USDA United States Department of Agriculture | Forest Service | South Park Ranger District
320 Highway 285
Fairplay, CO 80440
719-836-2031
Fax: 719-836-3875

File Code: 2810
Date: July 5, 2018

CERTIFIED MAIL – RETURN RECEIPT REQUESTED
NUMBER: 7017 1070 0000 6138 2362

Joseph Dorris
Claimant/ Operator
2920 Cedar Heights Drive
Colorado Springs, CO 80904

Dear Mr. Dorris,

I am writing in regards to the Crystal Jack Mine Plan of Operations (MPO) (#***2810-021210-MPO-2017-012***) for lode exploration and mining related activities on the South Park Ranger District of the Pike National Forest. In my June 26, 2018 letter to you, I informed you that I had signed the Crystal Jack Decision Memorandum (DM) on June 22nd and also instructed you on the final two steps necessary for MPO approval.

On July 2, 2018, I received your signed Design Criteria that incorporated into Section IV-A the changes and additions that were identified in the DM. As per the Memorandum of Understanding (MOU) between the Forest Service and the State of Colorado, Division of Reclamation, Mining, and Safety (DRMS), the DRMS is the lead bond authority and will be responsible for calculating your reclamation bond. This bond will need to be submitted to and approved by DRMS and the Forest Service in accordance with 36 CFR 228.13, prior to the authorization of your MPO. This bond will be used as a guarantee of faithful performance with the terms and conditions listed in the MPO. As a reminder, the bond can be adjusted during the term of the MPO in response to changes in the operations or to changes in the economy. Also, you may request a partial bond release following completion of the ground disturbing activities (i.e. all but monitoring).

These last two steps conclude the stipulations listed in the DM. Therefore, I have conditionally approved your Crystal Jack MPO with my signature in Section IX (attached). Operations are authorized to begin on ***July 15, 2018***, and are authorized for 5 years, with completion of all activities including reclamation by **December 31, 2023**.

Please be aware, this approval does not constitute permission to conduct activities that require other agency permits. You are responsible for obtaining all other necessary permits prior to operation. Furthermore, approval of this operating plan in no way authorizes, or in any way permits, a release or threat of a release of hazardous substances or pollutants into the environment that will require a response action or result in the incurrence of response costs.

All designs, monitoring plans, and analyses required by the MPO are subject to the requirement of 36 CFR 228.8 that mining operations be conducted so as, where feasible, to minimize adverse environmental impacts on National Forest surface resources. The operator's compliance with this requirement in no way insulates or releases them from any liability or obligations that may arise with respect to its operations under any applicable environmental law, including but not limited to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA),

42 U.S.C. 9601 et seq. The United States reserves its rights and claims under CERCLA to seek performance of response actions and/or reimbursement of response costs that may be incurred as a result of any release or threat of a release of a hazardous substance from the project, or any ancillary operation for the mining activity.

Prior to ground breaking activities, please contact Geologist Amy Titterington to arrange a field meeting to review the final MPO on site. If you have any questions and/or need clarification regarding the above information, please contact Geologist Amy Titterington at the South Park Ranger District office, by phone at 719-836-2031, and/or by email at amyjtitterington@fs.fed.us.

Sincerely,

JOSHUA S. VOORHIS
District Ranger

Enclosures:

1) Approved Crystal Jack MPO Renewal, signed July 2, 2018
2) DM for Crystal Jack MPO, signed June 22, 2018
3) Design Criteria for Crystal Jack MPO, signed July 2, 2018

cc: elliott.russell@state.co.us; williamsd@co.teller.co.us; Joe Dorris

USDA United States Department of Agriculture
Forest Service
South Park Ranger District
320 Highway 285
Fairplay, CO 80440
719-836-2031
Fax: 719-836-3875

File Code: 1950; 2810
Date: June 22, 2018

To: 2810 Dorris Crystal Jack File 2017-012

DECISION:

Mr. Dorris' original mine Plan of Operations (MPO) was authorized on September 28, 2005, with the option to renew for an additional 5 years, if no changes to his MPO occurred. A sufficiency review was conducted and the MPO was renewed on January 23, 2013, with the same stipulations. Based upon the best available scientific information, my review of the proposed Crystal Jack Mine Plan of Operations (MPO), and comments from the following internal agency district specialists: wildlife biologist, range and botany specialist, recreation specialist, silviculturalist, archaeologist, geologist, realty specialist, hydrologist, and fire management officer, I have decided to re-authorize the Crystal Jack MPO for exploration and mining activities as described below:

1. Allow the operation of an excavator for prospecting and/or mining; this would include overburden removal and vein exploration.
2. Allow the installation of hazard fencing and signing around the perimeter of the active mining area.
3. The use and storage of an excavator for reclamation of mining related disturbances including backfilling, re-contouring previous bench areas, obliteration of non-system roads and distribution of topsoil. The equipment will be removed at the end of the mining season.
4. Allow the use of a portable restroom during the mining season. The restroom will be removed at the end of the mining season.
5. Allow removal of trees only as necessary to access vein exploration.
6. Use of existing, adjacent non-system roads (two-track) for access and parking vehicles and equipment. The access routes are temporary and will be fully reclaimed at the end of the project.
7. Annual reclamation activities will be completed by October 31 of each season and all final reclamation activities will be completed by October 31, five years from the date of this authorization.

The operator will be required to (1) incorporate the design features (criteria) into the final MPO, and (2) post an appropriate reclamation bond as approved by the FS.

Operations approved by this decision will be in compliance with the rules and regulations for operations on NFS lands (36 CFR 228 Subpart A). All operations will be conducted in accordance with the design features to minimize and/ or eliminate environmental impacts on NFS surface resources (36 CFR 228.8). Approval of this MPO is consistent with 36 CFR 228.5.

Implementation will commence once the Plan of Operations is authorized. The Plan of Operations will be authorized for a five (5) year period, which will end on December 31st five (5) years after the Plan of Operations is signed. Once the Plan of Operations period of authorization has expired, and if there have been no changes to the MPO, the existing analysis will be reviewed for sufficiency to determine if it is adequate to re-authorize the *Crystal Jack Mine* Plan of Operations for a further five years.

BACKGROUND:

Joe Dorris, claimant and operator, has submitted a complete proposal on March 28, 2018, to renew his Plan of Operations to mine gemstones near Crystal Creek on the Ute, Two Point, Qui-Buc No. 1, Qui-Buc No. 4, Qui-Buc No. 5, Qui-Buc No. 6, and Qui-Buc No. 7 unpatented mining claims. The unpatented mining claims are found in portions of Sections 34 and 35, T11S, R71W, and portions of Sections 2 and 3, T12S, R71W, 6th Principal Meridian, approximately 5.0 miles northeast of Lake George, Colorado, in Teller County.

The mining operation may be accessed on existing routes, Trail Creek Rd to NFSR 201, NFSR 752, and NFSR 753 to the un-named access roads. The cross-country, non-system roads are approximately 12 feet wide x 2,430 feet long, cumulatively. Total disturbance for access is approximately 0.67 acres. The access road has already been bonded in the operator's previous Plan of Operations. The access route is temporary and will be fully reclaimed at the end of the project.

The total disturbance for the project will be approximately 4.0 acres. To date, 2.0 of the 4.0 acres have been reclaimed under his previous Plan of Operations. There are no current open excavations on the project site. This plan of operation will develop the remaining 2.0 acres at the Crystal Jack Mine.

