

**TECHNICAL REPORT**

**BLAWN MOUNTAIN PROJECT  
BEAVER COUNTY, UTAH**

**APRIL 16, 2012**

ENERGY, MINING, AND ENVIRONMENTAL CONSULTANTS

**NORWEST**  
CORPORATION

## **TECHNICAL REPORT**

### **BLAWN MOUNTAIN PROJECT BEAVER COUNTY, UTAH**

Submitted to:

**POTASH RIDGE CORPORATION**

Report Date:

April 16, 2012

Report Effective Date:

April 16, 2012

#### **Norwest Corporation**

136 E. South Temple, 12<sup>th</sup> Floor

Salt Lake City, UT

84111 USA

Tel: (801) 539-0044

Fax: (801) 539-0055

Email [slc@norwestcorp.com](mailto:slc@norwestcorp.com)

**[www.norwestcorp.com](http://www.norwestcorp.com)**

Authors:

**STEVEN B. KERR, CPG**

**MILTON E. HOLTER, P.ENG., P.GEO.**

**JASON N. TODD, QP**

**ROBERT I. NASH, PE**

**NORWEST**  
CORPORATION

## CERTIFICATE OF QUALIFICATIONS

I, Steven B. Kerr, CPG, PG of Salt Lake City, Utah, do hereby certify that:

1. I am currently employed as a Geologic Project Manager by Norwest Corporation, 136 East South Temple, Suite 1200, Salt Lake City, Utah, USA 84111.
2. I attended the Utah State University where I earned a Bachelor of Science degree in Geology in 1981 and a Master of Science degree in Geology in 1987.
3. I am a Certified Professional Geologist with the American Institute of Professional Geologists (CPG-10352). I am licensed as a Professional Geologist in the states of Alaska (# 512), Utah (#5557442-2250) and Wyoming (PG-2756).
4. I have worked as a geologist for a total of twenty-seven years since my graduation from university, working with companies involved in the mining and exploration of metal and industrial mineral deposits in the western United States. As a consultant I have worked on worldwide projects involving Ag/Pb/Zn vein, bauxite, coal, Cu/Au skarn, disseminated, Archaen, and placer gold deposits; iron ore, limestone, mineral sands, oil shale, trona, volcanic-hosted vein deposits, and uranium.
5. I have read the definition of “qualified person” set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with professional associations (as defined in NI 43-101) 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 all sections (excepting sections 13, 14, 16 and 17) of the technical report titled “Blawn Mountain Alunite Project, Beaver County, Utah” dated April 16, 2012 (the “Technical Report”) relating to the Blawn Mountain Alunite Property, with an **Effective Date of April 16, 2012.**
7. I personally inspected the Blawn Mountain Property on February 9-10, and March 15, 2012.
8. Prior to being retained by Potash Ridge Corporation in connection with the preparation of the Technical Report, I have not had prior involvement with the property that is the subject of the Technical Report.
9. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the parts of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the parts of the Technical Report for which I am responsible not misleading.
10. I am independent of the issuer applying all of the tests in Section 1.5 of NI 43-101.
11. I have read NI 43-101 and the Technical Report, and the parts of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101.

Dated at Salt Lake City, Utah this 16<sup>th</sup> day of April, 2012.

**ORIGINAL SIGNED AND SEALED BY “STEVEN B. KERR”**

\_\_\_\_\_  
Steven B. Kerr, CPG, PG

## CERTIFICATE OF QUALIFICATIONS

I, Milton E. Holter, P.Eng., P.Geo., of Calgary, Alberta, do hereby certify that:

1. I am currently self-employed as a Geologic Consultant at #107, 3 Sunmills Green S.E., Calgary, Alberta T2X 3N9.
2. I attended the University of Saskatchewan where I earned a Bachelor of Science degree in Geological Engineering in 1962 and a Master of Science degree in Geology in 1969.
3. I am a member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta, Member #20931; the Association of Professional Engineers and Geoscientists of Saskatchewan, Member #15541; and the Association of Professional Engineers and Geoscientists of British Columbia, Member #22013.
4. I have worked as a geologist for a total of fifty years since my graduation from university, working with companies and projects involved with the mining, exploration and assessment of industrial minerals deposits (potash, limestone), coal properties, aggregate occurrences, and oil and gas prospects in western Canada and United States. Since 2004, as a consultant, I have specialized in the exploration and evaluation of potash resource properties in western Canada.
5. I have read the definition of “qualified person” set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with professional associations (as defined in NI 43-101) 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 section 14 of the technical report titled “Blawn Mountain Alunite Project, Beaver County, Utah” dated April 16, 2012 (the “Technical Report”) relating to the Blawn Mountain Alunite Property, with an **Effective Date of April 16, 2012**.
7. I personally inspected the Blawn Mountain Alunite Property on March 15, 2012.
8. Prior to being retained by Potash Ridge Corporation in connection with the preparation of the Technical Report, I have not had prior involvement with the property that is the subject of the Technical Report.
9. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the parts of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the parts of the Technical Report for which I am responsible not misleading.
10. I am independent of the issuer applying all of the tests in Section 1.5 of NI 43-101.
11. I have read NI 43-101 and the Technical Report, and the parts of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101.

Dated at Salt Lake City, Utah this 16<sup>th</sup> day of April, 2012.

**ORIGINAL SIGNED AND SEALED BY “MILTON E. HOLTER”**

---

Milton E. Holter, P.Eng., P.Geo.

## CERTIFICATE OF QUALIFICATIONS

I, Jason N. Todd, QP, of Salt Lake City, Utah, do hereby certify that:

1. I am currently employed as an Engineering Project Manager by Norwest Corporation, 136 East South Temple, Suite 1200, Salt Lake City, Utah, USA 84111.
2. I attended the Montana School of Mines where I earned a Bachelor of Science degree in Mining and Minerals Engineering in 1998.
3. I am a Qualified Professional Member of the Mining and Metallurgical Society of America, Member #01414QP.
4. I have worked as a mining engineer for a total of fourteen years since my graduation from university, working with companies involved in the mining and exploration of coal base and precious metals in the western United States. As a consultant I have worked on worldwide projects involving mine design and planning for coal, oil shale and oil sand properties.
5. I have read the definition of “qualified person” set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with professional associations (as defined in NI 43-101) 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 section 16 of the technical report titled “Blawn Mountain Alunite Project, Beaver County, Utah” dated April 16, 2012 (the “Technical Report”) relating to the Blawn Mountain Alunite Property, with an **Effective Date of April 16, 2012.**
7. I personally inspected the Blawn Mountain Property on March 15, 2012.
8. Prior to being retained by Potash Ridge Corporation in connection with the preparation of the Technical Report, I have not had prior involvement with the property that is the subject of the Technical Report.
9. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the parts of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the parts of the Technical Report for which I am responsible not misleading.
10. I am independent of the issuer applying all of the tests in Section 1.5 of NI 43-101.
11. I have read NI 43-101 and the Technical Report, and the parts of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101.

Dated at Salt Lake City, Utah this 16<sup>th</sup> day of April, 2012.

**ORIGINAL SIGNED AND SEALED BY “JASON N. TODD”**

\_\_\_\_\_  
Jason N. Todd, QP

## CERTIFICATE OF QUALIFICATIONS

I, Robert I. Nash, PE, of Salt Lake City, Utah, do hereby certify that:

1. I am currently employed and am the Principal of Intermountain Consumer Professional Engineers, Inc., 1145 East South Union Avenue, Midvale, Utah, USA 84047.
2. I attended the Brigham Young University where I earned a Bachelor of Science degree in Mechanical Engineering in 1985.
3. I have worked as a licensed professional engineer (1988) for a total of twenty five years since my graduation from a university, for companies and projects involved with the processing of metals, specialty and precious metals, and mineral based projects.
4. I have read the definition of “qualified person” set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with professional associations (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.
5. I am responsible and have responsible charge for the preparation of sections 13 and 17 of the technical report titled “Blawn Mountain Alunite Project, Beaver County, Utah” dated April 16, 2012 (the “Technical Report”) relating to the Blawn Mountain Alunite Property, with an **Effective Date of April 16, 2012.**
6. I personally inspected the Blawn Mountain Property on March 15, 2012.
7. Prior to being retained by Potash Ridge Corporation in connection with the preparation of the Technical Report, I have not had prior involvement with the property that is the subject of the Technical Report.
8. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the parts of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the parts of the Technical Report for which I am responsible not misleading.
9. I am independent of the issuer applying all of the tests in Section 1.5 of NI 43-101.
10. I have read NI 43-101 and the Technical Report, and the parts of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101.

Dated at Salt Lake City, Utah this 16<sup>th</sup> day of April, 2012.

**ORIGINAL SIGNED AND SEALED BY “ROBERT I. NASH”**

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Robert I. Nash, PE

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## 1 SUMMARY

The following technical report was prepared by Norwest Corporation (Norwest) for Potash Ridge Corporation (PRC), a private mineral exploration and development company with corporate offices in Toronto, Ontario, Canada. The technical report presents estimates of mineral resources from PRC's Blawn Mountain Project in southwestern Utah and will support the company's intended placement for public trading on the Toronto Stock Exchange. This technical report has been prepared in accordance with National Instrument (NI) 43-101 and Form 43-101F1.

### 1.1 LOCATION AND TENURE

The Blawn Mountain Project consists of 11,549.2 acres of Utah State mineral tracts controlled through a Mining and Exploration With Option To Lease Agreement (Exploration/Option Agreement) through the state of Utah School and Institutional Trust Lands Administration (SITLA). Alunite is a hydrated aluminium potassium sulfate,  $KAl_3(SO_4)_2(OH)_6$  from which both sulfate of potash and aluminum have been extracted.

The property is located approximately 30 air-miles southwest of the town of Milford Utah and 30 air-miles from the Nevada border, as shown in Figure 4.1. The area is accessed from Interstate 15 (I-15), the main north-south travel corridor through Utah, by traveling west on the surfaced State Route 21 (SR-21) to the town of Milford, from Milford 24 miles farther west on SR-21, turning south onto a graveled secondary road and traveling approximately 17 miles. The property is located about 20 air-miles west of the Union Pacific Railroad (UP) route, running north-south and connecting Salt Lake City with Las Vegas and farther points on the UP rail system.

The Blawn Mountain Project is comprised of 17 full sections and two half sections of SITLA land and potash mineral rights as shown in Figure 4.2. PRC's entitlement is through the Exploration/Option Agreement with SITLA which was executed in the spring of 2011 and issued to Utah Alunite, LLC, a 100% owned entity of PRC. Two small mineral leases occur within the Blawn Mountain Project. One lease is a 40 acre tract located along the western edge of the project area and the second lease is a 155 acre tract within the boundaries of the project area. Both mineral leases within the Blawn Mountain Project are for metallic minerals only and do not include potash mineral rights.

The Exploration/Option Agreement is for a three-year term and required a front-end payment of \$200,000<sup>1</sup>, annual payments of \$62,370 (\$6/acre) and a \$1,000,000 bonus for lease issuance. Primary lease term would be 10 years, renewable in 5 year extensions. Annual rental amounts

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<sup>1</sup> Currency in US Dollars

would apply to the lease agreement as well as 4% gross royalty for metalliferous minerals and 5% for potash minerals.

## 1.2 HISTORY

Mining operations have been conducted in alunite occurrences in southwest Utah since the early 1900's. Early extraction targeted both potash and aluminum. The Blawn Mountain property was the subject of extensive study and exploration activity conducted by a Denver-based exploration and development company, Earth Sciences, Inc. (ESI). However, much of this work targeted the property's aluminum potential. Exploration and geological studies were augmented by mining and processing evaluations as well. They delineated four distinct areas of alunite mineralization at Blawn Mountain, then known as the NG property. Their historic areas A through D correspond to the PRC nomenclature of Areas 1 through 4. The project was taken to advanced stages of development, but was eventually abandoned due to challenging economics and depressed pricing for alumina and potash in the 1980's.

Previous resource estimates are difficult to relate to current assessments primarily due to focus of past programs on alumina production with potash as a secondary product. Cut-off grades were based on  $Al_2O_3$  content and therefore skew the  $K_2O$  estimates since potassium was not optimized. Historic estimates ranged from 142.6 million short tons (Mt) to 151.8Mt of in-place alunite resource proven and probable (relates to measured and indicated resource), with corresponding grade estimates of  $K_2O$  ranging from 3.85% to 4.15% and of  $Al_2O_3$  ranging from 13.03% to 14.13%.<sup>2</sup> None of these studies are deemed to be NI 43-101 compliant although reasonable methodologies were applied at the time. Furthermore, a qualified person has not done sufficient work to classify historical estimates as current mineral resources. PRC is not treating the historical estimates as current mineral resources.

## 1.3 GEOLOGY

The Blawn Mountain alunite deposit is located in the southern Wah Wah Mountains, of the eastern Basin and Range province, in an area characterized by a thick Paleozoic sedimentary section that was, 1) thrust faulted during the Sevier orogeny, 2) buried under a thick layer of regionally distributed Oligocene volcanic rocks and locally-derived volcanic rocks, 3) extended to the west by the Basin and Range event, 4) altered by  $H_2S$ -rich hydrothermal alteration related to a postulated shallow laccolithic intrusive which domed, and altered the overlying calc-alkaline volcanic rock (Hofstra, 1984), and 5) affected by continual erosion of the ranges contributing to colluvial and alluvial deposition in the valleys.

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<sup>2</sup> Walker, 1972 and 1973; Chapman 1974; Couzens, 1975.

The geologic characterization of the deposit is essentially that of an altered volcanic tuff. The host tuff deposit ranges in thickness from several hundred to one thousand feet at its thickest point. The property is moderately faulted with normal faults related to Basin and Range extensional block faulting. The deposit is controlled by its original alteration geometry, block faulting, and by erosion.

The Blawn Mountain deposit occurs along four ridges, three of which occur within PRC's exploration tracts. Alteration tends to be in linear bodies reflecting the role of normal faults in controlling the mineralization. Alteration is zoned away from the point of hydrothermal fluid upwelling. The mineralized ridges are erosional remnants of a once larger altered area.

## 1.4 EXPLORATION

The Blawn Mountain property was first evaluated by ESI as part of a nationwide alunite exploration program in 1969 which included literature searches, aerial reconnaissance for the bleached alunite zones, and field studies. In 1970 ESI started the first systematic exploration of the Blawn Mountain deposit. ESI completed a total of 320 drill holes throughout the property.

Blawn Wash Area 1 has been the most extensively delineated by advancement of 230 drill holes. Approximately 33 drill holes terminated in the ore deposit so mineralization may continue vertically downward in places. Areas 2, 3, and 4 were not fully delineated horizontally or vertically; 12 drill holes were advanced in Area 3 (one of which stopped in the mineral deposit), 17 drill holes were advanced in Area 2 (four of which stopped in the mineral deposit) and three drill holes were advanced in Area 4 (one of which stopped in the mineral deposit). Previous drill samples no longer exist so additional study of these samples is not possible.

After acquiring the property in 2011, PRC initiated a validation drilling program on Area 1 primarily to validate the previous exploration efforts. Under the guidance of North American Exploration Company (NAE), a combination of 19 core holes and 15 reverse circulation holes were completed on Area 1 between October 2011 and February 2012. All 34 drill holes were twinned to locations of previous drill holes completed by ESI. Figure 9.2 shows the drilling completed by PRC.

## 1.5 MINERAL RESOURCES

A 3-dimensional geological block model (3DGBM) was constructed from data obtained from PRC, who had acquired the downhole lithologic and assay base data from a third party. Data validation tasks involved statistical evaluations of base data, site visits conducted by the report authors, a 34 hole validation "twin" drilling program conducted by PRC in Area 1, and statistical analysis of the current twin hole assay values to that of the historic holes that were twinned.

The comparison of the K<sub>2</sub>O and Al<sub>2</sub>O<sub>3</sub> values from the PRC holes with their respective twin ESI holes covers 639 assay intervals or 6,390 feet of drilling. On an interval per interval basis there is poor correlation for K<sub>2</sub>O and AL<sub>2</sub>O<sub>3</sub> concentrations between the two sets of data. However, composite intervals for each hole show that the PRC holes have concentrations that range from 9 to 19.2% higher than the ESI data.

Norwest believes the PRC validation drilling program has adequately tested the Area 1 deposit, both spatially and in number of twinned drilling locations. Norwest is satisfied with the procedures established by NAE in data collection and sampling. The duplicate samples and comparative analyses returned favourable results that would indicate reliable analyses from ALS Minerals for the validation drilling program. While the ALS results show higher concentrations than previously indicated in the ESI drilling data, the ALS analyses confirm the presence of mineralization and indicate grades determined from the ESI drilling data will be conservative estimations.

Norwest has estimated resources from a 3DGBM constructed in MineSight<sup>®</sup>, a software package developed by Mintec Inc. The estimate was prepared in compliance with NI 43-101 requirements for the definition of Mineral Resources. The 3DGBM is based on the assays and lithologies of the current drilling database and on a series of 30 interpreted geological cross sections constructed through Area 1.

Based on variography well spacing, as applied to category of resource estimation, was applied as shown in Table 1.1.

**TABLE 1.1**  
**RESOURCE ASSURANCE CRITERIA FROM VARIOGRAPHY**

Compound	Measured	Indicated	Inferred
K <sub>2</sub> O	<150 ft.	<350 ft.	<1,000 ft.*
Al <sub>2</sub> O <sub>3</sub>	<150 ft.	< 250 ft.	<1,000 ft.*

Other estimation criteria include assumed density of ore and waste established at 13 ft.<sup>3</sup>/short ton (2.077 short tons/yd<sup>3</sup>).

Resource classification is based on the CIM Standards on Mineral Resources and Reserves, a set of definitions and guidelines established by the Canadian Institute of Mining and Metallurgy and Petroleum. Table 1.2 shows the estimated classified resource for the Blawn Mountain Project at increasing incremental K<sub>2</sub>O cut-off grades.

At a 1% K<sub>2</sub>O cut-off grade, there is a combined measured plus indicated in-situ resource of 162Mt carrying an average grade of 3.23% K<sub>2</sub>O and 13.90% Al<sub>2</sub>O<sub>3</sub>. The calculated potassium sulfate grade (K<sub>2</sub>SO<sub>4</sub>) at a 1% K<sub>2</sub>O cut-off grade is 5.98%. Increasing the cut-off grade to 3%

K<sub>2</sub>O reduces the combined in situ tons of material to 84 Mt. Average grade at a 3% K<sub>2</sub>O cut-off is 4.16% K<sub>2</sub>O and 15.23% Al<sub>2</sub>O<sub>3</sub> with a calculated equivalent grade of 7.7% K<sub>2</sub>SO<sub>4</sub>. Approximately 66% of the identified resources are classified as measured and 34% as indicated resource.

There are no mineral reserve estimates associated with this report.

The accuracy of resource and reserve estimates is, in part, a function of the quality and quantity of available data and of engineering and geological interpretation and judgment. Given the data available at the time this report was prepared, the estimates presented herein are considered reasonable. However, they should be accepted with the understanding that additional data and analysis available subsequent to the date of the estimates may necessitate revision. These revisions may be material. There is no guarantee that all or any part of the estimated resources or reserves will be recoverable.



**TABLE 1.2**  
**CLASSIFIED RESOURCE ESTIMATE FOR THE BLAWN MOUNTAIN ALUNITE DEPOSIT**

RESOURCE CLASSIFICATION	K <sub>2</sub> O CUTOFF GRADE (%)	IN SITU (TONS)	IN SITU GRADES					CONTAINED RESOURCES				
			K <sub>2</sub> O (%)	K <sub>2</sub> SO <sub>4</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	Alunite based on K <sub>2</sub> O (%)	Alunite based on Al <sub>2</sub> O <sub>3</sub> (%)	K <sub>2</sub> O (TONS)	K <sub>2</sub> SO <sub>4</sub> (TONS)	Al <sub>2</sub> O <sub>3</sub> (TONS)	Alunite based on K <sub>2</sub> O (TONS)	Alunite based on Al <sub>2</sub> O <sub>3</sub> (TONS)
<b>MEASURED</b>	-	108,885,865	3.20	5.92	13.94	28.12	37.75	3,483,259	6,441,566	15,181,956	30,621,290	41,100,476
	1.0	107,354,040	3.23	5.98	13.91	28.42	37.65	3,470,756	6,418,445	14,928,653	30,511,379	40,414,735
	1.5	102,856,427	3.32	6.14	13.96	29.17	37.79	3,412,776	6,311,223	14,358,757	30,001,678	38,871,918
	2.0	90,666,054	3.53	6.52	14.15	31.00	38.30	3,196,885	5,911,977	12,827,433	28,103,781	34,726,330
	2.5	73,041,949	3.84	7.10	14.62	33.74	39.58	2,803,350	5,184,215	10,680,194	24,644,219	28,913,339
	3.0	56,184,519	4.16	7.70	15.22	36.61	41.20	2,339,523	4,326,464	8,551,284	20,566,724	23,149,970
<b>INDICATED</b>	-	55,251,773	3.20	5.92	13.95	28.16	37.75	1,769,714	3,272,720	7,704,860	15,557,539	20,858,537
	1.0	54,658,009	3.23	5.97	13.89	28.39	37.60	1,765,454	3,264,841	7,591,451	15,520,084	20,551,518
	1.5	53,006,429	3.29	6.09	13.92	28.93	37.69	1,744,442	3,225,984	7,379,555	15,335,367	19,977,875
	2.0	46,770,183	3.49	6.45	14.12	30.68	38.22	1,632,279	3,018,563	6,602,547	14,349,350	17,874,364
	2.5	36,770,084	3.83	7.08	14.66	33.68	39.68	1,408,662	2,605,029	5,390,127	12,383,531	14,592,110
	3.0	28,064,514	4.16	7.70	15.22	36.59	41.19	1,168,045	2,160,058	4,270,296	10,268,271	11,560,514
<b>MEASURED AND INDICATED</b>	-	164,137,638	3.20	5.92	13.94	28.13	37.75	5,252,973	9,714,286	22,886,816	46,178,829	61,959,013
	1.0	162,012,049	3.23	5.98	13.90	28.41	37.63	5,236,210	9,683,286	22,520,104	46,031,463	60,966,253
	1.5	155,862,856	3.31	6.12	13.95	29.09	37.76	5,157,218	9,537,207	21,738,312	45,337,045	58,849,793
	2.0	137,436,237	3.51	6.50	14.14	30.89	38.27	4,829,164	8,930,540	19,429,980	42,453,132	52,600,694
	2.5	109,812,033	3.84	7.09	14.63	33.72	39.62	4,212,012	7,789,244	16,070,320	37,027,750	43,505,449
	3.0	84,249,033	4.16	7.70	15.22	36.60	41.20	3,507,568	6,486,522	12,821,580	30,834,996	34,710,484
<b>INFERRED</b>	1.0	417,957	3.22	5.95	16.68	28.30	45.16	13,454	24,880	69,728	118,274	188,766
	1.5	417,942	3.22	5.95	16.68	28.30	45.16	13,454	24,880	69,725	118,270	188,760
	2.0	352,712	3.47	6.41	17.37	30.46	47.02	12,221	22,601	61,263	107,439	165,850
	2.5	227,518	4.13	7.64	19.84	36.30	53.71	9,394	17,373	45,137	82,584	122,195
	3.0	151,367	4.80	8.88	23.20	42.21	62.80	7,269	13,442	35,111	63,899	95,052

## 1.6 MINING METHODS

A preliminary study of mining methods was performed by Norwest and will form the basis of ongoing and increased level of engineering and economic analysis. Given the lack of geotechnical and hydrological data and analysis at the time of this report, the study has been limited to conceptual work using the 3DGBM created for the resource estimates.

The nature of the alunite occurrence being in the form of ridges, there is a condition of minimal overburden associated with potential extraction. The overburden will be hauled and dumped into external waste piles outside of the pit. This condition lends itself well to truck and shovel surface mining. Truck and shovel mining is a highly-efficient, technologically advanced and proven low-cost method of surface mining.

The following general assumptions and parameters will likely be recognized for Blawn Mountain:

- Bench height of 40 ft.
- Working pit slopes will be 45°
- Production ramp-up will progress over two years reaching steady state production in year three.

Further study will include development of preliminary mine plans, scheduling, estimates of operating and capital costs and estimates of potentially mineable tonnages and rates.

## 1.7 METALLURGICAL TESTING AND MINERAL PROCESSING

PRC is considering a process that extracts potassium sulfate ( $K_2SO_4$ ), also called sulfate of potash (SOP). There is also potential to recover potentially economic quantities of sulfuric acid ( $H_2SO_4$ ) and alumina ( $Al_2O_3$ ). During the early and mid-1970's, ESI commissioned Hazen Research, Inc. (Hazen) to develop and perform an extensive metallurgical testing program on composite samples from the Blawn Mountain deposit that included pilot plant testing. In 2011, PRC commissioned Hazen to perform confirmatory test work on a bulk sample PRC collected from a pre-existing test pit at Area 1. Based on initial test work, modified flowsheets have been suggested as improvements to the processing.

Norwest has reviewed process and design work performed for PRC to date and has initiated conceptual studies that explore options for efficient mineral processing of  $K_2SO_4$ . Process optimization efforts are directed toward identifying energy-efficient and cost effective candidate technologies for maximizing recovery of product(s) and by-product(s) of highest purity, along with protection of environmental values and conservation of water through reuse of treated effluents at the project site.

The physical beneficiation tests performed by Hazen on alunite ore have shown that it is feasible to produce by flotation a concentrate containing 80% alunite with an 80% recovery.

Metallurgical test work is being planned to investigate flotation as a method of reducing the silica content of the feed to the drying and calcination steps. This would also result in enhanced product quality, conservation of energy, smaller equipment sizes in downstream drying/calcining, leaching, and solid/liquid separation operations as well as reduced footprint of the process plant.

## 1.8 ENVIRONMENTAL AND PERMITTING

Past environmental studies include an Environmental Impact Statement (EIS) in 1977 performed by the BLM for the ESI project. Environmental impacts that were evaluated included air quality impacts from the mine, primarily associated with particulates, and processing plant impacts, including SO<sub>2</sub>, NO<sub>x</sub> and fluorides, to surface and groundwater, wildlife, soils, vegetation, cultural resources and socio-economic impacts resulting from a large industrial project in a predominately agricultural community. Mitigation measures were proposed to reduce impacts and were evaluated by various agencies and at that time, deemed sufficient. Due to market conditions, the project was never launched.

The current exploration work has been covered by the SITLA Exploration/Option Agreement and approval of an exploration plan by Utah Division of Oil, Gas and Mining (DOGGM). Numerous additional permits, both State and Federal, will be required in order to operate a mining venture. The following table identifies the major permits that may be necessary prior to the construction and start-up of the Blawn Mountain project.

**TABLE 1.3**  
**MAJOR REQUIRED PERMITS**

<b>Major Permits or Approvals</b>	<b>Issuing Agency</b>
Federal Right-of-Way	U.S. Bureau of Land Management
Mining Permit	Division of Oil, Gas and Mining
Water Appropriations	Utah Office of State Engineer
Groundwater Discharge Permit	Utah Division of Water Quality
Air Quality Permit	Utah Division of Air Quality
Storm Water and Discharge Permit	Utah Division of Water Quality
Dredge and Fill Permit	U.S. Army Corps of Engineers
County Conditional Use Permit	Beaver County

In addition, satisfactory water appropriations will need to be acquired, as sufficient water is one of the most significant issues for the project. There is a strong focus on reducing water consumption for the project and an appropriations application will be filed based upon updated water requirements of the project.

## 1.9 CONCLUSIONS AND RECOMMENDATIONS

The Blawn Mountain Alunite Project has established control of 10,394.2 acres of mineral rights through an Exploration/Option Agreement with SITLA. Past exploration and current validation and analysis has established a mineral resource of enriched alunite. At a 1% K<sub>2</sub>O cut-off grade, there is a combined measured plus indicated in-situ resource of 162Mt carrying an average grade of 3.23% K<sub>2</sub>O and 13.90% Al<sub>2</sub>O<sub>3</sub>. This technical report has been authored by independent qualified persons and certificates attesting to this are included in the report.

Resource, mining and processing evaluations have shown this deposit to be a property of merit, ready for immediate mine planning and higher-level engineering and economic evaluation. The 2012 exploration program will focus on three primary tasks:

1. Drill 14 holes that will specifically attempt to identify mineralization to greater depths and collect samples for geotechnical characterization, detailed geochemistry and mineralogy information.
2. Conduct exploration drilling on Area 2 to identify and characterize measured and indicated resources.
3. Conduct exploration drilling farther down the ridge, southwestward, from the defined resources at Area 1.

The recommended 2012 Exploration Program includes 83 drill holes for a total of 28,000 feet. Drilling is currently planned to commence in June 2012.

**TABLE 1.4**  
**PROPOSED EXPLORATION**

Area	# Holes	Estimated Footage
Area 1	14	10,500
Area 2	45	11,500
Southwest of Area 1	24	6,000
<b>Total</b>	<b>83</b>	<b>28,000</b>

Total cost of the proposed exploration is \$2.3 million.

## 2 INTRODUCTION

Potash Ridge Corporation (PRC) controls significant alunite deposits in southwestern Utah known as Blawn Mountain. Mineral control is through a State of Utah Mining Exploration Agreement With Option To Lease (Exploration/Option Agreement), administered through the state School and Institutional Trust Lands Administration (SITLA). The property is located approximately 30 miles southwest of the town of Milford, Utah and 30 miles east of the Nevada border.

The Blawn Mountain alunite deposits were explored by Earth Sciences, Inc., (ESI), a mineral exploration and development company that was headquartered in Denver, Colorado, in the early 1970s and 1980s. ESI, which was a joint venture partner in The Alumet Company (Alumet), referred to the Blawn Mountain deposits as the NG Alunite deposits. The Blawn Mountain property subsequently came under PRC control in 2011 through the Exploration/Option Agreement,

Alunite is a complex mineral containing alumina ( $\text{Al}_2\text{O}_3$ ), potassium ( $\text{K}_2\text{O}$ ), and sulfur ( $\text{SO}_3$ ) all of which have important uses in commercial markets. PRC is pursuing development of Blawn Mountain primarily for the manufacture of potash (potassium sulfate). However, following initial development PRC anticipates multiple products from the alunite including alumina, and sulfur products.

