

Mining Plan of Operations for Little El and Bonanza Claim Groups

Chisana Mining District, Alaska

Chisana Mining LLC

February 1, 2016



Figure 1. View of Bonanza Creek (NPS Photo/ D. Rosenkrans)

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Related Documents/ Appendices

NOTE: Only parts of these documents are in the Appendices. The park has complete copies of these on file.

Appendix A. Chisana Mining LLC Right-of-way certificate of access #RWCA-9865-13-003 - *Sensitive*

Appendix B. Validity Exam for Bonanza Claims 1,2, 3, and 6

Appendix C. Validity Exam for Bonanza Claims 4 and 5

Appendix D. Validity Exam for Bench Claims 1 and 2, Little El Claims 1 and 2, Skookum Claim 1, and Snow Gulch Claim 1

Appendix C. Cumulative Impacts of Mining Final Environmental Impact Statement for Wrangell St. Elias National Park and Preserve and the Record of Decision (1990).

Appendix D. Bonanza 4-6 Mining Plan of Operations Final Environmental Assessment for Wrangell St. Elias National Park and Preserve and the Finding of No Significant Impact (1988).

Appendix E. Chisana-Gold Hill Landscape Report (Feldman 1998) - *Sensitive*

Appendix F. Bonanza 1-6 Mining Plan of Operations Final Environmental Assessment for Wrangell St. Elias National Park and Preserve and the Finding of No Significant Impact (1995).

Appendix G. Bonanza Creek Mining Plan of Operations Supplement: Regional Director's Analysis (2001) for Wrangell St. Elias National Park and Preserve.

Appendix H. Bonanza Creek Mining Plan of Operations 5-year extension: Regional Director's Analysis (2007) for Wrangell St. Elias National Park and Preserve.

Appendix I. Cultural Resource Maps of each of claim blocks – *Sensitive, not attached*

Appendix L. Copy of the Performance Bond held by NPS – *Sensitive, on record at the regional office, not attached*

Contents

Related Documents/ Appendices	2
FIGURES	5
TABLES	5
PART I. INTRODUCTORY INFORMATION	6
I. A. National Park System Unit	6
I. B. Mining Claim Information	7
I. C. Mining Claim Location	10
PART II. ACCESS	11
PART III. USE OF WATER	12
III. A. Description of Water Source(s) and Quantity	12
III. B. Volume of water for operations	13
III. C. Domestic Usage	14
III. D. Aquatic Resource	14
III. E. Permits	14
PART IV. PLAN OF OPERATIONS	16
IV. A. Names and Addresses	16
IV. B. Proposed Area of Operations	17
IV. C. Equipment to be used	21
IV. D. Proposed Operations	22
1. Mining type and level of operations	22
2. Timing and Production	23
3. Mine workings	24
4. Processing Mineral Bearing Deposits	24
5. Waste Management	24
6. Energy requirements	25
7. Explosives	26
8. Use of chemicals	26
9. Fuel requirements	26

10.	Structures.....	26
IV. E.	Nature and Extent of Known Deposit	27
IV. F.	Reclamation Plan.....	28
IV. G.	Compliance with Other Laws and Regulations	28
IV. H.	Environmental Report	28
IV. I.	Relationship to NPS Planning	29

FIGURES

Figure 1. View of Bonanza Creek (NPS Photo/ D. Rosenkrans)..... 1

Figure 2. Location of Gold Hill Mining District (dot) and Wrangell-St. Elias (shaded shape) in Alaska. 6

Figure 3. Location of claims in relation to Chisana and other claims in the Gold Hill Area. Inset of relative location in Alaska and Wrangell-St. Elias National Park and Preserve. 10

Figure 4. Bonanza Group and Little El Group Claim boundaries overlaid on a USGS 63K topographical map..... 11

Figure 5. Location of Little Eldorado Support Camp in relation to the claims (Cultural Resource Map, sensitive) 18

Figure 6. Map denoting areas previously disturbed which are proposed for mining on the Little Eldorado claim group. 19

Figure 7. Map denoting areas previously disturbed which are proposed for mining on the Bonanza claim group. 20

Figure 8. Keene 4” suction dredge..... 21

Figure 9. Example of high banker that may be used..... 21

Figure 10. Two possible spill containment structures 25

Figure 11. Little Eldorado Camp (NAB-51). From left to right the buildings are features 1, 2, 3, 4, 5 (tent frame-cabins), 6 (outhouse), and 7 (shed). NPS Photo from 2010 site assessment. 27

TABLES

Table 1. Mining claims covered in this mining plan of operations. 8

Table 2. Water Quality measurements from the NPS 1990 Mining EIS, data from 1987..... 13

Table 3. Summary of NPS permitted mining & exploration per season on the Bonanza and Little Eldorado Claims. Note that any work done on the Little Eldorado claims has, up until this point, been done as part of the BLM validity exams. 31

PART I. INTRODUCTORY INFORMATION

The claim holders, Chisana Mining LLC, wish to extract the mineral resource from the Bonanza and Little El Claims within disturbed riparian areas of Bonanza and Little Eldorado Creeks and other previously disturbed areas within the claim blocks. The Chisana Mining LLC (comprised of Dudley H. Benesch, 18%; Brian Dunlevy, 18%; Gary A. Cox, Bill Dunlevy, 16%; 16%; Lindsay Hall, 16%; and George White, 16%) owns the claims and the claims are located within the Wrangell St. Elias National Park and Preserve.

A Mining Plan of Operation (MPO) is required by the National Park Service (NPS) to adequately evaluate the impact the proposed mining operations will have on the protection, preservation, and public use of the resources and values of the Wrangell-St. Elias National Park and Preserve. The MPO for the Bonanza claims has expired and there has been no prior MPO for the Little El claims. An approved MPO is required by the regulations at Title 36 of the Code of Federal Regulations Part 9, Subpart A, January 26, 1977.

The purpose of this MPO is to fulfill the requirement of the National Park Service and allow the Chisana Mining LLC to beneficially extract the mineral resource in a method that minimizes to the extent possible the environmental impact of the operations.

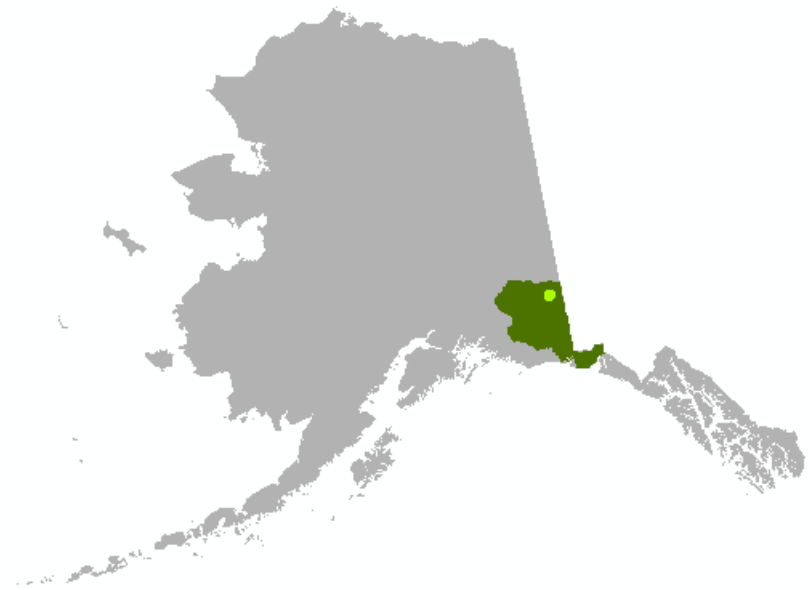


Figure 2. Location of Gold Hill Mining District (dot) and Wrangell-St. Elias (shaded shape) in Alaska.

I. A. National Park System Unit

This mining operation will occur within the boundaries of Wrangell-St. Elias National Park and Preserve, Alaska in the Gold Hill area of the Chisana (pronunciation “Shu-shana”) Mining District (Figure 2).

