# **Technical Report**

on the

# **Copper Hills Property**

Cat Mountain Mining District

Socorro County, New Mexico, USA

West: 107° 26′ 39" W, East: 107° 22′ 22" W, North: 34° 6′ N, South: 34° 3′ 40" N

October 25, 2011

prepared for



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by

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# 1.0 Summary

The Copper Hills property is located in Socorro County, New Mexico, approximately 15 km west of the village of Magdalena. Access is along US Hwy 60 from the city of Socorro, some 60 km to the east.

Enertopia Corporation has entered into a definitive mineral property option agreement dated April 11, 2011 with Wildhorse Copper Inc. and its wholly owned subsidiary Wildhorse Copper (AZ) Inc. respecting an option to earn a 100% interest, subject to a 1% NSR capped to a maximum of \$2,000,000 on one claim, in the Copper Hills property. The Copper Hills property is comprised of 56 located mining claims covering a total of 1,150 acres (468 hectares) located in Socorro County, New Mexico, USA. Wildhorse Copper Inc. holds the Copper Hills property directly and indirectly through property purchase agreements between Wildhorse Copper (AZ) Inc. and third parties (collectively, the "Indirect Agreements"). Pursuant to the option agreement between Enertopia Corporation and Wildhorse Copper Inc., Wildhorse has assigned the Indirect Agreements to Enertopia Corporation.

In order to earn the interest in the Copper Hills property, Enertopia Corporation is required to make aggregate cash payments of \$591,650 over an eight year period and issue an aggregate of 1,000,000 shares of its common stock over a three year period. As of April 11, 2011, Enertopia Corporation has made aggregate cash payments of \$61,650 to the respective claim owners and issued 500,000 shares to Wildhorse Copper Inc. The securities issued in the acquisition are subject to a hold period in Canada expiring on August 12, 2011. These securities are also restricted for United States securities laws purposes and are subject to the applicable hold periods.

The property is located within the physiographic province known as the Datil-Mogollon Section, locally characterized by volcanic highlands.

The geology of the project area was described by Wilkinson (1976). A northerly trending fault separates volcanic rocks to the west from younger piedmont gravels, alluvium and basalt to the east. Volcanic rocks are dominantly Oligocene 'Spears Formation' andesitic volcaniclastics. The important 'Nipple Mountain' tuff member is an interbedded lithic and variably welded tuff with deposition controlled by northeast and east-northeast trending, partly fault bounded paleovalleys. The overlying 'Hells Mesa Formation' and the 'A-L Peak Tuff' represents a change to ash flow volcanism related to the Mt. Withington caldera collapse. The caldera margin is situated 7 ½ km south of the Copper Hills prospect.

Structurally the property is situated within a north-northwest trending uplifted block bounded to the east by the 'Mulligan Gulch' graben. Three major structural trends are present at Copper Hills. The west-northwest trending 'Capitan' lineament is a pre-volcanic feature that was reactivated in the Oligocene. The northeast to east-northeast trending 'Morenci-Magdalena' lineament is also a basement feature that in part controlled deposition of the Nipple Mountain tuff. The north to 335° trend reflects the

monoclinal eastern edge of the uplifted block and controlled the emplacement of intrusive stocks and later Basin and Range faulting. Convergence of the three structural trends in the vicinity of the Copper Hills prospect resulted in an intense shattering of the rocks.

Mineralization at Copper Hills includes fracture controlled and disseminated copper oxides (plus silver) at the Copper Hills prospect and epithermal gold-silver veins. Wilkinson (1976) describes previous work conducted on the property. Various stakeholders held mining claims in the area almost continuously between 1950 and 2007. During the 1950's minor copper oxide production from the Copper Hills main outcrop took place and five short holes were drilled. In 1968 the Banner Mining Company reportedly drilled a deeper hole to 1,622 ft (494.5 m) and intersected pervasive propylitic alteration with abundant fresh and oxidized pyrite throughout the hole. Samples taken from the last 100 ft reportedly contained small amounts of pyrite plus chalcopyrite, sphalerite and galena. Numerous other prospecting pits and shafts are found on the property and most appear to be related to exploration and minor extraction of minerals associated with epithermal vein type systems. The Banner hole is on the eastern edge of a strong IP-chargeability anomaly defined by the IP survey completed by Wright geophysics in August, 2011.

The deposit model being investigated by Enertopia for economic potential at the Copper Hills project is that of epigenetic supergene Cu-Ag deposits, with potential for deeper porphyry-style mineralization.

The most recent exploration work done at Copper Hills was by Coyote Copper in the early part of 2008 which included a ground magnetics geophysical survey, followed by a reconnaissance and field verification mapping and rock chip sampling program and a soil sampling geochemical survey. Enertopia engaged Wright geophysical to manage an IP geophysical survey conducted in August, 2011. Wright also interpreted the results and provided a technical report. The original author of this report (Wiese) visited the Copper Hills project in early February, 2008 on behalf of Coyote Copper. The present author (Cleary) visited the property on August 31, 2011, on behalf of Enertopia Corp.

Compilation of historical information on the Copper Hills prospect combined with the outcome of the above mentioned exploration work, as carried out by Coyote Copper and its consultants, have herein resulted in a recommendation for further work to be performed by Enertopia Corporation.

This proposal is based on a two phase exploration program. Phase 1 would commence with 3 core drill holes to an average depth of 550 meters designed to test the strong IP-chargeability anomalies defined by the geophysical survey completed in August, 2011. In addition, reverse circulation drilling will be undertaken to verify the grade and extent of the copper (+silver) mineralization as documented by previous operators, within and peripheral to the Copper Hills Prospect. This is will require about 750 m of drilling in 10 reverse circulation holes each about 75 m in depth spaced on a 50 m x 50 m grid. The total Phase 1 program will cost of \$720,000.

Contingent upon Phase 1 providing positive results it is recommended for Phase 2 that additional drilling be undertaken to add to the grade and extent of the copper (+silver) mineralization as documented by previous operators, within and peripheral to the Copper Hills Prospect. This is will require about 1,500 m of drilling in 20 reverse circulation holes each about 75 m in depth designed to extend the a 50 m x 50 m grid.

An additional 2,500 m of core drilling is recommended to offset the two core holes into the IP anomaly. Other facets of a Phase 2 program include conducting additional geological mapping, prospecting and sampling of priority targets based on geophysical and geochemical survey interpretations. The cost of Phase 2 will be about \$1,210,000. The total for both phases is US\$1,930,000.

This report has been prepared in accordance with Canadian National Instrument 43-101 Standards of Disclosure for Mineral Projects ("NI 43-101"). The original report was prepared in April, 2011 by Claus Wiese, P.Eng., of Tucson, Arizona, USA, an independent Qualified Person (as defined within the connotation of NI 43-101). This subsequent update to the report was prepared in September, 2011 by John G. Cleary, CPG & RG of Reno, Nevada, USA, also an independent Qualified Person (as defined within the connotation of NI 43-101). The material change to the project during that time interval was the completion of the ground IP-Resistivity survey, which Wiese recommended in the original report.

## 2.0 Introduction

#### 2.1 Terms of Reference

This technical report has been prepared for Enertopia Corporation ("Enertopia") with the purpose of presenting the results of a preliminary geological and geophysical investigation and providing an independent opinion as to the mineral potential of the Copper Hills property, located in the Cat Mountain Mining District of Socorro County, New Mexico, USA. This evaluation is based on research of historical data and documents as well as from results of field work that was carried out by Coyote Copper ("Coyote") and its contractors and consultants during 2007 and the early part of 2008, and Enertopia's 2011 field program. This report also presents recommendations for additional work on this property.

This report was prepared to comply with the "CNSX" Canadian National Stock Exchange regulatory requirements and follows the guidelines and framework defined in the Form 43-101F1, pertaining to the National Instrument 43-101: Standards of Disclosure for Mineral Projects.

## 2.2 Sources of Information

Information relating to the historical background and particularly into the geological mapping and other investigations is largely based on a thesis entitled "Geology of the Tres Montosas - Cat Mountain Area, Socorro County, New Mexico", by William Holbrook Wilkinson, New Mexico Institute of Mining and

Technology, March 1976. Many references by Wilkinson relate to work done in this area dating as far back as 1900.

During the 1950's copper was mined from a deposit known as the Sixty Copper prospect. This prospect is herein renamed the Copper Hills prospect.

James Wright ("Wright"), a consulting geophysicist, recommended a geophysical program that would be best suited to define and delineate structures, lithologies and alteration related to copper mineralization at the Copper Hill property. Wright visited the property in December 2007 and suggested that a ground magnetic survey would be appropriate for this terrain. J.L. Wright Geophysics of Spring Creek, Nevada planned and managed the magnetic survey (with GPS navigation control) over the Copper Hills property. Wright recommended that the field work be carried out by Magee Geophysical Services ("Magee") of Reno, Nevada, who completed the work between January 6 and 12, 2008. A comprehensive geophysical report was delivered by Wright on January 18, 2008. Wright also conducted a ground IP-resistivity survey in August, 2011. Wright delivered a report on the IP survey August 25, 2011.

James N. Mayor ("Mayor"), a mining geologist based in Tucson, Arizona carried out a rock chip sampling program, focused in areas of known mineralization, together with reconnaissance mapping and prospecting in other prospective areas, including those newly interpreted from geophysical results.

A soil sampling geochemical program over and adjacent to the main mineralized area of the property was carried out. The survey was completed by February 7, 2008 and the samples were taken to Tucson, Arizona and shipped to ALS Chemex Laboratories in Elko, Nevada who forwarded the order to their preparation lab in Winnemucca, Nevada. The prepared sample splits were then shipped to ALS Chemex in Vancouver for gold and multi-element analysis.

Other sources of information used in the preparation of this report include reports and data available in the public domain. Where cited, references are referred to in the text. The complete list of references is found in section 21.0 of this report.

## 2.3 Involvement of Qualified Persons

On Feb 6 and 7, 2008 Claus Wiese ("Wiese") of I-Cubed LLC of Tucson, Arizona ("I-Cubed") and author of the original report, visited the Copper Hills property. During that time Wiese visited the relevant areas as documented in Wilkinson (1976) and other areas of significance as determined in previous reports and visits by Mayor. The soil survey crew was observed and their field procedures were reviewed. Independent location measurements were taken (handheld GPS) and two rock samples were collected for independent analysis. John G. Cleary visited the property on August 31, 2011.

# 2.4 Abbreviations and Units of Measurement

Unless otherwise specified, all units of measurement in this report are metric and all costs and/or prices are expressed in United States dollars.

Companies, consultants and other reference abbreviations include:

Abbreviation in text	Full Name
ALS Chemex	ALS Chemex Laboratories
Banner	Banner Mining Company
BLM	Bureau of Land Management (US Federal Government)
Cleary	John G. Cleary, consulting geologist & QP
Coyote	Coyote Copper (Arizona) Inc.
Donaldson	W. Scott Donaldson, attorney
Enertopia	Enertopia Corporation
I-Cubed	I-Cubed LLC
Magee	Magee Geophysical Services LLC
Mayor	James N. Mayor, consulting mining geologist
Timberwolf	Timberwolf Minerals Ltd.
Wiese	Claus Wiese P.Eng. (I-Cubed LLC, President and Q.P.)
Wildhorse	Wildhorse Copper (AZ) Inc.
Wilkinson	William H. Wilkinson, geologist
Wright	J.L. Wright Geophysics (James Wright), geophysicist

Other commonly used acronyms and abbreviations in this report are:

Abbreviation	Meaning
Cu	copper
Ag	silver

Au	gold
Pb	lead
Oz.	Troy ounce
ICP	Inductively Coupled Plasma
GPS	Global Positioning System
NSR	Net Smelter Returns
Zn	zinc
ppm	Parts per million (concentration)
ppb	Parts per billion (concentration)

Common units of measure and conversion factors

Metric unit	Imperial conversion factor
Hectare (ha)	ha x 2.471044 = acres
Meters (m)	m x 3.28083 = feet
Kilometers (km)	km x 0.6213712 = miles
Celsius (°C)	C° x (9/5) + 32 = fahrenheit

## 2.5 Disclaimer

This report is based on a review of information provided by Coyote and Wildhorse, published reports, observations made during the property visit and land status review. All interpretations and conclusions are based on the writer's independent research and personal property examination.

