

**NI 43-101 TECHNICAL REPORT**  
**ON THE**

**SAN RAFAEL URANIUM PROJECT**

**(Including the: DEEP GOLD URANIUM DEPOSIT and the DOWN YONDER  
URANIUM DEPOSIT)**

**EMERY COUNTY, UTAH, USA**

**Prepared for Pinion Ridge Mining LLC, Homeland Uranium Inc.  
(Utah) and Homeland Uranium Inc. (Canada)**

*In Compliance with Canadian National Instrument 43-101  
“Standards of Disclosure for Mineral Projects”*

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**Report Date: November 19, 2014**

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### **3.0 SUMMARY**

The San Rafael Uranium Project, located in east-central Emery County, Utah, is owned by Homeland Uranium Inc. (Utah) ("HUI Sub") a wholly-owned subsidiary of Homeland Uranium Inc. (Canada) ("HUI"). HUI (through HUI Sub) will acquire the San Rafael Uranium Project pursuant to a Share Exchange Agreement that will be dated November 6, 2014, and entered into among HUI, HUI Sub, Pinion Ridge Mining LLC ("PRM") and certain other parties. PRM previously acquired the San Rafael Uranium Project from Energy Fuels Inc. ("EFI") through an Assumption Agreement dated in August, 2014, and an Asset Purchase Agreement that was amended and restated July 1, 2014, with Energy Fuels Inc. (EFI) and its subsidiaries Magnum Minerals USA Corp. (Magnum) and Energy Fuels Resources Corp. ("EFR"). The San Rafael Uranium Project land position is comprised of a contiguous claim block covered by 136 BM unpatented federal lode mining claims and 10 Hollie unpatented federal lode mining claims, and the State Section 36 Mineral Lease area.

Magnum's interest in the San Rafael Uranium Project was obtained on November 19, 2006, via a joint venture (JV) agreement with Energy Metals Corporation (EMC), the underlying property owner. Magnum spent in excess of US\$1,000,000 in work-related expenses and issued 850,000 treasury shares, thereby meeting all the requirements to complete an 80% earn-in. Subsequently, Magnum's interest increased to 100%, with EMC's interest diluted to a non-participatory 2% Net Smelter Royalty (NSR). After the signing of the Magnum/EMC JV agreement, EMC was acquired by Uranium One. EFI became the owner of Magnum as a result of a merger with Magnum in June 2009 whereby Magnum became a wholly-owned subsidiary of EFI. References in this report to EFI, EFR and Magnum are to each of those entities individually, and references to "Energy Fuels" are to EFI, EFR and Magnum collectively.

The two core uranium deposits of the San Rafael Project, the Down Yonder and Deep Gold, were originally discovered by Continental Oil Company (Conoco) and Pioneer Uranium geologists in the late 1960s and 1970s to early 1980s, respectively. Exploration drilling was conducted just east of the core of the Tidwell Mineral Belt and north-northeast of the Acerson Mineral Belt. The area containing the deposits was considered to contain highly prospective paleo trunk stream channel trends. Some of the larger historic producing mines in the area were Atlas Minerals' Snow, Probe, and Lucky Mines. The deposits in the San Rafael Project are peneconcordant, channel-controlled, sandstone-hosted, trend type, with mineralization hosted in the upper sandstone sequence of the Salt Wash Member of the Upper Jurassic Morrison Formation.

In addition to Conoco, Pioneer Uranium, and Atlas Minerals, the US Atomic Energy Commission (AEC) and other companies (Union Carbide, Energy Fuels Nuclear, and others) conducted

exploration drilling and mining in the area. Some of these companies performed historic resource estimates on both the Down Yonder and Deep Gold deposits, but, they are not considered compliant with NI 43-101 standards. These resource estimates are of historical importance, were generated by senior mining companies with significant uranium exploration and production experience and are considered as relevant checks to this updated Technical Report.

This report updates information set out in two Technical Reports previously filed by Magnum. Those reports are “Down Yonder Uranium Project Emery County, Utah USA” prepared by Laurence E. Pancoast, Reg. Prof. Geol. #790, State of Idaho, dated March 3, 2008 and “Amended Technical Report on Magnum Uranium Corp.’s Deep Gold Uranium Deposit Emery County, Utah” prepared by Steve R. Sturm, CPG #08776, dated May 21, 2009. This report also updates information set out in a Technical Report previously filed by Energy Fuels Inc. This report was titled "San Rafael Uranium Project, Emery County, Utah, USA" prepared by O. Jay Gatten, Utah Professional Geologist #5222768-22250, dated March 21, 2011. The present report combines the descriptions of the two uranium deposits in the previous reports and includes discussions of all other known mineralized areas within the Homeland Uranium (Utah)'s San Rafael Project area.

For this report, no economic evaluation of the mineral resources was performed. Thus, the estimate that follows is solely a Mineral Resource. The combined Indicated Mineral Resource for the entire San Rafael Project comprises a resource of 758,000 tons @ 0.225%  $U_3O_8$  containing 3,404,600 lbs  $U_3O_8$  and an Inferred Mineral Resource of 453,800 tons @ 0.205%  $U_3O_8$  containing 1,859,500 lbs  $U_3O_8$ . Using the historic District average recovered  $U_3O_8:V_2O_5$  ratio of 1:1.35, this same tonnage could yield Indicated Mineral Resources of approximately 4,596,000 pounds  $V_2O_5$  at an average grade of 0.30%  $V_2O_5$ . The same Inferred Mineral Resource tonnage could yield approximately 2,510,000 pounds  $V_2O_5$  at an average grade of 0.28%  $V_2O_5$ . The mineral resource is broken out by Indicated and Inferred as shown in Table 3-1, below for the various deposits within the project area. (Worksheets for the various mineral resource areas' estimations are in Appendix I).

Subsequent to the May 2009 Technical Report on the Deep Gold deposit, Energy Fuels purchased the Hollie claims from Titan Uranium (January, 2011), giving Energy Fuels the rights to 100% of the Deep Gold deposit. The mineral resource controlled by the newly acquired Hollie claim portion is combined in Table 3-1 with the Magnum resources that were previously referred to as the “West Deep Gold” (Sturm, 2009).

There are no changes to the mineral resource estimates, and no mine development work has taken place in the San Rafael Uranium Project area, since the March, 2011, Technical Report was prepared and submitted (Gatten, 2011).

Table 3-1 San Rafael Project Mineral Resources

Subarea of San Rafael Property	Indicated Mineral Resources (grade and tons)	Indicated Mineral Resources (lbs)	Inferred Mineral Resources (grade and tons)	Inferred Mineral Resources (lbs)
Deep Gold including 4484 and North Areas	0.246% U <sub>3</sub> O <sub>8</sub>	2,219,400 U <sub>3</sub> O <sub>8</sub>	0.329% U <sub>3</sub> O <sub>8</sub>	554,500 U <sub>3</sub> O <sub>8</sub>
	0.33% V <sub>2</sub> O <sub>5</sub>	2,996,000 V <sub>2</sub> O <sub>5</sub>	0.45% V <sub>2</sub> O <sub>5</sub>	748,600 V <sub>2</sub> O <sub>5</sub>
	450,250 tons		84,400 tons	
Down Yonder Area	0.177% U <sub>3</sub> O <sub>8</sub>	989,300 U <sub>3</sub> O <sub>8</sub>	0.176% U <sub>3</sub> O <sub>8</sub>	1,271,800 U <sub>3</sub> O <sub>8</sub>
	0.24% V <sub>2</sub> O <sub>5</sub>	1,335,500 V <sub>2</sub> O <sub>5</sub>	0.24% V <sub>2</sub> O <sub>5</sub>	1,717,000 V <sub>2</sub> O <sub>5</sub>
	279,000 tons		361,500 tons	
Jackrabbit Area	0.340% U <sub>3</sub> O <sub>8</sub>	196,000 U <sub>3</sub> O <sub>8</sub>	0.209% U <sub>3</sub> O <sub>8</sub>	33,300 U <sub>3</sub> O <sub>8</sub>
	0.46% V <sub>2</sub> O <sub>5</sub>	264,500 V <sub>2</sub> O <sub>5</sub>	0.28% V <sub>2</sub> O <sub>5</sub>	45,000 V <sub>2</sub> O <sub>5</sub>
	28,800 tons		7,950 tons	
<b>TOTALS</b>	0.225% U <sub>3</sub> O <sub>8</sub>	3,404,600 U <sub>3</sub> O <sub>8</sub>	0.205% U <sub>3</sub> O <sub>8</sub>	1,859,600 U <sub>3</sub> O <sub>8</sub>
	0.30% V <sub>2</sub> O <sub>5</sub>	4,595,600 V <sub>2</sub> O <sub>5</sub>	0.28% V <sub>2</sub> O <sub>5</sub>	2,510,600 V <sub>2</sub> O <sub>5</sub>
	758,050 tons		453,850 tons	

Note: Summary and tables show total 453,800 inferred tons; vanadium change based on math.

Approximately 450,000 feet of historic drilling, conventional and core, from about 450 holes, was conducted in the areas of the Deep Gold and Down Yonder deposits. Depth to mineralization at the Deep Gold deposit in Section 23 averages 800 feet, with hole depths averaging approximately 1,000 feet. The depth to mineralization at the Down Yonder deposit in Section 36 averages 970 feet, with hole depths averaging approximately 800 feet in Section 35 and about 1,100 feet in Section 36. Magnum purchased and otherwise acquired most of the available historic exploration data produced by the previous operators. A 100 hole, 100,000 foot drilling program is warranted to discover and define additional uranium resources. Total cost for this work would be \$US 1.3 million to \$US 1.5 million, based on an all-inclusive cost of \$US 15/foot.

The Tidwell Mineral Belt and the San Rafael Uranium District have been the sites of considerable historic exploration drilling and production, with over 4 million pounds of uranium

and 5.4 million pounds of vanadium produced. Production from the Snow, immediately up dip of the Deep Gold deposit, which produced for nine years, starting in March 1973 and ending in January, 1982 consisted of 650,292 pounds of  $U_3O_8$  contained in 173,330 tons of material at an average grade of 0.188%  $U_3O_8$  (Wilbanks, 1982).

Although historic mining in the Tidwell Mineral Belt and at Atlas's Snow, Lucky, and Probe Mines, immediately adjacent to Homeland Uranium (Utah)'s land position boundary has been by conventional underground methods, the possibility exists that In-situ Leaching (ISL) techniques for extraction of sandstone-hosted uranium at Homeland Uranium (Utah)'s Deep Gold and Down Yonder deposits may be feasible. To this end, preliminary data collection and hydrologic evaluation to study the viability of ISL has been recommended.

## **4.0 INTRODUCTION AND TERMS OF REFERENCE**

The present report combines the descriptions of two significant deposits discussed in previous reports (Pancoast, 2008, Sturm, 2009, and Gatten, 2011) and includes discussion of the other known mineralized areas within the entire San Rafael Project area.

Homeland Uranium (Utah)'s San Rafael Uranium Project is located in east-central Emery County, Utah (Fig. 1). Pioneer Uravan geologists originally discovered the Deep Gold deposit in the late 1970's and early 1980's by exploration drilling conducted east of the adjacent Tidwell Mineral Belt (Fig. 2), particularly along the eastern and northeastern extensions and projections of Atlas Minerals' Snow and Lucky Mines ore bodies. The deposit, located in the central portion of the San Rafael Uranium Project land package (Deep Gold Fig. 3), lies at a depth of about 775 to 850 feet below the surface.

Continental Oil Company (Conoco) Uranium Division geologists originally discovered the Down Yonder deposit in the late 1960's and early 1970's by exploration drilling along the northeast extension of the Acerson Trough and Mineral Belt (Figs. 3 and 4). The Down Yonder deposit lies at a depth of 850-1,000 feet. Other historic holes within the San Rafael Project boundary discovered smaller deposits (Jackrabbit, 4484, and North) and identified additional mineralized areas. The Tidwell Mineral Belt and the San Rafael Uranium Districts have historically been the site of considerable exploration drilling and production, with greater than 4 million pounds of uranium and 5.4 million pounds of vanadium produced (Trimble and Doelling, 1978; Gordon, 1982; Wilbanks, 1982).

Prior to the discovery of these deep deposits, the property contained no evidence of any major workings or modern-day exploration activity, and no mention of mineralization or past

production existed in the geologic literature. The project area was considered to contain highly prospective areas within upper Salt Wash trunk stream channel trends as projected northeasterly from the Acerson Mineral Belt and channel system and Atlas Minerals' Snow and Lucky Mines (Fig. 3 and 4). Other than confirmation follow-up drilling by Atlas Minerals in late 1984 through 1986, no further historic drilling has been conducted at the Deep Gold deposit since Pioneer Uravan's discovery and successful drilling campaign defining it. Likewise, no further drilling had been conducted at the Down Yonder deposit after Conoco's discovery, other than minor confirmation follow-up drilling by Union Carbide in late 1974 and 1975 and Energy Fuels Nuclear in 1978. Magnum performed initial follow-up, in-fill, and offset exploration drilling within and along the western part of the Deep Gold deposit and in and around the Down Yonder deposit during the latter half of 2007. More holes were drilled by Magnum in 2008 and 2009. (see Sections 12.0 and 13.0 of this Report for details).

On November 19, 2006, Magnum entered into a joint venture (JV) agreement with EMC on their San Rafael Uranium Project area, which contains the Deep Gold deposit in the central part of the JV land holdings. Outlined in significant detail in Section 6.0 of this report, the JV land position consisted of 270 BM unpatented federal lode mining claims and adjacent State Section 36 Mineral Lease. Per the terms of the JV agreement outlined in Section 6.0 of this report, Magnum had the right to earn an undivided 65% interest in the San Rafael Uranium Project by spending US\$1.0 million in work on the Project and issuing 600,000 shares of Magnum treasury stock staged over a 4 year period. Magnum had the right to increase its interest in the property to 80% by issuing an additional 250,000 treasury shares to EMC after the initial earn-in. As of February 12, 2008, Magnum spent in excess of US\$1,000,000 in work-related expenses and issued 850,000 treasury shares meeting all the requirements to complete an 80% earn-in. Subsequently, by December 31, 2008, Magnum's interest increased to 100% with EMC's interest diluted to a non-participatory 2% NSR. Since the signing of the Magnum/EMC JV agreement, EMC has been acquired by Uranium One. EFI became the owner of Magnum as a result of a merger with Magnum in June 2009 whereby Magnum became a wholly-owned subsidiary of EFI. References in this report to EFI, EFR and Magnum are to each of those entities individually, and references to "Energy Fuels" are to EFI, EFR and Magnum collectively. Magnum reduced the number of BM claims held through the 2011 assessment year to 171. Energy Fuels further reduced the number of BM claims held through the 2015 assessment year to 136. The 10 Hollie claims acquired by EFR in January 2011 are now part of the Project.