I. B. Mining Claim Information

This plan of operations describes unpatented placer mining operations to be conducted on the Bonanza Creek (Bonanza 1-6) and Little Eldorado Creek (Bench 1-2, Little Eldorado 1-2, and Snow Gulch 1) claim groups where mineral exams determined valid claims. The mineral exams were completed for Bonanza 1-3 and 6 in 1990 (Brown 1990, see Appendix B), Bonanza 4-5 in 2010 (Ellefson et al. 2010, see **Error! Reference source not found.**), and the Little El claim group in 2014 (Kurtak et al 2014, see REF _Ref408320458 \h * MERGEFORMAT **Error! Reference source not found.**). All of these claims had been mined during Chisana's Gold Rush period and were staked as early as 1913. However, all of Gold Hill's original mining claims lapsed during the 1950's. The ownership of two claim groups, since their re-location in the 1960's, has been complicated by various partners selling various percentages of the ownership in the claims to multiple individuals but since the 1960's the claims have always been sold as the two groups: Bonanza Creek and Little El. These complications are summarized below, and in Table 1. Further information is available in the BLM case file abstracts referenced in Table 1.

Joe Layland re-located Little Eldorado 2 in 1963 for the Snow Gulch Mining Venture which consisted of Layland, Rupert Baird, Bert Bruhn, and Harold Wilkings. In 1966 Donald Dippel and Monte Allen re-located Bench 1 and 2, Little El 2, and Snow Gulch.1. In 1969 Layland re-located the Bonanza group claims. Bruhn returned his portion of the Snow Gulch holdings to the company and Dippel and Allen acquired Baird's share in June 1970. The entire Little El claim group was then claimed by the Snow Gulch Mining Venture. In July 1979 the Snow Gulch Mining Venture filed the Little El claims and Layland the Bonanza claims in accordance with the Federal Lands Public Mining Act.

When Wrangell-St. Elias National Park and Preserve (WRST) was established in 1980 Wilkings, the Dippel/ Allen partnership, and Layland each held one-third interest in the Little El claims and Layland held the Bonanza 1-6 claims. The NPS approved Dippel's plan to conduct mining operations 1983 for both the Bonanza and Little El claims. In 1984 Layland sold his claims to Gravest, Inc. which was comprised of the heirs of Layland and John A. Baker, 10 individuals in total including Helen J. Geisert and Rose M. Moody. James R. Moody (husband of Rose Moody) was identified as the operator and agent for Gravest, Inc. and the NPS approved J. Moody's plan for the Gravest property on the Bonanza claims in 1984. The NPS approved mining operation plans for both again in 1985. On July 24, 1985 a District Court Judge issued a preliminary injunction that barred the NPS from approving further mining plans until it completed an Environmental Impact Statement (EIS) evaluating the cumulative effect of further mining. In December the court allowed certain operators to obtain relief from the injunction providing their operations "did not contribute to any cumulative impact on park resources". In 1986 Gravest sat out and Dippel submitted a mining plan that was rejected by the NPS. In 1987 no companies mined at Gold Hill but at this time Dippel acquired Allen's share of the Little El claims. In 1988 and the NPS completed an Environmental Assessment for Gravest's mining plan of operations (MPO) on Bonanza claims 4-6 (WRST FONSI19870527, see Appendix D). After reviewing the document, the court to allowed J. Moody to resume mining.

Table 1. Mining claims covered in this mining plan of operations.

BLM Serial Number	Claim Group	Claim Name	Location Date	Validity Date	Legal Location Description: Copper River Meridian, Alaska, Township 04 North
AA-027047	Little El	Little Eldorado 1	9/5/1966	4/22/2014	Range 19 East, portions of Sections 24 and 25
AA-027048	Little El	Little Eldorado 2	6/30/1963	4/22/2014	Range 19 East, portions of Section 24
AA-027049	Little El	Bench 1	9/5/1966	4/22/2014	Range 19 East, portions of Section 24
AA-027050	Little El	Bench 2	9/5/1966	4/22/2014	Range 20 East, portions of Sections 19 and 30 and Range 19 East, portions of Sections 24 and 25.
AA-027051	Little El	Snow Gulch 1	6/30/1963	4/22/2014	Range 19 East, portions of Section 24
AA-029712	Bonanza	Bonanza 1	8/30/1969	4/20/1990	Range 19 East, portions of Section 35
AA-029713	Bonanza	Bonanza 2	8/30/1969	4/20/1990	Range 19 East, portions of Sections 35 and 36
AA-029714	Bonanza	Bonanza 3	8/30/1969	4/20/1990	Range 19 East, portions of Sections 25 and 36
AA-029715	Bonanza	Bonanza 4	8/30/1969	11/8/2010	Range 19 East, portions of Sections 25 and 36
AA-029716	Bonanza	Bonanza 5	8/30/1969	11/8/2010	Range 19 East, portions of Section 25
AA-029717	Bonanza	Bonanza 6	8/30/1969	4/20/1990	Range 19 East, portions of Sections 25 and 30

The 1988 EA allowed the NPS to approve a 5 year MPO for Bonanza Claims 4, 5, and 6 authorizing small-scale mining on previously disturbed ground by suction dredge, metal detector, and small high-banker type operations and authorized J. Moody's maintenance plans for trails connecting the Chicken Creek airstrip with the mining camp on Little Eldorado Creek. In May 1989 Dippel sold his two-thirds share of the Bonanza claims to three individuals which was then further divided but ultimately bought and consolidated by J. Moody. J. Moody continued to receive temporary relief from the injunction for Gravest's Bonanza claims. In April of 1990 the mineral validity exams were finalized for the Bonanza Creek claim blocks 1-3 and 6 (Brown 1990, Appendix B) and in August 1990 the NPS completed the required mining EIS (NPS ROD19900821, see Appendix C). In 1994 Geisert and R. Moody successfully "advertised out" each of the other 10 claimants of Gravest, Inc. under the provisions of 30 USC 28 and Alaska Statutes 3805.213. These laws enable the co-owner(s) of a claim to assert title over said claim by notifying other parties-in-interest that their failure to contribute a proportionate share of the expenditures for the statutory annual labor and required fees constitutes "just cause" to declare a forfeiture of any proportionate interest in the claim. In 1995 Geisert and R. Moody legally declared

ownership of claims with each party receiving one-half ownership in each claim. They then “Quit Claim” deeded their respective interests in the claims to J. Moody, president of A. H. Mining, in April 1995. In 1995 the NPS approved a 5 year MPO submitted by J. Moody which extended the initial Bonanza Creek MPO and added Bonanza 1, 2 and 3 so that it covered Bonanza 1-6 (Appendix H). This MPO was extended for a 5yr period in 2001 (Appendix I) and again in 2007 (Appendix H).

As of 2008 J. Moody and Snow Gulch Mining Company/ Venture were the two owners of the Little El claims and J. Moody the sole owner of the Bonanza claims. J. Moody then “Quit Claim” deeded his interests to Steve Herschbach and Dudley H. Benesch in early 2009 with each receiving a 50% share. Herschbach and Benesch then formed and transferred ownership to Chisana Mining Limited-Liability Company (LLC) in August 2009 (Alaska Entity Number 123622) comprised of six partners. Benesch was the registered agent for the LLC. In 2010 the mineral validity exams for Bonanza claim nos. 4 and 5 were completed (Ellefson et al. 2010) and the NPS extended the Bonanza 1-6 MPO with no changes for another 5yrs (expiring at the end of 2015). At this point the Chisana Mining LLC owned two-thirds share in Little El claims and full share in Bonanza Creek claims with Snow Gulch Mining owning one-third of the Little El claims. Snow Gulch Mining was an unincorporated association and one of the original locators of the Little El Claims. The original partners in the association have either sold their portions of the claims to subsequent owners or they have passed away. Notices sent via certified mail to Snow Gulch Mining’s address of record were returned unopened. Chisana Mining LLC in the spring of 2013, “advertised out” Snow Gulch Mining in accordance with 43 CFR §3837 by posting notices in local papers. No Snow Gulch Mining representatives stepped forward through the public notice process. In May of 2013 Herschbach sold his claims in Chisana Mining LLC to Brian Dunlevy who took over as the registered agent.

On October 21, 2013 Chisana Mining LLC filed documents with the BLM showing their efforts to give public notice and thereby acquired sole ownership of the subject claims. Both the Bonanza and Little El claims are now owned completely by Chisana Mining LLC who as the claimants, are submitting this MPO for both the Bonanza nos.1-6 and Little El claim groups. The current members and authorized operators of the Chisana Mining LLC and their respective percentage of ownership in the LLC are: Benesch 18%, Brian W. Dunlevy, 18%; Gary A. Cox, 16%; Bill Dunlevy, 16%; Lindsay Hall, 16%; and George White, 16%. The registered Agent or Organizer for the LLC is Brian Dunlevy. The operating association receives a set royalty (15%) of recovered gold from each of its authorized operators and rental fees for utilized association equipment.