This report has been prepared in accordance with Canadian National Instrument 43-101 Standards of Disclosure for Mineral Projects ("NI 43-101"). The original report dated April 30, 2011 was prepared by Claus Wiese, P.Eng., an independent Qualified Person (as defined within the connotation of NI 43-101) and Professional Engineer. Mr. Wiese is a geological engineer and the President of I-Cubed LLC. I-Cubed LLC is an independent consulting company to the mineral industry and specialized in mineral resource evaluations and mining reserve studies. The current update to the report was prepared by John G. Cleary, consulting geologist, Certified Professional Geologist #7420, and California Registered Geologist

# 5321. John G. Cleary is an independent Qualified Person (as defined within the connotation of NI 43-101).

James L. Wright is a 'Qualified Person', as defined in the Companion Policy 43-101CP sub-part 3.2. The author disclaims responsibility for the correctness of all information that is contained in the References section 21.0.

# 3.0 Reliance on Other Experts

The author has relied on data and information from Wildhorse regarding land ownership, property agreements, and the status of unpatented mining claims. Wildhorse's land information comes from the Bureau of Land Management (BLM) records and filings for new claims. These data have been subject to further validation by, a mining land law attorney, W. Scott Donaldson (Donaldson), of Phoenix, Arizona and a mining claim surveyor, Robert Breen of Environmental Field Services, LLC of Oracle, Arizona. The author notes that these professionals are recognized land specialists and believes that this work can be relied upon to be correct and accurate.

# 4.0 Property Description and Location

## 4.1 Location

The Copper Hills property is located in Socorro County, New Mexico, approximately 15 km west of the village of Magdalena. The Copper Hills property consists of a group of 56 contiguous unpatented lode mining claims. Access is via US Hwy 60 from the city of Socorro, some 60 km to the east. The property straddles two United States Geological Survey 7.5' quadrangle map sheets (Tres Montosas, New Mexico [west] and Arroyo Landavaso, New Mexico [east]). The claims cover parts of:

Meridian 23 Township 3S Range 5W Sections 6,7 Meridian 23 Township 3S Range 6W Sections 1,12

Geographic coordinates that bound the claims are as follows:

Northwest 107° 24′ 49″ W, 34° 4′ 50″ N Southeast 107° 23′ 30″ W, 34° 3′ 45″ N

**Figure 4-1** shows the location of the Copper Hills claim block. Also shown is access to the property. A list of claims can be found in **Appendix A**.

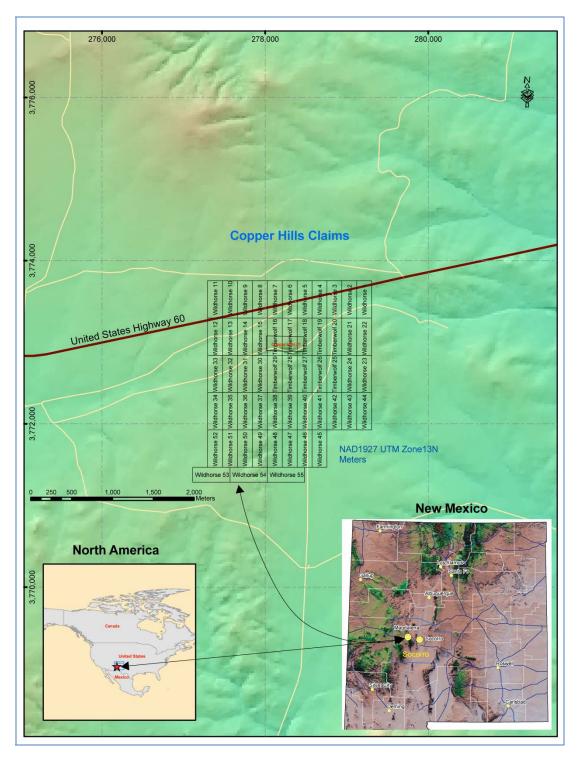


Figure 4-1 Property Location and Claim Map

## **4.2 Property Description**

The Copper Hills property consists of 56 contiguous unpatented lode mining claims (COPPER HILLS #1, Wildhorse 1-15; 21-24; 30-55 and Timberwolf 16-20; 25-29). All of the claims are owned or controlled by Wildhorse Copper (AZ), Inc., an Arizona corporation. Wildhorse Copper (AZ), Inc. is a wholly owned subsidiary of Wildhorse Copper, Inc., a British Columbia, Canada corporation. The combined area of the landholdings represents approximately 468 hectares (~1,150 acres). The property has not been legally surveyed.

The Bureau of Land Management (United States Federal government) holds the surface rights. There is no privately held land on the Copper Hills property,

The 46 Wildhorse claims and 10 Timber Wolf claims were located with the use of a global positioning system ("GPS") and tied to section corners and geodetic control points. The claim staking work was carried out on behalf of Wildhorse by Environmental Field Services, LLC, of Oracle, Arizona, a firm specializing in land surveying and claim staking. This work was completed between February 28 and October 1, 2011.

A yearly maintenance fee of US\$140 per claim must be paid to the Bureau of Land Management on or before September 1 of each year to maintain the title to the claims in good standing. In addition an annual "Notice of Intent to Hold" for each claim must be filed with the Socorro County Recorder. The county recordation filing fee per claim is \$9.00 per document page plus \$2.00 per each additional page.

Maintenance and recordation fees through the 2011 maintenance year have been paid to the Bureau of Land Management and the Socorro County Recorder's office.

# 4.3 Permitting and Reclamation

To the author's knowledge the property interest is subject only to the normal environmental regulations and liabilities as stipulated under the laws of New Mexico and the United States of America and the sufficiency of rights for exploration and mining operations on the property is subject only to the normal procedures and permits under the laws of the United States of America.

Prior to the commencement of any activity that may produce a disturbance to the surface (i.e. drilling), Enertopia will need to provide the Bureau of Land Management a financial guarantee under an approved 'Plan of Operations'. The 'bond' amount must cover the estimated cost to contract a third party to reclaim the disturbance due to operations. The Bureau of Land Management State office will authorize and maintain the bond instrument. Permits will then be needed to required construct drill sites and drainage sumps.

At the time of this report Enertopia had not made application for any permits nor had posted a financial assurance bond.

Reclamation of some disturbances by previous owners has occurred. The author understands that the Bureau of Land Management covered and secured at least one site (a shallow shaft) on the property in late 2007.

## 4.4 Other Considerations

During the currency of the agreement, Enertopia is responsible for its obligations to Wildhorse as outlined below, and responsible for the obligations of Wildhorse to Timber Wolf as outlined below, and responsible for the obligations of Wildhorse to the holder of the royalty (1% NSR capped at \$2,000,000 to Northern Tiger Resources) on commercial production from the Copper Hills #1 mining claim.

To acquire 100% of Wildhorse's right, title, and interests to the Copper Hills property Enertopia must make the following cash payments to Wildhorse Copper (AZ) Inc. and issue the following shares to Wildhorse Copper Inc.:

- paid \$7,500 on signing the letter of intent,
- paid \$51,150 on the execution of the Enertopia/Wildhorse Copper (AZ) Inc./Wildhorse Copper Agreement to Wildhorse Copper (AZ) Inc. on April 11, 2011, and issued to Wildhorse Copper Inc. 500,000 common shares in the capital stock of Enertopia,
- issuing to Wildhorse Copper Inc. 150,000 shares in the capital stock of Enertopia on or before the first anniversary of this Agreement,
- issuing to Wildhorse Copper Inc. 150,000 shares in the capital stock of Enertopia on or before the second anniversary of the Agreement, and
- issuing to Wildhorse Copper Inc. 200,000 shares in the capital stock of Enertopia on or before the third anniversary of the Agreement.

To acquire the 10 Timber Wolf claims Wildhorse is required to make payments totaling \$532,500.00 in cash to Timber Wolf over an eight year period.

## 4.4.1 Royalty Agreement

One of Wildhorse Copper (AZ) Inc.'s located mining claims, the Copper Hills #1 mining claim, is subject to a 1% NSR Royalty capped at \$2,000,000 from production from the Copper Hills #1 mining claim to an underlying royalty holder (Northern Tiger Resources).

# 5.0 Accessibility, Climate, Local Resources, Infrastructure and Physiography

The Copper Hills project area is located within Socorro County, New Mexico, approximately 15 km west of the village of Magdalena (pop. 900). The City of Socorro (pop. 9,000) located about 60 km west of the property offers a broad range of services. Albuquerque, New Mexico (pop.+500,000) is approximately 150 km north-northeast of the property, and is a major center for equipment, supplies, labor, logistics and services.

There is easy access to the property from Socorro (through Magdalena) along US Hwy 60, which crosses the property. Electric power and fiber optic telecommunications parallel Hwy 60. There are numerous unimproved ranch roads and trails that provide good access to the remainder of the area.

The property is located within the physiographic province known as the Datil-Mogollon Section, locally characterized by volcanic highlands (Hawley, 1986). The claim group is situated between the Gallinas Mountains to the north and the San Mateo Mountains in the south. Local terrain is flat to rolling hills with elevations between 2,125 m (6,970 ft) and 2,260 m (7,410 ft). The area is part of New Mexico's woodland rangelands; vegetation is classified as belonging to the Juniper Savanna ecotone. Juniper, cedar and some pinon bushes are common atop grassy surface growth.

The climate is considered semi-arid with precipitation between 1-2 cm per month and 5 cm per month average during summer monsoon season (July – September). The temperature is mild to moderate. Ambient temperatures for this region range from -5°C to +10°C (fall/winter) and +5°C to +30°C (spring/summer).

The physiography and climate pose no significant difficulties to exploration and mining activities in the area. The property has ample room for potential mine and mill operations and facilities. **Figure 5-1** is a photograph taken by the author at Copper Hills, New Mexico showing the typical vegetation of the area.



Figure 5-1 Typical Terrain at Copper Hills, New Mexico

# 6.0 History

# **6.1 Mining History – Socorro County**

The following mining history for the area is summarized from Padilla (2001).

In 1866 lead was discovered in the Magdalena district, and in 1867 silver was found in the Socorro Peak district. By the 1880's, the mining boom in Socorro County was in full swing, with crowded camps and tent cities dotting the land. In a six-month period in 1880-81, nearly 3,000 different mineral deposits were located and dozens of new towns developed including Kelly (population 5,000) and Magdalena, the two principal boom towns in Socorro County. Magdalena, which had begun as a collection of tents, grew substantially with the development of a railroad line from Socorro. A smelting plant erected in 1881 near Socorro treated ore from the Kelly and other mines until 1893. In 1896, a new smelter was constructed in Magdalena which then became the smelting town for the mine operations in both Magdalena and Kelly districts.

In a forty-year period, from the 1880's to the 1920's, Magdalena district production was valued at some \$60 million. In addition, coal mines were opened near Carthage between 1880 and 1885 to supply fuel for locomotives, mills, and smelters. This further increased the mineral production level during Socorro County's boom years.

In the early 1900's, as lead and silver were being mined, a zinc carbonate mineral, smithsonite, was discovered at Kelly. Smithsonite was previously discarded as waste rock.. Kelly's second wind of prosperity started as smithsonite was recovered from tailings piles and other leased properties. The mines of the Kelly area became New Mexico's leading zinc producers and were known for the high quality smithsonite mined from the area. By 1931 the smithsonite deposits were exhausted and mining throughout the district decreased.

## 6.2 Previous Work

Prior to Coyote acquiring its land position in the Copper Hills area, various stake holders had actively held mining claims there continuously between 1950 and 2007. The most active period occurred between 1950 and 1995 in which a core part of the property was held by a consortium of partners for as many as 45 years.

Previous work in and surrounding the Copper Hills project area was focused on the epithermal gold-silver vein mineralization in the Cat Mountain Mining district and disseminated copper (+/- silver) mineralization at the Copper Hills prospect. Wilkinson (1976) provides an overview of known historical work and previous operators.

## 6.2.1 Cat Mountain

The Cat Mountain gold mining district, 1.5 miles (2.4 km) south of the Copper Hills property, was active around 1900. A 20-stamp amalgamating mill was erected in 1902. The mill operated for a short time until 1903 when it was closed down. It was reported (Jones, 1904) that the gold mineralization at Cat Mountain was mainly refractory in nature. Hence, recovery was poor owing to the technology of the time. Production figures are not documented. The author is not aware of any other particulars including names of the operators.