Alunite is a naturally occurring mineral with the chemical composition of  $\text{KAl}_3(\text{SO}_4)_2(\text{OH})_6$ . In pure state, alunite is comprised of 11.37%  $\text{K}_2\text{O}$ , 36.92%  $\text{Al}_2\text{O}_3$ , 38.66%  $\text{SO}_3$ , and 13.05%  $\text{H}_2\text{O}$ . At times sodium will replace a portion of the potassium altering the alunite to the mineral natroalunite. This is not common in the Blawn Mountain mineral deposit as drill hole cuttings typically assay at less than 1%  $\text{Na}_2\text{O}$ . Iron can replace some of the aluminum altering the alunite to the mineral jarosite. However, iron does not appear to occur at Blawn Mountain in significant quantities. Alunite occurs worldwide associated with hydrothermal alteration accompanying volcanic activity. Alunite can be present in some very large deposits (Hall, 1978) and the western United States contains some of the largest deposits known in the world. The Blawn Mountain (Figure 4.1) deposit is one of these significant large deposits (Hall, 1978).

Alunite has been mined worldwide for centuries (Hall and Bauer, 1983). Mining of alunite in the United States has historically been for the production of potassium fertilizer. During War World I alunite was mined in the Mount Baldy mining district, Utah for production of potash fertilizer. The deposit was again mined during War World II for the alumina going to production of aluminum for the war effort. When potassium prices returned to normal levels following the two wars, alunite operations were no longer economically viable in the United States. Alunite has long been known to have value for alumina, potassium, and sulfur, though three obstacles have

often limited development: (1) adequate size of deposit, (2) concentrations of commercial components, and (3) cost of building and operating a processing plant. The size of most western alunite deposits were not known until the 1970s. Many of the western US Alunite deposits are fairly large and make them a cost-effective source for potassium sulfate and a competitive alternative to bauxite for alumina.

Compared with other types of mineral deposits containing similar chemical compounds, alunite contains less potassium than sylvinite, approximately 5% versus 20 to 35% and contains less alumina than bauxite (about 18% compared to 45%). However, alunite can be mined in the US whereas all of the bauxite used in the US is imported. Disruption of the bauxite supply can be a concern. Sylvinite is more abundant and less expensive to process through solution mining and flotation. Key factors to the economics of processing alunite are that two valuable products are produced, alumina and potash. Also, production of potash from alunite is in the form of potassium sulfate which sells for about twice as much as the more commonly produced potassium chloride from sylvinite. Recent changes in world mineral economics (increased demand for minerals in Asia and higher mineral prices) have led to a re-examination of alternate sources of minerals like alunite. Recent increases in the commodity prices for potash have led to renewed interest in the Blawn Mountain deposit.

The Blawn Mountain Projects contains the four mineralized areas previously defined by ESI and Alumet as the NG Alunite deposit. In June 2011 PRC acquired a collection of Alumet technical reports and correspondence from a third party that had received the data as part of another business transaction with ESI.

The authors visited the Blawn Mountain Alunite Project property on March 15, 2012. Mr. Kerr had previously performed a site visit on the 9<sup>th</sup> and 10<sup>th</sup> days of February 2012. The authors certify that they have supervised the work as described in this report. The report is based on and limited by circumstances and conditions referred to throughout the report and on information at the time of this investigation. The authors have exercised reasonable skill, care and diligence to assess the information acquired during the preparation of this report.

The accuracy of resource and reserve estimates is, in part, a function of the quality and quantity of available data and of engineering and geological interpretation and judgment. Given the data available at the time this report was prepared, the estimates presented herein are considered reasonable. However, they should be accepted with the understanding that additional data and analysis available subsequent to the date of the estimates may necessitate revision. These revisions may be material. There is no guarantee that all or any part of the estimated resources or reserves will be recoverable.

### **3 RELIANCE ON OTHER EXPERTS**

Norwest has prepared this report specifically for PRC. The findings and conclusions are based on information developed by Norwest available at the time of preparation and data supplied by outside sources. Norwest staff has not conducted any independent field work for the preparation of this report and have relied on the results of exploration documented in various public reports and on recent drilling data supplied by PRC.

The authors have not relied on other experts in the preparation of this report. PRC has supplied the appropriate documentation that supports the Exploration/Option Agreement it holds with the State of Utah to be in good standing. The existence of encumbrances to the agreement has not been investigated. Other Norwest personnel assisted in the compilation and digitization of the historical data and documents and the information contained within, in developing a generalized mining layout and methodology, in developing preliminary concepts for mine support facilities, and addressing current metallurgical testing results and developing a conceptual approach to ore processing. All this work was reviewed and deemed reasonable for this level of study by the authors.

## 4 PROPERTY DESCRIPTION AND LOCATION

The PRC Blawn Mountain property is located in the southern Wah Wah Mountains of Beaver County, Utah about 180 air miles south-southwest of Salt Lake City, Utah (Figure 4.1). The property is situated west-southwest of Milford (30 air miles to the northeast) and west-northwest of Cedar City (55 air miles to the southeast). The property is located on the Wah Wah South 100,000-scale USGS topographic map and straddles four 24,000-scale maps: Lamerdorf Peak, Frisco SW, The Tetons, and Blue Mountain. The property occupies T.29S., R.15W., sec. 13-16, 21-29, 32-36 and T.30S., R.15W., sec 2 along the Blawn Wash and Willow Creek drainages that cover most of the historic NG Alunite property.

PRC controls the Blawn Mountain property through an Exploration/Option Agreement (ML 51983.0 OBA) administered through SITLA. The agreement consists of a tract of land that covers 11,549.2 acres (Figure 4.2). Table 4.1 provides a legal description of the controlled area. The Exploration/Option Agreement is issued to Utah Alunite, LLC, a 100% owned entity of PRC. There are two pre-existing mineral tracts consisting of a 40 acre tract (ML48699.0MC) along the western edge of the project area and a 155 acre tract (ML 48698.0 MC) within the PRC land package designated under the exploration agreement. . Another mineral tract of 640 acres is located approximately one mile east of the PRC property. Remaining lands surrounding the PRC property are predominantly a mix of federal lands administered by the U.S. Bureau of Land Management (BLM) and state lands administered by SITLA.

The SITLA agreement is a combined metalliferrous minerals and potash exploration and an option to a mining lease agreement with the following stipulations: 1) three year lease; 2) bonus payment of \$200,000; 3) \$6/acre each year (\$62,370/annum). At the end of the agreement an additional bonus payment of \$1,000,000 is required for issuance of a combined metalliferrous minerals and potash lease. Primary term of the lease will be for 10 years with a provision to extend at 5 year intervals after primary term provided lessee is either in production of leased minerals or in diligent development of leased minerals. Annual rental rate for a combined mineral lease would be \$1/acre as required by statute; in addition \$4/acre advanced minimum royalty which would be increased at \$1/acre commencing with the sixth lease year and each lease year thereafter. Combined lease will require a 4% gross royalty for metalliferrous minerals and a 5% gross royalty for potash and associated chlorides.



**TABLE 4.1**  
**LEGAL DESCRIPTION OF SITLA PROPERTY**

<b>T29S,R15W, SLB&amp;M</b>		<b>ACRES</b>
Sec. 13:	ALL	640.00
Sec. 14:	ALL	640.00
Sec. 15:	ALL	640.00
Sec. 16:	E ½	320.00
Sec. 21:	ALL	640.00
Sec. 22:	ALL	640.00
Sec. 23:	ALL	640.00
Sec. 24:	ALL	640.00
Sec. 25:	ALL	640.00
Sec. 26:	ALL	640.00
Sec. 27:	ALL	640.00
Sec. 28:	ALL	640.00
Sec. 29:	ALL	640.00
Sec. 32:	ALL	640.00
Sec. 33:	ALL	640.00
Sec. 34:	ALL	640.00
Sec. 35:	ALL	640.00
Sec. 36:	W½	320.00
<b>T30S, R15W, SLB&amp;M</b>		
Sec. 2:	Lots 1(47.38), 2(47.32), 3(47.28), 4(47.22), S½SN½, S½(ALL)	669.20

There are four main zones of mineralization identified by PRC. Area 1 is located along a northeast trending ridgeline in the northwest portion of the property. Area 2 is located on another ridgeline, parallel to Area 1 that extends from the center of the property towards the northeast corner. Area 3 is located in the southwest corner of the property and Area 4 is located west of Area 3 and south of Area 2. Area 1 is the primary focus of this report and has been the primary focus of past and current exploration efforts.

The two existing mineral leases located within the PRC exploration agreement area (ML 48698.0 MC and ML 48699.0 MC) are metallic mineral leases that includes aluminum but not potash. PRC can explore and delineate potash resources on these leases. PRC is currently working to secure additional mineral control of the 155 acre lease that extends across a portion of Area 2 either through an agreement with the lessee or through an adjudication process through SITLA.

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

### **5.1 ACCESSIBILITY**

The property is located about 20 miles west of the Union Pacific Railroad route, 15 miles south of Highway 21, and 50 miles west of Interstate 15, the main north-south travel corridor through Utah. The area is reached by traveling west from Milford 24 miles on Route 21 and then turning south onto a graveled secondary road and traveling approximately 17 miles. The coordinates for the approximate center of the property are 1,420,000 feet east and 587,000 feet north, Utah State Plane, NAD 27, South Zone. All coordinates given and used in maps and plans are in feet and in the above referenced coordinate system.

### **5.2 ARCHAEOLOGY**

Berge (1974) inventoried the archeological resources of ESI's proposed alunite mine and processing plant sites and located numerous archeological sites but none that were eligible for the National Register (Perry, 1977). U.S. BLM (1977) noted a high density of archeological sites south and southwest of the ESI-proposed mine site that were thought to be potentially important.

### **5.3 CLIMATE**

The Blawn Mountain area is semi-arid with hot, dry sunny summers of low humidity and cold winters. Based on climate data from the closest long-term weather station at Milford, U.S. BLM (1977) the climate can be describes as follows, "Average mean temperatures at Milford based on 30 years of observation range from 25.7°F in January to 74.3°F in July. Extremes range from a record low of -34°F to a record high of 105°F. Maximum temperatures in summer frequently exceed 90°F. Cold spells in winter with temperatures below 0°F occur from time to time but seldom last for more than a few days". Temperatures at the alunite mine and plant would be cooler throughout the year than at Milford because Blawn Mountain is at higher elevation. Average annual precipitation at Milford is 8.4 inches with the wettest month being March and the driest month being July. Snow does not generally persist in the valleys but can blanket the mountains through the winter season (U.S. BLM, 1977).

### **5.4 ENERGY CORRIDORS**

Two energy corridors pass to the east of the Blawn Mountain tract both of which trend roughly north-south, as shown in Figure 5.1. The first, located 22 miles east of the property, contains the Utah Nevada (UNEV) Gas Pipeline, the Intermountain Power Project electric

transmission line, and the federally designated, multimodal West-wide Energy Corridor (U.S. Department of Energy, 2011). The second located approximately 25 miles east of the property contains the Kern River gas pipeline. The West-wide Energy Corridor follows State Highway 21, 12 miles north of the Blawn Mountain property (U.S. BLM, 2011).

## **5.5 GRAZING**

A grazing allotment map (U.S. BLM, 2011) shows boundaries of cattle and sheep grazing allotments and boundaries of wild horse herd management areas (HMA). The entire Blawn Mountain alunite tract is covered by grazing allotments; mostly by the Bucket Ranch allotment. The alunite tract is not within a HMA but the Four Mile HMA adjoins the south boundary of the Blawn Mountain tract and covers more than 100 square miles.

## **5.6 LOCAL RESOURCES**

Construction of a mining operation and processing plant at Blawn Mountain would require local resources of contractors, construction materials, employees and housing for employees, and energy resources. The Milford area offers construction material such as sand and gravel from several sources, crushed limestone from the Graymont lime plant in the Cricket Mountains to the north of Milford, crushed stone from a railroad ballast quarry just north of Milford, and Portland cement from the Ashgrove Cement West plant at Leamington approximately (90) miles away. The nearby towns of Delta, Milford, Fillmore, and Cedar City could provide mine and plant workers and furnish housing for company employees. There are two nearby electrical corridors and there is sufficient electricity being supplied within the region from coal, geothermal and wind power plants.

## **5.7 PHYSIOGRAPHY**

Topographically, the Blawn Mountain area is situated in a typical Basin and Range setting. The ranges, consisting of north-south trending mountains, are generally steep and rugged with mountaintop elevations up to 7,900 feet above sea level. The ranges are separated by fault graben basins with deeply incised drainages. Pine Valley lies to the west of the Wah Wah Range and Wah Wah Valley lies to the east. The Blawn Mountain deposits occupy three of the smaller ridges in the southern Wah Wah Range. The mineral tracts include substantial low relief areas that have potential to support mine and plant facilities.

Seasonal runoff is channeled away from the Blawn Mountain alunite deposits by two main drainages. Blawn Wash drainage carries runoff toward Escalante Valley to the southeast and Willow Creek drainage carries runoff into Wah Wah Valley to the northeast.

## 5.8 SEISMOLOGY

Blawn Mountain area has low potential for occasional moderate earthquakes. Perry (1977) discussed the possibility of weak earthquakes in the Blawn Mountain area due to its proximity to the transition zone between the Colorado Plateau and Basin and Range physiographic provinces, an area termed the Intermountain Seismic Belt. Perry also mentions “a non-instrumented report of an earthquake with a modified Mercalli Intensity of III (nominally Richter 3.1), recorded October 26, 1885 between 0800 and 0900 hours near Frisco, about 12 miles northeast of the project area. Pankow, Arabasz, and Berlacu (2009) refined the seismic history of the region and delineated an area of mildly anomalous seismic activity in the Escalante Valley. The most significant earthquake that is discussed for the area is the 1908 Milford earthquake of local Richter Scale magnitude (ML) 5±

## 5.9 SURFACE OWNERSHIP

The Blawn Mountain Exploration/Option Agreement tract is entirely composed of Utah State-owned land surface managed by SITLA. The lands immediately around the property are predominantly federal lands managed by the BLM along with additional SITLA tracts.

## 5.10 TRANSPORTATION

The Blawn Mountain alunite property is accessed by secondary roads maintained by Beaver County and located near highway and rail transportation. State Highway 21 passes 12 miles to the north of the property, connecting Milford, Utah with Ely, Nevada to the northwest. State highways SR-21 and SR-130 pass about 30 miles east of the property connecting Milford, Utah to Cedar City, Utah to the south. I-15 is located approximately 63 miles to the east southeast accessed via SR-21 and SR-130.

The Union Pacific Railroad route connecting Salt Lake City, Utah to Las Vegas, Nevada passes approximately 20 miles to the east of the Blawn Mountain property.

## 5.11 VEGETATION

The Blawn Mountain area is located in the pinyon-juniper community as defined by the BLM (1977). This flora community is characterized by occurrence of Utah Juniper, single-leaf and double-leaf Pinyon Pine. Occasional patches of Mountain Mahogany, Gamble Oak, Ponderosa Pine, and Aspen occur at higher elevations with greater rain fall amounts. The valleys of the area have been extensively chained to remove Juniper and Pinyon and improve grass growth for grazing.

Vegetation in the valleys is mixed shrub-grass community characterized by seven shrubs: Big Sagebrush, Black Sagebrush, Big Rabbitbrush, Small Rabbitbrush, Greasewood, Winterfat,

and Matchweed. Galleta, Indian Ricegrass and Cheatgrass are the most common grasses across the property. An inventory by the BLM revealed no threatened or endangered species of vegetation (U.S. BLM, 1977).

## **5.12 WATER RESOURCES**

The Blawn Mountain area has no perennial streams. Water to support mining and milling will need to be sourced from ground water. USGS studies indicate substantial groundwater resources are present in the Wah Wah and nearby Pine Valley drainages. PRC is in the process of securing water rights and resources to support mining and milling.

## **5.13 WILDERNESS DESIGNATION**

The Blawn Mountain area has not been designated for study or inclusion for wilderness. In 1999 the BLM re-inventoried its lands for suitability for classification of U.S wilderness designation. Part of the Wah Wah Range north of the Blawn Mountain tract met the wilderness re-inventory criteria. The southern boundary of the re-inventoried Central Wah Wah wilderness area is about 5 miles north of the northern border of the Blawn Mountain tract.

## **5.14 WILDLIFE**

Deer, wild horse, antelope, cougar, raptors and other birds, coyote, bobcat, and fox all are common animals in the area. No endangered species are known to inhabit the Blawn Mountain area (U.S. BLM, 1977). A BLM map of wildlife management areas for the Cedar City Field Office (U.S. BLM, 2011) shows no special management areas within the property.

## **5.15 CONFLICTING DEVELOPMENT**

The Blawn Mountain area has a long history of mineral exploration, grazing, and outdoor recreation. No historical land use conflicts are known for the property and if the property is developed for mineral extraction, no future land use conflicts are anticipated. Recently, southwest Utah has experienced extensive conventional energy, alternative energy and energy infrastructure development in the vicinity of Blawn Mountain area. The Cedar City Field Office of the BLM compiled a draft map for the Resource Management Plan (USBLM, 2011). This draft map indicates that the tracts with geothermal, wind power, and solar energy potential would not conflict with Blawn Mountain development.

## 6 HISTORY

The extensive hydrothermal alteration of the southern Wah Wah Range has long been known and most of the prospecting in the area has been for metallic minerals associated with the hydrothermal alteration. Whelan (1965) was the first known geological investigation that discussed production of the Blawn Mountain alunite as a commodity. In the early 1970s ESI was simultaneously investigating deposits in Colorado, Arizona, Nevada, California and several deposits in Utah. In 1970 ESI started the first systematic exploration of the Blawn Mountain alunite which they called the NG alunite property; results were encouraging. That same year ESI entered into a joint venture agreement with National Steel Corp. of Pittsburgh, Pennsylvania and the Southwire Company of Carrollton, Georgia to open an alunite mine as a source of alumina to supply the National Steel/Southwire's jointly-owned aluminum plant at Hawesville, Kentucky (Parkinson, 1974). The partnership was called the Alumet Company and was headquartered in Golden, Colorado. ESI owned 50% of the partnership and National and Southwire each owned 25%.

The NG alunite deposit is a circular cluster of four alunite areas (Figure 6.1). These four areas were mapped, surface sampled, and drilled. While ESI continued investigating other deposits, they focused most of their resources on the NG deposits. Initial results convinced ESI to further focus development on Area C, now referred to as Area 1, with the intention of investigating it as their first mine site. Additional surface sampling, drilling, and collection of bulk samples (for pilot plant testing) at Area 1, were completed before April 1974. Seven test pits (Earth Sciences, Inc., 1989) were excavated in the north end of Area 1 for samples to send to the Alumet pilot plant in Golden, Colorado; the largest sample was a 3,000 ton (Krahulec, 2007) sample from a pit identified as number 5. The Golden pilot plant (designed by Hazen) had the capacity to process 12 to 18 tpd and operated for three years with occasional shutdowns to modify the process (Earth Sciences, Inc., 1989).

Alumet's concept was to build an integrated plant that would produce 500,000 tpy of alumina with by-products of 450,000 tpy of sulfuric acid, 250,000 tpy of potash (sulfate of potash), and aluminum fluoride (Parkinson, 1974). To achieve this level of production, Alumet planned to mine four million tons of alunite per year for 25 years (Perry, 1977). Alumet acquired subsidiary mining properties and resources needed to support the alunite plant. Alumet acquired a phosphate property near Soda Springs, Idaho. Phosphate was to be mined and calcined in Idaho and shipped to the Blawn Mountain plant where the by-product sulfuric acid would be used to make phosphate fertilizer. The Soda Springs, Idaho phosphate mine was also intended to produce by-product vanadium (Parkinson, 1974). Alumet also acquired a coal property on the Wasatch Plateau to the northwest in central Utah to provide fuel for the alunite plant. Local water rights were acquired and water wells have been drilled and tested. Local aggregate sources were evaluated for use in construction of the plant.

During this time Alumet refined their resource calculations, commissioned feasibility and environmental studies, continued improving their metallurgical process, and commissioned design of an open pit mine on the northeast end of Area C with a plant and tailings pond adjacent to the northeast (Figure 6.2). Despite this advanced stage of development, plant construction and mining never occurred due to challenging economics in the 1980s and depressed pricing for alumina and potash.

Previous resource estimates are difficult to relate to the current assessment for several reasons. Historical estimates centered on alumina as the primary product with potash as a secondary product. Cut-off grades were based on  $\text{Al}_2\text{O}_3$  grades versus  $\text{K}_2\text{O}$ . Previous reserve estimates for Area 1 are summarized in Table 6.1. ESI initially carried out resource estimates in 1972 to include Areas 1 to 4. Chapman, Wood, and Griswold Ltd. (CW&G) were retained to calculate a corresponding estimate. Pincock, Allen and Holt and Computer Associates Inc. (PAH/CAI) calculated the resources for the north end of Area 1 in 1975. None of these studies are deemed to be NI 43-101 compliant although reasonable methodologies were applied at the time.

Table 6.2 presents historical resource and reserve estimates for all four areas that were part of the Alumet NG Alunite project. Previous resource estimates did not specify potassium grades. Table 6.3 provides calculated  $\text{K}_2\text{O}$  and  $\text{K}_2\text{SO}_4$  contents based on  $\text{Al}_2\text{O}_3$  contents for the historical estimates in Table 6.2. In recent analytical work completed by PRC in a validation drilling program, Norwest has observed a direct linear correlation between  $\text{K}_2\text{O}$  and  $\text{Al}_2\text{O}_3$  values. Based on this correlation, a multiplier of 0.2809 is applied to  $\text{Al}_2\text{O}_3$  to derive  $\text{K}_2\text{O}$  content. Potassium sulfate,  $\text{K}_2\text{SO}_4$ , is calculated from  $\text{K}_2\text{O}$  using a factor of 1.8493.

**TABLE 6.1 AREA 1 HISTORICAL RESERVE ESTIMATES**

Category	ESI		CW&G		PAH/CAI	
	Tons	% $\text{Al}_2\text{O}_3$	Tons	% $\text{Al}_2\text{O}_3$	Tons	% $\text{Al}_2\text{O}_3$
Proven	119,900,000	14.3	89,000,000	13	129,400,000	14
Probable	22,700,000	12.8	62,800,000	13.2	17,700,000	14.8
Inferred	36,100,000	14.1	Not estimated		18,015,000	17.1
Total	178,700,000	14.1	151,800,000	13.1	165,185,000	14.4

**TABLE 6.2 HISTORICAL RESOURCE AND RESERVE ESTIMATES FOR BLAWN MOUNTAIN**

Deposit	Ore (000 Tons)	Alunite (%)	Al <sub>2</sub> O <sub>3</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (000 Tons)	Inventory Classification	Reference
Area 1	129,400	38.3	14.00	18,155	Proven	Couzens, 1975
Area 1	17,770	40.3	14.80	2,626	Probable	Couzens, 1975
Area 1	18,015	46.7	17.10	3,079	Inferred	Couzens, 1975
Area 1	165,185	39.4	14.50	23,869	Total	Couzens, 1975
Area 2	54,400	38.5	14.30	7,779	Indicated	Walker, 1972
Area 2	124,900	39.5	14.60	18,235	Inferred	Walker, 1972
Area 2	25,900	41.5	15.30	3,963	High-Grade Indicated	Walker, 1972
Area 2	179,300	39	14.50	25,999	Total	Walker, 1972
Area 3	11,600	44	16.20	1,879	Indicated	Walker, 1972
Area 3	281,400	44	16.20	45,587	Inferred	Walker, 1972
Area 3	7,300	47	17.30	1,263	High-Grade Indicated	Walker, 1972
Area 3	293,000	44	16.20	47,466	Total	Walker, 1972
Area 4	51,700	36.5	13.50	6,980	Indicated	Walker, 1972
Area 4	49,200	38	14.10	6,937	Inferred	Walker, 1972
Area 4	100,900	37	13.80	13,924	Total	Walker, 1972
<b>Total</b>	<b>738,385</b>	<b>41.1</b>	<b>15.0</b>	<b>111,175</b>	<b>Grand Total</b>	

**TABLE 6.3  
CALCULATED K<sub>2</sub>O AND K<sub>2</sub>SO<sub>4</sub> CONCENTRATIONS FOR HISTORICAL  
RESOURCE AND RESERVE ESTIMATES FOR BLAWN MOUNTAIN**

Deposit	Ore (000 Tons)	K <sub>2</sub> O* (%)	K <sub>2</sub> O (000 Tons)	K <sub>2</sub> SO <sub>4</sub> * (%)	K <sub>2</sub> SO <sub>4</sub> (000 Tons)	Inventory Classification	Reference
Area 1	129,400	3.98	5,147	7.36	9,518	Proven	Couzens, 1975
Area 1	17,770	4.20	747	7.78	1,382	Probable	Couzens, 1975
Area 1	18,015	4.86	875	8.98	1,618	Inferred	Couzens, 1975
Area 1	165,185	4.12	6,804	8.98	14,840	Total	Couzens, 1975
Area 2	54,400	4.06	2,210	7.51	4,087	Indicated	Walker, 1972
Area 2	124,900	4.15	5,181	7.67	9,580	Inferred	Walker, 1972
Area 2	25,900	4.35	1,126	8.04	2,082	High-Grade Indicated	Walker, 1972
Area 2	179,300	4.12	7,386	8.04	14,412	Total	Walker, 1972
Area 3	11,600	4.60	534	8.51	987	Indicated	Walker, 1972
Area 3	281,400	4.60	12,951	8.51	23,950	Inferred	Walker, 1972
Area 3	7,300	4.91	359	9.09	663	High-Grade Indicated	Walker, 1972
Area 3	293,000	4.60	13,485	9.09	26,630	Total	Walker, 1972
Area 4	51,700	3.84	1,983	7.09	3,667	Indicated	Walker, 1972
Area 4	49,200	4.01	1,971	7.41	3,645	Inferred	Walker, 1972
Area 4	100,900	3.92	3,956	7.41	7,474	Total	Walker, 1972
<b>Total</b>	<b>38,385</b>	<b>4.29</b>	<b>31,675</b>	<b>7.93</b>	<b>58,577</b>		

\*Calculated from Equivalent Al<sub>2</sub>O<sub>3</sub> Concentrations, 3.52K<sub>2</sub>O=>Al<sub>2</sub>O<sub>3</sub>; 1.8493K<sub>2</sub>O=>K<sub>2</sub>SO<sub>4</sub>



## 7 GEOLOGICAL SETTING AND MINERALIZATION

The Blawn Mountain alunite deposit is located in the southern Wah Wah Mountains, of the eastern Basin and Range province, in an area characterized by a thick Paleozoic sedimentary section that was, 1) thrust faulted during the Sevier orogeny, 2) buried under a thick layer of regionally distributed Oligocene volcanic rocks and locally derived volcanic rocks, 3) extended to the west by the Basin and Range event, 4) altered by H<sub>2</sub>S-rich hydrothermal alteration related to a postulated shallow laccolithic intrusive which domed, and altered the overlying calc-alkaline volcanic rock (Hofstra, 1984), and 5) affected by continual erosion of the ranges contributing to colluvial and alluvial deposition in the valleys. Blawn Mountain is located along the Blue Ribbon lineament (Rowley and others, 1978) within the Pioche mineral belt (Shawe and Stewart, 1976), a tectonic, structural, and igneous zone that contains a large number of metallic mineral mining districts with almost two dozen associated alunite vein and replacement deposits.

Figure 7.1 shows a diagrammatic cross-section through the Wah Wah Range centered on Blawn Wash and Figure 7.2 presents a diagrammatic cross-section through Area 1 at Blawn Mountain.

### 7.1 REGIONAL STRATIGRAPHY

Regional rock strata underlying the Wah Wah and Blawn Mountain areas are Proterozoic to Cenozoic Era in geologic age. Rock strata consist of varying types of volcanic tuffs, rhyolites, mafic flows, basalts, quartzites, limestones, dolomites, sandstones and shales. Also present are brecciated zones associated with volcanic and faulting activity.

The sedimentary and volcanic stratigraphy of the region is summarized in Table 7.1 below.

### 7.2 ALUNITE OCCURRENCES

Hofstra (1984) postulates the presence of a relatively shallow laccolithic intrusion as the source of the hydrothermal fluids that created the alunite deposits, based on radial doming of the extrusive Miocene and Oligocene volcanic strata over an area of 6 miles north-south and 3 miles east-west. The laccolith may have intruded along a zone of weakness such as the Blue Mountain thrust. The high temperature H<sub>2</sub>S-rich fluid associated with the laccolith rose along the fracture zones created in the overlying strata by the intrusion. The fluid then penetrated into the Miocene and Oligocene volcanic layers where it encountered and boiled the groundwater. With the presence of oxygen that was transported in the groundwater, the H<sub>2</sub>S was oxidized into super-heated aqueous solutions of H<sub>2</sub>SO<sub>4</sub> and the resulting solution altered the volcanic rock along fracture zones associated with normal faulting and in zones of higher porosity/permeability. The more porous the fracture zones and strata, the more mineralization occurred. The alunite alteration has been K-Ar age dated at 22.5 million years ago (Hofstra, 1984).

**TABLE 7.1 REGIONAL STRATIGRAPHY**

Eras	Periods	Epochs	Groups	Formations	Members	
Cenozoic	Quaternary				Alluvium And Colluvium	
	Tertiary	Pliocene			Steamboat Mountain	Basalt
		Miocene	Quichapa	Blawn		Rhyolite
						Tuff
						Bauers Tuff
						Mafic Flow
						Garnet Tuff
		Oligocene	Needles Range	Isom		Bald Hills Tuff
						Three Forks Tuff
					Lund	
	Wah Wah Springs					
				Cottonwood Wash Tuff		
				Escalante Desert		
			Tuff Of Towers Point, Volcanic Breccia	Conglomerate		
	Paleocene - Eocene			Claron		
Mesozoic	Jurassic			Temple Cap		
	Triassic	Navajo Sandstone	Chinle		Petrified Forest	
					Shinarump	
					Moenkopi	
Paleozoic	Permian	Oquirrh	Gerster Limestone			
					Pympton Limestone	
					Kaibab Limestone	
					Ely Limestone	
					Callville Limestone	
	Pennsylvanian	Woodman	Gardison Limestone			
					Fitchville	
	Mississippian			Pinyon Peak Limestone		
	Devonian	Simonson Dolomite	Sevy Dolomite			
					Laketown Dolomite	
					Ely Springs Dolomite	
	Silurian			Eureks Quartzite		
	Ordovician	Kanosh Shale	Juab Limestone			
					Wah Wah Limestone	
					Fillmore Limestone	
					House Limestone	
					Notch Peak	
					Orr	
	Cambrian	Wah Wah Summit	Trippe Limestone			
					Pierson Cove	
				Eye Of Needle Limestone		
				Swasey Limestone		
				Whirlwind		
				Dome Limestone		
				Peasley Limestone		
				Chisholm Shale		
				Howell Limestone		
				Pioche		
				Prospect Mountain Quartzite		
Proterozoic	Precambrian			Mutual		

## 7.3 STRUCTURAL GEOLOGY

The Blawn Mountain deposit lies within the eastern Basin and Range province. During the Late Cretaceous Sevier orogeny the region was subjected to thrust faulting and folding. Major thrust faults are the Wah Wah, Teton, Dry Canyon and Blue Mountain. The Wah Wah thrust emplaced upper Proterozoic and overlying Cambrian strata over Ordovician to Pennsylvanian strata. The Teton thrust emplaced Ordovician and Silurian strata over Silurian and Devonian carbonates and the Dry Canyon thrust emplaced Silurian and Devonian carbonates over Pennsylvanian and Mississippian strata. The Blue Mountain thrust emplaced Cambrian and younger age carbonates over Jurassic strata.