O. Jay Gatten of Kaysville, Utah, the author of this report, was retained by Homeland Uranium Inc. (Utah) to perform a Canadian Securities Administrators (CSA) National Instrument 43-101 compliant mineral resource assessment evaluation of the San Rafael Project, Emery County, Utah, and to provide Homeland Uranium (Utah) with a technical report compliant with CSA National Instrument 43-101 guidelines. This report has been prepared to meet CSA National Instrument 43-101 standards. The report provides a detailed accounting of the geology and 43-



101 compliant mineral resource calculation pertaining to the San Rafael Project and its potential to host economic uranium mineralization. The overriding purpose of this report is to provide an independent mineral resource assessment of the deposits within the San Rafael Project and, as warranted from the data at hand, recommend an exploration program to Homeland Uranium (Utah) to further enhance the economic potential of the project. Based on the author's resource calculation results and the need for further in-fill and extension drilling to fully define the maximum extent and boundaries of the deposits, the author has recommended to Homeland Uranium (Utah) a 100,000 foot drilling program, further described in Section 22.0 of this report.

The data utilized as part of the basis of this evaluation and in the preparation of this report were supplied in part by Energy Fuels geologists to the author. This report draws much of its content from both published and unpublished documents and maps, from extensive data sets pertaining to the property that were purchased by Magnum, and from previous project reports and interoffice memos detailing the results of Pioneer Uranium's drilling, follow-up drilling by Atlas Minerals, non-compliant resource estimates performed by Atlas Minerals, and numerous surface geologic studies by well known U.S. uranium industry, research, and government geologists. This report updates the background information and content of the prior NI 43-101 compliant Technical Reports filed by EFI and Magnum, which are available on SEDAR. Additionally, part of this report's content is augmented by the author's own observations made during three visits to the Project area and surrounding region between 2005 and 2007 to prospect for and evaluate uranium deposits. The author also worked in the area from 1975 until about 1976 supervising the drilling of selected uranium deposits for Sanders Associates. The author is also familiar with most of the available geological literature and maps of the San Rafael project area. The author has also reviewed Homeland Uranium (Utah)'s San Rafael Uranium Property geology, historic uranium mines and workings, historic drill sites and patterns, Deep Gold and Down Yonder surface geology, Pioneer Uranium and Atlas Minerals' drilling data, and the non-compliant historic resource calculations pertaining to the mineral deposits.

O. Jay Gatten is Utah Professional Geologist (#5222768-2250) and has experience spanning a period of more than forty (40) years, much of it pertaining to uranium and coal exploration, as well as precious metals, base metals and industrial mineral exploration and property evaluations. The author is experienced in uranium exploration having been employed by Phillips Uranium as an exploration geologist; and has done additional consulting work relating to uranium exploration and mine development with Ferret Exploration, Sanders Associates and North American Exploration.

## Terms of Reference:

### Units of Measure

Imperial units are used throughout this report because the majority of the historic and exploration data generated on the San Rafael Project's uranium deposits were originally measured and reported in Imperial units. Units of measure used in this report with metric conversions include:

#### Linear Measure

1 foot = 0.3048 meters

1 mile = 1.609 kilometers

#### Weight

1 pound = 0.454 kilograms

1 short ton = 0.907 metric tonne

#### Area

1 acre = 0.4047 hectare

1 square mile = 259 hectares

### Definitions of Geologic Terms and Acronyms used:

1. *AEC* – Atomic Energy Commission
1. *A.I.P.G.* – American Institute of Professional Geologists
2. *Asphaltite* – Any one of the naturally occurring, black, solid bitumens, which are soluble in carbon disulfide and fuse above 230°F.
3. *BLM* – Bureau of Land Management
4. *BM* – Claims comprising part of Homeland Uranium (Utah)'s San Rafael land package
5. *CIM* – Canadian Institute of Mining
6. *Coffinite* – A primary black uranium mineral  $U(SiO_4)(OH)_4$
7. *Corvusite* – A blue-black, brown, or purplish secondary vanadium mineral  $V_2O_4 \cdot 6V_2O_5 \cdot nH_2O$ , also known as blue-black (vanadium) ore.
8. *CSA* – Canadian Securities Administrators
9. *Disequilibrium* – A condition where the chemical uranium content is out of proportion with the uranium content as determined by a gamma-ray probe (equivalent uranium).
10. *EFI*- Energy Fuels Inc., parent company of EFR (Energy Fuels Resources Corporation) and Magnum (Magnum Uranium and Magnum Minerals USA)
11. *EMC* – Energy Metals Corporation
12. *eU<sub>3</sub>O<sub>8</sub>* – Equivalent U<sub>3</sub>O<sub>8</sub> is an industry standard indirect measurement of the uranium content within the sphere of measurement of the gamma-ray detector. Grade

- calculation based on the gamma radiation emitted by down-hole counts per second and subjected to a complex set of mathematical equations, taking into account specific parameters of the probe used, speed of logging, size of the bore hole, drilling fluids, and presence or absence of, and type of drill hole casing.
13. *Festoon (cross-bedding)* – A variety of trough cross-bedding consisting of elongate, semi ellipsoidal, eroded, plunging troughs or scoop-like structures that are filled by sets of thin laminae conforming in general to the shapes of the troughs that crosscut each other so only parts of each unit are preserved, resulting in a festoon-like (a hanging open rope or curve) appearance in section.
  14. *Fluvial* – Of or pertaining to a river or rivers.
  15. *G x T* – Grade x Thickness derived by multiplying the grade of the intercept times the thickness of the interval containing the grade.
  16. *Garnet* – A group of varying colored minerals with the formula  $A_3B_2(SiO_4)_3$ , where A = Ca, Mg,  $Fe^{+2}$ , and  $Mn^{+2}$ , and B = Al,  $Fe^{+3}$ ,  $Mn^{+3}$ , and Cr. A common accessory mineral in a number of rock types.
  17. *Interfluve(s)* – The area(s) between rivers.
  18. *ISL* – In-Situ Leaching uranium recovery process using injection wells to pump a leachate solution into the deposit to dissolve the uranium and then extract the pregnant solution via recovery wells. The uranium-rich fluid is piped to a recovery plant where it is extracted from the solution via ion exchange and the barren fluid is treated and re-injected into the well field to be used again.
  19. *JV* – Refers to joint venture effort to explore and/or mine with reference to a mineral property.
  20. *Leucoxene* – A general term for fine-grained, opaque, whitish alteration products of ilmenite, an iron-black, opaque mineral  $FeTiO_3$ .
  21. *Lignite* – A brownish-black coal intermediate in maturation between peat and subbituminous coal.
  22. *Montroseite* – A black primary vanadium mineral  $VO(OH)$
  23. *National Uranium Resource Evaluation (NURE) Program* – This program was conducted by the U.S. Department of Energy during the mid- to late-1970's and early 1980's to assess the uranium potential of the United States. Assessment was conducted on 1 x 2 Degree Quadrangle areas and included geologic studies of known uranium occurrences, deposits, and districts, airborne radiometric and magnetic surveys, and rock, stream-sediment, and groundwater geochemical surveys.
  24. *NSR* – Net Smelter Royalty is a royalty that is a certain percentage of the revenue generated by the mine by selling its product, minus the expenses of producing the product, usually with a limit on what can be deducted.

25. *Penconcordant* – In this case, said of a stratabound sandstone-hosted uranium deposit in which the mineralization trends are typically parallel to the depositional trends of the host rock (distinct, well recognized paleo-stream channels).
26. *PRM* - Pinion Ridge Mining LLC
27. *HUI* - Homeland Uranium Inc. (Canada)
28. *HUI Sub* - Homeland Uranium Inc. (Utah)
29. *Rib and furrow* – Referring to the bedding-plane expression of micro cross-bedding, consisting of small, transverse, arcuate markings (convex up current) occurring in sets and confined to relatively long, parallel, narrow grooves oriented parallel to the current flow and separated from one another by narrow and not altogether continuous ridges.
30. *Stratabound* – Said of a mineral deposit confined to a single stratigraphic unit. The term can refer to a stratiform deposit (of either sedimentary or igneous origin) or to a randomly oriented orebody contained within a single stratigraphic unit.
31. *Tonnage Factor* – The number of cubic feet in 2,000 pounds (1 ton) of rock.
32. *Tourmaline* – A group of minerals with the general formula  $(\text{Na,Ca})(\text{Mg,Fe}^{+2}, \text{Fe}^{+3}, \text{Al,Li})_3\text{Al}_6(\text{BO}_3)_3\text{Si}_6\text{O}_{18}(\text{OH})_4$  – a common accessory mineral in a number of rock types.
33. *Tuffaceous* – Said of sediments containing up to 50% tuff
34. *Tyuyamunite* – A yellow secondary uranium mineral  $\text{Ca}(\text{UO}_2)_2(\text{VO}_4)_2 \cdot 5-8\text{H}_2\text{O}$
35. *Uraninite* – A black primary uranium mineral  $\text{UO}_2$
36. *USDOE* – United States Department of Energy
37. *Zircon* – A mineral of varying color, usually brown to colorless,  $\text{ZrSiO}_4$  – a common accessory mineral in a number of rock types.

## 5.0 RELIANCE ON OTHER EXPERTS

The author has relied on the accuracy of the historical data as itemized and referenced in Sections 8.1, 8.2, 8.3, 11.0, 12.0, 13.0, and 19.0 of this report and upon the various project reports, particularly those authored by Magnum, Conoco, Union Carbide, Pioneer Uranium, and Atlas Minerals geologists and mining engineers, as referenced in Section 23.0 of this report. This report draws much of its background information, graphics, and content from Pancoast's 2008 NI 43-101 compliant Technical Report concerning Magnum's Down Yonder uranium deposit and resource, and both the 2008 and 2009 Technical Reports on the Deep Gold deposit by Sturm. Many Sections of this report, in whole or in part, are based on or drawn from those reports. These Sections are 5.0 through 12.0, and 17.0.

The BM unpatented federal lode mining claims shown in the land map, Figure 3, and the Utah State Section 36 Mineral Lease (ML-49311) constitute most of the San Rafael project mineral property holdings. These locations and corresponding property claim maps were provided by EMC, Magnum's original Joint Venture partner on the property, to Magnum and were relied upon, in part, as defining the mineral holdings of Magnum. Furthermore, a detailed due diligence land check and title report corroborating the validity and legitimacy of the lands comprising the Magnum/EMC San Rafael Uranium Project area was contracted by Magnum to Bensing and Associates, Professional Land Services, Franktown, Colorado, prior to Magnum consummating the JV agreement with EMC (Guinand, 2006). A subsequent detailed report by Guinand (2006) further delineates title of lands for an area of one mile around the BM claims, also requested by Magnum during the due diligence period. This report also addressed the ten (10) Hollie claims (shown in light green color over a portion of the Deep Gold deposit on Fig. 3), indicating that they were properly staked. EFR purchased the Hollie claims in January 2011, so they are now part of the Homeland Uranium (Utah)'s San Rafael Project. The author has reviewed the results of both reports in detail and has corroborated the accuracy of them through BLM and Utah State Trust Lands checks of his own. Also, at the request of Magnum, a professional land survey of the BM claim block was performed by U.S. Registered Mineral Surveyor John Russell of Russell Surveying of McCall, Idaho during January, 2007. Homeland Uranium (Utah) and Energy Fuels believe these reports are accurate.

For the purposes of computing the indicated and inferred resource estimates presented in this report, the author has relied in part on historical down-hole gamma-ray drill-hole probe and drill-hole location data originally generated by Conoco, Pioneer Uranium, and Atlas Minerals during their drilling of the property, most of which is now in Homeland Uranium (Utah)'s possession, and topographic and geographic base map data provided by the U.S. Geological Survey. The previous Magnum Technical Reports have been reviewed in detail by Homeland Uranium (Utah) personnel, Energy Fuels' geologists and the author and found to be reliable. The author has not independently verified the information provided from these sources, however he is not aware of any information to suspect that these sources are unreliable. The Pioneer Uranium and Atlas Minerals down-hole gamma-ray drill-hole probe results are reported to 0.1-foot intervals while the Conoco reports are reported in 0.5-foot intervals.. All of these results are shown on the previous operators' drill-hole location maps, various project drill-hole logs, and in Atlas Minerals spreadsheets, interoffice memos, weekly reports, and documents, all obtained and copied by Magnum geologists.

This Technical Report and all publications, exhibits, documentation, conclusions, and other work products obtained or developed by the author for this Technical Report are for the sole and exclusive use of O. Jay Gatten, B.S. in Geology and Utah Professional Geologist #5222768-

2250. This Technical Report was prepared specifically for the purpose of complying with Canadian Securities Administrators National Instrument 43-101 and may be distributed to third parties and published without prior consent of the author if the Technical Report is presented in its entirety without omissions or modifications, subject to the regulations of NI 43-101. Consent is expressly given for submission of this Technical Report to all competent regulatory agencies, including but not limited to the British Columbia Securities Commission, the Ontario Securities Commission, the Alberta Securities Commission, the TSX-Venture Exchange, and the Toronto Stock Exchange. However, all reports, publications, exhibits, documentation, conclusions, and other work products obtained or developed by the author during completion of this Technical Report shall be and remain the property of the author. Unauthorized use or reuse by third parties of reports, publications, exhibits, documentation, conclusions, and other work products obtained or developed by the author for the purposes of this Technical Report is prohibited.

## **6.0 PROPERTY DESCRIPTION AND LOCATION**

Homeland Uranium (Utah)'s San Rafael Uranium Project land holdings and property position are located in Emery County, Utah (Figs. 1 through 4). In its entirety, the San Rafael Uranium Project land position exists as a single contiguous claim block covered by 181 unpatented federal lode mining claims and the contiguous State Section 36 Mineral Lease. Specifically, the 136 BM claims (BM 1-6, BM 10-49, BM 55-69, BM 78--104, BM 109-112, BM 118A-120A, BM 121-122, BM 123A-BM 127A, BM 128-130, BM 146-159, BM 162-174, BM 179-187, BM 238-239, BM 242, BM 248, and BM 264) and the Hollie claims (1-10) cover about 2,900 acres located in all or parts of Sections 11, 13-14, 22-26, and 35, T21S, R14E.,SLB & M, Emery County, Utah. The Utah State Section 36 Mineral Lease ML-49311, which holds most of the Down Yonder deposit, ties into the southeastern corner of the claim block in T21S, R14E (Fig. 3). The Deep Gold deposit lies in Section 23, T21S, R14E, in the central part of the property.

The BM and Hollie claims all lie on public lands administered by the Bureau of Land Management (BLM) They were staked intermittently from January through March 2006. The Utah State Section 36 Mineral Lease, Mineral Lease No. 49311, comprises approximately 640 acres, which is leased from the State of Utah School and Institutional Trust Lands Administration (SITLA). This Lease is for a period of ten (10) years, expiring on April 30, 2024, and carries a royalty of eight percent (8%) for fissionable metalliferous materials and four percent (4%) for non-fissionable metalliferous minerals, based on the gross value of the ores produced from the leased lands and sold by the Lessee. The annual rental fee is US\$1.00 per acre per annum.

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The majority of the San Rafael property lies north of US Interstate Highway 70. The Interstate Highway crosses Utah State Section 36 diagonally from northeast to southwest. The Down Yonder deposit is situated north of the highway. Magnum employed attorneys with Holland and Hart to prepare a Title Opinion of the land within the project boundary. There are no significant flaws with Magnum's ownership of the claims and State Mineral lease. To the extent known, the property has no environmental liabilities.