In 2013 NPS issued the LLC a right-of-way certificate of access (RWCA) to access their claims from Chicken Creek airstrip (see Appendix A). This RWCA also authorizes allowable maintenance of routes. In April of 2014 the mineral validity exams were finalized for the Little El claim block (Kurtak et al 2014, see **Error! Reference source not found.**). With the validity exam for the Little El claim blocks complete and the upcoming expiration of the authorized MPO for the Bonanza claim block the Chisana Mining LLC is submitting a new MPO to the NPS to cover all of their claims.

I. C. Mining Claim Location

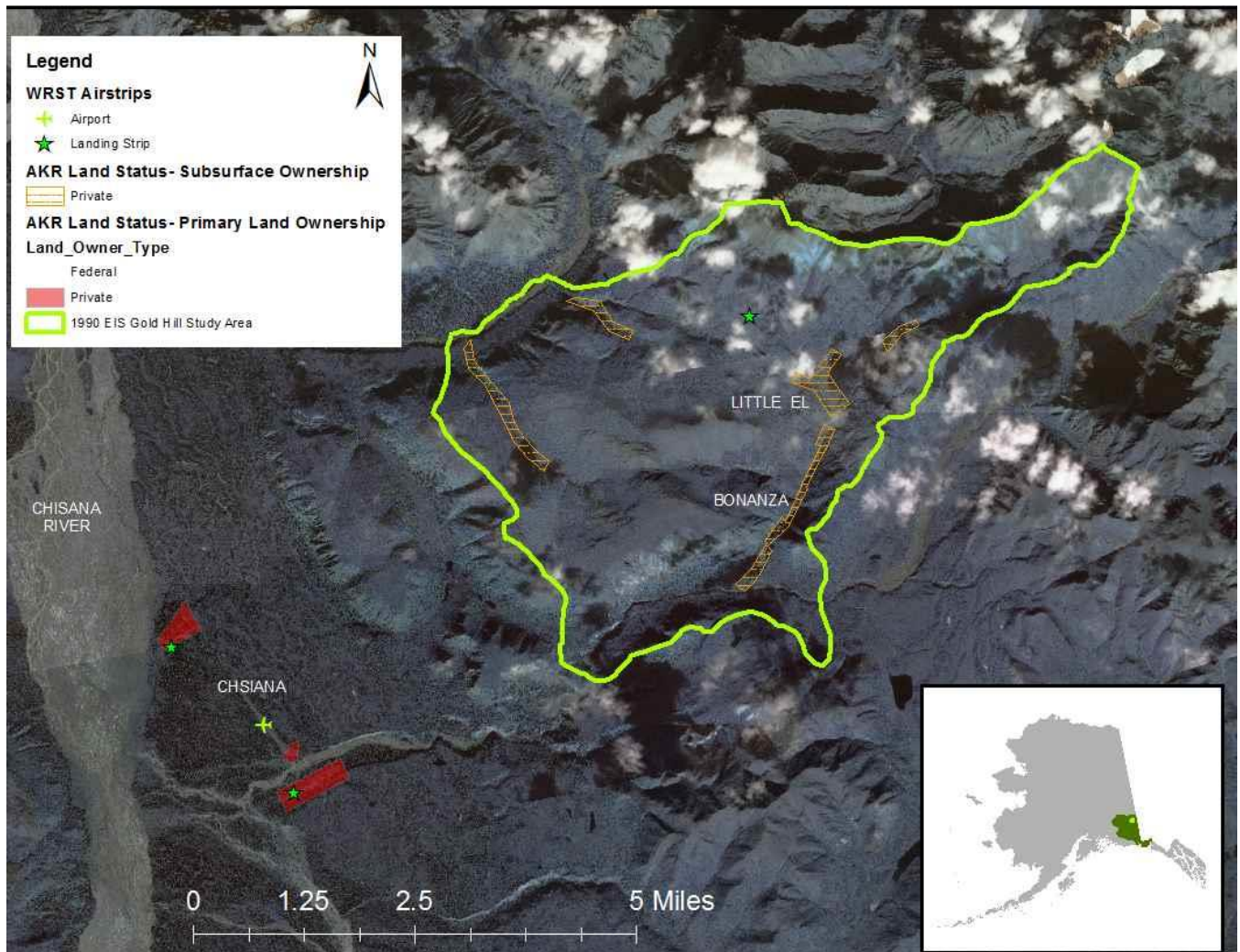


Figure 3. Location of claims in relation to Chisana and other claims in the Gold Hill Area. Inset of relative location in Alaska and Wrangell-St. Elias National Park and Preserve.

The subject federal placer mining claims are located in the Gold Hill area, in the Chisana (pronunciation “Shu-shana”) Mining District, approximately 60 miles south of Northway, Alaska and within 30 miles of the Canadian Border, in the foothills south of the Nutzotin mountains (Figure 3, Figure 4). Two main streams, Chavolda Creek on the north side and Cathenda Creek on the south, drain the Gold Hill area. Bonanza Creek borders the east side of Gold Hill and is part of the Cathenda Creek drainage. All the waters draining from the Gold hill area are part of the headwaters of the Chisana River. Bonanza Creek has two sections of canyon along its course. The upper and shorter canyon is above the confluence of Little Eldorado Creek and below Coarse Money Creek. The main canyon, which is entirely contained in the Bonanza 1-6 claims is approximately 1.5 miles long and lies between Little Eldorado Creek and Cathenda Creek. Little El Claim Group is in the southeast-flowing Little Eldorado Creek drainage basin,

starting at its confluence with Bonanza Creek. The southern parcel of the Bench no. 1 claim is located on Bonanza Creek, 0.1 miles above its confluence with Little Eldorado Creek. The Bonanza Creek claim group is situated along the course of Bonanza Creek between its confluences with Cathenda and Little Eldorado Creeks. For the legal description of lands involved see

Table 1. For a more complete description of the claims reference validity exams for the Bonanza Group (Brown 1990 and Ellefson et al. 2010) and for the Little El Group (Kurtak et al. 2014).