Regionally there are four sets of normal faults that relate to Basin and Range block faulting. These faults generally trend west-northwest, northeast, northwest and north-south. The Blawn Wash area is a graben bounded by west-northwest and northeast faults and the bounding volcanic ridges that host the alunite mineralization.

Within the project area are several minor normal faults that offset the alunite deposit. Figure 7.3 depicts the location of these local normal faults as well as the mapped surface geology.

## 7.4 PROPERTY GEOLOGY

The Wah Wah Range is partly composed of a thick section of marine, Paleozoic and Triassic quartzites and carbonates (Miller, 1966) deposited in the miogeocline of the western continental shelf. This area was covered by ocean until the Jurassic Period when it was uplifted during the Sonoma orogeny. The first major deformation of this area was during the Cretaceous/Tertiary Sevier orogeny which thrust older basement rocks over younger rocks along both the Wah Wah and Blue Mountain thrusts, contributing to the folding of the sediments associated with the upper thrust plate (Ordovician to Pennsylvania Age strata).

Regional volcanism deposited a thick layer of calc-alkaline volcanic rocks across the area presently occupied by the southern Wah Wah Mountains. The Basin and Range extensional event created much of the current topography of the area by stretching the region about 40 miles westward; creating mountains with intervening valleys separated by range-bounding, normal faults that rotate at depth into a regional decollement. Local bimodal (calc-alkaline and basaltic) volcanism also occurred in the southern Wah Wah Mountains, associated with Basin and Range extension which began about 26 million years ago. The sedimentary and volcanic stratigraphy of Blawn Mountain is summarized in Table 7.2 below.

**TABLE 7.2**

**STRATIGRAPHY OF THE BLAWN MOUNTAIN AREA FROM KRAHULEC (2007) AS MODIFIED FROM HOFSTRA (1984)  
AND ABBOTT AND OTHERS (1983).**

Eras		Periods	Epochs	Groups	Formations	Members	
Cenozoic		Quaternary				Alluvium And Colluvium	
		Tertiary	Pliocene			Steamboat Mountain	Basalt
			Miocene	Quichapa		Blawn	Rhyolite Tuff Bauers Tuff Mafic Flow Garnet Tuff
			Oligocene			Isom Bullion Canyon Volcanics	Bald Hills Tuff Three Creeks Tuff
				Needles Range		Lund Wah Wah Springs Cottonwood Wash Tuff Escalante Desert	
					Conglomerate		
Paleozoic	Upper Plate of Wah Wah Thrust	Cambrian			Orr Wah Wah Summit Trippe Limestone Pierson Cove Eye Of Needle Limestone Swasey Limestone Whirlwind Dome Limestone Peasley Limestone Chisholm Shale Howell Limestone Pioche Prospect Mountain Quartzite		
Proterozoic					Mutual		
Paleozoic	Lower Plate of Wah Wah Thrust	Pennsylvanian			Callville Limestone		
		Mississippian			Woodman Gardison Limestone		
		Devonian			Fitchville Pinyon Peak Limestone Simonson Dolomite Sevy Dolomite		
		Silurian			Laketown Dolomite		
		Ordovician			Ely Springs Dolomite Eureka Quartzite Kanosh Shale Juab Limestone		

**7.5 MINERALIZATION**

Alunite mineralization is found on four ridges, three of which occur within PRC’s exploration tracts. Acid sulfate alteration associated with a shallow, possibly laccolithic intrusion altered the silicic-alkalic rhyolite porphyries, flows and tuffs belonging to the Miocene Blawn Formation and the Oligocene Needles Range Group. Alteration tends to be in linear bodies reflecting the role of normal faults in controlling the mineralization. Alteration is zoned away from the point of hydrothermal fluid upwelling. The mineralized ridges are erosional remnants of a once larger altered area. The alteration zoning types as described by Hofstra (1984) are summarized in Table 7.3.

**TABLE 7.3  
MINERAL ALTERATION ZONES OF ACID SULFATE ALTERATION AT BLAWN MOUNTAIN (MODIFIED FROM HOFSTRA, 1984). ALTERATION INTENSITY INCREASES FROM TOP TO BOTTOM IN THE LIST.**

<b>Zone Name</b>	<b>Mineral Assemblage</b>	<b>Rock Texture Destroyed?</b>
Low Propylitic	chlorite-calcite ± quartz	No
High Propylitic	quartz-epidote-montmorillonite-sericite ± pyrite ± kaolinite± quartz ± calcite ± illite	No
Hematite-Clay	hematite-kaolinite-chlorite-montmorillonite ± alunite ± sericite	No
Quartz-Alunite	quartz-alunite ± kaolinite ± pyrophyllite ± cristoballite ± hematite	Mostly
Silica Cap	quartz ± opal ± cristoballite ± tridymite	Yes
Quartz-Sericite-Alunite	quartz-sericite-pyrite ± alunite	Yes

Krahulec (2007) described the appearance of rocks from the silica cap and quartz-alunite zone as follows, “The Silica Cap is a zone of intense silicification believed to be the near-surface manifestation of the hydrothermal channelways. The silica is typically buff, dense, and massive but may be quite porous and vuggy locally and resemble a siliceous sinter . . . . On the surface the Quartz-Alunite alteration zones are composed of white to cream to buff to gray to pink, generally fine grained, punky to dense, intermixed alunite and silica with only minor amounts of other impurities, mainly iron . . . . Alunite also occurs locally as coarse (>0.5 inch), lathy, typically pink crystals in veins. Kaolinite becomes increasingly important, at the expense of alunite, in the Quartz-Alunite zone near the boundary with the Hematite-Clay zones and also where the Quartz-Alunite zones are cut by faults (Walker, 1972). Dickite (a high-temperature member of the kaolinite group) is reported by Whelan (1965) and Thompson (1991) in the Quartz-Alunite zone”.

Figure 7.4 depicts mapping by Hofstra of the alteration facies in the Blawn Mountain area and its effect on topography. The extremely erosion resistant Silica Cap forms the tops of peaks and the underlying highly erosion resistant Quartz-Alunite facies forms the steepest parts of the ridges. In cross section the alteration zones have two basic forms, a nested-cone geometry and a relatively flat-lying form, as shown in Figure 7.5. Krahulec gives the following description of the two geometries, “The cone-shaped (narrow end at the base) zones are interpreted as the primary area of strong hydrothermal upwelling . . . and the adjoining flat-bottomed zones are recognized as permeability-controlled areas above the paleo-ground-water table where steam-heated  $H_2S$  is oxidized to  $H_2SO_4$ . Only the central portion of Area C (Area 1) at Blawn Mountain is clearly a funnel-shaped zone. The other flat bottomed alunite zones are strongly controlled by higher porosity and permeability of the host volcanic rocks, while the hydrothermal cones are largely independent of these factors (Hofstra, 1984)”. Krahulec continues this discussion by quoting Hofstra, “. . . The control of permeability on the degree of alteration intensity is most important near the margins of Quartz-Alunite altered zones. Alteration is pervasive and unaffected by variations in the permeability of the host rocks”. The alteration zones tend to be thicker in cone-shaped areas than in flat-lying areas. It is possible that there were more cone-shaped feeder zones . . . but they were eroded or are buried under valley fill.

Figure 7.6 shows the geometry of the Area 1 alunite alteration zone, derived from the block model used in the resource calculations presented in this report.

## **8 DEPOSIT TYPES**

While there is no known formal industrial mineral ore deposit model for alunite, all of the characteristics of a potential model and some exploration criteria could be derived from three publications: Hall (1978), Hall and Bauer (1983), and Hofstra (1984).

The local alunite deposit has been described, in the above mentioned publications, as hydrothermal alteration of calc-alkaline volcanic rocks.

## **9 EXPLORATION**

The Blawn Mountain area was first evaluated by ESI as part of a nationwide alunite exploration program in 1969 which included literature searches, aerial reconnaissance for the bleached alunite zones, and field studies. In 1970 ESI started the first systematic exploration of the Blawn Mountain alunite which they referred to as the NG alunite property. Initial exploration focused on four separate mineralized zones located on along three ridges. All four of these mineralized zones are completely within the current PRC lease holding. ESI conducted mapping, surface sampling and drilling before focusing its attention on the northwest ridge now referred to as Area 1. Figure 9.1 shows the rotary drill locations completed by ESI at Blawn Mountain.

After acquiring the property in 2011, PRC initiated a validation drilling program on Area 1 primarily to validate the previous exploration efforts. Under the guidance of NAE, a combination of 19 core holes and 15 reverse circulation holes were completed on Area 1 between October 2011 and February 2012. During Norwest's first site visit in February, additional recommendations were made to the validation drilling program that included the two final reverse circulation holes and some adjustments to the sample preparation procedures. All 34 drill holes were twinned to locations of previous drill holes completed by ESI. Figure 9.2 shows the drilling completed by PRC.



## 10 DRILLING

ESI company records indicate a total of 320 drill holes were completed on their NG Alunite deposit. All but three of these holes are located within the current PRC exploration areas. The three holes not located within the PRC tracts are located a short distance outside the property boundary to the southeast. Two-hundred-eighty-seven (287) holes were completed on Area 1, eighteen (18) holes at Area 2, and twelve (12) holes at Area 3. Six of the drill holes located in Area 2 are located within the 155 acre mineral tract (ML 48698.0 MC) not under PRC control.

ESI used air-track percussion drilling and conventional rotary drilling in its exploration efforts. Air-track drilling was primarily used as a prospecting tool to test the ground where there were poor bedrock exposures. Rotary drilling was used to define subsurface geology and collect samples for analysis.

There are numerous drill site locations where multiple holes have been drilled. This was due to:

- Air-track drilling being first used at several sites where there were poor surface exposures to identify sites to be followed with rotary drilling.
- Adverse drilling conditions were encountered at several sites that required abandoning a drill hole, moving over a few feet on the drill pad and making another attempt.
- Several locations where holes were re-entered or drilled a second time to collect additional information.

ESI completed its drilling in three stages:

- Reconnaissance drilling in 1971 completing 10 holes for a total of 2,650 feet. Three holes were completed on Area 1, four holes at Area 2, and three holes at Area 3.
- Exploration drilling in 1972 completing an additional 42 drill holes. Sixteen holes were completed at Area 1 for a total of 4,438 feet, fourteen holes were completed at Area 2 for a total of 2,865 feet, nine holes were completed at Area 3 for a total of 2,590 feet, and three holes were completed on a fourth area outside the current PRC lease for a total of 740 feet.
- Development drilling in 1973 and 1974 on Area 1. Drilling was roughly aligned to a 300 (NW-SE) by 500 (NE-SW) grid pattern oriented to the ridgeline. A total of 268 air-track and rotary holes were completed for a total footage of 46,267 feet.

Table 10.1 summarizes the drilling completed at Blawn Mountain. ESI did not maintain complete records for most of the air-track drill holes and some of the abandoned holes. Complete records were only maintained for holes with assays. Norwest has geologic logs for all holes, but is missing coordinates for the air-track holes and some abandoned holes.

**TABLE 10.1 DRILL HOLE SUMMARY**

Drill Hole ID	USP-South NAD27 (ft)			Total Depth (ft)	Lithology	Assays	Model
	Eastings	Northing	Elevation				
<b>ESI Drilling</b>							
A1	1062660	10421295	7120	255	X	X	X
A2	1063582	10420152	6920	290	X	X	X
A3	1062021	10420051	6940	455	X	X	X
A4	1064407	10420741	6820	140	X	X	X
A5	1062701	10420364	7020	100	X	X	X
A6	1062001	10420580	7200	410	X	X	X
A7	1061837	10421134	7380	630	X	X	X
A8	1061617	10421159	7340	100	X	X	X
A9	1061164	10421159	7360	410	X	X	X
A10	1061824	10421672	7215	100	X	X	X
A11	1061954	10422450	7120	300	X	X	X
A12	1061907	10422082	7180	400	X	X	X
B1	1064970	10429344	7140	315	X	X	X
B2	1067658	10432547	7340	260	X	X	X
B3	1066478	10432175	7350	425	X	X	X
B4	1065866	10430843	7140	150	X	X	X
B5	1064895	10427911	6980	100	X	X	X
B6	1068044	10432016	7250	200	X	X	X
B7	1068644	10432643	7140	135	X	X	X
B8	1069421	10435685	7060	170	X	X	X
B9	1070452	10435418	7020	350	X	X	X
B10	1069620	10433459	7020	280	X	X	X
B11	1070614	10434708	6940	230	X	X	X
B12	1067981	10430389	7030	60	X	X	X
B12A	1067926	10430294	7000	200	X	X	X
B13	1066710	10431868	7280	300	X	X	X
B14	1067196	10430631	7050	360	X	X	X
B15	1065718	10432131	7120	130	X	X	X
B16	1070162	10433301	6940	240	X	X	X
B17	1067278	10431231	7070	110	X	X	X
C1	1060515	10435797	7446	890	X	X	X
C2	1057378	10433218	7460	40	X	X	X
C3	1056141	10431792	7480	80	X	X	X
C4	1058714	10434443	7330	250	X	X	X
C5	1060261	10436473	7370	270	X	X	X
C6	1060427	10436057	7380	400	X	X	X
C7	1062072	10436503	7595	600	X	X	X
C8	1062548	10436391	7620	450	X	X	X
C8A	1062540	10436391	7620	30		X	
C8B	1062542	10436385	7620	60		X	
C9	1060460	10435503	7340	650	X	X	X

Drill Hole ID	USP-South NAD27 (ft)			Total Depth (ft)	Lithology	Assays	Model
	Easting	Northing	Elevation				
C10			7460	355		X	
C10A	1059312	10435011	7457	620	X	X	X
C11	1061984	10436870	7420	240	X	X	X
C12			7470	50		X	
C12A	1061262	10436403	7470	220	X	X	X
C13	1062091	10435899	7380	270	X	X	X
C14	1059229	10434558	7380	200	X	X	X
C15	1059173	10435230	7320	170	X	X	X
C16	1055326	10431521	7500	43	X	X	X
C17				10	X	X	
C18	1061764	10436294	7404	11	X	X	X
C19				12	X		
C20				15	X		
C21				11	X		
C22				11	X		
C23A				10	X		
C23B				23	X		
C24				10	X		
C25				23	X		
C26				11	X		
C27				11	X		
C28				11	X		
C29				11	X		
C30				11	X		
C31				23	X		
C32				23	X		
C33				23	X		
C34				23	X		
C34A	1059223	10434453	7455	23	X	X	X
C35				23	X	X	
C36				23	X	X	
C37				11	X	X	
C38	1061999	10435961	7408	47	X	X	X
C39	1061474	10436083	7435	47	X	X	X
C40				30	X		
C41				23	X	X	
C42				12	X	X	
C43				35	X	X	
C44	1060409	10436549	7380	60	X	X	X
C45				30	X	X	
C46				20	X	X	
C47				15	X		
C48				12	X		

Drill Hole ID	USP-South NAD27 (ft)			Total Depth (ft)	Lithology	Assays	Model
	Easting	Northing	Elevation				
C49				10	X		
C50				12	X	X	
C51				30	X	X	
C52				10	X		
C53				12	X	X	
C54							
C55	1062549	10435630	7189	140	X	X	X
C56				8	X		
C57				7	X		
C58				30	X		
C59				12	X	X	
C60				12	X		
C61				20	X		
C62	1061403	10436915	7280	20	X	X	X
C63				24	X		
C64	1062490	10437351	7251	71	X	X	X
C65	1062671	10437218	7252	20	X	X	X
C66	1062898	10437072	7213	40	X	X	X
C67	1063191	10436935	7190	12	X	X	X
C68				30	X		
C69	1063567	10436482	7161	40	X	X	X
C70				12	X		
C71				20	X		
C72	1062912	10435760	7176	40	X	X	X
C73				40	X		
C74				12	X		
C75				12	X		
C76				20	X	X	
C76A				10	X		
C76B				20	X		
C77	1061745	10435743	7275	70	X	X	X
C78				30	X		
C79	1061452	10435850	7315	50	X	X	X
C80				60	X	X	
C81				10	X		
C82	1061045	10435867	7360	60	X	X	X
C83				12	X		
C84				10	X		
C85				60	X	X	
C86				35	X	X	
C87				36	X	X	
C87A				60	X	X	
C88	1060317	10435801	7453	60	X	X	X

Drill Hole ID	USP-South NAD27 (ft)			Total Depth (ft)	Lithology	Assays	Model
	Easting	Northing	Elevation				
C89	1060668	10435901	7460	60	X	X	X
C90				60	X	X	
C91				15	X		
C91A				20	X	X	
C91B				18	X		
C91C	1062272	10436468	7645	80	X	X	X
C92				20	X		
C92A	1062387	10436455	7650	84	X	X	X
C93				16	X		
C93A	1062663	10436319	7600	70	X	X	X
C94	1061965	10436161	7475	140	X	X	X
C95	1061893	10436108	7450	53	X	X	X
C96	1062126	10436083	7457	60	X	X	X
C97	1059483	10435324	7335	60	X	X	X
C98	1058901	10435101	7343	140	X	X	X
C99	1058725	10434880	7350	140	X	X	X
C100	1058963	10434504	7371	140	X	X	X
C101	1059050	10434285	7259	140	X	X	X
C102	1059362	10434283	7245	136	X	X	X
C103	1059603	10434455	7255	140	X	X	X
C104	1062073	10435541	7223	79	X	X	X
C105	1063426	10436061	7185	118	X	X	X
C106	1063693	10436223	7197	99	X	X	X
C107	1063624	10436403	7167	118	X	X	X
C108			7167	65	X	X	
C109	1062529	10437332	7249	24	X	X	X
C110	1062031	10437260	7278	20	X	X	X
C111				35	X	X	
C112				26	X		
C113A				16	X		
C113B				12	X		
C113C				9	X		
C113D				5	X		
C113E				13	X		
C114				10			
C115	1060202	10435977	7410	57	X	X	X
C116	1061510	10436093	7440	110	X	X	X
C117	1060683	10436692	7362	315	X	X	X
C118	1060794	10436286	7404	180	X	X	X
C119	1061999	10435961	7408	150	X	X	X
C120	1062517	10436056	7428	100	X	X	X
C121	1059764	10435709	7325	68	X	X	X
C121A				6			

Drill Hole ID	USP-South NAD27 (ft)			Total Depth (ft)	Lithology	Assays	Model
	Easting	Northing	Elevation				
C121B				6			
C122				140	X	X	
C123				140	X	X	
C123A				5	X		
C123B				11	X		
C124				150	X	X	
C125	1060472	10435687	7447	400	X	X	X
C126				150	X	X	
C127				130	X	X	
C128				24	X		
C129A				10	X		
C129B				11	X		
C129C				18	X		
C129D				10	X		
C129E				10	X		
C130	1060464	10435949	7446	650	X	X	X
C131				150	X	X	
C132				150	X	X	
C132A				22	X		
C132B				10	X		
C133A				28	X		
C133B				30	X		
C134				77	X	X	
C135	1063021	10436265	7451	210	X	X	X
C136				48	X	X	
C137				100	X	X	
C138				50	X	X	
C139				125	X	X	
C140	1062882	10436468	7451	400	X	X	X
C141				107	X	X	
C142				90	X	X	
C143				150	X	X	
C144	1063014	10435790	7177	95	X	X	X
C145	1060341	10436276	7382	545	X	X	X
C146				140	X	X	
C146A				10	X		
C147				144	X	X	
C148	1059982	10435999	7360	48	X	X	X
C148A				10	X		
C149				20	X		
C149B				10	X		
C149C				5	X		
C150	1062529	10436748	7470	300	X	X	X

Drill Hole ID	USP-South NAD27 (ft)			Total Depth (ft)	Lithology	Assays	Model
	Easting	Northing	Elevation				
C151	1059742	10436598	7191	60	X	X	X
C152	1059749	10436545	7189	47	X	X	X
C153	1062918	10437059	7210	200	X	X	X
C154	1063372	10436832	7167	150	X	X	X
C155	1061673	10436720	7435	250	X	X	X
C156	1061701	10436569	7511	450	X	X	X
C157	1060821	10436105	7439	490	X	X	X
C158	1060737	10436459	7359	330	X	X	X
C159	1061211	10436698	7332	300	X	X	X
C160	1061609	10437045	7289	220	X	X	X
C161	1062737	10436005	7400	300	X	X	X
C162	1062517	10436056	7428	370	X	X	X
C163	1061782	10436042	7411	240	X	X	X
C164	1061345	10436095	7427	420	X	X	X
C165	1061794	10435681	7270	150	X	X	X
C166	1061383	10435846	7197	200	X	X	X
C167	1060690	10435445	7272	450	X	X	X
C168	1060370	10435240	7206	420	X	X	X
C169	1059930	10435211	7237	550	X	X	X
C170A	1060134	10435232	7222	810	X	X	X
C171	1059882	10435569	7357	700	X	X	X
C172	1060164	10435511	7353	635	X	X	X
C173	1060721	10435648	7380	620	X	X	X
C174	1060918	10435801	7338	435	X	X	X
C175	1059883	10434952	7233	900	X	X	X
C176	1059789	10434732	7233	540	X	X	X
C177	1060761	10436266	7403	370	X	X	X
C178	1060260	10436000	7407	465	X	X	X
C178A				15	X		
C179	1060062	10435773	7408	750	X	X	X
C180	1059726	10435417	7346	700	X	X	X
C181	1059579	10435219	7389	810	X	X	X
C182	1062093	10436224	7524	400	X	X	X
C183	1059699	10434971	7336	700	X	X	X
C184	1061761	10436301	7519	450	X	X	X
C185			7313	10			
C185A	1059786	10435220	7313	540	X	X	X
C186	1061295	10436416	7471	400	X	X	X
C187	1059484	10435324	7335	536	X	X	X
C188	1059759	10435850	7304	285	X	X	X
C189	1059418	10434759	7426	540	X	X	X
C190	1059932	10436146	7308	280	X	X	X
C191	1060207	10436705	7312	248	X	X	X

Drill Hole ID	USP-South NAD27 (ft)			Total Depth (ft)	Lithology	Assays	Model
	Easting	Northing	Elevation				
C192	1060607	10436826	7295	250	X	X	X
C193	1061122	10436770	7275	710	X	X	X
C194	1059007	10434776	7458	555	X	X	X
C195	1058920	10434628	7436	580	X	X	X
C196	1059189	10434581	7408	240	X	X	X
C197	1059995	10435897	7371	780	X	X	X
C198	1063224	10436296	7350	255	X	X	X
C199	1062877	10436730	7359	200	X	X	X
C200	1060384	10436168	7392	120	X	X	X
C201				42	X		
C201A	1060327	10436417	7383	79	X	X	X
C202	1063224	10436296	7350	50	X	X	X
C202A				10	X		
C203	1063101	10436492	7370	30	X	X	X
C203A				30	X		
C204	1062459	10436967	7373	79	X	X	X
C205	1062000	10437001	7375	133	X	X	X
C206	1061643	10436871	7373	32	X	X	X
C206A				10	X		
C207	1059603	10434455	7255	154	X	X	X
C208				80	X	X	
C208-45	1060370	10435240	7206	120	X	X	X
C208-60	1060370	10435240	7206	80	X	X	X
C209	1059958	10436054	7344	154	X	X	X
C209A				154	X	X	
C210	1060885	10435719	7316	102	X	X	X
C211				32	X	X	
C211A	1059196	10435168	7367	42	X	X	X
C211B				32	X		
C212				35	X	X	
C212A	1058905	10435015	7373	112	X	X	X
C213A				10	X		
C213B				10	X	X	
C213C				20	X		
C213D	1058798	10434795	7381	134	X	X	X
C214	1061063	10436835	7230	134	X	X	X
C215	1061140	10435871	7330	340	X	X	X
C216				20	X		
C216A	1060603	10436924	7265	92	X	X	X
C217	1060214	10436623	7345	94	X	X	X
C218				134	X	X	
C219				134	X	X	
C220	1061245	10436551	7409	500	X	X	X



Drill Hole ID	USP-South NAD27 (ft)			Total Depth (ft)	Lithology	Assays	Model
	Easting	Northing	Elevation				
C221A				10	X		
C221B				10	X		
C221C				30	X		
C221D				20	X		
C222				60	X	X	
C223				60	X	X	
C224A				10	X		
C224B				10	X		
C224C				20	X	X	
C225				50	X	X	
C225A				60	X	X	
C226				80	X	X	
C226A				72	X	X	
C227				45	X	X	
C227A				120	X	X	
C228	1062459	10436967	7373	200	X	X	X
C229	1062000	10437001	7375	200	X	X	X
C230	1061643	10436871	7373	200	X	X	X
C230A				200	X		
<b>PRC Drill Holes</b>							
BM1	1421006	594151.7	7332	229	X	X	
BM2	1419398	591908.7	7255	146	X	X	
BM3	1421057	593856.7	7470	280	X	X	
BM3A	1421057	593856.7	7470	200	X	X	
BM4	1420055	593454.7	7407	368	X	X	
BM5	1420136	593730.7	7382	480	X	X	
BM6	1418984	592034.7	7408	301	X	X	
BM7	1421779	594323.7	7420	133	X	X	
BM8	1419790	593350.7	7371	790	X	X	
BM8A	1419790	593350.7	7371	800	X	X	
BM9	1420267	593140.7	7447	477	X	X	
BM10	1418803	592230.7	7458	536	X	X	
BM11	1419521	592869.7	7346	550	X	X	
BM11A	1419521	592869.7	7346	457	X	X	
BM12	1422312	593509.7	7428	300	X	X	
BM13	1421247	593303.7	7315	200	X	X	
BM14	1420255	592956.7	7340	370	X	X	
BM14A	1420255	592956.7	7340	273	X	X	
BM14B	1420255	592956.7	7340	650	X	X	
BM15	1420165	592693.7	7206	380	X	X	
BM16	1421886	593352.7	7380	228	X	X	
BM16A	1421886	593352.7	7380	200	X	X	
BM17	1419929	592685.7	7222	410	X	X	

Drill Hole ID	USP-South NAD27 (ft)			Total Depth (ft)	Lithology	Assays	Model
	Easting	Northing	Elevation				
BM17A	1419929	592685.7	7222	820	X	X	
BM18	1421577	593495.7	7411	198	X	X	
BM19	1419960	592964.7	7353	651	X	X	
BM20	1421866	593956.7	7595	400	X	X	
BM21	1419678	592405.7	7233	810	X	X	
BM22	1421141	593548.7	7427	338	X	X	
BM23	1420112	593254.7	7453	198	X	X	
BM24	1420616	593558.7	7436	431	X	X	
BM25	1419677	593022.7	7357	790	X	X	
BM26	1421495	594023.7	7511	420	X	X	
BM27	1421888	593677.7	7524	300	X	X	
BM28	1420259	593402.7	7446	700	X	X	

PRC completed a validation drilling program on Area 1 between October 2011 and February 2012. All drill sites were twinned to locations of previous drill holes completed by ESI and were oriented to provide adequate spatial representation of the deposit. Nineteen (19) of the PRC holes were drilled using wire-line coring methods, continuously collecting HQ (2.5 inch diameter) core. A total 6,764 feet of drilling was accomplished through core drilling with an average recovery of 91 percent. The remaining 15 drill holes were completed using reverse-circulation (RC) drilling equipped with either a down-hole hammer or deep-hole bit. A total of 8,050 feet were completed with RC drilling.

NAE managed logistics, logging, and sampling for the PRC program. Two different drilling contractors were used in the RC drilling. It was quickly recognized by NAE that the first drilling contractor was having difficulty recovering sufficient sample volumes. After several measures were employed to improve sample returns, NAE brought in a second drilling contractor to complete the RC drilling. The second contractor did not experience the same problems and was able to deliver adequate sample volumes and complete the drilling program. The first drilling contractor completed seven RC holes for a total of 4,210 feet. None of the samples from these seven holes have been used or incorporated by PRC in their evaluation of Blawn Mountain. The second drilling contractor completed 8 holes for a total of 3,840 feet. Samples and data from these holes are being used by PRC in their evaluation of the deposit.

## 11 SAMPLE PREPARATION, ANALYSES AND SECURITY

### 11.1 SAMPLING METHOD AND APPROACH

From 1969 through 1974, ESI collected samples from rotary drilling on 10 foot intervals. ESI also collected extensive outcrop and trench samples. For drilled samples, the material penetrated (alunite, clay, dolomite, non-ore) was reported in ten foot increments along with analytical results (data column headings were: %  $\text{Al}_2\text{O}_3$  by  $\text{SO}_3$  determination, % soluble  $\text{Al}_2\text{O}_3$ , %  $\text{Al}_2\text{O}_3$  by K + Na determination, %  $\text{K}_2\text{O}$ , and %  $\text{Na}_2\text{O}$ ). In some drill holes, lab analysis was only performed on samples at every 30 to 50 feet or on composite samples from four 10-foot intervals. For surface samples, the alumina analysis of the sample was typically plotted by location on a resource plate.

For PRC's validation drilling program logistics, logging, and initial sample preparation has been managed by NAE following recommendations made by Norwest. NAE has maintained chain of custody for all samples from the time of collection at the drill sites through initial sample preparation to delivery of samples at the ALS Minerals facility in Winnemucca, NV where they have undergone further preparation for analysis. For PRC's validation drilling program, NAE collected samples on 10-foot intervals for core holes and on five-foot intervals for RC holes. Geologic logs have been maintained for all drill holes and include descriptions for lithology, alteration, and recovery. In addition, core logs provide detail on fractures and orientations. Following logging, core was transported to a preparation facility set up by NAE where the core was cut longitudinally into half and quarter-core sections. Core samples submitted for analyses are comprised of 10-foot quarter-core sections. Each sample weighs approximately 10 to 11 lbs. The remaining half and quarter-core sections are stored in traditional waxed cardboard core boxes, in a secure storage facility in Milford. For RC drilling, samples are collected on five-foot intervals. Cuttings coming up through the central return discharge hose, pass through a cyclone and then through a Jones splitter. The splitter is set to a 50/50 split with one split being retained. Samples are collected continuously at five-foot intervals. Each five-foot sample weighs approximately 18 to 24 lbs..