#### 6.2.2 Copper Hills prospect

The Copper Hills prospect is located in Township 3S, Range 5W and Section 6, approximately 1600 ft (about 490 m) south of US Hwy 60. It is an oxide copper body with mineralization disseminated in a highly silicified and fractured Tertiary volcanic tuff unit. Workings consist of a shaft and several excavations, one of which is 130 m in length. It is thought this work was carried out in the early 1950's, but details are not confirmed at this time. The author is not specifically aware of who all the individual operators were and has relied on Wilkinson's (1976) report for these descriptions. Total production was said to be 356 tons which averaged 3.01 oz. silver per ton and 0.81% copper. Trace amounts of gold and up to 1.33% lead have also been reported.

On the ridge above the excavation at the Copper Hills prospect, 5 short drill holes were completed, oriented along a northeast-southwest line. It is thought this drilling was done during the early 1950's. Wilkinson (1976) reports that the drill holes, apparently completed during the 1950's, all intersected copper mineralization.

In 1968, Banner Mining Company drilled a vertical diamond drill hole to 1,622 ft. (494.5 m.). It was located approximately 10 m south of the Copper Hills prospect. Copper, lead and zinc sulphide mineralization was encountered towards the bottom of the hole. The author has not seen the original report by Banner and has relied on Wilkinson (1976).

## 6.2.3 Other Work

Numerous prospecting pits and shafts are found on the property north of Hwy. US 60. Most appear to be related to exploration and extraction of minerals associated with epithermal vein type systems. It is unclear when, or over what period of time this work was carried out, or by whom.

During 1971 and 1975 Wilkinson conducted detailed geologic mapping at a scale of 1:24,000 for the Tres Montosas 7.5-minute mile quadrangle. In addition detailed mapping of the Copper Hills prospect was done at 1:2,400 scale. The results of this work and the ensuing research and interpretations were published as a Masters thesis and were presented to the Department of Geosciences, New Mexico Institute of Mining and Technology, Socorro, New Mexico.

# 7.0 Geological Setting

# 7.1 Regional Geology

The regional geology of southwestern New Mexico is described in a document summarized by the New Mexico Bureau of Geology and Mineral Resources at <a href="http://geoinfo.nmt.edu/tour/provinces/mogollon\_datil\_volcanic\_field">http://geoinfo.nmt.edu/tour/provinces/mogollon\_datil\_volcanic\_field</a>.

The Copper Hills property is located in the Mogollon-Datil volcanic field, part of a discontinuous belt of middle Cenozoic volcanism that runs from the Sierra Madre Oriental in central Mexico, through the Trans-Pecos volcanic field in west Texas, and northward to the San Juan volcanic field in southwestern Colorado. **Figure 7-1** shows the Copper Hills property outline in relation to the northeast part of the Mogollon-Datil volcanic field.

Lavas and tuffs erupted from andesitic to silicic volcanoes, domes, and calderas coalesced to form the 40,000 square km Mogollon-Datil volcanic field in southwestern New Mexico between ~24 to 40 million years ago. Andesite volcanoes erupted 40 to 36 million years ago followed by both basaltic and andesitic volcanoes and silicic calderas between 36 and 24 million years ago. The Mogollon-Datil volcanic field is composed of two caldera complexes that were active at about the same time. The oldest

eruptions of the southern complex occurred in the Organ Mountains near Las Cruces, New Mexico about 36 million years ago. Volcanic activity migrated 220 km northwest from the Organ Mountains and ended with the eruption of ash flows of the 28 million year old Bursum caldera located northwest of Silver City, New Mexico. Caldera formation in the northern complex started near Socorro about 32 million years ago and migrated toward the southwest.

Normal faults and distinct mountain blocks with intervening sediment-filled valleys formed during extensional events 36 million years ago. The extensional faults trend north on the east side of the volcanic field, northeast on the northwest side of the field and northwest on the southwest side of the field.

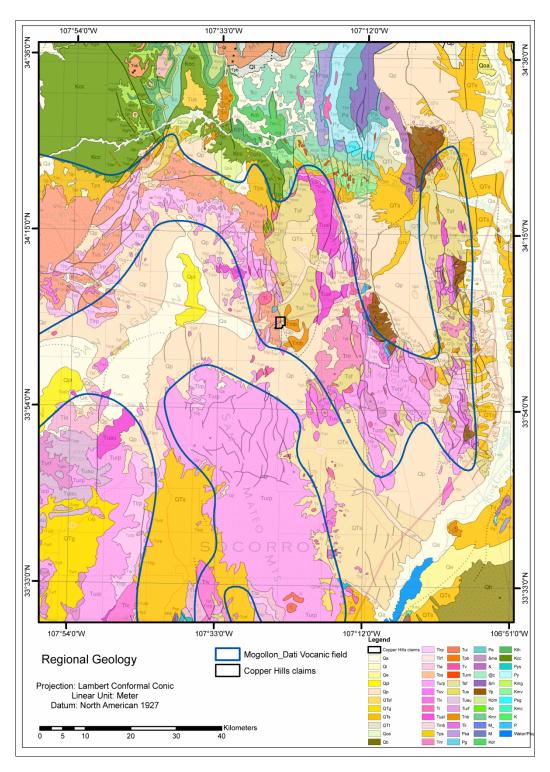


Figure 7-1 Regional Geology [NMBGMR]

## 7.2 Property Geology

A 1:24,000 scale geological map of the Tres Montosas Quadrangle was completed by Wilkinson (1976), as part of the requirement of a Masters of Science degree at the New Mexico Institute of Mining and Technology. The Copper Hills property falls within this map area and most of the following description is from his work. A map of the property scale geology is shown in **Figure 7-2**.

The property is underlain by Tertiary volcanic rocks, except for Paleozoic Abo Formation quartzite in the extreme northwest corner of the property. The northerly trending Council Rock fault separates volcanic rocks in the west from younger piedmont gravels, alluvium and basalt to the east.

Volcanic rocks on the property are dominantly undivided Oligocene age (37.1 Ma) andesitic volcaniclastics belonging to the Spears Formation. The important Nipple Mountain member is an interbedded lithic and variably welded tuff with deposition controlled by northeast and east-northeast trending, partly fault-bounded paleovalleys.

The overlying Hells Mesa Formation (30.6 Ma) and the A-L Peak Tuff (31.8  $\pm$ 1.7 Ma) represents a change to ash flow volcanism related to the Mt. Withington caldera collapse. The caldera margin is situated 7 ½ km south of the Copper Hills prospect

Within the map area Spears Formation is the dominant rock unit but exposures are rare; mainly as distinctive "float" on low, rounded hills. The unit has been dated at 37.1 Ma. In a typical section the Spears Formation is subdivided into lower and upper members, both largely include volcaniclastic rocks with lesser latite flows separated by the distinctive ash flow tuff of the Nipple Mountain. Wilkinson (1976) mapped the Spears Formation (undivided) and the Nipple Mountain Tuff.

The Nipple Mountain Tuff is generally a pink moderately to densely welded crystal poor ash flow tuff. Phenocrysts ranging from 3 to 10% are mostly plagioclase and sanidine. The unit is variable in thickness, from 20 m in the Banner drill hole at Copper Hills to in excess of 150 m.

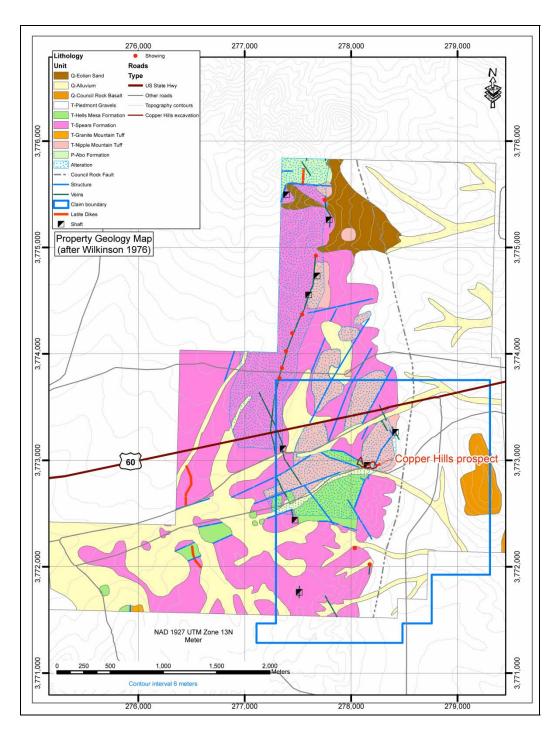
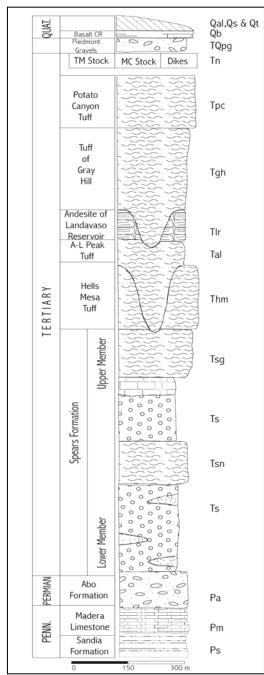


Figure 7-2 Property Geology Map

## 7.2.1 Stratigraphy

A generalized stratigraphic column of rocks in the project area is presented here as **Figure 7-3**. The stratigraphic column is from Wilkinson (1976). A brief description of the units follows:

Figure 7-3 Stratigraphic Column



**Qal, Qs & Qt** <u>Quaternary deposits</u> - stream deposits of sand and gravel, colluvium, sand and gravel

**Qb** Council Rock Basalt – dense basaltic andesite flows.

**TQpg** <u>Piedmont gravels</u> – poorly to moderately indurated, poorly sorted heterolithic sands and gravels.

**Tn** <u>Tertiary intrusives undivided</u> – late Tertiary intrusives (andesite to granites and monzonite dikes).

**Tpc** <u>Potato Canyon Tuff</u> – moderately to densely welded crystal-rich ash flow tuffs.

**Tgh** <u>Tuff of Gray Hill</u> – moderately to densely welded crystal-poor ash flow tuff . Botryoidal pumice tuff at base.

**TIr** <u>Landavaso Reservoir Andesite</u> – aphanitic platy basaltic andesite flows.

**Tal** A-L Peak Tuff – densely welded, crystal-poor, ash flow tuff.

**Thm** Hells Mesa Formation – densely welded, massive blocky, crystal-rich, ash flow tuff.

**Tsg** <u>Granite Mountain Tuff</u> – moderately to densely welded crystal-rich ash flow tuff.

**Ts** <u>Spears Formation</u> – porphyritic, dense andesite flows, latitic to andesitic mudflow breccias and conglomerates.

**Tsn** Nipple Mountain Tuff – poorly to densely welded lithicrich ash flow tuff with interbedded porphyritic andesite flows. Coarsely porphyritic amygdaloidal andesite flow at base. The **Copper Hills prospect** is hosted in Tsn.

**Pa** <u>Abo Formation</u> – fine grained, thin bedded quartz arenites and siltstones. Interbedded limestone pebble conglomerate and quartzite breccias.

**Pm** <u>Madera Limestone</u> - thin medium grained siltstones and micrites. (not exposed in project area).

Ps Sandia Formation - medium to coarse grained

quartzites, sandy carbonaceous shales and siltstones with thin beds of limestone. (not exposed in project area).

## 7.2.2 Intrusive Rocks

Latite dikes are present in two locations outside the Copper Hills claims (around the periphery of the Tres Montosas stock and at Cat Mountain) and are relative to lineaments and lineament intersections.

Those dikes near the stock are radially distributed about the stock for a distance of as much as two miles.

At Cat Mountain the steeply dipping dike swarm trending north-northwest to north-northeast crop out over an area of 2.4 km x 3.2 km. Dikes up to 3 m wide are propylitically altered. The dike swarm in association with the quartz-calcite veins, as well as regional magnetics has been interpreted by Wilkinson and others to indicate the presence of a pluton buried beneath the Cat Mountain mining district.

The Tres Montosas stock is exposed northwest of the Copper Hills claims and is a composite body consisting of three facies: andesite to granodiorite, latite to quartz monzonite and granite. The Tres Montosas stock intrudes rocks ranging in age from the lower Spears Formation to the A-L Peak Tuff, and thus has a maximum age of 31.8 Ma.

In the Copper Hills area the ground magnetic survey, carried out by Coyote, has located several magnetic highs interpreted as buried intrusives (Wright, 2008).

## 7.2.3 Structure

Structurally the claims are situated within a north-northwest trending uplifted block bounded to the east by the Mulligan Gulch graben. The three major structural trends and topographic features present at Copper Hills are shown in **Figure 7-4**. This map is modified after Wilkinson 1976.