JOSHUA S. VOORHIS
District Ranger

Enclosures:
1) Crystal Jack Mine Plan of Operations signature page
2) Design Criteria for Crystal Jack Mine
3) Original SIR for Crystal Jack Mine, dated January 24, 2013

cc: elliott.russell@state.co.us; williamsd@co.teller.co.us; Joseph Dorris

FS-2800-5 (7/95)
OMB NO. 0596-0022 USDA, Forest Service
Expires 01/31/2002

PLAN OF OPERATIONS FOR MINING ACTIVITIES ON NATIONAL FOREST SYSTEM LANDS

Submitted by: Joseph L. Dorris (Signature) Operator (Title) 25 Sep 2017 (Date)

Plan Received by: Amy [illegible] (Signature) Geologist (Title) 26 Sept 2017 (Date)

I. GENERAL INFORMATION

A. Name of Mine/Project: CRYSTALJACK

B. Type of Operation: lode
(lode, placer, mill, exploration, development, production, other)

C. Is this a (new/continuing) operation? (circle one). If continuing a previous operation, this plan (replaces/modifies/supplements) a previous plan of operations. (circle one)

D. Proposed start-up date of operation: 1 June 2005

E. Expected total duration of this operation: Twenty (20) years

F. If seasonal, expected date of annual reclamation/stabilization close out: NA

G. Expected date for completion of all required reclamation: 31 May 2025

II. PRINCIPALS

A. Name, address and phone number of operator: Joseph L. Dorris; 2920 Cedar Heights Drive; Colorado Springs, CO; 80904; Tel: (719) 685-4479; E-mail: glacier@frii.com

B. Name, address, and phone number of authorized field representative (if other than the operator). Attach authorization to act on behalf of operator. Owner, Mark Newton (address below) or Timothy L. Dorris; 5092 Laredo Ridge Drive, Colorado Springs, CO 80922; Tel (719) 659-2038; e-mail: timd123@live.com

C. Name, address and phone number of owners of the claims (if different than the operator):
Mark Newton, 6515 North Spokane, Chicago, IL 60646 (773) 631-2910

(If more space is needed to fill out a block of information, use additional sheets and attach to form)

RECEIVED
MAR 2 8 2018
South Park
Ranger District

FS-2800-5 (7/95)
OMB NO. 0596-0022 USDA, Forest Service
Expires 01/31/2002

PLAN OF OPERATIONS FOR MINING ACTIVITIES ON NATIONAL FOREST SYSTEM LANDS

18 Mar 2018 Resubmitted

Submitted by: Joseph L. Dorris (Signature) Operator (Title) 25 Sep 2017 (Date)

Plan Received by: Amy [illegible] (Signature) Geologist (Title) 28 Mar 2018 (Date)

I. GENERAL INFORMATION

A. Name of Mine/Project: CRYSTALJACK

B. Type of Operation: lode
(lode, placer, mill, exploration, development, production, other)

C. Is this a (new/continuing) operation? (circle one). If continuing a previous operation, this plan (replaces/modifies/supplements) a previous plan of operations. (circle one)

D. Proposed start-up date of operation: Continuation of project begun in 1993. Annual startup is approximately 1 June annually

E. Expected total duration of this operation: An additional ten years, through 2028

F. If seasonal, expected date of annual reclamation/stabilization close out: 31 October annually

G. Expected date for completion of all required reclamation: 31 October 2028

II. PRINCIPALS

A. Name, address and phone number of operator: Joseph L. Dorris; 2920 Cedar Heights Drive; Colorado Springs, CO; 80904; Tel: (719) 685-4479; E-mail: glacier@frii.com

B. Name, address, and phone number of authorized field representative (if other than the operator). Attach authorization to act on behalf of operator. Owner, Mark Newton (address below) or Timothy L. Dorris; 5092 Laredo Ridge Drive, Colorado Springs, CO 80922; Tel (719) 659-2038; e-mail: timd123@live.com

C. Name, address and phone number of owners of the claims (if different than the operator): Mark Newton, 6515 North Spokane, Chicago, IL 60646 (773) 631-2910

(If more space is needed to fill out a block of information, use additional sheets and attach to form)

D. Name, address and phone number of any other lessees, assigns, agents, etc., and briefly describe their involvement with the operation, if applicable:

None

III. PROPERTY OR AREA

Name of claim, if applicable, and the legal land description where the operation will be located.

MC#	Name	Section	Township	Range
	See attached list			

IV. DESCRIPTION OF THE OPERATION

A. **Access.** *Show on a map (USGS quadrangle map or a National Forest map, for example) the claim boundaries, if applicable, and all access needs such as roads and trails, on and off the claim. Specify which Forest Service roads will be used, where maintenance or reconstruction is proposed, and where new construction is necessary. For new construction, include construction specifications such as widths, grades, etc., location and size of culverts, describe maintenance plans, and the type and size of vehicles and equipment that will use the access routes.*

Refer to accompanying maps. This is a continuing operation begun in 1993 with prospecting preceding that. Mining access roads for this operation were previously approved and are bonded. No new construction is needed. Access to all sites is from established roads or old two-track roads. Access roads are indicated by solid green lines (Forest Roads) or dashed green lines. (Their location has been field checked and cross checked with Google Earth and in cases does not align with the USGS maps, particularly on the Qui Buc claims.) When this project is complete, all non-system access roads will be obliterated and reclaimed as will the dig sites. The roads are numbered on the attached map and are Forest Roads 201, 753 and 752. Access to Forest Road 201 is off of Teller County Road 32 via Park County 94 off of US 24 at Lake George. All access roads are cleared for 12 feet and are adequate for 4WD vehicles, excavators, and bringing in equipment trailers if necessary, all of which have been using these roads since 1993. The main access road for the Qui-Buc claims, Site N 13, is off of Forest Road 753 and has an unlocked but closed gate. It is 1,000 feet in length and slope (rise over run method) averages 10 percent. The steepest section over 20 feet has a slope of 20 percent. Access to the Ute claim is off of Forest Road 201. We will gate this road near the claim boundary. It currently has a Forest Service closure marker. The east side of this road which also accesses the Ute claim and eventually connects back with 201 is closed for operations on the Ten Percenter. Access is 530 feet to the claim boundary and averages 8 percent slope. Distance across the Ute claim to Dig Site 5 is an additional 500 feet for total distance of 1,030 feet from Road 201. It has an average slope of 10 percent. Access to Dig Site 7 on the Two Point is off of Forest Road 752. The gate

was destroyed by vandals in 2007 because they were upset by the closure. Currently, there is signage that restricts the road to authorized use only. This access road has been in place since before 1990. Distance to the dig site is 400 feet and averages 17.5 percent slope. The road beyond the dig site that served the Rocket claim has been obliterated and reclaimed to the boundary of the Two Point claim. Roads are annually maintained during operations. Erosion is controlled with water bars and restricted use (about ten day per any of these roads per season, but not allowing for unauthorized usage). Maintenance is accomplished with an excavator and includes moving downed trees (Hayman fire), cutting water bars, and filling pot holes as needed. The weight of the machine helps compact fills which lessens future erosion.

These three sites are adjacent to established Forest Roads but not to any main roads or highways. Highway 24 is about 4 miles away by crow flight and is hidden. The Two Point claim site might be visible from Cedar Mountain Road if persons leave the road and are hiking or picnicking. Sites on the Ute and the Qui-Buc claims are not visible except to persons using the mine access roads, hunters, hikers, or rockhounds.

B. **Map, Sketch or Drawing.** *Show location and layout of the area of operation. Identify any streams, creeks or springs if known. Show the size and kind of all surface disturbances such as trenches, pits, settling ponds, stream channels and run-off diversions, waste dumps, drill pads, timber disposal or clearance, etc. Include sizes, capacities, acreage, amounts, locations, materials involved, etc.*

Refer to accompanying maps.
Summary: This operation is covered under Colorado State mining permit M 1993-030 which is bonded for 2.0 acres. It includes 26 sites and 16 prospects. There are 5 sites on the Ute mining claim, 7 sites on the Two Point mining claim, and 14 sites and 16 prospects on the Qui-Buc claims—Qui-Buc No. 1, Qui-Buc N. 4, Qui-Buc No. 5, Qui-Buc No. 6, and Qui-Buc No. 7. (The other Qui-Bucs are under Glacier Peak.) The Qui-Bucs and Ute mining claims are on the northern perimeter of the Lake George Ring Dike structure. The Two Point mining claim is part of the Smoky Hawk Trend. There are currently no open active sites on any Crystaljack properties. All were reclaimed in 2014 or earlier and all show 80 percent or greater revegetation. Site 5 on the Ute, Site N 13 on Qui-Buc No. 1, and Site 7 on the Two Point are currently bonded for operations and total 1.98 acres. About 2.2 acres have been reclaimed and most of those sites have been released under Crystaljack or Colorado Calumet Inc. All sites were inspected in 2015 and cleared for release due to level of reclamation achieved.