### 11.2 SAMPLE PREPARATION, ANALYSES AND SECURITY

ESI determined both the elemental and mineralogical content of a large number of samples. Some of the mineralogy was done by X-ray diffraction. The most critical analytical number for ESI was the  $\text{Al}_2\text{O}_3$  content of the alunite ore and was determined by three methods simultaneously, 1) indirectly by measuring the  $\text{SO}_3$  content through a LECO furnace determination of the sulfur content, 2) by determining the soluble  $\text{Al}_2\text{O}_3$  content, presumably by wet chemical methods, and 3) by indirectly determining the Na and K content. ESI also measured  $\text{K}_2\text{O}$  and  $\text{Na}_2\text{O}$  by an unspecified method. ESI documentation provides results achieved by different techniques and different analytical laboratories. Laboratories listed were ESI, Alument, Hazen Research, Skyline

Labs, and NSA. Though ESI did evaluate their internal analytical testing with outside labs and the results are available in the documents PRC has obtained there is little information relating to actual sample procedures or quality control methods.

Core and RC samples from PRC's drilling program were shipped directly by NAE personnel to the ALS Minerals sample preparation facility in Winnemucca, NV. NAE delivered 651 core samples and 735 RC samples. This includes 59 blind duplicate samples to evaluate analytical precision

At the ALS sample preparation facility samples are prepared through the following steps:

- Samples are initially weighed and entered into the ALS tracking system
- Samples are completely crushed to 70% < 2mm
- Samples are then passed through a riffle splitter to create a 1000 g representative samples
- The 1000 g samples are then pulverized to 85% < 75µm
- Prepared samples are then forwarded onto the ALS Minerals laboratory in Vancouver, B.C. for geochemical analysis.

All reject material following splitting is saved and returned to PRC for potential future testing.

PRC selected two analytical packages to use on all samples from the validation drilling program. The first package is a whole rock analysis for major oxides using Ion Couple Plasma- Atomic Emission Spectroscopy (ICP-AES) following a lithium metaborate fusion. Under this procedure determinations are made for SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, Fe<sub>2</sub>O<sub>3</sub>, CaO, MgO, K<sub>2</sub>O, Cr<sub>2</sub>O<sub>3</sub>, TiO<sub>2</sub>, MnO, P<sub>2</sub>O<sub>5</sub>, SrO, BaO, LOI (loss on ignition). Reporting levels are to 0.01%. The second analytical package is an ICP-AES package for major, minor, and trace elements using a four acid digestion. Determinations in the second analytical package include Al, Ca, Fe, K, Mg, Na, S, and Ti reported to 0.01% levels and Ag, As, Ba, Be, Bi, Cd, Co, Cr, Cu, Ga, La, Mn, Mo, Ni, P, Pb, Sb, Sc, Sr, Th, Tl, U, V, W, and Zn all reported in ppm concentrations.

## 12 DATA VERIFICATION

Norwest has conducted two site visits to the Blawn Mountain property. The first visit was carried out on February 9 and 10, 2012 and the second visit was carried out on March 15, 2012. Both site visits have confirmed the location and access routes of previous and current exploration activities. During the first site visit PRC's validation drilling program was still in progress with both the core and RC rigs operating. Norwest was able to observe drilling, logging and sampling procedures at the drill sites. Norwest also visited and observed the core cutting procedures and sample storage facilities being employed by NAE in Milford. At the time of the first site visit, none of the drill samples had yet been shipped to ALS Minerals for sample preparation and analysis. At the request of Norwest blind duplicate samples of core were added into the sample sequence as one step of quality control.

During the second site visit, warmer weather had decreased snow cover such that surface geology at Area 1 could be observed in closer detail. Norwest was able to observe and confirm both ore and non-ore lithologies, alterations, geologic contacts, and a few of the major structures that bound the Area 1 deposit.

A search of the SITLA online database confirms the mining leases PRC has with the State of Utah for Blawn Mountain. PRC has valid mineral control through the Exploration/Option Agreement for 10,394.2 acres.

The drill program carried out by PRC in 2011 and 2012 was designed to validate the previous drilling data collected by ESI between 1969 and 1974. The PRC drill hole locations are twinned to ESI drill holes. Table 12.1 identifies the ESI holes that are twinned by the PRC holes.

**TABLE 12.1 PRC VALIDATION DRILLING**

PRC Validation Holes	Drill Type - Driller	Twin ESI Drill Hole
BM1	Core - Layne	C159
BM2	Core - Layne	C103 (C207)
BM3	Core - Layne	C12A
BM3A	RC - Gardner	C12A
BM4	Core - Layne	C178
BM5	RC - Layne*	C145
BM6	Core - Layne	C196
BM7	Core - Layne	C11
BM8	RC - Layne*	C197
BM8A	RC - Gardner	C197
BM9	Core - Layne	C125
BM10	Core - Layne	C194
BM11	RC - Layne*	C180
BM11A	Core - Layne	C180
BM12	Core - Layne	C162 (C120)
BM13	Core - Layne	C79
BM14	Core - Layne	C9
BM14B	Core - Layne	C9
BM15	RC - Layne*	C168 (C208)
BM16	Core - Layne	C13
BM16A	RC - Gardner	C13
BM17	RC - Layne*	C170A
BM17A	RC - Gardner	C170A
BM18	Core - Layne	C163
BM19	Core - Layne	C172
BM20	RC - Gardner	C7
BM21	RC - Layne*	C175
BM22	Core - Layne	C164
BM23	Core - Layne	C88
BM24	Core - Layne	C157
BM25	RC - Layne*	C171
BM26	RC - Gardner	C156
BM27	RC - Gardner	C182
BM28	RC - Gardner	C130

\* Samples not used due to poor recovery

Norwest has examined and compared the K<sub>2</sub>O and Al<sub>2</sub>O<sub>3</sub> values from 27 of the PRC holes with their respective twin ESI holes. The comparison covers 639 assay intervals or 6,390 feet of drilling. On an interval per interval basis there is poor correlation for K<sub>2</sub>O and Al<sub>2</sub>O<sub>3</sub> concentrations between the two sets of data. However, composite intervals for each hole show that the PRC holes have concentrations that range from 9 to 19.2% higher than the ESI data. Table 12.2 summarizes the composite values for the twinned intervals. Poor correlation between the two sets of data can be attributed to different drilling methods and most likely different analytical techniques. ESI used conventional rotary drilling methods. Rotary samples tend to be prone to dilution and wall-rock contamination compared to core and RC drilling. Though it is not specified in the ESI documents, K<sub>2</sub>O was most likely determined by traditional spectrometry such as atomic absorption or flame photometry versus the ICP-AES analyses completed by ALS Minerals.

**TABLE 12.2 COMPOSITE VALUES FOR TWINNED VALIDATION DRILLING**

PRC Drill ID	ESI Twin ID	Composite Interval		PRC		ESI	
		From	To	K <sub>2</sub> O (%)	Al <sub>2</sub> O <sub>3</sub> (%)	K <sub>2</sub> O (%)	Al <sub>2</sub> O <sub>3</sub> (%)
BM1	C159	10	230	4.84	18.39	4.11	15.62
BM2	C103 (207)	Various		1.91	15.19	2.25	12.60
BM3 (3A)	C12A	30	170	3.65	17.69	3.32	14.29
BM4	C178	90	360	3.30	14.81	2.93	12.18
BM6	C196	Various		2.58	14.28	2.53	12.41
BM7	C11	0	130	3.83	16.38	2.76	11.36
BM8 (8A)	C197	10	780	2.43	16.78	2.70	15.19
BM10	C194	Various		1.75	18.25	0.90	14.90
BM11 (11A)	C180	0	450	3.97	15.32	3.33	12.83
BM12	C162	Various		2.85	13.89	2.74	11.95
BM14 (14B)	C9	0	640	3.87	16.31	3.84	15.53
BM16 (16A)	C13	10	220	1.78	15.02	2.24	14.01
BM17 (17A)	C170A	0	810	3.12	15.04	2.86	12.25
BM18	C163	40	170	2.72	14.51	2.65	12.63
BM19	C172	0	620	5.18	19.79	5.02	18.43
BM20	C7	10	400	3.14	16.05	2.96	14.53
BM22	C164	0	330	3.72	15.81	3.57	14.70
BM24	C157	10	400	1.93	13.23	3.69	17.10
BM26	C156	0	410	3.25	15.32	3.51	14.82
BM27	C182	0	280	3.36	14.81	3.01	13.06
BM28	C130	0	650	5.01	18.89	4.18	15.45

The samples sent to ALS Minerals included 47 blind duplicates. Comparison of K<sub>2</sub>O and Al<sub>2</sub>O<sub>3</sub> concentrations between the original and duplicate samples shows good correlation ranging from 74 to 78%. Figure 12.2 shows the correlation for K<sub>2</sub>O and Al<sub>2</sub>O<sub>3</sub> for the original and duplicate samples.

Following the return of analytical results from ALS, a set of 12 sample pulps was forwarded to ACT Labs for comparative analysis (Table 12.3). For this set of 12 samples there are two sets of analyses from ALS Minerals, original and duplicates, plus the one set of analyses from Act Labs. ACT Lab analyses compare very closely to ALS Minerals for the 12 samples. Correlation between the two sets of analyses for K<sub>2</sub>O and Al<sub>2</sub>O<sub>3</sub> exceed 98%.

**TABLE 12.3**  
**ANALYTICAL COMPARISON BY LABORATORY**

Sample ID	Al <sub>2</sub> O <sub>3</sub> (%)			K <sub>2</sub> O (%)		
	ACT Labs	ALS Original	ALS Duplicate	ACT Labs	ALS Original	ALS Duplicate
949922	19.09	19.10	18.50	4.52	4.37	4.51
949937	23.61	23.90	24.00	6.76	6.74	7.04
949947	10.78	10.95	10.85	3.08	2.96	3.15
949957	22.87	23.20	22.90	6.38	5.84	6.49
949967	22.39	22.30	22.60	6.22	5.55	6.30
949977	19.84	19.90	20.10	5.06	4.61	5.28
949987	14.36	14.50	14.70	2.99	2.87	3.08
949992	14.10	14.15	14.35	3.21	3.10	3.34
949997	16.65	16.60	16.95	4.00	3.88	4.12
978252	16.71	16.55	17.05	4.50	4.36	4.65
978257	14.80	14.95	15.20	2.99	2.96	3.10
978262	15.41	15.30	15.00	3.22	3.11	3.28

A comparison made during the PRC drilling program was to evaluate analytical results between core and RC drilling. Two RC holes, BM3A and BM16A, are twinned to two of the core holes, BM3 and BM16. Between the two twinned locations there are 340 feet of analyses to compare between the two types of drilling. There is a 75% correlation for K<sub>2</sub>O between matched sets data between the core and RC data. Al<sub>2</sub>O<sub>3</sub> has a lower correlation of 50%. Core generally returns slightly higher grades for K<sub>2</sub>O and Al<sub>2</sub>O<sub>3</sub> than drill cuttings for the respective intervals.

Norwest believes the PRC validation drilling program has adequately tested the Area 1 deposit, both spatially and in number of twinned drilling locations. Norwest is satisfied with the procedures established by NAE in data collection and sampling. The duplicate samples and



comparative analyses returned favourable results that would indicate reliable analyses from ALS Minerals for the validation drilling program. While the ALS results show higher concentrations than previously indicated in the ESI drilling data, the ALS analyses confirm the presence of mineralization and indicate grades determined from the ESI drilling data will be conservative estimations.

## 13 MINERAL PROCESSING AND METALLURGICAL TESTING

### 13.1 INTRODUCTION

Alunite, or hydrous potassium aluminum sulfate,  $KAl_3(SO_4)_2(OH)_6$ , from the Blawn Mountain deposits in Utah, is a sulfate mineral. PRC is investigating the potential for the production of fertilizer-grade potassium sulfate ( $K_2SO_4$ ), also called sulfate of potash (SOP), by-product concentrated (98 wt%) sulfuric acid ( $H_2SO_4$ ), and alumina ( $Al_2O_3$ ) product.

### 13.2 HISTORICAL AND RECENT METALLURGICAL TESTING

ESI commissioned Hazen to develop and perform an extensive metallurgical testing program on composite samples from the Blawn Mountain deposit in the early and mid-1970's. Bench scale testwork was performed on composites of drill core and rotary drill cuttings from the exploration drilling program. Testwork was performed on all aspects of the process including, comminution, beneficiation, including flotation, calcination, leaching, crystallization and solid liquid separation studies. A large bulk sample was collected from test pits on Blawn Mountain and processed through a pilot plant at the Hazen facilities in Golden, Colorado. The testing program was successful and design criteria were established for design of the full scale process facilities.

In 2011, PRC commissioned Hazen to perform confirmatory testwork on a bulk sample collected from Test Pit No. 5 on Blawn Mountain. Test Pit No. 5 was the deepest test pit and was located near the center of the envisioned starter pit for the mine. The objective of this preliminary test program was to confirm the results of the original Hazen testwork. Since that time, modified process flowsheets have been suggested as improvements.

The current test program consisted of the following tests:

- Ore characteristics
- Particle size analysis
- Head sample chemical analysis
- Comminution testwork including Bond crushing, rod and ball mill work indices and Bond abrasion indices
- Calcination
- Water leach testing
- Evaporation and crystallization
- Solid-liquid separation
- Alumina processing.

A selection of the test results from the historical Hazen test programs are presented in the following sections. Results of the current test work will be available in Q2 2012.

### 13.3 HISTORICAL METALLURGICAL TEST RESULTS

Characteristics of Blawn Mountain SOP mineral processing operations (3), as envisioned, are as follows:

- Potassium (K) content of ore: 4.51 wt %.
- Sodium (Na) content of ore: 0.16 wt %.
- Na<sub>2</sub>SO<sub>4</sub>:K<sub>2</sub>SO<sub>4</sub> ratio: 0.05.
- To assure minimum product purity of 50 wt% K<sub>2</sub>O, the Na<sub>2</sub>SO<sub>4</sub>:K<sub>2</sub>SO<sub>4</sub> ratio should be maintained at 0.08.
- Blending of the run-of-mine (ROM) ore to meet target Na<sub>2</sub>SO<sub>4</sub>:K<sub>2</sub>SO<sub>4</sub> ratio is a method of minimizing the effects of the variability of ROM feed to the SOP Process Plant.

#### 13.3.1 Product Specifications

Table 13.1 summarizes the three main parameters that determine product quality and grades.

**TABLE 13.1**  
**TYPICAL MARKET PRODUCT GRADES**

Standard SOP	Low Chloride SOP	Granular SOP	Soluble SOP
Purity: 50 wt% K <sub>2</sub> O (92.5 wt% K <sub>2</sub> SO <sub>4</sub> )	Purity: 51 wt% K <sub>2</sub> O (94 wt% K <sub>2</sub> SO <sub>4</sub> )	Purity: 50 wt% K <sub>2</sub> O (92.5 wt% K <sub>2</sub> SO <sub>4</sub> )	Purity: 52 wt% K <sub>2</sub> O (96 wt% K <sub>2</sub> SO <sub>4</sub> )
Particle Size: 70 to 10 Tyler mesh	Particle Size: 70 to 10 Tyler mesh	Particle Size: 20 to 6 Tyler mesh	Particle Size: 150 to 48 Tyler mesh
Chloride Content: < 1.0%	Chloride Content: < 0.5%	Chloride Content: < 1.0%	Chloride Content: < 0.5%

#### 13.3.2 Sampling and Screen Analysis

Hazen, during the 1970's, performed tests on a core composite sample, Composite NGC-101, which was prepared by coning, quartering, and splitting 110 bags (2,750 pounds) of ore from core holes, which varied in depth from 10 ft. to 400 ft. Assay heads were prepared on the as-received and minus 65 mesh composite.

Screen analyses for as-received and crushed portions of Composite NGC-101 ore (2) are given in Table 13.2.

**TABLE 13.2**  
**SCREEN ANALYSES**

% Retained					
Mesh	As-Received*		Stage Crushed Through		
	A	B	8 mesh	28 mesh	65 mesh
+4	-	3.0			
8	-	7.9			
10	15.7	-	5.9		
14	-	11.6	-		
20	13.7	-	17.3		
28	-	13.2	-	0.1	
35	13.5	-	15.0	13.9	
48	-	11.9	-	13.7	
65	10.6	4.3	11.0	8.7	
100	4.1	4.2	4.5	7.6	10.7
150	3.7	3.5	3.8	5.6	11.6
200	3.0	2.9	3.1	4.6	9.7
325	3.1	3.0	3.0	4.4	7.7
-325	32.6	34.5	36.4	41.4	60.3

\*Note: The “as-received” ore was 33 to 35% minus 325 mesh.

### 13.3.3 Drying Tests

The as-received ore was found to be moist and became air-dried during sample preparation. The moisture content of five 20 pound bag samples averaged 0.5% H<sub>2</sub>O when dried at 100°C before stage-crushing to 65 mesh.

Table 13.3 summarizes observed weight loss during drying tests.

**TABLE 13.3**  
**SAMPLE DRYING TEST RESULTS**

Drying Temperature, °C	Weight Loss, %
100	0.9
200	1.2
400	1.2
600	8.0
800	18.5

The drying tests indicated:

- Interstitial water was lost during drying through 400°C.
- At 600°C, both interstitial and combined water were lost along with small quantities of sulfur in off-gases.
- At 800°C, sulfur loss in off-gases was significant.

### 13.3.4 Chemical Analysis of Ore

Table 13.4 summarizes the chemical analyses of Composite NGC-101 and bulk samples taken from Test Pit C5.

**TABLE 13.4**  
**CHEMICAL ANALYSIS OF COMPOSITE ORE**

Assay, wt %, (Dried at 100°C)								
	K	SO <sub>4</sub> *	Fe	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	Ti	Na	P
Historical As-received								
Head A	3.65	20.6	1.38	17.07	-	0.45	-	-
Head B	-	20.7	-	-	-	0.45	-	-
Head C	3.60	20.1	1.38	16.85	-	-	-	-
Other	-	-	-	-	51.8	-	0.27	0.05
Minus 65-mesh								
Head I	3.67	20.6	-	-	-	-	-	-
Head II	3.66	20.7	-	-	-	-	-	-
Average	3.65	20.5	1.38	16.96	51.8	0.45	0.27	0.05
Bulk Sample C5	4.51	5.85	-	-	46.2	-	0.16	-

\*Leco analysis and assumes all sulfur reported is in the sulfate form.

Based on the formula  $KAl_3(SO_4)_2(OH)_6$ , the theoretical potassium analysis should be 4.06% based on the SO<sub>4</sub> content, and the Al<sub>2</sub>O<sub>3</sub> content should be 16.31%. The new assay results of bulk samples reported by Hazen indicate that the ore has higher potassium content than that reported for the historical data (1, 5).

The results of a partial semi-quantitative spectrographic analysis (3) of the Composite NGC-101 ore is given in Table 13.5.

**TABLE 13.5**  
**SPECTROGRAPHIC ANALYSIS OF COMPOSITE NGC-101 ORE**

Element (Symbol)	Atomic Number	%	Element (Symbol)	Atomic Number	%
Copper (Cu)	29	0.001	Strontium (Sr)	38	0.061
Zinc (Zn)	30	0.006	Titanium (Ti)	22	0.110
Iron (Fe)	26	0.920	Zirconium (Zr)	40	0.022
Rubidium (Rb)	37	0.003	Manganese (Mn)	25	0.004
Barium (Ba)	56	0.072	Yttrium (Y)	39	0.002

### 13.3.5 Mineralogical Analysis

Hazen performed mineralogical examinations on a series of screen fractions (from plus 4 mesh to minus 400 mesh) of Composite NGC 101 core, which shows:

- The particle size of alunite varies from coarse-grained to fine-grained aggregates in a matrix of microcrystalline quartz. Alunite particles vary in size from 200 x 50 microns to 50 x 10 microns.
- Coarse alunite aggregates contain inclusions of about 10-micron rounded quartz particles and alunite, when fine-grained, is intimately intergrown with quartz.
- Accessory minerals are iron oxide (hematite), leucoxene (fine-grained altered titanium mineral, rutile or TiO<sub>2</sub>), zircon (zirconium silicate), and microcline (KAlSi<sub>3</sub>O<sub>8</sub>) or potassium-rich feldspar.
- Voids up to about 1 mm diameter and filled with opal-like substance with minor amounts of calcite (CaCO<sub>3</sub>) on microfractures.
- X-ray diffraction studies indicate the absence of aluminosilicates such as clay.

Microscopic examination of calcines obtained from 750oC to 900oC roasting step and their water-leach residues shows:

- An amorphous, intimate mixture of alumina and dehydrated alum phase.
- Optical evidence suggests that leachable K<sub>2</sub>SO<sub>4</sub> might be entrapped in this phase.
- The presence of amorphous alumina on the exterior of the alum-alumina particles could prevent diffusion of soluble K<sub>2</sub>SO<sub>4</sub> from the interior of the mixture.

### 13.3.6 Work Indices

Reduction of particle size in mineral processing is an energy-intensive operation. Work Index relates power consumption in crushing and grinding to the feed and product size distribution. Table 13.6 presents results of tests on bulk sample<sup>(5)</sup> performed by Hazen to evaluate Bond ball mill work index (BW<sub>i</sub>) and Bond crusher impact work index (CW<sub>i</sub>) in kilowatt hours per ton (kWh/t), and Bond abrasion work index (A<sub>i</sub>) in grams (g).

**TABLE 13.6**  
**WORK INDICES BW<sub>i</sub>, CW<sub>i</sub> AND AI FROM HAZEN TEST RESULTS**

Parameter	BW <sub>i</sub> , kWh/t	CW <sub>i</sub> , kWh/t	A <sub>i</sub> , g
Sample # 53021	5.9	7.06	0.2391

Hazen test results suggest that the Blawn Mountain ore is relatively soft and less power will be expended in size reduction operations.

### 13.3.7 Roasting/Calcining Tests

Hazen has performed roasting studies on Composite NGC-101 ore in the rotary Vycor Retort and in the 6 inch diameter Screw Reactor(3) to:

- Determine the solubility of potassium and sulfate in the calcine produced at approximately 600°C (low) and at approximately 800°C (high) calcining temperatures.
- Produce calcine for investigating alumina solubility and/or flotation studies.

Vycor®, manufactured by Corning, Inc., is a high temperature and thermal shock- resistant glass with a low thermal coefficient of expansion. In the roasting tests, the Vycor Retort with approximately 200 grams of charge was placed in an electric furnace and the temperature was raised and held at the desired level. The retort was rotated at about 1 rpm and a stream of air or nitrogen was used to purge the evolved gases from the retort. Temperature measurements were taken inside the retort just above the ore bed and recorded continuously. Off-gases were analyzed to determine SO<sub>2</sub>, SO<sub>3</sub>, and O<sub>2</sub> content.

At the end of the roasting cycle, the furnace was shut off and the calcine was allowed to cool. After cooling, the calcine was weighed to determine the weight loss due to roasting, a head calcine sample was split, and all or a portion of the remaining sample was sent to leach for evaluation of roasting efficiency based on the solubility of potassium and sulfate.

The Screw Reactor was an externally (gas) heated, 6 inch diameter and 110 inches long unit equipped with a variable speed screw for moving the ore at a rate of 5 to 10 pounds per hour along the reactor. The externally heated roasting zone measured about 50 inches in length and the variable residence time was from 30 to 60 minutes. Temperature was measured at four points along the roasting zone and recorded.

The calcine leaving the roasting zone passed through a cooling zone and was discharged to a container. During roasting, air or nitrogen was circulated cocurrent or countercurrent to the flow of the ore. The off gases leaving the reactor were analyzed to determine SO<sub>2</sub>, SO<sub>3</sub>, and O<sub>2</sub> content.

### 13.3.8 Calcining Test Results

The roasting studies by Hazen have shown that relatively coarse ore can be roasted at about 600°C to produce a calcine from which potassium sulfate can be extracted by leaching in a basic aqueous solution and thus separating it from aluminum oxide and silica. Roasting at 800 to 900°C produces a water-soluble calcine.

Table 13.7 summarizes test results of calcining the bulk sample of ore at Hazen to establish percent potassium extraction as a function of calcining temperature and residence time in the calciner.

**TABLE 13.7**  
**PERCENT POTASSIUM EXTRACTION AS A**  
**FUNCTION OF CALCINING TEMPERATURE AND RESIDENCE TIME**

Hazen Calcining Test Results		
Temperature, °C	Residence Time, minutes	Potassium (K) Extraction, %
850	60	74

### 13.3.9 Leach Test Results

Water leaching tests were performed by Hazen on calcines produced at 800°C, 50 wt% solids and at 17 wt% solids. The leaching cycle consisted of leaching with water as the lixiviant followed by filtration and washing the filter cake with water.

Table 13.8 and Table 13.9 summarize the results of leaching tests at Hazen establishing the influence of leaching parameters on percent extraction of potassium.

**TABLE 13.8**  
**PERCENT POTASSIUM EXTRACTION AS A FUNCTION OF PERCENT SOLIDS,**  
**LEACHING TEMPERATURE AND LEACHING TIME**

Hazen Leaching Test results			
Temperature, °C	Leaching Time, Minutes	Solids, %	Potassium (K) Extraction, %
Room Temperature	60	50	65.2
90	60	50	80.5
100	60	17	74

**TABLE 13.9**  
**INFLUENCE OF LEACHING TIME ON WATER LEACHING OF**  
**HIGH TEMPERATURE (800°C) CALCINE**

Leaching Time, Minutes	Wt% Dissolved	
	Al <sub>2</sub> O <sub>3</sub>	SO <sub>4</sub>
15	5.2	80.0
60	3.3	80.5
180	2.1	60.0



**13.3.10 Effect of Leaching pH**

Hazen selected minus 8 mesh calcine produced in the 6 inch Screw Reactor during high temperature Test SR-13 to study the effect of pH of the lixiviant (leaching medium) because of the relatively low potassium solubility of the calcine when leached with water. Table 13.10 summarizes the characteristics of the calcine produced during high temperature Test SR-13.

**TABLE 13.10  
CHARACTERISTICS OF THE CALCINE FROM TEST SR-13**

Parameter	Test SR-13
Roasting:	
Temperature, °C	850
Time, minutes	1.0
Purge gas	Air
Feed, mesh	8
Leaching Temperature, °C	85
Calcine Analysis, wt%:	
K	4.01
SO <sub>4</sub>	12.5
Al <sub>2</sub> O <sub>3</sub>	19.1
Leach Weight Loss, wt%	14.4
Dissolution, wt%:	
K	86.6
SO <sub>4</sub>	76.6
Al <sub>2</sub> O <sub>3</sub>	12

Leaching test data developed by Hazen shows that when water leaching the calcine at 17 wt% solids, the potassium-rich liquor had a terminal pH of about 4.0.

Three parallel leaching tests were performed at 85°C by Hazen using the calcine from high temperature Test SR-13. In these leaching tests, the pH of the leach solution was raised from its normal level of pH 4.0 to pH 6.0, 8.0, and 9.0. The pH adjustment was made using ammonium hydroxide (NH<sub>4</sub>OH).

The results, according to Hazen, show little difference in the solubility of both potassium and sulfate when leaching at pH 6.0, 8.0, or 9.0. At all pH-adjusted levels, about 94% of the potassium and about 95% of the sulfate were dissolved. Additionally, Hazen reports that the solubility of potassium and sulfate increased by about 7 percentage points when pH was raised from 4.0 to 6.0 with ammonium hydroxide.

## 14 MINERAL RESOURCE ESTIMATES

Three potential mine development units have been identified within the PRC Blawn Mountain property and a fourth potential mineralized zone is located directly outside the property between the tracts of land that comprise the exploration agreement. Only Area 1 has sufficient geologic and analytical data to support resource estimation at this time. Areas 2 and 3 are defined by 17 drill holes and 3 holes respectively along with surface mapping. Both areas are recognized as future exploration targets.

Norwest has estimated resources from the 3DGBM constructed in MineSight®, a software package developed by Mintec Inc. The estimate was prepared in compliance with NI 43-101 requirements for the definition of mineral resources. The 3DGBM is based on the assays and lithologies of the current drilling database and on a series of 30 interpreted geological cross sections constructed through Area 1.

A total of 353 drill holes including 34 holes recently drilled specifically for the purpose of validating the historical analytical results have been completed. The geologic model is built from the assays and records of 172 drill holes. As discussed in Section 10, 147 of the drill holes were not used in the geologic database. A majority of these holes were air-track holes. The air-track drill was often used to prospect for bedrock under alluvium or to spot rotary holes. There are insufficient records for these holes to include them in the geologic model.

A number of criteria were established for determination of resources:

1. The validation process indicated from recent laboratory results that constituent values were as much as 20% higher than historical results. It was therefore decided to utilize only the historical results. This established more conservative analytical values but also ensured that a larger number of control points of common program origins would be incorporated into the quality characterization of the deposit. By adopting this approach 60 holes were used to establish mineral grades.
2. A statistical review of analytical results through the construction of a series of correlograms determined that there was no appreciable preferred orientation of grades for  $K_2O$  and  $Al_2O_3$ . Down-hole variograms were also prepared and showed that there were no significant nugget effects or directionality to the data that would require more robust kriging approaches.
3. Analytical results were based on composites developed over 10 ft. intervals in each hole.
4. Four lithologic domains are represented in the geologic block model: Alunite, Clay, Dolomite, and Silica.
5. The geologic block model has the overall dimensions of 5,900 X 3,900 X 1,400 feet. All units are in Utah State Plane – South coordinates, NAD27 (Table 14.1).

**TABLE 14.1 BLOCK MODEL DIMENSIONS**

	Minimum	Maximum	Block Size
Easting	1,418,100	1,424,000	20
Northing	591,300	595,200	20
Elevation	6,300	7,700	20

6. A standard cubic block size of 20 ft. (X-dimension) by 20 ft. (Y-dimension) by 20 ft. (Z-dimension) was used in the block model. Radii for K<sub>2</sub>O were 350 ft. for the first pass and 1,000 ft. for the second pass. Data search radii for Al<sub>2</sub>O<sub>3</sub> were established at 250 ft. for the first pass and 1,000 ft. for the second pass.
7. Topographic data for the block model is sourced from a USGS digital terrain model (DTM). DTM has a 10 m (32.8 ft.) resolution.
8. Based on variography well spacing, as applied to category of resource estimation, was applied as shown in Table 14.2.

