

**HACKBERRY SILVER PROPERTY  
MOHAVE COUNTY, ARIZONA, USA  
NI 43-101 TECHNICAL REPORT**



Prepared for

**Bitterroot Resources Ltd.**  
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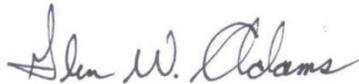
Effective Date: March 28, 2017

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**DATE AND SIGNATURE PAGE**

The effective date of this NI 43-101 Technical Report entitled “Hackberry Silver Property, Mohave County, Arizona, USA, NI 43-101 Technical Report,” is March 28, 2017



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Glen W. Adams, Professional Geologist

Date: March 28, 2017



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Jeffrey Rowe, P.Geo.

Date: March 28, 2017

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## **1.0 SUMMARY**

### **1.1 Introduction**

Mr. Glen (Glendenning) W. Adams, P. Geol. (Minnesota and Wisconsin and Registered Member SME, No. 4115591RM) (“Mr. Adams” or “Author”), a Certified Professional Geologist (a Qualified Person), was retained by Bitterroot Resources Ltd. to examine the project area and prepare an independent National Instrument 43-101-compliant Technical Report (“Report”) for the Hackberry Project (“Property”) located in Mohave County, Arizona, U.S.A. Mr. Adams is responsible for the written body of the Report. All map figures in the Report were produced by Mr. Jeffrey Rowe, P. Geo. (British Columbia) (“Mr. Rowe”), a Certified Professional Geologist (a Qualified Person). Collectively Mr. Adams and Mr. Rowe are the co-authors (“Co-Authors”) of the Report. The Report is based on a compilation and analysis of historic unpublished and published geological reports and data prepared by cited individuals, personal communications and on a field inspection by Mr. Adams. The Report incorporates a summary of previous work and an appraisal of the exploration potential of the Property. The purpose of the Report is to demonstrate that the results of the historic exploration and mining activities on the Property, as well as the Property’s inherent mineral potential, establishes sufficient merit to warrant further exploration.

### **1.2 Project Location and Ownership**

The Hackberry Project (“Property”) is located within the central Peacock Mountain Range of northwest Arizona, approximately 48 km (30 miles) northeast of Kingman, Arizona (Figure 4-1).

The Property covers two separate historic mining operations. The northwest-most is the Silver King-Hillside area (“Silver King”), which is covered by three unpatented mining claims, encompassing approximately 24 hectares (60 acres), held by Nevada Select Royalty Inc., (“Nevada Select”) a Nevada corporation, which in turn is a wholly-owned subsidiary of Ely Gold and Minerals Inc., a British Columbia company. The southeastern, and historically more productive mine area, consists of the Old Hackberry (or Sunshine), and the South Hackberry mines (“Hackberry”) located on 12 Patented Lode Claims that cover about 97 hectares (240 acres) and extend over a north-south distance of about 1.9 km (1.2 miles). The Hackberry part of the Property is held in the Arizona-based, Hughes Family Trust (“Hughes Trust”).

### **1.3 History**

The Hackberry and South Hackberry prospects were discovered in 1874. The Silver King prospects were discovered about the same time or slightly later. The Silver King deposits were only developed to the lower reaches of the oxidized zone by shallow workings, but the

extracted, oxidized silver-rich mineralization yielded an average of 6,860 grams/tonne (200 ounces/ton) silver. The South Hackberry mine had a number of different owners who made no apparent systematic attempts to develop the mine. Various sources referred to ongoing litigation and receivership problems and the mine never succeeded in any significant production.

The Hackberry mine had two separate periods of production. Mining from 1874 through 1884 developed one main silver-rich mineralized shoot that produced between \$2,000,000 and \$3,000,000 (1884 dollars) worth of high-grade mineralization that was mostly milled on-site. In 1884 the mine was closed due to the combination of apparent mismanagement problems, an influx of mine waters and litigation issues and the mine workings were allowed to flood. Over the next 33 years several unsuccessful attempts were made to reopen the mine. In 1917 the mine was purchased by the Hackberry Consolidated Mining Company. The mine was dewatered and development was started on a narrow mineralized seam on the 600-level that developed into a significant base- and precious-metal-bearing body that produced an estimated 136,065 tonnes (150,000 short tons) of mineralized material with an approximate gross value of \$4,000,000 (1917 dollars). In 1919 litigations problems again arose resulting in the permanent closure of the Hackberry Mine and the mine was allowed to flood.

Several companies and individuals have made unsuccessful attempts to discover additional mineable resources since the mine's closure in 1919. Minor exploration efforts have been carried out, including a limited, but unknown, amount of drilling; however, to date no well-planned, significant exploration program has been conducted on the Property.

#### 1.4 Geology and Mineralization

Regionally, the Property is located in the Peacock Mountains within the Basin and Range province of the southwestern U.S. More specifically, the Property covers rocks that are part of the Arizona Mohave crustal subprovince (Prante, 2009; Duebendorfer, 2015). Duebendorfer (2015) states that reliable age dates for the oldest granitic intrusive rocks in the Arizona Mohave crustal subprovince are about 1,735 million years.

The local Property-scale geology consists of a mixed sequence of feldspathic "granitic" gneisses (variably foliated and sheared, medium to coarse-grained, equigranular granitic rock) and biotitic and biotite-amphibolite gneisses intruded by several, post-metamorphic, fine to medium grained, intermediate to mafic dikes of possible Middle Proterozoic age. Poorly sorted, unconsolidated Quaternary colluvium is common on the Property along the lower mountain slopes and adjacent outwash plains.

A structural fracture zone, striking between 310<sup>0</sup> to 335<sup>0</sup>, extends approximately 2.5 km (1.5 miles) along the length of the Property. The fracture systems and their splays host many of

the post-metamorphic dikes and the main Hackberry and Silver King mineralized zones. The mineralized vein systems hosted by the structural fractures dip about  $40^{\circ}$  to the southwest in the south and steepen to about  $55^{\circ}$  to  $80^{\circ}$  southwest, and locally vertical to slightly northeastward, in the north. Locally joint sets become significant structural features where they increase in intensity as noted east of the Silver King area between the two main structural zones on the Property. The structural zone may be part of a more regional feature that appears to extend from the Hackberry deposit area northwesterly for about 6.5 km (4 miles) ) as observed on satellite imagery and the trend of historic surface workings.

The base- and precious-metal mineralized zones on the Hackberry property consist of a series of one or more fracture sets containing quartz veins or zones of silicification within envelopes of locally argillically altered and sometimes foliated, granitic gneiss. The mineralized zones are commonly discontinuous and erratically distributed within the main structures and their splays. Widths of the mineralized zones vary greatly and randomly pinch and swell from 0.1 to 1.5 meters (1 to 5 feet) over variable lengths ranging from 6 to 180 meters (20 to 600 feet). The main Hackberry lode is an exception as the mineralized vein breccias vary from 122 to 335 meters (400 to 1100 feet) in length and 1.5 to 21 meters (5 to 70 feet) in width (Malkoski, 1985).

The mineralized fracture zones contain drusy to vuggy, locally cockscomb, white to clear, quartz veinlets, lenses and breccia matrix. The veins and breccias commonly contain trace amounts, to locally 20 percent, primary sulfide minerals in the form of galena, sphalerite, minor pyrite and local chalcopyrite and possible tetrahedrite. Secondary oxidized products of the primary sulfides are common in surface exposures, shallow mine workings and pits and on the historic mine dumps. Excluding the often very high-grade oxide deposits, the reported historical grade of the base- and precious-metal mineralization typically mined ranged from 25 oz/t to 100 oz/t (857 to 3,429 grams/tonne) silver, 0.05 to 0.15 oz/t (1.7 to 5.1 grams/tonne) gold with 8 percent lead, 6 per cent zinc and copper from 0.5 to 2.5 percent (Watts, 1912; Johns, 1918; Weed, 1922; Warne, 1983). Recently sampled surface rock and mine dump geochemistry results reflect grades similar to the historic grades.

Malkoski (1985) believed he recognized property-wide evidence for vertical metal zoning consisting of an upper quartz zone, an intermediate precious metals and sulfide zone and a lower base metals zone. Based on this data and the overall characteristics of the mineralized systems on the Property, it appears that the deposits likely occur within the transition zone between a Mesothermal type deposit and an Intermediate-Sulfidation, Epithermal type deposit, as described by Sillitoe (2003).

## 1.5 Current Status

The Hackberry Mine and associated deposits and occurrences were exploited during the late 1800's and early 1900's. Since 1919 there has not been a significant, well organized exploration program nor a major drilling effort conducted on the Property. Recent era reconnaissance exploration, and reports of potential mineral resources remaining in the historic mine workings, suggests that the Property has excellent potential and warrants further exploration. It is Bitterroot's intention to mount a comprehensive, Property-wide exploration effort, including a future, drilling-intensive campaign, to determine if a significant mineral resource is present on the Property.

## 1.6 Mineral Resource

There are no NI 43-101 compliant resources currently present on the Property.

Several historical resource estimates have been put forth by various authors (Watts, 1912; Johns, 1918, Hamm 1987); however these resources are based on incomplete data from the late 1800's and early 1900's. A qualified person has not subsequently conducted sufficient work to classify the historic resource estimates as being compliant with NI 43-101 standards and as such Bitterroot is not considering the historic resources as current mineral resources.

## 1.7 Conclusions and Recommendations

Based on unpublished and published data cited in this Report, as well as a personal inspection of the Property, the Author has concluded that the Hackberry Property exhibits evidence of significant silver, gold and base-metal mineralization and is an exploration property of merit. Further, the Author recommends that Bitterroot conduct a multi-disciplinary geological, geochemical and geophysical exploration program on the Property, using state-of-the-art exploration techniques. The objective of the proposed exploration program will be to confirm the validity of the historic data and to delineate drill targets, all directed toward defining a future mineral resource. Although not part of the initial exploration budget, a significant core drilling program will be recommended during the next exploration phase once drill targets have been identified. An initial budget of approximately \$176,800 (\$U.S.) is proposed to carry out the first multi-disciplinary program.

## 2.0 INTRODUCTION

### 2.1 Issuer and Terms of Reference

Mr. Adams and Mr. Rowe were requested by Bitterroot Resource, Ltd, (and its 100 percent-owned Michigan subsidiary Trans Superior Resources, Inc., collectively referred to as

“Bitterroot”) to prepare a National Instrument 43-101-compliant (NI 43-101) Technical Report (“Report”) for the Hackberry Project located in Mohave County, northwest Arizona, U.S.A. Bitterroot is a publicly-traded Canadian junior exploration company listed on the TSX Venture Exchange; symbol BTT (TSX-V). Bitterroot’s Corporate Head Office is located at Suite 206-B, 1571 Bellevue Avenue, West Vancouver, BC, Canada, V7V 1A6.

Mr. Adams and Mr. Rowe are each independent of Bitterroot and have no beneficial interest in the Hackberry Project. Fees for this Report are not dependent, in whole or in part, on any prior or future involvement or understanding resulting from the conclusions of this Report. This Report was prepared in accordance with the disclosure and reporting requirements set forth in NI 43-101, specifically to support the current value and future exploration potential of the Hackberry Project.

## **2.2 Qualified Person**

Glen W. Adams, Certified Professional Geologist (SME Registered Member No. 4115591RM) is serving as a Qualified Person as defined in NI 43-101. Mr. Adams has over 40 years of domestic and international, base- and precious-metal and diamond exploration and property evaluation experience.

Jeffrey D. Rowe, Certified Professional Geoscientist (Association of Professional Engineers and Geoscientists of British Columbia, Canada, License No. 19950) is serving as a Qualified Person as defined in NI 43-101. Mr. Rowe has over 34 years of domestic and international, base- and precious-metal exploration and property evaluation experience.

## **2.3 Sources of Data for Technical Report**

Data for the Technical Report was sourced from various historical unpublished and published geological reports, maps, mine plans and news articles as cited in Section 27.0, References, by personal communications with individuals as cited in the body of the Report and from results obtained from a Property inspection by Mr. Adams. Several of the unpublished reports were obtained from the digital archives of the Hughes Family Trust and the Arizona Geological Survey.

## **2.4 Details of Inspection**

Mr. Adams spent September 8 and 9, 2016, on the Property. During this time Mr. Adams conducted reconnaissance field examinations of the property’s geology and took seven pertinent rock samples from several of the Property’s mineral occurrences and historic mine dumps. The sample locations and silver, lead and zinc analyses are shown in Figures 7-5, 7-6, 7-7 and 7-8 in Section 7.5 of the Report. During the Property inspection Mr. Adams

became familiar with the current status and geological and geographical features of the property.

## 2.5 Units of Measure

Unless otherwise stated, all distance units are reported in metric units followed by their approximate conversions in the Imperial system in parentheses, for example; 25 meters (82 feet). With respect to geological rock sample locations as noted in analytical tables or spreadsheets, sample locations are stated in meters and tied to the NAD 27 Zone 12 datum. Maps and figures in this report are plotted in UTM NAD 83 Zone 12.

References to values of silver, gold or other metals in the body of the text are reported in parts per million (“ppm”), percent (%), Troy ounces per short ton (“oz/t”), grams per metric tonne (grams/tonne), Troy ounces (oz), short tons (tons), metric tonnes (tonnes) or kilograms (kg). Precious metals values historically reported in troy ounces per short ton have been converted to grams per metric tonne using a factor of 1 oz/ton = 34.286 grams/tonne, and both values are reported. All other elements referred to in geochemical analyses are reported in parts per million (“ppm”) or percent (“%”) as indicated. All currencies are reported in U.S. dollars.

## 3.0 RELIANCE ON OTHER EXPERTS

The Authors relied upon Almar Professional Land Services, Inc. for information related to property ownership and mineral tenure. Ms. Marty Miller, Certified Professional Landman (CPL), and owner of Almar Professional Land Services, Inc. (Corporate Office: 450 Hillside Dr., Suite A-160, Mesquite, NV, 89027) reviewed and verified surface and mineral ownership status of the patented mining claims and the Nevada Select unpatented claims, as well as the status of Bitterroot Resources Ltd.’s recently-staked unpatented mining claims on US Federally-owned lands managed by the Bureau of Land Management (BLM). Ms. Miller and her team summarized their findings on the patented claims in a memorandum addressed to Michael Carr, CEO of Bitterroot Resources Ltd., dated December 27, 2016. Ms. Miller’s memorandum identified nine (9) minor concerns in the recording of several historical documents in the chain of title. These concerns were described by Ms. Miller as “Informational” in nature and are not deemed to be material to the ownership status of the patented claims. Ms. Miller’s opinions stated in the memorandum are professional opinions, not legal opinions, and are based upon industry best practices and procedures for the records reviewed.

## **4.0 PROPERTY DESCRIPTION AND LOCATION**

### **4.1 Property Location**

The Hackberry Project is located in the Peacock Mining District, Mohave County, northwest Arizona, approximately 48 km (30 miles) northeast from Kingman, Arizona (Figure 4-1). The Property lies along the east flank of the central Peacock Mountain range approximately 5.6 km (3.5 miles) west of the small community of Hackberry, Arizona, located along U.S. Highway 66. Access from Hackberry to the Property is by a network of publically-accessible gravel roads which traverse Federal, State and private lands.

### **4.2 Property Description and Ownership**

The Property covers two separate historic mining areas. In the northwest part of the Property the Silver King mine workings are located on three unpatented mining claims, totaling 24 hectares (60 acres), held by Ely Gold and Minerals Inc., (“Ely”) a British Columbia company and its wholly-owned subsidiary Nevada Select Royalty, Inc. (Nevada Select), a Nevada company. To the southeast the historically more productive Hackberry mine and the South Hackberry mine are located on the southern part of 12 Patented Lode claims, totaling 97 hectares (240 acres), owned by the Hughes Trust. The leased properties consist of approximately 121 ha (300 acres) made up of 12 patented mining claims and three unpatented mining claims (Figure 4-2), spanning northwest-southeast across parts of Sections 20, 21, 27 and 28, Township 23 North, Range 14 West, Salt River meridian. Bitterroot has also staked 51 mining claims on surrounding Federal land.

### **4.3 Mining Claims**

Prior to Bitterroot’s involvement, the Hackberry Project initially consisted of 12 patented lode claims and three unpatented mining claims. The patented lode claims cover approximately 97 ha (240 acres) of fee land and the unpatented mining claims cover about 24 ha (60 acres) staked on Federal BLM lands.