- 1. The west-northwest trending Capitan lineament is a pre-volcanic feature that was reactivated in the Oligocene.
- 2. The northeast to east-northeast trending Morenci-Magdalena lineament is also a basement feature that in part controlled deposition of the Nipple Mountain tuff.
- The north to 335° structures reflect the monoclinal eastern edge of the uplifted block and appear to have controlled the emplacement of intrusive stocks and later Basin and Range faulting.

The result is an intense "shattering" of the rocks in the vicinity of the Copper Hills prospect as noted by Mayor (2008).

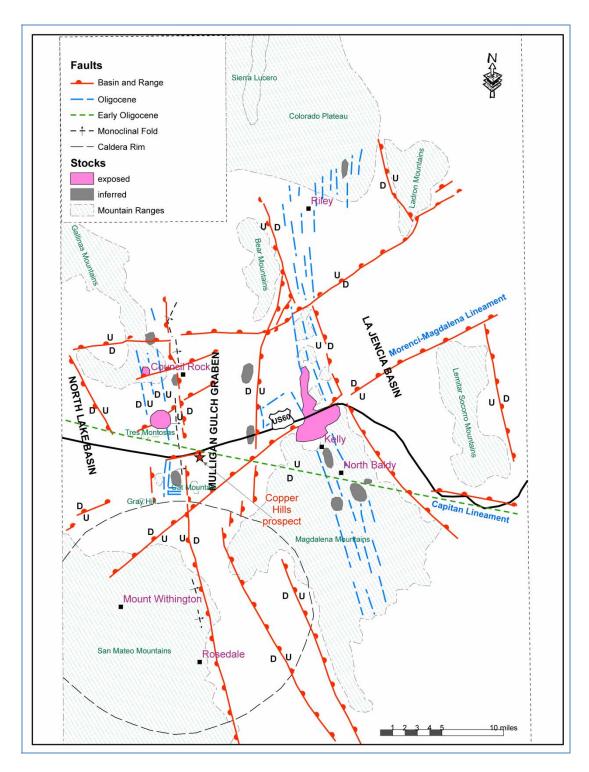


Figure 7-4 Major Structural Features

## 8.0 Deposit Types

There are two deposit types at the Copper Hills project; epigenetic copper-gold deposits and epithermal gold-silver vein deposits. A brief discussion of each of these follows.

## 8.1 Epigenetic Supergene Copper-Silver Deposits

The processes of weathering can be responsible for the *in situ* enrichment of copper, as well as other metals such as zinc, silver and gold in many deposits that occur at or near the surface. The process is referred to as 'supergene enrichment' and is a product of oxidation and dissolution of sulphide minerals in the upper portions of the weathering profiles (Robb, 2008).

Supergene enrichment in these systems occurs when a copper protore (low grade primary mineralization) is leached in an acidic (commonly caused by dissolution of pyrite) oxidizing environment (low temperature meteoric water) above the water table and then re-precipitated in a 'blanket zone' after it is transported downward to a reducing environment below the water table. This process continues to re-concentrate the copper through time as the water table elevation falls concurrently with the erosion of the land surface (Ingebritsen, 1998).

At any given time the 'oxide zone' above the water table contains secondary oxide copper mineral assemblages such as chrysocolla, malachite, azurite and cuprite. Below the water table the 'supergene zone' commonly has secondary minerals such as native copper and copper sulphides including chalcocite, covellite, and chalcopyrite.

Factors such as an increase in the concentration of a component in the solution, a decrease in temperature or pressure, reaction with surrounding rocks and minerals, and mixing with other solutions can result in very complex precipitation assemblages, patterns and geometries.

# 8.2 Epithermal Vein Gold-Silver Deposits

Epithermal, volcanic hosted gold-silver deposits can be classified as low sulphidation or high sulphidation. The Copper Hills veins are of the low sulphidation type. These deposits are characterized by quartz veins, stockworks and breccias carrying precious metals as well as variable amounts of base metals that form in high-level to near-surface environments. The mineralization commonly exhibits open space filling textures and is associated with volcanic-related hydrothermal systems (Panteleyev, 1996).

Host rocks are felsic to intermediate in composition and occur in continental volcanic fields with extensional structures.

Deposits are frequently spatially and/or genetically related to caldera margins, fracture systems related to grabens, and/or volcanic intrusions and are commonly of Tertiary age. All of these depositional environments exist within the exploration area.

Epithermal precious metal mineralizing systems can develop one or more of several styles of potentially economic deposits within a given area. Whether any one of the deposit styles develops is dependent upon a complex interaction of the local structure, the stratigraphy, the chemistry of hydrothermal fluid, the chemistry and interaction with groundwater, the duration of the system, and the number of precious metal bearing pulses the hydrothermal system generates. Deposits can develop close to or at the paleosurface if the system's hydrologic /hydraulic conditions allow the precious metal bearing fluids to reach shallow levels. By contrast, the precious metals may be deposited at considerable depth below the paleosurface, as much as 1.5 to 2 km, if shallow level access is restricted or capped. Each hydrothermal system has its own unique set of factors and conditions.

Shallow, often lower grade deposits can occur as disseminated, bedded siliceous, stockwork, or as breccia hosted. Deposits formed deeper in the hydrothermal system are often veins, stockworks, and breccias, although disseminated and stratigraphic controlled deposits can occur. Veins, stockworks, and breccias can be low grade, high grade, or even bonanza grade. It is not unusual in epithermal deposits for precious metals to be present at trace to very low concentrations for several hundred to more than one thousand feet below the paleosurface and yet host high grade to bonanza grade deposits at depth. Such is the case at Creede, Colorado and Comstock in Nevada. Veins, breccias, and stockworks often do not reach shallow levels of the hydrothermal system.

It is the opinion of the author that this deposit style at Copper Hills be investigated by Enertopia with a lower priority to that of the epigenetic supergene copper-silver type as discussed in the previous section.

## 9.0 Mineralization

Mineralization within the claims includes fracture controlled /disseminated copper oxides (Copper Hills prospect) and epithermal style veins (Vein prospects). Enertopia's primary interest lies with the former, namely the fracture controlled /disseminated copper oxides style. Both styles are discussed below.

# 9.1 Copper Hills Prospect

At the Copper Hills prospect the Tertiary host rock is intensely silicified and fractured Nipple Mountain tuff. The predominant minerals are chrysocolla, mottramite, malachite, tenorite, cuprite, azurite and chalcocite together with iron oxides after pyrite. The chrysocolla, malachite and chalcocite are disseminated throughout the rock as tiny blebs often replacing feldspar and as fracture coatings. The mottramite, tenorite and azurite are strictly fracture coatings or filling vugs. Cuprite occurs as crystals associated with tenorite. Limonite-hematite is present as fracture coatings, dissemination and 'liesegang' bands (Mayor, 2008).

The most intense copper mineralization occurs along fractures where the copper minerals have apparently been re-mobilized and re-deposited by circulating groundwater. Copper mineralization also occurs as disseminations within the host rock. The copper mineralization is not always apparent on weathered surfaces.

Minor micro crystals of quartz and barite were noted as rare fracture fillings. Possible galena and tetrahedrite (silver) was noted at one site.

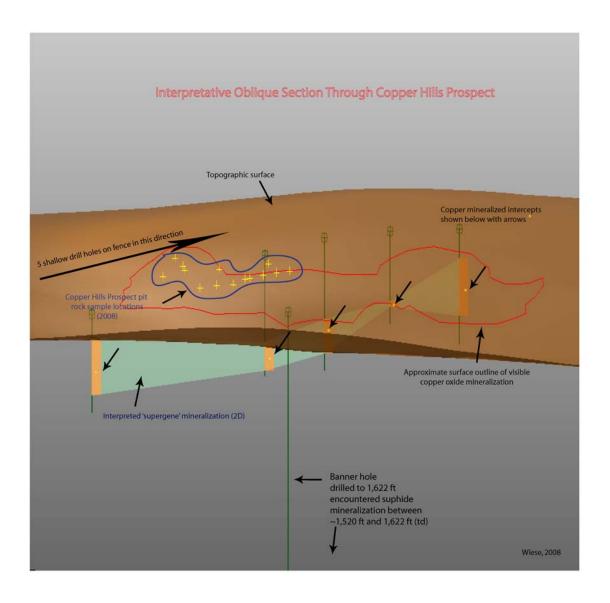
The mineralization described herein is exposed in two outcrops of the Nipple Mountain tuff. The boundaries of this mineralization are well defined by faults on the south and east sides. Part of the west side is also bounded by a fault.

Historic drilling, drill hole sections and reports of excavation and minor production given in Wilkinson (1976) indicate the copper mineralization is an irregularly shaped "blanket' about 800 ft. (~245 m) long by about 500 ft (~150 m) wide and of supergene origin (**Figure 9-1**). This estimate of dimensions is based on the drilling information mentioned above, plus copper oxide exposures at and adjacent to the east and north of the Copper Hills prospect. **Figure 9-2** is a cross-section through the copper mineralization "blanket" depicting the interpreted mineralization.

Mayor (2008) postulates that this mineralization may have formed from the supergene weathering of a zone of epithermal veinlets hosted in fractured and silicified Nipple Mountain tuff. Base metals and silver could have been transported by acidic ground water at low temperatures and mineralization localized at the convergence of various faults.

The origin of the protore is unknown, though a possible origin may be from the hydrothermal alteration related to a mineralized intrusive now buried beneath the Mulligan Gulch graben (Mayor, 2008).

In 1968, the Banner Mining Company drilled a deeper hole collared just south of the main outcrop. The hole was collared in mineralized rock but little additional mineralization occurs within core extending through the Nipple Mountain tuff. The hole was drilled to 1,622 ft (494.5 m) and bottomed in what was originally interpreted as Mesozoic sedimentary rock. Subsequent work indicated that these carbonaceous siltstones are probably the Sandia Formation. It was reported that propylitic alteration (low temperature and pressure mineral assemblages) was pervasive throughout the hole with abundant fresh and oxidized pyrite. The pyrite occurs as disseminated cubes, veinlets, and in quartz-calcite veinlets in amounts ranging from 0 to 4%. Below about 1,330 ft (406 m) quartz-calcite-epidote veinlets become abundant. It was reported that samples taken from the last 100 ft of the hole contained small amounts of pyrite plus chalcopyrite, sphalerite and galena hosted in quartz veinlets. This mineral assemblage hosted by quartz veinlets is indicative of porphyry-style mineralization.



not to scale

Figure 9-1 Oblique View (345°) Copper Hills Prospect

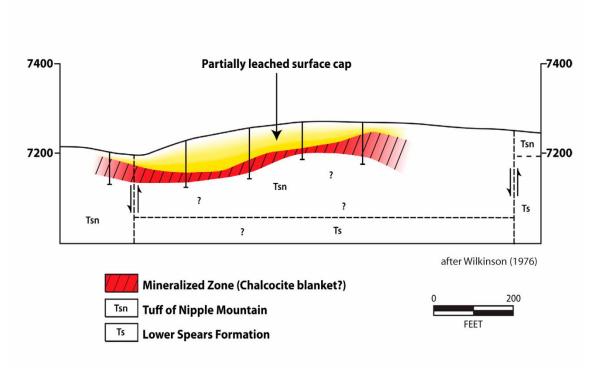


Figure 9-2 Cross-section View – Copper Hills prospect

# 9.2 Vein Prospects

Two small vein districts are reported in the general Copper Hills area; at Council Rock, 3 miles to the north of the claims, and; at Cat Mountain, 1.5 miles south of the Copper Hill claims. No production figures are available.

Within the Copper Hills project area, steeply dipping epithermal veins are found associated with only Abo and Spears Formation rock units. Numerous pits and shafts occur across the property located on outcropping veins. The veins typically trend north to N30°W and N50°E and vary in width from few millimeters to 2.4 m. Pinching and swelling of veins is common and some can be traced up to 1.5 km. The pinching and swelling may also occur vertically.

The veins are dominantly open space fillings with varied proportions of quartz and calcite assemblages, bladed barite and fluorite with minor secondary cerrussite, mimetite, wulfenite and anglesite.

Bladed barite fills cavities in black calcite and quartz. Fluorite occurs as crystals filling vugs in quartz and calcite. Quartz veins are massive or form interstitial fillings in brecciated host rock. Amethystine quartz and late stage clear quartz filling vugs were also noted.

The black calcite may be iron and/or manganese-rich. It forms as masses of intergrown crystals often occurring as alternating bands with quartz. Later stage calcite is clear and forms small platy crystals filling cavities scattered through the veins (Mayor, 2008).

Evidence of sulphides is not common. Minor iron oxides after pyrite and traces of possible galenatetrahedrite are noted.