The past and pending excavation and working area are indicated on accompanying maps. Because there are no current unreclaimed disturbances on Crystaljack properties (except for some access roads) there are no soil or back fill piles indicated. Shallow berms do exist below almost all reclaimed areas for purposes of erosion control. As a result, there are no backfill or soil piles indicated on the maps. Soil piles and back fill piles will be positioned away from the excavations as delineated in Part C. Maximum disturbance for any given season is estimated to be .75 ac. Approximately half of each annual disturbance will be reclaimed each season. The final season will be final closeout reclamation. Approximately 4 acres of productive area remain on Crystaljack claims but will be added as discovered and as other sites are reclaimed. All intended operations and sequence of operations and resulting reclamation are annually submitted to the South Park Ranger District and the Division of Reclamation, Mining, and Safety (DRMS) as well as reports on completed activities, including annual reclamation.

Exploration prospects (such as 001, 002) are limited to one or two per season if in the vicinity of the production sites and will not exceed 1,600 sq' each. Any prospects will be opened and reclaimed during the active season, unless one shows mineralization. If necessary, it may remain open to the following season for proper exploration and evaluation.

The portable restroom is fixed to a trailer and is located at a suitable spot on the access road within easy access of the excavation site. It is only on site during active operations, about a week at any given Crystaljack site. The red x'd box indicates the approximate intended location. A base camp which will consist of a weather gazebo will be located on the access roads or adjacent as indicated by red box on the maps. This is where mining documentation, personal safety equipment, first aid, hand tools, etc., are maintained, and provides shelter for getting out of inclement weather. If we decide to camp on one of the Crystaljack sites, a tent will be put up on one of these red boxed areas or on the access road. 4WD vehicles will be parked on the access roads. Similarly, the excavator will be brought out to the access road for servicing if necessary. All facilities will be located on bonded dig sites or on bonded access roads or immediately adjacent. Equipment, vehicles, the gazebo, restroom, etc. will be on site only during active operations, approximately one week per any given season.

There are no permanent water sources on any of these mining claims. No excavation will penetrate the water table. Drainage from the Two Point is toward Crystal Creek, 1,200 feet north and 280 feet elevation. Drainage for Site N 13 on Qui Buc No. 1 is 1.1 miles to little Beaver Creek via an intermittent stream. The claim boundary is 960 feet away and 150 feet elevation. Ute claim drainage is 2,200 feet south to Crystal Creek at 320 feet elevation drop.

The map shows previous excavations which have been reclaimed (backfilled, recontoured, reseeded) as green shaded areas. Permitted and pending sites are shown as yellow polygons with green indicating reclaimed areas (if any) within these sites. Currently, there are no open excavations. Remaining berms, if any, are rounded about one foot deep, and similar to the contour grooves formed by the excavator teeth for reclamation. All sites are also indicated on attached Google Earth aerial maps except the smaller reclaimed sites and prospect sites (since nothing is visible.)

C. **Project Description.** *Describe all aspects of the operation including mining, milling, and exploration methods, materials, equipment, workforce, construction and operation schedule, power requirements, how clearing will be accomplished, topsoil stockpile, waste rock placement, tailings disposal, proposed number of drillholes and depth, depth of proposed suction dredging, and how gravels will be replaced, etc. Calculate production rates of ore. Include justification and calculations for settling pond capacities, and the size of runoff diversion channels.*

Nature of economic deposit: All geologic materials on site are silicates. There are no reactive metals or sulfides and all rock is also non-reactive. The potential economic deposits are found in widely scattered pegmatite structures that penetrate the 1.04 billion-year-old Pikes Peak Granite. All crystallized minerals that can be found in NYF pegmatites are being mined. This includes smoky quartz, microcline var. amazonite feldspar, cleavelandite feldspar, muscovite, fluorite, goethite, hematite, topaz, and up to 50 additional associated rare-earth element pegmatite minerals (some of which are unique to the Lake George Ring Dike deposit). All are artisan products which require extensive value added processes to result in economic value. Although the bulk mineral species are "common" they meet the qualification as gem minerals due to rarity and beauty.

Mining and exploration: There is no conventional extraction of ore in the sense of industrial mining. There is no core-drilling, seismic testing, GPR, or other useful traditional sampling

methods. Permit sites are designated in areas where visible samples of pegmatite have been found either on the surface or by digging with pick and shovel. Deposits are irregular and unpredictable and may or may not breach the surface, which when it occurs, provides indications of deeper pegmatites. Very few pegmatite dikes contain cavities with crystallized minerals. All production is through exploration for pegmatite dikes by using excavators. A prospective area is first cleared and top soil is stacked. We then start below slope of the expected dike and start making a cut across slope with the excavator. A berm is cut below where the backfill material is established. As a cut is developed, we watch for pegmatites to be exposed. We cut about three inches per bucket, searching for a cavity in the decomposed granite that may or may not contain economic crystals. There will be no blasting for Crystaljack Mining. If it becomes necessary, an amendment will be filed. There is no milling or processing on site. All crystals are removed off site for cleaning and further preparation.

Mineral extraction: The main piece of equipment for all aspects of our operation is an excavator. Once a cavity is encountered, the wall is made safe by removing any loose material and by cutting a bench. Then the excavator is shut down. All collecting is done with hand tools, generally a geologist's pick and a screwdriver. We use compressed air on occasion to power pneumatic chipping hammers to remove surrounding rock. We also use hand picks to remove surrounding rock. This enables us to open a cavity where we can usually pick out crystals by hand. We use up to 250 gallons of water per season to wash out pockets while collecting. Up to 20 gallons may be used in a day. This keeps us from damaging delicate crystals. Other crystals may be inspected for missing fits by hand washing in a bucket. All water is brought from off site. It is disposed of by spreading on bare ground or by watering tree seedlings. As crystals are pulled from the cavities, we wrap them in newspaper and put them in boxes for taking off site for further cleaning and preparation.

All safety meets MSHA standards. Safety is paramount and proper equipment is used throughout the process including hard hats, safety goggles, high vis vests, gloves, steel boots, sunscreen, ear plugs, etc. Other tools are hammer, chisel, screwdriver, small pick, shovel, etc. All excavations are bermed to prevent rockfall. Working faces are restricted to 8 feet or less. If more, they are benched in 8 foot benches. When cavities are encountered, both sides are driven back and the top is removed so there is no danger from rockfall. Open excavations are broken down at close of season so that they can be safely walked into. During operations, 5 foot barrier fencing is erected as necessary above the open excavations.

Milling and processing: None is done on site. Some crystals are hand washed in water to help examine for missing fits.

Workforce and operation schedule: The workforce usually consists of two to three individuals. One person operates the excavator; the other person watches for both safety and for pegmatite exposure. A third person may assist during collecting, carrying tools, water, etc. All individuals are involved in collecting. Operations consist of up to 60 mechanized days between generally 1 June and 31 October on all operations including Glacier Peak, Quist Exploration, American Dream Exploration, T. D. Minerals, and Crystaljack Mining. This schedule depends on rental availability, workforce availability, etc. We prefer 1 June through 30 July for all operations. An operational day is 8 hours. Operations are intermittent and depend on weather. We do not operate during inclement weather, especially thunderstorms. We will usually first do 25-35 operational days on Glacier Peak sites. We move to the Sky Hawk second and will spend from 5 to 10 days on the Sky Hawk. Remaining operational time will be spent on Crystaljack, Quist Exploration, and American Dream Exploration. We will open a single site on Crystaljack properties in any one season. This will be from 5 to 7 operational days and be included in the 60

total possible days. When we move from Glacier Peak to other operations, we move rental equipment and gear to those other sites. We do not simultaneously operate on other sites. We always maintain the main base camp at the Smoky Hawk for safety reasons and for MSHA. Occasionally, about every third day, we may camp on site at the Crystaljack sites, which means we will camp approximately two nights during any given season on Crystaljack claims. Campsites are on access roads or disturbance areas. The workforce accesses the site with 4WD vehicles and leaves their vehicle on site while operating.