At the request of Magnum, a professional land survey of the BM claim block was performed by U.S. Registered Mineral Surveyor John Russell of Russell Surveying of McCall, Idaho during January 2007. This survey was performed to accurately establish the boundaries of Magnum's BM claim land holdings, as well as the outer boundaries of the Hollie, CRP, and Big G claim blocks mentioned above and any other claim blocks that might conflict with Magnum's BM claim block. This work was performed in order to have a firm and legal basis for locating future drill sites on the Magnum/EMC (BM claim block), as well as locate the exact boundary between the BM and Hollie claims. Following the results of the survey, additional claims (BM 109 Fraction, and BM 164-168) were staked by Russell on January 10 and 11, 2007, filed with the Emery County Recorder's Office on January 31<sup>st</sup> and with the BLM on February 26<sup>th</sup>. Additionally, fractions found on BM claims land just south of the Hollie claims were staked and filed for Magnum by Russell in November, 2007.

The BM claims were originally staked by EMC in groups on January 7-11, February 8, and September 9, 2005, and March 15, 2006, and the Section 36 State Mineral Lease was obtained by William M. Sheriff from the State of Utah on April 4, 2004. An assignment was made from Sheriff to EMC Utah Inc. on January 6, 2006, assigning an undivided 100% interest in the Lease. As a result of Magnum's interest in the uranium potential of the land within the BM claim block and State lease, particularly of the Down Yonder and Deep Gold deposits, Magnum approached EMC in 2006 to see if it might be interested in joint venturing the property in order to move it forward. EMC agreed and a formal JV arrangement between the two companies was consummated on November 19, 2006.

Under the terms of the agreement, Magnum could earn an undivided 65% interest in the property by fulfilling the requirements of spending US\$1.0 million in work on the San Rafael Uranium Project and issuing 600,000 shares of treasury stock staged over a four year period. Magnum's first year obligation was US\$200,000 in work and issuance of 150,000 treasury shares. Magnum had the right to increase its interest in the property to 80% by issuing an additional 250,000 treasury shares to EMC after the initial earn-in. As of February 12, 2008, Magnum spent in excess of US\$1,000,000 in work-related expenses and issued 850,000 treasury shares meeting all the requirements to complete an 80% earn-in. Subsequently, and of December 31, 2008, Magnum's interest increased to 100% based on additional exploration expenditures and with

EMC's interest diluted to a non-participatory 2% NSR. Also, since the signing of the Magnum/EMC JV agreement, EMC has been acquired by Uranium One. Magnum received a Quitclaim deed from EMC on May 15, 2009 granting all rights to the claims to Magnum. On the same day, a Royalty Deed was executed between Magnum and EMC wherein the details of the 2% NSR retained by EMC were specified.

A purchase agreement was made between EFR and Titan Uranium on January 12, 2011 for EFR to purchase the full rights to the 10 Hollie claims. A quitclaim deed describing this transaction has been recorded at the Emery County court house. The State lease ML-49311 was assigned to Magnum on May 21, 2009 with a 2% overriding royalty retained by EMC. Magnum purchased much of the historic data used in this and previous reports from a private individual. The purchase agreement granted that person a 2% NSR on any production from the BM claims, as amended, and a ½ % NSR from State lease ML-49311.

The BLM is the federal permitting agency for all work-related activities conducted on Homeland Uranium (Utah)'s BLM ground (BM and Hollie claims- Deep Gold area). Prospecting and mining permits will also be required by the Utah Division of Oil, Gas, and Minerals (DOGGM). Utah SITLA has administrative input with DOGM on any permits needed for exploration or mining on ML-49311, Down Yonder area.

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

The property is located on the eastern side of the San Rafael Swell in east-central Utah, approximately 140 air miles southeast of Salt Lake City (Fig. 1). The little desert community of Green River, Utah is located about ten miles to the east (Fig. 2). In a general sense, Homeland Uranium (Utah)'s greater San Rafael Uranium Project property position lies within a wedge-shaped area, roughly bound along its northeast edge by US Highway 6-50 and along its southeast edge by Interstate 70 on the (Fig. 2).

Access to the San Rafael Project is excellent and is gained by traveling ten miles southwest of Green River on Interstate 70 to the Hanksville Exit (Exit 147) and then turning north onto Emery County Road EM 1029, a reasonably well-maintained gravel road. This road leads into the heart of the BM claim block and from there access is gained by taking a well marked dirt road traversing parts of Sections 23 and 24 that leads to the U.S. Geological Survey "Buckmaster" bench mark. The eastern part of the Deep Gold deposit is within the Hollie claim block (Plate 1) on the upper bench that the access road traverses, and the western part of the deposit is within the BM claims just to the west on the next lower bench. A sharp escarpment basically separates the



eastern and western parts of the Deep Gold deposit which the access road partly traverses the edge of on its way to the bench mark. From the bench mark, access to the Down Yonder deposit is gained by traversing cross country for about a mile southeast through relatively flat sage-covered terrain to the heart of the historic drilling in the north half of Section 36. Even though the south end of the lease in State Section 36 is traversed by I-70, vehicle access must use the Exit mentioned above. Access by foot can be gained by parking off the north side of the Interstate Highway, crossing over the barbed-wire freeway right-of-way fence, and walking one-quarter to one-half mile into the project area (Fig. 3).

Concerning additional local access features, U.S. Highway 6-50 crosses just north of the greater San Rafael Uranium Project area in a northwesterly direction and is roughly paralleled by the regional railroad line. Access to the property is generally good year around, except for periods of heavy snowstorms during December through February and increased monsoon rains and summer cloudburst storms during August through October. Access for drilling and other exploration activity is excellent, except during occasional heavy rainy periods which can create heavy flash flooding and roads mudding-up and becoming impassable.

Climate in the project area is dry, semi-arid to arid, typical of Colorado Plateau physiography that extends throughout much of Colorado, Utah, Arizona and New Mexico. Winters are relatively cold, with temperatures as low as 20° below zero Fahrenheit and nominal snowfalls of 4 to 8 inches in the months of December and January. Summer daytime temperatures can reach a maximum of 105° Fahrenheit, making the project area dry and hot, particularly in late summer. Precipitation, on average and as expected in a desert environment, ranges from roughly 0.5 inch to 1 inch per month, resulting in 5 to 7 inches per year. The San Rafael Uranium District lies in the rain shadow of the San Rafael Reef, which is just to the west and receives less precipitation than the San Rafael Swell or the area immediately to the east near the town of Green River.

This part of the Colorado Plateau containing the project area is expressed through topography characterized by meandering drainages, flat- to gently-dipping mesas and basins with abrupt scarp breaks and edges, and low relief (Plate 2). Topography of the area is gentle to moderate, with the overall relief being less than 250 feet. The area specific to the San Rafael Project exists as two relatively flat, sage brush-covered benches. The lower bench contains the western half of the Deep Gold deposit and much of the Jackrabbit resource area, and the upper one contains the eastern half of Deep Gold deposit and the Down Yonder deposit, separated by an abrupt north-trending escarpment (Plate 3). The upper bench slopes toward the east. Another escarpment along the west edge of the claims drops into Buckmaster Draw. Elevations range from 4,200 to 4,400 feet, with the area cut by scattered intermittent, arroyos. This topography/physiography is in sharp contrast to the area immediately to the west that includes a major physiographic/geologic feature, the San Rafael Swell, where steeply dipping rock units,

hogbacks, flatirons, steep sided mesas, and cliff fronts dominate the landscape, creating spectacular scenery. At the extreme eastern edge of the Swell, resistant rocks form a prominent ridge or escarpment known as the San Rafael Reef (Plate 4).

The dominant vegetative pattern in the area is mostly scattered low brush with large areas of bare ground and patches of grass. Vegetation comprises mostly xerophytic and phreatophytic desert species dominated by grasses, sagebrush, greasewood, rabbit brush, shadscale, blackbrush, mormon tea, leadbush, and prickly pear cactus. Principal animal and bird species found include jackrabbits, coyotes, ground rodents, deer, owls, and raptors. Seasonal use of land for livestock grazing is possible, but lack of surface water and vegetation in the summer months precludes maintaining any livestock without bringing in water.

Concerning local water sources, the Green and San Rafael Rivers are the only perennial drainages that flow through the general area, but they do not cross or cut through the project area (Fig. 2). Previous operators' internal reports and drill logs mention the water table at a depth of approximately 500 to 800 feet below the surface, suggesting a possible source for process water that may not be as controversial as the above mentioned rivers and create less impact concerning the use of scarce and valuable surface water in the region (Pinnick, 1975).

The San Rafael Uranium Project is located in east-central Emery County, which is predominantly made up of small rural communities of ranchers, farmers, and coal miners. The county population is about 10,700; the county seat is Castle Dale, and the largest city in the county is Huntington. The closest infrastructure to the San Rafael Project area is the small rural community and nearby town of Green River (population 973), located approximately ten miles to the east and just north of Interstate 70 (Figs. 1 and 2). Here, restaurants, fast-food drive-ins, motels (Best Western and Holiday Inn), a post office, and gas stations line the city's main street. The town serves as a relatively isolated, but major transportation center and hub for the railroad and Interstate 70, and also as a link to nearby U.S. Highway 6-50 and its junction with Interstate 70.

Power is present in the form of a major transmission line from Green River to Price that crosses the northeast corner of the BM claim block, only about one mile north of the Deep Gold deposit and four miles north of the Down Yonder deposit.

## 8.0 HISTORY

### *8.1 San Rafael Uranium District History*

Homeland Uranium (Utah)'s San Rafael Uranium Project is located in the San Rafael Uranium District (Green River District), which has been sporadically mined and explored for uranium and vanadium since 1880 (Trimble and Doelling, 1978). The uranium-vanadium deposits were first discovered in Salt Wash Member outcrops by sheepherders in 1880 near what is classically termed the Tidwell Mineral Belt. The original claims were located by Judge J.W. Warf of Price, Utah, about 1 mile north of the present position of Interstate 70. Subsequently, ore was shipped to Germany and Europe in the early part of the 20th century (1900 to 1911), and minor and sporadic exploration and production continued up until 1948 (Trimble and Doelling, 1978).

In 1948, uranium prices rose, resulting in renewed exploration and the discovery of a number of shallow, 40-foot deep deposits. From 1948 to 1956 production increased rapidly to 60,584 tons having an average grade of 0.25%  $U_3O_8$  and 0.44%  $V_2O_5$ . In 1954, the U.S. Atomic Energy Commission (AEC) drilled six deep holes in the center of the Tidwell Mineral Belt and intersected well mineralized material, with private industry subsequently continuing with deeper drilling and discovering larger deposits at depths exceeding 300 feet. Shafts were sunk and the deposits were found to increase in size downdip to the east from the area where the earlier discoveries had been made. Subsequent mine development continued to outline strings or clusters of deposits whose total content was 10,000 tons or greater. New mines continued to be developed until 1958 when the U.S. Government, the major buyer for uranium, modified its policy with the AEC placing limitations on uranium procurement. Production gradually decreased until 1971 when all mining ceased in the San Rafael Uranium District. Much of this historic production came from mines within and adjacent to the western part of Homeland Uranium (Utah)'s land holdings, all hosted in upper Salt Wash Member sandstone just updip from the same rock unit hosting the mineralization discussed as resources later in this report.

In the late 1960's, the electric-generating industry started to regard nuclear energy as a viable power source for the masses and turned its attention to the exploration for and development of it. Exploration in the District, in the form of drilling, was renewed and holes to depths of 1,100 feet extended the area of discoveries downdip and east of the existing mines. Exploratory drilling east of the main Tidwell area and northeast of the Acerson Mineral Belt outlined several mineralized zones and deposits, one of which turned out to be the Down Yonder deposit discovered by Conoco in 1968 – 1970 (Fig. 4). In 1972, another deposit was discovered and developed at about 600 feet, and the Snow shaft was sunk on it by Atlas Minerals in 1973. The Snow, along with the Probe, both of which were worked by Atlas until 1982, turned out to be two of the largest mines and biggest producers in the District, the Snow producing 650,292 pounds of  $U_3O_8$  at an average

grade of 0.188% U<sub>3</sub>O<sub>8</sub> and the Probe producing 293,985 pounds of U<sub>3</sub>O<sub>8</sub> at an average grade of 0.186% U<sub>3</sub>O<sub>8</sub> (Wilbanks, 1982). Continued exploratory drilling along the northeast extension of the Snow and Lucky Mines mineralization outlined several mineralized zones and deposits, one of which turned out to be the Deep Gold deposit discovered by Pioneer Uranium drilling during 1979 through 1981 (Figs. 2 through 4). Production in the District pretty much ceased with the closure of the Snow and the Probe in 1982, both of which, combined, produced nearly 1 million pounds of U<sub>3</sub>O<sub>8</sub>.

To date, in excess of 4.0 million pounds of uranium and 5.4 million pounds of vanadium have been produced from over fifty mines in the San Rafael Uranium District, with most of the ore mined during the 1950's and 1970's to early 1980's uranium booms (Trimble and Doelling, 1978; Wilbanks, 1982). During the latter time period, several properties in the area were the subject of feasibility studies and some were taken to production. Some of the companies and governmental organizations conducting work in the District during these time periods include Atlas Minerals, Conoco, Union Carbide, Four Corners Uranium, Anaconda, Santa Fe Nuclear, Pioneer Uranium, Utah Geological and Mineral Survey, and the AEC.

Property acquisition and exploration in the area were actively conducted in the 2005-2009 time period by numerous companies, including Magnum. Minor production came from a small, shallow mine west of the Jackrabbit resource area. The material from that mine was sold to Denison Mines' White Mesa Mill in Blanding, Utah. Production ceased there due to the lower price of uranium throughout most of 2009 and 2010. Many claims were dropped during the last two years, especially in the deeper portion of the district. In early 2011, some of this land was re-staked by prospectors, inspired by the uranium price increase.

The two core deposits discussed separately in the following subsections of this report were described in earlier Technical Reports on the Deep Gold deposit (Sturm, 2009) and the Down Yonder deposit (Pancoast, 2008). This report updates that information to bring the discussion current with changes that occurred since those reports were filed.

## ***8.2 Deep Gold Uranium Deposit History***

Information in Homeland Uranium (Utah)'s possession indicates that the Deep Gold uranium deposit was originally discovered in the late 1970's and early 1980's as a result of exploration drilling conducted by Pioneer Uranium, Inc. just east of the main producing Tidwell District area and northeast of the Acerson Mineral Belt. The area containing the deposit was considered highly prospective within upper Salt Wash trunk stream channel trends as projected northeastward as an extension of Atlas Minerals' Snow and Lucky Mines' uranium mineralization and paleo channel system(s) (Fig. 3). This favorability was extended just to the

east and northeast into the central part of Section 23 where both moderate to large size deposits were thought to occur and where Pioneer Uranium's drilling ultimately led to the Deep Gold discovery. In essence, the Deep Gold deposit represents the downdip and northeasterly extension of the Snow and Lucky Mines' uranium mineralization and paleo-stream channel trend(s).