Enertopia has indicated to the author that the vein prospects that exist in the Copper Hills area are of secondary interest in their exploration strategy at this time.

## 10.0 Exploration

Historical exploration and development work done on the ground covered by the Copper Hills claims has been discussed in a previous section of this report (6.2 Previous Work). The following is a discussion of the mineral exploration work completed by Coyote in 2008 and 2011.

In January 2008 Coyote carried out a ground magnetics geophysical survey. This was followed in February 2008 by a soil sampling geochemical survey and a reconnaissance mapping and rock chip sampling program.

Claus Wiese, the original author of this report, visited the Copper Hills project on February 6 and 7, 2008 and witnessed the geochemical sampling and mapping programs as they were underway.

All work carried out on behalf of Coyote was done by contract or consulting personnel. Those companies or individuals are named in their appropriate sections, below.

## **10.1 Ground Magnetic Survey**

A ground magnetic survey was conducted by contactor Magee Geophysical Services LLC of Reno, Nevada. The survey area covered a large part of the Copper Hill claims (see **Figure 10-1**). A total of approximately 129 line kilometers of magnetic data were acquired. Real-time differentially-corrected GPS was used for positioning. The field operations were based out of Socorro, New Mexico.

Magnetic data from this survey were diurnally corrected and forwarded to consulting geophysicist, James Wright (J.L. Wright Geophysics Inc., Spring Creek, Nevada) for further processing and interpretation. Details about the survey method, equipment, procedures, and results are taken and summarized from the final report from J.L. Wright Geophysics Inc, dated January 18, 2008 and are quoted below. A total of eighteen (18) specific locations and six (6) larger scale structures all requiring ground investigation were identified as a result of the geophysics program. Note that any reference below to the "Sixty Prospect" refers to the Copper Hills prospect as they are one and the same.

*Quoting Wright below:* 

## Introduction

In January 2008, a ground magnetic survey was completed over the Copper Hills property controlled by Coyote Copper (Arizona) Inc. Objective was to delineate structures, lithologies, and alteration related to copper mineralization present on the property. Copper deposits are often associated with porphyry intrusions and can occur as veins, stock works, breccias and disseminations within and adjacent to the intrusions. In addition, alteration observed at the Copper Hills pit includes extensive structurally controlled silicification, which could well be magnetite destructive and thus produce a low magnetic response. These factors lead to the implementation of the ground magnetic survey reviewed by this report.

## Conclusions and Recommendations

Note: Wright used other available data (regional and property scale) to formulate his interpretation. This included United States Geological Survey reduced to pole Airborne Magnetics survey, United States Geological Survey Gravity survey, and Wilkinson's geology map (Wilkinson, 1976). Wright also continues:

The ground magnetic survey reveals a complex structural / lithologic picture on the property, which is consistent with the regional setting. Mineralization at the Sixty (Copper Hills) Prospect falls at a major structural intersection between two regional scale lineaments. Furthermore, an interpreted intrusion centers approximately one kilometer to the northeast, which may not be related to the Tres Montosas intrusion. Extensive areas of magnetite destructive alteration are also interpreted, as well as two unusual magnetic lows possibly produced by a much different alteration type. Significantly, the magnetic data and associated interpretation show good agreement with geologic controls.

A target hypothesis is defined which identifies eighteen (18) specific locations and six (6) larger scale structures all requiring ground investigation. In addition to the various targets, a number of locations are identified for ground examination which should help confirm the interpretation. Indeed, the next exploration effort should be a geologic evaluation including, among other goals, the support / confirmation of concepts / interpretations set forth herein. No additional geophysical work is recommended until completion of the geologic work.

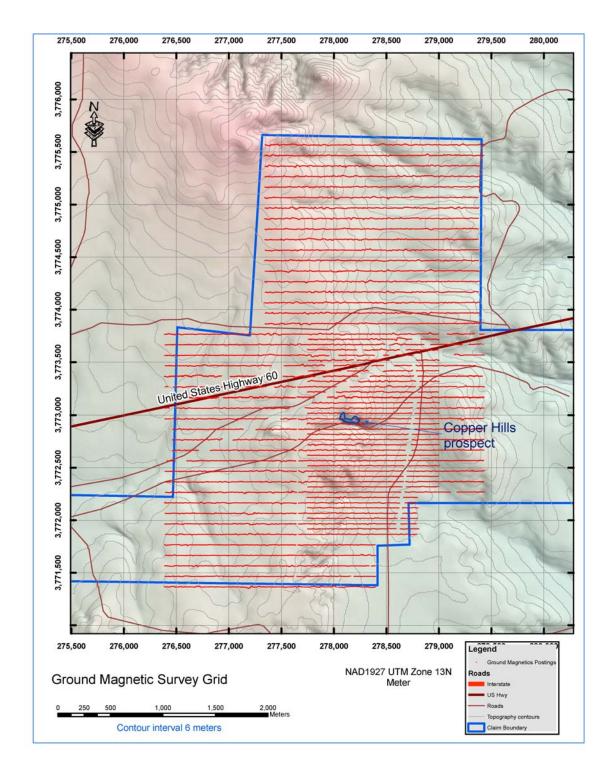


Figure 10-1 Ground Magnetics Survey grid

## **10.2 Ground IP Survey**

Zonge International, Inc. of Tucson, Arizona conducted a ground IP survey on the Copper Hills property in August of 2011 (Zonge job # 11088). Zonge acquired 16 line miles (27 km) of IP data using a dipole-dipole electrode array with a 150 meter dipole length (Figure 10-2).

Results and data from the IP survey were delivered to J.L. Wright Geophysics, Inc. of Spring Creek, Nevada. Wright interpreted the data and produced a comprehensive report showing both chargeability and resistivity cross sections from each of the 16 east-west IP lines (Wright, 2011).

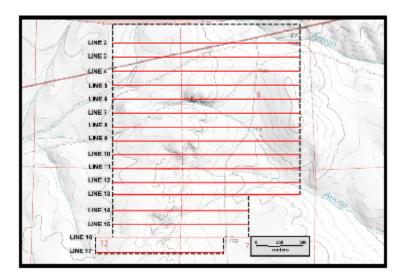


Figure 10-2 Ground IP Survey grid

Results from the IP survey show a strong chargeability anomaly east of the Tres Montosas fault in the western portion of the Copper Hills claim block. The anomaly is coincident with anomalous Cu (up to 0.3%) and Zn (up to 0.1%) in rocks, oxidized pyrite and spotty silicification of volcanic rocks at the surface. Wright produced a 3D model of the chargeability anomaly viewed from below to the northwest (Figure 10-3).

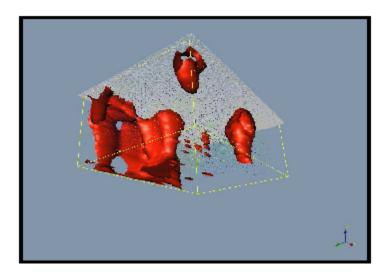


Figure 10-3 Chargeability anomaly looking up to the north (Voxler 3D iso-surface)

The main body of the chargeability anomaly is directly west of the Copper Hills prospect pit and the Banner Mining Company core hole described above. From 1,300 to 1,600 feet the Banner core hole intersected up to 4% disseminated pyrite and the propylitic alteration assemblage also described above and shown in Figure 9-1. The chargeability cross section from IP line 6 shows the strong chargeability section directly west of the Banner core hole (Figure 10-4)

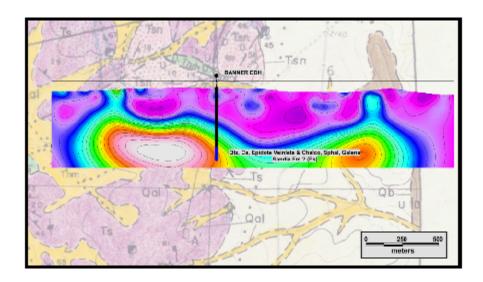


Figure 10-4 Previous core hole in relation to the chargeability anomaly in IP Line 6

## 10.3 Geologic Mapping and Rock Sampling

Coyote retained Mayor, an independent mining exploration geologist, to carry out a brief reconnaissance mapping, prospecting and rock chip sampling program focused on areas of known mineralization. This work consisted of investigating and sampling the two mineralization types and to formulate a framework for further exploration at the property.

A total of 54 rock samples were collected from the Copper Hills prospect, vein prospects and the Nipple Mountain tuff. The analytical results are documented below.

# 10.3.1 Results Copper Hills Prospect

A total of 21 rock samples were collected from the Copper Hills prospect. A total of 18 chip samples across selected mineralization returned up to 1.18% copper, 27.1 ppm silver and 0.24% lead over 1.0 m. An 86.5 m chip sample traverse (non-continuous 16 samples) across the face of the main excavation at the Copper Hills prospect returned a total weighted average of 0.16% copper, 8.9 ppm silver and 0.09% lead (see **Figure 10-2**). Three grab samples were collected from outside the excavation area and returned up to 0.05% copper, 19.9 ppm silver and 0.10% lead.

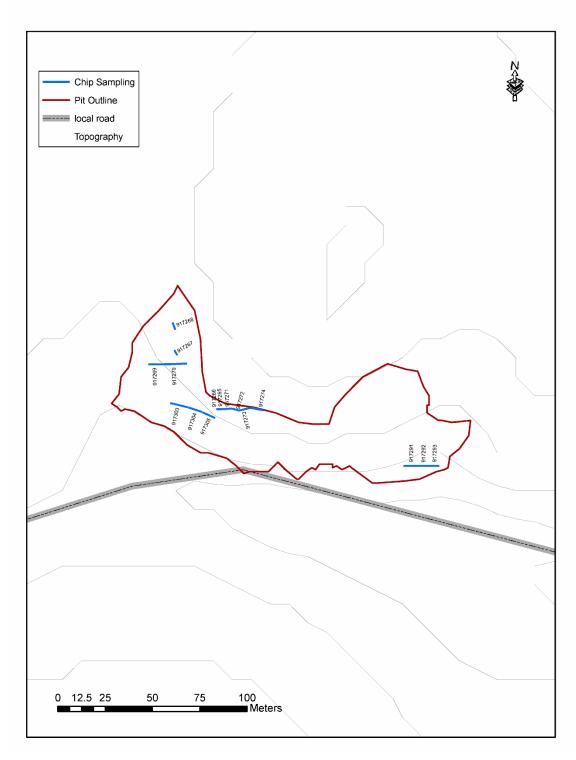


Figure 10-5 Rock Chip Samples – Copper Hills prospect

Wilkinson (1976) quotes a report by Thurmond of a 350 ton shipment from the Copper Hills prospect in the 1950's that assayed 3.01oz/t Ag and 0.81% Cu.

Both Cu and Ag values as documented for the bulk sample are greater than in the grab and chip samples of the current program. This may be due to surface oxidation of the mineralization as it has been exposed to the environment for over 50 years.

The basic statistics of assays for selected elements of the Copper Hills prospect sample population is presented in **Table 10.2-1** below.

	Copper Hills Prospect Assay Statistics - all sample types											
		CU	AU	AG	PB	ZN	МО	AS	ВА	HG	MN	SB
samples		21	21	21	21	21	21	21	21	21	21	21
units		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Mean		1774.2	.0048	9.0	888.9	25.6	2.4	9.8	363.8	.64	52.9	13.4
Median		665.0	.0040	7.9	678.0	15.0	1.0	8.0	190.0	.50	38.0	13.0
Minimum	1	87	.003	1.4	105	3	<1	4	30	<1	20	3
Maximun	n	11800	.007	27.1	2800	103	13	26	1900	2	217	44

Table 10.2-1 Copper Hills Prospect Rock Sample Assay Statistics

#### **Veins**

Two samples from a N25°W trending vein bounding the Nipple Mountain tuff block that hosts the Copper Hills prospect returned two anomalous gold values (0.306 and 0.235 ppm Au). In the northern part of the property, two other samples taken from altered vein material near an old prospect pit also returned anomalous gold values (0.191 and 0.128 ppm Au).

The highest Pb and Zn values of the sampling program are associated with these same four samples, showing a strong correlation between Au-Pb-Zn.

The basic statistics of assay for selected elements of the vein sample population is presented in **Table 10.2-2** below.