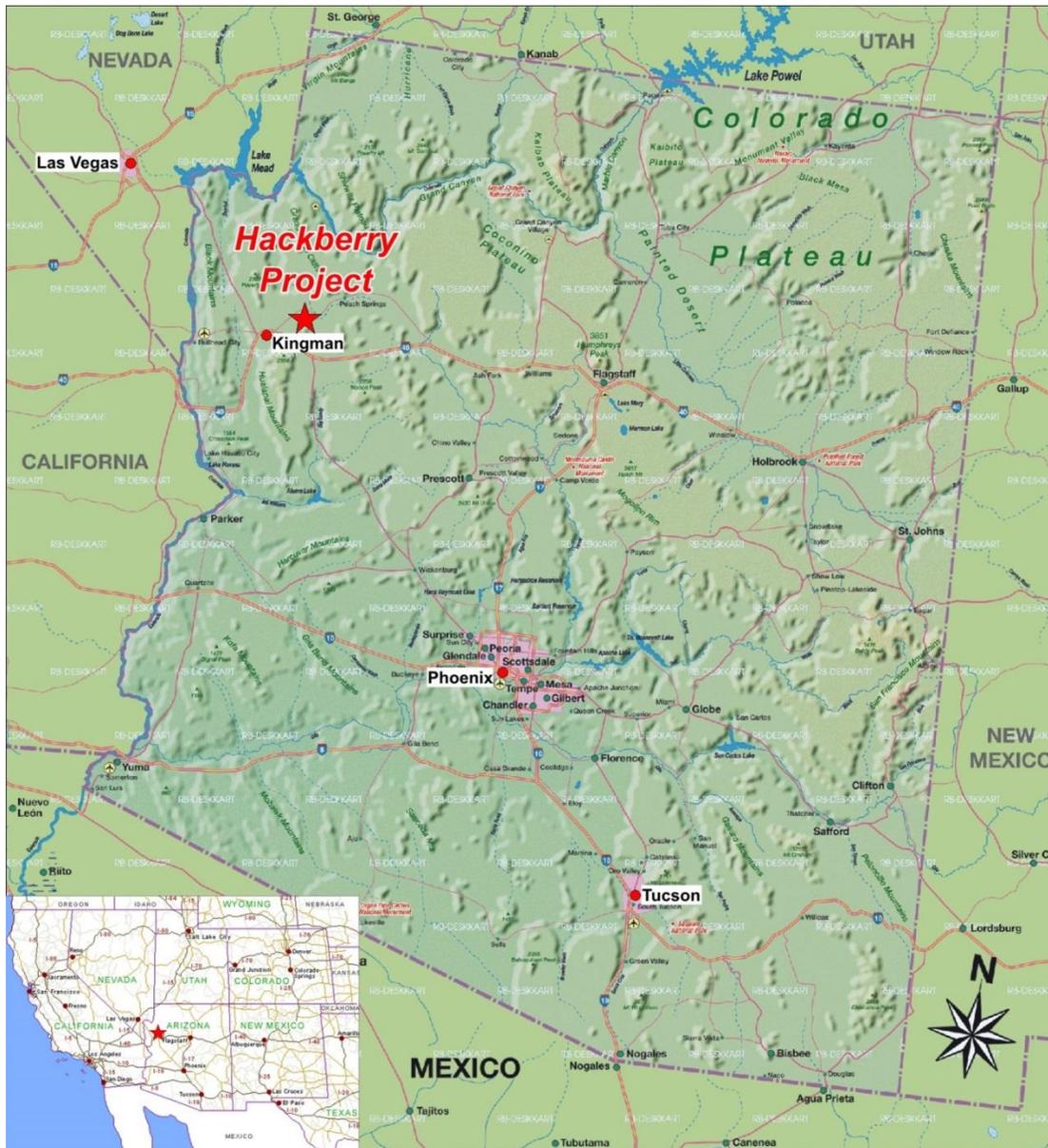


Figure 4-1. Location of the Hackberry Property, Mohave County, Arizona

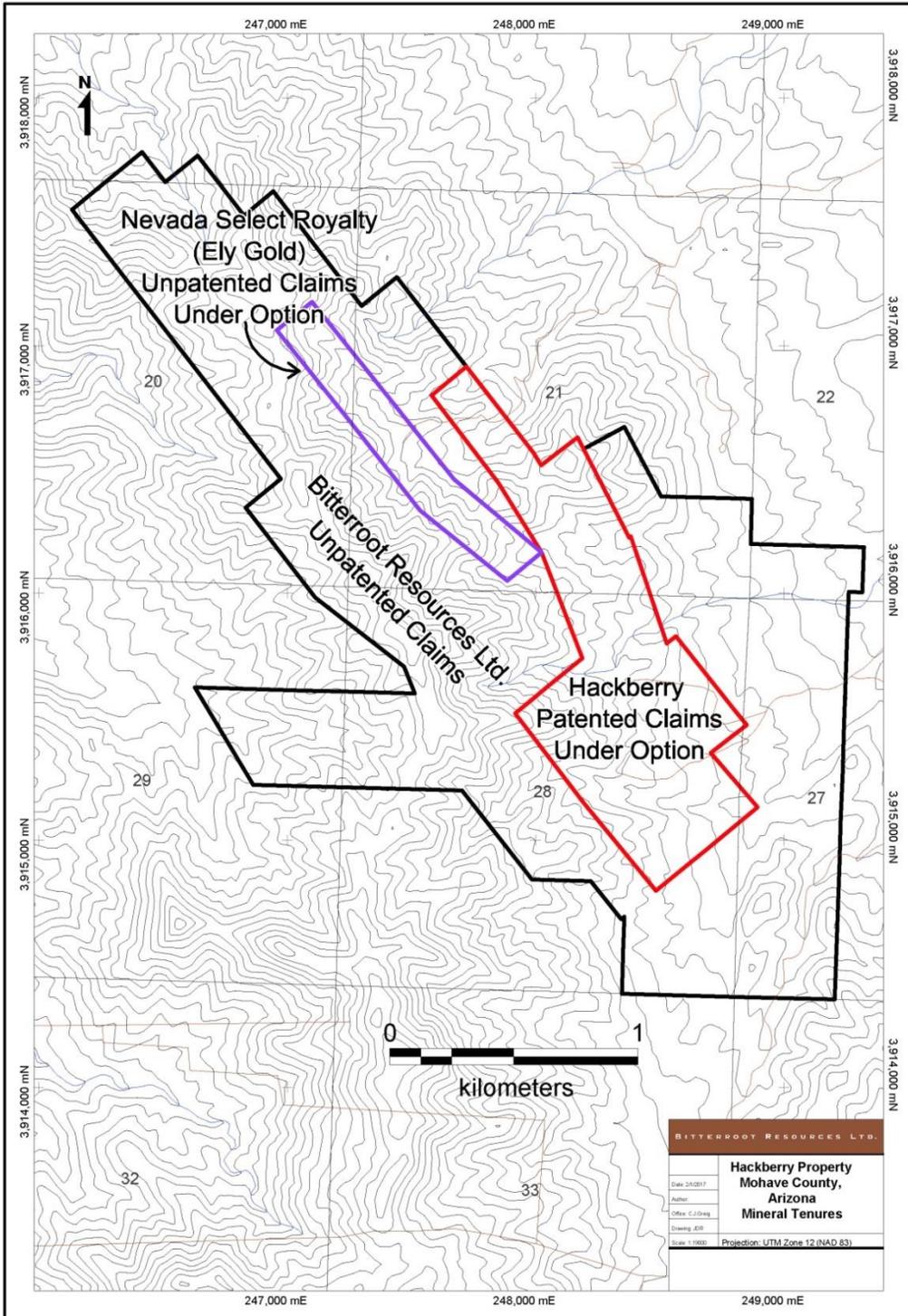


Figure 4-2. Outline of mining claims under Bitterroot ownership, Hackberry Property, Mohave County, Arizona

The patented claims, which include both surface and mineral rights, are owned by the Hughes Family Trust. Bitterroot has acquired an option to acquire 100 percent of these patented claims, as described in Section 4.4.1. Two past-producing mines, known as the Hackberry mine and the South Hackberry mine are located on the Sunshine and the South Hackberry patented lode claims (Table 4-1). The other 10 patented claims are contiguous with the Sunshine and South Hackberry patents. Three adjacent unpatented mining claims held by Nevada Select host the Silver King mines. Bitterroot has acquired an option to acquire 100 percent of the Nevada Select claims, as described in Section 4.4.2 and Table 4-2. The surface and mineral rights on the unpatented claims are managed by the BLM.

**Table 4-1. Hughes Family Trust Patented Mining Claims, Mohave County, Arizona**

<u>Claim Name</u>	<u>Mineral Survey-Lot Number</u>	<u>County Document Number</u>
Homestead	MS # 3497	Book HH, Page 689
Homestead No. 3	MS # 3497	Book VV, Page 531
Homestead No. 7	MS # 3497	Book VV, Page 535
Hackberry South	MS # 37	Book 6, Page 647
North Hackberry No. 2	MS # 3497	Book W, Page 529
North Hackberry No. 3	MS # 3497	Book W, Page 530
North Hackberry No. 4	MS # 3497	Book W, Page 531
Sunshine	MS # 2598A	Book 21, Page 61
Sunshine No. 2	MS # 2598A	Book 21, Page 61
Protection	MS # 3496	Book HH, Page 690
Protection No. 1	MS # 3496	Book VV, page 537
Protection No. 2	MS # 3496	Book VV, Page 538

**Table 4-2. Nevada Select (Ely) Unpatented Mining Claims, Mohave County, Arizona**

<u>Claim Name</u>	<u>Serial Number</u>	<u>County Document Number</u>
Big Ben	AMC 430369	2015004528
Hillside No. 1	AMC 430370	2015004528
Silver King	AMC 430371	2015004528

In addition to the above patented lode and unpatented mining claims, Bitterroot staked and recorded 51 unpatented mining claims which cover the projected extent of the mineralized trend, other historic mineral showings and adjacent prospective areas where bedrock is

covered by colluvial deposits (Table 4-3). The final total project area covered by all patented and unpatented mining claims is approximately 526 ha (1,300 acres), (Figure 4-2).

The Company's patented and unpatented mining claim blocks are accessible via a network of public roads which cross various combinations of BLM-managed Federal lands, State of Arizona lands and private lands subject to public right-of-ways. The patented claims under option host private, gated access roads.

Bitterroot currently holds 100 percent interests in 51 unpatented mineral claims on Federal lands where the surface and mineral rights are managed by the BLM. The unpatented claims under BLM surface and mineral management require the appropriate permits commensurate with the work to be conducted on the claims. To the best of the Author's knowledge there are no other significant factors or risks that may affect access, title, or the right or ability to perform work on the Property.

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**Table 4-3. Bitterroot Resources Unpatented Mining Claims, Mohave County, Arizona**

<u>Claim Name</u>	<u>Serial Number</u>	<u>County Document Number</u>
BTT-1	AMC442391	2017005052
BTT-2	AMC442392	2017005053
BTT-3	AMC442393	2017005054
BTT-4	AMC442394	2017005055
BTT-5	AMC442395	2017005056
BTT-6	AMC442396	2017005057
BTT-7	AMC442397	2017005058
BTT-8	AMC442398	2017005059
BTT-9	AMC442399	2017005060
BTT-10	AMC442400	2017005061
BTT-11	AMC442401	2017005062
BTT-12	AMC442402	2017005063
BTT-13	AMC442403	2017005064
BTT-14	AMC442404	2017005065
BTT-15	AMC442405	2017005066

<u>Claim Name</u>	<u>Serial Number</u>	<u>County Document Number</u>
BTT-16	AMC442406	2017005067
BTT-17	AMC442407	2017005068
BTT-18	AMC442408	2017005069
BTT-19	AMC442409	2017005070
BTT-20	AMC442410	2017005071
BTT-21	AMC442411	2017005072
BTT-22	AMC442412	2017005073
BTT-23	AMC442413	2017005074
BTT-24	AMC442414	2017005075
BTT-25	AMC442415	2017005076
BTT-26	AMC442416	2017005077
BTT-27	AMC442417	2017005078
BTT-28	AMC442418	2017005079
BTT-29	AMC442419	2017005080
BTT-30	AMC442420	2017005081
BTT-31	AMC442421	2017005082
BTT-32	AMC442422	2017005083
BTT-33	AMC442423	2017005084
BTT-34R	AMC443120	2017011362
BTT-35R	AMC443121	2017011363
BTT-36R	AMC443122	2017011364
BTT-37	AMC442424	2017005088
BTT-38R	AMC443123	2017011365
BTT-39R	AMC443124	2017011366
BTT-40R	AMC443125	2017011367
BTT-41	AMC442425	2017005092
BTT-42	AMC442426	2017005093
BTT-43	AMC442427	2017005094
BTT-44	AMC442428	2017005095
BTT-45	AMC442429	2017005096

<u>Claim Name</u>	<u>Serial Number</u>	<u>County Document Number</u>
BTT-46	AMC442430	2017005097
BTT-47	AMC442431	2017005098
BTT-48	AMC442432	2017005099
BTT-49	AMC442433	2017005100
BTT-50	AMC442434	2017005101
BTT-51	AMC442435	2017005102

#### 4.4 Royalties, Agreements and Encumbrances

**4.4.1 The Hughes Trust Option to Purchase Agreement.** The Hughes Trust Option to Purchase Agreement (“Hughes Trust Agreement”) covers the 12 patented mining claims on the Property. Under the terms of the option agreement, Bitterroot will initially pay US\$50,000 and issue 1,500,000 Bitterroot shares to the Hughes Trust. On or before each of the next four anniversaries, Bitterroot will pay the Hughes Trust US\$62,500 and issue 1,250,000 Bitterroot shares, for total consideration of US\$300,000 and 6,500,000 Bitterroot shares, to ultimately acquire 100 percent interest in the Hughes Trust patented claims. The Hughes Trust will also retain a 3 percent Net Smelter Return (NSR) royalty on production from the patented claims and 13 of Bitterroot’s unpatented claims in the immediate area of the Hughes Trust patented claims. Following exercise of the option, Bitterroot can buy half (1.5 percent) of the NSR for US\$1,500,000. Upon commencement of commercial production, the Hughes Trust will also receive minimum advance royalty payments of US\$940,000 per year for 5 years.

**4.4.2 The Nevada Select (Ely) Royalty Option Agreement.** Under the terms of the Nevada Select Option, Bitterroot will initially pay Nevada Select US\$20,000 and issue 200,000 Bitterroot common shares to Nevada Select. On or before the first anniversary date of Exchange acceptance, Bitterroot will pay Nevada Select US\$30,000 and issue Nevada Select 100,000 shares. On or before the second anniversary date of Exchange acceptance, Bitterroot will pay Nevada Select US\$50,000 and issue Nevada Select 100,000 shares. On or before the third anniversary date of Exchange acceptance, Bitterroot will pay Nevada Select US\$50,000 and issue Nevada Select 200,000 shares for total consideration of US\$150,000 and 600,000 Bitterroot shares to exercise the Option and acquire a 100 percent interest in the unpatented claims. Nevada Select will also retain a 3 percent net smelter returns royalty (the “NSR”) on precious metals (defined as silver, gold and platinum), a 2% NSR on all other

products sold from the property and a 0.5% NSR on production from any unpatented lands which Bitterroot acquires within a 2.66 mile radius of the North Hackberry claims. On the first three anniversaries of the Option exercise, Bitterroot will pay Nevada Select advance minimum royalty payments of US\$10,000 per year. On the fourth through tenth anniversary of the Option exercise, Bitterroot will pay Nevada Select advance minimum royalty payments of US\$15,000 per year.

**4.4.3 Bitterroot Unpatented Mining Claims.** The 51 unpatented BLM mining claims staked and recorded by Bitterroot require an annual Bureau of Land Management maintenance payment of US\$155.00 per claim which is due prior to September 1 of each year if Bitterroot wishes to keep the claims in good standing for the following year.

#### **4.5 Environmental Liabilities**

Previous mining in the Hackberry Project area took place between 1874 and 1921. There are several historic vertical and decline shafts, pits and trenches on the property. The major shafts observed during Mr. Adams' field inspection were surrounded by wire fences and high visibility orange plastic mesh to warn others of potential danger. The need for additional safety measures will be assessed prior to commencing exploration activities on the Property.

#### **4.6 Permitting**

Neither Bitterroot nor the current landholders have made the Author aware of any current permitting or security bonds in place on the Property, or of any upcoming permitting requirements. Once the scope of Bitterroot's 2017 exploration program is known, an operating plan will be developed and permits for conducting exploration on BLM managed lands will be applied for.

### **5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY**

#### **5.1 Access**

The Hackberry Project area is most easily accessed from Kingman, Arizona by driving northeast on paved U.S. Route 66 for approximately 41.8 km (26 miles), to a point about 3.2 km (2.0 miles) northwest of the community of Hackberry. From this point a secondary public gravel road exits Route 66, and extends southwest over the railroad tracks and proceeds southeast approximately 1.3 km (0.8 miles), then southwest about 4.7km (2.9

miles) to the Silver King prospect on the north part of the Property. To reach the main Hackberry and South Hackberry workings, after crossing the railroad tracks proceed southeast on public gravel roads for about 2.1 km (1.3 miles) and then southwest approximately 4.3 km (2.7 miles).

## 5.2 Climate

Meteorological data in this section are from the U.S. Climate website for Kingman, Arizona (usclimatedata.com), and WeatherSpark weather data for the Kingman airport (weatherspark.com). Kingman and the property area have a semi-arid steppe climate. The average summer time high temperature in Kingman (June through September) is about 31<sup>0</sup> to 36.5<sup>0</sup> C (88<sup>0</sup> to 90<sup>0</sup>F). Winter time high temperature (mid-November through February) range from about 14<sup>0</sup> to 16<sup>0</sup>C (58<sup>0</sup> to 61<sup>0</sup>F) while the average low temperature for the same time period is about 1<sup>0</sup>C (34<sup>0</sup>F). Due to the difference in elevation between Kingman and the Hackberry project area, both the high and low temperature averages on the Property are several degrees lower than those in Kingman.

Thunderstorms are common during the height of the rainy (monsoon) period in July and August yielding about 3.1 cm (1.2 inches) of rain per month. Average annual rainfall is about 25 cm (10 inches). The average monthly precipitation for November through February is about 2.5 cm (0.97 inches).

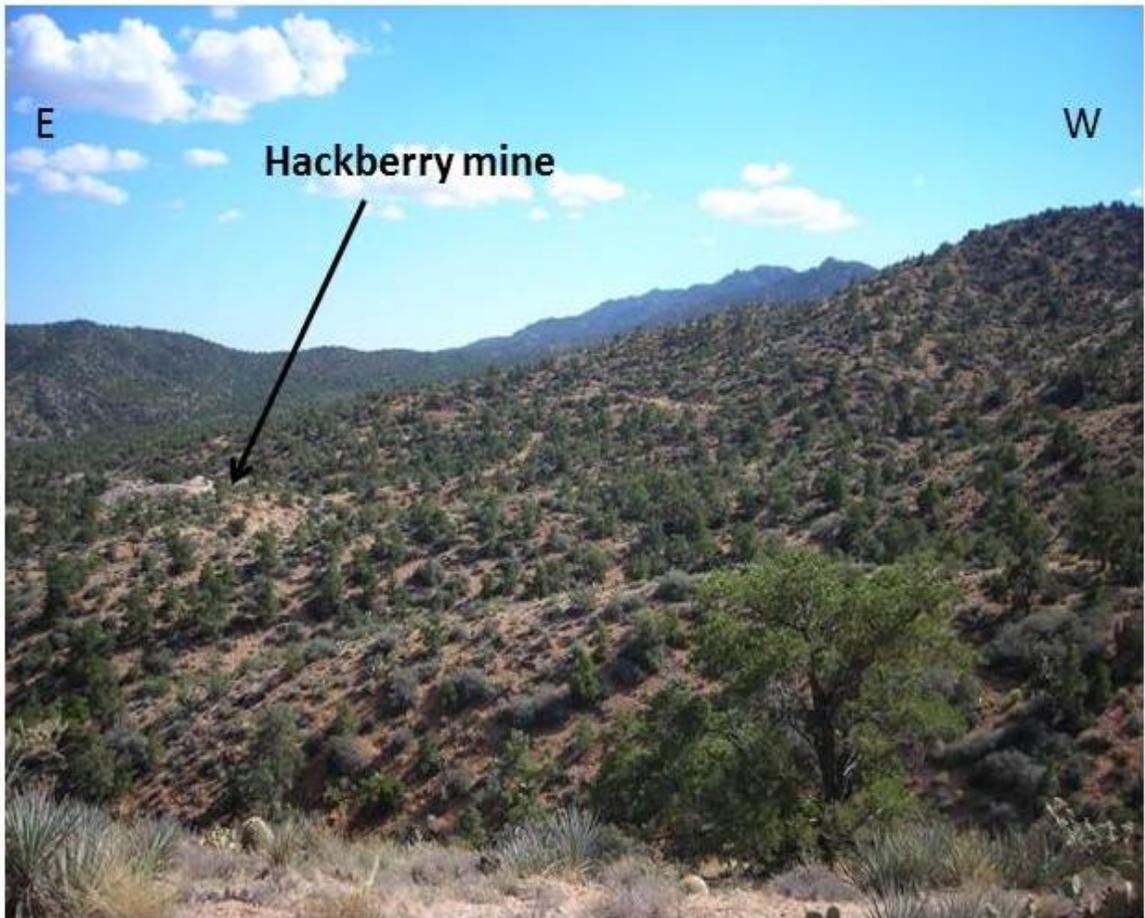
Typical winds vary from 0 to 35 km per hour (0 to 22 miles per hour) and rarely exceed 47 km per hour (29 miles per hour). Winds are generally from a southerly direction with most coming from the southwest.