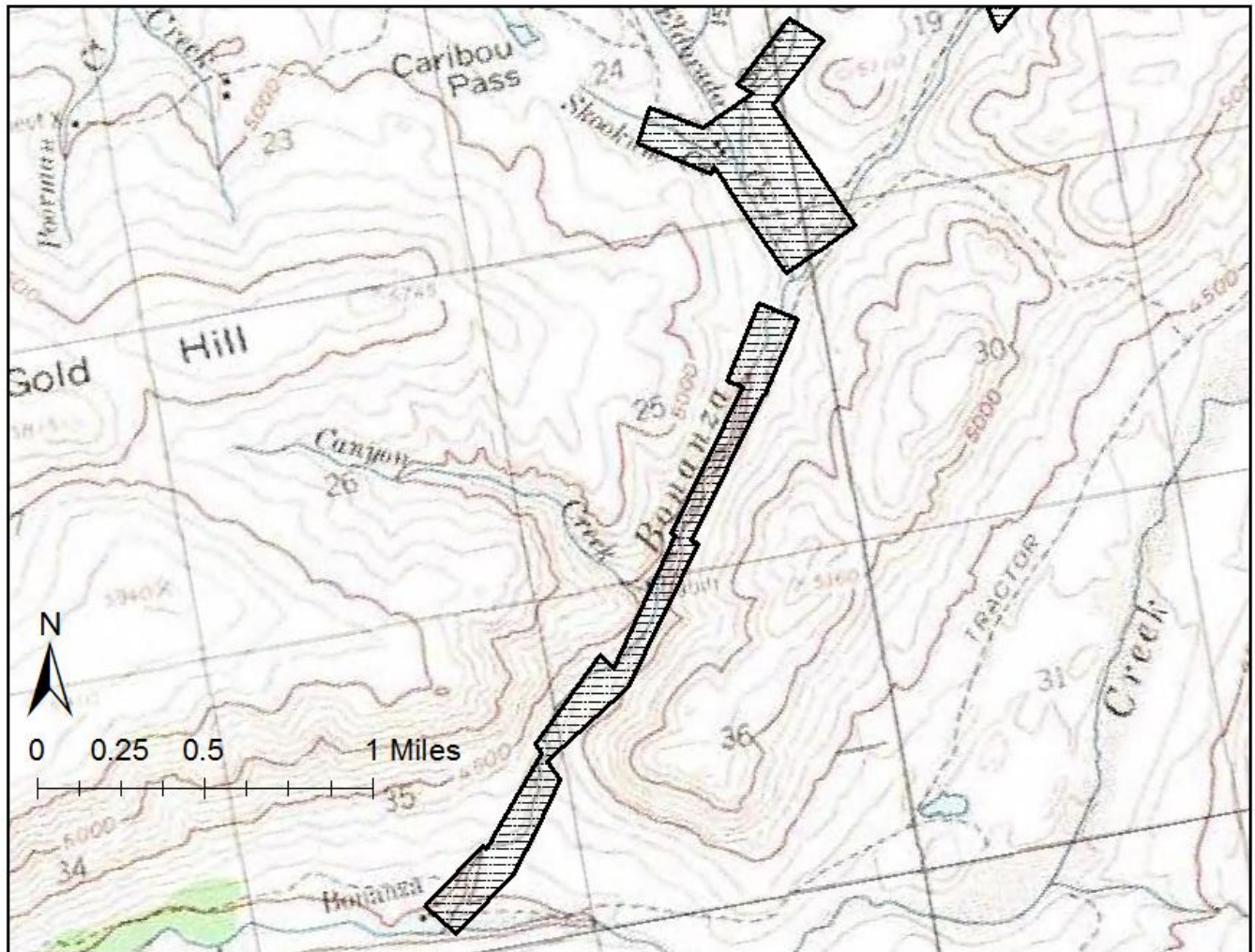


Figure 4. Bonanza Group and Little El Group Claim boundaries overlaid on a USGS 63K topographical map.

PART II. ACCESS

ANILCA 1110 (b) requires the NPS to provide the owners of property within National Park System Units such rights as may be necessary to assure adequate and feasible access to their properties for

economic and other purposes. ANILCA 1110(b) also gives the NPS the responsibility to reasonably regulate access to inholdings to protect natural and other values of National Park Service units. A Right-of-Way Certificate of Access (RWCA) is required to access unpatented placer mining claims at Gold Hill. The claimants described their access to the claim groups and were issued a RWCA in 2013, #RWCA-9865-13-003 (see Appendix A). No new access is proposed by this plan of operations. This plan does not negate the terms of that RWCA.

PART III. USE OF WATER

III. A. Description of Water Source(s) and Quantity

Gold Hill (5,745 feet elevation) is located in the Nutzotin Mountains six miles east of Chisana and the Chisana River. The northern portion of the Gold Hill area is drained by Chavolda Creek which eventually empties into the upper drainage of the White River, draining the eastern extent of the district before entering Canada and eventually discharging into the Yukon River. The Bonanza-Chathenda drainage empties the southern portion into the north-flowing Nabesna and Chisana Rivers which are the two headwater rivers of the Tanana River.

The majority of the Little El claims (Bench no. 2, Little El no. 1-2, Skookum, and Snow Gulch) are confined to the Little Eldorado Creek basin, a broad and shallow two-mile-long southeast flowing tributary of Bonanza Creek. The eastern parcel of the Bench no. 1 claim overlies a stretch of Bonanza Creek. The Bonanza claims straddle Bonanza Creek, a six-mile long, southwest-flowing tributary to Cathenda Creek. For most of its route, Bonanza Creek is confined to a narrow steep-walled valley following a generally straight, likely fault-controlled course. Vertical relief on the subject claims is roughly 500 feet, although the valley walls gain between 600 to 900 feet in elevation within one quarter mile to either side of the creek. Portions of the creek are incised into bedrock, locally with up to 100-foot high vertical canyon walls. The left (southeastern) limit of the Bonanza Creek valley is bounded by a long linear ridge at a consistent elevation of about 5,300 feet. In this area Bonanza Creek is confined to a narrow steep-walled valley following a generally straight, likely fault-controlled course. Vertical relief on the subject claims is roughly 260 feet. The Bonanza Creek empties into Cathenda Creek which then empties into the Chisana River at about 3,100 feet. Water flow in the streams are highly variable with seasonable snow melt and rainfall. At Bonanza 1-5 stream flow has been estimated or measured to be between 4.7 and 45.2 cfs, with an average of 11 cfs while the average streamflow for Little Eldorado is 7cfs and for Skookum <2cfs (Data from EIS). The stream width varies seasonally with snow melt and rainfall. Stream bed materials consist of gravel with a small percentage of fines. Gravel is typically less than 2 feet deep over bedrock. Bedrock surface when exposed is weathered and fractured.

Table 2. Water Quality measurements from the NPS 1990 Mining EIS, data from 1987.

Water Quality	Bonanza Creek	Little Eldorado Creek	Skookum Creek
Flow (cfs)	2.5	2.9	2.1
Suspended solids(mg/l)	<2.0	<2.0	<2.0
Turbidity (NTU)	1.6	9.2	0.8
pH	8.0	8.3	7.6
Conductivity (umho)	240.0	185.0	40.0
Alkalinity (mg/l)	183.0	69.0	50.0
Hardness	165.0	88.0	19.0
Arsenic (mg/l)	<0.001	<0.001	<0.001
Cadmium (mg/l)	<0.02	<0.02	<0.02
Chromium (mg/l)	<0.03	<0.03	<0.03
Copper (mg/l)	<0.01	<0.01	<0.01
Iron (mg/l)	<0.03	<0.069	0.069
Lead (mg/l)	<0.08	<0.08	<0.08
Manganese (mg/l)	<0.003	<0.003	<0.003
Zinc (mg/l)	<0.01	<0.01	<0.01

III. B. Volume of water for operations

Proposed operations consists of suction dredges with an intake diameter of six (6) inches (or less) which may be operated up to 8 hours a day. Smaller dredges may be used. While a 6-inch suction dredge may operate at approximately 410 gallons (g) per minute as a pump, when operated as a suction dredge pumping a slurry of gravel and water, the approximate rate for water use is 80 g per minute. Maximum manufacturer's rating for the suction dredge pump is approximately 340 gallons of water per minute (gpm). Due to the intake of gravel during dredging, the operator estimates actual water usage at approximately 60 gpm. No construction of diversion ditches is proposed.

The proposed operation also includes the use of high bankers and a pump to feed the high banker. Like the suction dredge operations, high bankers are considered by the Alaska Department of Natural Resources as non-consumptive use, and as such, the significant quantity of water use to require an authorization, permit to appropriate or certificate of appropriation is more than 30,000 g of water per day as per 11 AAC 93.035(b)(3). The operator has in the past obtained a Permit to Appropriate from the

State of Alaska pursuant to state law AS 46.15, and intends to renew this permit for the purpose of operations described herein. For this operation, use of a pump to support high banker operations will be limited according to the size of the pump to be used.

III. C. Domestic Usage

Water for domestic use will be taken out of Little Eldorado Creek, at approximately 10 g per day per person. Water will be hand carried from creek to cabin.

III. D. Aquatic Resources

No fish in Bonanza, Skookum, or Eldorado Creeks at the elevation of the mining activity were observed during the 1986 and 1987 field work conducted by the NPS in support of the NPS Environmental Impact Statement (page 81 of the Affected Environment, Chisana Study Area, Final Environmental Impact Statement, Appendix C) nor were they found in a 2001 study. Aquatic invertebrates were found in Bonanza and Little Eldorado but not in Skookum in 1987.

III. E. Permits

The decision by the National Park Service to approve or not approve a proposed mining plan of operations on the Bonanza and Little El Group placer claims is classified as a federal action. Approval to conduct mining would be contingent upon compliance with all applicable State of Alaska and federal statutes and regulations. Any change in mining plans must be submitted in writing to the park Superintendent or their delegate a year prior to changing operations.

NPS personnel have access to the claims in accordance with 36 CFR 9.10 (h). Monitoring of the operation for compliance with the plan of operations and impacts to the environment are conducted by the NPS. The Agent for the Chisana LLC submits an annual report to the Superintendent within 60 days after the cessation of operations each year. The Agent's annual report is used in conjunction with information gathered by the NPS during monitoring and compliance investigations to determine any incremental or cumulative impacts caused by the operation. The annual report shall include, at a minimum, the following information:

1. Beginning of season arrival date on claims.
2. End of season departure date from claims.
3. Mining operations startup date.