	Vein Sample Assay Statistics											
		CU	AU	AG	РВ	ZN	МО	AS	ВА	HG	MN	SB
	samples	18	18	18	18	18	18	18	18	18	18	18
	Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
N	lean	98.0	.067	5.8	3110.4	3475.0	6.3	28.3	1558.9	.67	1782.3	2.5
M	ledian	31.5	.028	2.8	481.5	697.5	1.0	24.5	1510.0	.50	1532.5	2.5
M	linimum	9	.009	<.2	87	162	1	5	200	<1	182	<2
M	laximum	1000	.306	45.3	24800	26800	47	114	3200	1	4790	6

Table 10.2-2 Vein Rock Sample Statistics

#### **Nipple Mountain Tuff**

Based on the Copper Hills prospect, silicified, pyritized and fractured (dominantly N20°-30°W Fe-oxide coated fractures), Nipple Mountain tuff is the preferred host to the copper mineralization. The widely spaced reconnaissance samples do not provide a specific focus. One other potential target is a belt of Nipple Mountain tuff trending WSW away from the Copper Hills prospect and represented by several samples. At one location N40°W Fe-oxide-barite fractures cut the strongly silicified and pyritized rock. Copper values, however, are not elevated in these samples.

The geochemical data does not support the concept of gold mineralization hosted in the Nipple Mountain tuff sampled as part of this program.

The basic statistics of assays for selected elements of this Nipple Mountain tuff sample population is presented in **Table 10.2-3** below.

	Nipple Mountain Tuff Sample Assay Statistics											
		CU	AU	AG	PB	ZN	МО	AS	ВА	HG	MN	SB
	samples	15	15	15	15	15	15	15	15	15	15	15
	Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Ме	an	28.1	.007	.17	131.0	220.9	2.2	12.8	528.7	.667	216.2	1.6
Ме	edian	16.0	.004	.10	36.0	70.0	1.0	9.0	160.0	.500	137.0	1.0
Mi	nimum	4	.003	<.2	9	19	<1	<2	50	<1	69	<2
Ма	ximum	118	.032	.5	835	1415	11	35	2750	1.0	1130	3

Table 10.2-3 Nipple Mountain Tuff Sample Statistics

# 10.4 Soil Geochemistry

In 2008, Coyote carried out a soil sampling program over the central part of the Copper Hills project area. The sampling program was laid out on the same grid as used for the ground magnetic survey. In this case only the detailed portion of that grid was sampled using a 50m x 50m density. This resulted in a coverage area of 230.5 ha. **Figure 10-3** shows the sample grid.

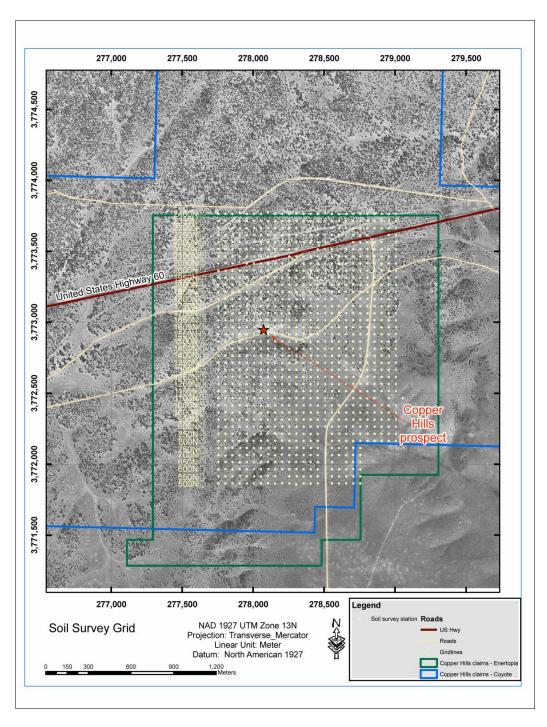


Figure 10-6 Soil Survey grid

A total of 958 samples were collected over an 8 day period. Due to cultural and physical obstacles (mainly roads) a few locations were not sampled.

The complete report entitled "Soil Geochemistry Report on the Copper Hills Property" prepared for Coyote Copper in August 2008 is attached to this report as **Appendix B**.

#### **10.4.1 Results**

According to the United States Department of Agriculture (USDA), the Natural Resources Conservation Service branch has completed an updated soil survey in the area as recently as 2004. This is part of their nation-wide initiative and all information is contained in the Soil Survey Geographic (SSURGO) database.

Their soil maps define 4 separate soil units within the area of the Copper Hill claims. These 4 units have slightly different characteristics but generally are described as sandy to gravelly, loam material of neutral to slightly alkaline pH. Vertical profiles are described by the USDA as 'horizons', with Coyote's soil survey sampling depths between 7 and 10 cm falling within their upper 1 or 2 horizons (H1 or H2). It is reasonable to expect that in this terrain, elemental concentrations found in these near surface soil horizons are a result of proximal sources.

In addition, and in reference to a report entitled "A Regional Geochemical Atlas For Part of Socorro County, New Mexico", by James Watrus, 1998, elemental baseline values and thresholds can be said to have been determined in the regional sense. Some of the data in this report was used to interpret meaningful thresholds as related to the Copper Hills soil assay results.

Analytical results have been reviewed by Claus Wiese and some basic observations are herein discussed.

Basic statistics on the assay data have determined several sets of elemental correlations. The most significant is Cu correlating with (in order of correlation coefficient) Pb, Ag, V, and Zn. Another clear correlation is shown by Au related with Zn, Ga, Ba, and Mn.

To investigate the spatial distribution of the correlating elements the data were gridded and contoured. The following **Table 10.3-1** shows the four thresholds used to contour each of the elements studied. These were computed using the 'Jenks optimization method' or goodness of variance fit.

Element Threshold	Cu ppm	Pb ppm	Ag ppm	V ppm	Zn ppm
1	>= 18	>= 40	>= 0.20	>=60	>= 80
2	> 50	> 137	> 0.25	> 70	> 112
3	> 100	> 363	> 0.35	> 135	> 202
4	> 200	> 898	> 0.50	> 200	> 350

Table 10.3-1 Elemental Thresholds used for Contouring

In addition to the statistics of Cu, elemental correlations with Pb, Ag, V and Zn, the anomalous patterns formed by all these elements are generally coincident. There are two distinctly separate anomalous areas within the survey grid. One of these is directly related to the Copper Hills prospect and the other is located from 200m to 500m south of the prospect.

## 11.0 Drilling

A minor amount of historical drilling has been carried out in the area of the Copper Hills project. Results of these campaigns have been discussed in previous sections of this report (sections 6.2.2 and 9.1).

# 12.0 Sampling Method and Approach

During January and February 2008, Coyote carried out a reconnaissance rock sampling program and a soil sampling survey.

## 12.1 Rock Chip Sampling

Mayor undertook to sample selected mineralized outcrops. A total of 55 samples were collected as follows: 21 from the Copper Hills prospect, 18 from vein prospects and 16 of the Nipple Mountain tuff.

The material was broken using a rock hammer and the pieces were packed in heavy cloth sample bags, tied with cloth laces, and marked with a unique sample identification number. The sample location was taken using a handheld GPS device (setup in UTM Zone 13N coordinates and using the NAD27 datum). The sample was geologically described and together with the location information recorded into a field book. Sample weights ranged from 1.5 to 6 kg.

All samples were taken back to Tucson, Arizona by Mayor from where he shipped them to ALS Chemex Laboratories in Elko, Nevada for preparation and subsequent analysis in Vancouver, Canada.

# 12.2 Soil Sampling

A two person sampling team was considered practical from the efficiency and safety standpoint. In preparation for the field work the predetermined grid coordinates were programmed in to the GPS system. The GPS was set up to use the UTM Zone 13N coordinate system (meters) projected to the NAD27 datum. In addition, kraft paper soil sample bags were pre-numbered with the sample number as associated with the grid coordinate. The soil bags were organized and carried in stacks according to grid travel.

The sample crew used the GPS for positioning and to navigate to the next grid sample station. The GPS data logger was used to store the location coordinate and sample number. The samples were collected by digging a small hole between 7 to 10 cm deep using a hand mattock. Material taken from the hole

was first passed/shaken through a kitchen sieve to remove the larger gravel material. The undersize material was packed into the sample bag and hauled in a pail or packsack by the crew.

A total of 958 samples were collected over an 8 day period. At the completion of the program the survey crew returned the samples to Tucson, Arizona. They were delivered to Mayor where they were repacked for shipment to ALS Chemex labs in Elko, Nevada. The samples were then forwarded by ALS Chemex to their soils preparation facility in Winnemucca, Nevada and subsequent analysis was done in Vancouver, British Columbia, Canada.

# 13.0 Sample Preparation, Analyses and Security

As described previously, rock and soil samples were collected from the Copper Hills project in early 2008. The preparation and analysis procedures for the two sample types are described below. All sample preparation and analyses were carried out by ALS Laboratory Group's Mineral Division. ALS Chemex maintains an ISO 9001:2000 certification at all locations.

### 13.1 Rock Samples

The 55 rock samples were collected, packed in heavy cloth sample bags secured with cloth laces, stored and shipped by FEDEX courier to ALS Chemex in Elko, Nevada by Mayor in two separate consignments. Two additional rock samples were collected by the author and submitted to the same batch as Mayor's second consignment. The primary elements to be analyzed were Cu, Au, Ag, Pb, and Zn. Lab packages were selected to best accommodate these analyzes at appropriate levels of detection. Based on ALS Chemex's catalog codes, these are Au-ICP21 (for Au) and ME-ICP41 (for Cu, Ag, Pb, Zn and others) and these will be described more fully below.

Once the samples arrive at the ALS Chemex preparation facility, they are bar coded (for sample inventory logging), weighed, oven dried, finely crushed to 70% -2mm or better, split off (250g) and pulverized by "ring and puck" grinding mill (to greater than 85% passing a 75 micron screen). The prepared samples were sent by UPS courier to the ALS Chemex analytical lab in Vancouver, Canada. These samples were cleared through international customs by ALS Chemex's custom broker.

Gold was analyzed by fire assay with an Inductively Coupled Plasma ("ICP") finish on a 30g sample weight (Au-ICP21). The other elements were analyzed as part of a package suite which includes the Ag, Al, As, B, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, Ga, Hg, K, La, Mg, Mn, Mo, Na, Ni, P, Pb, S, Sb, Sc, Sr, Th, Ti, Tl, U, V, W and Zn. These elements were analyzed by aqua regia digestion and ICP finish. Analyzes for Cu, Pb and Zn on over limit concentrations were re-done to detect the higher values.

ALS Chemex maintains an internal program for quality control which includes the random introduction of blanks, duplicate and standard samples into the sample analysis job flow. At this stage, Coyote did not

send duplicate samples for check procedures nor were any sample pulps sent to other labs for quality control purposes.

Final assay results were transmitted by e-mail initially and in addition paper reports were mailed.

It is the opinion of the author that the sample preparation, analytical and security protocols as stated by ALS Chemex in their results to Coyote are adequate to realize reliable results for the scope of this program.

# 13.2 Soil Samples

The soil sampling crew collected on average about 120 samples per day. Each day's yield was stored in their locked vehicle. At the end of the program the crew returned the samples in 5 large plastic tubs and delivered them to Mayor in Tucson, Arizona at which point they were re-packed in cardboard boxes and shipped by FEDEX courier to ALS Chemex's preparation facility in Elko, Nevada. Coyote sent ALS Chemex a complete inventory list of sample numbers, without their corresponding grid coordinates, to assist in validating the large inventory received. ALS Chemex immediately dispatched the shipment with MGL Trucking (their regular contractor) to their Winnemucca, Nevada preparation facility. There, the entire batch was split into 5 separate work orders. All samples were bar coded and weighed. The bar coding (logging procedures) sets up a chain of custody for sample tracking purposes. Reportedly some of the samples were first oven dried. All samples were sieved to 180 micron. Both over- and under-size are retained. The under size material split is ready for analysis. This batch was sent to the ALS Chemex Analytical Laboratory in Vancouver, Canada. ALS Chemex uses UPS courier service for this transportation and the batch was cleared through customs by their broker. ALS Chemex also used their soil permit to facilitate legal entry of the inorganic materials to Canada.

The analysis packages for the soils samples was the same as for the rock samples as described above (Au by Au-ICP21 & multi-elements by ME-ICP41).

Gold was analyzed by fire assay with an ICP finish on a 30g sample weight (Au-ICP21). The other elements were analyzed as part of a package suite which includes the Ag, Al, As, B, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, Ga, Hg, K, La, Mg, Mn, Mo, Na, Ni, P, Pb, S, Sb, Sc, Sr, Th, Ti, Tl, U, V, W and Zn. These elements were analyzed by aqua regia digestion and ICP finish (ME-ICP41).