Power requirements: Non-conventional. We use a diesel compressor for chipping hammers. We use a solar cell to recharge batteries for our small water pump for washing crystals.

Clearing: 1.98 acres remains on Crystaljack which has not been cleared; however, clearing will be not greater than .75 acre per season. There are approximately 25 mixed conifers of small diameter at Site N 13 on Qui Buc No. 1 that would be cleared. There are about 6 trees on Site 7 on the Two Point claim. Only small conifers and aspens that are post Hayman fire are on the Ute at Site 5. When clearing one of these sites, limited to one on any given season, we will use our excavator to first cut a substantial berm along the lower permit boundary. We will then clear any timber and brush with the excavator. If necessary, we will use a chainsaw with spark arrestor. Almost all trees are less than five inches in diameter. We avoid cutting trees larger than eight inches if possible. Both brush and timber is placed away from the proposed excavation or in some cases used as cribbing for backfill piles. Sod and forbs are placed in the soil piles and are returned to the excavation last. After reclamation, the timber will be placed cross-slope on reclaimed areas. Additionally, there are some fire-killed trees on Site G-H. These have already been removed and will be put back cross slope when the site is complete.

Topsoil: Topsoil is removed with the excavator bucket, starting at the apex of the dig site and placed behind the excavator at the extension of the excavator arm away from the excavation or in cases of a large excavation in several piles spaced to be within reach of the excavator bucket for reclamation. This is generally over 50 feet. The soil is moderately thin, especially under conifers on rocky ground. On Qui Buc No. 1 Site N 13, it averages three inches. On the Ute, it averages 4 inches. On the Two Point, it averages two to three inches. All of this soil is retained and stockpiled. Sufficient subsoil is also scraped off the dig site, at least six inches or if available, more. This is placed over the topsoil piles to help stabilize and prevent erosion of the soil. The piles are marked. None of these sites have upslope hazards.

Topsoil volume: For Site 5 on the Ute, based on average 4 inches, there are approximately 500 to 550 cu yards of soil that will be stockpiled. On the Two Point, Site 7, with soils depths averaging 2.5 inches, and .67 acres to be excavated there will be about 200 to 230 cu yds of soil for stockpiling. For Qui-Buc No. 1 Site N 13 with 3 inch average depth oand .33 acres to excavate, there will be about 130 to 135 cu yds stored.

Waste rock, backfill, stockpile, tailings, drill holes, dredging: All material except topsoil, occasional boulders, and mined material is stored for backfilling the excavation with the excavator. Mining progresses from the bottom of the slope to the top. Backfill material is placed along the bottom of the excavation and along the perimeters away from soil piles. The berms prevent movement downslope or loose rock from rolling downslope. There will be some rock on Site 7 on the Two Point. This rock is stored with the backfill material; however if some backfill is more rock than gravel, this will be placed in the excavation first. Any outcroppings will blend with exposed fill rock. Backfill material is then placed back and contoured. Soil is placed and spread last. There are no tailings or waste rock. There are no drill holes nor dredging. The volume of backfill material and boulders is equivalent to the depth at which we can penetrate the

decomposed granite. On average we will excavate to a depth of 10 feet on these sites since they are shallow and competent granite is quickly reached. However, the actual volume of material to be replaced at the completion of an excavation is considerably less because an excavation is partially filled as work progresses. Average depth at closeout will be less than 6 feet. Volume of backfill to be replaced will be approximately 9,500 cu yds for the Ute, 6,500 cu yds for Crystaljack, and 3,200 cu yds for Qui-Buc No. 1. Only one of these sites will be excavated in any given season and each site will be reclaimed, recontoured, and reseeded before commencing with another site. 20,000 cu yds. Backfill is replaced as the excavation moves uphill.

All current excavations and disturbances and reclamation and anticipated annual excavations and disturbances and reclamation is annually reported to the South Park Ranger District and the DRMS. This allows computation of reclamation requirements should abandonment occur for any reason.) as well as reports on completed activities, including annual reclamation.

Production of ore: There is no ore in the conventional sense. Unlike mining a conventional deposit, it is not possible to assess the extent or value of production prior to digging. Pegmatite dikes exist throughout the 1,100 square miles of the Pikes Peak batholith. Only a few happen to have crystal cavities. For any given excavation on the Crystaljack claims, we hope to find a cavity that produces about 50 flats (11" x 18" x 4" box) of raw crystals. This approximates 750 pounds of material. Significant value is added by proper cleaning and preparation (offsite.)

Settling ponds and diversion channels: We have no settling ponds. We use berms to trap occasional runoff. Runoff is essentially non-existent except for minor runoff from road surfaces. We use water bars on the roads to direct runoff onto either porous grus in the disturbance areas or onto vegetated forested lands through which the access roads run.

There will be no suction dredging. It is not applicable to this operation

This operation is also permitted under Colorado State Mining Permit M-1993-030 issued 26 April 1993 by the Colorado DRMS. Copies of all data and submittals to acquire these permits were furnished to the U.S.F.S. South Park District Rangers Office and should be considered part of this operations plan.

Additionally, all annual maps which show reclamation accomplished to date and all pending sites are also submitted to the Colorado State DRMS. Annual copies of these reports have also been submitted to the U.S.F.S. South Park District Rangers Office. They should also be considered part of this operations plan and further clarify and expand numerous aspects of this plan.

D. **Equipment and Vehicles.** *Describe that which is proposed for use in your operation (Examples: drill, dozer, wash plant, mill, etc.). Include: sizes, capacity, frequency of use, etc.*

We have no mills nor wash plants. We will use one rental excavator, a John Deere 350 or equivalent, 39 tons with 2 cu yd bucket. If necessary, we use an Ingersoll Rand 300 air compressor to run pneumatic chipping hammers. We may use a hydraulic hammer attachment to the excavator since sites on the Crystaljack claims have more rock. The compressor and hydraulic hammer are towed by a 4WD truck into position. We use a 250 gallon tank for water with garden pump and hoses. The workforce uses private 4WD vehicles to access site and these are parked on site. We usually have two to three 4WD vehicles on site during mechanized operations. Hopefully we will not have any maintenance trucks. Visitors will park along the access roads and may average two per day while

operating on Crystaljack claims. (This is because this site is located near Forest Road 752 and people stop to see what we are doing.) Operations will normally be continuous for 5 to 7 days on a single site in any given season on the Crystaljack sites. Otherwise, hand-collecting and mineral extraction will continue throughout the season without use of mechanized equipment.

E. **Structures.** *Include information about fixed or portable structures or facilities planned for the operation. Show locations on the map. Include such things as living quarters, storage sheds, mill buildings, thickener tanks, fuel storage, powder magazines, pipelines, water diversions, trailers, sanitation facilities including sewage disposal, etc. Include engineering design and geotechnical information for project facilities, justification and calculations for sizing of tanks, pipelines and water diversions, etc.*

No structures will be built. No powder magazines will be used. No fuel will be stored on site. No tanks, pipelines, or water diversions will be needed, nor used. Mining activity will be conducted during the daylight hours. Personnel will remain overnight on site only during the active phase of mining when equipment, approximately two nights during five to seven operational days on Crystaljack. Personnel will camp on the disturbance site. All personnel will practice minimal-impact camping. A portable restroom attached to a trailer will be used, and all refuse will be removed from site to a sanitary landfill. Between active operation phases, nothing will remain on site. All Crystaljack sites will be clean. Nothing will be present nor stored. Berms will be established and will be maintained until 80% or more coverage is reestablished.