4. Total number of operators and number of helpers who mined/ explored during the season
5. Number of days dredging was conducted.
6. Number of days exploration was conducted.
7. Claims on which dredging operations were conducted.
8. Claims on which exploration was conducted
9. Volume (cubic yardage) of material mined.
10. Volume processed by dredge.
11. Volume of oversized material moved by hand.
12. Total linear footage of stream bed worked.
13. Total surface area (square yardage) of stream bed disturbed.
14. Average number of hours processing material daily.
15. Estimated rate of water usage (gpm) while dredging.
16. Number of dams constructed.
 - lengths of dams
 - heights of dams
 - volume of material used in dams
17. Reclamation completed in previously disturbed, un-vegetated areas. Equipment removed from site.
18. Support facilities maintenance/construction conducted.
19. Volume of fuel stored on claim during the season.
20. Volume and location of fuel stored on claim over the winter.
21. Map showing locations of areas dredged for mine production and exploration.
22. Cultural resources found which are not on the maps provided in the environmental assessment, including items discovered during mining operations reported to the Superintendent as required under operating stipulations.
23. Any incidents with Wildlife (such as bears breaking into camp).

24. Operational changes to the approved plan of operations which occurred and may need to be considered as alterations to the plan of operations.
25. Future mining and exploration plans.
26. Copy of any reports filed with other agencies (e.g. EPA turbidity reports, ACE, etc.) as part of their permitting requirements.
27. Number of access trips taken by three and four- wheel ATV on each trail segment.
28. Condition of and/or problems with the access route.
29. Mitigation performed on access route.

The issuance of a Special Use Permit for continuing operations is contingent upon review of the operator's annual report, the possession of current required permits from other federal and state agencies (i.e. Alaska Department of Environmental Conservation, Army Corps of Engineers, Alaska Department of Fish and Game), and the NPS monitoring data showing that no significant or cumulative impacts occurred. Operating stipulations are revised as needed and attached to Special Use Permits. Annual reviews continue for the duration of the approved plan of operations.

The claimants have posted a performance bond with the NPS before commencing mining operations. The amount of the performance bond was calculated "...to be in an amount equal to the estimated cost of completion of reclamation requirements..." as required under 36 CFR 9.13 (c). An explanation of the bonding and cost estimate calculations were included in the Engineering and Geological Analysis appended to the 1995 EA (Appendix B). That analysis has remains current and appropriate (see Appendix L).

PART IV. PLAN OF OPERATIONS

IV. A. Names and Addresses

The claims are owned and will be operated by the members of Chisana Mining LLC (Fairbanks, Alaska Recording Office). The legal signatory on permits will be the registered agent for the LLC at the time of permit issuance but all owners and their assistants will be bound to it. It is intended that each of the owners will be authorized operators. The operating association receives a set royalty (15%) of recovered gold from each of its authorized operators and rental fees for utilized association equipment. Each of the operators may engage assistance during the mining season. A maximum of 6 operators with a maximum of 2 assistants or helpers per operator would be operating at any one time. A maximum combination of 6 suction dredges and/or high bankers would be in operation at any one time.

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IV. B. Proposed Area of Operations

Claim boundaries within which operations are proposed – Figure 4. Updated boundary maps will be provided to the NPS once new boundaries have been surveyed for the valid portions of the Little El claims. The claimants intend to continue using the Little Eldorado Creek support camp (seven buildings, NAB-51, Figure 5) as a storage site, equipment staging, fuel and fuel supply cache, and camp location. The claimants intend to mine the whole length of the claimed streams possible up to the confluence with Snow Gulch and will focus on areas that are already disturbed by previous mining (Figure 6. Map denoting areas previously disturbed which are proposed for mining on the Little Eldorado claim group. and Figure 7) . No maps are provided for the following activities as they are not proposed: pits, cutes, and underground portals; mine tailings and waste dumps; soil and vegetation stockpiles; ore stockpiles; water diversion, discharge points, settling ponds. The activities: areas for reclamation; openings to underground mines; and mill site are not applicable to the proposed operation.

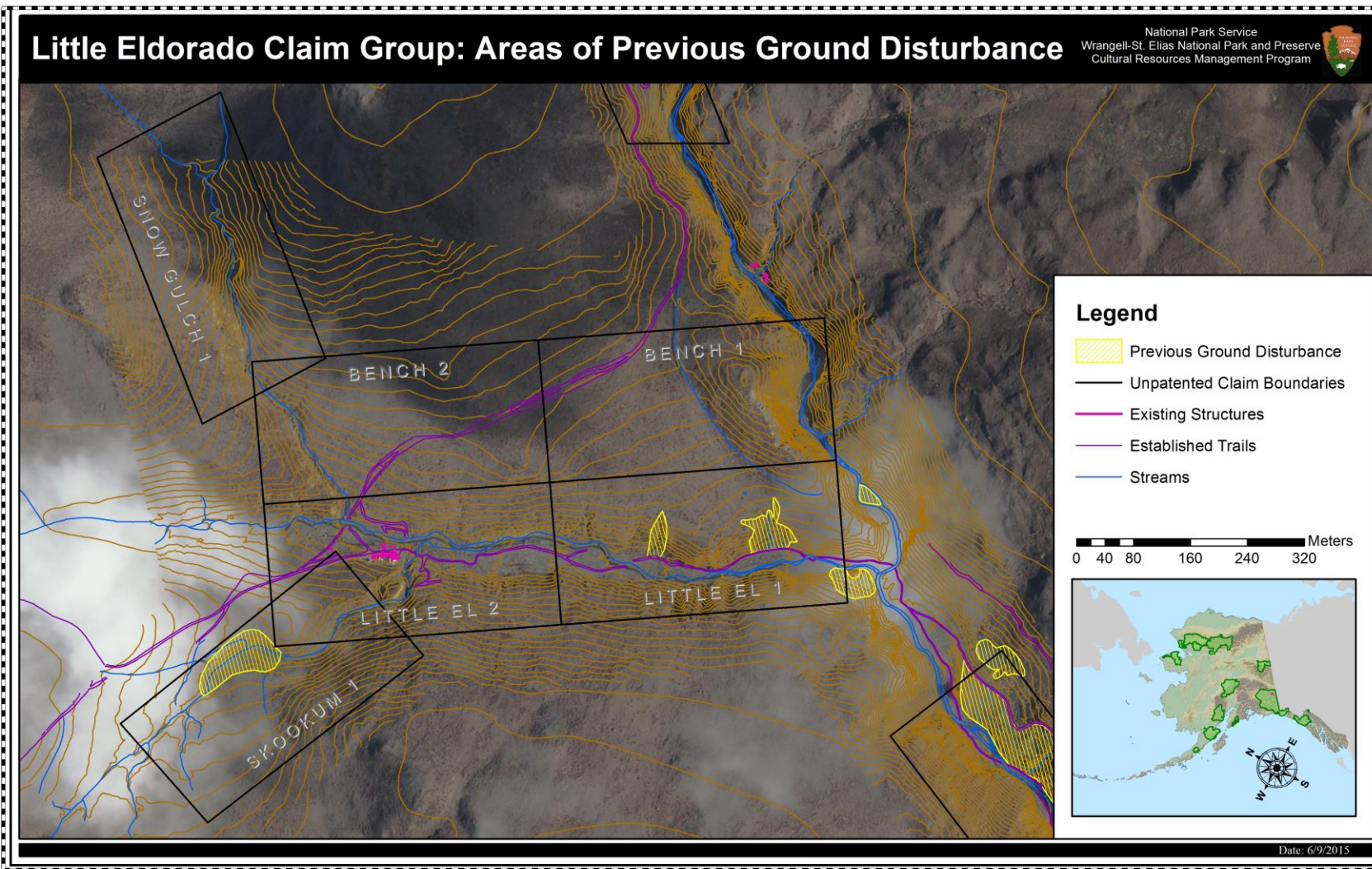


Figure 6. Map denoting areas previously disturbed which are proposed for mining on the Little Eldorado claim group.