**TABLE 14.2 CLASSIFICATION CRITERIA**

	Measured	Indicated	Inferred
K <sub>2</sub> O	<150 ft.	<350 ft.	<1,000 ft.*
Al <sub>2</sub> O <sub>3</sub>	<150 ft.	< 250 ft.	<1,000 ft.*

9. The assumed density of ore and waste was established at 13 ft.<sup>3</sup>/short ton (2.076923 short tons/yd<sup>3</sup>) as derived from estimates used previously by ESI (1974). Norwest believes that this bulk density factor is reasonable for this deposit type.
10. The boundaries of the deposit were defined by the applied radii of influence of drill holes or interpreted structural controls such as known bounding fault systems and alteration limits.
11. Both visual and calculated validation of model block values to posted drill assay values show strong correlation.

Resource classification is based on the CIM Standards on Mineral Resources and Reserves, a set of definitions and guidelines established by the Canadian Institute of Mining and Metallurgy and Petroleum. Table 14.1 shows the estimated classified resource for the Blawn Mountain alunite deposit at increasing incremental K<sub>2</sub>O cut-off grades. Figures 14.2, 14.3, and 14.4 show cross sections through the block model for Area 1. The cross sections exhibit typical zoned mineralization for hydrothermal alteration also referred to as “nested cone geometry” by Krahulec. Figure 14.5 identifies the classified resources for the Blawn Mountain property.

The preferred scenario for resource presentation is a 1% K<sub>2</sub>O cut-off grade. At a 1% cut-off grade, there is a combined measured plus indicated resource of 162 million tons (Mt) of in-situ material carrying an average grade of 3.23% K<sub>2</sub>O and 13.90% Al<sub>2</sub>O<sub>3</sub>. The calculated potassium sulfate grade (K<sub>2</sub>SO<sub>4</sub>) at a 1% K<sub>2</sub>O cut-off grade is 5.98%. This cut-off grade maximizes the in-place tons while providing a quantity of K<sub>2</sub>SO<sub>4</sub> deemed suitable by current processing studies.

**TABLE 14.3**  
**CLASSIFIED RESOURCE ESTIMATE FOR THE BLAWN MOUNTAIN ALUNITE DEPOSIT**

RESOURCE CLASSIFICATION	K <sub>2</sub> O CUTOFF GRADE (%)	IN SITU (TONS)	IN SITU GRADES					CONTAINED RESOURCES				
			K <sub>2</sub> O (%)	K <sub>2</sub> SO <sub>4</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	Alunite based on K <sub>2</sub> O (%)	Alunite based on Al <sub>2</sub> O <sub>3</sub> (%)	K <sub>2</sub> O (TONS)	K <sub>2</sub> SO <sub>4</sub> (TONS)	Al <sub>2</sub> O <sub>3</sub> (TONS)	Alunite based on K <sub>2</sub> O (TONS)	Alunite based on Al <sub>2</sub> O <sub>3</sub> (TONS)
<b>MEASURED</b>	-	108,885,865	3.20	5.92	13.94	28.12	37.75	3,483,259	6,441,566	15,181,956	30,621,290	41,100,476
	1.0	107,354,040	3.23	5.98	13.91	28.42	37.65	3,470,756	6,418,445	14,928,653	30,511,379	40,414,735
	1.5	102,856,427	3.32	6.14	13.96	29.17	37.79	3,412,776	6,311,223	14,358,757	30,001,678	38,871,918
	2.0	90,666,054	3.53	6.52	14.15	31.00	38.30	3,196,885	5,911,977	12,827,433	28,103,781	34,726,330
	2.5	73,041,949	3.84	7.10	14.62	33.74	39.58	2,803,350	5,184,215	10,680,194	24,644,219	28,913,339
	3.0	56,184,519	4.16	7.70	15.22	36.61	41.20	2,339,523	4,326,464	8,551,284	20,566,724	23,149,970
<b>INDICATED</b>	-	55,251,773	3.20	5.92	13.95	28.16	37.75	1,769,714	3,272,720	7,704,860	15,557,539	20,858,537
	1.0	54,658,009	3.23	5.97	13.89	28.39	37.60	1,765,454	3,264,841	7,591,451	15,520,084	20,551,518
	1.5	53,006,429	3.29	6.09	13.92	28.93	37.69	1,744,442	3,225,984	7,379,555	15,335,367	19,977,875
	2.0	46,770,183	3.49	6.45	14.12	30.68	38.22	1,632,279	3,018,563	6,602,547	14,349,350	17,874,364
	2.5	36,770,084	3.83	7.08	14.66	33.68	39.68	1,408,662	2,605,029	5,390,127	12,383,531	14,592,110
	3.0	28,064,514	4.16	7.70	15.22	36.59	41.19	1,168,045	2,160,058	4,270,296	10,268,271	11,560,514
<b>MEASURED AND INDICATED</b>	-	164,137,638	3.20	5.92	13.94	28.13	37.75	5,252,973	9,714,286	22,886,816	46,178,829	61,959,013
	1.0	162,012,049	3.23	5.98	13.90	28.41	37.63	5,236,210	9,683,286	22,520,104	46,031,463	60,966,253
	1.5	155,862,856	3.31	6.12	13.95	29.09	37.76	5,157,218	9,537,207	21,738,312	45,337,045	58,849,793
	2.0	137,436,237	3.51	6.50	14.14	30.89	38.27	4,829,164	8,930,540	19,429,980	42,453,132	52,600,694
	2.5	109,812,033	3.84	7.09	14.63	33.72	39.62	4,212,012	7,789,244	16,070,320	37,027,750	43,505,449
	3.0	84,249,033	4.16	7.70	15.22	36.60	41.20	3,507,568	6,486,522	12,821,580	30,834,996	34,710,484
<b>INFERRED</b>	1.0	417,957	3.22	5.95	16.68	28.30	45.16	13,454	24,880	69,728	118,274	188,766
	1.5	417,942	3.22	5.95	16.68	28.30	45.16	13,454	24,880	69,725	118,270	188,760
	2.0	352,712	3.47	6.41	17.37	30.46	47.02	12,221	22,601	61,263	107,439	165,850
	2.5	227,518	4.13	7.64	19.84	36.30	53.71	9,394	17,373	45,137	82,584	122,195
	3.0	151,367	4.80	8.88	23.20	42.21	62.80	7,269	13,442	35,111	63,899	95,052

Increasing the cut-off grade to 3%  $K_2O$  reduces the combined in-situ tons of material to 84 Mt. Average grade at a 3%  $K_2O$  cut-off is 4.16%  $K_2O$  and 15.23%  $Al_2O_3$  with a calculated equivalent grade of 7.7%  $K_2SO_4$ . Approximately 66% of the identified resources are classified as measured and 34% as indicated resource.

The accuracy of resource and reserve estimates is, in part, a function of the quality and quantity of available data and of engineering and geological interpretation and judgment. Given the data available at the time this report was prepared, the estimates presented herein are considered reasonable. However, they should be accepted with the understanding that additional data and analysis available subsequent to the date of the estimates may necessitate revision. These revisions may be material. There is no guarantee that all or any part of the estimated resources or reserves will be recoverable.

**15 MINERAL RESERVE ESTIMATES**

There are no mineral reserve estimates associated with this report.

## **16 MINING METHODS**

### **16.1 GEOTECHNICAL CONSIDERATIONS**

At this stage of development, no current geotechnical testing or studies have been performed at Blawn Mountain.

### **16.2 HYDROLOGICAL CONSIDERATIONS**

At this stage of development, no current hydrological testing or studies have been performed at Blawn Mountain.

### **16.3 MINING METHOD**

A preliminary, conceptual mining study has been performed by Norwest using the current geologic resource model. The following section discusses the likely mining methods and considerations involved with resource extraction.

#### **16.3.1 Proposed Mining Method**

The majority of the ore body at Blawn Mountain is near surface resulting in minimal overburden cover. This condition lends itself well to truck and shovel surface mining. Truck and shovel mining is a highly-efficient, technologically advanced and proven low-cost method of surface mining.

The general mining sequence will most likely include the following:

1. Clearing vegetation and topsoil (if present).
2. If necessary, topsoil will be placed in temporary stockpiles for use later in restoring disturbed lands.
3. Prepare drilling pads for drilling of ore and waste.
4. Charging blast holes with explosives and initiating controlled blasts to break the consolidated material into smaller, more manageable size fractions.
5. Loading fragmented material into haul trucks with hydraulic shovels/excavators and front-end loaders.
6. Delivering ore to the primary crusher and waste to temporary external dumps.
7. Backfilling mined out pits with overburden and regrading to smooth surface.
8. Haul and spread topsoil over regraded surface.
9. Plant topsoiled surfaces with an accepted mix of shrubs and grasses.

### **16.3.2 Mine Design Parameters**

The following general assumptions and parameters will likely be recognized for Blawn Mountain:

- Bench height of 40 ft.
- Working pit slopes will be 45°
- Production ramp-up will progress over two years reaching steady state production in year three.

## **16.4 MINE SCHEDULE AND VOLUMETRICS**

### **16.4.1 Mine Design and Scheduling**

For preparation of the mine schedule, Norwest will utilize MineSight<sup>®</sup> mine planning and scheduling software. A 3D block model and mining parameters will be used to develop minable areas. The mine area will be “sliced” horizontally into benches. These benches will then be queried to output the ore tonnages as well as waste volumes, by bench. Based on the benches selected, MineSight will calculate waste volumes, ore tonnages, annual stripping ratios, and weight averaged ore quality.

### **16.4.2 Waste Dumping**

Given the shallow cover above the ore body, overburden removal requirements will be minimal. The overburden will be hauled and dumped into external waste piles outside of the pit.

## **16.5 MINING EQUIPMENT**

### **16.5.1 Mine Equipment Selection**

Appropriate mining equipment will be selected to best match the proposed mining method (previously described). At preliminary stage, Norwest anticipates mid-sized excavators and front end loaders will be suitable. Trucks will be chosen to match excavators, yet be interchangeable between various excavators and loaders for operational versatility. Support equipment will be selected to match the needs of the trucks and excavators.

### **16.5.2 Equipment Productivity**

Equipment productivities for major equipment will be built-up using a “first principles” approach (i.e., calculated based on such factors as bucket size, material type, swing cycle time, mechanical availability, operator efficiency, etc.). These productivities, typically expressed in quantity/production hour (e.g., bcy/hr for waste and tons/hr for ore) will be used to calculate the operating hours that a piece of equipment is required to work.



## **16.6 MANPOWER**

Estimated production requirements will dictate the required operating schedule and manpower level.

### **16.6.1 Hourly Operations and Maintenance**

This group of workers includes excavator operators, truck drivers, equipment operators, general laborers, and maintenance personnel consisting of welders, electricians and mechanics.

### **16.6.2 Management and Staff**

The management group includes managers (site and engineering), supervisors (operations and maintenance), mine planning engineers, surveyors, geologists, safety officers, administration and financial staff.

## 17 RECOVERY METHODS

### 17.1 OVERVIEW OF ALUNITE PROCESSING

As envisioned, a combination of unit operations or process steps will be employed in the production of SOP. Based on process optimization test results, unit operations in the commercial process plant may include but will not necessarily be limited to:

- Primary crushing and stockpiling of crushed run-of-mine (ROM) ore.
- Secondary and tertiary crushing and screening of ore.
- Flotation to reduce the silica content of the feed.
- Drying of downstream process feed or flotation concentrate.
- Calcining of dried process feed or flotation concentrate.
- Off-gas cleaning and sulfuric acid recovery.
- Sulfuric acid storage and handling.
- Leaching of calcine with water to extract potassium sulfate.
- Solid/liquid separation and solution purification.
- Evaporation of leach solution and crystallization of potassium sulfate.
- Product drying, compacting, packaging, and load out.
- Alumina stockpile.

Ancillary facilities and/or operations include:

- Groundwater harvesting, treatment, and storage.
- Water conservation through treatment and reuse of process effluent(s).
- Management of process residues in an environmentally sound manner.
- Electric power and plant and instrument air distribution.
- Process reagents storage and handling.

Process optimization efforts are now underway, directed toward identifying energy-efficient and cost effective candidate technologies for maximizing recovery of product(s) and by-product(s) of highest purity, along with protection of environmental values and conservation of water through reuse of treated effluents at the project site.

The physical beneficiation tests performed by Hazen on alunite ore have shown that it is feasible to produce by flotation a concentrate containing 80% alunite with an 80% recovery.

Metallurgical test work is being planned to investigate flotation as a method of reducing the silica content of the feed to the drying and calcination steps. This would also result in enhanced product quality, conservation of energy, smaller equipment sizes in downstream drying/calcining, leaching, and solid/liquid separation operations as well as reduced footprint of the process plant.

## **18 PROJECT INFRASTRUCTURE**

Infrastructure and logistic requirements for the project, which include roads, rail, port facilities, dams, dumps, stockpiles, leach pads, tailings disposal, power, and pipelines, have not been fully determined and designed.

## **19 MARKETS AND CONTRACTS**

### **19.1 MARKETS**

Norwest understands that PRC has conducted at least two market and price studies relative to this project and that there are several other studies and forecasts that are publicly available. Norwest has not reviewed this information and no assessment of the market and price for the production is included in this report.

### **19.2 CONTRACTS**

There are no contracts in place that are material to the project that will be required for property development, including mining, concentrating, smelting, refining, transportation, handling, sales and hedging, and forward sales contracts or arrangements.

## **20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT**

### **20.1 REGULATORY ENVIRONMENT**

#### **20.1.1 State Regulations**

Mining and processing operations in the United States must comply with all applicable federal and state regulations. Operations located in Utah require compliance with federal as well as state mining and environmental regulations. Utah has primacy over major environmental disciplines including mining, and air and water permitting. The project is located in southwestern Utah on State controlled land therefore most permits that The Blawn Mountain Alunite Project will need to obtain will be issued by State agencies.

#### **20.1.2 Federal Regulations**

Vast amounts of land in Utah are managed by the BLM due to the presence of either federally-controlled surface land or federal mineral ownership. In Utah the control of large parcels of land and minerals were granted to the state to provide a source of revenue from the management of surface use or mineral development. These “state sections” and other lands obtained through additional grants or exchanges from the federal government are managed by SITLA in Utah.

When federal lands are impacted federal approvals are required by the applicable land management agency, most commonly the BLM. Federal actions requiring permits or approvals trigger an environmental review under the National Environmental Policy Act (NEPA). The level of scrutiny a project receives is based upon the land management agencies’ discretion and the significance of impacts to the environment. When impacts are potentially more significant, an Environmental Impact Statement (EIS) may be required. This process can take several years and involves multiple agencies and extensive public input. When impacts are less significant, the federal permit or approval can be substantiated with an Environmental Assessment (EA), which is an abbreviated process that generally can be accomplished within 6-12 months. Regardless of the process that applies, environmental impacts of the project must be evaluated prior to receiving federal authorization to proceed.

### **20.2 ACCESS AND UTILITIES TO THE BLAWN MOUNTAIN ALUNITE PROJECT**

The Blawn Mountain project area is 11,549.2 acres in southwestern Utah located on surface land and minerals controlled by SITLA.

An existing county maintained road (Revenue Basin Road) provides access to the project area. PRC will utilize this road to access the project area, bring necessary utilities to the project, and initially to transport product to a rail load-out located close to the town of Milford, Utah some 30

miles away. In its current condition, the road is not adequate to accommodate the type and amount of vehicles needed to support the project. Additionally, the road is not wide enough to include the necessary utilities, which further necessitates the need to upgrade the road. The land adjacent to the road is managed by the BLM and impacts to this land required for expansion will require a right-of-way (ROW) from the BLM.

Revenue Basin Road also provides access to several other SITLA parcels, and provides access to areas with potential for renewable energy project development. To help encourage these multiple development opportunities, Beaver County is in the process of applying for the ROW on the basis that improvement of the road for future uses will enhance economic development in their County as well as adjacent counties. While the wide environmental study corridor could include sufficient room for utilities, the County ROW request will include only the road upgrade. Utilities will be addressed in subsequent requests to BLM by the service providers.

Historically, ROW applications by counties to support economic development have undergone an EA review as opposed to the more onerous EIS. Based upon legal precedent (“Cotter Decision” Utah v. Andrus, 1979), BLM is obligated to allow “reasonable access” to facilitate development of State controlled resources.

### **20.3 HISTORICAL ENVIRONMENTAL STUDIES**

In the 1970’s ESI proposed to develop the Blawn Mountain resource as an alumina project, with alunite being the primary mineral of interest. At that time the land and minerals were managed by the BLM. In 1977, the BLM completed an environmental review, EIS level study on the proposed project in compliance with NEPA. The EIS addressed both impacted natural resources and socio-economic impacts of the project. At that time, the project was evaluated as an alumina, potassium sulphate and phosphate fertilizer project. Environmental impacts that were evaluated included air quality impacts from the mine, primarily associated with particulates, and processing plant impacts, including SO<sub>2</sub>, NO<sub>x</sub> and fluorides, to surface and groundwater, wildlife, soils, vegetation, cultural resources and socio-economic impacts resulting from a large industrial project in a predominately agricultural community. Mitigation measures were proposed to reduce impacts and were evaluated by various agencies and deemed sufficient. Due to market conditions, the project was never launched.

Subsequently, the BLM, through a land exchange process, granted the Blawn Mountain land and minerals, and other surrounding areas to SITLA. As detailed above, PRC has an exploration agreement with SITLA and is in the process of completing the necessary studies to convert to a mineral lease. PRC has obtained an exploration permit from the DOGM to complete exploration work to further delineate and quantify the resource.

## 20.4 MAJOR OPERATING PERMIT AND AUTHORIZATIONS

The following discussion and table identifies the major permits that need to be obtained prior to the construction and start-up of the Blawn Mountain project.

**TABLE 20.1**  
**MAJOR REQUIRED PERMITS**

Major Permits or Approvals	Issuing Agency
Federal Right-of-Way	U.S. Bureau of Land Management
Mining Permit	Division of Oil, Gas and Mining
Water Appropriations	Utah Office of State Engineer
Groundwater Discharge Permit	Utah Division of Water Quality
Air Quality Permit	Utah Division of Air Quality
Storm Water and Discharge Permit	Utah Division of Water Quality
Dredge and Fill Permit	U.S. Army Corps of Engineers
County Conditional Use Permit	Beaver County

This report is not meant to be all inclusive and covers only the major permits required. In addition to the permits discussed in this report, other ancillary environmental permits and authorizations include spill control and response plans, hazardous waste management/transportation authorization, authorization for use of low level radioactive sources, and hazardous chemical training for employees.

### 20.4.1 Beaver County - BLM Right of Way (ROW)

Beaver County is currently preparing to submit a ROW application to the BLM to upgrade the Revenue Basin Road so that it can support general economic development in the valley, including the Blawn Mountain Project. Beaver County has processed other ROWs for road upgrades after completion of an EA. The anticipated time period to complete an EA is 6-12 months, as opposed to an EIS which can take several years. To date, Beaver County has held preliminary meetings with the BLM and requested that the ROW be granted in order to help bring economic development into the Beaver County and adjacent counties.

### 20.4.2 Utah Division of Oil, Gas and Mining Notice of Intent

All hardrock mining operations, such as the Blawn Mountain Alunite Project, that disturb more than 5 acres of land must file a Notice of Intent (NOI) and obtain approval from the Utah DOGM prior to beginning operations. Permit applications must contain a complete description of the environmental resources and impact analysis in the area to be mined, a description of mining

methods, a comprehensive reclamation plan and a financial security instrument acceptable to DOGM to cover the costs of reclamation to be completed by an independent third-party.

PRC needs to complete the environmental baseline studies for the site, and complete the mining and reclamation plan. Preparation, submittal and approval of the NOI can typically be completed within one year assuming sufficient planning is integrated into the baseline data collection schedule, a comprehensive, well organized application is submitted, and the project is not highly controversial. Mining permit approval time is typically 9-12 months. NOI approvals can be challenged by interested parties which can extend final authorization.

### **20.4.3 Water Appropriations**

Acquiring sufficient water is one of the most significant issues for the project. PRC has been actively pursuing high priority water rights for the project based upon the estimated water requirements (4,000-6,000 acre feet per year) from preliminary design information. More accurate projections will be developed as part of the next level of engineering. There is a strong focus on reducing water consumption for the project. High priority or senior rights allow the holder to take water at critical periods of the year such as late July and August when water is in greatest demand. An appropriations application will be filed based upon updated water requirements of the project.

### **20.4.4 Groundwater Discharge Permit**

Mining projects that include a potential source of contamination to groundwater resources must complete a groundwater discharge permit application. The Utah Division of Water Quality (DWQ) will review the application and determine if a permit is required. In some cases, a permit is not required. If a permit is required, points of compliance and effluent limits will be negotiated for the various potential sources of compliance.

Groundwater discharge permit applications will require PRC to complete sufficient groundwater investigations to be able to evaluate potential impacts to the resource, and if necessary provide sufficient mitigation. While some older information on the hydrology of the region was developed as part of the 1977 EIS, the current exploration drilling program will complete a sufficient number of groundwater wells to develop a sound understanding of the hydrogeology of the region. The hydrologic interpretation will be included in the groundwater permit application. Actual permit processing time is based upon the thoroughness and level of organization of the application and whether there are sensitive groundwater issues (source and quality) in the area where the project is located. Groundwater permit applications typically are processed in approximately 9-12 months.



## **20.4.5 Air Quality Permit**

In Utah, all sources that emit a regulated pollutant are required to obtain an Approval Order from the Utah Division of Air Quality (UDAQ). Sources that emit more than 250 tons per year of any regulated pollutant are considered to be major sources under the Clean Air Act and pursuant regulations. Some “listed” sources have a threshold of 100 tons per year to be considered major. For purposes of classifying the Blawn Mountain Project, it is not a listed source but is projected, based upon preliminary plant design calculations, to exceed the 250 tons per year for several pollutants including SO<sub>2</sub>, NO<sub>x</sub>, O<sub>3</sub>, and coarse and fine particulates. Preliminary estimates of greenhouse gas emissions will exceed the 100,000 tons per year that trigger the need for a permit for those pollutants.

The project is located in an Attainment Area which is a designation assigned to air sheds that meet the National Ambient Air Quality Standards (NAAQS). Sources in attainment areas require Prevention of Significant Deterioration (PSD) permits that restrict the level of degradation of the air shed surrounding the source. The project is also located in relatively close proximity, approximately 100 miles, to at least one Federal Class I air shed, Zion National Park. Federal Class I air sheds include most National Parks or other pristine air sheds where air quality values that enhance the visitors experience are protected. PSD permitting requires sources to establish baseline meteorological data and background concentrations for regulated pollutants. This information is used to model the dispersion of emissions from the source in order to evaluate the impacts to the Class I air shed.

PRC has been proactive in addressing the regulatory requirements to obtain an air quality permit by meeting with the UDAQ and identifying the level of investigation required to obtain a permit. Based upon input from the UDAQ, elements of the plan have been developed and implementation details are being evaluated. A schedule has been developed to collect one year of baseline air quality data and to prepare, submit and obtain permit approval, which is estimated to take approximately one year. The air quality permit will be the longest lead-time permit and drive the overall environmental permitting schedule. Collection of one year of baseline data, application preparation and approval typically take between 24 and 27 months.

## **20.4.6 Storm Water and Point Source Discharge Permit**

Project construction requires a National Pollutant Discharge Elimination System (NPDES) storm water permit to control off-site sedimentation. Utah has obtained full jurisdiction from the Environmental Protection Agency (EPA) for implementing NPDES requirements. The storm water pollution prevention plan (Plan) to control erosion will be developed from the mining and reclamation plan. The Plan must be fully developed and permit coverage granted prior to breaking ground at the site.

Once the project is on-line and point sources (sediment ponds) are required, an industrial NPDES permit for these sources will be required.

Both the storm water Plan and the NPDES design requirements will be developed as part of the drainage control plan for the operation. If impoundments are larger than 20 acre feet in capacity or exceed 20 vertical feet from base elevation on the downstream side, a Dam Safety Certification will be required from the State and Mine Safety and Health Administration. These authorizations are common to the industry and will evolve from design work associated with the project. Lead times for the NPDES and Dam Safety Certification/MSHA approvals typically take 6-9 months.

#### **20.4.7 Army Corps of Engineer's Jurisdictional Waters**

The U.S. Army Corps of Engineers, ACOE, regulate Section 404 of the Clean Water Act. Section 404 Permits under the Clean Water Act are required to fill or dredge "jurisdictional" waters or waterways of the U.S. Permits or approvals granted by the ACOE require NEPA compliance because it constitutes a federal action. Mining-related small scale impacts to jurisdictional waters, less than 0.5 acres, may qualify under a Nationwide Permit which would not require a NEPA analysis.

A preliminary assessment of ACOE jurisdictional waters for the proposed access road was completed. Some areas along the road corridor fall within categories for which ACOE generally will assert jurisdiction. The plan would be to avoid these areas entirely or keep the disturbance level below 0.5 acres to qualify for a Nationwide Permit.

A follow-up assessment of jurisdictional waters was completed for lands within the SITLA tract boundary. This work did not constitute a formal delineation which the ACOE is required to endorse, but was completed to establish areas with potential jurisdictional waters. This assessment evaluated a few small areas of potential jurisdiction. PRC would likely avoid these areas or maintain disturbance to less than 0.5 acres required for a Nationwide Permit.

#### **20.4.8 County Conditional Use Permit**

Beaver County, where the project is located, will require PRC to obtain a Conditional Use Permit, CUP, for the project. CUPs focus on direct impacts to the social fiber of the community and the impacts to infrastructure. The CUP will require an analysis of the impacts on social programs including schools, medical facilities, law enforcement and employee housing, as well as traffic and noise.

PRC has been proactive in maintaining good communication with the local community. To date, County officials as well as local ranchers have expressed strong support for the project, and . has expressed high interest in seeing the project succeed. With this level of support for the project, the CUP should be issued without significant challenges. Anticipated time for approval would be 2-3 months once all the supporting studies have been completed.

**20.5 SUMMARY**

Permits and authorizations required for the Blawn Mountain Alunite Project are common to most major mining and processing operations in Utah and throughout the U.S. The schedule to obtain the permits listed above may vary somewhat. However, integration of sound design principles and some flexibility with respect to the project footprint and environmental impacts will result in issuance of all required permits for the project.

**21 CAPITAL AND OPERATING COSTS**

Capital and Operating Cost estimates have not been prepared or reviewed by Norwest for this report.

## **22 ECONOMIC ANALYSIS**

This report is reporting only the resource estimate for this project and as such does not include any economic analysis. This report does not purport to represent any future economic viability of mining the estimated resource.

**23 ADJACENT PROPERTIES**

There is no data or information available for adjacent properties that are pertinent to present report.

**24 OTHER RELEVANT DATA AND INFORMATION**

There are no relevant data and information applicable to this report, other than sources referenced in Section 27.

## **25 INTERPRETATION AND CONCLUSIONS**

The mineral tracts are controlled by PRC by the Exploration/Option Agreement through SITLA. The property has undergone past exploration which can be considered sufficient for the delineation of a mineral resource in Area 1; other areas (2, 3 and 4) under PRC control are considered exploration targets.

The drilling and surface mapping within Area 1 has led to a geologic interpretation of the deposit as rhyolite porphyries and ignimbrites that have experienced hydrothermal alteration and consequent enrichment in potassium and aluminum compounds, and termed alunite. Geologic modeling based on drilling data and field mapping depicts a single mass of alunite approximately a mile long by 900 feet wide and with an average thickness of approximately 500 feet.

A mineral resource has been estimated and reported for a range of  $K_2O$  cut-off grades for Area 1. Measured plus Indicated in situ resources for Area 1 range from 162 Mt of in situ resources with no  $K_2O$  cut-off to 84Mt using a 3% grade cut-off. At the preferred scenario of a 1% cut-off Measured plus Indicated  $K_2O$  is estimated to be 5.2Mt and  $Al_2O_3$  is estimated to be 22.5Mt. At the 3% cut-off Measured plus Indicated  $K_2O$  is estimated to be 3.5Mt and  $Al_2O_3$  is estimated to be 12.8Mt. Average  $K_2O$  grade ranges from 3.23 to 4.16% and  $Al_2O_3$  grade ranges from 13.9 to 15.22% for the respective cut-offs.

Much of the interpretation and mineral resource estimations were derived through a 3D block model created from drilling and field mapping data using MineSight modeling software. The details of the methodology are described in the report text.

Preliminary evaluations of mining methods and equipment indicate a surface mineable resource that has potential for economic extraction. Metallurgical testing and process engineering indicate economic potential as well. No current feasibility studies that include detailed mine planning, geotechnical and hydrologic evaluations, full market studies and economic evaluations have been performed. As this is the case, the viability of the deposit for demonstrated economic feasibility has yet to be determined.



## 26 RECOMMENDATIONS

Norwest considers the Blawn Mountain property to be of sufficient merit to warrant additional exploration. At this time only Area 1 has delineated resources. Norwest believes there is opportunity to identify additional resources on all three areas within the PRC mineral tracts. The 2012 exploration program should focus on three primary tasks:

1. Mapping, sampling and drilling have adequately tested the surface spatial limits of mineralization for Area 1. However, a large number of drill holes that define the block model terminate in ore. The geometry of the block model suggests potential to define additional resources at greater depths. Norwest recommends drilling 14 holes that will specifically attempt to identify mineralization to greater depths. Projected drill depths range from 400 to 1,000 feet for a total of 10,500 feet. To support mine planning and design, Norwest recommends drilling seven of the proposed holes as continuous core holes from surface to collect samples for geotechnical characterization and gather detailed geochemistry and mineralogy information. This will provide vital information that will support mine planning and process design. Proposed drilling locations are shown on Figure 26.1.
2. ESI completed 18 drill holes on Area 2 before focusing attention on Area 1. Norwest has developed a preliminary model of Area 2 based on surface mapping and the 18 drill holes. Based on this preliminary model, Norwest believes there is potential to identify between 200 to 300 MT through additional drilling and sampling. Based on the mineral characteristics observed in the variography exhibited in the Area 1 block model, approximately 45 drill holes will be needed to define most of Area 2 mineralization to measured and indicated resources. At this time Area 2 appears to be more tabular in shape than Area 1. The 45 hole program has depth projections ranging from 175 to 425 feet for a total of 11,500 feet.

Area 2 includes a 155 acre mineral tract (ML 48698.0 MC) not under PRC control. It would be advantageous to acquire mineral rights to this tract as it occupies the central portion of Area 2 and represents approximately 25% of the total area. There does appear to be sufficient areas to access and explore both to the northeast and southwest of ML 48698.0 MC and there is potential to define sizable resources without control of the tract.