V. ENVIRONMENTAL PROTECTION MEASURES (SEE 36 CFR 228.8)

A. **Air Quality.** *Describe measures proposed to minimize impacts on air quality such as obtaining a burning permit for slash disposal or dust abatement on roads.*

Impact is minimal. No slash will be burned. No open fires will be used. No haulage will occur. There is no crushing or milling. As a result, minimal dust is generated and is equivalent to that generated by wind across surrounding forest lands which is below mitigation requirements. The exception is the forest roads which are heavily used by ATVs and 4WDs and can produce 30 to 90 pounds of dust north of this site on any given day. Decomposed granite retains significant moisture and once the first couple of inches has been removed (after soil removal and the surface dries), the material is damp and produces no measurable dust. During reclamation, this can be greater; however, this is during a very short period of time. It is not feasible to water the material during reclamation due to slope and accessibility. Similarly, dust from our daily travel is mitigated by 5 mph speeds on the 400 feet to .2 mile access roads and is negligible. Daily travel will amount to about 15 days per year for two to three vehicles during active mining operations. Equipment is roaded in at 3.8 mph once and removed once unless an excavator is brought in for a second time to complete reclamation.

B. **Water Quality.** *State how applicable state and federal water quality standards will be met. Describe measures or management practices to be used to minimize water quality impacts and meet applicable standards.*

1. *State whether water is to be used in the operation, and describe the quantity, source, methods and design of diversions, storage, use, disposal, and treatment facilities. Include assumptions for sizing water conveyance or storage facilities*

2. *Describe methods to control erosion and surface water runoff from all disturbed areas, including waste and tailings dumps.*

3. *Describe proposed surface water and groundwater quality monitoring, if required, to demonstrate compliance with federal or state water quality standards.*

4. *Describe the measures to be used to minimize potential water quality impacts during seasonal closures, or for a temporary cessation of operations.*

5. *If land application is proposed for waste water disposal, the location and operation of the land application system must be described. Also describe how vegetation, soil, and surface and groundwater quality will be protected if land application is used.*

This site is covered under water quality discharge permit COR 340808. There is no discharge. No wastewater is produced nor are any appreciable amounts of water used in this operation. A maximum of 20 gallons of water, brought in from off site, may be used per day to help in crystal extraction and cleaning. Water is used only to remove mud or to reveal crystal pockets. No runoff is produced. All rain is quickly absorbed into the excavations or small pits. Intermittent runoff during storm episodes may occur from access road surfaces and is dispersed via water bars onto the surrounding vegetation. All drinking water is brought in from off site. Excavations are not located near any open water or intermittent streams. None will penetrate the water-table at any point. Drainage from the Two Point is toward Crystal Creek, 1,200 feet north and 280 feet elevation. Drainage for Site N 13 on Qui Buc No. 1 is 1.1 miles to little Beaver Creek via an intermittent stream. The claim boundary is 960 feet away and 150 feet elevation. Ute claim drainage is 2,200 feet south to Crystal Creek at 320 feet elevation drop. Excavations are fully bermed, not only to stop rockfall but to prevent any possible runoff during a cloudburst or severe storm event.

C. **Solid Wastes.** *Describe the quantity and the physical and chemical characteristics of solid waste produced by the operation. Describe how the wastes will be disposed of including location and design of facilities, or treated so as to minimize adverse impacts.*

All solid materials from mining will be reincorporated and re-countered into the backfills. All minerals being extracted are silicates and are non-reactive. No secondary, harmful substances, such as oxides, acids, etc., are produced through exposure to weathering and no chemical characteristics of these minerals are damaging to the environment. All garbage and refuse will be hauled off site daily and disposed of in a sanitary land fill. This includes lunch wrappers, possible grease tubes, etc. What is brought on site is removed from the site. Nothing is allowed to accumulate. The portable restroom will be taken off site to be serviced weekly or more frequently as needed.

D. **Scenic Values.** *Describe protection of scenic values such as screening, slash disposal, or timely reclamation.*

We have pre-photos of our permitted sites. Many are from post Hayman fire, and hence do not show the desired scenic end goal. They do show the natural geologic features and contours. Although all active mining sites will temporarily not be scenically appealing, upon reclamation we recontour and reshape the areas to match what the previous area looked like as much as the earth features can be addressed. We start planting trees and shrubs the following season of reclamation in order to speed up blending the disturbance back into the surrounding area. The mining sites are relatively remote and infrequently visited by other people. None of these sites are visible from Forest Roads, 752, 753, or 201. They are behind limited access gates or signage. It is possible the Two Point claim, Site 7, will be visible from Cedar Mountain Road if people pull off that road and walk to where they can see the site across the valley. Currently, the most use in the area is by off-road vehicles, 4-wheelers, and dirt bikes. Secondary use is by rockhounds who are looking for areas to collect crystals. They are the most likely to walk onto a disturbance area. Visual impact is minimized by restricting the size of the

excavations wherever possible and refilling excavations as soon as possible. Currently, all sites are reclaimed and revegetated. Our goal is to protect the scenic values as much as possible and return the land to productive wildlife habitat and a scenic state as soon as possible.

E. **Fish and Wildlife.** *Describe measures to maintain and protect fisheries and wildlife, and their habitat (includes threatened, endangered, and sensitive species) affected by the operations.*

Wildlife is attracted to the reclaimed sites especially by the new growth from shrubs and grasses. Active sites are generally adjacent to these sites. Any high wall areas during operations are fenced. At close of operations, high walls are broken down and partially refilled. This makes the site safe to persons as well as wildlife. My standard is that if I can walk into an excavation then a deer or elk can do the same. We don't have open fires. We are also careful not to leave any food around to inadvertently attract wildlife. We also leave all slash near the excavations since this is used as mulch or erosion control upon reclamation. No threatened, endangered, or sensitive species have been identified within our areas of operation. I am also familiar with these species and have been watchful for them. My plan is not to operate in areas which might endanger fisheries or wildlife. I plan to protect as much of the diverse ecosystem and habitats as much as possible. Reclamation is carried out as quickly as possible to ensure that the return to a productive wildlife habitat is as soon as possible. In addition to the required native seed mixture, we are also planting shrubs for wildlife and replacing the timber, especially in areas damaged by the Hayman fire.

F. **Cultural Resources.** *Describe measures for protecting known historic and archeological values, or new sites in the project area.*

No known areas of historic value or archeological sites have been discovered or are known to exist in this area of operations. The mining district, itself, is the most historic location in the world for amazonite and smoky quartz. It has produced the world's finest specimens since the late 1800's.

G. **Hazardous Substances.**

1. *Identify the type and volume of all hazardous materials and toxic substances which will be used or generated in the operations including cyanide, solvents, petroleum products, mill, process and laboratory reagents.*

No hazardous substances will be used on site nor produced by this operation. Diesel fuel will be brought on site for the excavator every third day in a sealed, 50-gallon tank on a 4WD truck for refueling. No fuel or lubricants will be stored on site. They will remain in the bed of a truck as much as practical while being used on site. A spill blanket is used during refueling operations. The excavator will also be returned to a level and safe area for refueling. No refueling will take place in the excavations or during hazardous conditions. The South Park Ranger number is 719 836 2031, Teller County Sheriff is 719 687 6652, and the Division of Reclamation, Mining, and Safety is 303 866 3567.

2. *For each material or substance, describe the methods, volume, and frequency of transport (include type of containers and vehicles), procedures for use of materials or substances, methods, volume, and containers for disposal of materials and substances, security (fencing), identification (signing/labeling), or other special operations requirements necessary to conduct the proposed operations.*

Diesel fuel is transported in an approved 50-gallon tank which is attached to the truck. Refueling takes place approximately every third day.