In order for the reader to gain a general chronological perspective and background on Deep Gold deposit's exploration history, it is important to review some of the main observations made by project geologists, reference certain historic geologic reports and maps produced by Pioneer Uranium, Inc. and Atlas Minerals, and present the non-compliant resource estimates made by Atlas Minerals contained in internal company reports. Although Homeland Uranium (Utah) considers the estimates to be historically relevant and significant, it is acknowledged that they do not comply with the guidelines of NI 43-101 and they are not being treated as such.

The earliest reference to the Deep Gold deposit in Homeland Uranium (Utah)'s possession is a detailed location map of holes drilled by Pioneer Uranium, Inc. during the time period 1979 through 1981 (Casey, 1981). A detailed analysis of this map reveals that 247 holes comprising 235,788 feet of drilling were placed to test the target during this time period. Of this total, 44,804 feet in 48 holes were drilled in 1979, 150,904 feet in 158 holes were drilled in 1980, and 40,080 feet in 41 holes were drilled in 1981. Hole depth averaged approximately 960 feet, with mineralization intersected in the upper sandstone sequence of the Salt Wash Member of the Upper Jurassic Morrison Formation at depths of generally between 775 and 850 feet (Casey, 1981). Water was intersected at depths ranging from 500 to 800 feet below the surface as noted in some of the drill logs in Homeland Uranium (Utah)'s possession. Holes were generally spaced 100 feet apart. Comments made in an Atlas Minerals Internal Office Memo indicate that Pioneer spent approximately US\$1 million on their drilling in the Deep Gold area (Smith, 1984).

In 1984, Atlas Minerals acquired the Deep Gold deposit from Pioneer Uranium, Inc., which was part of a 608 unpatented lode mining claim land package located east of and adjacent to existing claims containing the Probe, Snow, and Lucky orebodies (Fig. 3). Atlas geologists recognized that a number of mineralized pods were present on the Deep Gold area and that the paleodepositional and mineralization trends are both easterly and northeasterly as extensions of the Snow and Lucky Mines (Hesse, 1984). During 1984 through 1986, Atlas drilled 52 conventional holes in the Deep Gold area in Section 23 for a total of 52,295 feet (Hesse, 1984; Berggren, 1985; Wham, 1986). Of this total, 24,515 feet in 25 holes were drilled in 1984, 21,560 feet in 21 holes were drilled in 1985, and 6,220 feet in 6 holes were drilled in 1986. Many of Atlas' holes were placed to extend Pioneer Uranium drill fences and were oriented perpendicular (northwest to southeast) to northeasterly mineralized trends, with hole-spacing generally averaging 200 feet. Similar to Pioneer Uranium logs, Atlas logs show that water was encountered at depths ranging from 400 to 825 feet deep in most of the holes (Henkelman, 1984; Price, 1984

through 1986). Average hole depth was approximately 1,000 feet. Reference is also made in Atlas Minerals Affidavits of Assessment that the actual underlying mineral claimant for the land containing the Deep Gold deposit was Santa Fe Nuclear, who also appears to be the underlying claimant when Pioneer Uranium drilled the deposit. It is also noted in an Atlas summary sheet concerning the property that the claims carried a 12% royalty commencing on production, with a US\$20,000 advanced minimum royalty that was due to Santa Fe Nuclear on February 16<sup>th</sup> of each year.

According to detailed information contained in an internal Atlas Office Memo authored by Smith (1984), Atlas performed a resource calculation for the Deep Gold deposit in March of 1984 prior to its initial drilling on the property. The report describes a reasonably detailed 43-101 non-compliant resource estimate for the Deep Gold deposit based on 239 Pioneer Uranium holes, 122 of which Atlas considered to be mineralized using a cutoff of 4.0' @ 0.15% U<sub>3</sub>O<sub>8</sub>. A 25-foot radius or area of influence was given to each hole, considered by Atlas and the author to be a conservative approach. In total, the resource comprises 261,300 pounds of U<sub>3</sub>O<sub>8</sub> in 57,555 tons of mineralized material at an average grade of 0.227%, with the tons number arrived at by back-calculating. Average thickness of mineralization is given at 3.4 feet. No breakdown was made of this estimate as to "possible," "indicated," or "inferred" resources. None of the foregoing is considered to be classified as a reserve estimate based on the author's following statement:

*Although the terms "reserve" and "resource" used above and elsewhere in this report, when historical information is discussed, were estimates produced by Atlas Minerals, they are not to be relied upon in this report under the definitions required by National Instrument 43-101. The statements of tonnage and grade above and below are therefore classified herein for the reader to consider as exploration information of historical significance only and only to reflect an order of magnitude of the size and grade of the Deep Gold deposit. The relevance and reliability of the tonnage and grade defined in the historical estimates contained in this report are based on extensive sampling by rotary and core drilling, and by down-hole gamma-ray logging, carried out by Pioneer Uranium, Inc. and Atlas Minerals, senior minerals and/or mining companies, with significant exploration and/or production experience. The author of this report has verified the estimation of the tonnages and grades as previously reported by an independent Qualified Person (QP) (Sturm, 2009). The results of the current mineral resource calculations are presented in Section 19.0 of this report..*

Atlas further stated that the deposit had attractive thickness and grade, but that a uranium price of US\$40 per pound would be necessary to justify sinking a shaft to mine it. As an alternative, Atlas geologists suggested the possibility that the property could be accessed through the nearby Probe shaft, thus reducing mining costs to below US\$40 per pound (Smith, 1984).

Atlas performed a second 43-101 non-compliant resource calculation on the Deep Gold deposit in May of 1985 (Price, 1985), just subsequent to their 1985 drilling campaign. The resource was given in terms of pounds of U<sub>3</sub>O<sub>8</sub> drilled out by Pioneer Uranium prior to Atlas' drilling, along with the number of pounds added as a result of the Atlas drilling. The calculation indicates an historic resource of 649,917 pounds U<sub>3</sub>O<sub>8</sub> contained in 100,988 tons of material at an average grade of 0.322% U<sub>3</sub>O<sub>8</sub>. Within this total, Pioneer's drilling resulted in 519,811 pounds of U<sub>3</sub>O<sub>8</sub> contained in 78,548 tons of material, and Atlas' drilling resulted in adding 130,106 pounds of U<sub>3</sub>O<sub>8</sub> in 22,440 tons of material. Again, the reader is cautioned that this historic resource estimate is not qualified under and does not meet current 43-101 guidelines, and Homeland Uranium (Utah) and the author are not treating it as such. It is being presented here for historic information and reference purposes only.

No information is available to the author regarding ownership of the western part of the Deep Gold deposit in the BM claims area during the period 1986 to 2004. As previously mentioned in Section 6.0 of this report, EMC staked the BM claims in 2005 and 2006, but conducted no exploration or development work on the property. EMC lease-optioned its entire San Rafael Uranium Property land holdings, including the Deep Gold area, to Glen Hawk Minerals, Ltd., on June 20th, 2005. After conducting no work on the property, and as a result of financial difficulties and a desire to move into gold exploration, Glen Hawk returned the property to EMC only a year later in early June of 2006. As a result of Magnum's interest in the uranium potential of the land within the BM claim block, and particularly of the Deep Gold deposit in Section 23, Magnum approached EMC in 2006 to see if it might be interested in joint venturing the property in order to move it forward. EMC agreed and a formal JV arrangement between the two companies was consummated on November 19, 2006.

Magnum has earned an undivided 100% interest in the entire San Rafael property position, substantially ahead of schedule, by virtue of the aggressive exploration drilling program it conducted during 2007-2008. To date, no production has come from the Deep Gold uranium deposit.

### ***8.3 Deep Gold Uranium Deposit Ownership History***

Concerning the eastern side of the deposit, which lies on the Hollie Claim block (Hollie 1 through 10 claims), little is known about its ownership prior to being controlled by U.S. Energy Corp. and its partner Crested Corp. in the 2000's. However, it is known that on May 6, 2006, U.S. Energy Corp. and Crested (USE Parties) entered into a 50%-50% JV agreement with Uranium Power Corp. on their Green River North Property, i.e., Hollie 1 through 10 unpatented lode mining claims, as per certain work and share requirements outlined in the agreement. Subsequently, on April 30, 2007, Uranium One Inc. completed the purchase of a package of

uranium properties from U.S. Energy Corp., which included the purchase of the Shootaring Canyon uranium mill in Utah, as well as the contractual rights with Uranium Power Corp, which included the Hollie Claim block. As a result, UPC/Uranium One owned that portion of the Deep Gold deposit (east half) located on the Hollie claims and Magnum, through its 100% earn-in of the EMC JV, owned that portion (west half) of the deposit located on the BM claims. UPC acquired Uranium One's 50% of the Hollie claims in mid-2009. Subsequently, Titan Uranium became owner of UPC. EFR purchased the rights to the Hollie claims from Titan in January 2011. Therefore, Magnum and EFR now hold all rights to the entire Deep Gold deposit and nearby associated 4484 and North deposits areas. Since the Hollie claims were never part of the Magnum/Uranium One (EMC) JV, the 2% NSR royalty due Uranium One on any production elsewhere on the San Rafael Project area will not apply to the Hollie claims (see Section 6 of this report for more detail).

#### ***8.4 Down Yonder Uranium Deposit History***

The Down Yonder uranium deposit was originally discovered by Conoco in the late 1960's and early 1970's as a result of exploration drilling conducted just east of the main Tidwell Mineral Belt area and northeast of the Acerson Mineral Belt. The area containing the deposit, dubbed by Conoco geologists as the Acerson-Conoco Mineral Belt (Wentworth, 1970), was considered to contain highly prospective areas within upper Salt Wash trunk stream channel trends as projected north-northeastward from the Acerson Mineral Belt and channel system (Fig. 4). This favorability was projected into Sections 35 and 36 where both moderate to large size deposits were expected to occur and where Conoco drilling ultimately led to the Down Yonder discovery. In support of Conoco's favorability trend concept, subsequent work by Trimble and Doelling (1978) pointed out that historic drilling indicated uranium in Salt Wash sandstone northeast of the Sahara mine in the Acerson Mineral Belt, which they felt could represent the south end of an important northeast mineralization trend, extending into Sections 1, 2, and 11, T22S, R14E, and Section 36, T21S, R14E, where the Down Yonder deposit is located (Fig. 4). Trimble and Doelling (1978) went on further to say that this area possibly has the best potential for future production in the District.

In order for the reader to gain a general chronological perspective and background on the property's exploration history, it is important to review some of the main observations and NI 43-101 non-compliant resource estimates made by the AEC, Conoco, Union Carbide, and Atlas Minerals that are contained in internal company reports. For a detailed listing and summation of these estimates, the reader is referred to Table 8-3, Historic 43-101 Non-Compliant Mineral Resource and Mineral Reserve Estimates for the Down Yonder uranium deposit. A more detailed break down of the historic resource estimates is discussed below and illustrated in Tables 8-1 and



8-2. Although Homeland Uranium (Utah) and the author consider these estimates to be historically relevant and significant, it is acknowledged that none of them comply with the guidelines of NI 43-101 and they are not being treated as such.

The earliest reference in Homeland Uranium (Utah)'s possession of Conoco addressing the subject of a resource at Down Yonder is found as Figure 3 in Wentworth (1970), a Grade x Thickness contour map that pinpoints several areas in Section 36 where the Grade x Thickness of the mineralization approaches or exceeds commercial limits in 1970 terms. Wentworth (1970) states that because of the AEC's vast experience in estimating reserves of Colorado Plateau Salt Wash-hosted uranium deposits, Conoco contracted the AEC to run a computerized statistical analysis on the mineralization encountered in Section 36. As a result of this work, a "Sichel Krige Analysis of Five Foot Combined Assay Values" was compiled, a copy of which is in Homeland Uranium (Utah)'s possession. The Sichel Krige Analysis lists statistically based average grades and fractional tonnages that can be expected for certain grade cutoffs within a mineralized area. Using the mineralized areas outlined by a Grade x Thickness of 0.10 or greater, a cutoff grade of 0.040%  $U_3O_8$ , and the computed AEC average mineralization thickness of 9.2 feet, a 43-101 non-compliant indicated and inferred ore reserve plus mining potential of 973,000 tons containing 2.1 million pounds of  $U_3O_8$  was determined for several subareas in Sections 35 and 36 (Table 8-3). This AEC reserve estimate is not qualified under the regulation of NI 43-101 for anything more than historic exploration information and Homeland Uranium (Utah) and the author are not treating it as such.

According to a Union Carbide internal memo authored by Pinnick (1974) concerning the evaluation of the Down Yonder deposit as submitted to Union Carbide by Conoco in 1974, Conoco drilled 165 holes on the entire Down Yonder property from 1968 through 1970, with drilling depths varying from 500 feet in the western edge of section 2 to 1,200 feet in the northeast corner of section 36. Drill depths in the Section 36 deposit area averaged 1,000 feet. Seven of the holes were cored and the remaining 158 were plug sample drilled. All of the cored holes were drilled into the deposit in section 36, and cores were submitted to the AEC for petrographic analysis (Heyse, 1969). Of the 165 holes drilled, 128 were placed mostly north of Interstate 70 in the two sections, 35 and 36, T21S, R14W (Fig. 3). Pinnick's 1974 report recommends Union Carbide's acquisition of the property from Conoco and further drilling, which took place in 1974 and 1975. The report goes on further to give a comparison of Union Carbide versus Conoco 43-101 non-compliant resource estimates for the Down Yonder deposit using Conoco's drilling results, given in contained pounds of  $U_3O_8$ , and average thickness and grade as follows:

**Table 8-1;** Comparison of Union Carbide to Conoco Historic Down Yonder Resource Estimates.

	<u>Union Carbide</u>			<u>Conoco</u>		
Section 36	1,050,400 lbs	4.4'	0.26% U <sub>3</sub> O <sub>8</sub>	1,724,000 lbs	6.4'	0.167% U <sub>3</sub> O <sub>8</sub>
Section 35	<u>210,000 lbs</u>	<u>5.5'</u>	<u>0.20% U<sub>3</sub>O<sub>8</sub></u>	<u>349,000 lbs</u>	<u>8.0'</u>	<u>0.136% U<sub>3</sub>O<sub>8</sub></u>
<b>TOTAL</b>	<b>1,260,400 lbs</b>	<b>4.6'</b>	<b>0.25% U<sub>3</sub>O<sub>8</sub></b>	<b>2,073,000 lbs</b>	<b>6.7'</b>	<b>0.160% U<sub>3</sub>O<sub>8</sub></b>

The report also describes a separate 43-101 non-compliant resource estimate just for the Down Yonder Section 36 mineralization in two subareas, Areas A and B (Table 8-2). A possible 20,000 tons, indicated 133,000 tons, and inferred 92,000 tons are given for a total of 202,000 tons at a grade of 0.26% containing a total 1,050,000 pounds of U<sub>3</sub>O<sub>8</sub> (Table 8-3). No qualification is made in this Union Carbide historical estimate as to the definition of “possible”, “indicated”, and “inferred” tons. This breakdown of classification does not qualify the reserve estimate under the regulation of NI 43-101 for anything more than historic exploration information.