## 5.3 Physiography

The Property lies on the east flank of the central Peacock Mountain range. Elevations vary from approximately 1340 m (4400 feet) on the southeastern boundary of the Property to about 1615 m (5300 feet) on the northwest boundary. Topography varies from moderately rugged rolling hills between arroyos to relatively steep hillsides further up the flank of the mountain range (Figure 5-1.)

Vegetation is fairly typical of high desert terrains consisting of low-growing cactus species, (prickly pear and hedgehog), and live oaks, junipers and minor pinon pine. Overall the foliage is relatively open. The ground surface is commonly covered with a few centimeters to 20 centimeters (<1 to 8 inches) of moderately coarse colluvium with up to about 20 percent exposed bedrock.

According to Malkoski (1985) ground water levels vary from within 10 to 30 meters (30 to 100 feet) of the surface in the main Hackberry workings.



**Figure 5-1. Typical topography and physiography looking south, one km north of the Hackberry Mine, Hackberry Property, Mohave County, Arizona.**

#### **5.4 Local Resources and Infrastructure**

Other than gravel access roads, and relatively limited primitive drill roads constructed in the 1970's and 1980's, there is little infrastructure present on the Property. The small community of Hackberry and State Route 66 are approximately 4.8 km (3 miles) east of the Property. Hackberry has a rail siding off of the double-tracked Burlington Northern Santa Fe Railway (BNSF) "Southern Transcon" corridor. A major cross-county, high-voltage powerline passes through the area immediately west of Hackberry. Interstate-40 passes approximately 20 km (12.5 miles) south of the Property. The town of Kingman, Arizona is a regional supply center and the largest town in Mohave County. Additional supplies, services

and international airports are located in Phoenix, AZ, some 260 km, (165 miles) southeast of Kingman and in Las Vegas, NV, about 160 km (100 miles) northwest of Kingman.

## 6.0 HISTORY

### 6.1 Pre-1926

Unless otherwise stated, much of the data on the early history of the Hackberry area was derived from a 1912 report written by W.L. Watts (Watts, 1912). The depths of the workings in the historic mine data are measured in feet down the 40<sup>0</sup>-dip of the inclined shaft from the surface, unless otherwise stated (for example: the 600-level is 183 meters, or 600 feet, down the dip of the inclined shaft). Dollar value figures for Poly-metallic mineralization or metals are in U.S. dollars at metal prices of the historic times being referenced, not in present day metal prices. There was very limited mineral exploration conducted on the Hackberry Property through its post-mining history. In Section 6.0, detailed historic data is presented on the previous mining activities to assist the reader in better understanding the current mineral potential of the Property.

The Hackberry and the South Hackberry properties were discovered in the same year, 1874, by separate parties of prospectors. The South Hackberry mine was sold that same year and developed separately from the Hackberry mine. The Silver King mineralization may have been discovered in that same year or possibly in 1879 (Johns, 1918).

**6.1.1 The Hackberry Mine.** A majority of the metal production on the Property has come from the Hackberry mine. Early production from this mine was conducted under the name of the Hackberry Mining and Milling Company. Initially high-grade, poly-metallic mineralization was partly processed off-site although some high-grade material was processed on-site in a 5-stamp mill which ran from 1874 through 1879 under the name of the “Hackberry Company”. A new 10 stamp mill began operation in 1879 following the destruction of the 5-stamp mill by a fire. This fire may also have been responsible for destroying much of the early mine records (Hamm 1987).

From 1874 through 1877, \$250,000 dollars' worth of silver-rich mineralization was mined; however, only about 50 percent metals recovery was achieved. Between 1877 and the end of 1879 approximately \$500,000 worth of silver-rich mineralization was recovered from mineral bodies mined down to the 125-level on the north part of the mine and the 250-level on the southern part. The base- and precious-metal-bearing rock had an average value of \$180 per ton at the then current metal values (Watts, 1912). Silver averaged \$1.15 per ounce at that time, which would equate to an average silver-equivalent grade of 156 oz/t (5,367 g/t).

In 1879 the mine was sold to the "Indian Queen Company" and over the ensuing four years, the best of the remaining high-grade mineralization above the 500-level in the mine was removed. From an interview with W.B. Ridenour, discoverer of the Hackberry mine and later the mine and mill superintendent, Watts (1912), stated that the mineralized shoot mined during the initial mining phase at the Hackberry mine had been 213 meters (700 feet) long at the 400-level and was pitching to the northwest at about 60 degrees. Silver grades in the zone ranged from 122 to 300 oz/t (4,183 to 10,286 gram/tonne) with most well mineralized vein material ranging from 150 to 180 oz/t (5,143 to 6,171 grams/tonne). Johns (1918) reported that from initial mine start up to the 1884 closure, the Hackberry mine produced about \$3,000,000 in high grade silver. A majority of the silver-bearing mineralization was mined from one silver-rich shoot that outcropped at the surface, was mined to a down-dip depth of about 180 meters (600 feet) and was 152 meters (500 feet) long. The body ranged from 0.5 to 1.2 meters (2 to 4 feet) in width. Robertson (1974) reported that the deepest workings from the Hackberry mine's initial production were down to the 600-level on the inclined shaft, which equated to a vertical depth of 110 meters (360 feet). He repeated Johns' \$3,000,000 production value from 1874 to 1884, but also referred to a different production figure for the same time frame of \$2,000,000, quoted from the 1924 Mines Register (precursor of the Copper Handbook and later the Mines Handbook).

In 1884 the hoisting works were lost to a fire. To maintain production, a winze was sunk from the 300-level drift to a depth of 18 meters (60 feet). Here the silver-rich zone was 1.2 meters (4 feet) in thickness and graded 126 oz/ton (4,320 grams/tonne) silver. The metal-rich zone was mined for six weeks producing \$1000 per day. Later in 1884 the Hackberry mine was closed due to the combination of apparent mismanagement, problems with an influx of mine waters and litigation issues. The mine workings were allowed to flood.

From the mine closure in 1884 to 1917, a span of 33 years, several groups attempted to reopen the mine, but to no avail. A vertical shaft with a proposed depth of 168 m (550 feet) was started in 1913 (Newspaper article, Nov. 22, 1913, Hughes Trust archives) Water problems slowed progress but the shaft was completed in late 1915 (EMJ Vol. 99, page 35, Hughes Trust archives).

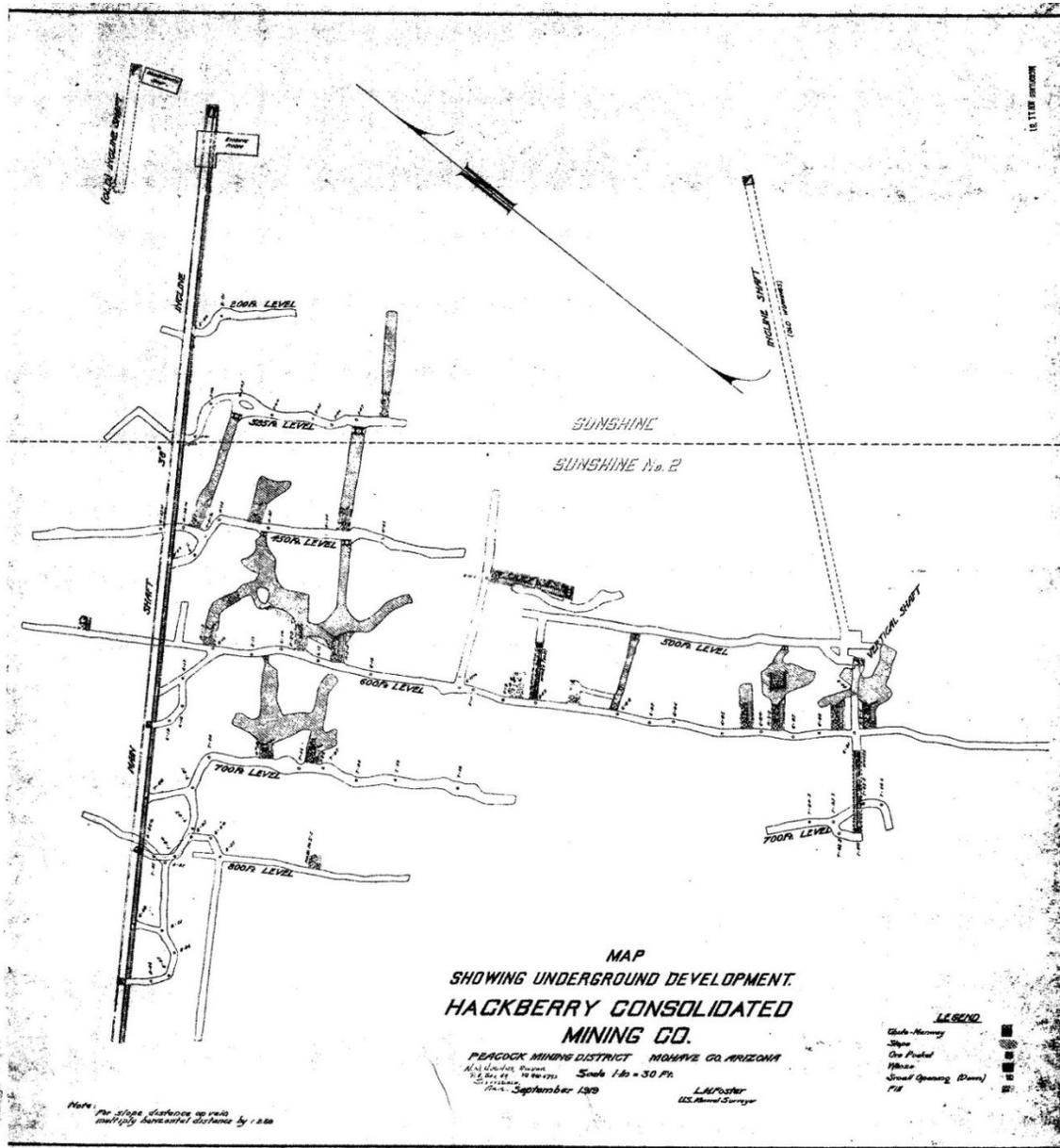
In January of 1917 the mine was purchased by the Hackberry Consolidated Mining Company (Johns, 1918). After some refurbishing and dewatering of the mine, development was started on a narrow base- and precious-metal seam which was followed north from the 600-level. The metal-bearing seam expanded to 1.5 to 6.7 m (5 to 25 feet) in width, was 183 meters (600 feet) in length and continued up-dip to within about 60 m (200 feet) of the surface (Johns, 1918). Only a barren quartz breccia vein zone was visible at the surface (Malkoski, 1985). The mineralized zone was estimated to contain 136,065 tonnes (150,000 short tons) between the 200-level and 600-level with an approximate gross value of

\$4,000,000 and contained an estimated average grade of 25 oz/t (857 grams/tonne) silver, 0.097 oz/t (3.3 grams/tonne) gold and 8 percent lead (Johns, 1918). A total of 278 samples of high-grade, poly-metallic mineralization analyzed from the Hackberry mine in 1919 contained an average of 32 oz/ton (1,097 grams /tonnes) silver, (Breen, 1918; Weed, 1922). An intersection in the same mineralized zone at the 750-level (approximately 230 meters down-dip) had a 6.7-meter (22-foot) thickness of which one meter (3 feet) in the core of the zone contained 100 oz/t (3,429 grams/tonne) silver while the surrounding 5.8 meters (19 feet) averaged approximately 25 oz/t (857 grams/tonne) silver. The zone remained open at depth and to the southeast towards the South Hackberry property (Johns, 1918). J. Breen (1918), in an assessment of the Hackberry mine for new owner James Murray, concluded that the main mineralized zone should average 3.5 to 4 feet (1.0 to 1.2 meters) in thickness and he conservatively estimated the grades should be 20 oz/t (686 grams/tonne) silver, 0.08 oz/t (2.7 grams/tonne) gold, 2.5 percent lead and 3.5 percent zinc. Breen further stated that based on flotation tests, he expected recoveries of 85 percent of the silver, 90 percent of the gold, 90 percent of the lead and 50 to 60 percent of the zinc (Breen, 1918). Development continued to at least the 950-level (290 meters down-dip) and stoping between the 700-level and the 950-level (229 meters and 290 meters down-dip respectively) suggested that similar mineral grades were present at those depths (Robertson, 1974). The 950-level would be approximately 250 meters (820 feet) vertically beneath the northeast-sloping topographic surface.

A new flotation mill was constructed to handle the new primary sulfide mineralization and was ready for operations in March of 1919, however litigations problems again arose resulting in the permanent closure of the Hackberry Mine in December, 1919 and the mine was allowed to flood (Roberts, 1974; Hamm, 1987). Some of the remaining silver-rich, poly-metallic mineralization was shipped to outside smelters and some was processed onsite in the flotation mill before the mine was completely flooded. Robertson (1974) quotes the 1924 Mines Handbook which reported that mined material shipped to the smelter in 1919 averaged 15.2 oz/t (521 grams/tonne) silver and shipped concentrate contained 151.8 oz/t (5,205 grams/tonne) silver and 0.255 oz/t (8.74 grams/tonne) gold. The same reference showed 311 tons (282 tonnes) shipped in 1920 that contained 16.14 oz/t (553.37 grams/tonne) silver. There were rumors of some high grade mineralization being mined above the water table from 1924 to 1926 (Hamm, 1987).

There is little data on the total amount of underground development completed on either the Hackberry or South Hackberry mines. Various historic investigators indicated that the Hackberry Mine workings continued down-dip to the 950-level (290 meters) and that about 1000 feet (305 meters) of lateral development existed (Johns, 1919; Sparkes, 1919; Roberts, 1974; Warne, 1983). A 1919 map of the underground workings of the Hackberry Mine,

produced by U.S. Mineral Surveyor L. H. Foster (1919), is the only evidence of the locations of some of the actual stopes in the old mine workings (Figure 6-1). Based on his



**Figure 6-1. Map showing underground development of the Hackberry Mine by U.S. Minerals Surveyor H. L. Foster (1919).**

research and early data provided by Johns (1918), Hamm (1987) suggested past production from the Hackberry Mine may have been about 77,500 tons (70,300 tonnes) at a grade of 34 oz/t (1166 grams/tonne) silver containing about 2.6 million ounces (80,868 kilograms) of silver.

**6.1.2 The South Hackberry Mine.** Very little mining took place at the South Hackberry mine. Watts (1912) indicated that a 46-meter (150-foot) inclined shaft had been sunk on the property near the claim boundary with the Hackberry Mine. Ridenour (in Watts, 1918) believed that the upper silver-rich mineralized shoot in the Hackberry mine continued into the South Hackberry mine. During 1874 several open cuts were developed to about 6 m (20 feet) in depth, a 21-m (70-foot) shaft was sunk from which several hundred tons of higher grade mineralization were mined and a 27-m (90-foot) shaft was sunk intersecting silver-rich mineralization but the shaft bottomed in alluvium (Watts, 1912). The projected southeastern continuation of the Hackberry mineralized vein system south of the South Hackberry mine is covered by thick colluvium washed down from the mountain side. Outcrop beyond and southeast of the colluvium shows no obvious indications on the surface of the mineralized zone continuing. Watts (1912) suggested the zone may have been faulted off and a north-trending fault has been mapped immediately east of the South Hackberry zone by Albin (1991).

Watts (1912) states that several thousands of dollars in silver-rich, poly-metallic mineralization were recovered from the South Hackberry mine; however several subsequent owners made no apparent systematic attempts to develop the mine. Various sources refer to ongoing litigation and receivership problems.

**6.1.3 The Silver King Workings.** The Silver King area, located about 1.6 km (1.0 miles) northwest of the Hackberry mine, was also discovered in 1874 or slightly later. Prospectors found high-grade oxidized silver mineralization and worked the veins from shallow declines, shafts and trenches. The old workings reached depths of only 15 to 30 m (50 to 100 feet), but grades were reported to average approximately 200 oz/t (8,657 grams/tonne) silver (Johns, 1918). The silver-rich mineralization was packed on mules to the Hackberry five-stamp mill where it was processed.

The Silver King zone is either a separate parallel mineralized veins system or a splay from the northern extension of the main Hackberry mineralized trend. The Silver King workings lie about 200 to 300 m (600 to 1000 feet) to the west of the main Hackberry mineralized trend and about 1,200 meters (3,940 feet) northwest of the Hackberry mine. The 915-meter (3000-foot) projected strike length of the Silver King zone is covered by the three Ely unpatented mining claims (see Figure 4-2).

Based on discussions with W.B. Ridenour, Johns (1918) states that the Silver King workings consisted of two zones about 366 m (1200 feet) apart, a northern zone about 120 m (400 feet) in length and a southern zone about 150 m (500 feet) long. Combined, the two zones produced about \$70,000 in value up until about 1884. Where mined, Johns (1918) states that the veins ranged from 0.6 to 1.2 m (2 to 4 feet) in width and consisted of mainly silver chloride and horn silver in a quartz gangue.