3. *Describe the measures to be taken for release of a reportable quantity of a hazardous material or the release of a toxic substance. This includes plans for spill prevention, containment, notification, and cleanup.*

There will be no release of toxic materials due to this operation. Additionally, the mined substances do not produce any toxic substances. Should we have an accidental spill of diesel fuel, we will follow the spill reporting rule as outlined by the Division of Minerals and Geology, dated 2 August 2005. This includes notifying the Division of Reclamation, Mining, and Safety 303 866 3567, the South Park Ranger District, 719 836 2031, and the Teller County Sheriff, 719 687 6652. It also includes treating with aeration and introducing oil-degrading bacteria.

H. **Reclamation.** *Describe the annual and final reclamation standards based on the anticipated schedule for construction, operations, and project closure. Include such items as the removal of structures and facilities including bridges and culverts, a revegetation plan, permanent containment of mine tailings, waste, or sludges which pose a threat of a release into the environment, closing ponds and eliminating standing water, a final surface shaping plan, and post operations monitoring and maintenance plans.*

See attached map which shows permitted sites under this plan of operations. Those reclaimed sites which are outlined in red show our reclamation efforts since mining began on the Crystaljack claims in 1993. They show our standard of reclamation. This reclamation is also annually reported to the South Park Ranger District and DRMS. We intend to continue reclamation with high standards.

Each excavation is closed and reclaimed as soon as possible after operations. On Crystaljack claims, we will use one excavator, John Deere 350 or equivalent, with a 2 cu yd bucket for close-out reclamation. Reclamation on the largest site on Crystaljack on the Ute will take 3 working days. The other sites will take between 1.5 and 2 days. Reclamation time is based on previous experience and the fact that material is partially returned to the excavation as work progresses. It does not have to be hauled back to the excavation. The excavator can reach and swing backfill and topsoil from where it is stored. Generally, an excavation will be completely filled and reclaimed with substantial growth within three years of initial work. During work, an excavation may be partially filled and reclaimed instead of waiting until the final work. In any case, no excavation will remain un-reclaimed after completion for more than a season.

Reclamation will consist of refilling the excavation with stored rock and backfill and regrading the site. Topsoil is stored as far from the excavation as possible. It is capped with several inches of subsoil to protect it from possible loss and is seeded so it generally has some vegetation cover. It is stored in piles placed at appropriate distances for efficient and quality replacement. All the topsoil piles all located within the permit boundaries within reach of our excavator to decrease inadvertent loss through repeated movement. By using an excavator, we have better control of redistribution of the soil and there is less loss than trying to use a bulldozer. We can spread it more evenly around boulders, distribute it as needed onto shallower sites (or remove from deep sites), and we can form it better to the natural pre-existing contour. It does take longer. There are 1.98 acres remaining on the Crystaljack claims to be excavated. Base on average depths, if all the soil was stockpiled in one season, we would have about 900 cu yds of stored topsoil. However, we limit operations to one site per season, as well as stripping a maximum of .75 acres in anyone season. All topsoil will be replaced on the dig sites to their original depth, approximately 3 to 4 inches. After spreading the topsoil, it will be reseeded using the South Park District's dry/lower elevation seed mix (per attached). Whenever possible, trees will be planted

the following year. Each site varies but we plant ponderosa or Douglas fir depending on the surrounding timber and nature of coverage (We have planted several hundred Douglas fir, ponderosa, and aspen on a number of Crystaljack sites. We have also planted several hundred shrubs including wax currant, chokecherry, meadow rose, and mountain mahogany.) Once reseeded and trees are planted, we monitor and photograph all sites for annual growth. This is included in annual reclamation reports to the South Park Ranger District and Colorado DRMS. If reclamation should not be successful for any given site, the process is repeated until 80% coverage or better is achieved and the habitat has been returned to a productive and healthy status. If there are subsequent areas of erosion (we have not experienced any) we will regrade, recontour, and reseed as necessary.

All heavy-traffic areas, walk-ways for equipment, non-system roads, working pads, camp sites, and any other disturbed areas will be reclaimed in a like fashion. We will scarify all roads, return some rock to improve the natural look, place logs cross slpe, and reseed to permanently close and obliterate the road. Reseeded water bars or similar berms will remain to insure against erosion. Additionally, all pre-existing hand-dug pits, trenches, and excavations within the immediate area of operations will also be reclaimed.

Reseeding is done in the fall by broadcasting the seeds immediately after reclamation when the soil is loose. Generally mulching, matting, and fertilizer is not necessary. By using an excavator, we can swing the bucket to form semi-concentric curves across the sloped surface of the reclaimed area. These are like small troughs or groves about six inches apart as well as deep. These trap the seeds from washing away and also trap moisture for better germination. The first rain often breaks these small ridges down and increases the number of seeds that become buried giving results close to drilling the seed. The small groves also provide greater protection to the seeds than if broadcast on a relatively smooth surface. We put mulch from the dig sites in the soil piles. In places, this is groused into the reclaimed area by using the excavator's tracks to push small branches and dead shrubbery back into the ground.

Little can be done against noxious plants other than to quickly reestablish the grasses which will out-compete them, especially because grasses form a mat of growth. Because the approved mix includes mostly bunch grasses which are slow growing and provide poor ground cover until established, we also use reGreen (wheat) in our mix in order to reestablish some rapid growth on the reclaimed areas. By immediately planting shrubs and trees, we also cut down on the noxious plants since normal trees and shrubs are not seen in natural succession of a disturbed area for three to five years. As the shrubs and trees mature, they will subdue the noxious plants. We monitor our sites. We have eradicated noxious plants by hand pulling or digging when noticed, in attempt to prevent establishing larger colonies. Whenever we have done this, we have also reseeded these areas in an effort to get grass growing. If there becomes a noxious plant problem, we will report this to the South Park Ranger District for possible control efforts.

No waste rock is produced. All rock and backfill will be reconstituted into the excavations. We use the near-40 ton excavator to improve compaction of the backfill and to reduce the fluff factor. Soil is spread over this. During active mining, backfill and rocks are placed in piles downslope of the working face. (Excavators work more efficiently by pulling material from below them rather than from above them.) The excavations are also partially filled while the excavation moves upslope. In this respect, the excavation is two-thirds already backfilled when operations are completed. All piles are stabilized by limiting the height and by berming the aprons or cribbing the aprons with timber.

VI. FOREST SERVICE EVALUATION OF PLAN OF OPERATIONS

A. Required changes/modifications/special mitigation for plan of operations:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

(If more space is needed to fill out a block of information, use additional sheets and attach to form.)

B. **Bond.** Reclamation of all disturbances connected with this plan of operations is covered by Reclamation Performance Bond No. _____, dated _____, signed by _____ (Principal) and _____ (Surety), for the penal sum of _____. This Reclamation Performance Bond is a guarantee of faithful performance with the terms and conditions listed below, and with the reclamation requirements agreed upon in the plan of operations. This Reclamation Performance Bond also extends to and includes any unauthorized activities conducted in connection with this operation.

The bond amount for this Reclamation Performance Bond was based on a bond calculation worksheet. The bond amount may be adjusted during the term of this proposed plan of operations in response to changes in the operations or to changes in the economy. Both the Reclamation Performance Bond and the bond calculation worksheet are attached to and made part of this plan of operations.

Acceptable bond securities (subject to change) include:

1. Negotiable Treasury bills and notes which are unconditionally guaranteed as to both principle and interest in an amount equal at their par value to the penal sum of the bond; or
2. Certified or cashier's check, bank draft, Post Office money order, cash, assigned certificate of deposit, assigned savings account, blanket bond, or an irrevocable letter of credit equal to the penal sum of the bond.

VII. TERMS AND CONDITIONS

A. If a bond is required, it must be furnished before approval of the plan of operations.

B. Information provided with this plan marked confidential will be treated in accordance with the agency's laws, rules, and regulations.