3. Alunite mineralization is likely to extend farther down the ridge, southwestward, from the defined resources at Area 1. ESI drilled three holes southwest, 1,200 to 3,500 feet southwest from the defined zone of mineralization at Area 1. Assays were collected from one of these holes with encouraging results. Based on the extents of surface mapping,

Norwest believes a 24 hole program for a total of 6,000 feet can adequately define additional resources farther to the southwest from the Area 1 deposit.

The exploration budget for Blawn Mountain for 2012 is presented in Table 26.1.

**TABLE 26.1 EXPLORATION BUDGET**

DESCRIPTION	UNIT COST (\$)	JAN – MAY		JUNE		JULY		AUGUST		TOTAL
		UNITS	COST	UNITS	COST	UNITS	COST	UNITS	COST	
Project Manager	2,100	10	21,000	20	42,000	30	63,000	30	63,000	189,000
Field Geologists	1,500	10	15,000	60	90,000	90	135,000	90	135,000	375,000
Field Technicians	1,000			40	40,000	30	60,000	30	60,000	160,000
<b>SubTotal</b>			<b>36,000</b>		<b>172,000</b>		<b>258,000</b>		<b>258,000</b>	<b>724,000</b>
<b>Permitting</b>										
Drill Planning	50,000	1	50,000							50,000
NOI Amendment	5,600	1	5,600							5,600
Cultural/Environmental Surveys	58,000	1	58,000							58,000
<b>SubTotal</b>			<b>113,600</b>							<b>113,600</b>
<b>Site Preparations</b>										
Dirt Work – Site Preparations, Roads	3,500	10	35,000	15	52,500	15	52,500			140,000
Post Abandonment	1,500			10	15,000	20	30,000	10	15,000	60,000
Reclamation	3,700					25	92,500	15	55,500	148,000
<b>SubTotal</b>			<b>35,000</b>		<b>67,500</b>		<b>175,000</b>		<b>70,500</b>	<b>348,000</b>
<b>Area 1 Drilling</b>										
Core	50			2,430	121,500	2,570	128,500			250,000
Reverse Circulation	25			2,750	68,750	2,750	68,750			137,500
<b>Area 2 Drilling</b>										
Reverse Circulation	25					6,000	150,000	5,500	137,500	287,500
<b>Southwest of Area 1</b>										
Reverse Circulation	25			2,000	50,000	2,000	50,000	2,000	50,000	150,000
<b>SubTotal</b>					<b>240,250</b>		<b>397,250</b>		<b>187,500</b>	<b>825,000</b>
<b>Analyses</b>										
Sample Preparation	9.05			718	6,498	732	6,905	1,350	12,218	25,621
Major Oxides ICP	29.75			718	21,361	732	21,777	1,350	40,163	83,301
Trace Elements ICP	14.30			243	3,475	257	3,675			7,150
Mineral XRD	125.00			122	15,250	129	16,125			31,375
Geotechnical	2,175.00			21	45,675	21	45,675			91,350
<b>SubTotal</b>					<b>92,259</b>		<b>94,157</b>		<b>52,381</b>	<b>238,797</b>
<b>Down-hole Geophysics</b>										
Down-hole Geophysics	2,000			3	6,000	4	8,000			14,000
<b>SubTotal</b>										
<b>Total</b>			<b>184,600</b>		<b>578,009</b>		<b>625,907</b>		<b>874,881</b>	<b>2,263,397</b>

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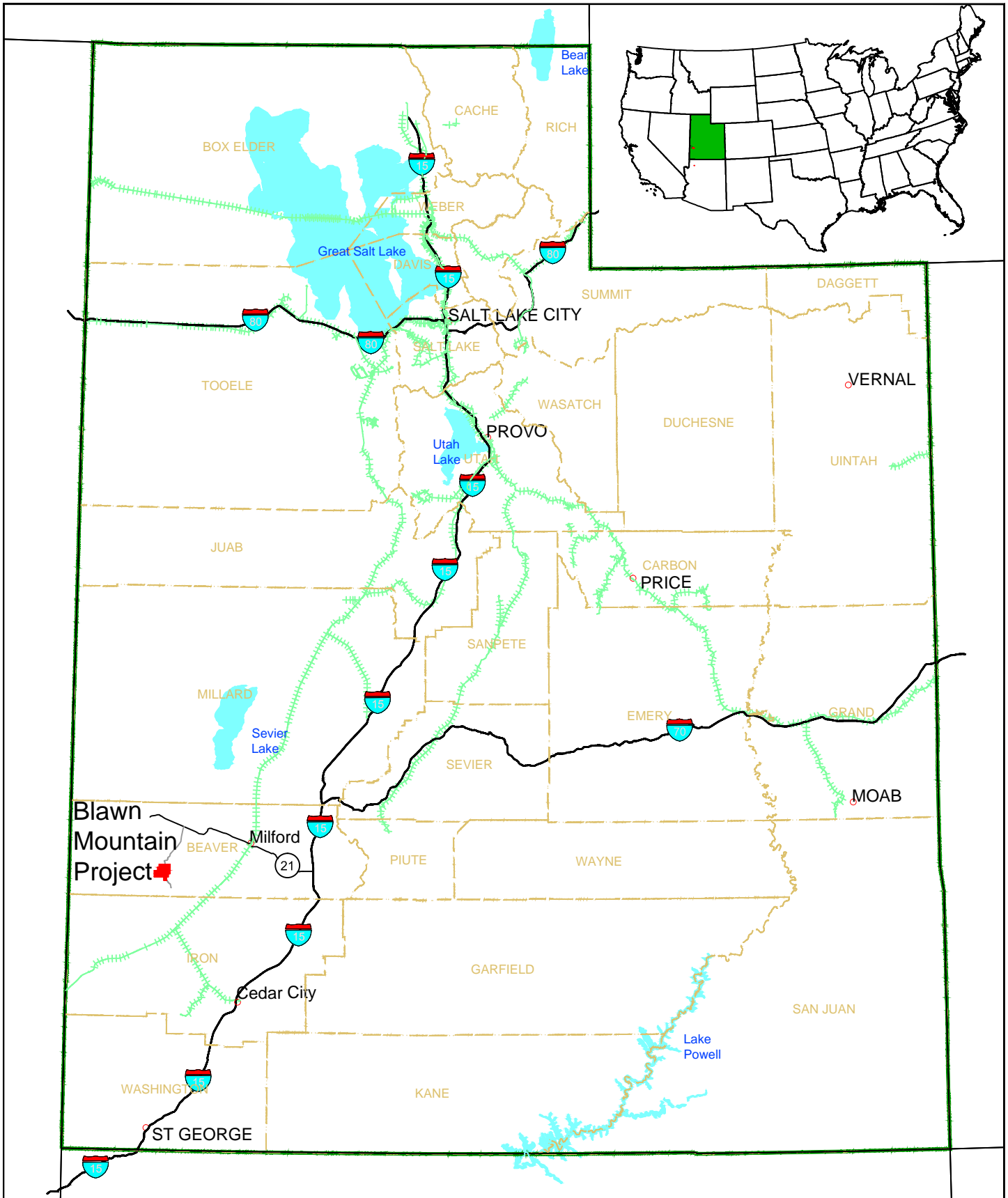
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## 28 ILLUSTRATIONS

- 4.1 General Location Map
- 4.2 Exploration/Option Area Location Map
- 5.1 Regional Infrastructure
- 6.1 Former NG Alunite Project Areas
- 6.2 Proposed NG Development Plan
- 7.1 Regional Geologic Cross-section
- 7.2 Local Geologic Cross-section
- 7.3 Surface Geology Map
- 7.4 Alunite Alteration Areas
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- 7.6 3DBM Representation of Area 1 Alunite Zone
- 9.1 Topography and Drill Hole Locations
- 9.2 Area 1 Alunite Zone Drill Holes
- 12.1  $K_2O$  and  $Al_2O_3$  Scatter Plots
- 14.1 Variograms OF Analytical Results
- 14.2 Area 1 Block Model Cross-section A-A'
- 14.3 Area 1 Block Model Cross-section B-B'
- 14.4 Area 1 Block Model Cross-section C-C'
- 14.5 Area 1 Resource Classification
- 26.1 Proposed Drill Hole Locations

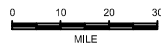




**LEGEND**

- Freeway
- City or Town
- Blawn Mountain Project
- Railroad
- Counties
- Major Lakes

UTAH STATE PLANE  
SOUTH ZONE NAD 27



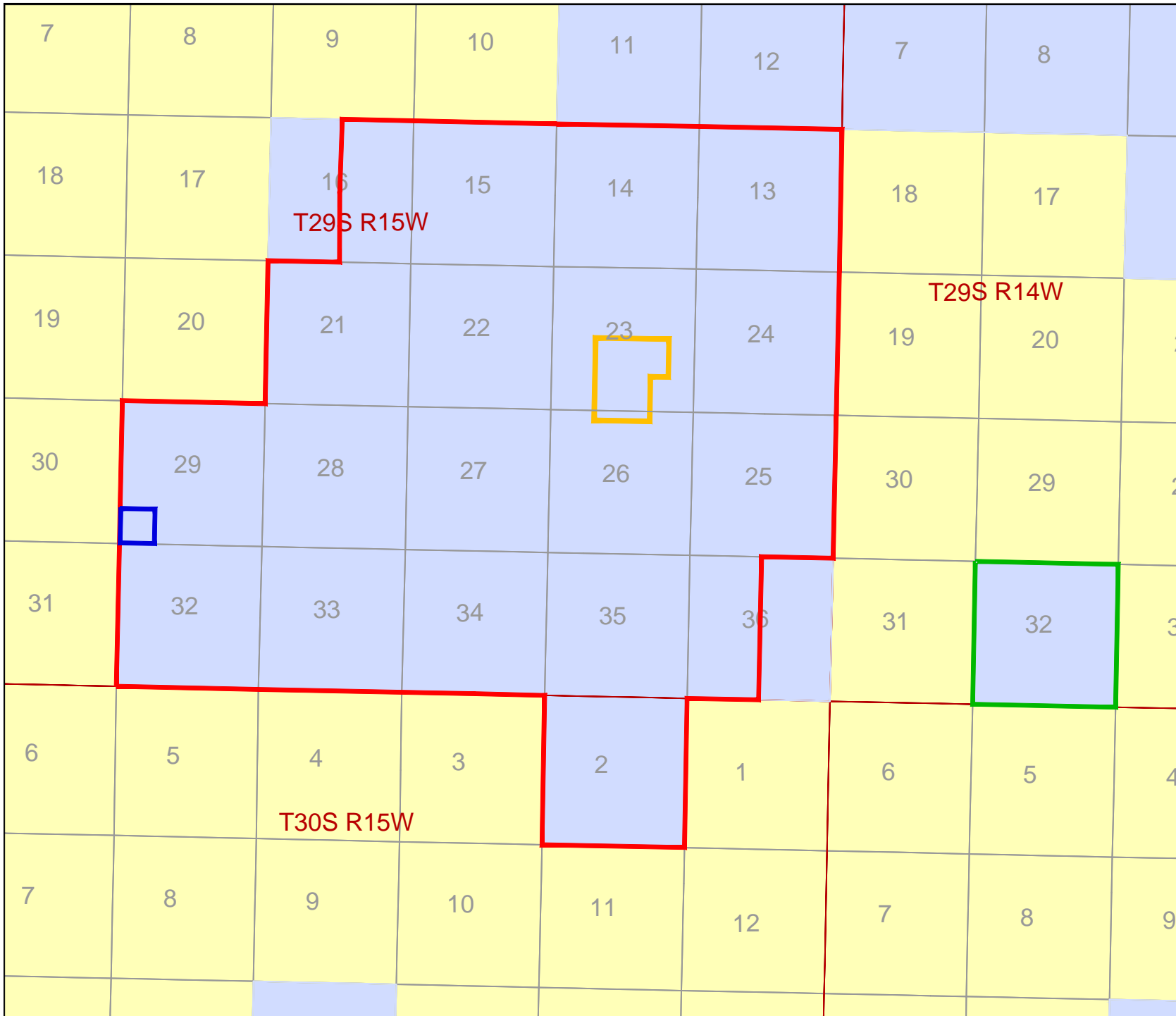
**FIGURE 4.1**

POTASH RIDGE CORPORATION  
BLAWN MOUNTAIN PROJECT  
GENERAL  
LOCATION MAP

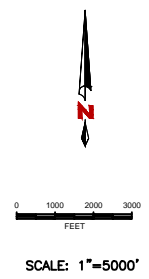
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SCALE:  
As Shown

**NORWEST**  
CORPORATION



- LEGEND**
- State Exploration Area  
Utah Alunite LLC  
10,394.2 acres
  - Melvin J. Pack  
155 acres
  - Robis Mickey, Trust  
40 acres
  - Gary W. Clifton  
640 acres
  - BLM land
  - State Trust Land
  - Private Land

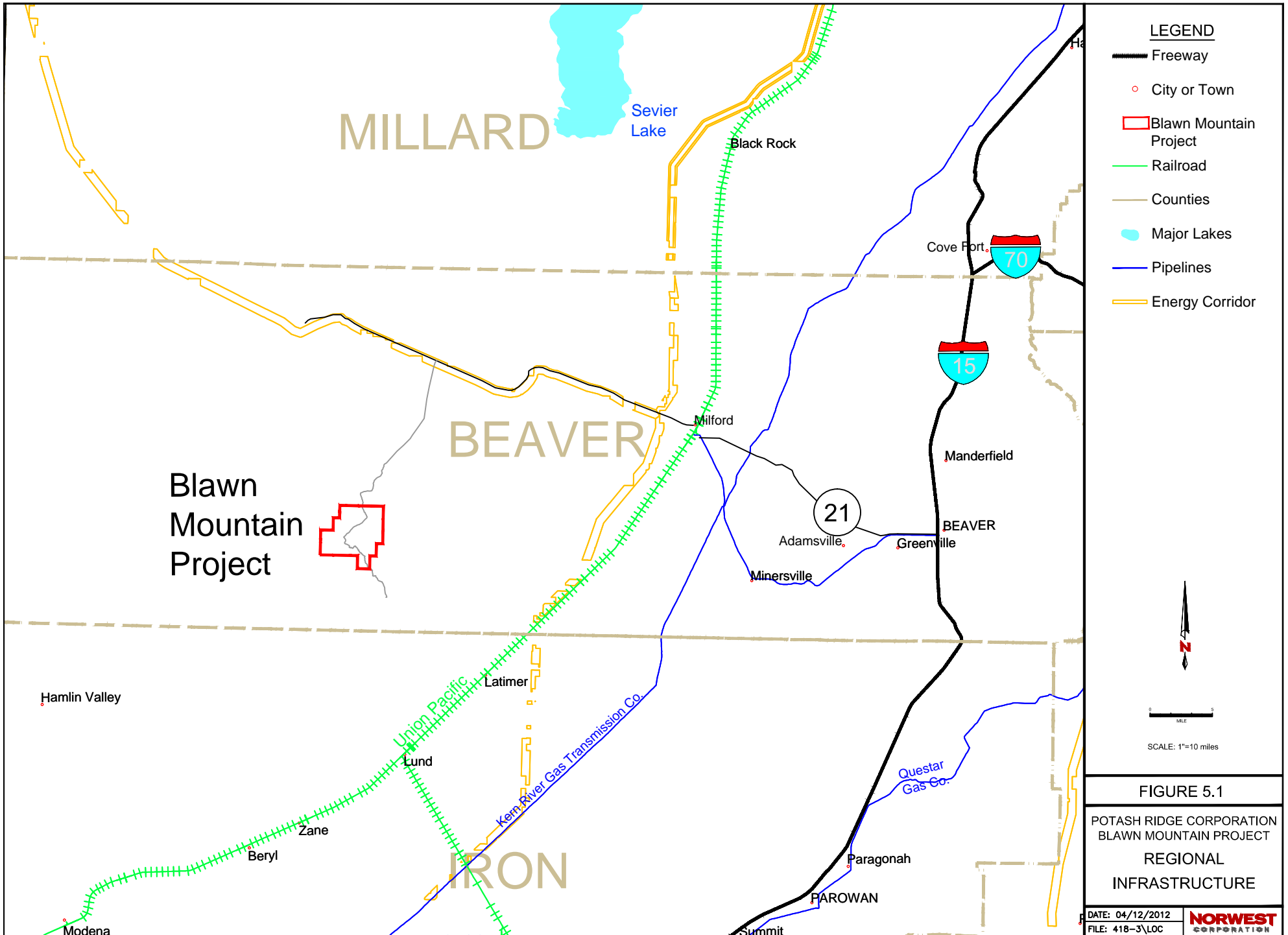


**FIGURE 4.2**

POTASH RIDGE CORPORATION  
BLAWN MOUNTAIN PROJECT  
EXPLORATION/OPTION  
AREA LOCATION

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**NORWEST**  
CORPORATION



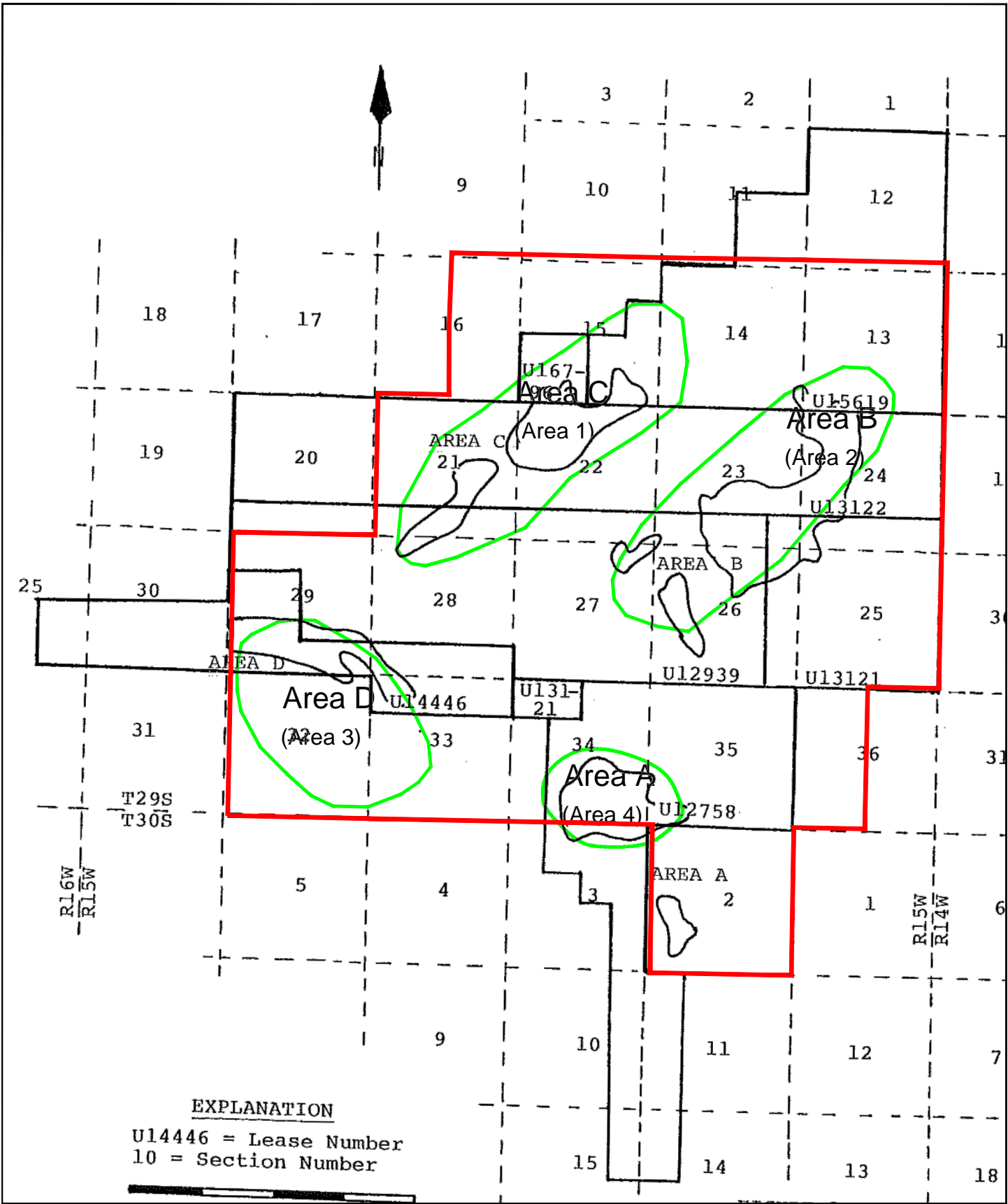
**LEGEND**

- Freeway
- City or Town
- Blawn Mountain Project
- Railroad
- Counties
- Major Lakes
- Pipelines
- Energy Corridor



FIGURE 5.1

POTASH RIDGE CORPORATION  
 BLAWN MOUNTAIN PROJECT  
 REGIONAL  
 INFRASTRUCTURE

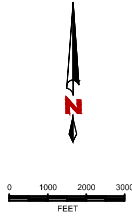


**FIGURE 6.1**  
 POTASH RIDGE CORPORATION  
 BLAWN MOUNTAIN PROJECT  
 FORMER NG  
 ALUNITE PROJECT AREAS

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**LEGEND**

- Current Blawn Mountain Property
- Former NG Alunite Boundary



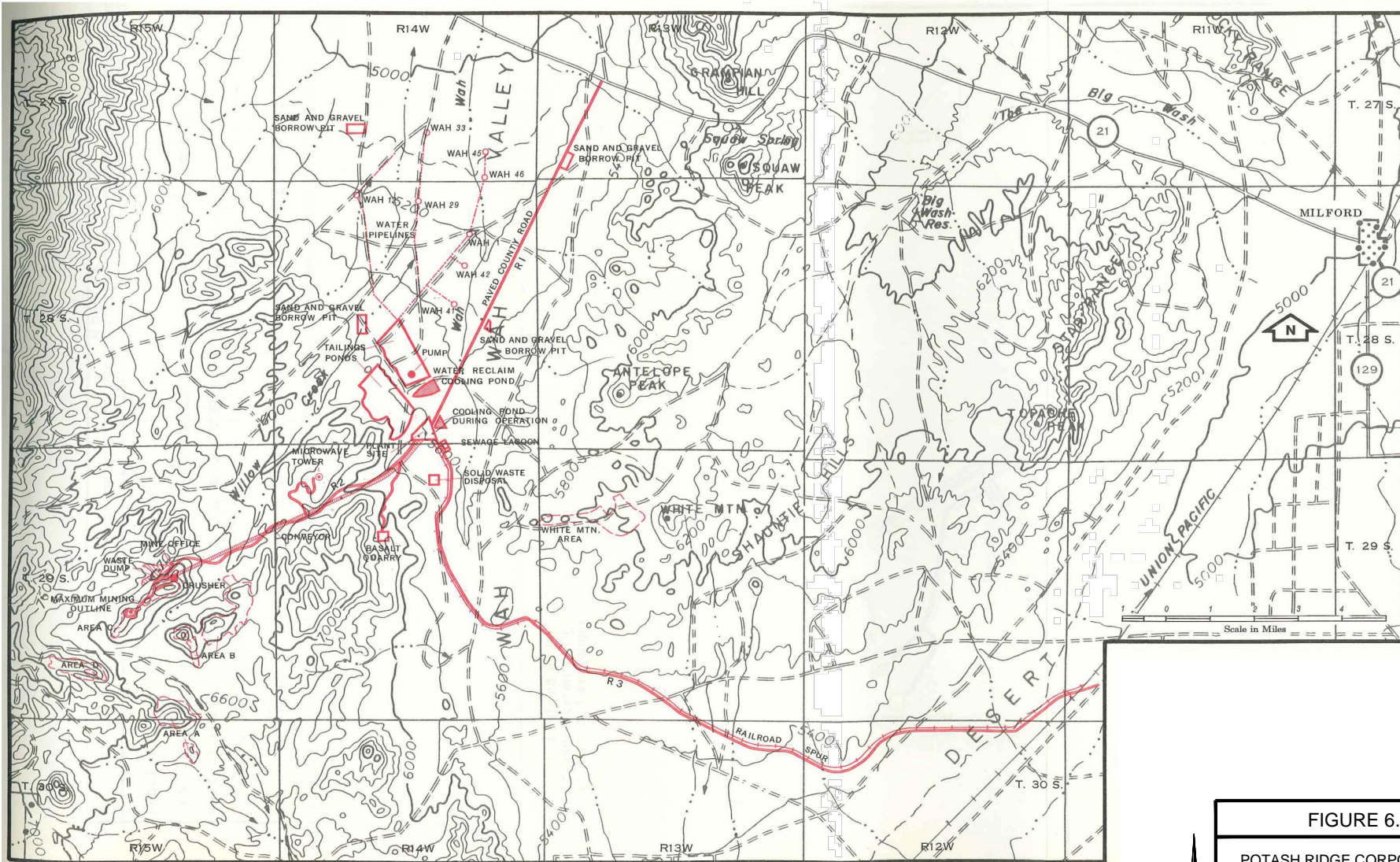
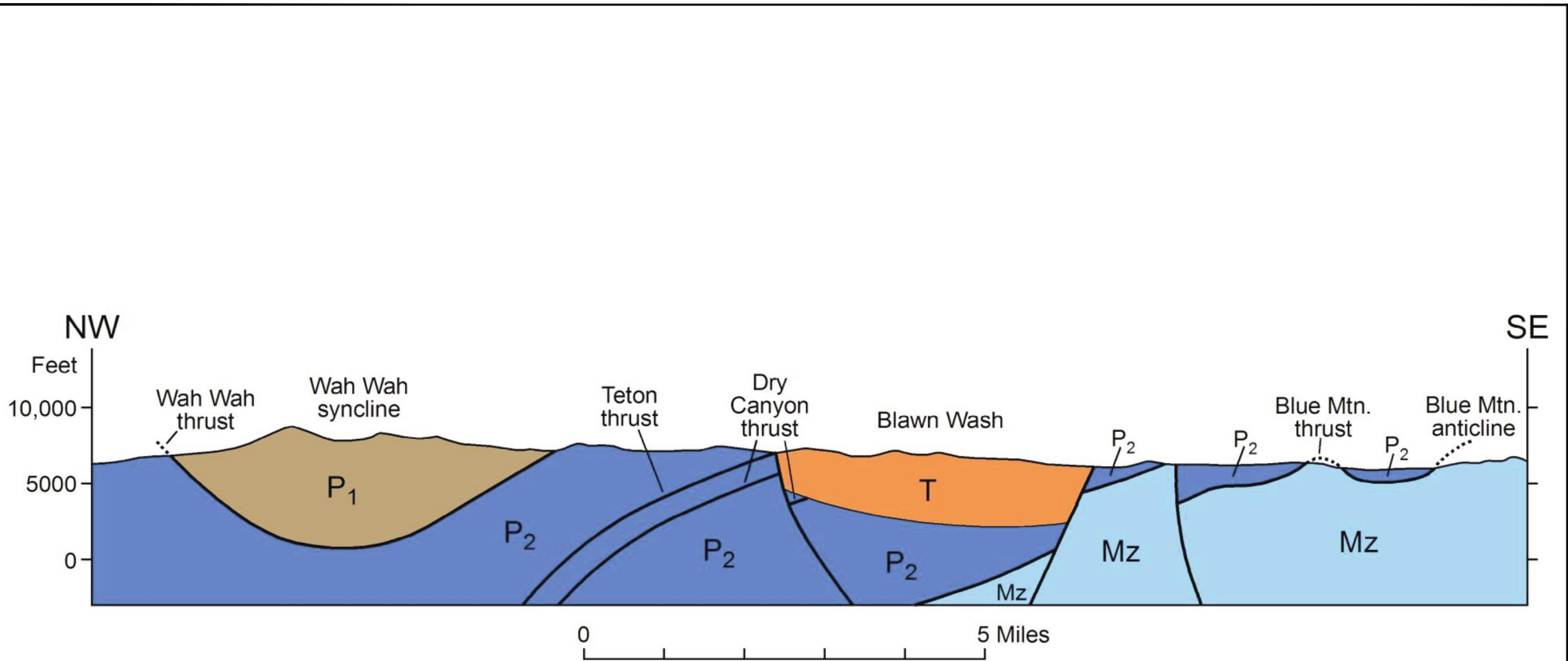


FIGURE 6.2

POTASH RIDGE CORPORATION  
 BLAWN MOUNTAIN PROJECT  
 FORMER NG PROPERTY  
 DEVELOPMENT PLAN



*T = Tertiary volcanic rocks*

*Mz = Mesozoic block beneath the Blue Mountain thrust*

*P<sub>2</sub> = Upper Paleozoic block between the Blue Mountain and Wah Wah thrusts*

*P<sub>1</sub> = Lower Paleozoic block above the Wah Wah thrust*

*Modified from Abbott and others (1983) and Hintze and others (1994).*



FIGURE 7.1		
POTASH RIDGE CORPORATION BLAWN MOUNTAIN PROJECT REGIONAL GEOLOGICAL CROSS SECTION		
DATE: 06/04/2012	PROJECT: 2XXX	<b>NORWEST</b> CORPORATION
FILE: 418-3\XSEC		

