AND COORDINATION

This EA was prepared by the Glennallen Field Office Interdisciplinary Team.

5.0 LIST OF PREPARERS

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6.0 REFERENCES CITED

(Additional references cited are available upon request at the Glennallen Field Office.)

Jangala, John W.

2009a. Assessment of Heritage and Paleontological Resources, Glennallen Field Office for the Trespass Cabin Removal Project (GFO-09-09). Ms. on file, Bureau of Land Management Glennallen Field Office, Glennallen. Alaska.

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