C. Approval of this plan does not constitute certification of ownership to any person named herein and/or recognition of the validity of any mining claim named herein.

D. Approval of this plan does not relieve me of my responsibility to comply with other applicable state or federal laws, rules, or regulations.

Crystal Jack

E. If previously undiscovered cultural resources (historic or prehistoric objects, artifacts, or sites) are exposed as a result of operations, those operations will not proceed until notification is received from the Authorized Officer that provisions for mitigating unforseen impacts as required by 36 CFR 228.4(e) and 36 CFR 800 have been complied with.

F. This plan of operations has been approved for a period of 5 YEARS or until 12/31/2023. A new or revised plan must be submitted in accordance with 36 CFR part 228, subpart A, if operations are to be continued after that time period.

VIII. OPERATING PLAN ACCEPTANCE

I/We have reviewed and agreed to comply with all conditions in this plan of operations including the required changes, modifications, special mitigation, and reclamation requirements. I/We understand that the bond will not be released until the Authorized Officer in charge gives written approval of the reclamation plan.

Joseph L. Ward — Operator (or Authorized Representative)

28 June 18 — (Date)

IX. OPERATING PLAN APPROVAL

Josh Voorhis — (Name)

District Ranger — (Title)

John S Voorhis — (Authorized Officer)

7/2/18 — (Date)

III. PROPERTY OR AREA

MC#	NAME	SECTION	TOWNSHIP	RANGE
6833	UTE	2	TWP-12-S	RNG-71-W
48354	TWO POINT	3	TWP-12-S	RNG-71-W
48355	QUI-BUC NO. 1	35	TWP-11-S	RNG-71-W
48358	QUI-BUC NO. 4	35	TWP-11-S	RNG-71-W
48359	QUI-BUC NO. 5	34	TWP-11-S	RNG-71-W
48360	QUI-BUC NO. 6	35	TWP-11-S	RNG-71-W
48361	QUI-BUC NO. 7	34	TWP-11-S	RNG-71-W

Claims listed above are shown highlighted in yellow on the accompanying index map for CRYSTALJACK mining on the U.S.G.S. Hackett Mountain, Colorado quadrangle map.

IIB. PRINCIPALS

B. Authorized field representatives in addition to the operator, Joseph L. Dorris, are owner, Mark Newton and Timothy L. Dorris.

Mark Newton is also the authorized field representative for CRYSTALJACK Mining for the listed claims in this operations plan. He is authorized to act on behalf of the operator in his absence and on an "as need be basis." This authorization runs concurrent with this operations plan.

Should neither Mark Newton nor the operator be available, Timothy L. Dorris is also an authorized field representative for CRYSTALJACK Mining. This authorization is for an emergency basis only. This authorization runs concurrent with this operations plan.

Joseph L Dorris — 25 Sep 2017

JOSEPH L. DORRIS — date

APPENDIX F
REQUIRED SEED MIXES

Dry / Lower Elevation Seed Mix (7,500 to 10,000 feet in elevation)

SCIENTIFIC NAME	COMMON NAME	HABIT	LIFESPAN	% MIX
Elymus lanceolatus ssp. Dasystachyum var. Critana	Thickspike wheatgrass	Sod former	Long-lived	23
Bromus marginatus var. Bromar	Mountain brome	Bunchgrass	Short-lived	20
**Festuca arizonica* var. Redondo	Arizona fescue	Bunchgrass	Long-lived	15
**Festuca ovina* var. Covar	Sheep fescue	Bunchgrass	Long-lived	15
Koeleria cristata (macrantha)	Prairie junegrass	Bunchgrass	Short-lived	15
Leymus cinereus var. Magnar	Great basin wildrye	Bunchgrass	Long-lived	10
Bouteloua gracilis var. Hachita	Blue grama	Sod former	Long-lived	10
Poa canbyi var. Canbar	Canby bluegrass	Bunchgrass	Medium	5
Trifolium fragiferum	Strawberry clover	Legume	Short-lived	2

*Choose only one of these fescues; Arizona fescue is preferred.

Riparian Seed Mix (streamside areas or wetlands)

SCIENTIFIC NAME	COMMON NAME	HABIT	LIFESPAN	% MIX
**Carex aquatilis*	Water sedge	Rhizomatous	Long-lived	30
**Carex nebrascensis*	Nebraska sedge	Sodformer	Long-lived	30
Deschampsia caespitosa	Tufted hairgrass	Bunchgrass	Long-lived	20
Calamagrostis Canadensis	Bluejoint reedgrass	Sodformer	Pioneering	15
Juncus balticus	Baltic rush	Sodformer	Medium	15
Beckmannia syzigachne var. Egan	Sloughgrass	Rhizomatous	Short-lived	10
Eleocharis parvula	Spikerush	Rhizomatous	Pioneer	10

*Choose only one of these sedges; the Nebraska sedge may be preferred.

Design Criteria for Crystal Jack Mine Plan of Operations
July 2018

DESIGN CRITERIA

Forest Service wildlife biologist, botanist, archaeologist, geologist, hydrologist, recreation, lands, timber, wilderness, fuels, and fire specialists have reviewed the proposed project. Measures necessary to protect threatened or endangered species, Region 2 sensitive species, their habitat, or potential habitat from the effects of the proposed management actions are addressed through the development of project design criteria. Design criteria are intended to minimize the project's effects to the environment. The FS has created the following design criteria that will be required of the Operator to be incorporated into the final MPO prior to MPO approval. Specific design criteria include:

Administration and General Site Requirements

1. The bond for this operation must be posted prior to commencing any exploration activities. The amount of bond would be calculated to ensure full reclamation and revegetation of areas disturbed by the exploration activity.
2. The Operator shall arrange for the FS to inspect any mining-relate equipment, prior to it entering NFS lands at the beginning of each operational period, in order to prevent the spread of noxious weeds and their seeds.
3. The Operator will dispose of camper holding tank contents (if applicable) at an offsite facility or provide a temporary self-contained portable toilet.
4. In the event previously unidentified cultural or paleontological materials are discovered during project implementation, all work will cease until a qualified archaeologist is contacted and the need for further investigation and consultation determined.
5. Operations may be suspended and/or changed if the FS administrator determines that they are not compliant with this decision, the approved Plan, applicable laws or regulations, or that resource conditions have changed. Operations may resume after compliance items have been resolved between the Forest Service, the Operator, and appropriate regulatory agencies.
6. The operator is required to be consistent with Teller County building and sanitation code requirements, with CDRMS permitting requirements, and with the Colorado Department of Public Health and Environment requirements.

   These requirements include, but are not limited to state water rights permit, state water discharge permit, county conditional use permit and all necessary building permits. These conditions are included in the approved Plan of Operations. If the operator does not comply with these conditions, he/she will be in noncompliance with the USFS regulations and appropriate action would be taken at that time.

Access

7. Access routes will be confined to the existing non-system road unless otherwise approved by the Forest Geologist. This road will be decommissioned during final reclamation.

Noxious Weeds

8. Apply Forest Service approved native seed mix for reclamation practices.
9. Protocols for noxious weed management should include the monitoring and treatment of noxious weeds every year during the life of the mine. Treatment should occur along roads and access roads to reduce the threat of inadvertent distribution.
10. As a standard operating procedure, the Operator should treat noxious weed occurrences as soon as they are identified, and cooperate with the Forest Service to inventory, monitor, and control noxious weeds/undesirable plants within areas of disturbance until release of all bond monies.
11. Establish effective ground cover on disturbed sites to prevent accelerated on-site soil loss. Restore ground cover using certified native plants as practicable to meet revegetation requirements. Avoid persistent or invasive exotic plants.
12. To further minimize the spread of noxious weeds and their seeds, equipment should be washed thoroughly, especially the undercarriage, to eliminate undesirable or noxious weed seeds potentially carried from previous jobs. Washing should occur at the closest facility available, prior to entry onto NFS lands.
13. At the end of the mine life during the mine reclamation period, revegetated areas should be monitored for the presence of plants on the Colorado State Noxious Weed list for a period of five years. A and B list species from the Colorado State Noxious Weed list (Appendix A) will be eradicated prior to bond release.