A subsequent 1975 report by Pinnick further details the above Conoco 43-101 non-compliant resource estimate on the Down Yonder deposit, consisting of four main areas of mineralization, Areas A and B located in Section 36, and Areas C and D located in Section 35. Copies of original Conoco computer print-out sheets of mineralized intercepts determined by down-hole gamma-ray logging of drill-holes defining the above four areas of mineralization are in Homeland Uranium (Utah)'s possession.

**Table 8-2;** Subdivision of Conoco’s Historic Down Yonder Resource Estimates

Area	Short Tons	Pounds U <sub>3</sub> O <sub>8</sub>	Thickness	Grade % eU <sub>3</sub> O <sub>8</sub>
Section 36 A	80,000	320,000	6.0 ft	0.200
B	<u>438,750</u>	<u>1,404,000</u>	<u>6.5 ft</u>	<u>0.160</u>
<b>TOTAL</b>	518,750	1,724,000	6.4 ft	0.167
Section 35 C	83,929	235,000	9.0 ft	0.140
D	<u>43,846</u>	<u>114,000</u>	<u>6.0 ft</u>	<u>0.130</u>
<b>TOTAL</b>	127,775	349,000	8.0 ft	0.136
<b>Totals for Deposit</b>	646,525	2,073,000	6.7 ft*	0.160

(Sturm. 2009).



**TABLE 8-3. HISTORIC 43-101 NON-COMPLIANT MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES FOR THE DOWN YONDER URANIUM DEPOSIT**

DATE	COMPANY	TYPE OF ESTIMATE	TONS	GRADE % U <sub>3</sub> O <sub>8</sub>	POUNDS U <sub>3</sub> O <sub>8</sub>
1970	AEC resource estimate for Conoco (Wentworth, 1970)	Sichel Krige analysis of 5-foot combined assay values	973,000	0.108*	2,100,000
1974	Union Carbide estimate vs. Conoco estimate using Conoco drilling data	UC in-house	252,080*	0.25	1,260,400
		Conoco in-house (Pinnick, 1974)	646,525*	0.16	2,073,000
1974	Union Carbide estimate just for Section 36 deposit – Areas A and B	UC in-house (Part of UC’s above estimate) (Pinnick, 1974)	202,000 Possible + Indicated + Inferred	0.26	1,050,000
1975	Union Carbide details Conoco estimate above for Section 36 Areas A and B and Section 35 Areas C and D	UC detail of Conoco in-house estimate (Pinnick, 1975)	646,525	0.16	2,073,000
1975	Union Carbide using 1974-75 UC drilling results just for Section 36	UC in-house (Pinnick, 1975)	245,000 Possible + Indicated + Inferred	0.19	931,000
1978	Atlas Minerals A, B, and C Blocks in Section 36	T.L. Wilson in-house estimate (Price, 1981)	NDA	NDA	610,000 Inferred
1981	Atlas Minerals Blocks A and B in Section 36	M. Price in-house estimate (Price, 1981)	137,838*	0.185	510,000 Inferred 1,500,000 Potential
1981	Atlas Minerals Blocks A, B, C, and D in Section. 36	W.W. Holloway in-house estimate (Holloway, 1981)	274,226	0.182	997,311 Inferred

\*Denotes number derived by back-calculating from data supplied by estimators

NDA= No data available

In summary, Union Carbide reported the total Down Yonder 43-101 non-compliant resource, as estimated by Conoco, to contain 2,073,000 pounds of U<sub>3</sub>O<sub>8</sub> in 646,525 tons at an average grade of 0.160% U<sub>3</sub>O<sub>8</sub> (Table 1; Pinnick, 1975). No breakdown was made of this estimate as to “possible,” “indicated,” or “inferred” resources. None of the foregoing is considered to be classified as a reserve estimate based on the author’s following statement:

*Although the terms “reserve” and “resource” used above and elsewhere in this report, when historical information is discussed, were estimates produced by Conoco and/or reported by Union Carbide and the AEC above and by Atlas Minerals below, they are not to be relied upon in this report under the definitions required by National Instrument 43-101. The statements of tonnage and grade above and below are therefore classified herein for the reader to consider as exploration information of historical significance only and only to reflect an order of magnitude of the size and grade of the Down Yonder deposit. The relevance and reliability of the tonnage and grade defined in the historical estimates contained in this report are based on extensive sampling by rotary and core drilling, and by down-hole gamma-ray logging, carried out by senior mining companies with significant exploration and production experience. The author of this report has verified the estimation of the tonnages and grades as previously reported by an independent Qualified Person (QP) (Pancoast, 2008). Revisions and additions have been made based on additional drilling by Magnum in 2008 to arrive at a new mineral resource estimation. The results of the current mineral resource calculations are presented in Section 19.0 of this report.*

In 1975, Union Carbide recalculated its 43-101 non-compliant resource estimate for the Down Yonder deposit in Section 36 based on its evaluation drill program of the area in late 1974 and 1975 (Pinnick, 1975). Union Carbide drilled 13 holes and changed the average intercept to 6.0 feet at a grade of 0.19% U<sub>3</sub>O<sub>8</sub>. The estimate was updated to comprise 20,000 tons possible, 133,000 tons indicated, and 92,000 tons inferred for 245,000 tons at an average grade of 0.19% U<sub>3</sub>O<sub>8</sub>, yielding 931,000 pounds of U<sub>3</sub>O<sub>8</sub> (Table 8-3). No qualification is made in this Union Carbide historical estimate as to the definition of “possible”, “indicated”, and “inferred” tons. This breakdown of classification does not qualify the estimate under the regulation of NI 43-101 for anything more than historic exploration information.

Information is sketchy, but Atlas Minerals and Conoco internal documents, memos, and interoffice correspondence dated from 1978 through 1983, in Homeland Uranium (Utah)'s possession, indicate that Conoco was attempting to vend the Down Yonder to Atlas, with Atlas performing at least three 43-101 non-compliant resource estimates (Table 8-3; one by T. L. Wilson, 1978; one by M. Price, 1981; and one by W.W. Holloway, 1981) in addition to those by Union Carbide and Conoco cited above (Holloway, 1981; Price, 1981; Heiny, 1983). Furthermore, drill-hole maps attached to Holloway’s (1981) estimate reports indicate an

additional 10 holes, 78-EF-1 through 78-EF-10, were drilled on the Down Yonder deposit in 1978. Although it is uncertain who drilled these holes, it is speculated that it was Energy Fuels Nuclear based on the EF prefixes given to the drill holes.

A NI 43-101 non-compliant estimate performed on the Down Yonder deposit in 1978 by T. L. Wilson of the Atlas Mining Department resulted in Blocks A, B, and C (excluding Block D), all in Section 36, containing combined 43-101 non-compliant inferred reserves of 610,000 pounds of  $U_3O_8$ , which was probably amenable to incline or shaft access (Table 8-3; Price, 1981). Wilson did not calculate geologic potential reserves. A second Atlas calculation by M. Price (1981) of mineralization contained in the area evaluated by Wilson and as controlled by 1981 economics determined the presence of 510,000 pounds of 43-101 non-compliant inferred reserves for Blocks A and B together (Table 8-3). Geologic potential 43-101 non-compliant reserves for the highly favorable portion of the Down Yonder deposit were determined by Atlas to be 1,500,000 pounds  $U_3O_8$ , roughly three times the 510,000 43-101 non-compliant pounds calculated by Price (1981) for Blocks A and B in Section 36 (Table 8-3). In July of 1981, W.W. Holloway performed a third 43-101 non-compliant resource estimate for Atlas on all four Blocks in Section 36, A, B, C, and D, resulting in 997,311 pounds  $U_3O_8$  contained in 274,226 tons at an average grade of 0.182 over an average thickness of 4.2 feet (Table 8-3; Holloway, 1981). Holloway's estimate was based on 43-101 non-compliant "inferred" resources only. This breakdown of classification does not qualify the estimate under the regulation of NI 43-101 for anything more than historic exploration information and the author and Homeland Uranium (Utah) are not treating it as such.

### ***8.5 Down Yonder Uranium Deposit Ownership History***

No information is available to the author regarding ownership of the Down Yonder deposit during the period 1984 to 2004. The Section 36 State Mineral Lease no. 49311 was obtained by William M. Sheriff from the State of Utah on April 4, 2004 and an assignment was made from Sheriff to EMC Utah Inc. on January 6, 2006 for an undivided 100% interest in the Lease. BM claims were staked by EMC to cover the remainder of the mineralization as it is known to presently exist in adjacent Section 35. No exploration or development work was conducted on the property by EMC. EMC lease optioned its entire San Rafael Uranium Property land holdings, including the Down Yonder deposit area, to Glen Hawk Minerals, Ltd., on June 20th, 2005. After conducting no work on the property and as a result of financial difficulties and a desire to move into gold exploration, Glen Hawk returned the property to EMC only a year later in early June of 2006. As a result of Magnum's interest in the uranium potential of the land, Magnum approached EMC in 2006 to see if it might be interested in joint venturing the property in order to move it forward. EMC agreed and a formal JV arrangement between the two companies was consummated on November 19, 2006. Magnum has earned an undivided 100% interest in the

entire San Rafael property position, substantially ahead of schedule, by virtue of the aggressive exploration drilling program it conducted over other parts of its property position during 2007-2008. To date, no production has come from the Down Yonder deposit. The lease ML-49311 was assigned to Magnum on May 21, 2009 with a 2% overriding royalty retained by EMC.

## **9.0 GEOLOGICAL SETTING**

### ***9.1 Regional – San Rafael Uranium District Geology***

The property is located in a moderate sized topographic and structural low, locally known as the Green River Desert. Structurally, this low can be considered a narrow southern extension of the Uinta Basin. Several local features of the Colorado Plateau surround the area. The area is bounded on the west by the San Rafael Swell, a large asymmetrical doubly plunging anticline, and on the east by the Paradox Basin/Paradox Fold and Fault Belt. The Nequoa Arch is located immediately to the south and to the north the Green River Desert merges with the larger Uinta Basin, although it is separated from the latter by the northwest-trending Book Cliffs (Fig. 5).

Stratigraphically, all exposed consolidated rock units within the boundaries of the San Rafael Uranium District area are sedimentary formations deposited during the Mesozoic era (Trimble and Doelling, 1978). The oldest unit is the Triassic Moenkopi Formation which underlies the Chinle, Wingate, and Kayenta Formations. Jurassic rocks are, in ascending order, the Navajo, Carmel, Entrada, Curtis, Summerville, and Morrison Formations. The Cretaceous rocks, also in ascending order, include the Cedar Mountain and Dakota Formations, and members of the Mancos Shale. Alluvial and colluvial deposits of Quaternary age are scattered throughout the District. The Triassic rocks are both marine and continental in origin, whereas the Jurassic rocks are for the most part non-marine and most of the Cretaceous rocks are of marine origin. A stratigraphic column briefly describing the characteristics of the sedimentary rocks from the Moenkopi through the Mancos Shale in the San Rafael Uranium District is given as Figure 6. This report is only concerned with those rock units penetrated by the historic drilling in the Homeland Uranium (Utah)'s San Rafael Project area (see Section 9.2 below), with the objective of describing the Salt Wash Member of the Jurassic Morrison Formation, host to the uranium mineralization, in greater detail. For a more comprehensive description of the stratigraphy of the Green River area, the reader is referred to "Geology of the Green River Mining District," by Young and others, 1960. The reader is also referred to Figure 7 of this report, Geologic Map of the San Rafael Uranium District.

The San Rafael District is near the confluence of three tectonic divisions; the San Rafael Swell, the Uinta Basin, and the Paradox Fold and Fault Belt (Fig. 5). The San Rafael Swell is a broad uplift whose steep east limb, the San Rafael monocline, forms the west boundary of the District. The Uinta Basin is to the north where its southern boundary is defined by the Book Cliffs escarpment. The strata beneath the cliffs dip gently northward or northeastward toward the center of the Basin. To the south the dip of outcrops is influenced by the Nequoia Arch, an arm of the Monument Uplift. An additional anticlinal structure, the Green River nose or anticline, is just east of the District (Fig. 5). The influence of these structures has produced a broad, shallow, northeast plunging syncline known as the Acerson Trough (Trimble and Doelling, 1978). The San Rafael District centers mostly on the northwest flank of this master structure, the axis of which trends N25°E, and which also appears to be the main control to the District's paleo-stream channel trends and development for uranium mineralization at the Deep Gold, Down Yonder, 4484, Jackrabbit, and other deposits within Homeland Uranium (Utah)'s project area.

## ***9.2 Local – Deep Gold Uranium Deposit Geology***

As mentioned above, this report is only concerned with those rock units intersected by previous operators' historic drilling and Magnum's 2007, 2008, and early 2009 drilling in the area of the San Rafael Project area, with the objective of describing the main host rock, the Salt Wash Member of the Upper Jurassic Morrison Formation, in greatest detail (Fig. 6; Plate 5).

### **Summerville Formation (Upper Jurassic)**

The Summerville is the oldest Formation encountered in the drilling programs and consists of thin, even-bedded mudstone and siltstone. The Formation has a characteristically reddish-brown color, which is easily distinguished from the redder mudstones and siltstones that generally occur in the overlying lower Salt Wash. Its origin is considered marginal marine and it averages 150 feet thick. Only the top beds immediately below the lower Salt Wash sands were penetrated by selected holes.

### **Morrison Formation (Upper Jurassic)**

The Morrison is a complex non-marine unit that is subdivided into two members, the upper Brushy Basin and the lower Salt Wash (Figs. 6 and 7). The Salt Wash consists of channel and floodplain deposits and contains the known uranium deposits in the San Rafael Uranium District (Plate 5). The Brushy Basin is composed mostly of floodplain-type deposits and decomposed ash (Plate 6).



### ***Salt Wash Member:***

The Salt Wash Member averages 220 feet thick in the Snow and Lucky Mines and Deep Gold area and is about 250 feet thick in the historic holes in the Down Yonder area. It is composed predominantly of fine- to medium-grained sandstone interbedded with thin mudstone, claystone, and siltstone. Occasional conglomeratic sandstone is also present.

According to the results of the drilling, the Salt Wash contains a lower unit consisting of claystone, mudstone, siltstone, sandstone lenses, and occasional thin limestone. A persistent gypsum bed at the base of the Salt Wash was encountered throughout the area drilled. Trimble and Doelling (1978) include this gypsum bed as the very top of the underling Summerville Formation described above. They mention that the upper foot of the bed contains abundant jasper nodules, possibly signifying the development of an old soil horizon. In some places in the District, the Salt Wash fills channels cut into this gypsum horizon, whereas in others the channels completely remove the gypsum, indicating a disconformity at the Salt Wash – Summerville contact. The upper part of the Salt Wash, where the deposits occur, characteristically contains relatively thick channel-type sandstones and conglomerates with thin interbedded mudstones (Plate 5). In places, carbonaceous trash is abundant in the upper Salt Wash sands and was encountered in varying amounts in most of the sands (Wentworth, 1970).