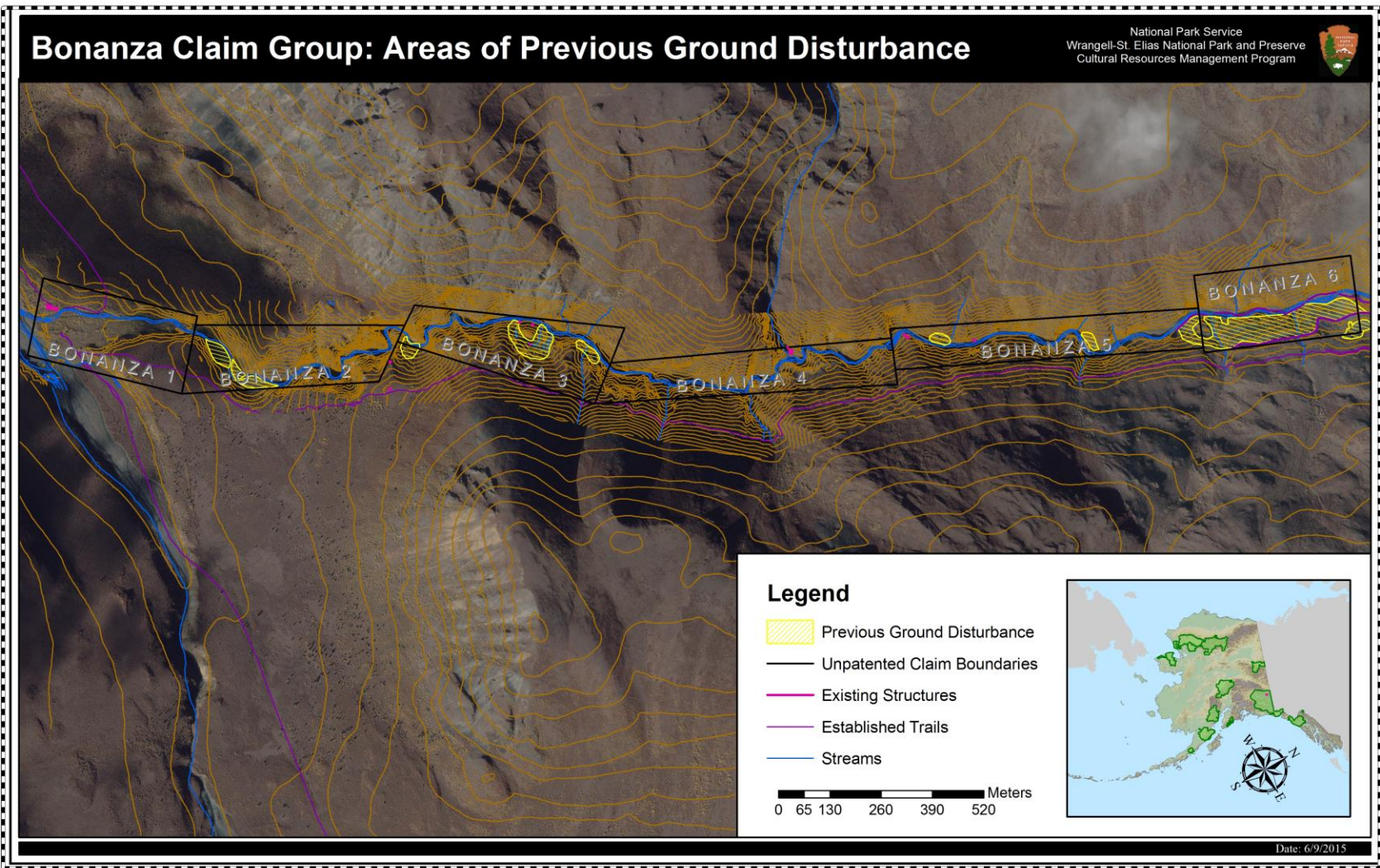


Figure 7. Map denoting areas previously disturbed which are proposed for mining on the Bonanza claim group.

IV. C. Equipment to be used

Access to these claims from the Chicken Airstrip is covered in Right-of-Way-Certificate-of-Access (RWCA) that was authorized to the LLC in 2013 by the Regional Director (see Appendix A).

Two Conam four wheeled all-terrain vehicles (ATVs) and 2 Polaris four wheeled ATVs will be used for surface transportation on the claims. Fuel and maintenance for the equipment is housed with the fuel for the dredges and generators at the base camp next to Skookum Creek and Little Eldorado Creek.

Operations equipment will include the following:

- a. *Suction Dredge* - Current equipment on site includes a 2.5 and 4 inch Keene mini dredge, a 4 inch Dalke mini dredge, and a 4 inch Keene dredge powered by 5 or 8 HP Honda and Briggs motors. Each dredge will move a maximum of 3 yards of material through a sluice in one day. We expect to also use a 6 inch Keene min dredge in the future which could move a maximum of 5 yards of material in one day. No larger than a 6 inch suction dredge will be used to extract the mineral resources from Bonanza and Little Eldorado Creeks. Each dredge will not use more than 5 g of gas per day and the fuel not in the dredge's fuel tanks will be transported daily from the storage shed at the base camp to the worksite. Small temporary impoundments will be constructed using large rocks from the existing creek bed. A tarp or similar plastic may be draped over the rocks to impede drainage over the impoundment to create a pond for the dredge to float, however if an impermeable boundary is placed, it will be removed at the cessation of use of that particular impoundment.



Figure 8. Keene 4" suction dredge

Effluent will drain into the impoundment to allow solids to settle prior to being discharge over the temporary impoundment. Most likely, a new impoundment will be constructed every day, and removed every evening unless for some reason dredge activities for the current impoundment were not completed in a single day. In no event will an impoundment remain in place for longer than 7 days. There is no intent to redirect creek flow except as needed during high water events. Water impoundments will not use any material taken from cultural features.



Figure 9. Example of high banker that may be used

Suction dredge mining operations will be restricted to areas normally covered by water within the submerged portion of the active stream area. It is anticipated that up to 3 suction dredges will be operated at a time.

- b. *High Banker Power Sluice Box* - A high banker may be used for areas where suction dredging is not feasible, such as in the steep sections of the creeks. Hand methods (buckets and shovels) will be used for the most part to transfer ore bearing gravels into the high banker although a mechanical method, such as an excavator attachment to a small ATV or similar piece of equipment may be used. All highbanker use will occur in previously disturbed areas of Bonanza #6 where the upper trails traverse ground previously mined in the early 1900s.
- c. *Metal Detector* - A metal detector, such as the Fisher Gold Bug 2 which is on site or equivalent will be used to help in exploratory activities in any currently unidentified bench deposits or at any location in the creek bed. It operates on 2- 9 volt batteries and needs no other fuel.
- d. *Miscellaneous tools* - Multiple miscellaneous tools and equipment may be used during mining including gold pans, shovels, hand tools such as hammers and wrenches, picks, ax, generators, power tools (such as drills and saws), pry bars, and protective equipment such as safety glasses and ear protection. All equipment will be removed from the claims at the end of each season and stored at the Little Eldorado camp. When mining is complete or the tools are obsolete they will be removed from the area entirely.

IV. D. Proposed Operations

1. Mining type and level of operations

This plan is to continue operations that have been ongoing since before the founding of the park on the Bonanza Claims and to begin a new mining operation (new since 1913) on the Little El claims. Please see Table 3.

The proposed plan is to use Dalke and Keene 2.5, 4, and 6 inch suction dredges powered by a 5 or 8 HP Honda and Briggs motors. The dredges have a box sluice and they rest on pontoons in the stream. Water and gravel would be drawn into the intake hose by the suction pump. The material would then be pumped into the sluice box to separate gold from the gravel. The processed gravel and used water would then be discharged into the stream from the sluice box. The dredges will process from 3-5 cubic yards of gold-bearing gravel per day. Small dams may be needed to float the dredge, but will not exceed 20 cubic yards of rocks and material.

All gravels 5 inch and smaller will be processed through the floating sluice box, and all materials larger than 6 inch will be hand moved out of the way and then moved back into the hole after the hole has been dredged. After the overburden is dredged we will use prying tools to break open the bedrock, and use

the dredge to extract the concentrates from the bedrock. After processing the fractured bedrock, the operators will return the broken bedrock. As we move up the channel the dredge will redeposit smaller gravels over the bedrock. In this fashion reclamation will be concurrent with the operation. Final reclamation is done at the end of the season, when the final dredge site is leveled out. Any dams that were constructed will be broken down and leveled back to the natural contour. The dredging operation is confined to the active stream channel, and will not exceed the annual high water mark.