As mentioned before, ALS Chemex maintains an internal program for quality control which includes the random introduction of blanks, duplicate and standard samples into the sample analysis job flow.

Final assay results were transmitted by e-mail initially and in addition paper reports were mailed.

It is the opinion of the author that the sample preparation, analytical and security protocols as stated by ALS Chemex in their results to Coyote are adequate to realize reliable results for the scope of this program.

#### 14.0 Data Verification

Land purchase documents and other legal agreements were verified by Claus Wiese with documents supplied by Coyote and through communications with Coyote's attorney, Donaldson. Land records were independently verified with the Bureau of Land Management using their LR2000 web based data retrieval system.

The geophysical report and interpretation, by Wright, was reviewed by the author.

All the analytical data ensuing from the programs have been reviewed and verified by Claus Wiese. All assays from current programs were received in electronic form and were deemed 'finalized' by the laboratory, ALS Chemex. Check assaying was not considered warranted for this reconnaissance sampling program. Rock and soil sample routing/transportation procedures and logistics were reviewed and verified, by the author, with customer service personnel at ALS Chemex in Vancouver, Canada..

All sample locations for the soil and rock sampling programs were cross-referenced with field notes and sample numbers to ensure accuracy.

Claus Wiese made a property examination prior to the commencement of this report. At that time he witnessed the soil and rock sampling programs and procedures. Independent location checks, a review of sampling procedures and the collection of separate rock samples was also carried out during this time.

The author cannot directly verify the accuracy of the data and results as portrayed in Wilkinson's 1976 geological report, however it is the author's opinion that Wilkinson's research was thorough and well done, leading to comprehensive interpretations and conclusions.

# 15.0 Adjacent Properties

There are no mineral properties adjacent to the Copper Hills property.

# 16.0 Mineral Processing and Metallurgical Testing

Not applicable to this report.

#### 17.0 Mineral Resource Estimates

Not applicable to this report.

#### 18.0 Other Relevant Data and Information

Not applicable to this report.

# 19.0 Interpretation and Conclusions

## 19.1 Interpretation

#### **19.1.1 Ground Magnetics Survey**

Wilkinson's mapping was used as geologic control for the interpretation of the ground magnetics results.

Four general domains were identified which can be correlated with the geology.

- 1. In the northwest corner of the property, the Abo Formation appears to be domed by a lobe of the Tres Montosas intrusion. Faulting mapped by Wilkinson (1976) supports a doming mechanism resulting in exposure of the Abo Formation. The ground magnetics show a steep gradient in the extreme northwest corner, indicating the intrusive margin at depth.
- 2. Further south is an area of quite subdued magnetics bounded to the northeast and south by abrupt changes in the magnetic character. This area is interpreted as Abo Formation overlain by a thin cover of Spears Formation [Wilkinson]. Such smooth magnetics would be consistent with a sedimentary lithology, such as the Abo Formation.
- 3. Across in the southwest corner of the survey, the magnetics are quite active with a number of north-south directed linear features. A similar pattern is noted to the east and northeast of the interpreted Abo Formation. Wilkinson documented the latite dikes to contain 1% magnetite. Such a concentration would produce moderate strength magnetic anomalies similar to those noted. It is interpreted that the north-south latite dike swarm mapped by Wilkinson (south of the survey area) continues north into the survey area and is responsible for much of the active magnetics.
- 4. The fourth domain, termed the Mulligan Gulch Graben, lies east of the prominent north-south linear magnetic feature and extends the full length of the survey. This linear high is interpreted as dike material filling the Council Rock Fault. The course of the interpreted fault from Wilkinson's mapping can be compared with this magnetic feature. As expected, magnetic responses within the graben are subdued as a result of basin fill cover; however, several strong magnetic anomalies do fall within the graben. These correlate with a quaternary basalt unit termed the Council Rock Basalt, which appears to overlie the basin fill material.

The residual pole reduced (RTP) magnetics accentuates finer detail in the data. Interpreted dikes and structures are readily delineated. Elements of the Copper Hills and Morenci-Magdalene lineaments are

also identified, which appear to form boundaries to the previously identified area of shallow Abo Formation. The multitude of dikes are terminated and offset by numerous structures. Two magnetic highs east of the Council Rock Fault are interpreted as possibly reflecting buried intrusions. One of these is located near the intersection of the Copper Hills and Morenci-Magdalena lineaments. Furthermore, the intrusive appear to feed a dike filling the Council Rock Fault to the south-southwest. This dike's magnetic response is diminished and more continuous than the latite dike responses. In fact, strong latite dike responses appear to cross-cut this anomaly immediately west of the main intrusive body. Similar magnetic responses are noted along the Morenci-Magdalena lineament. These observations suggest the interpreted intrusion differs from the latite dikes in composition and may well be un-related to the Tres Montosas intrusive.

Alteration mapped by Wilkinson (1976) can be generally compared with the alteration pattern derived from the magnetics. Wilkinson (1976) notes the mapped alteration can be characterized as pyrite, or evidence of pyrite, in the rock. Identification of alteration with magnetic data can be subjective. It is generally based upon the reduction of magnetic response due to removal of magnetic material in the rock. This process is generally gradational, but structurally / lithologically controlled. Therefore boundaries are generally difficult to define precisely and weathering / rock changes can mimic alteration. Nevertheless, the alteration mapped by Wilkinson generally correlates with reduced magnetic amplitudes, suggesting a magnetite destructive type of alteration.

The interpreted alteration extends considerably along the Morenci-Magdalena lineament, as well as along the north-south structural fabric. This alteration occurs immediately west of the interpreted intrusions in the horst block. Basin fill material masks identification of alteration in the vicinity of the interpreted intrusions. It is conceivable the interpreted intrusion is the source of the observed alteration with the Tres Montosas intrusive playing a minor role.

**Figure 19-1** summarizes the interpretation by combining the elements discussed previously with the geological mapping after Wilkinson (1976). Of immediate note is that the Copper Hills prospect falls directly on structural intersections related to the Copper Hill and Morenci-Magdalene lineaments and within the interpreted alteration limits. This suggests structural intersections and structures proximal to the interpreted alteration and Copper Hill prospect represent targets for similar mineralization. Numerous other structures and intersections are identified by the interpretation.

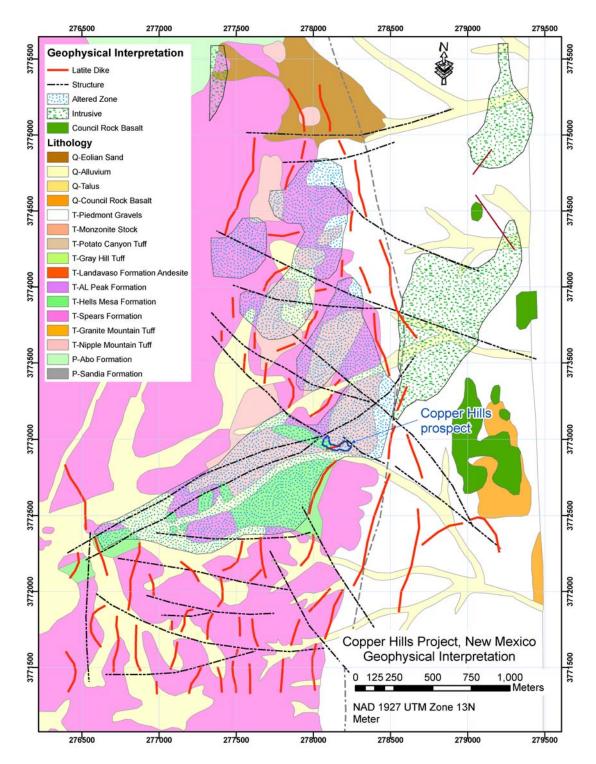


Figure 19.1 Geophysical Interpretation with Geology

#### 19.1.2 Ground IP Survey

Results from the ground IP survey show a strong chargeability anomaly to the east of the Tres Montosas fault. The anomaly is about 500 meters wide east-west and about 1,000 meters long north-south. Wright concludes that the chargeability anomaly may be related to "pyritic alteration". The IP anomaly is coincident with the presence of oxidized pyrite and copper at the surface along with quartz veining, silicification and strongly anomalous base metal anomalies along north-trending structures. These features are permissive of a porphyry-style hydrothermal system.

#### **19.1.3 Soil Geochemical Survey**

Analytical results have been reviewed by the author and some basic observations are herein discussed.

Basic statistics on the assay data have determined several sets of elemental correlations. The most significant is Cu correlating with (in order of correlation coefficient) Pb, Ag, V, and Zn. Another clear correlation is shown by Au related with Zn, Ga, Ba, and Mn.

To investigate the spatial distribution of the correlating elements the data were gridded and contoured. The following **Table 19.1-1** shows the four thresholds used to contour each of the elements studied. These were computed using the 'Jenks optimization method' or goodness of variance fit.

Element Threshold	Cu ppm	Pb ppm	Ag ppm	V ppm	Zn ppm
1	>= 18	>= 40	>= 0.20	>=60	>= 80
2	> 50	> 137	> 0.25	> 70	> 112
3	> 100	> 363	> 0.35	> 135	> 202
4	> 200	> 898	> 0.50	> 200	> 350

Table 19.1-1 Selected Elemental Thresholds

In addition to the statistics of Cu elemental correlations with Pb, Ag, V and Zn, the anomalous patterns formed by all these elements are generally coincident. There are two distinctly separate anomalous areas within the survey grid. One of these is directly related to the Copper Hills prospect and the other is located from 200m to 500m south of there.

Over the Copper Hills prospect, all correlated elements define anomalies closely associated with
the known mineralization. It is significant to note that both Cu and Pb form an anomalous halo
extending about 200 meters to the NE of the surface mineralization at the Copper Hill prospect.
In addition, a southeasterly trending linear extension to this anomaly, from the Copper Hills
prospect, can be identified by elevated levels of Cu, Pb and to some extent Zn. On the surface

- this pattern is directly correlated to deposits of alluvium in low lying terrain which probably served as drainage channels away from the Cu mineralization at surface.
- The other anomalous pattern is defined by common Cu-Pb-Zn-V (no Ag) and is situated over what has been mapped as Spears Formation. Cu-V anomalous patterns follow an E-W trend up to 500m in length. Pb-Zn anomalies in the same area display a strong N-S alignment up to 650m in length. This area was not geologically investigated by Coyote during their program. Based on these coincident elemental anomalies this area warrants detailed follow-up to assist in defining the significance of these geochemical results.

In summary, the elemental associations noted above are consistent with the mineralization models sought at Copper Hills. Anomalous patterns pertaining to these elements and/or associations highlighted at the Copper Hills prospect can be interpreted as significant to mineralization.

**Figure 19-2** shows the location of the geochemical survey grid on the geological map Wilkinson (1976) and includes, in this case, the contoured Cu anomalies. **Figure 19-3** offers an enlarged view of the Cu contours in relation to the Copper Hills prospect.