Timber

14. To the best ability of the Operator, reclaim site to pre-disturbance conditions as listed in the reclamation plan and bond. If at any time deleterious effects occur to multiple trees or larger swathes of existing vegetation please contact Silviculture / Timber management for further consultation.
15. In regards for timber removal, if necessary, all trees to be removed will need to be identified by the Claimant and agreed upon by a USFS Minerals Specialist. Timber specialists will be notified of the agreed upon trees for removal and an inventory will be made. This will allow the Timber Program of Work to account for the volume removed. According to FS handbook / manual the Claimant has the right to free use of timber:

    2813.13b - Claims Validated Subsequent to Act of 1955

    Such claims which otherwise come under Title 30, United States Code, Section 612 (30 U.S.C. 612) carry the same surface rights as those described in section 2812, except for the following modifications:

    1. Right to occupancy and use necessary for prospecting, mining, and processing, but not the exclusive right to the surface. Lands containing such claims are subject to the rights of the United States to manage and dispose of the vegetative resources, to manage other resources except locatable minerals, and to the right of the United States, its permittees and licensees, to use so much of the surface area necessary for such purposes and for access to

adjacent lands.

2. Right to cut timber on the claim for mining uses and for necessary clearing, except that timber cut in the process of necessary clearing cannot be sold by the claimant. The United States has the right to dispose of timber and other vegetative resources.

3. Right to additional timber required for mining purposes, if timber was removed from the claim by the Forest Service after claim location. The quantity and kind of timber to be provided, free of charge from the nearest available source which is ready for harvesting, will be substantially equivalent to that previously removed from the claim.

The Claimant must gather a 2400-1 permit from the South Park Ranger District and follow aforementioned protocol to use the identified timber for removal. Please contact Pike National Forest Timber Staff, if any further questions arise.

Water Quality/ Soils

16. Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources caused by physical and chemical pollutants during minerals exploration activities.
17. Monitor restored ground to ensure no rills or gullies are forming and that no invasive plant species are present.
18. Install contour berms and trenches around vehicle service and refueling areas, chemical storage and use areas, and waste dumps to fully contain spills. Use liners as needed to prevent seepage to groundwater.
19. Reclaim each mining area when its use ends, using certified local native plants as available; avoid persistent or invasive exotic species. Stabilize waste dumps and tailings in non-use periods to prevent wind and water erosion.
20. Reclaim and stabilize facilities, disturbed areas, surface water diversion structures, and transport and storage areas before the end of seasonal shutdown so that they will function as designed to prevent adverse impacts to surface water from erosion and sedimentation.
21. Back-fill and re-contour disturbed areas, including exploratory trenches, pits, or holes to the original contour, where practicable, or to an acceptable post-mining contour that blends with the surrounding topography to re-establish surface and subsurface hydrologic pathways to the extent practicable.
22. Report spills and take appropriate clean-up actions in accordance with applicable state and federal laws, rules and regulations. Contaminated soil and other material shall be removed from NFS lands and disposed of in a manner according to state and federal laws, rules, and regulations.
23. Limit the amount of exposed or disturbed soil at any one time to the minimum necessary for efficient operations during minerals production activities. Stabilize mined areas and surface disturbance activities as soon as practicable before moving and opening new areas.
24. Clearly delineate the geographic limits of the area to be cleared.
25. Conduct extraction activities in such a manner as to minimize the potential for slope failures, limit slope steepness and length, limit disturbed areas to those actively used for extraction, retain existing vegetation as long as possible, and allow for progressive reclamation of the site where practicable.

Wildlife - Terrestrial

26. Existing roads would be used for most operations, and if new roads are determined to be necessary for operations in the MPO, they would be required to be obliterated and reseeded (final reclamation) according to USFS standards.
27. Trees removed should be limited and would be approved by the Forest Service prior to their removal to ensure tree conservation.
28. Trees should not be removed May 15 – July 15 to protect sensitive and migratory birds.
29. Mining activities would not occur in historic mine shafts or adits. If mining activities are proposed in adits or shafts, they would have to first be surveyed for the presence of bats by qualified personnel.
30. Biological surveys should be carried out, using standard protocols recommended by the USFS, for northern goshawk, bald eagle, golden eagle, peregrine falcon and other raptor species prior to project activities.
31. If mining operations are planned in wetland or riparian areas, another BAE would be required and surveys for amphibian species would need to be completed prior to project implementation.
32. Where goshawk or other raptor nests are present, no heavy equipment operations would take place between March 1 and September 30 within a 0.5 mile radius of the nest.
33. Within 650-foot radius of an identified active goshawk nest, no mining activity (including the use of hand tools and occupancy) or vegetation removal would occur at any time.
34. Appropriate reclamation practices and erosion protection measures would be carried out in order to limit the impacts to soil, water and amphibian species.
35. If any nest or den site or migratory bird, threatened, endangered or sensitive (TES) species is located or observed during implementation of the project, the wildlife biologist will be notified and any appropriate conservation measures (for example, timing restrictions or buffer zones) will be put in place

Reclamation

The operator'(s) agree to complete the following reclamation measures:

36. Within the one year expiration of this authorization, the operator will commence final reclamation.
37. Remove all materials and return the mining area to the original natural contours. This includes all excavation cuts.
38. Silt fences or other erosion control will be utilized to prevent off-site sediment transport.
39. Straw waddles must be certified weed-free (shredded aspen fill recommended).
40. Water bars may be required on slopes and access road to control erosion.
41. Slash should be scattered and/ or piled, or used in erosion control on slopes.
42. Any erosion control blankets must be 100% natural fiber (i.e. no monofilament) and

certified weed-free.

43. Reclamation will be monitored by the operator, USFS personnel, and State of Colorado (DRMS) inspectors on an as needed basis.
44. All non-system access roads will be ripped, re-contoured, graded, and seeded at the end of operations.
45. The road and site will be seeded with USFS-approved seed mixtures, as needed.
46. Re-vegetation will not be complete until at least 50% plant re-growth has been established; when compared to adjacent undisturbed areas.
47. Top soil must be saved and used to cover all disturbed areas.
48. Return large rocks, boulders, and logs to their original (general) position.
49. The U.S. Forest Service may require additional reclamation measures if needed.
50. Remove all trash off of Forest Service Lands.
51. Remove all structures (fences, signs) from Forest Service Lands.
52. Complete all reclamation within one year of the end of the operating plan.
53. Refund of any reclamation bond is contingent upon the success of reclamation.

MONITORING

- The Forest Service will monitor and assess the progress of reclamation activities, including re-vegetation and erosion control, for a minimum of three years. Dependent on the success of the second phase of reclamation, additional seeding, weed treatment, or installation of erosion control structures may occur.

THE FOLLOWING STANDARD TERMS AND CONDITIONS ARE TAKEN FROM FOREST SERVICE FORM FS -2800-5 AND ARE <u>REQUIRED</u> FOR THIS PLAN OF OPERATIONS:

- Information provided within this plan that is marked confidential will be treated in accordance with the agency's laws, rules, and regulations.
- Approval of this plan does not relieve me of my responsibility to comply with other applicable state or federal laws, rules, or regulations.
- Approval of this plan does not constitute recognition or certification of ownership to any person named as owner herein.
- Approval of this operating plan does not constitute, now or in the future, recognition or certification of the validity of any mining claim to which it may relate or to the mineral character of the land on which it lies.

Crystal Jack

I acknowledge and understand these modifications and mitigation measures. I agree to adopt them into my mining Plan of Operations and abide by them through the life of my mining operation.

Joseph L. Davis — 28 June 18

Operator's Signature — Date

John S Voorhis — 7/2/2018

District Ranger — Date