The operation will start in early June each year and continue until mid-September, depending upon the weather conditions. We estimate that we can process from 1-10 yards of material per day, depending on the size of the material that they are moving and the dredge being used. Maximum yardage would be 500 cubic yards per season, based on a 60-100 day season. On average per year we can mine 100-400 linear feet of the creek, depending upon the depth of the overburden and the width of the creek. We have found during previous operations that the overburden ranged from 1 – 14 feet deep, but the average was 4-6 feet. Creek width varies from 5-40 feet.

We also propose to use metal detectors for the purpose of prospecting and sniping exposed bedrock areas. Exploration activities are planned for all claims. Prospecting will be limited to already disturbed, un-vegetated areas. Test holes will be approximately 6 feet in diameter, and hand dug with a shovel. The maximum number of pits dug per season would be 6. Some will be out of the active floodplain. The maximum surface disturbance would be 25,000 square feet. Upon completion of testing all holes will be backfilled into their natural state.

Equipment for testing will be a shovel, gold pan, and 3 inch High Banker dredge. The High Banker can be used as a dredge for sampling or material can be shoveled into it from a prospect hole.

2. Timing and Production

It is anticipated that annual mining operations will begin no earlier than June 1 and end no later than September 30 each year.

The total approximate length of creek bed to be mined in the claims is on average 100-400 linear feet of the creek per year, depending upon the depth of the overburden and the width of the creek. We have found during previous operations that the overburden ranged from 1 - 14 feet deep, but the average was 4-6 feet. Creek widths vary from 5-40 feet. We estimate maximum potential of 500 cubic yards of gravel to be moved per season. Potentially this could result in 2,000 linear feet could potentially be mined in less than 6 years. However, this mining plan of operations should be authorized for 10 years to provide flexibility in the event a season is delayed, operators cannot hit their production goal or operations cannot proceed for any reason.

Assuming operations will be conducted by the 6 owners of the LLC, operations on the bench deposits will take place intermittently between dredging days and these activities will not typically control the length of time needed to dredge the claims.

3. Mine workings

Removal of vegetation and soil layer - No removal of vegetation or soil is envisioned as suction dredging will take place where water is available in the then current creek location.

Removal of Colluvium and Fluvial Gravel - It is anticipated that the gravels are up to 4 feet thick and are on bedrock in the active creek. Any gravel to be moved will be done either by hand, with the suction dredges or with small motorized equipment.

4. Processing Mineral Bearing Deposits

Mineral bearing deposits will be processed using the sluice box attached to the suction dredges or a high banker. Gravels to be processed in the high banker will be moved by hand. It is anticipated that the gravels to be processed in the exposed bench area on the Bonanza and Little El claims will be obtained only from areas that were previously disturbed. Annual operations are expected to disturb less than 500 square feet per year. Any areas excavated in a year will be refilled at the end of each mining season.

The metal detector will be used to identify possible nugget locations. The metal detector makes an audible signal when buried metal is detected. Small excavations using hand tools, such as a trowel will be made to further explore the area indicated by the audible signal. Typically, a metal detector can detect metal buried less than 1 foot deep. Consequently, hand excavated exploratory holes will typically be less than 1 cubic foot. Material that is excavated to explore the audible signal will be replaced into the less than 1 cubic foot excavations after identification of the metal object causing the signal. If the metal object causing the signal is not gold, then it will be reburied into the small excavation.

5. Waste Management

Mine Water Waste Management: The creek gravels are medium to coarse grained with a small percentage of fines. Discharge from the suction dredges will occur directly into Bonanza Creek, usually within the temporary impoundment a few feet downstream of the suction dredges.

Any effluent from the high bankers will be discharged to vegetated areas outside the existing flowing creek, to allow solids to settle.

There will be no effluent produced by metal detector operations.

Human Waste: An outhouse is located within the support camp. There is a need to dig a new hole and relocate the outhouse, and the claimant has requested written permission from the park. The plan is to reconstruct the outhouse using exterior materials consistent with the historic cultural landscape, and to move the outhouse from the current location (between the 5th and 6th buildings) to a location closer to the airstrip and further from surface water. Other human waste will be deposited in a pit located off the floodplain and will not be located in the vicinity of archeological resources. The bottom of the pit will be no less than 4 ft. from the water table and the pit will be covered with soil and vegetation at the end of the season.

Solid Waste: All burnable trash will be burned in a burn barrel at the support camp. Garbage and waste oil will be flown out to Tok for disposal at the minimum at the end of every season. All trash and other scent attractants will be kept safe from bears through the use of bear-proof containers or electric fences.

Other: Each year, maintenance equipment and supplies will be transported to site. To the extent possible, non-perishable supplies will be transported in the winter. This includes, but is not limited to:

1. Maintenance tools such as wrenches, hammers, jacks, tire pumps, tire repair kits, replacement tires etc.
2. Maintenance supplies including but not limited to lubricants, replacement parts, etc.

6. Energy requirements

At the support camp there are two 2,000 watt generators that are used for powering power tools for equipment repairs and to run lights. The Honda generators have 1 gallon tanks and can operate approximately 15 hours on that capacity. Chisana Mining LLC will store no more than 150 g of fuel oil and gasoline at any one time at its Little Eldorado support camp.

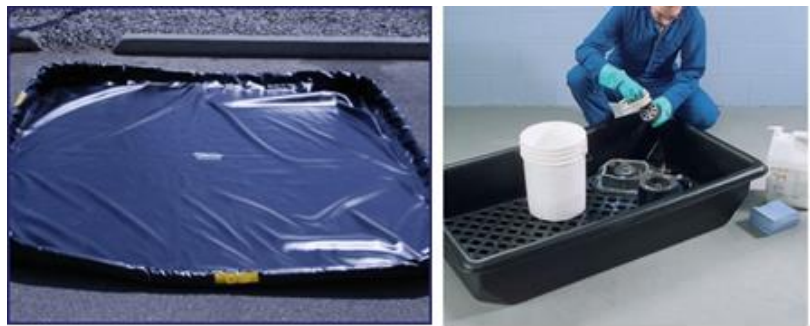


Figure 10. Two possible spill containment structures

Propane and kerosene will be used for heating and cooking when needed. At any one time 6 small 20-30 pound bottles of propane and 5 10 gallon cans of kerosene will be stored at the support camp on Little Eldorado Creek.

7. Explosives

No explosives or blasting will take place.

8. Use of chemicals

No chemicals other than fuel, oils and lubricants for equipment and soap for domestic cleaning will be used.

9. Fuel requirements

All gasoline, heating oil, and motor oil would be transported and stored in the support. Fuel will be transported from the support camp to the work sites on an as needed basis. Estimated fuel use per season is 10 gal per day, or 500 g of gasoline; 50 g of heating oil; 100 g propane; and 50 g of kerosene per year. The estimated amount of fuel stored in camp at any time is: 120 g gasoline, 50 g fuel oil, 180 g propane, and 50 g kerosene.

Fuel will be stored in metal or other bear-proof material containers no larger than 55 g. At times when there is no skid steer in use, it is anticipated that annual fuel consumption will be less than 100 g. No more than 400 g will be stored on site.

Spill containment for fuel will be near sheds at the support camp and at the work site. Containment will consist of an impermeable tarp draped over a 2x8 wooden frame, with barrels placed upon rubber matting to prevent tearing of the tarp. Absorbents pads will be located near the fuel storage area so that any drips from fueling activities will be immediately cleaned up. When fueling the equipment a drip pan will be used to prevent spillage onto the ground.

10. Structures

Little Eldorado Creek support camp (seven buildings, NAB-51, Figure 11), Bonanza No. 5 (two tent frames, NAB-079 and NAB-80), Canyon Creek cabin on Bonanza No. 4 (NAB-047), Bonanza No. 3 (frame shed, IS#201-??), Bonanza No. 1 (three structures, NAB-046) will be used in support of the mining operations.

We propose the following alterations to the support camp at this time. Two of the buildings at the Little Eldorado Creek support camp will have roof repairs to maintain the viability and structural integrity of the buildings. We will take before and after photos and intend to make the roofing material match the other 5 structures in the camp per the discussions with the park service. No additional alterations or improvements to the structures are permitted without prior approval, in writing, from the superintendent.