## 6.2 1958 to Present

Mr. Nicholas Hughes Sr. bought the 12 patented lode claims covering the southern part of the Hackberry Property at auction for unpaid back taxes in 1958. Since 1958 Hughes Sr. (now deceased), and the current co-trustees Craig and Nick Hughes, brought in several major and minor exploration companies that conducted various exploration programs on the Property. Much of the following data comes from reports and maps in the Hughes Family Trust archives. The authenticity of this historical data is difficult to verify and there is no guarantee as to the accuracy or completeness of the supporting documentation. For the purposes that the data in the historic reports were used, Mr. Adams, as a Qualified Person, believes, to the best of his knowledge, that the reports should be considered reliable.

Roberts (1974), Hamm (1987) and data from the Arizona Geological Survey Digital archives reported that companies, including Hecla Mining Co. in 1968, Cyprus Exploration Co in 1974, Continental Minerals around 1978 and Ranchers Exploration and Development Corp. in about 1984 all reviewed the Property but for various reasons it appears they did not come to an agreement to conduct any exploration other than due diligence reconnaissance work. Gunnex Ltd. of Toronto conducted three lines of I.P. surveys in 1968 with inconclusive results (Head, 1968). A 1968 sample from the old stamp mill tailings, possibly collected by Hecla Mining, returned an assay of 47.5 oz/ton (1,629 grams/tonne) silver (Hamm, 1987).

Malkoski (1985) reported that in the late 1970's Western States Minerals staked a large group of claims on the surrounding area around much of the Property, including covering the then open Silver King area. Western States constructed several access roads and drill pads on the Silver King property and may have conducted limited drilling. Malkoski (1985) inferred Western State's drilling may have been reverse circulation drilling. Craig Hughes stated that a company, which may or may not have been Western States, worked on the Silver King property in the 1970's and drilled one hole (Hamm, 1987). No drilling reports or drilling results have been found by the Author.

Northern Arizona Gold and Silver Mining and Milling, a stock investment group, came to an agreement with the Hughes family and controlled the patented claims from 1979 to about 1982 (Hamm, 1987). Work on the Property involved unsuccessful attempts at de-watering and re-opening underground workings and the building of three, 4,000-ton (3628-tonne) leach pad facilities to recover silver from the historic mine dumps (personal communication with Craig Hughes, September 12, 2016; Ascarza, 2017). A rotary drill company from Las Vegas reportedly drilled three holes of unknown depth approximately 120 to 200 meters (400 to 650 feet) along strike and northwest of the Hackberry main declined shaft.

Apparently there was no geologist on site, but the driller reported substantial mineralization in the holes. Apparently assay results of drilled material returned little or no metal values (Hamm, 1987). Although several drill sites were prepared on the Property during this campaign, apparently only three additional holes were drilled using a pickup-mounted, downhole-hammer drill prior to the stock company suspending operations (Hamm, 1987). No analytical results from any of the above drilling were found in public or private sources. There is no available data suggesting that any core drilling was conducted on the Property.

About 1985, an ex-board member of Ranchers, Mr. Sam Arentz, tried to interest the Hughes family in a partnership funded by Arentz or through outside financiers. A reconnaissance geological mapping and rock sampling program was carried out by consultant M. Malkoski (1985), on Arentz's behalf. Financing never developed and the partnership ended. In the late 1980's Hamm (1987) reviewed the property for Combined Metals and recommended acquisition; however there is no record of any work being conducted. Based on discussions with co-trustee Craig Hughes, there have been no further significant exploration efforts conducted on the Property from the late 1980's until present (personal communication). Therefore, the Property has not undergone any present-day exploration programs utilizing modern geological, geophysical or geochemical techniques in conjunction with contemporary mineral deposit modeling.

### 6.3 Historic Mineral Resources

Throughout the long history of the Property, various authors have produced mineral resource estimates. The following resource data is historic and should be considered conceptual in nature and were not prepared, or verified, by a qualified person as defined in NI 43-101

Johns (1918) compiled a resource estimate for the Hackberry deposit from apparent personal underground inspections just prior to the final mine closure that had a total of 150,000 tons (136,065 tonnes) of mineral resources remaining in place between the 200-level and the 600-level (60 to 180 meters down-dip from the surface) with grades estimated at 25 oz/t (857 grams/tonne) silver, 0.1 oz/t (3.4 grams/tonne) gold and 8 percent lead. He further stated that where the mineralized zones narrowed, assays as high as 100 oz/t (3,429 grams/tonne) silver were obtained. Hamm (1987) suggested that approximately 54,000 tons (48,983 tonnes) of Johns' stated resource may have been mined at a later date. John D. Warne, P.E., (Warne, 1983) produced a report for then owner Nicholas Hughes Sr. suggesting a speculative resource consisting of 160,000 tons (145,136 tonnes) of what he called indicated resources and 320,000 tons (290,272 tonnes) of what he called inferred resources for a combined total of 480,000 tons (435,408 tonnes) grading 32 oz/t (1,097 grams/tonne) silver and 0.10 oz/t (3.4 grams/tonne) gold. There is insufficient information to provide guidance as to what basis, parameters or methods were used by the cited authors in determining the above stated historic mineral resources. **Bitterroot Resources Ltd. does**

**not treat the historic mineral resource data described in this Section 6.3, as current mineral resources. These historic resources are conceptual in nature and do not conform to NI 43-101 reporting standards.** There has been insufficient exploration conducted on the Property to determine if a mineral resource exists on the Property. Substantial exploration, including drilling and subsequent geochemical analyses, beyond the initial phase of exploration proposed in this Technical Report, will be required to determine if a NI 43-101-compliant mineral resource is present on the Hackberry Property. There is no certainty that upon completion of subsequent drilling, a mineral resource will be delineated.

## 7.0 GEOLOGICAL SETTING AND MINERALOGY

### 7.1 Regional Geology

The Hackberry Property is located in the Peacock Mountain range at the eastern edge of the eastern Mohave crustal province, or more specifically, within the Arizona Mohave crustal subprovince (Prante, 2009; Duebendorfer, 2015). Duebendorfer (2015) states that reliable age dates for the oldest granitic intrusive rocks in the Arizona Mohave subprovince are about 1,735 million years.

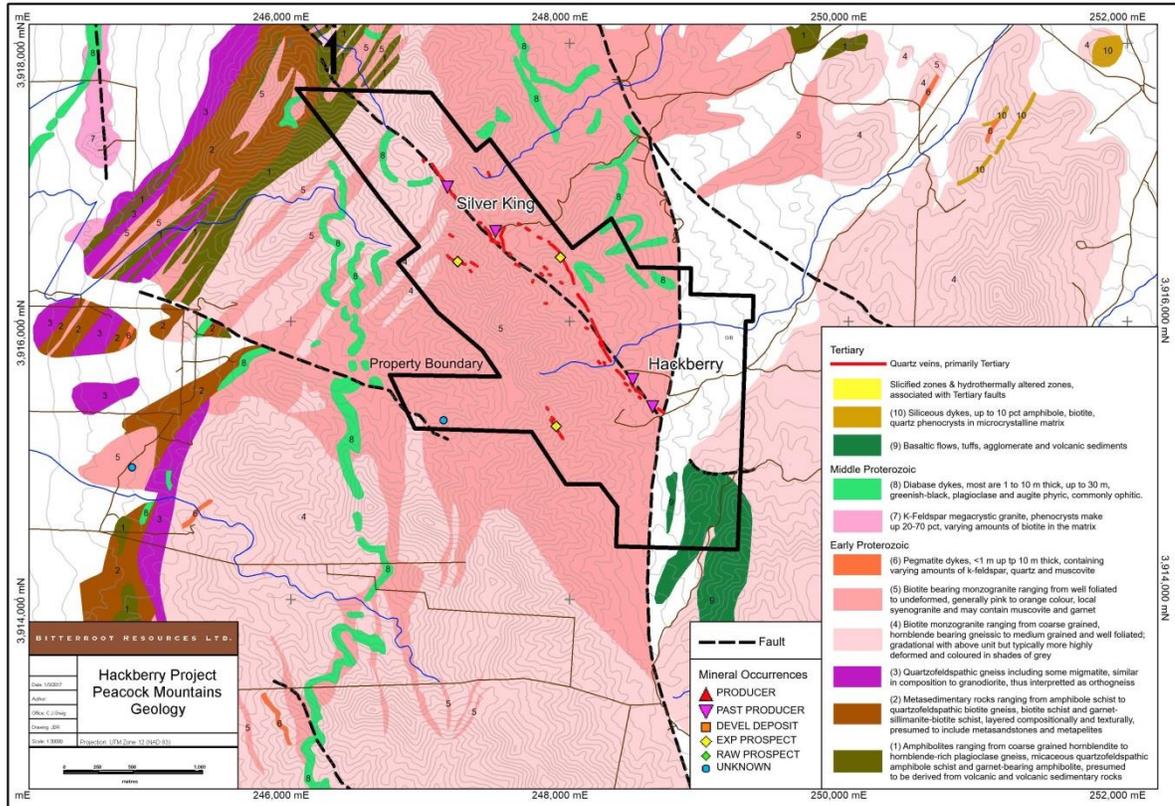
Geologically, the Peacock Mountains (Figure 7-1) consist predominantly of a Paleoproterozoic, metasedimentary sequence of psammitic and pelitic schists associated with fine grained amphibolite and hornblende gneisses and minor ultramafic rocks. These rocks are locally intruded by medium to coarse grained, poorly to moderately foliated to undeformed, undifferentiated granites and undeformed, late-stage, medium- to coarse-grained mafic dikes (Prante, 2009; Albin, 1991). Outcroppings of undeformed Tertiary basalts and andesites occur locally. Poorly sorted, unconsolidated Quaternary colluvium is common along the mountain slopes and outwash plains.

The protoliths of the psammitic and pelitic schists consisted of probable immature sandstones with interlayered siltstone and mudstone lenses and argillaceous sediments respectively. The amphibolitic gneisses have been interpreted as probable metabasalts and the hornblende gneisses, often interlayered with thin felsic gneiss bands, are suggestive of a felsic metavolcanic protolith (Duebendorfer, 2015).

### 7.2 Hackberry Property Geology

The local Property-scale geology (Figure 7-2) is dominated by a mixed sequence of feldspathic “granitic” gneisses and biotitic and biotite-amphibolite gneisses intruded by several, post-metamorphic, fine to medium grained, unmetamorphosed, intermediate to

mafic dikes (Malkoski, 1985). The term “gneiss” may be somewhat of a misnomer as visually the country rocks appear to be more of a variably foliated, medium grained granitic rock. DeMatties (1979) described the rocks as sheared, medium- to coarse-grained, equi-



**Figure 7-1. Regional Geology, Peacock Mountains, Mohave County, Arizona (After Albin, 1991)**

granular granites (Figure 7-3). Because much of the lithological data is taken from Malkoski (1985), the term “granitic gneiss” will be retained in this Report.

The hill sides are commonly covered in colluvium up to 5 to 20 cm (2 to 8 inches) thick and outcrop exposure is relatively limited, probably not exceeding 15 to 20 percent. Outcrops occur mostly in the dry arroyo stream beds, as well as forming steep walls of arroyos and small canyons and as sub-crop along ridge lines

Several of the historic property investigators conducted varying degrees of reconnaissance geological mapping during the post-1958 era. Clifton (1978) produced a reconnaissance geological map; however he did little detailed work on the country rock. Malkoski (1985)

appears to have carried out a more detailed mapping program and much of the following is based on his observations, unless otherwise cited, and on observations made by the Author during the property inspection.

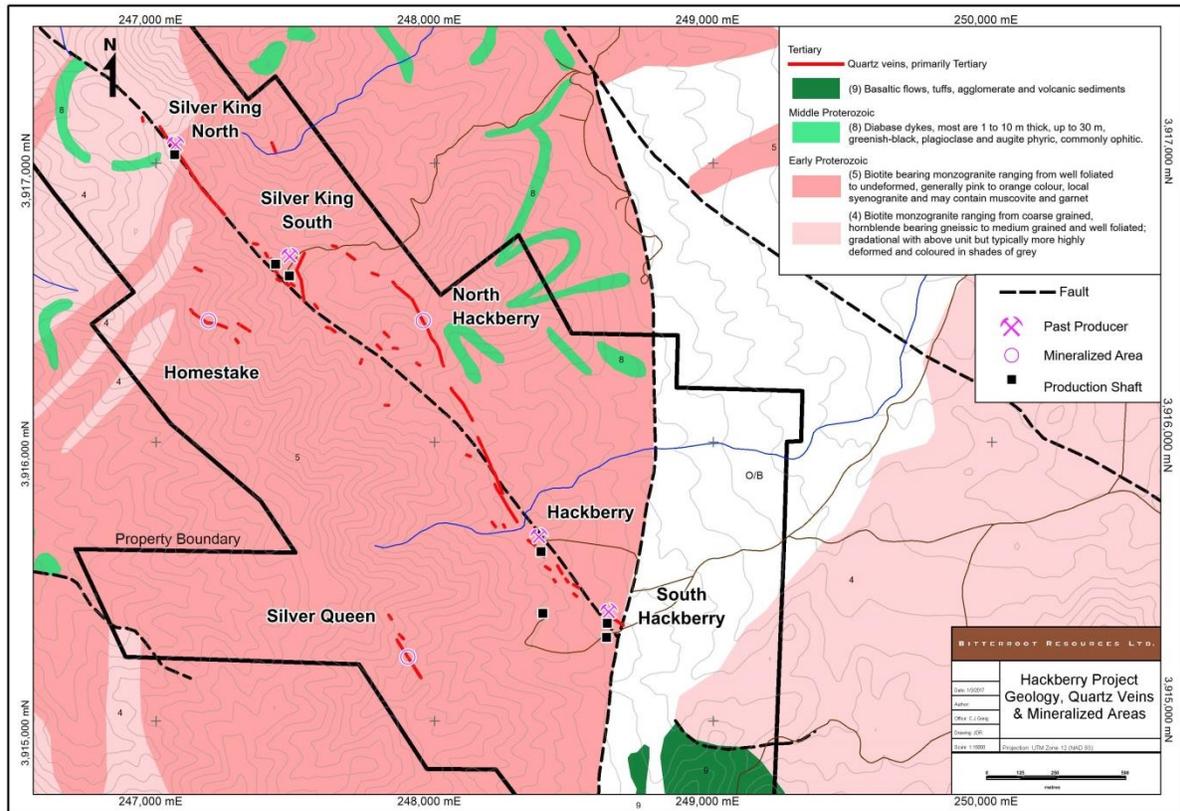


Figure 7-2. Hackberry Property Geologic Map, Mohave County, Arizona (After Albin, 1991)

Approximately 80 percent of outcrop coverage consists of coarse-grained, equigranular, quartz, K-feldspar, plagioclase ( $\pm$  minor amphibolite) granitic gneiss. Scattered occurrences of biotite-hornblende-feldspar gneiss occur in areas north and east of the Hackberry mine area. Limited outcrops of biotite-amphibole schist occur along the Silver King access road and west of the South Hackberry Mine area (Malkoski, 1985).

Post-metamorphic intrusive rocks occur across the Property and consist of generally northwest-striking, intermediate to basaltic dikes and sills. A notably significant, 1000-meter-long (3,300-foot), siliceous iron-stained dike (Watts, 1912), also described as a grey-brown mottled, aphanitic “vitrophyre” dike (Malkoski, 1985), strikes northwest across the

Property. The dike varies in width from 1.5 to 30 m (5 to 100 feet) and dips from  $35^{\circ}$  to  $55^{\circ}$  southwest in the southern part of the Property, to near-vertical in the northern part where it appears to lens out. Thick colluvium covers the southern extent of the projected location of the dike. Where visible, the contacts of the post-metamorphic dikes with the country rock exhibit tectonic breccia zones of varying degrees (DeMatties, 1979).

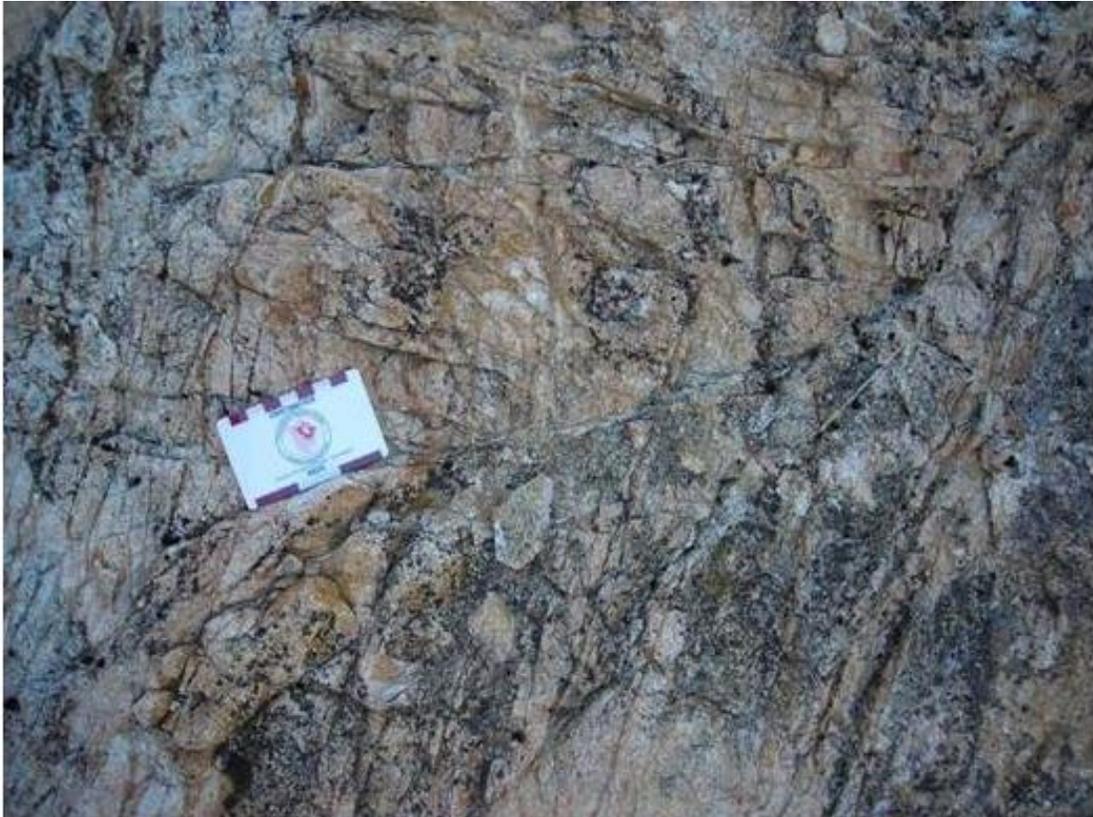


Figure 7-3. Fractured, and locally brecciated, “granitic” gneiss, east of the North Silver King workings.