The Salt Wash sands are the result of fluvial processes that created a broad, regional alluvial plain deposited by northeast-flowing streams. Wentworth (1970) and Trimble and Doelling (1978) proposed the source of the sediments lay to the south, southwest, and west in Arizona, western Utah, or eastern Nevada. Trimble and Doelling (1978) further mention that sediment deposition is thought to have been by intermittent shifting streams in possible semiarid environments. Aggrading streams that deposited the early Salt Wash Member were small and filled small channels. As time progressed, the size of the streams increased until, at the top of the member, a thick, broad accumulation of partly conglomeratic channel sands was deposited. These larger streams carried much woody plant and organic debris acting as important reductant material and loci for the concentration of uranium. The Salt Wash is exposed as the eastern dip slope of the north-trending hogback west of Buckmaster Draw, west of the Project boundary.

Individual Salt Wash sandstone bodies and layers encountered by Conoco drilling in the Down Yonder area measure well over 100-feet thick (Wentworth, 1970). Even though laterally persistent, they vary in thickness because of facies relationships and changes with lateral mudstone units, minor scouring and filling, and sand build up. Results of the drilling also show that the channels trend in a north to northeast direction, a point further discussed in Section 11.2 of this report. The upper Salt Wash sandstones are predominantly light gray, but very light gray, medium gray, and light tans are not uncommon. Wentworth (1970) attributed much of the lighter

colors to kaolinization of feldspar and decomposition of chert. The sandstones consist mainly of subrounded and frosted quartz grains cemented to varying degrees by calcite and siliceous material. Interstitial clay is not uncommon, and large clay galls were observed in Conoco cores indicating considerable turbulence during certain periods of deposition. Although not abundant, authigenic pyrite was also observed. Various accessory minerals identified in a petrographic study conducted by the AEC on material from Conoco Down Yonder deposit core holes include apatite, garnet, leucoxene, tourmaline, and zircon, just to mention a few (Heyse, 1969). The study also notes that tourmaline content is more abundant in and near uranium mineralization.

The mudstone and claystone within the Salt Wash are varicolored, with red and green hues predominating. Results of Conoco drilling indicate that mudstone in contact with permeable sandstone is bleached green to light gray in a number of cores (Wentworth, 1970). While it is widely known that green mudstones are usually found in the vicinity of Salt Wash-hosted uranium mineralization, the relationship between primary and secondary colors in Salt Wash sedimentary rocks is not fully understood.

***Brushy Basin Member:***

Drilling results show the Brushy Basin Member of the Morrison averages 350-feet thick in the area of the San Rafael Project. The drilling results also show this Member to mainly consist of variegated mudstones and claystones, with variable lesser amounts of siltstone, sandstone, and loosely cemented conglomerate. The sandstones and conglomerates form lenticular bodies which seldom extend more than 100 feet laterally in their lesser dimension. The dominant colors are maroon to reddish-brown, with shades of green, gray, and purple not uncommon (Plate 6). The claystones in the unit generally consist of bentonite, which formed by the decomposition of volcanic ash, and which some workers believe is the source of the uranium hosted in the underlying Salt Wash sandstone throughout the District (Stokes, 1967; Trimble and Doelling, 1978).

According to Trimble and Doelling (1978), the time of Brushy Basin deposition was marked by streams that became sluggish and channel deposition thinner and less common. They also mention that discontinuous limestones in the Member indicate the formation of shallow lakes on the low interfluvial floodplain areas, and that the high volcanic ash content in claystones, mudstones, and siltstones composing most of the Member, indicates nearby volcanic activity.

The Brushy Basin Member is considered latest Jurassic in age, and its upper contact with the overlying Cedar Mountain Formation, described below, has been designated as the boundary between the Jurassic and Cretaceous beds (Stokes, 1952). The Brushy Basin Member is exposed

in the lower slopes of both sides of Buckmaster Draw along the western boundary of the Project area.

### **Cedar Mountain Formation – (Lower Cretaceous)**

The Cedar Mountain Formation is divided into two Members in the San Rafael Uranium District, the basal Buckhorn Conglomerate and an Upper Shale (Figs. 6 and 7). In the District, exposures of the Buckhorn are discontinuous, attaining a maximum thickness of 30 feet in the north and diminishing near the south, where it pinches out (Fig. 7). Exposures of the Upper Shale are continuous over the length of the District, attaining a maximum width of over 3 miles near the south end. The Buckhorn Conglomerate rests unconformably on the Brushy Basin Member of the Morrison Formation described above and contains mostly gray, black, and tan chert and quartzite pebbles and cobbles. In places where the Buckhorn crops out, particularly east of Buckmaster Draw, slopes are strewn with large blocks of the conglomerate (Fig. 7; Plate 6). This outcropping forms a north-south band about one-half mile wide in sections 15, 22, and 27. The Snow shaft collar is near the upper contact of the Cedar Mountain Formation. Drill holes in the Jackrabbit area also collar in this unit. The overlying Upper Shale is similar to the Brushy Basin, with lithologies of siltstone, shale, mudstone, sandstone, and limestone, but colors are more faded to a gray and the banding is less distinct (Trimble and Doelling, 1978). The siltstones, shales, and mudstones are mostly bentonitic and form the bulk of the Member.

Previous operators' and Magnum's drilling results in the Deep Gold, Jackrabbit, and Down Yonder areas confirm the similarity of Upper Shale Member beds of the Cedar Mountain with the underlying Brushy Basin, but, as noted by Trimble and Doelling (1978) and as referenced above, are lighter in color and quite difficult to differentiate in the subsurface (Wentworth, 1970). Conoco geologists believed that these paler colors are due to bleaching by swamp waters. Wentworth (1970) further states that Conoco geologists applied the term Cedar Mountain to designate the beds between the top of the Brushy Basin and the base of the Mancos in their drilling in the Down Yonder area, and believed that the Cedar Mountain should be included with the Brushy Basin in any formal rock unit scheme. The Cedar Mountain Formation was deposited in the same fluvial and lacustrine environments responsible for the Brushy Basin Member of the Morrison (Trimble and Doelling, 1978).

### **Mancos Shale – (Upper Cretaceous)**

The Mancos Shale is a thick calcareous marine unit that forms the surface of much of the Green River Desert and covers most of the eastern part of the San Rafael Uranium District (Figs. 6 and 7; Plate 7). Classically, the Mancos is divided into five Members, which, in ascending order, are the Tununk Shale, Ferron Sandstone, Blue Gate Shale, Emery Sandstone, and Masuk Shale (Trimble and Doelling, 1978). In the District and particularly in the Deep Gold deposit area, only

the lower three Members are present (Wentworth 1970). The Ferron Sandstone Member, a thin shaly sandstone unit, separates monotonous blue gray calcareous Blue Gate Member shales from lithologically similar colored shales of the underlying Tununk Member. Furthermore, although Conoco geologists recognized the stratigraphically highest Member in the nearby Down Yonder deposit area as the Blue Gate and referred to it as such in their drilling (Wentworth, 1970), Trimble and Doelling (1978) refer to this shale as the Upper Mancos Shale. Thickness of the Tununk is 350 to 400 feet, the Ferron 20 to 30 feet, and the Blue Gate 600 feet plus in the District. The Ferron forms a low north-striking, east-dipping cuesta as the step of the lower and upper benches that cross the Deep Gold deposit and the western edge of the Down Yonder deposit. Pioneer Uranium's, Atlas Minerals', and Magnum's drill holes were sited within the Tununk in the western, shallower part of the Deep Gold deposit. The historic holes in the Hollie claim part of the Deep Gold deposit collar within the Ferron and Blue Gate (Upper Mancos Shale). Most of the historic and Magnum's drill holes in the Down Yonder area were sited within the Blue Gate Member (Upper Mancos Shale).

#### **Structure In and Around the Deep Gold Uranium Deposit Area**

Beds in the Deep Gold deposit area dip gently, approximately 3°, to the northeast toward the center of the Green River Desert structural low. Near the outside boundaries of the Green River Desert the dips increase in magnitude, especially along its west edge near the fringe of the San Rafael Swell, where they are up to 11°. Dips of the lower Jurassic and older rocks are much steeper in the 2-to-4 miles west of the project boundary. Ground water occurrences in the basin are roughly parallel to the structure, with the younger aquifers successively becoming saturated toward its center (Wentworth, 1970). Numerous northwest-striking normal faults traverse the San Rafael Uranium District that can be traced southeasterly into the Paradox Fold and Fault Belt (Figs. 5 and 7; Trimble and Doelling, 1978). These faults are speculated to be of Laramide or post-Laramide age and, along with subsidiary fractures, may have locally controlled uranium accumulation. If these faults are older, they may also have influenced sediment deposition of the Salt Wash streams. Conoco geologists reported minor drilling problems in the Down Yonder deposit area that were due to fracturing encountered in the Mancos in certain isolated areas (Wentworth, 1970).

## 10.0 DEPOSIT TYPES AND EXPLORATION MODEL

The exploration target or deposit type known to exist and being explored for by Homeland Uranium (Utah) at the San Rafael Project is the peneconcordant, channel-controlled, trend type. Specifically, this deposit type matches the recognition criteria of Sandstone Type Uranium Deposits Class 240, Subclass 243 – Channel-Controlled Peneconcordant Sandstone-Type Deposits – as defined by Austin and D’Andrea (1978) for the United States Department of Energy’s (USDOE) National Uranium Resource Evaluation (NURE) Program conducted in the late 1970’s and early 1980’s. Austin and D’Andrea’s classification work and widely established recognition criteria regarding geologic environments favorable for sandstone-type deposits are part of the larger uranium deposit classification manual and classic treatise entitled “Geologic Characteristics of Environments Favorable for Uranium Deposits.” This publication was written and compiled by Bendix Field Engineering Corporation geologists for the USDOE in 1978 (Mickle and Mathews, eds.) and still serves as a major working classification manual for many geologists exploring for all types of uranium deposits throughout the United States and other parts of the world.

Peneconcordant uranium deposits in sandstones are essentially stratabound deposits which do not normally exhibit the continuous and sharp boundary between altered and unaltered ground commonly found in roll front-type deposits. This deposit class includes deposits in which altered and unaltered ground may be clearly distinguishable, as in parts of the Uravan Mineral Belt, Colorado (Thamm, et al, 1981), and those in which the distinction, if it exists, is not readily evident, as at Ambrosia Lake, New Mexico. Again referring to Austin and D’Andrea’s sandstone-type deposit classification system, peneconcordant deposits are broken down into Subclass 243, those hosted by distinct, easily recognized channels, as is the Deep Gold, Down Yonder, and the other uranium deposits in the San Rafael Uranium District, and Subclass 244, those deposits in which channel control is not as evident.

Major recognition criteria and definitive geological characteristics of peneconcordant, channel-controlled, trend-type uranium deposits, taken from Austin and D’Andrea (1978) and many of which are present at the San Rafael Project’s deposits as determined by the results of previous operators’ historic drilling and Magnum’s drilling, are listed below.

- Peneconcordant deposits are stratabound uranium deposits that occur in discrete, easily recognized paleo-stream channels scoured and eroded into underlying strata and rocks; sedimentary structures, especially scours and channel contacts, are ore controls, and faults, fractures, synclines, and troughs serve to control drainage location and

development; host rocks have developed in a braided stream or trunk stream channel network and alluvial fan/flood plain environment;

- Sandstone host rocks are commonly first-cycle sediments that are either feldspathic or arkosic, or are quartz- and chert-grain rich depending on provenance; host rocks range from boulder conglomerates to siltstones, with medium- to coarse-grained sandstones the most common; bedding tends to be lenticular, typical of fluvial deposits, with many deposits occurring in distinct sinuous and braided channel network forms; ore trends are parallel to the depositional trends of the host rock; some of the best mineralization occurs on the edges of thicker channels where mudstone-sandstone ratios increase and reach equality;
- The source of the uranium is postulated to be tuffaceous shales or tuffaceous volcanic rocks overlying the favorable sedimentary host rocks; uranium is leached from the overlying shales and/or tuffs and precipitated in the underlying sandstones; the most common primary uranium minerals found in unoxidized material are uraninite and coffinite, and the most common primary vanadium mineral is montroseite; common secondary (oxidized) minerals include tyuyamunite and corvusite; commonly associated sulfides include pyrite and marcasite ( $\text{FeS}_2$ );
- The dominant reductant for the ore is carbonized “trash”; fossil wood, leaves, vegetative matter, large and small plant remains, lignite, asphaltite, logs, and fine carbonaceous matter are the loci for the deposition of uranium;
- Geometry of deposits in plan view ranges from tabular to lenticular to sinuous, with their long axes aligned along the trend of the paleochannel; ore thickens and thins with the stratigraphic structures, channel scours, mudstone-sandstone ratios, and according to the amount of carbonaceous material present, and may occur either as a single body or as a cluster of bodies, with larger bodies usually comprising a number of connected pods; where clustered, orebodies can measure hundreds of feet wide, thousands of feet long, and are generally 3- to 6-feet thick. Average grades range between 0.10% and 0.40%  $\text{U}_3\text{O}_8$ .

Stream channel trends are also diagrammatically shown in Figure 4, a drawing taken from Trimble and Doelling (1978), with special reference to the Acerson Trough area's trunk channel stream systems. Uranium mineralization in the San Rafael Uranium District including Homeland Uranium (Utah)'s deposits is peneconcordant and stratabound, occurring in the upper continuous sandstone unit of the Salt Wash Member of the Upper Jurassic Morrison Formation. It was produced by several trunk streams which entered the area from the south, which included the

Tidwell, Acerson, and Sahara trunk channel stream systems containing the District's deposits. The Down Yonder deposit is in the Acerson trunk channel while the Deep Gold deposit is in the Tidwell trunk channel. The 4484 deposit appears to be in the fringe of the Acerson trunk channel. Further evaluation will be needed to determine its relationship to the Deep Gold deposit, 1,700 feet to the northwest.

## **11.0 MINERALIZATION**

### ***11.1 San Rafael Uranium District Mineralization***

The Tidwell Mineral Trend, the main historic mining area in the San Rafael Uranium District, is located updip and just west of the Deep Gold deposit and 2 miles west and northwest of the Down Yonder deposits (Figs. 3, 4, and 7). Part of it lies within the western one-fourth and margin of Homeland Uranium (Utah)'s greater San Rafael Uranium Project land position. The Jackrabbit deposit is in the main part of the Tidwell District. The area is also historically known as the Four Corners Mining District after an early operator, Four Corners Uranium. Using Trimble and Doelling's (1978) production figures for the District and taking into account subsequent Atlas Minerals in-house reports concerning later production from the Snow and Probe mines (Atlas Minerals Engineering Department, 1982; Gordon, 1982; Wilbanks, 1982), in excess of 4.0 million pounds of  $U_3O_8$  and 5.4 million pounds of  $V_2O_5$  have been produced from over 50 mines in the San Rafael Uranium District to date. This production equates to roughly 1,000,000 tons of material mined, with a speculated 8 million pounds of uranium remaining (Trimble and Doelling, 1978).