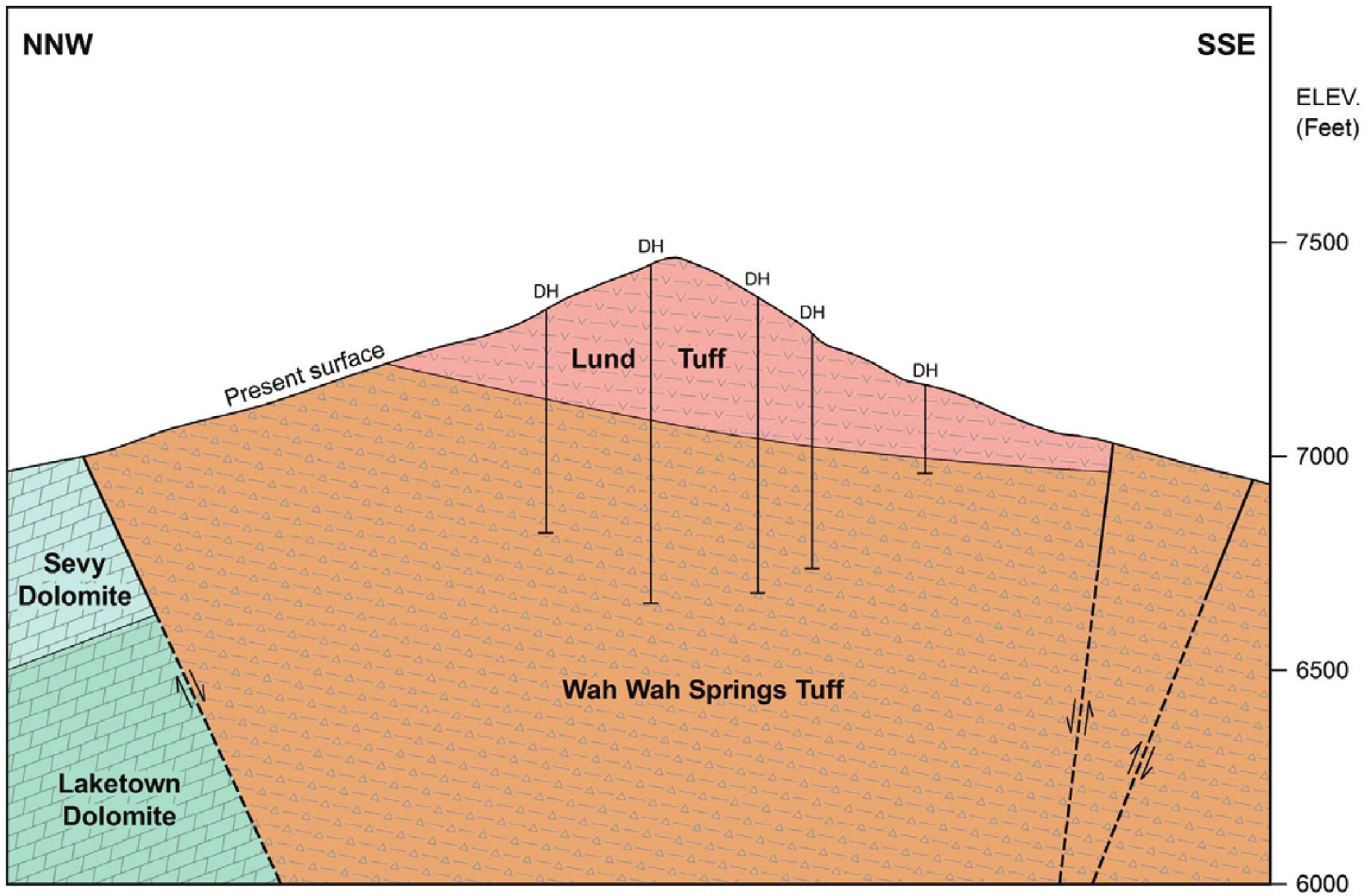
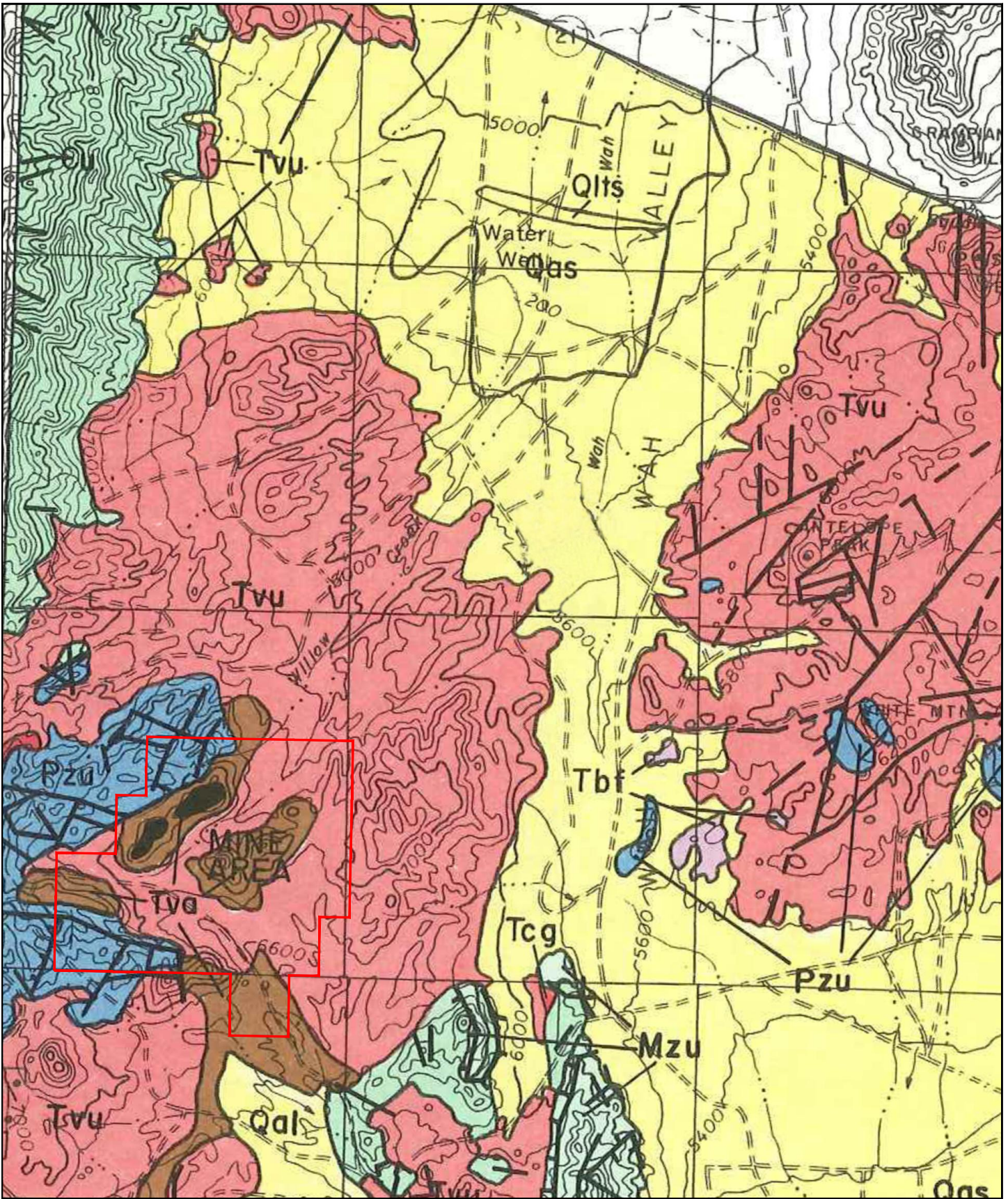


FIGURE 7.2  
 POTASH RIDGE CORPORATION  
 BLAWN MOUNTAIN PROJECT  
 LOCAL GEOLOGICAL  
 CROSS SECTION  
 DATE: 06/04/2012  
 FILE: 418-3\XSEC **NORWEST**  
 CORPORATION



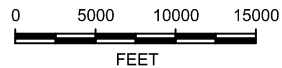
**LEGEND**

**SEDIMENTARY**

- Qal, Qas, Qlts ALLUVIUM AND LAKE DEPOSITS
- Tcg CONGLOMERATE
- Mzu MESOZOIC SANDSTONE AND SHALE
- Rzu PALEOZOIC LIMESTONES, DOLOSTONES AND QUARTZITES
- Cu CAMBRIAN LIMESTONES AND QUARTZITES

**VOLCANIC**

- Tva ALTERED IGNIMBRITES
- Tvu UNDIFFERENTIATED VOLCANICS
- Tbf BASALT FLOWS
- NORMAL FAULTS
- THRUST FAULTS



**FIGURE 7.3**

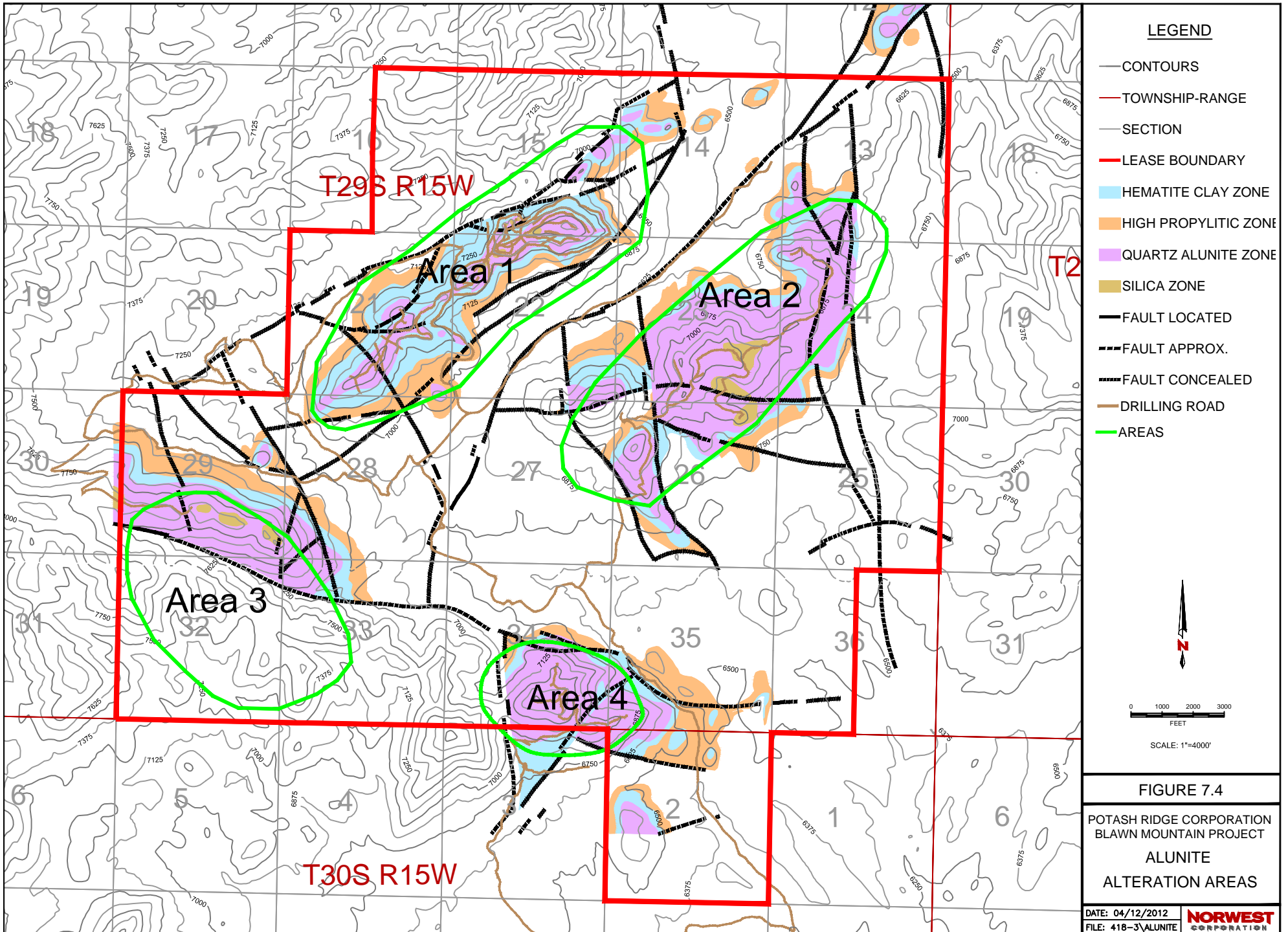
POTASH RIDGE CORPORATION  
BLAWN MOUNTAIN PROJECT  
**SURFACE  
GEOLOGY MAP**

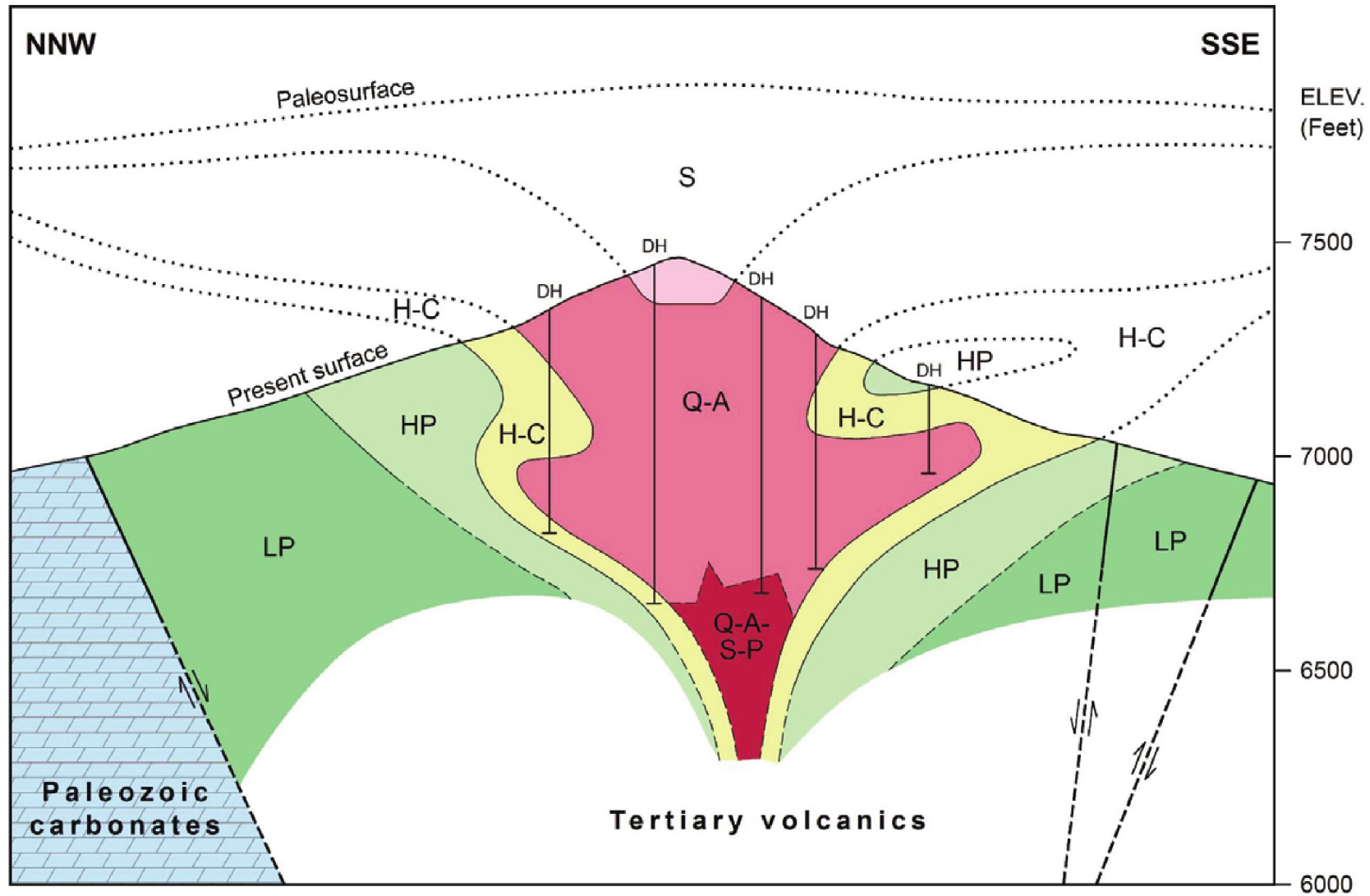
DATE: 04/11/2012  
FILE: 418-3\Loc

SCALE:  
1:12000









- Q-A-S-P Quartz-alunite-sericite-pyrite zone
- Q-A Quartz-alunite zone
- S Silica zone
- H-C Hematite-clay zone
- HP High propylitic zone
- LP Low propylitic zone

FIGURE 7.5

POTASH RIDGE CORPORATION  
 BLAWN MOUNTAIN PROJECT  
 ALUNITE ALTERATION  
 CROSS SECTION

DATE: 06/04/2012  
 FILE: 418-3\XSEC



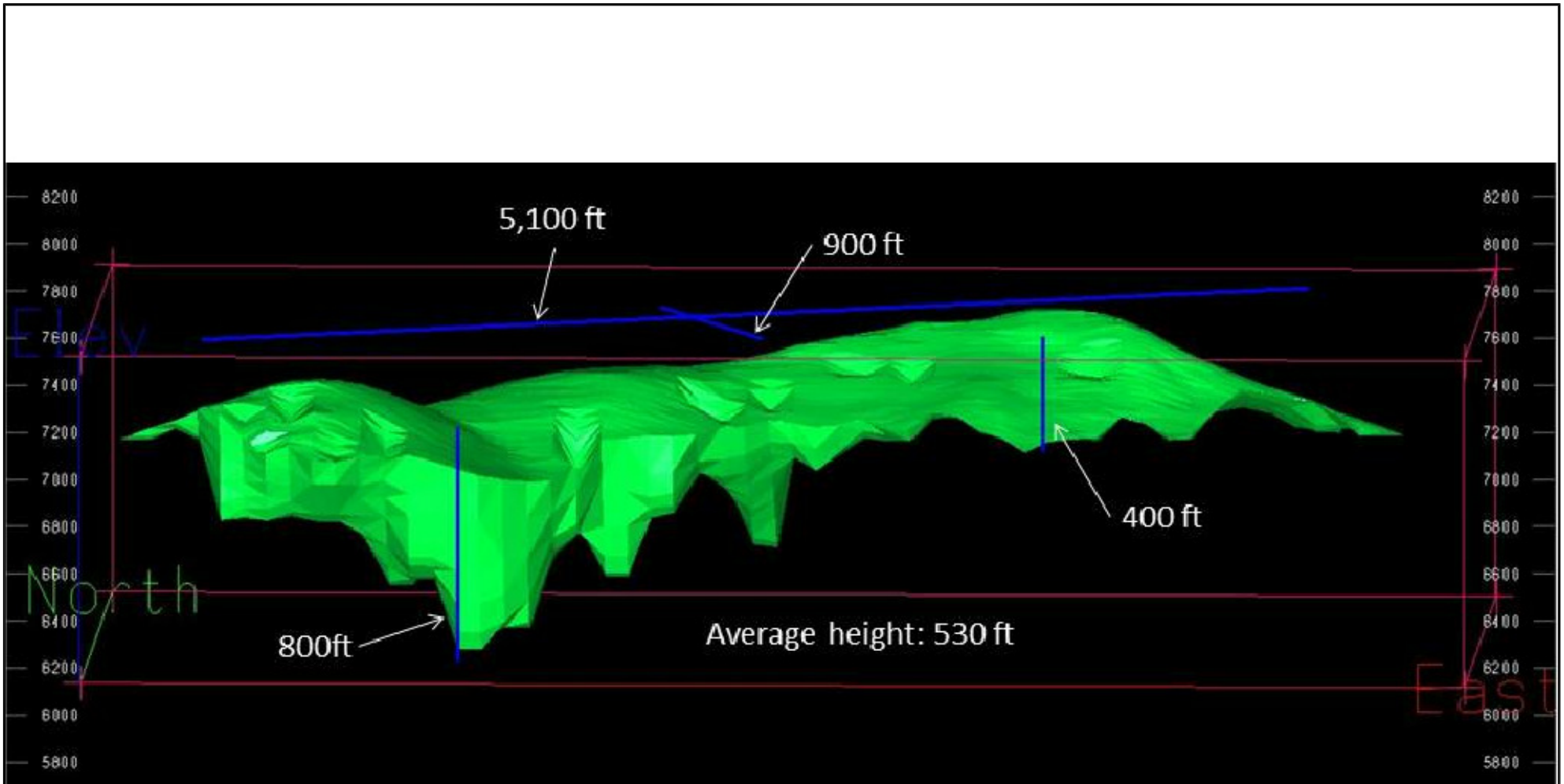
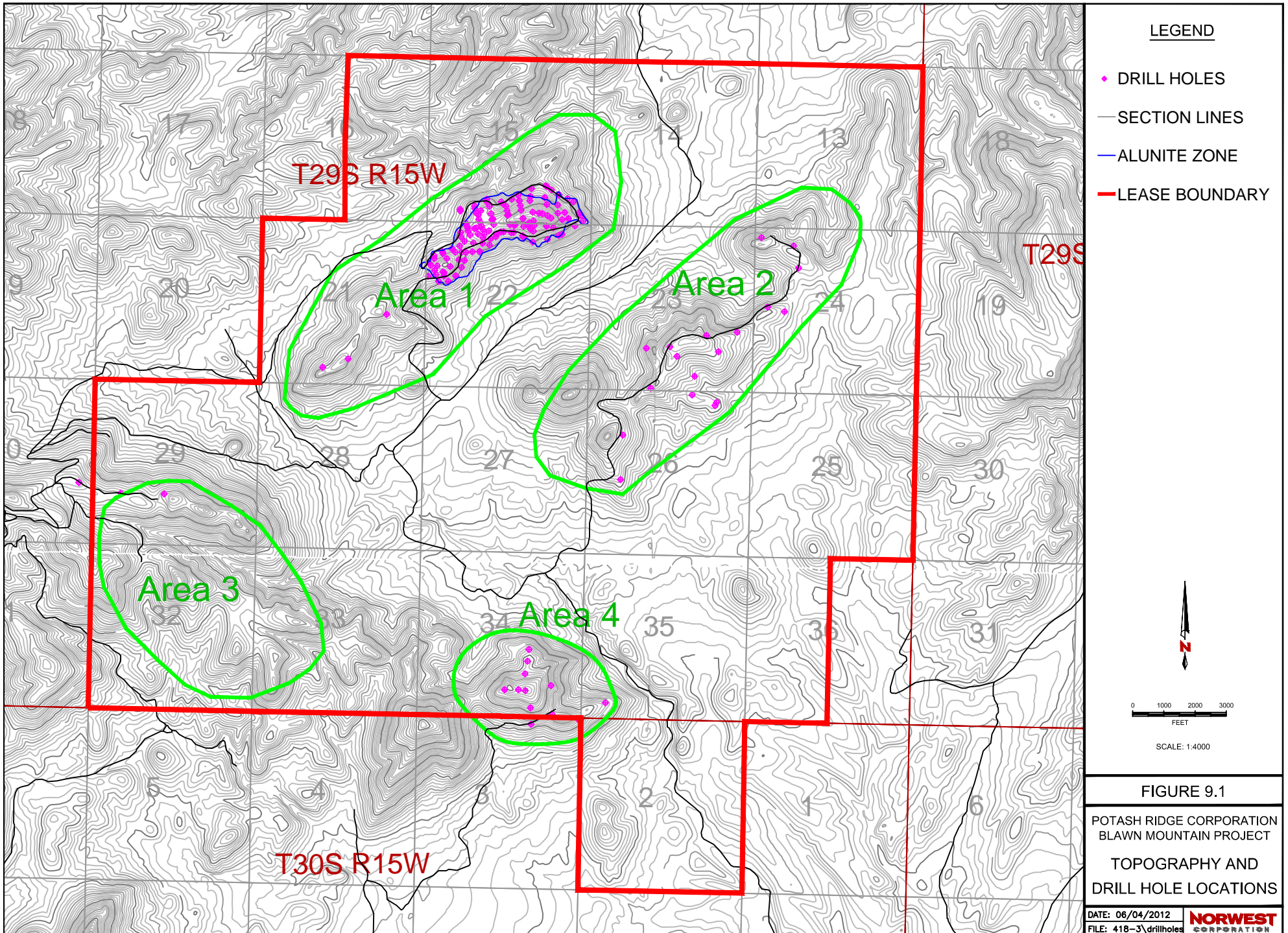
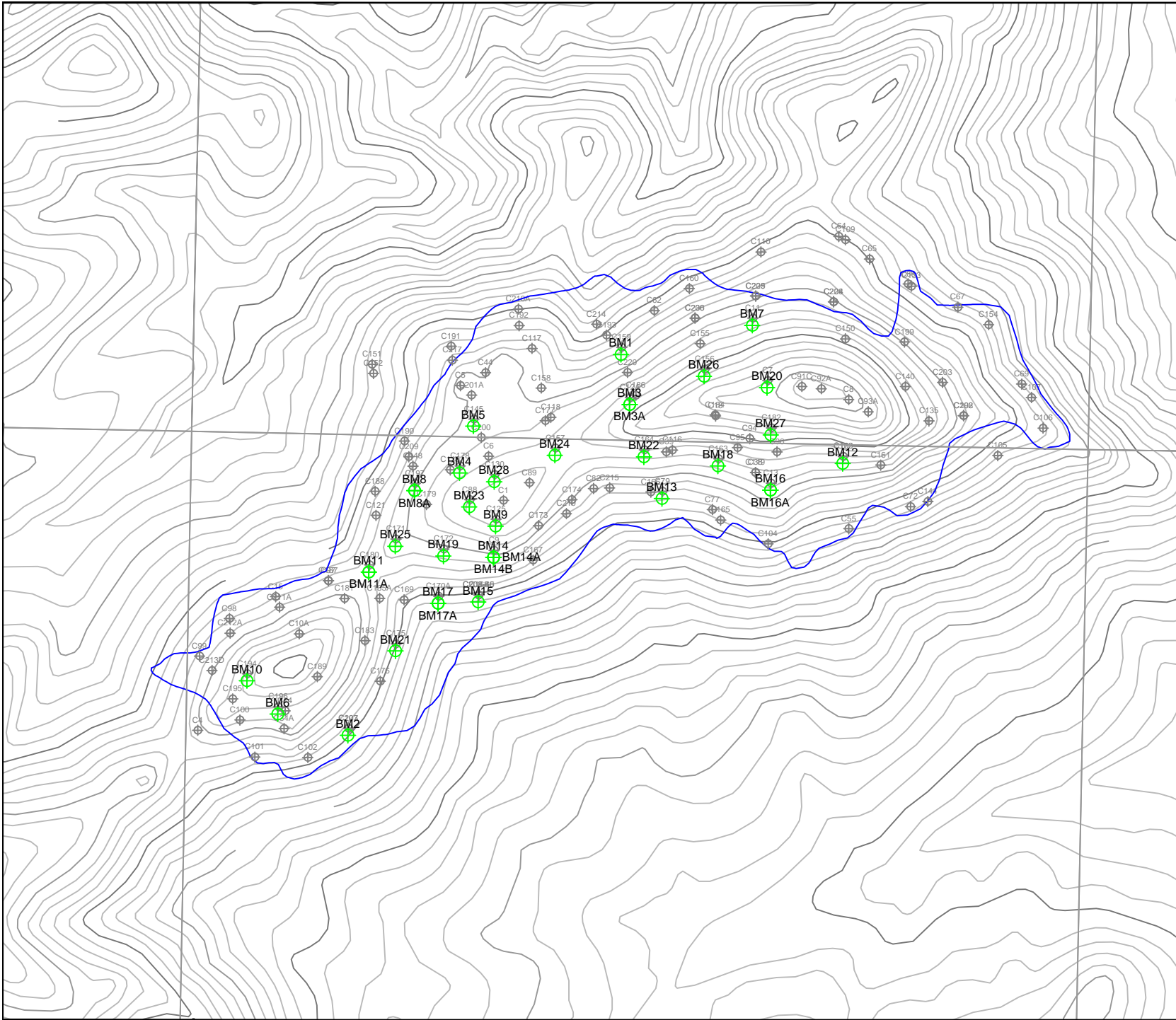


FIGURE 7.6

POTASH RIDGE CORPORATION  
 BLAWN MOUNTAIN PROJECT  
 3DBM REPRESENTATION  
 OF AREA 1 ALUNITE ZONE

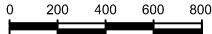
DATE: 04/4/2012	SCALE: as noted	<b>NORWEST</b> CORPORATION
FILE: 418-3 figures		