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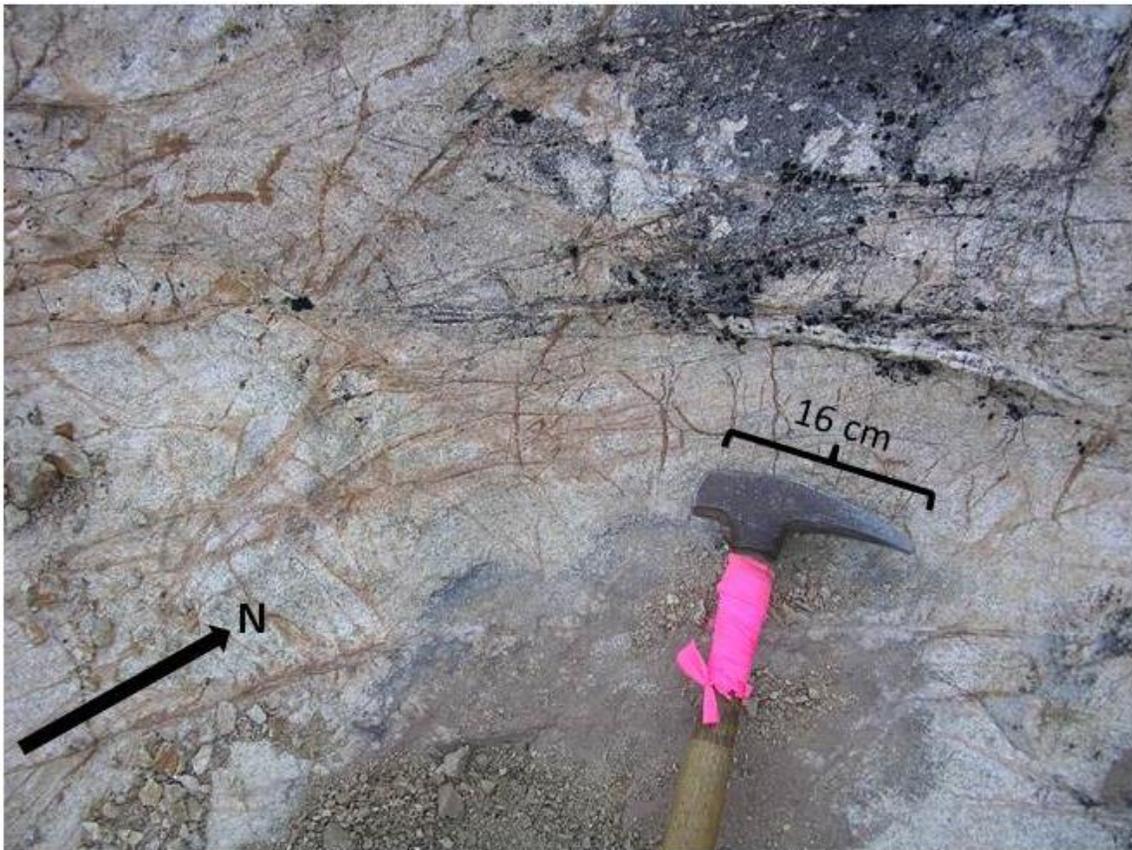
### 7.3 Structure

The Peacock Mountains lie within the Basin and Range province of the western U.S. and local structural features tend to parallel the regional trends. The primary structural lineament trends on the Property range from about  $320^{\circ}$  to  $335^{\circ}$  azimuth. The lineament features host many of the post-metamorphic dikes, the main Hackberry and Silver King mineralized zones and the Silver Queen mineralized zone southwest of the Hackberry mine area (DeMatties, 1979; Malkoski, 1985), (see Figure 7-2). A secondary linear trend, striking

270<sup>0</sup> to 290<sup>0</sup> azimuth, hosts the Homestake mineralized zone, located about 245 m (800 feet) west of the Silver King South zone (Figure 7-2). This more westerly trend is also associated with several splays off of the main Hackberry mineralized trend (Malkoski, 1985). Locally, joint sets may provide significant structural features for mineralization where they increase in intensity as noted by the Author between the Silver King and North Hackberry mineralized zones (see Figure 7-2 and Figure 7-4).

#### 7.4 Alteration

There appear to be little or no regional alteration assemblages developed on the Property-scale; however, local argillic and, to a lesser extent, chloritic wall rock alteration assemblages commonly envelope the main mineralized zones and veins (Malkoski, 1985). Argillic alteration is more widespread, often forming 3 to 6 meter (10 to 20 feet) wide zones in the gneissic wall rocks adjacent to mineralized vein systems. Where the country rock



**Figure 7-4.** Strongly jointed and fractured granitic gneiss located east of the North Silver King workings.

gneiss is encompassed within a mineralized zone, argillic alteration may be intense as exposed in the Silver King shear zone (Malkoski, 1985). Weak to moderate argillic alteration was observed during the Property inspection in the iron-stained, strongly jointed, foliated granitic rocks between the Silver King and northern part of the Hackberry vein system.

## 7.5 Significant Mineralized Zones

Unless otherwise cited, the following descriptions rely heavily upon the work of M. Malkoski (1985), with minor contributions based on the Author's observations during the Property inspection.

There are two main mineralized zones, the Hackberry (comprised of South Hackberry-Hackberry-North Hackberry, Figure 7-2) and the Silver King (comprised of Silver King South - Silver King North, Figure 7-2), that strike in a general northwesterly direction along much of the length of the Property. The zones dip about  $40^{\circ}$  to the southwest in the south part of the Property and steepen to about  $55^{\circ}$ - $80^{\circ}$  southwest in the north part. The Silver King structural zone is a possible splay off of the Hackberry fracture zone. It trends southeasterly, subparallel to the Hackberry mineralized zone for about 1.5 kilometers (0.9 miles) at its northern extremity and then angles towards the Hackberry zone with an apparent projected intersection about 300 meters (980 feet) north of the Hackberry mine. There is some conjecture that the intersection of the two mineralized structures occurs further south, in the immediate area of the Hackberry mine, and influenced the formation of the silver-rich deposits. Both mineralized structures may be traced by a combination of intermittent historic surface workings, base- and precious-metal mineralization (or anomalous base- and precious-metal rock geochemistry), or altered and sheared, quartz-veined, zones in outcrop and sub-crop. Based on satellite imagery and historic workings, this mineralized fracture system may be more extensive as it can be traced for a total distance of about 6 km (3.7 miles) northwest from the Hackberry mine.

The poly-metallic vein zones on the Hackberry Property consist of a series of one or more fracture sets located within envelopes of locally argillically altered and sometimes foliated, granitic gneiss. The mineralized zones are generally discontinuous and erratically distributed within the main fault structures and their splays. Widths of individual vein sets vary greatly, randomly pinching and swelling from 0.3 to 1.5 meters (1 to 5 feet) with quartz-rich breccia- and vein-bearing zones reaching widths of 15 meters (50 feet) and variable mineralized strike lengths ranging from 6 to 180 meters (20 to 600 feet). The main Hackberry lode is an exception as the mineralized vein breccias vary from 122 to 335 meters (400 to 1100 feet) in length and 1.5 to 21 meters (5 to 70 feet) in width (Malkoski, 1985).

The mineralized fracture zones contain drusy to vuggy, locally cockscomb, white to clear, to slightly greenish quartz veinlets, lenses and breccia matrix containing up to 20 percent disseminated sulfide minerals. Primary sulfide minerals consist of moderate to coarse-grained galena and sphalerite as intergrown aggregates and veinlets. Minor amounts of pyrite occur as disseminated patches and grains. Locally chalcopyrite is rarely intergrown with galena and sphalerite as is possible tetrahedrite. Primary sulfide minerals are present but not overly common in surface exposures and on historic mine dumps. Alternatively, above the water table, oxidized varieties of the primary sulfide minerals prevail (cerrusite, smithsonite, hemimorphite, malachite, chrysocolla). An unidentified black, sooty, mineral, observed as a coating on galena during the Property inspection, and noted by Malkoski (1985), may be argentite (silver sulfide). The mineralized zones, or lodes, usually have well defined boundaries with their long axis paralleling the host structure, although cross-cutting mineralized veinlets are present.

**7.5.1 Description of the Main Hackberry Mineralized Zone.** The most significant mineralized zone explored to date on the Property is the Hackberry vein zone, hosting the Hackberry and South Hackberry mines. The decline shaft entrances for the mines are located on the Sunshine and South Hackberry patented claims respectively. The mineralized zone continues intermittently approximately 1.75 km (1.1 miles) to the northwest of the Hackberry mine to the North Hackberry prospects (see Figure 7-2). Neither the northern nor southern terminations of the mineralized zone have been delineated. The northern part of the zone appears to diffuse into several joint sets while the southern end is covered by a thick colluvium deposit, beyond which there appears to be no obvious indications of the mineralized structure in outcrop. The zone averages about six meters (20 feet) wide but reaches its widest surface expression of 21 meters (70 feet) approximately 240 meters (787 feet) northwest of the Hackberry decline shaft. The mineralized zone forms a broad “S” curve striking from 323<sup>0</sup> to 337<sup>0</sup> azimuth, dipping southwesterly from 39<sup>0</sup> to 63<sup>0</sup>, flattening as the lode trends more westerly and steepening, locally to near vertical, between bends (Malkoski, 1985). Flexures in structures such as this can be favorable sites for deposition of high-grade mineralized shoots.

A vitrophyre (siliceous) dike forms the footwall to the main Hackberry lode at the surface near the Hackberry mine (DeMatties, 1979; Malkoski, 1985), but elsewhere the dike locally acts as a host to mineralization. As the mineralized zone reaches the North Hackberry surface workings, the dike-like appearance fades and the zone splays into a series of locally intense joint sets, parallel shears and veinlets. Locally intense argillic alteration of the hanging wall granitic gneiss occurs on the surface over a thickness of 0.5 to 6 meters (1.5 to 20 feet) along southern extents of the mineralized lode becoming less common to the northwest.

The sub-surface expression of the mineralized zone as originally described by Watts (1912) and Johns (1919) and summarized by Malkoski (1985) and Hamm (1987), occurred as a lens of vein breccia, mostly incorporated within the “vitrophyre” dike rock described by Malkoski (1985), and to a lesser extent, within granitic gneiss country rock. The mineralized lodes followed the dike along a northwesterly strike, dipping 35° to 45° to the southwest. The strike length of the northern part of the more recently mined lode was about 120 meters (400+ feet) on the 200-level of the mine and about 215 meters (700 feet) on the 600-level. The upper reaches of the mineralized zone did not outcrop, terminating about 60 meters (200 feet) down-dip below the surface with the lower reaches extending to between the 600- and 800-levels, likely defined by lower silver grades at the time of mining (1919 metal values). The silver-rich mineralized lens raked approximately 60 degrees to the northwest. The higher-grade core was approximately 0.3 to 1.5 meters (1 to 5 feet) thick above the 500-level widening down-dip to about 4.8 meters (16 feet) on the 600-level (Malkoski, 1985). Following mine closure in 1919, 3700 tons (3,356 tonnes) of silver-rich, poly-metallic mineralization from the lower and northern levels of the mineralized body were milled and returned 0.11 oz/t (3.77 grams/tonne) gold and 21.87 oz/t (749.8 grams/tonne) silver (Malkoski, 1985)

The composition of the mineralized lodes observed on the surface by Malkoski (1985) consisted of quartz vein breccia containing up to 20 percent coarse, euhedral, galena and sphalerite in aggregates and cross-cutting quartz stringers and veinlets. Locally minor fine grained galena, tetrahedrite, pyrite and chalcopyrite occurred as disseminated grains and patches.

Analytical results from surface rock and dump sampling conducted by Malkoski (1985), and by the Author, during the Property inspection (Sample HBY-001), indicate that most of the anomalous samples occur along the poorly exposed, southern extent of the Hackberry Lode. The samples were collected along an approximate 315-meter (1033-foot) strike length of the vitrophyre (siliceous) dike. Some of the more strongly anomalous results are shown directly below and on Figures 7-5, 7-6, 7-7 and 7-8.

- Sample 45502: 29.07 ppm Ag, 261.4 ppm Pb 133.0 ppm Zn
- Sample 45618: 65.64 ppm Ag, 1093.0 ppm Pb 1071.0 ppm Zn
- Sample 45620: 56.97 ppm Ag, 561.3 ppm Pb 475.3 ppm Zn
- Sample HBY-001 1430 ppm Ag 13 % Pb 12.3 % Zn

**7.5.2 Description of the Silver King Mineralized Zone.** The Silver King mineralized zone occurs on the Nevada Select unpatented mining claims. The zone consists of two areas of higher grade mineralization along the western arm of a “Y”, or probable splay, from the main Hackberry mineralized zone. This splay hosts the North and South Silver King mine workings; the southernmost workings being located about 1100 meters (3,937 feet)

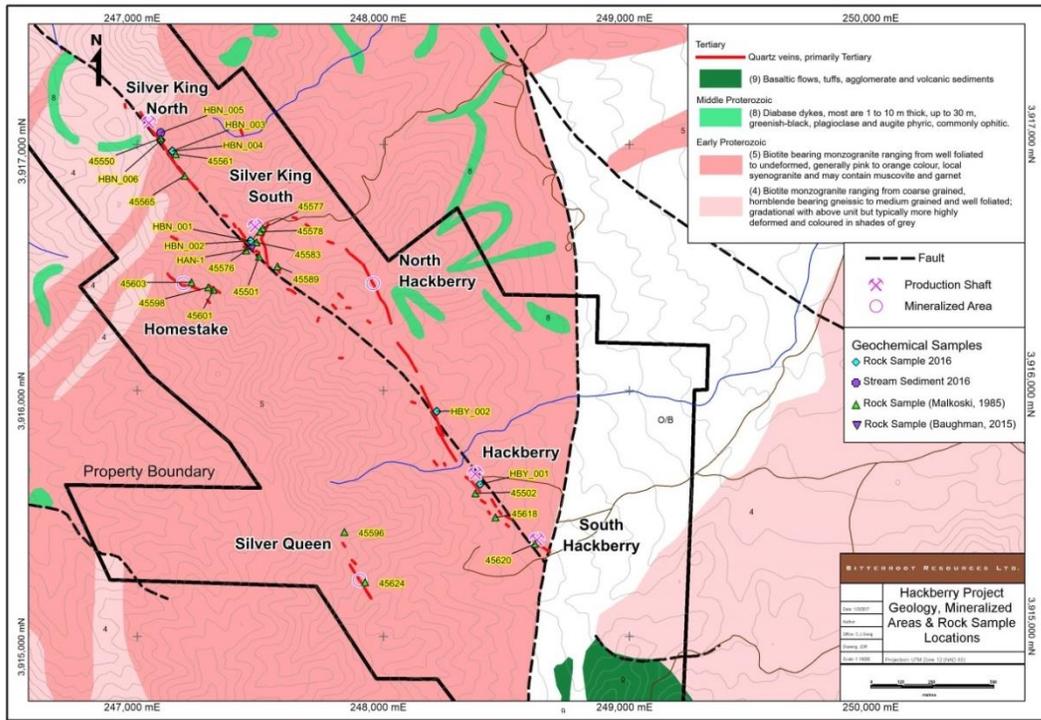


Figure 7-5. Geochemical Sample Locations, Hackberry Property, Mohave County, Arizona

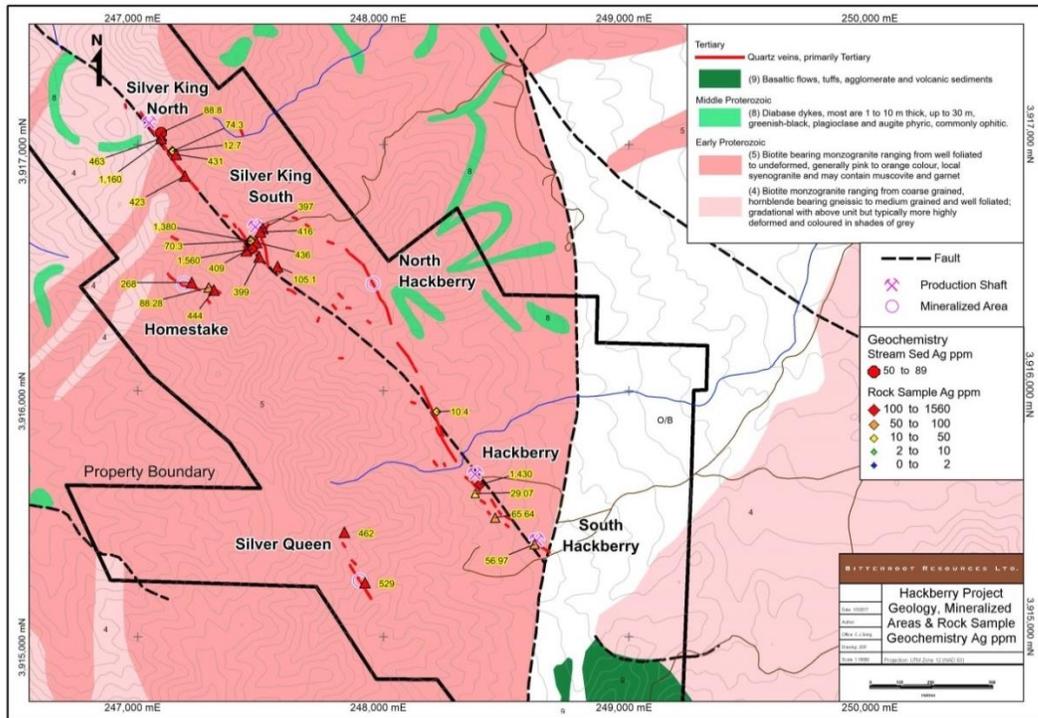


Figure 7-6. Silver Analyses, for Select Samples, Hackberry Property, Mohave County, Arizona