The average thickness of the material mined is generally between 3.5 and 5.5 feet, with average grade dropping from roughly 0.35%  $U_3O_8$  in the mid to late 1950's (Young and others, 1960) to around 0.18% to 0.19%  $U_3O_8$  from the Snow and Probe Mines in the early 1980's and as the minimum acceptable ore grade changed with economics over time (Wilbanks, 1982). Deposits generally have an elongate shape and preferred northeasterly orientation that mimics the orientation of the paleo-stream channels in which they occur. Uranium mineralization exists almost entirely at one stratigraphic level, the upper sandstone sequence of the Salt Wash Member of the Upper Jurassic Morrison Formation, as described above. The size of the deposits generally increases in a northerly to northeasterly direction and from the surface basinward, where optimal host rock types were deposited and favorable sandstone-mudstone ratios were produced during development of the Acerson Mineral Trend. Size of deposits varies considerably, ranging from a few tons to semi-continuous to continuous clusters in excess of 150,000 tons. Historically, mine depths in the Tidwell Mineral Trend ranged from 40 feet along its west edge, to 300 to 400 feet further downdip to the east, and finally to about 600 to 700 feet downdip at the Snow and Lucky

Mines (Figs. 3 and 7). The Jackrabbit deposit ranges in depth from 210 to 510 feet. Depths of the large uranium deposits, located just east of the Tidwell Mineral Trend, all or part of which are on Homeland Uranium (Utah)'s ground, include the Deep Gold deposit at about 775 to 1,000 feet, the 4484 deposit at about 900 feet, and the Down Yonder deposit at about 950 to 975 feet.

Several features have had an effect, either directly or indirectly, upon mineralization and the occurrence of the uranium-vanadium deposits in the San Rafael Uranium District. These features, along with a short description of each are given below. For a more in-depth description of them, the reader is referred to Trimble and Doelling (1978).

1. Sedimentary and Stratigraphic Controls:

- a. Depositional Environment – The Salt Wash Member of the Morrison was laid down in an aggrading fluvial environment. Mineralization in the San Rafael Uranium District is principally in the upper sandstone unit of the Salt Wash, produced by several trunk stream channel systems (Tidwell, Acerson, and Sahara) which flowed from the south to the northeast. As sequential deposition of coarse to fine sedimentary materials took place, a general lateral belt of favorable, permeable, coarser host rocks, consisting of sandstones and sandy conglomerates, developed along certain sections of the trunk stream channel systems. These host rocks, are followed, both downstream and laterally by a general fining to less permeable and favorable host sediments as current velocity decreased.
- b. Channel Trends - Most of the stream channels in the Project area have a northeast trend, as observed by Stokes (1954), Million (1957), Wentworth (1970), and Trimble and Doelling (1978). Stream directions have been determined by mapping sedimentary structures such as lineation, festoon, cross-bedding, and rib and furrow in the upper sandstone unit of the Salt Wash.
- c. Presence of Carbonaceous Material – Mineralization occurs in the San Rafael District where carbonaceous material is abundant and has served as a reducing environment for the deposition of uranium. Carbonaceous material is less abundant in the southern part of the area, but increases northward along with more favorable host rock types as stream velocities decrease somewhat, forming lateral belts of favorability where the distributary system reaches a maximum. Further north and with further decrease in stream velocity, favorability decreases as only the finest plant material and mud and silt dominates as sands thin and feather out (Trimble and Doelling, 1978).



- d. Channel Contacts and Sandstone-Mudstone Ratios – Uranium mineralization in the upper sandstone unit is normally localized near the contacts of the sub-channels, with most of it usually near the bottom or sides of the individual channels. Many deposits are also found where there is a sudden change in the slope of the contact. Better deposits occur where the lithology is mixed and where favorable rock types are well mixed with carbonaceous matter. Sandstone-mudstone ratios play a major role in localizing and confining mineralization, as further defined and described below in detail in Section 11.2.
- e. Thickness of the Upper Sandstone Unit – Thickness of the upper sandstone unit is a major control to uranium mineralization. In thinner units, even where carbonaceous material is present, mineralization is minor to nonexistent. Most of the thick sandstone units in the San Rafael Uranium District are coarser grained and permeable, thus enhancing circulation of the mineralizing fluids.

## 2. Structural Controls:

- a. Faults and Joints – Strong jointing is present normal to bedding in mineralized horizons and surrounding units, however mineralized bodies do not appear to be influenced by the jointing. Development of joints is probably related to regional folding that occurred subsequent to primary uranium deposition. Secondary oxide uranium and vanadium minerals occur on fracture surfaces.
- b. Anticlinal and Synclinal Axes – Subtle folding may have continued in Morrison time and controlled the streams depositing the Salt Wash sands. A topographic high (anticlinal axis) existed at the north end of the District and may have served to deflect the northeast flowing Salt Wash river channels, thus aiding the accumulation of carbonaceous matter to the south in the mineralized area (Trimble and Doelling, 1978).
- c. Northeast-Trending Lineaments – A periodicity is noted in the occurrence of northeast-trending mineralized bodies in the District, which implies a linear control other than or in addition to simple sedimentary channels. This linear control suggests structural lineaments, which could be related to the above mentioned folding in a washboard configuration or to an unknown and unobserved pattern of jointing or fracturing (Trimble and Doelling, 1978).

## 3. Chemical Controls and Source of Uranium

- a. A chemically reducing environment is needed for preservation of carbonaceous material and emplacement and maintenance of a uranium deposit. Circulating ground water introduced the uranium and vanadium into the reducing environment. Age dates of Colorado Plateau uranium deposits indicate mineralization occurred from 70 to 115 million years ago (Stieff and others, 1953; Shawe and others, 1991). Leaching of bentonitic shales and mudstones in the Brushy Basin Member stratigraphically above the Salt Wash Member may have been the source of the uranium (Stokes, 1967; Gloyn and others, 2003).

The two core deposits are discussed separately in the following subsections of this report. This information is largely from the earlier Technical Reports on the Deep Gold deposit (Sturm, 2009) and the Down Yonder deposit (Pancoast, 2008). Additional information gathered since these reports were filed has also been included. The general concepts of mineralization described in detail for these two deposits are applicable to the other smaller deposits in Homeland Uranium (Utah)'s San Rafael project area (Jackrabbit, 4484, North).

## ***11.2 Deep Gold Uranium Deposit Mineralization***

Uranium mineralization at the Deep Gold deposit is best described from the results of Atlas Minerals' drilling in Section 23 and from Atlas' drilling and mining of its updip extension, which comprises the adjacent Snow and Lucky Mines just to the west and southwest (Fig. 3). First-hand observations can also be made from drill logs obtained from Magnum's 2007 drilling in the western part of the deposit. It is worth reiterating that Deep Gold mineralization basically comprises a northeast-trending linear belt of ground that appears to exist as the downdip east-northeast extensions of the Snow and Lucky Mines uranium ore bodies.

Historic work by Atlas Minerals geologists related to Deep Gold uranium deposit mineralization started with studies of underground workings in the Tidwell Mineral Belt, which indicated that significant mineralization closely follows sedimentary depositional patterns. Past mining and drilling experience indicate that those areas where the upper Salt Wash system thickens into coalescing and overlapping channels are definitely more favorable in terms of hosting an economic ore deposit. As a result of this understanding, efforts were made by Atlas geologists to delineate these most favorable areas in outcrop, match them to existing underground workings, and then project trends into the subsurface for possible future evaluation (Wilbanks, 1982).

Following the above concept,, Atlas geologists mapped exposures of the upper Salt Wash Member from a point due west of the Probe shaft south along the outcrop for approximately 2.6 miles. Particular attention was given to sand thickness, current directions from cross bedding, general channel trends, and major faulting. Along the outcrop the upper Salt Wash alternatively thickens and thins, and it was discovered that two, thick, predominant channel systems exist in the field and show up on aerial photographs as erosion resistant highs on the Salt Wash dip slope.

Results of further work found that the second channel system thickens to 80 feet, with a prominent northeast trend. Sands coarsen upward and are capped by up to 10 feet of pebbly conglomerate. Also found were large coalescing channels separated by discontinuous shale splits up to 5-feet thick. The linear ridge formed by the outcrop of this channel system is dotted with numerous surface uranium diggings, and a number of underground workings. Current directions taken from cross bedding indicate an average direction of flow of N65°E. Further along this trend and across property lines to the northeast, Pioneer Uravan drilling identified the Deep Gold deposit, which Atlas geologists felt was an orebody adjacent to or continuous with the Atlas Lucky orebody and also could be, in part, the downdip extension of Atlas' Snow Mine orebody (Wilbanks, 1982). Based on his drilling in the area, the Pioneer Uravan geologists felt that their ore body, the Deep Gold, is situated where the Snow channel trend merges with another trend (the Lucky ore body trend?) coming from the southwest.

Atlas Minerals geologists' reports mention that economic ore deposits in the Snow – Lucky – Deep Gold area and trend(s) are associated with sudden changes in depositional environment, grain size, and permeability, all of which play a role in uranium deposition as evidenced by common ore localization near channel sides and bottoms. The sites where channel sands sharply contact less permeable mudstone or shale are common hosts for reducing carbonaceous material, and may also have provided hydrologic traps for uranium mineral deposition from ground water (Wilbanks, 1982).

The thickness of the upper Salt Wash sand sequence is also a major controlling factor in uranium deposition. The upper sequence is coarser grained and more permeable than the remainder of the Salt Wash, aiding in groundwater circulation. Because the thicker sand sequences consist of more numerous overlapping channels, they naturally provide a larger number of favorable localities for mineral deposition. Where the upper Salt Wash sequence is finer, fewer channels are present, carbonaceous material is less abundant, and uranium deposits are smaller or nonexistent.

Recognition criteria and characteristics determined for Deep Gold uranium deposit mineralization indicated from geological and gamma-ray logs of holes drilled by Magnum in the west half of the deposit during 2007 confirm Atlas' observations described above and indicate

mineralization ranges from 773.5 feet to 843.5 feet deep (Magnum Press Release dated January 17, 2008). Host rock comprises clean to slightly arkosic carbonaceous sandstone, with associated conglomerate and local nearby siltstone/mudstone interbeds. Mineralization appears to be podiform in nature, with larger bodies usually consisting of a number of closely spaced or connected pods. Thickness of mineralization generally averages about 4 feet, with grades from various 4-foot thick intercepts as determined by down-hole gamma-ray probe work ranging between 0.161% U<sub>3</sub>O<sub>8</sub> and 0.470% U<sub>3</sub>O<sub>8</sub> (Magnum Press Release dated January 17, 2008). Current dimensions of known Deep Gold mineralization, including both the east and west deposit areas and as projected to the surface from all known drilling, both historic (Pioneer Uravan and Atlas Minerals) and Magnum, is over 2,000 feet in a northwest-southeast direction (normal to channel trend) and in excess of 2,000 feet in a northeast-southwest direction (parallel to the ancient stream channel trend). This boundary of known mineralization is presently open in numerous directions, particularly to the west and southwest toward the Lucky and Snow Mines, and south across the southern boundary of the Hollie claims.

The 4484 deposit lies about 1,700 feet to the southeast of the Deep Gold deposit. Available information from historic drilling suggests the habit and tenor of the 4484 deposit are similar to the Deep Gold deposit. Even if the 4484 deposit is in a different trunk channel than the Deep Gold deposit, the proximity would lend itself to access from a centrally located shaft. The mineral resources of the nearby North deposit are also similar to the Deep Gold, although additional exploration drilling will be needed to characterize and evaluate this resource..

### ***11.3 Down Yonder Uranium Deposit Mineralization***

Uranium mineralization at the Down Yonder deposit is best described from the results of Conoco's drilling, augmented by the Magnum drilling in 2008. The most encouraging results come from the State Section 36 Mineral Lease Area, where the majority of the deposit is located, and from adjacent deposits in Section 35 (Wentworth, 1970). Conoco's discoveries at Down Yonder area comprise a north-northeast trending linear belt of ground downdip, east of and subparallel to the Tidwell Mineral Belt. Conoco's linear belt, containing the Down Yonder deposit and dubbed by Conoco geologists as the Acerson-Conoco Mineral Belt (Wentworth, 1970), appears to be the north-northeastern extension of the Acerson Mineral Belt where small, near surface deposits have been found and historically mined close to the Salt Wash outcrop rim.

Conoco drilled 151 holes in Sections 35 and 36 combined, for roughly 160,000 feet of drilling. In an attempt to establish a stratigraphic and sedimentary relationship with the mineralization, Conoco geologists constructed two isopach maps and one lithology ratio map from the drill-hole information. All three maps, included in this report as Figures 8 through 10 and described below,

are significant in terms of identifying stream channel characteristics and some of the controls to mineralization at the Down Yonder deposit.

The sandy sediments were channeled into the underlying mud as shown on Figure 8. This channeling is attributed to both an erosion and fill situation and to a facies relationship with the underlying shale. Next, the isopach map in Figure 9 shows thick northeast-trending channels. Thicknesses of the Salt Wash Member up to 114 feet thick were penetrated by Conoco's drilling, indicating a major trunk channel system traversing the area. Finally, Figure 10 also depicts the channels, but most importantly areas where high mudstone/sandstone ratios are present. These areas are indicative of channel edges where strong mineralization was encountered and where coarser stream clastics grade and intertongue with mudstones and siltstones of the surrounding floodplain.

Three important conclusions can be drawn from the three maps:

1. The upper Salt Wash sandstone unit represents a large trunk channel system trending northeast and north across the northern part of Section 2, the southern part of Section 35, and much of the State Section 36 Mineral Lease ML-49311 area (Fig. 4). The thicker sand units in the system channel into the underlying shale/mudstone. The thicknesses of these sands are greater than the thicknesses of surrounding branch channel and floodplain deposits penetrated at this horizon elsewhere in the District by Conoco's drilling.
2. Strong mineralization was found, for the most part, on the edges of the thicker river channels where the mudstone-sandstone ratios are increasing. It seems likely that the less dense carbonaceous material accumulated along the edge of the channels, away from the high velocity currents intermittently present in the centers of the channels. Subsequently, good porosity and permeability within the trunk channels, afforded passageways for uranium-rich waters (Wentworth, 1970). The uranium was deposited at channel edges where this ground water contacted the reducing environment created by carbonaceous matter.
3. The trunk channel trend can be projected both north and south within the Acerson-Conoco Mineral Belt. Conoco geologists believed that further exploration in Sections 2 and 35 would result in the discovery of large areas of mineralization similar to those found in the State Section 36 Mineral Lease Area. Also, considering the northward increase in size of the Tidwell Mineral Belt deposits, they also speculated that larger size deposits may be present to the north of State Section 36 within the trunk channel system. Future drilling will be necessary to prove or disprove this idea.