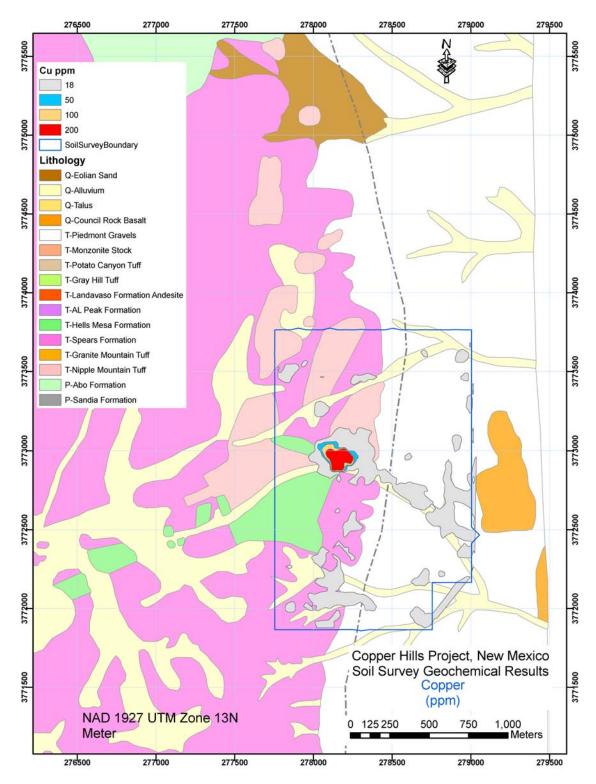


Figure 19-2 Soil Geochemical Results (Cu) with Geology

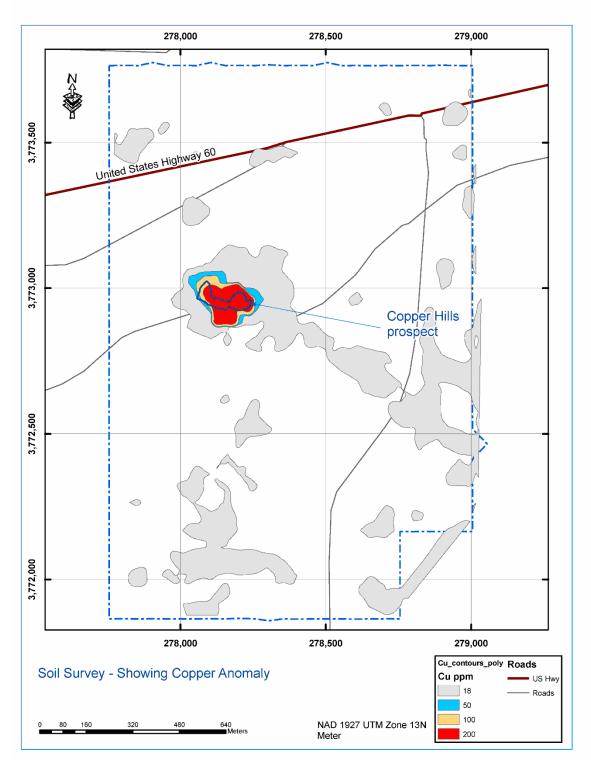


Figure 19-3 Soil Survey Showing Copper Anomaly

#### 19.2 Conclusions

The primary focus of the last mineral exploration program at the Copper Hills project was to follow-up known Cu-Ag mineralization in and around the Copper Hills prospect.

Results of the geophysical survey, and the subsequent interpretations, fit well with the geology as mapped by Wilkinson (1976). Interpretations of structural trends, proximity to inferred buried intrusives and mapping of alteration (of pyritic nature) focus exploration efforts in several areas, and importantly, confirm a favorable target area precisely in the area known to host the Copper Hills prospect.

Soil geochemistry anomalies (Cu, Pb, Ag, V, and Zn) define patterns consistent with known mineralization at the Copper Hills prospect and surroundings, yet extend to other areas signified and related to geophysical targets independently suggested for follow-up.

Results of the detailed mapping, ground magnetics and an IP survey suggest a buried porphyry copperstyle hydrothermal system with associated supergene Cu mineralization within a complex structural / lithological framework. The existence of numerous documented pits, workings, and other showings add credibility to these interpretations

It is the opinion of the author that the results of Coyote's and Enertopia's exploration program verified the mineral potential of the Copper Hills prospect and extended the knowledge of the geological framework related to the known Cu-Ag mineralization there. Results to date indicate that Copper Hills has an alteration, geochemical, and IP signature permissive of a buried porphyry-style system. Further exploration by drilling is now appropriate.

#### 20.0 Recommendations

The overall objective of the recommended program is the discovery of a potentially economic copper deposit. A two-phase exploration program is recommended for the Copper Hills project. The total estimated budget for both Phases of the program is US\$1,804,000. The budget is described in more detail in Table 20.2 below.

## 20.1 Phase 1 Program

Phase 1 is designed to test the IP-chargeability anomaly with 3 core holes. The 3 holes will test for potential porphyry-style alteration and copper mineralization at an average depth of 550 meters. The core holes are described below on Figure 20.1 and Table 20.1 In addition, reverse circulation drilling will be undertaken to verify the grade and extent of the copper (+silver) mineralization as documented by previous operators, within and peripheral to the Copper Hills Prospect. This is will require about 750 m of drilling in 10 reverse circulation holes each about 75 m in depth spaced on a 50 m x 50 m grid. The total Phase 1 program will be 1,650 meters of core and 750 meters of reverse circulation drilling at a cost of \$720,000.

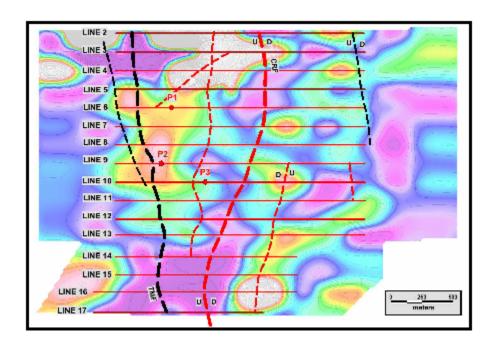


Figure 20-1 Proposed Phase 1 core holes designed to test IP anomaly

Table 20.1 Phase 1 proposed core holes (coordinates in NAD 27, meters)

Hole	Easting	Northing	Depth, m
P1	277,745	3,772,950	550
P2	277,660	3,772,500	550
P3	278,015	3,772,350	550

### **20.2 Phase 2 Program**

Contingent upon Phase 1 providing positive results it is recommended for Phase 2 that additional drilling be undertaken to add to the grade and extent of the copper (+silver) mineralization as documented by previous operators, within and peripheral to the Copper Hills Prospect. This is will require about 1,500 m of drilling in 20 reverse circulation holes each about 75 m in depth designed to extend the a 50 m x 50 m grid.

An additional 2,500 m of core drilling is recommended to offset the three core holes into the IP anomaly. Other facets of a Phase 2 program include conducting additional geological mapping, prospecting and sampling of priority targets based on geophysical and geochemical survey interpretations. The cost of Phase 2 will be about \$1,210,000. The total program will cost \$1,930,000.

Table 20.2 Proposed Copper Hills project budget

Core Drilling	Phase 1
Time to complete: 5 months	
Geologist + geotech	\$ 100,000
Geochem, 1200 rock samples	\$ 30,000
Field supplies	\$ 8,000
Vehicle expenses	\$ 16,000
Motel & food	\$ 25,000
Core Drilling 1,650m @ \$200/m	\$ 330,000
RC Drilling 750m @ \$65/m	\$ 50,000
Drafting, GIS, reporting	\$ 15,000
Permitting, bonding	\$ 60,000
Site prep, reclamation	\$ 36,000
10% contingency	\$ 50,000
Total Phase 1	\$ 720,000

Offset RC and Core Drilling	Phase 2
Time to complete: 7 to 10 months	
Geologist, assistant geologist +	
geotech	\$ 200,000
Geochem, 2000 rock samples	\$ 55,000
Field supplies	\$ 15,000
Vehicle expenses	\$ 27,000
Motel & food	\$ 50,000
RC Drilling 1,500m @ \$65/m	\$ 98,000
Core Drilling 2,500m @ \$200/m	\$ 500,000
Drafting, GIS, reporting	\$ 30,000
Permitting, bonding	\$ 75,000
Site prep, reclamation	\$ 60,000
10% contingency	\$ 100,000
Total Phase 2	\$ 1,210,000

Total Program in US\$ \$1,930,000

#### 21.0 References

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Wright, James L., August 25, 2011, Copper Hills Property Induced Polarization Survey GIS Database

# 22.0 Certificate of Qualified Person JOHN G. CLEARY, Consulting Geologist

Certified Professional Geologist No. 7420 California Registered Geologist No. 5321

P.O. Box 19727, Reno, Nevada 89511 USA Tel: 775-852-4049 Fax: 775-852-4397

I, John G. Cleary of Reno, Nevada, USA do hereby certify:

- (1) I am a consulting geologist for Enertopia Corporation
- (2) I am Registered Geologist No. 5321 with the State of California since 1991 and Certified Professional Geologist No. 7420 with the American Institute of Professional Geologists since 1986. I am a Fellow of the Society of Economic Geologists since 1986 and a Member of the Society of Mining Engineers since 1974.
- (3) I am a graduate of Dartmouth College with a B.A. (Honours) in Geology (1974) and of the University of Montana with an M.S. in Economic Geology (1976).
- (4) I have continuously practiced my profession in North, Central, and South America, Europe, and Southeast Asia since 1973.
- (5) I have read the definition of "qualified person" set out in National Instrument 43-101 and certify that by reason of my education, affiliation with professional associations and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
- (6) I am responsible for the preparation of the technical report entitled "Copper Hills project, Socorro County, New Mexico" dated October 25, 2011. I visited the Copper Hills property on August 31, 2011.
- (7) I have not had prior involvement with the Copper Hills property.
- (8) I am not aware of any material fact or material change with respect to the subject matter of the technical report that is not reflected in the technical report, the omission to disclose which makes the technical report misleading.
- (9) I am independent of the issuer applying all tests in section 1.5 of national Instrument 43-101.
- (10) I have read National Instrument 43-101 and Form 43-101F1, and the technical report has been prepared in compliance with that instrument and form.
- (11) 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 25th day of October, 2011, in Reno, Nevada, USA.

John G. Cleary, Consulting Geologist, Certified Professional Geologist No. 7420

# 23.0 Additional Requirements for Technical Reports on Development Properties and Production Properties(Not applicable.)

# **Appendix A - List of Claims**

MINING CLAIMS

Claim Name	Date of Location	Socorro County, New Mexico Instrument Number	BLM NMMC No.
WILDHORSE 1	3/1/2011	201100729	190849
WILDHORSE 2	3/1/2011	201100730	190850
WILDHORSE 3	3/1/2011	201100731	190851
WILDHORSE 4	3/1/2011	201100732	190852
WILDHORSE 5	3/1/2011	201100733	190853
WILDHORSE 6	3/1/2011	201100734	190854
WILDHORSE 7	3/1/2011	201100735	190855
WILDHORSE 8	3/1/2011	201100736	190856
WILDHORSE 9	3/1/2011	201100737	190857
WILDHORSE 10	3/1/2011	201100738	190858
WILDHORSE 11	3/1/2011	201100739	190859
WILDHORSE 12	3/1/2011	201100740	190860
WILDHORSE 13	3/1/2011	201100741	190861
WILDHORSE 14	3/1/2011	201100742	190862
WILDHORSE 15	3/1/2011	201100743	190863
TIMBERWOLF 16	3/1/2011	201100744	190864
TIMBERWOLF 17	3/1/2011	201100745	190865
TIMBERWOLF 18	3/1/2011	201100746	190866
TIMBERWOLF 19	3/1/2011	201100747	190867
TIMBERWOLF 20	3/1/2011	201100748	190868
WILDHORSE 21	3/1/2011	201100749	190869
WILDHORSE 22	3/1/2011	201100750	190870
WILDHORSE 23	2/28/2011	201100751	190871
WILDHORSE 24	2/28/2011	201100752	190872
TIMBERWOLF 25	2/28/2011	201100753	190873
TIMBERWOLF 26	2/28/2011	201100754	190874

Claim Name	Date of Location	Socorro County, New Mexico Instrument Number	BLM NMMC No.
TIMBERWOLF 27	2/28/2011	201100755	190875
TIMBERWOLF 28	2/28/2011	201100756	190876
TIMBERWOLF 29	2/28/2011	201100757	190877
WILDHORSE 30	2/28/2011	201100758	190878
WILDHORSE 31	2/28/2011	201100759	190879
WILDHORSE 32	2/28/2011	201100760	190880
WILDHORSE 33	2/28/2011	201100761	190881
WILDHORSE 34	2/28/2011	201100762	190882
WILDHORSE 35	2/28/2011	201100763	190883
WILDHORSE 36	2/28/2011	201100764	190884
WILDHORSE 37	2/28/2011	201100765	190885
WILDHORSE 38	2/28/2011	201100766	190886
WILDHORSE 39	2/28/2011	201100767	190887
WILDHORSE 40	2/28/2011	201100768	190888
WILDHORSE 41	2/28/2011	201100769	190889
WILDHORSE 42	2/28/2011	201100770	190890
WILDHORSE 43	2/28/2011	201100771	190891
WILDHORSE 44	2/28/2011	201100772	190892
WILDHORSE 45	2/28/2011	201100773	190893
WILDHORSE 46	2/28/2011	201100774	190894
WILDHORSE 47	2/28/2011	201100775	190895
WILDHORSE 48	2/28/2011	201100776	190896
WILDHORSE 49	2/28/2011	201100777	190897
WILDHORSE 50	2/28/2011	201100778	190898
WILDHORSE 51	2/28/2011	201100779	190899
WILDHORSE 52	2/28/2011	201100780	190900
WILDHORSE 53	2/28/2011	201100781	190901
WILDHORSE 54	2/28/2011	201100782	190902
WILDHORSE 55	2/28/2011	201100783	190903
COPPER HILLS #1	9/14/2000	n/a	169266