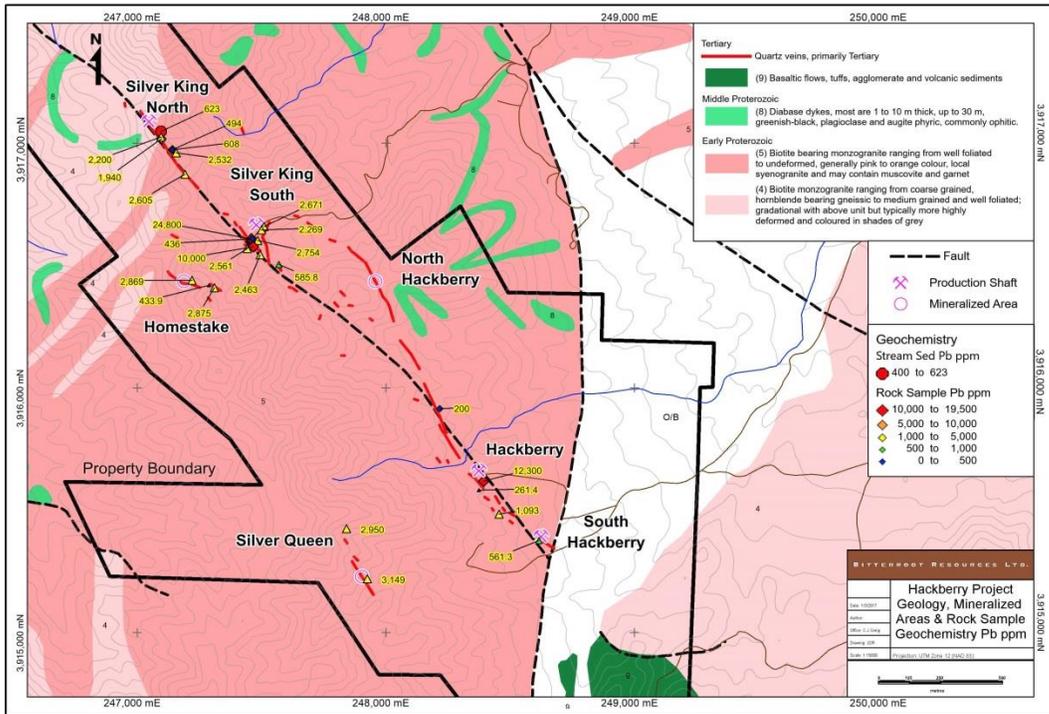


Figure 7-7. Lead Analyses, for Select Samples, Hackberry Property, Mohave County, Arizona

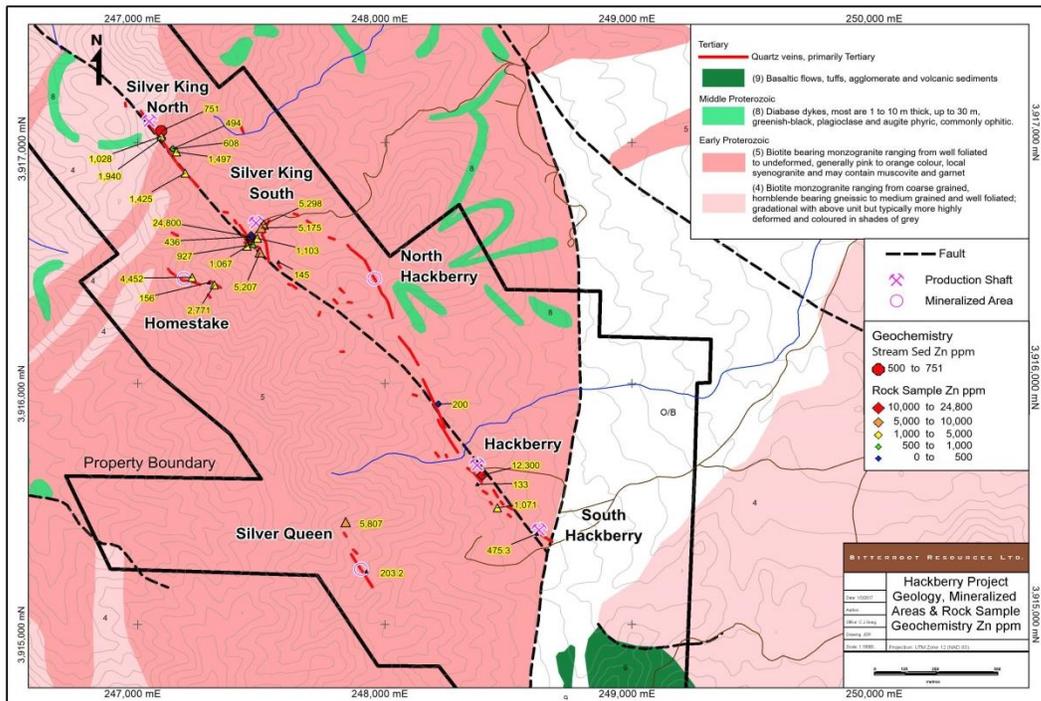


Figure 7-8. Zinc Analyses for Select Samples, Hackberry Property, Mohave County, Arizona

northwest of the Hackberry mine (see Figure 7-2). The historic workings of the Silver King mineralized zone can be traced on the surface for approximately 800 meters (2625 feet). The zone is hosted by less resistant gouge material and altered country rock and is not easily identified in outcrop, but can best be followed by historic mine workings. The host mineralized structure strikes about  $310^{\circ}$  to  $320^{\circ}$  azimuth, dips from  $50^{\circ}$  to  $80^{\circ}$  southwest and consists of a compound fracture zone enveloped by argillically-altered granitic and biotite gneisses (Malkoski, 1985). The hanging wall is weakly altered, but locally there exists a six-meter-wide (20-foot), foot-wall zone of moderately argillically altered and heavily jointed gneissic rocks containing quartz veinlets that are both parallel to, and splayed from, the main fracture zone (Malkoski, 1985). The northwest extent of the zone is covered in talus and towards the southeast the fracture zone, and associated alteration, dissipates about 240 meters (800 feet) from the south workings, and short of intersecting the main Hackberry vein structure.

The composition of the Silver King mineralization is based on observations from materials on historic mine dumps by Malkoski (1985) and has been described as coarse grained, euhedral galena, pyrite and minor chalcopyrite aggregates and veinlets in vuggy quartz gangue. Most sulfide minerals are partially oxidized to cerrusite, smithsonite and chrysocolla associated with limonite-manganese oxides. The historic silver-rich mineralization is reported to have been predominantly oxide mineralization grading to primary sulfides at a depth of about 15 meters (50 feet). The mineralization occurs in shear zones and associated splays as 30 to 60 centimeter (1 to 2 foot) wide bands of quartz veinlets and lenses, as individual, three to four centimeter (1.5 inch) wide quartz veinlets and as vein breccias.

Mineralization occurs at two locations along approximately 800 meters (2,625 feet) of the structural zone. The northern occurrence is marked by several open cuts and shallow inclined shafts over a distance of about 120 meters (400 feet). The inclined shafts are less than 18 meters (60 feet) in down-dip depth. The southern zone, about 600 meters (1970 feet) southeast of the northern occurrence consists of one inclined and two vertical shafts that originally went to approximately 30 meters (100 feet) down-dip but now appear to be open to depths of only six to nine meters (20 to 30 feet). The southern historic workings cover a zone about 150 meters (490 feet) in length and the sheared zone is up to about 45 meters (150 feet) wide, but not necessarily mineralized over that width. What may be a vertical drill casing was noted about 15 meters (50 feet) southwest of the southern-most vertical shaft. If this casing represents a drill hole, there are no known available related data.

Historic data suggests the Silver King workings were mined intermittently by near-surface excavations from about 1874 to 1907 (Malkoski, 1985). The deepest workings reached no more than about 30 meters (100 feet), but the oxidized silver-rich mineralization recovered

reportedly contained silver grades in the 200 oz/t (6,857 grams/tonne) range (Johns, 1918), consisting of supergene silver minerals such as silver chloride (cerargyrite, also known as horn silver). Ridenour suggested that total production from the two Silver King mining areas, with a value of about \$70,000, was milled at the Hackberry mill (Johns, 1918). At the then silver price of about \$1.15 per ounce, the production may have totaled in the order of 60,900 ounces (1,890 kilograms) of silver.

Surface geochemical analytical results from both bedrock and dump sampling conducted by Malkoski (1985), and by the Author, during the Property inspection (samples HBN-001, -006), reveal several anomalous values in silver, lead and zinc. Some of the more anomalous samples are shown below and on Figures 7-5, 7-6, 7-7 and 7-8.

#### North Silver King Zone

- Sample 45550: 463 ppm Ag 2200 ppm Pb 1028 ppm Zn
- Sample 45561: 431 ppm Ag 2532 ppm Pb 1497 ppm Zn
- Sample 45565: 423 ppm Ag 2605 ppm Pb 1425 ppm Zn
- Sample HBN-006 1160 ppm Ag 5970 ppm Pb 1940 ppm Zn

#### South Silver King Zone (northwest-trending structure)

- Sample 45501: 399 ppm Ag 2463 ppm Pb 5207 ppm Zn
- Sample 45576: 409 ppm Ag 2561 ppm Pb 1067 ppm Zn
- Sample 45589: 105.1 ppm Ag 585.8 ppm Pb 145 ppm Zn
- Sample HBN-001 1380 ppm Ag 1.95 % Pb 2.48 % Zn
- Sample HAN-1 1560 ppm Ag 1.0 % Pb 927 ppm Zn

#### South Silver King Zone (east-trending zone)

- Sample 45577: 397 ppm Ag 2671 ppm Pb 5298 ppm Zn
- Sample 45578: 416 ppm Ag 2269 ppm Pb 5175 ppm Zn
- Sample 45583: 436 ppm Ag 2754 ppm Pb 1103 ppm Zn

Anomalous geochemical results in the area of the South Silver King workings suggest that not only is there mineralization along a 150-meter (490-foot) northwest-southeast strike length along the major mineralized trend, but significant anomalous mineralization also occurs over a 110-meter (360-foot) zone trending east from the main structure (Figures 7-5, 7-6, 7-7 and 7-8).

**7.5.3 Description of the Homestake Mineralized Zone.** The Homestake lode is traced by a series of small-scale surface workings located about 300 meters (985 feet) southwest of the southern Silver King workings (see Figure 7-2). This prospect was not examined during the

property inspection. Malkoski (1985) described the lode as being a series of fractures with individual and sheeted quartz veins traceable for about 335 meters (1100 feet) striking around  $290^{\circ}$  azimuth with variable but relatively steep dips. Individual quartz vein sets average about 30 cm (1 foot) in width and vary from 75 to 150 meters (250 to 500 feet) in strike length. Individual vein attitudes likewise vary widely from  $288^{\circ}$  azimuth dipping  $68^{\circ}$  to the southwest to  $318^{\circ}$  azimuth dipping  $84^{\circ}$  northeast.

The host granitic gneisses are locally intensely to moderately argillically altered. Veins and veinlets are composed of vuggy to coarse crystalline quartz hosting aggregates of partially oxidized galena and chalcopyrite. The occurrence has been developed by several small pits and adits and one nine-meter (30-foot) open cut (Malkoski 1985). There has been no known production from this lode. Some significant analyses of surface rock samples taken along the strike length of the mineralized zone (Malkoski, 1985) are shown directly below and on Figures 7-5, 7-6, 7-7 and 7-8.

- Sample 45598: 88.28 ppm Ag 433.9 ppm Pb 156 ppm Zn
- Sample 45601: 444 ppm Ag 2875 ppm Pb 2771 ppm Zn
- Sample 45603: 268 ppm Ag, 2869 ppm Pb 4452 ppm Zn

**7.5.4 Description of an Unnamed (Silver Queen) Mineralized Zone.** An unnamed group of surface exploration workings (here named the Silver Queen Lode) is located about 600 meters (1970 feet) west-southwest of the Hackberry inclined shaft on the southern part of the Property (see Figure 7-2). This prospect was not examined during the Property inspection. As described by Malkoski (1985), the workings consist of an inclined shaft, an 11-meter (35-foot) adit and several small test pits and trenches along a 240-meter (800-foot) by 60-meter (200-foot) zone of strong jointing hosting quartz-filled breccias and veins. The zone strikes about  $330^{\circ}$  azimuth and is composed of quartz vein stringers 3 to 15 centimeters (.1 to .5 feet) wide within bands of sheeted and argillically altered gneiss 20 cm to 3.5 meters (0.5 to 12 feet) wide. Individual veins within these zones dip steeply southwest to near-vertical at the south end of the zone flattening to around  $50^{\circ}$  southwest at the north end. Patches of disseminated and partially oxidized galena occur in the quartz on several dumps.

Rock geochemical data of Malkoski (1985) show anomalous metals values from areas of the old workings over a strike length of about 230 meters (750 feet). Anomalous results from two samples, one a selected grab from a small dump (Sample 45624), the other from quartz veins along trend of the projected mineralized zone 220 meters (720 feet) to the north, are listed below and shown on Figures 7-5, 7-6, 7-7 and 7-8.

- Sample 45596: 462 ppm Ag 2950 ppm Pb 5807 ppm Zn
- Sample 45624: 529 ppm Ag 3149 ppm Pb 203.2 ppm Zn

## 7.6 Metal Zoning

M. Malkoski (1985) described a vertical mineral zoning pattern on the Property based on his field mapping, research of available literature and an emphasis on rock geochemistry analyses. Malkoski proposed an upper quartz zone, an intermediate precious-metal and sulfide zone and a lower base-metals zone. Paraphrased from his property report, the zoning scenarios are as follows:

**Upper Quartz Zone** – The upper quartz zone exists in the outcrop areas of the Hackberry Lode and much of the Silver King Lode,

- widespread argillic alteration of the granitic gneiss over 3 to 60-meter (1 to 200-foot) wide zones
- characteristic mineral is drusy to vuggy, white-grey-greenish quartz
- rare disseminated grains of pyrite, chalcopyrite and galena and their pseudomorphs
- characteristic trace elements
  - As, Sb forming broad anomalies over mineralized areas
  - Cu in more localized anomalies
  - Pb and Zn, which appear to dominate the hydrothermal system, form anomalies over mineralized ground in all zones
  - Ag in moderate-sized anomalies over mineralized areas
- vertical extent is unknown

**Intermediate Precious-Metals and Sulfide Zone** – The intermediate precious-metals and sulfide zone was probably mined from about 30 meters to 150 meters (100 to 500 feet) down-dip in the Hackberry mine. The zone is found near the surface on the Silver King north and south mineralized zones and along the surface expressions of both the Homestake and Silver Queen areas.

- in the upper boundary of the zone, sulfide minerals and Ag ( $\pm$ Au) coincide and appear vertically gradational over about 30 meters (100 feet)
- the lower boundary of the zone is marked by a decrease in Ag ( $^{+}$ Au) and probably occurs at about 180 meters to 245 meters (600 to 800 feet) down-dip in the Hackberry mine
- vertical extent in the Hackberry mine is about 90 to 120 meters (300 to 400 feet); the entire vertical height of the zone has not been mined elsewhere
- mineralized widths are reported to have increased from 30 cm (1 foot) to over four meters (16 feet) on the 600-level of the Hackberry mine
- actual “pay streak” may remain a relative constant thickness while disseminated sulfide minerals become increasingly common over greater widths with increased depth

- alteration appears to be similar to the upper quartz zone, but locally more restricted
- characteristic minerals are dominant galena, subordinate sphalerite and pyrite, minor chalcopyrite and tetrahedrite and possibly argentite, all in a quartz gangue
- characteristic elements: Ag (+Au), Pb, Zn
- zone characterized by low As+Sb and a high Ag/As+Sb ratio

**Lower Base-Metals Zone** – The lower base-metals zone was likely only encountered in the lower levels of the Hackberry mine workings on the 700- and 900-levels

- zone heights and alteration assemblages are unknown
- mineralogy is similar to the precious metals zone but with sub- or low-grade Ag (+Au)
- characteristic elements: Pb, Zn, (+Ag, Mo?)

Malkoski (1985) also suggested there may be a lateral structural uplifting of the vertical zoning patterns. He believed that, from east to west, the upper quartz zone crops out at the surface at the Hackberry mine, whereas the precious-metals and sulfide zone is at or near the surface at the Silver King workings and sulfide mineralization crops out at the surface on the Homestake and Silver Queen areas. He believed that as a whole, his elemental abundance and metal ratio data supported the field evidence. This would suggest as one traverses up elevation from east to west, one is going deeper into the vertical zoning systems, inferring some form of post-mineral structural uplifting from east to west. This same scenario can also be explained by different mineralizing episodes occurring at different elevations in the mineralizing system during multiple, repetitive influxes of the mineralizing fluids in a typical epithermal vein environment (Megaw, 2006).

## 8.0 DEPOSIT TYPE

Historic investigators did not present opinions on the type of hydrothermal mineral deposits of the Hackberry mine areas. The Author believes that the Hackberry deposit is best represented as a mesothermal type deposit, or as a transition deposit type between mesothermal and an intermediate-sulfidation epithermal deposit, as described by Sillitoe (2003). This opinion is based on the main characteristics of the Hackberry hydrothermal vein system, listed below, compared to the very similar characteristics of the mesothermal, poly-metallic veins of the nearby Wallapai District, as described in Section 23.0 below, as well as comparisons to current classifications and nomenclature (Buchanan, 1981; Sillitoe and Hedenquist, 2003, Megaw, 2006).

### Characteristic features of the mineralized zones of the Hackberry deposit

- vein and breccia vein system
- vein filling: fine-grained to drusy and comb quartz
- 1-20 percent primary sulfide mineral content of veins
- elevated Ag ( $\pm$ Au); Ag:Au >500 (based on rock geochemistry of Malkoski, 1985, the Author's rock and dump geochemical analytical results and historic production data)
- common sulfide minerals: galena, sphalerite, + chalcopyrite, + minor pyrite
- anomalous trace metals: As, Sb
- associated clay (sericite/argillic) alteration assemblage of host rocks
- probable association of polymetallic veins with intermediate intrusive (extrusive?) volcanic rocks

## 9.0 EXPLORATION

Bitterroot has completed no exploration on the Property as of the effective date of this Report.