Artifacts located in cabins shall be left where found. Direct support of mining operations is the only allowable use of historic support facilities on Bonanza and Little Eldorado creeks.

Mining activities on Bonanza #4 will be based out of the Little Eldorado Camp, and fuel for that operation will be temporarily stored in the small fuel cabin at Skookum Creek. Any spike camps will be on sparsely vegetated gravel bars on a sufficiently high terrace to minimize it washing out during flood events and will avoid areas with sensitive cultural resources.



Figure 11. Little Eldorado Camp (NAB-51). From left to right the buildings are features 1, 2, 3, 4, 5 (tent frame-cabins), 6 (outhouse), and 7 (shed). NPS Photo from 2010 site assessment.

Domestic water supply will be from the nearest creeks at approximately 10 g per day per person. We do not anticipate using any storage tanks or piping systems.

All food and scent attractants will be kept away from bears. Where possible, all food items will be removed at the end of the season along with the trash so that bears are not attracted to it. Any damage to the cabins by wildlife will be reported to the NPS.

Chisana Mining LLC will secure buildings in which supplies and equipment are left when not present in

order to prevent theft. However, these buildings will not be marked as private in any other way.

IV. E. Nature and Extent of Known Deposit

Please refer to BLM Validity Exams (See Appendices B, C, and D) for information and maps on the geology and deposit. Please refer to the National Park Service Alaska Field Area Resources Report NPS/AFARCR/CRR-96/29; A History of the Chisana Mining District, Alaska 1980-1990 for the complete history of mining in the Chisana District and on the Little Eldorado and Bonanza claims for past mining activity and cultural resources (not included with this plan).

Table 3 shows the NPS authorized mining activity since 1995 on these claims. Most of this has been on the Bonanza claims with the info on 2010 including work on the Little Eldorado that was authorized as part of the BLM validity exam.

IV. F. Reclamation Plan

1. Procedures for removing all surface structures, equipment and man-made debris
2. Replacing overburden and spoil
3. Grading to original contours
4. Replacing topsoil
5. Prevention of surface subsidence
6. Re-establishing native vegetation

Reclamation is proposed as an ongoing process during the mining operation. The instream dredge will be returning the processed gravel directly to the stream as it exits the sluice. At the end of the season they will level out any tailings piles. Because only previously disturbed and non-vegetated areas in the active stream channel are mined, there has been no requirement to replace top soil. Any dams used to enhance water depth for dredge operation are removed as soon as work in an area has ceased and the dam site re-contoured to approximate the original grade.

IV. G. Compliance with Other Laws and Regulations

The claimants are responsible for having the following current permits from other agencies.

- Alaska Department of Natural Resources (A DNR) Water Use Permit for suction dredge activities
- Environmental Protection Agency (EPA) Water Use Permit for suction dredge placer mining and water discharge
- Army Corp of Engineers (ACE) General Permit for suction dredge placer mining and water discharge
- State of Alaska Mining Permit

IV. H. Environmental Report

The areas to be mined by activities authorized under this plan are areas that were previously disturbed during mining activities in the area from 1913 to the present. The proposed operations will be confined to existing disturbances.

During mining, any cultural remnants that are encountered will be temporarily moved, and when annual operations are complete, the cultural remnant will be replaced at or near where it was found.

Included in Appendix C is the Summary of the Final Environmental Impact Statement (EIS) for the Wrangell St. Elias National Park and Preserve; the Affected Environment Section of the EIS for the Park Environmental and for the Chisana Study Area, and the Record of Decision resulting from the EIS.

Please refer to the National Park Service Alaska Field Area Resources Report NPS/AFARCR/CRR-96/29; A History of the Chisana Mining District, Alaska 1980-1990 for the complete history of mining in the Chisana District and on the Bonanza and Little Eldorado for past mining activity and cultural resources (not included with this plan).

- A. Environment of the area affected by the operation
- B. Impacts of proposed operations on the environmental components above
- C. Steps to be taken to insure minimal surface disturbance
- D. Methods for disposal of all rubbish and other solid and liquid wastes
- E. Alternative methods of extraction and the environmental effects of each
- F. Effects of actions taken to comply with the reclamation plan

IV. I. Relationship to NPS Planning

The National Parks Service has prepared multiple mining environmental assessments (EA) related to proposed mining in the Chisana – Gold Hill Area. These environmental assessments analyzed effects on the environment and are listed below.

- 1988 Moody Bonanza Claims 4-6 5yr Mining Operations EA (Appendix D)
- 1990 WRST Cumulative Impacts of Mining EIS (Appendix C, [PEPC 43408](#))
- 1992-1997 Fales Big Eldorado Creek Mining Operations EA
- 1994 Supplement to Fales Big Eldorado Creek Mining Operations EA
- 1995-2000 Moody Bonanza Claims 1-6 5yr Mining Operations EA (Appendix F)
- 2001 Fales Big Eldorado Claims Mining Operations EA
- 2001-2005 Moody Bonanza Creek Mining Plan of Operations Supplement: Regional Director's Analysis for Wrangell St. Elias National Park and Preserve and Moody Bonanza Nos 1-6 Mining Operation Extension CE (Appendix G, PEPC 12645)

- 2007-2011 Moody Bonanza Creek Mining Plan of Operations 5-year extension: Regional Director's Analysis for Wrangell St. Elias National Park and Preserve and Moody Bonanza Nos 1-6 Mining Operation Extension CE (Appendix H, PEPC 25027)
- 2008 WRST Programmatic Established and Maintainable Access to Inholdings EA (PEPC 19671)
- 2012-2014 Chisana Mining LLC Operation Bonanza 1-6 Extension by Special Use Permit
- 2013 Chisana Mining LLC Right-of-Way-Certificate-of-Access CE (Appendix A, PEPC 45893)
- 2013 Lamal Shamrock Group Mining Plan of Operations EA ([PEPC 44300](#))

Table 3. Summary of NPS permitted mining & exploration per season on the Bonanza and Little Eldorado Claims. Note that any work done on the Little Eldorado claims has, up until this point, been done as part of the BLM validity exams.

Data Source	Mining & Exploration Per Season									
	Start Date	End Date	Stream bed disturbed annually (linear feet)	Surface area disturbed annually (square feet)	Daily Production (cubic yards of material processed)	Annual Production (cubic yards of material processed)	Avg. Hours running dredge/day	No. Work Days	Total Est. Hours running dredges	Total No. People
Pre-1991 Max Operations	ud	ud	125	900	0.8	40-100	ud	95	ud	ud
1991 NPS Monitoring Report	ud	ud	335	8200	5.0	400	ud	80	ud	ud
1992 NPS Monitoring Report	ud	ud	585	9110	3.7	220	ud	60	ud	ud
1993 NPS Monitoring Report	ud	ud	375	3400	5.4	185	ud	34	ud	ud
1996 Operator's Annual Report	ud	ud	126	1035	2.3	82	ud	36	ud	ud
1996 NPS Monitoring Report	ud	ud	185	2037	ud	ud	ud	36	ud	ud
1997, 1998, 1999, 2000	No operations these years - clean-up and reclamation work only									
2001 Operator's Annual Report	ud	ud	ud	ud	ud	ud	ud	ud	ud	ud
2002 Operator's Annual Report	ud	ud	0	0	20	ud	ud	16	ud	ud
2003 Operator's Annual Report	ud	ud	0		59	ud	ud	71	ud	ud
2004 Operator's Annual Report	ud	ud	0	0	30	ud	ud	60	ud	ud
2005-06-07 Operator's Annual Report	No operations these years - clean-up and reclamation work only									
2008 Operator's Annual Report	mid July	mid Sept	0	0	ud	1	ud	7	0	ud
2009 Operator's Annual Report	9-Jun	8-Sep	70	648	1.9	103.3	4	54	13.5	ud
2010 Operator's Annual Report	25-Jun	10-Aug	100	670	2.1	70	4	34	136	6+BLM
2011 Operator's Annual Report	8-Jul	4-Aug	21	126	34.5	34.5	5	15	40	5
2012 Operator's Annual Report	5-Jul	29-Jul	20	6	76.5	64	6	11	55	5
2013 Operator's Annual Report	25-Jul	10-Aug	50	42	3.4	74	10	22	31.5	8
2014 Operator's Annual Report	4-Jul	1-Aug	54	648	2.1	92	6	44	21	7