**LEGEND**

- ◆ POTASH RIDGE DRILL HOLES
- ◆ DRILL HOLES
- SECTION LINES
- ALUNITE ZONE



SCALE: 1:800

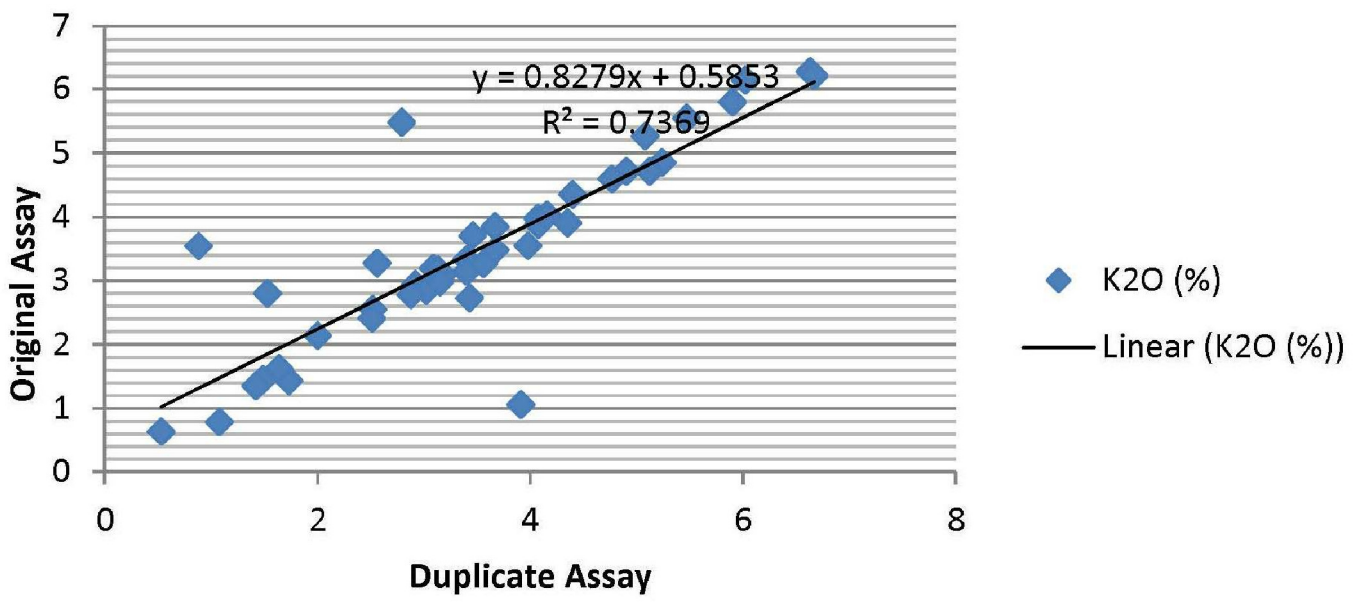
**FIGURE 9.2**

**POTASH RIDGE CORPORATION  
BLAWN MOUNTAIN PROJECT  
AREA 1  
ALUNITE ZONE  
DRILL HOLES**

DATE: 04/12/2012  
FILE: 418-3\drillholes



## K2O (%)



## Al2O3 (%)

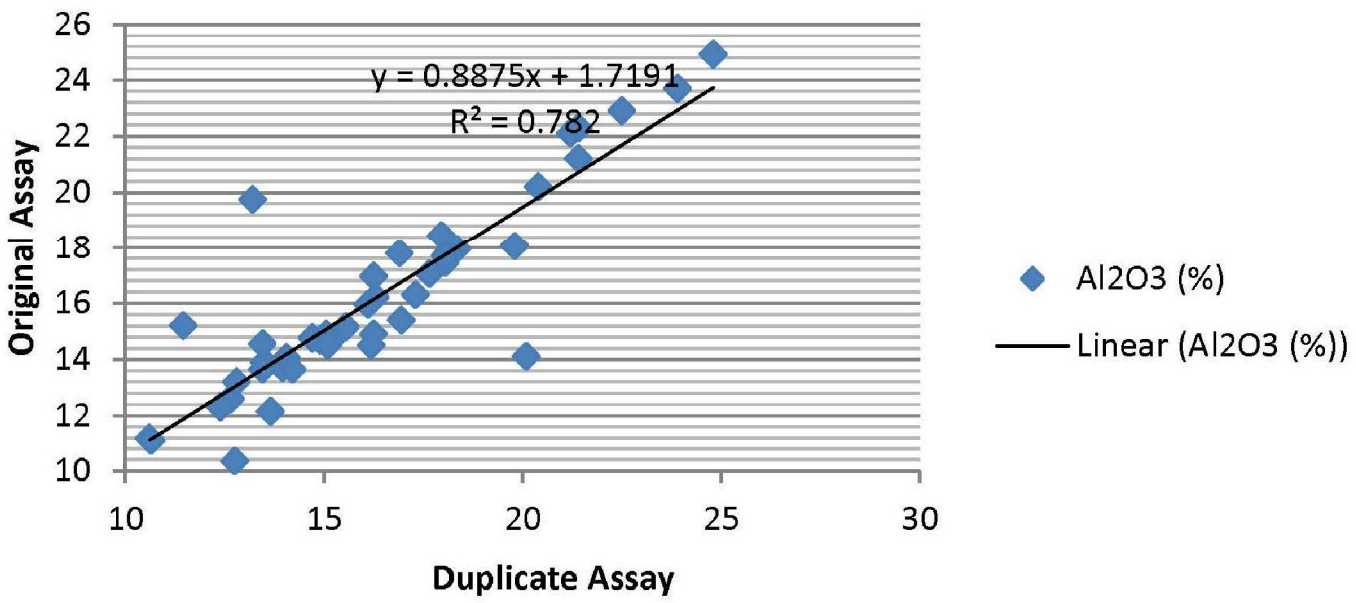
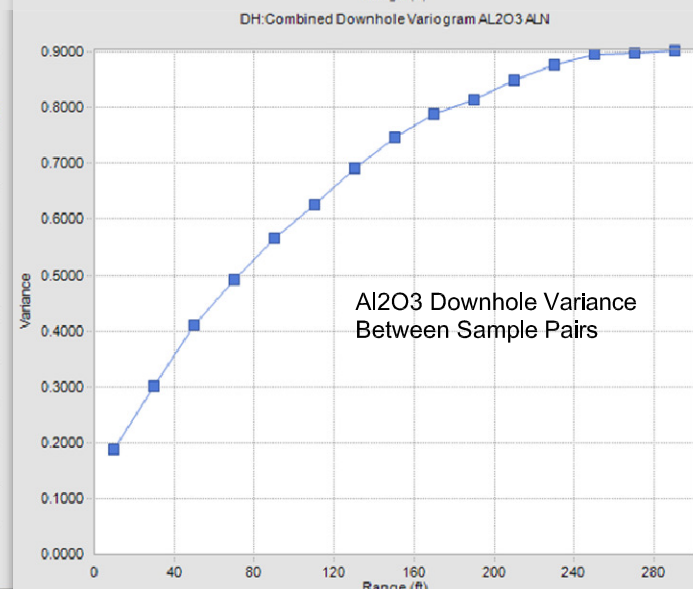
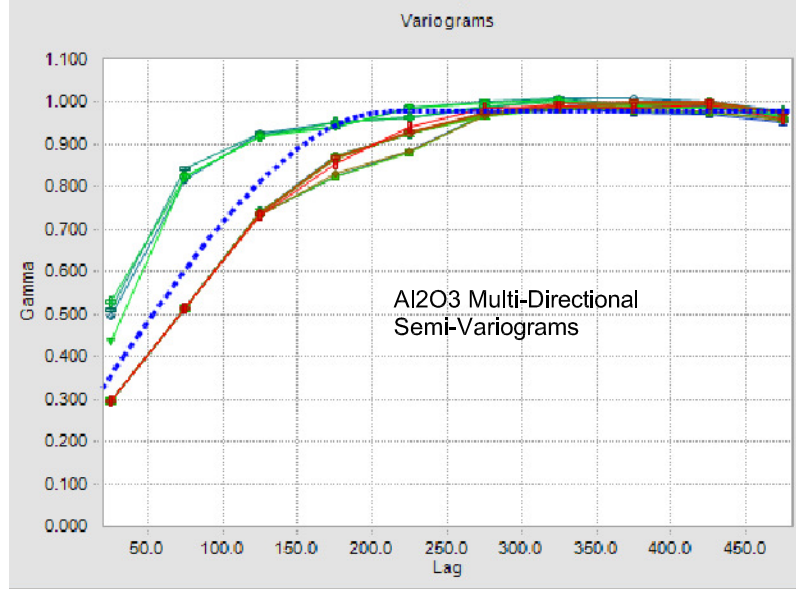
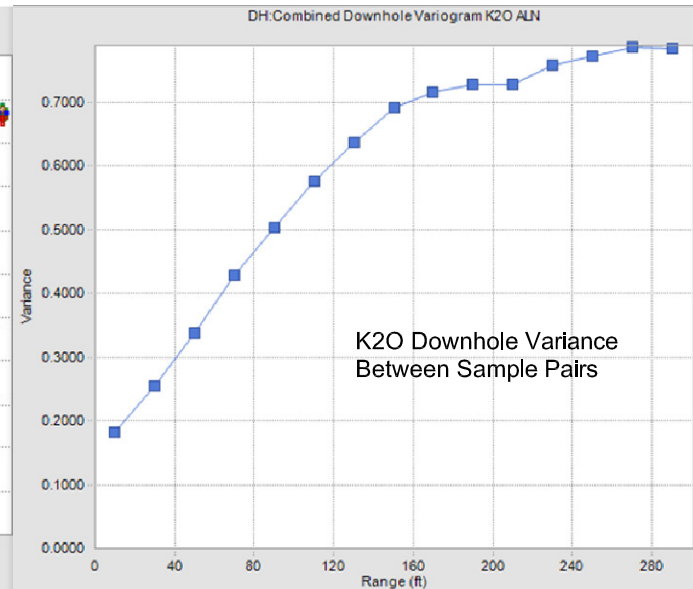
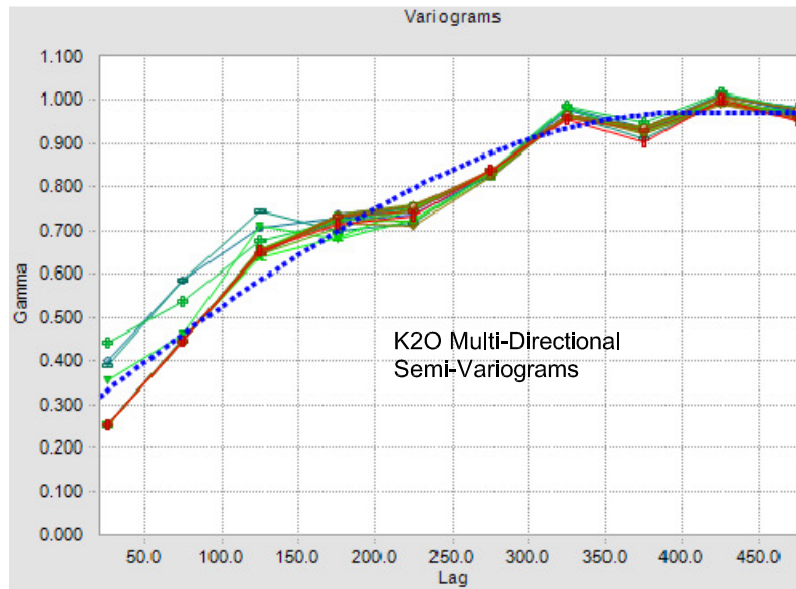


FIGURE 12.1

POTASH RIDGE CORPORATION  
 BLAWN MOUNTAIN PROJECT  
 K2O and Al2O3 COMPARISONS  
 FOR ORIGINAL and  
 DUPLICATE ASSAYS

DATE: 04/13/2012  
 FILE: 418-3





Best Fit Experimental Semi-Variograms (Spherical Model)

FIGURE 14.1

POTASH RIDGE CORPORATION  
BLAWN MOUNTAIN PROJECT  
VARIOGRAMS OF  
ANALYTICAL RESULTS

DATE: 04/4/2012  
FILE: 418-3 figures

SCALE:  
as noted

**NORWEST**  
CORPORATION

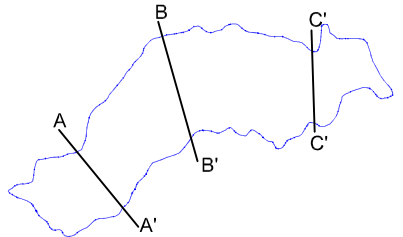
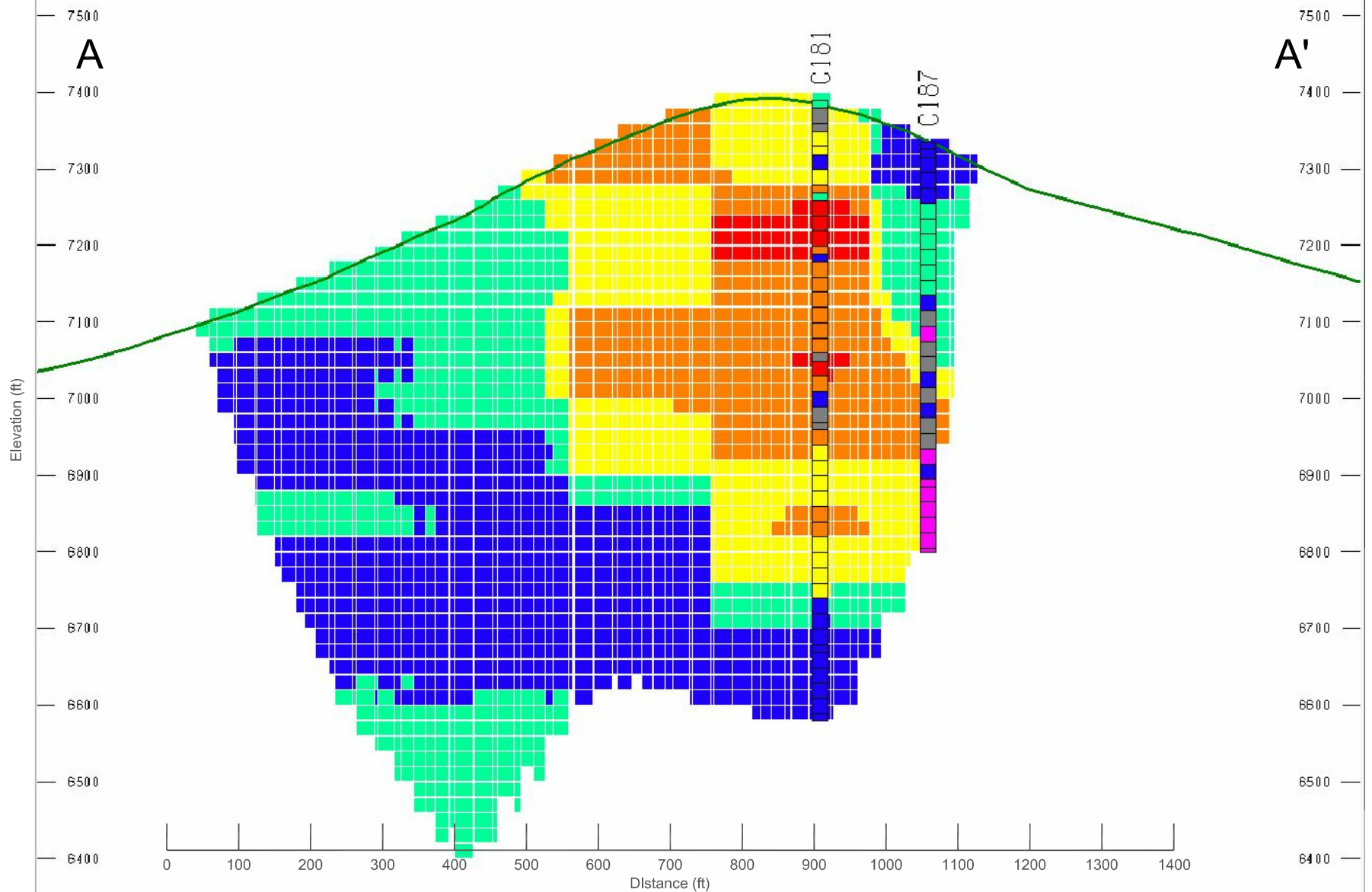
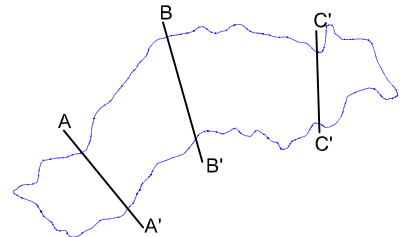
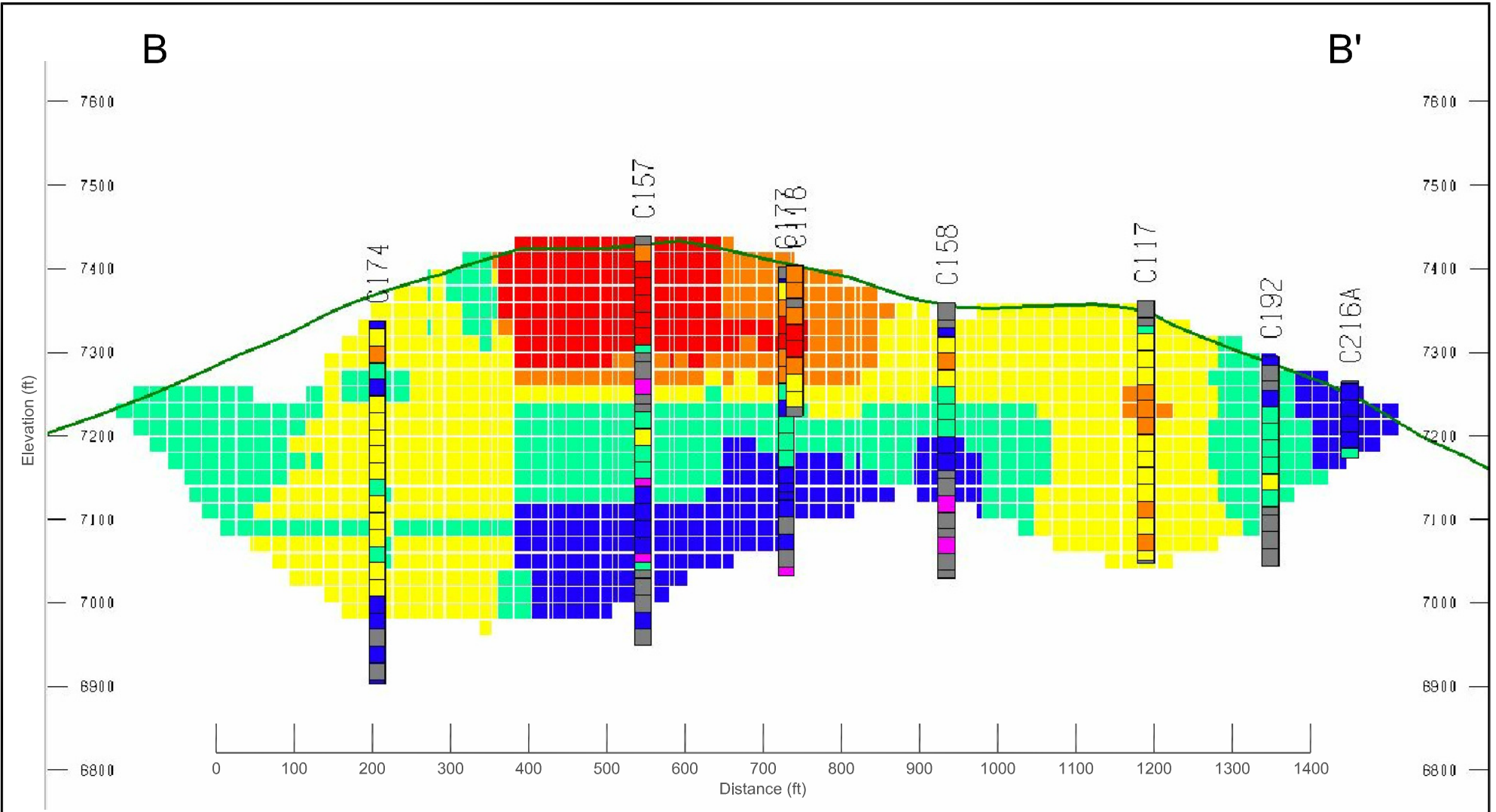


FIGURE 14.2

POTASH RIDGE CORPORATION  
 BLAWN MOUNTAIN PROJECT  
 AREA 1 BLOCK MODEL  
 CROSS-SECTION A-A'





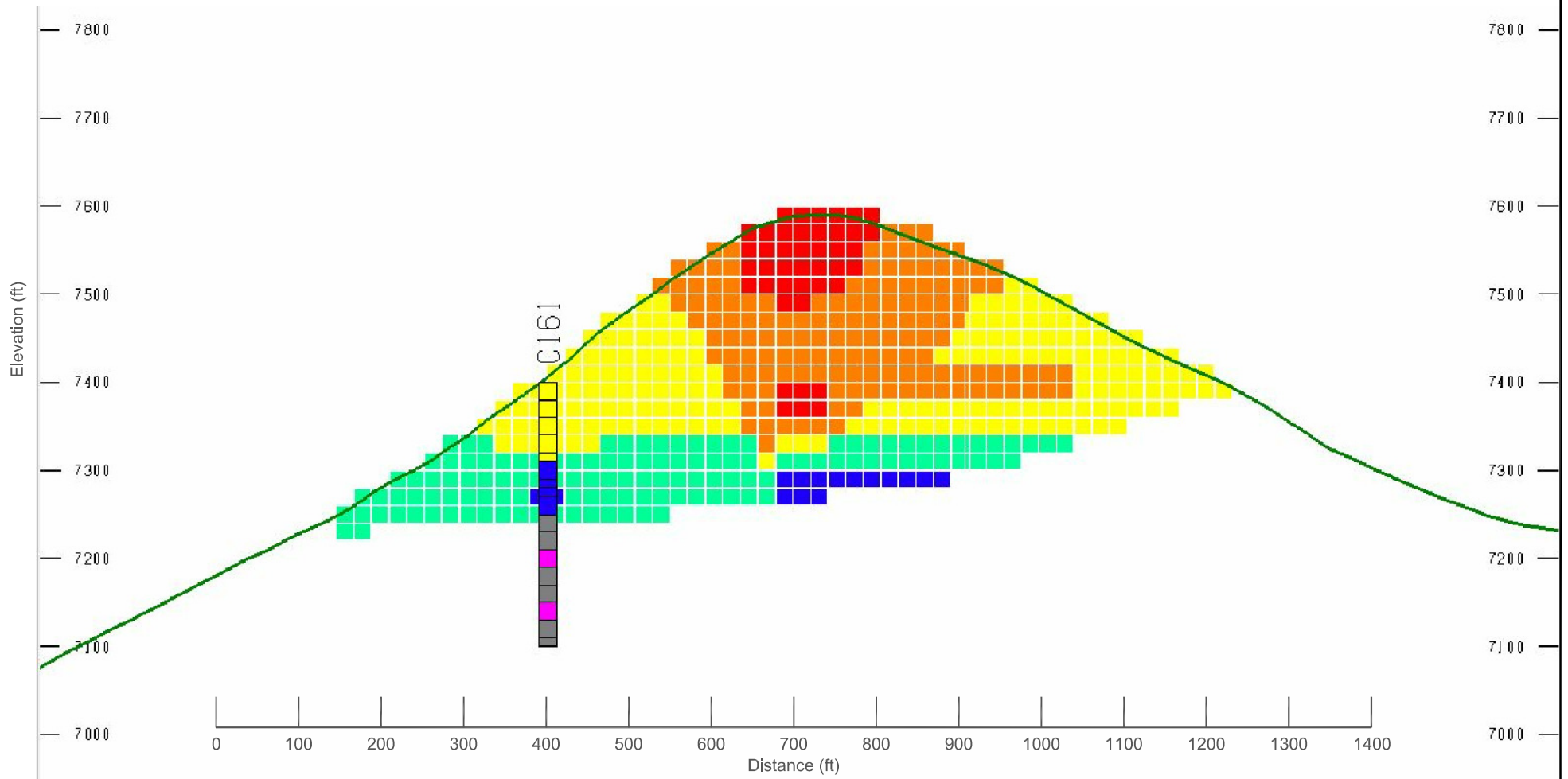
**FIGURE 14.3**

POTASH RIDGE CORPORATION  
BLAWN MOUNTAIN PROJECT  
AREA 1 BLOCK MODEL  
CROSS-SECTION B-B'

DATE: 04/4/2012    SCALE: as noted  
FILE: 418-3 figures    **NORWEST CORPORATION**

C

C'



K2O%

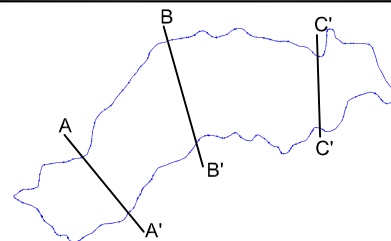


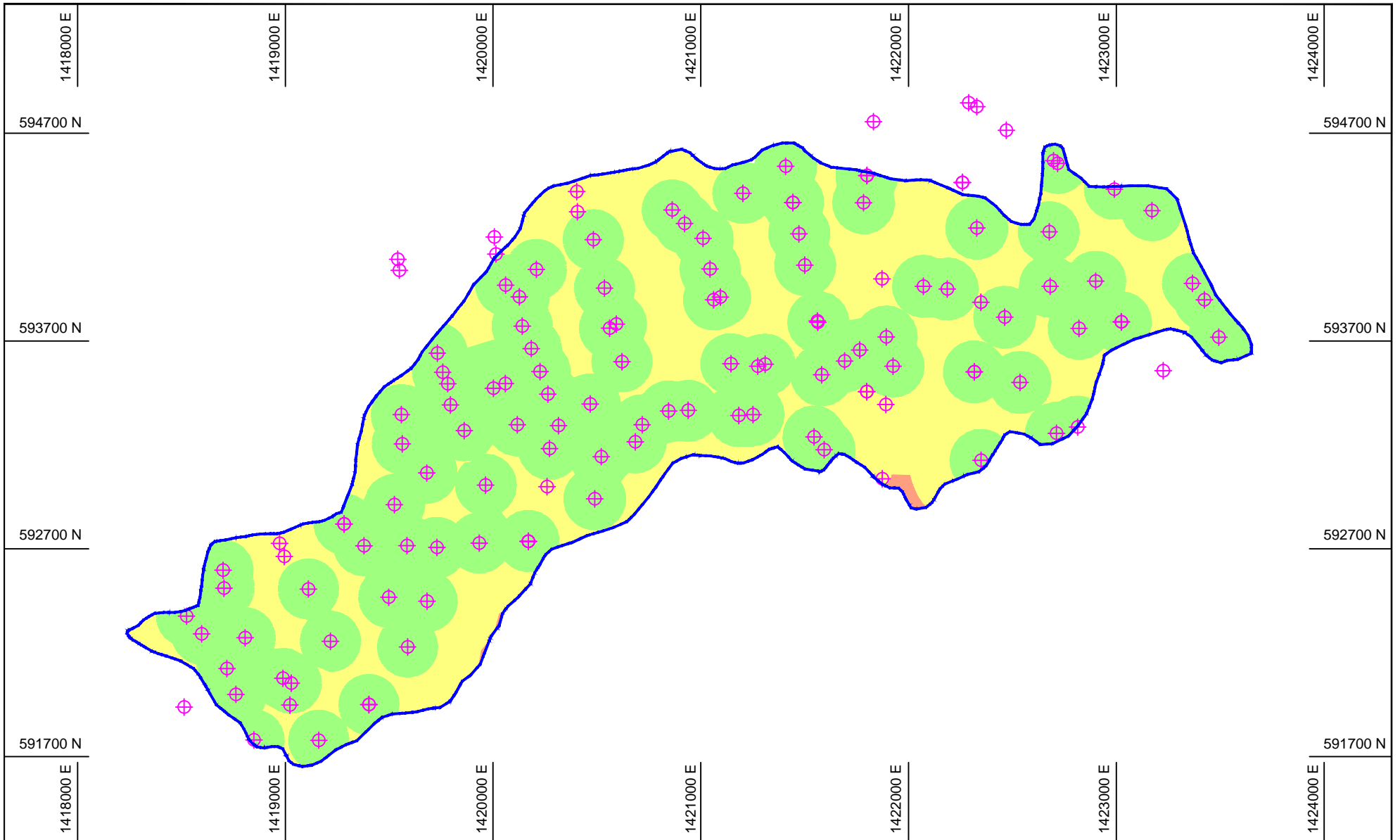
FIGURE 14.4

POTASH RIDGE CORPORATION  
 BLAWN MOUNTAIN PROJECT  
 AREA 1 BLOCK MODEL  
 CROSS-SECTION C-C'

DATE: 04/4/2012  
 FILE: 418-3 figures

SCALE:  
 as noted





Resource Classification



Measured  
Indicated  
Inferred



Drillhole



Alunite Zone

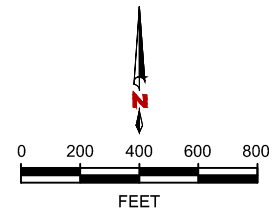


FIGURE 14.5

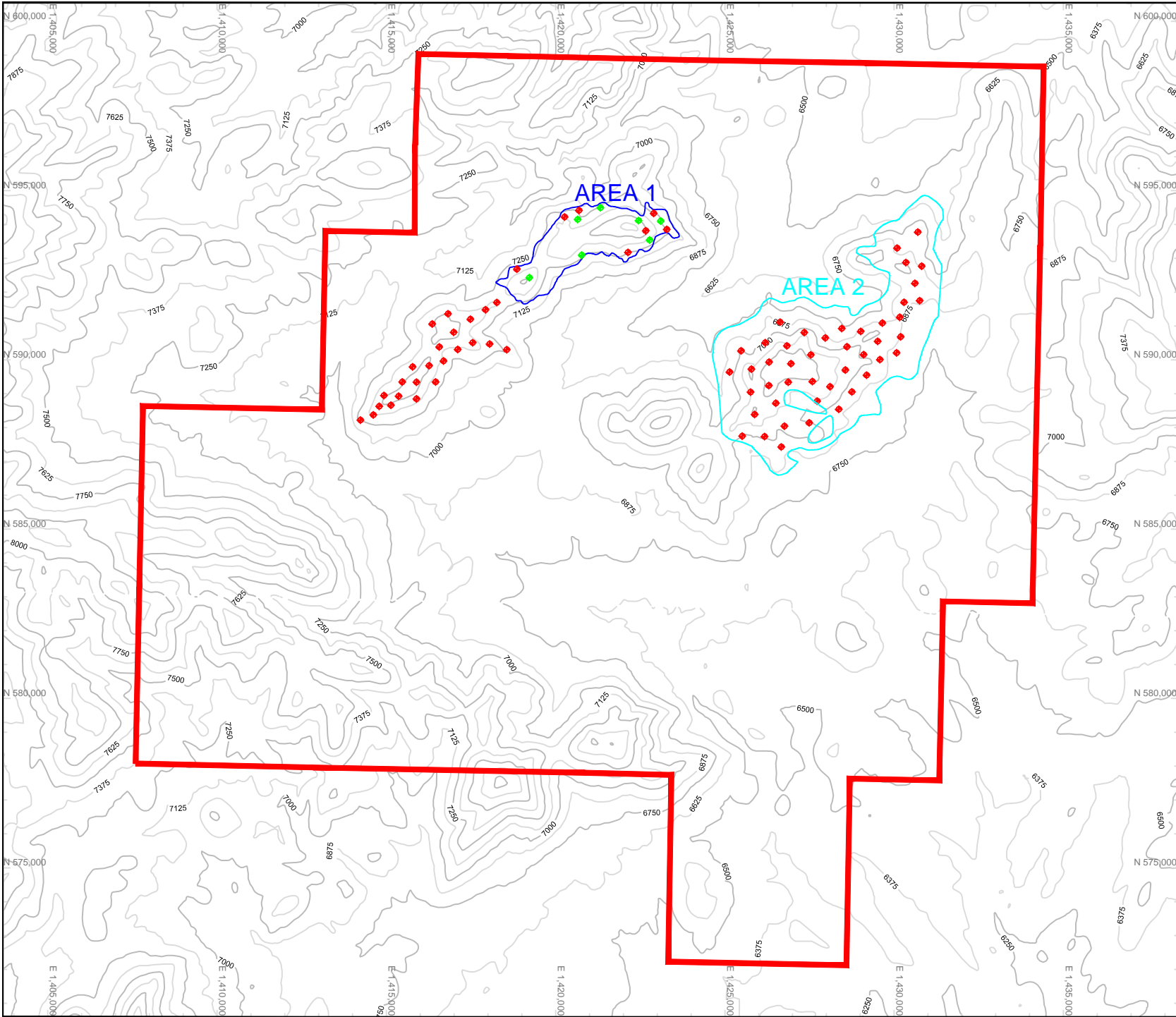
POTASH RIDGE CORPORATION  
BLAWN MOUNTAIN PROJECT

RESOURCE  
CLASSIFICATION MAP

DATE: 04/4/2012  
FILE: 418-3 figures

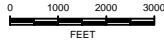
SCALE:  
1:650

**NORWEST**  
CORPORATION



**LEGEND**

- ◆ CORE DRILL HOLES
- ◆ DRILL HOLES
- ALUNITE ZONE AREA 1
- ALUNITE ZONE AREA 2
- LEASE BOUNDARY



SCALE: 1"=4000'

**FIGURE 26.1**

POTASH RIDGE CORPORATION  
 BLAWN MOUNTAIN PROJECT  
 PROPOSED DRILL HOLE  
 LOCATION MAP

DATE: 06/04/2012  
 FILE: 418-3\PROPDH