Limited historical exploration was conducted on the Property by various companies and individuals as noted in Section 6, however detailed data on the type, location and results of that exploration are lacking. An exception is work conducted by Malkoski (1985), who, utilizing a combination of reconnaissance geological mapping, rock geochemistry, metal ratios and metal zoning data, identified several potential exploration drill targets, which to the Author's knowledge, have not been tested. Due to the historical nature of this data, the information related to these exploration targets has not been verified by a qualified person, as defined in NI 43-101, therefore there is no guarantee as to the accuracy or completeness of the actual data or the supporting documentation. However, the Author believes, to the best of his knowledge, that Malkoski's exploration targets have merit, and thus are summarized below and the target areas are shown on Figure 9-1.

### Target Zone – South Hackberry Mine

Target 1 – southern extension of mineralized zone mined on the 600- to 700-level of the Hackberry Mine

Supporting Data – anomalous surface geochemical results continue southeastward from the Hackberry mine and historical records of the zone trending beyond the underground Hackberry workings into, and beneath, the historical South Hackberry mine workings

**Target Zone – North of the Hackberry Mine**

Target 2 – northern extension of Hackberry mineralized zone about 400 meters (1,310 feet) northwest of Hackberry Mine

Supporting Data – weak (deep?) surface geochemical results extending from the Hackberry Mine area; metal ratios and precious metal zoning on surface suggests target may be deep

Target 3 – northern Hackberry vein system about 800 meters (2,625 feet) northwest of Hackberry Mine

Supporting Data – Hackberry vein system consists of lenses of vein breccia; weak surface geochemistry suggests the target zone is likely above the intermediate precious-metal sulfide zone

**Target Zone – Silver King Workings**

Target 4 – Silver King south

Supportive Data – moderate to strong geochemical anomalies along mineralized shear zone mined to very shallow depths; intermediate precious-metal sulfide zone at surface

Target 5 – Silver King north

Supporting Data – strong to moderate surface geochemical anomalies (sample number 45550: 13.5 oz/t Ag; 463 g/tonne Ag); historic workings are very shallow inferring the intermediate precious-metal sulfide zone present at the surface, has not been tested at depth

**Target Zone – Homestake Prospect**

Target 6 – located about 300 meters (985 feet) southwest of the Silver King south workings; possible secondary drill target, needs more work to define drill targets

Supporting Data – Intermediate precious-metal sulfide zone crops out along entire 335 meters (1100 feet) of leached, mineralized zone; erratic anomalous rock geochemical results

**Target Zone 7 – Silver Queen Prospect**

Target – located approximately 610 meters (2000 feet) west-southwest of the Hackberry inclined shaft; possible secondary drill target, needs additional work to define drill targets

Supporting Data – Intermediate precious-metal sulfide zone signature is strong at surface with favorable metal ratios

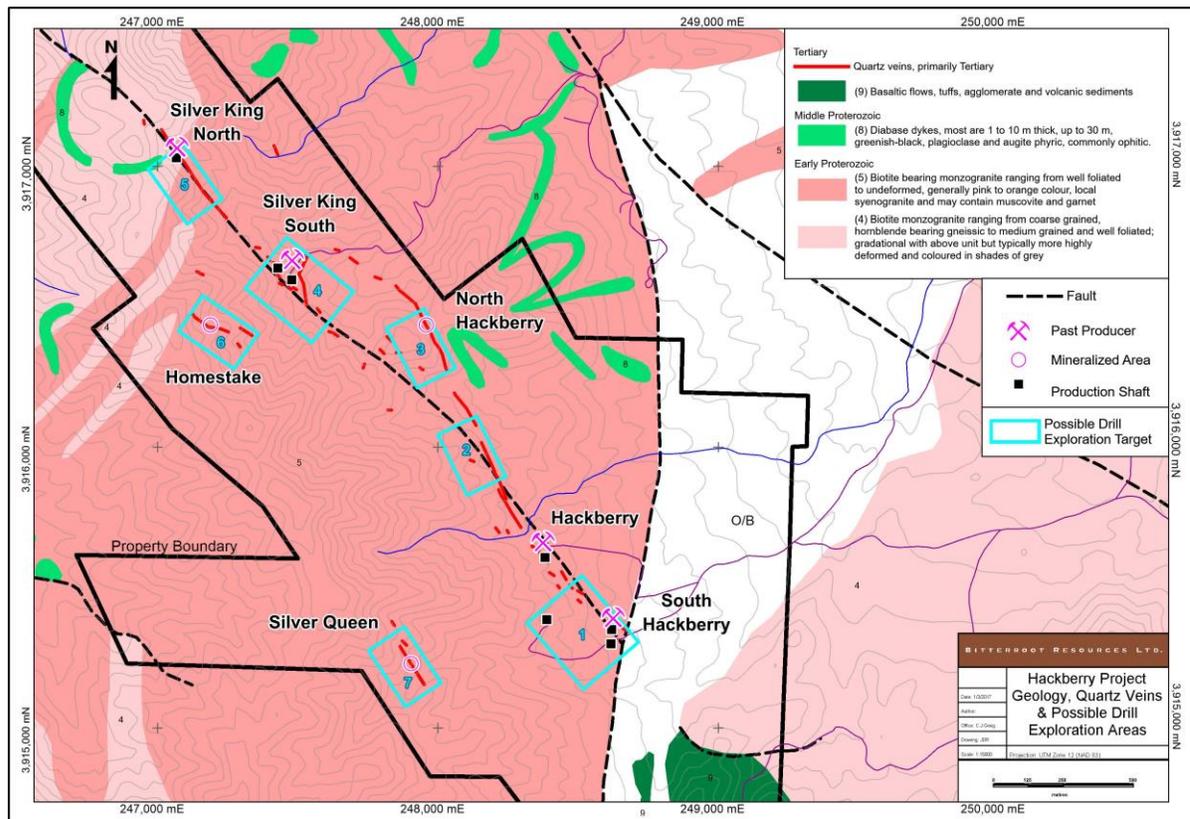


Figure 9-1. Exploration Drill Target Areas of Malkoski (1985), Hackberry Property, Mohave County, Arizona

## 10.0 DRILLING

Bitterroot has conducted no drilling on the Property. The limited historic drilling is described in Section 6.

## 11.0 SAMPLE PREPARATION, ANALYSES AND SECURITY

Only minimal rock and stream sediment samples were taken by Bitterroot for verification purposes during the initial Property inspection. Bitterroot has not conducted a Property-wide sampling program. The verification samples were collected by Glen Adams, a Qualified Person as defined by NI 43-101, while visiting the Hackberry Property on September 8 and 9, 2016. Analytical results of samples HBN-002, HBN-006 and HBY-001 are noted in Sections 7.51 and 7.52. All of the verification samples remained in Mr. Adams' possession until they were shipped by commercial carrier to ALS Geochemistry ("ALS") in Tucson, Arizona. The samples were prepared for analyses by ALS in Tucson. The analytical

procedures (ME-GRA21, OG46 and ME-ICP41) were performed by ALS Canada Ltd. in North Vancouver, BC, Canada, an ISO/IEC 17025 accredited laboratory.

Sample HAN-1 was taken by Mr. Baughman, a representative of Ely, on the South Silver King mine area, the analytical results of which are noted in Section 7.52. Bauman's sample was also analyzed by ALS Canada Ltd., in North Vancouver, BC, Canada, in February, 2015.

Historic rock sampling was carried out by Malkoski (1985), the analytical results of which are noted in Sections 7.51, 7.52, 7.53 and 7.54. Malkoski (1985) used the now defunct GCI laboratory of Toledo, California. No references were made regarding sample security, quality assurance or quality control (QA/QC) procedure. Mr. Adams has no knowledge of the quality of either Baughman's or Malkoski's sampling, sample recovery or sample security, therefore there is no guarantee as to the accuracy or completeness of the work done or of the supporting documentation.

## 12.0 DATA VERIFICATION

Mr. Adams has relied upon various authors of historic reports who, to the best of his knowledge, may or may not qualify as Qualified Persons in the context and definition in NI 43-101. While reasonable care was taken in preparing the Report, the early historical nature of much of the information, as well as the fact that the historic information has not been verified by a qualified person as defined in NI 43-101, the Author cannot guarantee the accuracy or completeness of the supporting documentation used, all of which are listed in the Reference section. Where possible, referenced reports were examined from alternative sources to verify authenticity. As many of the older reports were originally private company reports supplied by the Hughes Family Trust, verification of authenticity was not always possible. For the purposes that the historic reports were used, Mr. Adams, as a Qualified Person, believes to the best of his knowledge that the reports should be considered reliable unless otherwise stated in the Report.

## 13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

Bitterroot did not conduct any Mineral Processing or Metallurgical Testing.

Historical data regarding silver-rich, poly-metallic mineralization from the Hackberry mine suggested that expected recovery rates should be approximately 85 percent of the silver, 90 percent of the gold, 90 percent of the lead and 50 to 60 percent of the zinc (Breen, 1918). Because of the early historical nature of this data, it has not been verified by a qualified

person, as defined in NI 43-101, and therefore there is no guarantee as to the accuracy or completeness of the actual data or the supporting documentation.

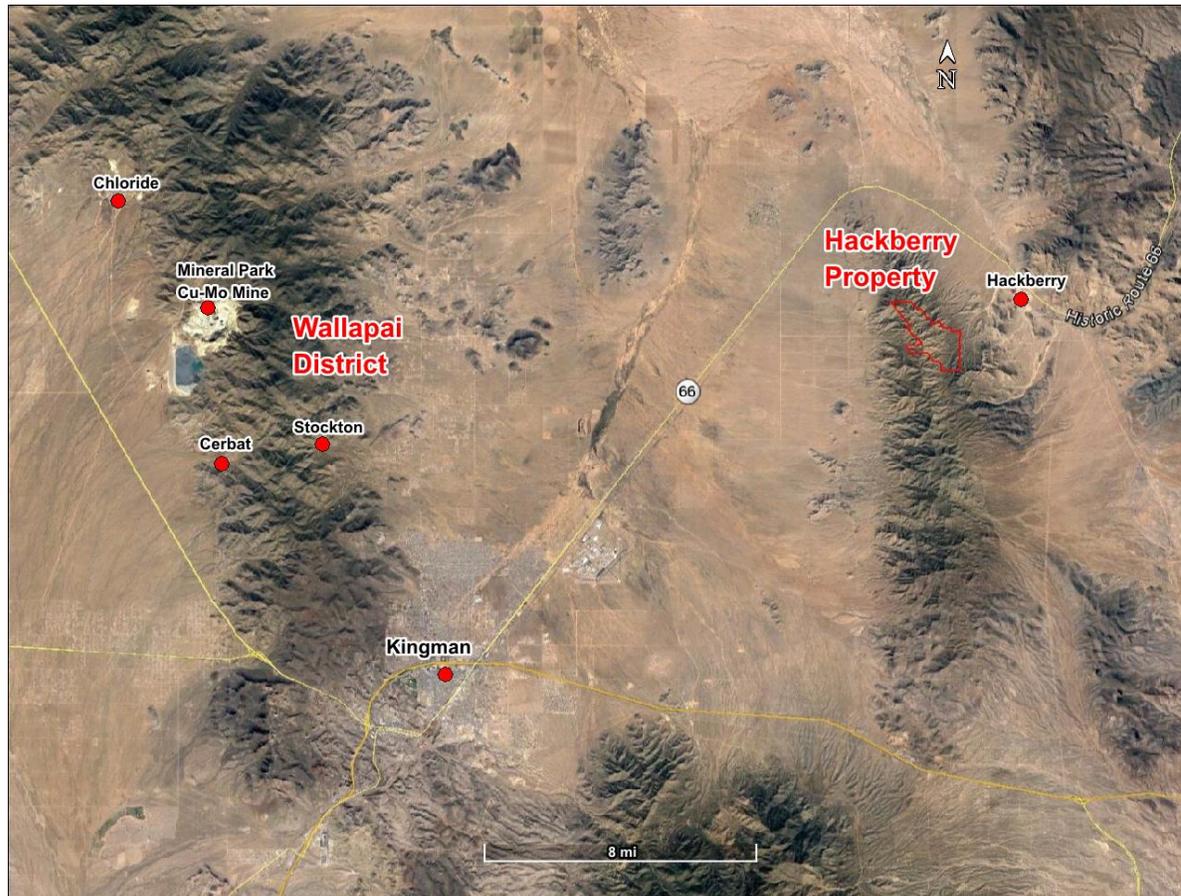
#### **14.0 MINERAL RESOURCE ESTIMATES**

Bitterroot is not reporting any mineral resource estimates for the Property. Historic mineral resources estimates, which are not compliant with NI 43-101, are stated in Section 6.3.

**(Sections 15.0 through Section 22.0 are not pertinent to this Report and are not included.)**

#### **23.0 ADJACENT PROPERTIES**

Other deposits in northwest Arizona, that the Author is familiar with, exhibit characteristics similar to the Peacock District mineralization and the Hackberry deposit. One such group of deposits occurs within the adjacent Wallapai District located north of Kingman, Arizona, and only 30 kilometers (18.6 miles) west of the Hackberry Property (Figure 7-9). . Because the two closely-spaced mining districts share so many significant characteristics, a summary of the Wallapai District is presented here in Section 23 solely to provide geologic comparisons. An additional benefit is that the near-by Wallapai District presents a much larger, and significantly more diverse, public data pool compared to the more restricted, mostly unpublished private reports available on the Hackberry Property. The Wallapai District data also may add some verification to possible conclusions drawn on the Hackberry geological and mineralogical environments. It must be understood however that any general or specific characteristics of the Wallapai District may not necessarily be indicative of the geology or mineralization of the Hackberry Property. Because of the early historical nature of some of the information on the Wallapai District, there is no guarantee as to the accuracy or completeness of the supporting documentation used, all of which are listed in the Reference section.



**Figure 23-1. Wallapai District with Hackberry Property Location, Mohave County, Arizona**

The Wallapai District is located in the Arizona Mohave crustal subprovince of Duebendorfer (2015), as is the Hackberry Property. The Wallapai District extends northwest from Kingman, Arizona for about 48 km (30 miles). Included in the district are the Chloride, Mineral Park, Cerbat and Stockton mining camps. The mining of base- and precious-metal veins in the Wallapai District occurred from 1863 to 1948, from over 70 mines. Metal production from 1904 through 1948 totaled about \$22.5 million dollars (Dings, 1951). Geologically the basement rocks of the Wallapai District consist of Precambrian fine- to medium-grained amphibolites, mafic schists and amphibolitic gneisses (Thomas, 1949; Dings, 1951; Eaton, 1980). Intruding the gneissic terrain are Precambrian monzonitic to granitic bodies ranging in age from  $1,740 \pm 20$  to  $1,340 \pm 20$  million years (Lang, 1988). The Laramide Ithaca Peak monzonitic porphyry stocks, dated at  $73.3 \pm 2.6$  m.y. (Lang, 1988), intrude the central Cerbat Mountains and host the Mineral Park Cu-Mo porphyry deposit. The Mineral Park Cu-Mo deposit, now closed and on care and maintenance status, operated from 1965 to June 2013 producing 614 million pounds (279 million kilograms) of Cu in

concentrate, 160 million pounds (72.6 million kilograms) of Cu as cathode, 55 million pounds (25 million kilograms) of Mo in concentrate and historical data indicates over 5 million ounces (155,521 kilograms) of Ag (Simmerman, 2013).

The base- and precious-metal veins of the Wallapai District generally follow the basin and range structural grain of the Cerbat mountains, forming quartz-filled fracture systems that strike  $330^{\circ}$  to  $310^{\circ}$  azimuth and dip within  $60^{\circ}$  of vertical (Lang, 1988). The mineralized veins occur within a belt about 6.5 to 9 kilometers (4 to 5.5 miles) in width and 22.5 kilometers (14 miles) long and individual veins are traceable for lengths of 30 meters to 4 kilometers (48 feet to 2.5 miles) (Thomas, 1949). Veins average 0.9 to 1.2 meters (3 to 4 feet) in width ranging from a few centimeters to 10 meters wide (<1 inch to 33 feet) (Dings, 1951). Zones of closely-spaced veins separated by bands of gouge and country rock may reach widths of 24 to 100 meters (80 to 330 feet) (Thomas, 1949). The veins generally exhibit well defined walls and in places are in contact, and follow, late-stage lamprophyric dikes (Schrader, 1909). Gouge and breccia envelope most veins (Thomas, 1949). The veins consist of fine-grained, to coarse, comb and rosette crystal forms, as well as vuggy and drusy quartz. The quartz is white to grey in color, often limonitic, commonly shattered and re-cemented by late calcite and may be locally chalcedonic or exhibit crustification banding (Thomas, 1949). Less common vein gangue consists of calcite, manganiferous siderite and rare rhodochrosite. The primary sulfide minerals, in order of abundance, are pyrite, sphalerite, galena and chalcopyrite. Also present are arsenopyrite, proustite (a ruby silver; silver-arsenic-sulfide), molybdenite and argentite (Dings, 1951). Oxidation levels generally mimic the water table which ranges from 20 to 60 meters (75 to 200 feet) below surface, which was the final depth of many of the early mines that recovered only the much higher grade, secondary oxidized silver minerals and gold. Wall rock alteration consists of weak vein wall propylitization and silicification and locally intense sericitization, within a few meters of the veins (Thomas, 1949). District-wide metal zoning described by Lang (1988) is centered on the Ithaca Peak stocks. The zoning pattern consists of a central Cu-Mo core and proceeding outward through zones of Cu-Mn to Cu to Pb-Zn( $\pm$ As) to outer Ag-Au mineralization. Metal zoning in individual mines is less obvious. The Wallapai District poly-metallic vein systems are considered to be mesothermal in deposit type (Lindgren, 1913; Butler, 1938; Dings, 1951).

Of the over 70 historic poly-metallic vein mines in the Wallapai District, two mines, the Tennessee-Schuylkill mine in the Chloride camp and the Golconda mine in the Cerbat camp, accounted for over 90 percent of the district's lead and zinc, and accessory precious-metal, production (Dings, 1951). The Tennessee-Schuylkill mine, the more studied of the two deposits is summarized below based on data from Schrader (1909), Thomas (1949), Dings (1951), Eaton (1981) and Lang (1988).

- Production 1901-1948: 43,383 oz.(1,349 kilograms) gold, 1,514,187 oz. (47,096 kilograms) silver, 66,805,907 lbs. (30,303 tonnes) zinc, 59,897,096 lbs. (27,169 tonnes) lead, 839,837 lbs. (381 tonnes) copper
- Vein characteristics: strike length 1829 meters (6000 feet) at 352<sup>0</sup> (azm.), average dip 85<sup>0</sup> E., variable widths 0.3m – 6.7 meters (1 – 22 feet), average width 2.4 meters (8 feet), mined to a vertical depth of 442 meters (1,450 feet), several veins mined underground do not come to surface
- Host rocks: granitic gneiss, amphibolite, pegmatite, and schist
- Wallrock alteration: weak propylitic, siliceous and locally strong sericitic (argillic) from a few centimeters to one meter (< 1 in. to 3 ft.) into wallrock
- Primary base- and precious-metal minerals: sphalerite, galena, chalcopyrite, arsenopyrite, rare tetrahedrite-tennantite, proustite, molybdenite, argentite
- Average grade: 17 to 25 oz/t (529 to 778 gr/tonne) silver , 3.5 percent lead and 6 to 8 percent zinc
- Ag:Au ration: approximately 35 (based on production figures)
- Fluid inclusion homogenization temperatures: 290<sup>0</sup> - 310<sup>0</sup> C.
- Fluid inclusion salinity: 1 – 7 equivalent weight percent NaCl (quartz in poly-metallic veins district-wide)
- High-grade mineralized shoots: range from 0.3 to 6 meters (1 to 20 feet) in width, 30 to 150 meters (100 to 500 feet) in strike length and 60 to 300 meters (200 to 1000 feet) in vertical extent
- Metal zoning: possible lateral zoning with dominant galena in the north grading into dominant sphalerite to the south
- Age of mineralization: possibly during Laramide orogeny or mid-Tertiary

## 24.0 OTHER RELEVANT DATA AND INFORMATION

The Author knows of no additional relevant data that might materially impact the interpretations and conclusions presented in this Technical Report.

## 25.0 INTERPRETATIONS AND CONCLUSIONS

The Hackberry Property consists of silver-rich, poly-metallic, vein deposits hosted within a mixed sequence of Precambrian feldspathic “granitic” gneisses and minor biotitic and biotite-amphibolite gneisses. The Precambrian rocks are intruded by a limited number of intermediate to mafic, probably mid-Proterozoic volcanic dikes that pre-exist the poly-metallic mineralizing events on the Property. Prominent structural fracture zones strike northwest-southeast for almost 2 km (1.2 miles) along most of the length of the Property dipping southwest at 40° on the southern part of the Property and steepening to 55° to 80° southwest on the northern part. The structural fracture zones host intermittent but persistent, base- and precious-metal bearing quartz vein systems including the past-producing, Hackberry, South Hackberry and Silver King high-grade silver deposits.

Much of the available data on the Property is in the form of private historical reports, several written prior to 1920, and verification of authenticity was not always possible. However, for the purposes that the historic reports were used, the Author, as a Qualified Person, believes, to the best of his knowledge, that the reports should be considered reliable unless otherwise stated in the Report.

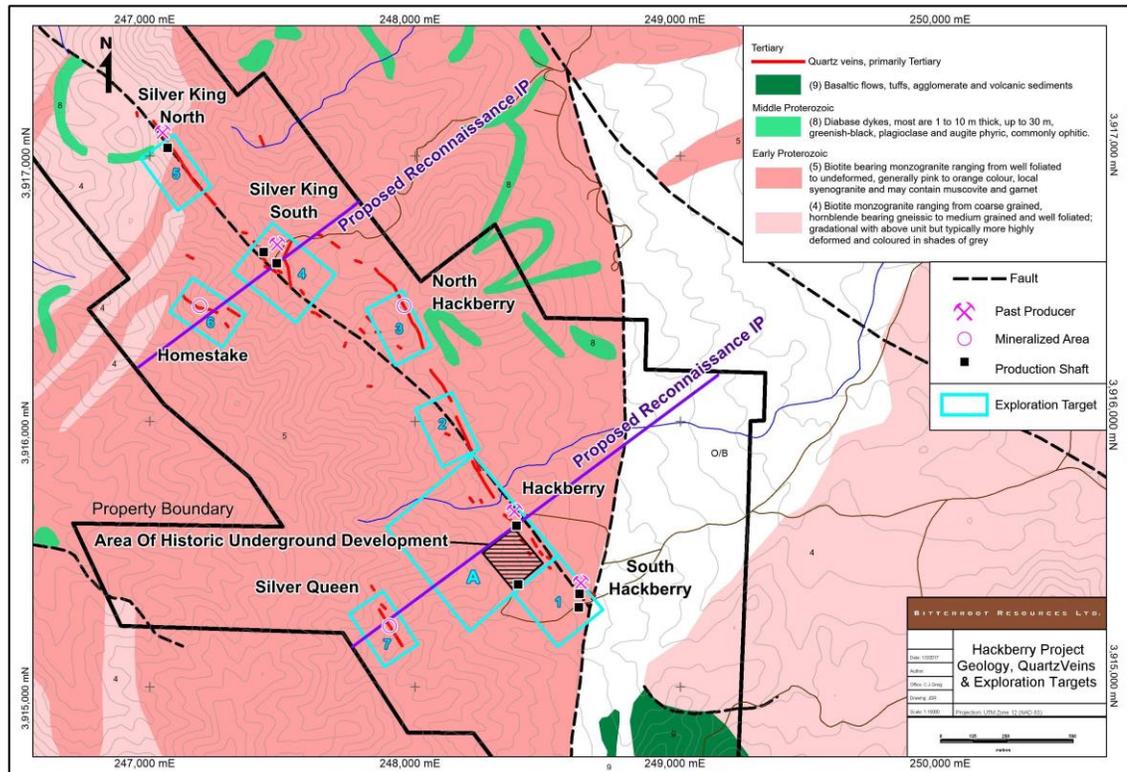
Based on the available data cited in this Report, as well as a personal inspection of the Property, the following conclusions have been drawn about the Hackberry Property:

- Both the initial and the final mine closures of the Hackberry mine were for reasons other than the depletion of the silver-rich, poly-metallic mineralization being mined.
- Areas of potential high-grade base- and precious-metal mineralization may remain unmined in the Hackberry mine between the 200-level and the 600-levels estimated to total 100,000 to 150,000 tons (90,710 to 136,065 tonnes) grading about 25 oz/t (857 grams/ton) silver (Johns, 1918, Hamm, 1987). It must be noted that this potential resource is historical and conceptual in nature. It is unknown what techniques were used to determine the size or grade of the potential resource and therefore the data may not be reliable. There has been insufficient historical, and no recent, exploration to substantiate the existence of such a resource and there is no certainty that subsequent exploration will define such a resource.

- The high-grade mineralized zone mined on the 400-level of the Hackberry mine appeared to be striking southeastward across the southern property boundary and trending into the South Hackberry mine area (Watts, 1912; Hamm, 1987). This high-grade mineralized zone may be present down-dip, below the lowest developed levels of the South Hackberry mine.
- Underground evidence from the Hackberry mine indicates that hidden high-grade mineralized zones occurred at depth but presented no visual evidence of such grades at the surface. Other high-grade mineralized zones having the same hidden characteristics may be present elsewhere along the mineralized structures of the Hackberry Property.
- It is possible that the Hackberry mineralized zone continues southeast of the South Hackberry mine beneath a thick colluvium deposit.
- Anomalous As+Sb and Ag/(As+Sb) surface data over the north and south Silver King workings suggests that mineralization may plunge to the northwest (Malkoski, 1985), similar to the high-grade mineralized zones in the Hackberry mine. Therefore, there is potential for significant high-grade mineralization to plunge undetected beneath the shallow, high-grade, enriched silver deposits mined from the Silver King workings.
- There has been no comprehensive exploration conducted on the Property since the cessation of mining activities in 1920.
  - There have been no successful attempts to re-enter the underground workings to conduct significant mapping and sampling campaigns.
  - Malkoski (1985) conducted a limited sampling program targeting only the known mineralized zones and historic workings. There have been no Property-scale surface geochemical surveys conducted on the Property
  - There is no evidence of any recent geophysical surveys being conducted employing modern equipment or data interpretations.
  - Very limited drilling was reported on, or adjacent to, the Property and there are no available records regarding number of holes, collar locations or, most

importantly, drilling results. There is no reference to any core drilling having been conducted on the Property.

- The geological and structural setting, as well as the silver-rich, poly-metallic mineralization of the Hackberry Property, suggests numerous shared characteristics with the nearby Wallapai Mining District. The more-studied characteristics of the Wallapai District may aid in better understanding various characteristics of the Hackberry Property. General or specific characteristics of the Wallapai District may not necessarily be indicative of the geology or mineralization of the Hackberry Property
- Two deposits in the Wallapai District were mined to depths exceeding 425 meters (1400 feet), suggesting that mineralized zones of the Hackberry Property could extend to greater depths than were historically mined. There are no assurances that the depth of mineralization in the Wallapai District will be duplicated on the Hackberry Property.
- Based on all the available data, the Hackberry Property appears to have excellent exploration potential to host significant undiscovered mineral resources including:
  - historically documented, but un-mined, resources between the 200- and 600-levels, and possibly elsewhere, in the Hackberry mine workings (Figure 25-1)
  - potential for undiscovered, hidden mineral resources or continuations of mineralized zones down-dip beneath, or along strike from, the mined portions in the Hackberry, South Hackberry and Silver King mines (Figure 25-1)
  - potential for undiscovered mineral resources at depth and along strike from the Hackberry-Silver King mineralized trends, including the geochemically-defined targets proposed by Malkoski (1985), (Figure 25-1)



**Figure 25-1. Target Areas with Potential for Undiscovered Mineral Resources, Hackberry Property, Mohave County, Arizona**

(Target areas are shown in cyan, plus the Hackberry mine target area marked as A. Numbers refer to Malkoski's targets noted in Section 9.0 and proposed IP/Resistivity lines are shown in purple)

- The Hackberry Property exhibits ample evidence of significant, undiscovered, high-grade, silver, gold and base-metal mineralization potential to constitute an exploration property of merit. Bitterroot should conduct an initial multi-disciplinary exploration effort on the Hackberry Property which should include detailed, geologic mapping, structural analysis, rock, soil and silt sampling and geophysical surveys. The objectives of the exploration program are to verify historical data and define potential high quality drill targets, with the ultimate goal of defining a mineral resource. A comprehensive drilling program, although not a part of this initial exploration phase, must be the principal objective for the subsequent exploration effort.

The Author has considered all of the potential risks related to the Property and is satisfied that there are no known significant risks and uncertainties that could reasonably be expected to affect the reliability or confidence in the exploration information presented in this Report.

## 26.0 RECOMMENDATIONS

The Hackberry Property exhibits good exploration potential and it is recommended that Bitterroot conduct an in-depth, Property-wide, exploration program. The exploration program should include detailed geological mapping, including alteration mapping and structural analysis, rock, soil and silt geochemical sampling and state-of-the-art geophysical surveys, including a detailed magnetic survey and possible IP/Resistivity surveys. Initially, it is recommended that IP / Resistivity surveys be conducted on two reconnaissance lines (see Figure 25-1), to determine the effectiveness of the technique in this specific mineralized environment. If it is determined that IP / Resistivity is not an effective tool, attention should be put towards increased drilling of geologically selected targets during the next phase of exploration. BLM permitting should be initiated as soon as possible for the pertinent exploration activities being conducted on BLM-managed lands. Based on the proposed recommendations above, a budget to cover the exploration expenditures is presented below in Table 26-1.

**TABLE 26-1. PROPOSED HACKBERRY PROPERTY EXPLORATION BUDGET**

<u>Proposed Exploration Activity</u>	<u>Expenditures (US\$)</u>
Permitting	\$ 12,000
Safety / Security	7,500
Project Geologist	16,500
Geologic Mapping	27,750
Field Expenses	18,450
Geophysical Surveys:	
Recon. IP / Resistivity	24,000
Recon. Ground Magnetism	12,000
Airborne Magnetism	22,000
Geophysical Consultant	5,000

<b><u>Proposed Exploration Activity</u></b>	<b><u>Expenditures (US\$)</u></b>
Geochemical Sampling:	
Soil Sampling	6,530
Silt Sampling	2,050
Rock Sampling	3,050
Administration / Contingency	<u>20,000</u>
<b>TOTAL</b>	<b>\$ 176,830</b>

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## CERTIFICATE OF QUALIFIED PERSON – Glen (Glendenning) W. Adams

To accompany the report entitled: “Hackberry Silver Property, Mohave County, Arizona, U.S.A., NI43-101 Technical Report” prepared for Bitterroot Resources, Ltd., dated March 28, 2017 with an effective date March 28, 2017 (the “Technical Report”).

I, Glen (Glendenning) W. Adams, MSc, Professional Geologist, do hereby certify that:

I am currently a Geological Consultant and the President and Principal Geologist of StarPoint Resources, LLC, an Arizona registered LLC.

My business address is: 6694 E. Superstition View Drive  
Apache Junction, AZ 85119  
U.S.A.

I am a graduate of the University of Minnesota, Duluth, Minnesota, with a Bachelor of Arts Degree in Geology (1971), and a graduate of the University of Western Ontario, London, Ontario, with a Master of Science Degree in Geology (1976).

I am a licensed Professional Geologist in good standing in the states of Minnesota (No. 30223) and Wisconsin (No. 316) and a Registered Member of the Society for Mining, Metallurgy and Exploration (Registered Member No. 4115591RM)

I have practiced my profession for over 40 years since graduation. I have been directly involved with mineral exploration and property evaluations for base- and precious-metals and diamonds in the United States, Canada, South Africa, Argentina, Panama and Peru for both major and junior U.S. and Canadian mineral companies. I have held the industry Exploration positions of Senior Professional Geologist, Senior Exploration Manager, District Geologist and Division Manager, all directly related to mineral exploration project generation, evaluation, development and discovery.

I am currently a member of the Arizona Geological Society, the Society of Economic Geologists and a Registered Member of the Society for Mining, Metallurgy and Exploration.

I am a Qualified Person as defined in National Instrument 43-101.

I personally inspected the Hackberry Property on September 07 and 08, 2017 conducting geological examinations and taking pertinent samples on the Property.

I am an Author of the Technical Report titled “Hackberry Silver Property, Mohave County, Arizona, U.S.A., NI43-101 Technical Report”, dated March 28, 2017, and I am responsible for the written body of the Technical Report consisting of Sections 1 through 14, inclusive and Sections 23 through 27, inclusive. I collaborated with co-author Jeffrey Rowe who drafted all map-related figures within the Technical Report. Jeffrey Rowe also reviewed and contributed to the written body of the Technical Report.

I am independent of the issuer, Bitterroot Resources Ltd., and its U.S. subsidiary Trans Superior Resources Inc., applying the test set out in Section 1.5 of NI 43-101. On January 17, 2017, in consideration for my ongoing consulting services to Bitterroot, I was granted stock options of Bitterroot, exercisable to acquire up to 70,000 common shares of Bitterroot Resources Ltd. at an exercise price of \$0.10 per share until January 16, 2022 (the “Stock Options”). The Stock Options do not represent a material financial interest to me, and did not interfere with my judgment regarding the preparation of the Technical Report.

I have had no prior involvement with the Hackberry Property prior to September 07, 2017.

I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with the afore-stated National Instrument and Form.

As of the effective date of this Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information required to be disclosed to make the report not misleading.

I consent to the filing of the Technical Report with any stock exchange and other regulatory authority, and any publication by them, for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 28<sup>th</sup> day of March, 2017.



Glen W. Adams, MSc, P.Geol.

## CERTIFICATE OF QUALIFIED PERSON – Jeffrey D. Rowe

To accompany the report entitled: “Hackberry Silver Property, Mohave County, Arizona, U.S.A., NI43-101 Technical Report” prepared for Bitterroot Resources Ltd., dated March 28, 2017 with an effective date March 28, 2017 (the “Technical Report”).

I, Jeffrey D. Rowe, B.Sc., Professional Geoscientist, do hereby certify that:

I am currently a Geological Consultant employed by C. J. Greig & Associates Ltd., of British Columbia, Canada.

My business address is: 729 Okanagan Ave. E.  
Penticton, B.C.  
Canada V2A3K7

I am a graduate of the University of British Columbia, Vancouver, British Columbia, with a Bachelor of Science Degree in Geology (1975).

I am a licensed Professional Geoscientist in good standing with the Association of Professional Engineers and Geoscientists of British Columbia (License No. 19950).

I have practiced my profession for over 34 years since graduation. I have been directly involved with mineral exploration and property evaluations for base- and precious-metals in Canada, the United States and Mexico for both major and junior Canadian mineral companies. I have held the industry Exploration positions of Senior Professional Geologist, Exploration Manager and Vice President Exploration, all directly related to mineral exploration project generation, evaluation, development and discovery.

I am a Qualified Person as defined in National Instrument 43-101.

I have reviewed historical documents describing the geology and mineralization in the area of the Hackberry Property.

I am an Author of the Technical Report titled “Hackberry Silver Property, Mohave County, Arizona, U.S.A., NI43-101 Technical Report”, dated March 28, 2017, and I am responsible for drafting all map-related figures within the Technical Report. I have also reviewed and contributed to the written body of the Technical Report written by co-author Glen Adams.

I am independent of the issuer, Bitterroot Resources Ltd., and its U.S. subsidiary Trans Superior Resources Inc., applying the test set out in Section 1.5 of NI 43-101. In consideration for my

ongoing consulting services to Bitterroot, I was granted stock options of Bitterroot, exercisable to acquire up to 75,000 common shares of Bitterroot Resources Ltd. at an exercise price of \$0.10 per share until January 21, 2021 (the “Stock Options”). The Stock Options do not represent a material financial interest to me, and did not interfere with my judgment regarding the preparation of the Technical Report.

I have had no prior involvement with the Hackberry Property.

I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with the afore-stated National Instrument and Form.

As of the effective date of this Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information required to be disclosed to make the report not misleading.

I consent to the filing of the Technical Report with any stock exchange and other regulatory authority, and any publication by them, for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 28th day of March, 2017.



Jeffrey D. Rowe, B.Sc., P.Geo.