Magnum drilled 30 holes in 2008, totaling 32,732 feet in the Down Yonder uranium deposit. This was probably the first exploration work specific to the deposit since Conoco's drilling of the property from 1968 through 1973, Union Carbide's ore reserve review work and limited drilling of the property from 1974 to 1975, and Atlas Minerals ore reserve review work and evaluation of the property for potential acquisition throughout the late 1970's and early 1980's. The Magnum work consisted of step out exploration holes to expand the resource and in-fill drilling to verify the known mineralized horizons. The drilling was successful in both categories and increased confidence in the historic data. Spot core was recovered and the samples were used to better characterize the rock properties and mineralization. The drill results were discussed in a Magnum Uranium Corp. Press Release dated October 3, 2008. For a detailed description of all of this previous work conducted on the property, particularly the results of Conoco's drilling and resulting historic 43-101 non-compliant resource estimates, the reader is referred to History Section 8.0 of this report and to Table 8-3, Historic 43-101 Non-Compliant Mineral Resource and Mineral Reserve Estimates for The Down Yonder uranium deposit, also included in History Section 8.0 of this report.

## **12.0 EXPLORATION**

Magnum geologists acquired historic exploration drilling information pertaining to the San Rafael Project from a number of confidential sources in order to piece together the exploration history of the deposits and to generate a National Instrument 43-101 compliant resource estimate for the property. Homeland Uranium (Utah) will be using this resource estimate and the geological modeling to conduct future exploration drilling to better define the deposit with the ultimate goal of taking the property to production. To this end, Magnum acquired all of Conoco's, Pioneer Uranium's, and Atlas Minerals' drill-hole location maps, copies of all available down-hole gamma-ray logs of historic drill holes and geologic reports, and all available Atlas Minerals' geological and 43-101 non-compliant resource estimate reports concerning the project area. The Conoco data includes copies of original computer print-out sheets of all down-hole gamma-ray log derived mineralized intervals and intercepts (in 0.5-foot intervals) for all holes drilled through 1970. Additionally, Magnum has acquired numerous reports by Union Carbide describing 43-101 non-compliant in-house resource estimates of the Down Yonder deposit. To date, Magnum has located and/or identified over 3,300 historic drill holes in the vicinity of the BM and Hollie claim blocks and State Section 36 Mineral Lease land holdings, all drilled for uranium. Over 2,000 of these holes are located on Homeland Uranium (Utah)-controlled land.

During three phases of exploration drilling in the latter half of 2007, 2008, and early 2009, Magnum drilled 58,546 feet of conventional rotary drilling with some spot core in 63 holes. This

drilling included the western part of the Deep Gold deposit, the Down Yonder deposit, the Jackrabbit deposit area, and a few scattered exploration holes, Magnum's exploration drilling project included down-hole logging for gamma, spontaneous potential (SP), and resistivity. The logging was performed by Century Geophysical, Salt Lake City, Utah, and Jet West Geophysical Services LLC of Farmington, New Mexico.

The objective of this drilling was to fill-in for verification as well as step-out on known mineralized zones and discover new areas of high-grade uranium mineralization similar to those defining the historic mineral resources and mineralized areas found by previous operators. The lithology of all holes where core or cuttings were available was logged by the exploring companies' geologists. Results of Magnum's drilling delineate numerous high-grade intervals and intercepts that corroborate and expand upon those determined by the historic drilling. In all cases, Magnum's drilling further expanded the size of the target deposits, which are all still open in many areas and could host additional uranium resources (see Table 13-1 and Section 13.0 of this Report for a detailed discussion of Magnum drilling results).

The results of the exploration drilling are more clearly described in Section 13.0 of this report.

## **13.0 DRILLING**

The two core uranium deposits are discussed separately in the following subsections of this report. This information is from the earlier Technical Reports on the Deep Gold deposit (Sturm, 2009, and Gatten, 2011) and the Down Yonder deposit (Pancoast, 2008, and Gatten 2011). Magnum performed additional drilling after the reports were prepared in both of these areas, as discussed below. Comments have been added where applicable to better describe historic, as well as recent drilling, at the other partly defined deposits (Jackrabbit, 4484, North) in Homeland Uranium (Utah)'s San Rafael project area.

### ***13.1 Deep Gold, and 4484 Deposits and North Area Drilling***

Historic drilling of the Deep Gold deposit conducted prior to that performed by Magnum in late 2007 comprises 288,083 feet in 299 holes. Making up this total are 247 holes comprising 235,788 feet drilled by Pioneer Uranium during 1979 through 1981, and 52 holes comprising 52,295 feet drilled by Atlas Minerals from 1984 through 1986. Depth to uranium mineralization in Section 23 averages 800 to 1,000 feet. To the southeast, at the 4484 deposit, the depths to the main mineralized horizon ranges from 1,000 to 1,130 feet. East of the Hollie claims, historic drill

holes extended to almost 1,200 deep to penetrate the upper sandstones of the Salt Wash. North of there at the North Area, the mineralization depth ranges from 950 to 1,150 feet (west to east) in historic drill holes.

Rotary drilling conducted by Magnum throughout the western part of the Deep Gold deposit during the latter half of 2007 comprises 10,570 feet in 11 holes. The holes were either drilled as twins, in fills, or step-outs. Interpretation of the exploration drilling information shows that six of the holes encountered significant intercepts typical of the tenor and thickness and occurring at the same depths of those found during Pioneer Uranium's and Atlas Minerals' historic drilling of the Deep Gold deposit. They are also of the same tenor and thickness of material mined at Atlas Minerals' nearby updip Snow and Lucky Mines (Table 1; Wilbanks, 1982). Some of the holes with better intercepts include SR-15-07 with 4.0 feet of 0.470%  $eU_3O_8$ , SR-27-07 with 4.0 feet of 0.356%  $eU_3O_8$ , and SR-25-07 with 4.0 feet of 0.161%  $eU_3O_8$  (Table 13- 1, and see Magnum Press Release dated 1/17/08 for details). These and numerous historic holes are used in the mineral resource calculations presented later in this report (Section 19.0). Depths of mineralization ranged from 773.5 feet to 826.5 feet in the northern part of the western edge of the Deep Gold deposit to 827.0 feet to 843.5 feet in the southern part of the western edge. Drilling was conducted by Bob Beeman Drilling Company of Moab, Utah and down-hole logging for gamma, spontaneous potential (SP), and resistivity was performed by Century Geophysical, Salt Lake City, Utah, and Jet West Geophysical Services LLC of Farmington, New Mexico. All of the holes were logged by Magnum company geologists, with all logs residing in Homeland Uranium (Utah)'s office in Nucla, Colorado. Most of the holes were surveyed for down-hole drift, which often trends northwest (up dip) similar to all of the historic Pioneer Uranium holes that were surveyed.



**TABLE 13-1. 2007 MAGNUM MINERALS USA CORP. DEEP GOLD DRILLING RESULTS**

Hole Number	Depth (feet)	From – To (feet)	Intercept Thickness	% eU <sub>3</sub> O <sub>8</sub>	Pounds U <sub>3</sub> O <sub>8</sub> /Ton
SR-08-07	1,000	Anomalous	-	-	-
SR-15-07	900	800.5-804.5	4.0	0.470	9.40
		813.5-814.5	1.0	0.125	2.50
SR-22-07	880	825.5-826.5	1.0	0.139	2.78
SR-23-07	1,060	Anomalous	-	-	-
SR-24-07	880	773.5-776.5	3.0	0.066	1.32
SR-25-07	950	838.0-842.0	4.0	0.161	3.22
SR-26-07	900	Anomalous	-	-	-
SR-27-07	1,040	827.0-831.0	4.0	0.356	7.12
SR-28-07	1,000	Anomalous	-	-	-
SR-29-07	900	842.0-843.5	1.5	0.124	2.48
SR-32-07	1,060	Anomalous	-	-	-
<b>TOTAL</b>	<b>10,570</b>				

Besides the Deep Gold deposit, there are a number of mineralized areas and trends that have been identified by previous exploration and mining efforts on Homeland Uranium (Utah)'s land holdings. To date, Homeland Uranium (Utah) and Energy Fuels have located and/or identified over 3,300 historic drill holes within the boundary of the BM claim block and State Section 36 Mineral Lease, all drilled for uranium. Over 2,000 of these holes are located on land now controlled by Homeland Uranium (Utah). The vast majority of the drilling is the result of the intense search by many companies, mostly major uranium exploration and development companies, for peneconcordant, high-grade, mineralized zones hosted in the favorable upper Salt Wash sandstone that can be linked together into mineable deposits. Throughout the majority of Homeland Uranium (Utah)'s property position, these zones were deposited in chemically favorable reducing environments of trunk channel and braided stream systems and networks presently buried beneath 350 to 1,000 feet of overlying sedimentary rock. These mineralized zones are not traceable on the surface, but are covered, blind targets that can only be outlined by drilling.

Surface drilling was done to outline ore reserves at the nearby Atlas Minerals' Snow and Probe Mines, which collectively produced approximately 1.0 million pounds U<sub>3</sub>O<sub>8</sub> from upper Salt Wash sandstone (Fig. 3; Wilbanks, 1982). Continuous long hole programs were also used to locate additional ore underground. This underground longhole drilling had a success ratio of 35%

for the Probe Mine and 29% for the Snow Mine (Wilbanks, 1982). It is important to note that underground drilling and actual mining led to significantly more ore being discovered and mined than the surface drilling indicated. This point is commonly brought out and is applicable to most of the historic mines in the Tidwell Mineral Belt as more uranium was discovered through underground mining and longhole programs than was indicated from surface drilling. By example, from start up through shut down, actual production figures for Atlas Minerals' Snow Mine indicate that it produced 455% more tons of ore and 281% more pounds of  $U_3O_8$  than the original reserves indicated by surface drilling (Wilbanks, 1982). In summary and as quoted by Wilbanks (1982), "In the past most orebodies mined in the Green River (Tidwell District) area have ultimately produced more pounds of  $U_3O_8$  than calculated in original reserves."

### ***13.2 Down Yonder Area Drilling***

The Pancoast report (March 2008) states that approximately 160,000 feet of historic drilling, from a total of 151 holes, had been conducted on the Down Yonder deposit. This drilling consists of 119 holes placed in the State Section 36 Mineral Lease area, the main part of the deposit, and another 32 holes placed in adjacent Section 35 just west of the State Mineral Lease, where a subsidiary and underexplored part of the deposit exists. The Down Yonder Mineral Resource map shows the known historic drill holes and the Magnum 2008 drilling. Hole depths average approximately 800 feet in Section 35 and approximately 1,000 to 1,100 feet in State Section 36. Magnum drilled 30 holes in the Down Yonder deposit area in 2008 which total 32,732 feet. These were drilled to verify historic data, explore for additional mineral resources, and gather geotechnical information on the host sandstone. Magnum's intended use of the core data was twofold: 1) mineralization verification through assaying for comparison of chemical uranium grades to equivalent uranium grades calculated from the radiometric logs, along with acquiring vanadium assays, and 2) initial phase work to investigate the potential to produce the deposit via in-situ recovery (ISR) extraction techniques. Magnum contracted with R Squared Incorporated of Denver, Colorado to initiate evaluation of aquifer properties and leachability of the metals. The in-place density of the host sandstone was also measured. This density information proved useful in revising the mineral resources of both previously reported deposits.

A breakdown of the 119 historic drill holes on the State Section 36 Mineral Lease is as follows: 96 Conoco holes, 7 of which are core and the remainder conventional rotary, all drilled in 1968 through 1970, 11 Union Carbide core holes and 2 rotary holes drilled in 1974 and 1975, and 10 EF – Energy Fuels Nuclear rotary (?) holes drilled in 1978. A breakdown of the historic drilling in adjacent Section 35 is as follows: 32 Conoco rotary holes drilled in 1968 through 1970 and

two rows of rotary holes in 1973 trending in a northwest-southeast direction across the Silver Bell lease to the west/northwest and onto the Down Yonder resource area in Section 35.

The results of Conoco's 1973 holes were used to draw cross-sections showing the positive correlation between the Four Corners producing sandstone in the main Tidwell Mineral Belt, i.e., the heart of the San Rafael Uranium District area just west/northwest and up-dip of the Down Yonder deposit. Where the District's main uranium producers – Atlas's Snow and Probe mines are located, the drilling results show excellent continuity of the mineralization located near the base of the Four Corners – Down Yonder sandstone.. The location of the Magnum drill holes are shown on the resource map and the significantly mineralized intercepts are listed in Table 13-2, below.

**TABLE 13-2. 2008 MAGNUM MINERALS USA CORP. DOWN YONDER DRILLING RESULTS-selected mineralized holes**

<b>Drill Hole ID</b>	<b>From (feet)</b>	<b>To (feet)</b>	<b>Intercept Thickness</b>	<b>% eU<sub>3</sub>O<sub>8</sub> Grade</b>	<b>Pounds U<sub>3</sub>O<sub>8</sub>/Ton</b>
<b>DY-22A-08</b>	970.5'	971.5'	1.0'	0.259%	5.18
<b>DY-23-08</b>	968.5' includes 969.5'	972.5' includes 972.0'	4.0'	0.063%	1.26
			2.5'	0.092%	1.84
<b>DY-24-08</b>	963.5' includes 964.5'	967.0' includes 966.5'	3.5'	0.338%	6.76
			2.0'	0.587%	11.74
<b>DY-26-08</b>	963.5'	965.5'	2.0'	0.200%	4.00
<b>DY-27-08</b>	965.5'	966.5'	1.0'	0.101%	2.02
<b>DY-27A-08</b>	954.0'	955.5'	1.5'	0.143%	2.86
<b>DY-28-08</b>	973.0' includes 973.0'	978.0' includes 976.5'	5.0'	0.255%	5.10
			3.5'	0.348%	6.96
<b>DY-29-08</b>	963.0'  968.0' includes 968.0'	964.0'  972.5' includes 970.0'	1.0'	0.189%	3.78
			4.5'	0.113%	2.26
			2.0'	0.205%	4.10
<b>DY-30-08</b>	976.5' includes 978.5'	980.5 includes 981.0'	4.0'	0.141%	2.82
			2.5'	0.279%	5.58
<b>DY-40-08</b>	976.0' includes 980.5'	987.5' includes 984.5'	11.5'	0.056%	1.12
			4.0'	0.093%	1.86
<b>DY-43-08</b>	980.0' includes 980.0'	987.0' includes 983.5'	7.0'	0.113%	2.26
			3.5'	0.172%	3.44
<b>DY-45-08</b>	968.0'	969.5'	1.5'	0.125%	2.50

## 14.0 SAMPLING METHOD AND APPROACH

Historic sampling methods and approaches used by previous operators to determine the uranium content of their drill holes were based mostly on radiometric analysis by down-hole gamma-ray logging. Union Carbide's method of exploration drilling usually entailed rotary drilling to a depth a few feet above the Brushy Basin-Salt Wash contact and then coring through the host sandstone horizon into the underlying mudstone. Much of the detailed results of the historic work are in Homeland Uranium (Utah)'s possession and have been used as the basis for the 43-101 compliant mineral resource estimation. Down-hole log interpretation has historically been found to be an accurate representation of in situ grades for uranium mineralization in the San Rafael District as established by Atlas Minerals during their exploration and mining operations conducted in the District. All of Conoco's holes were mechanically logged with a Gearhart Owen Logging Unit which provides a gamma-ray, resistivity, and spontaneous potential curve (Wentworth, 1970). In situ uranium grade, expressed as equivalent  $U_3O_8$  ("e $U_3O_8$ "), is calculated using industry standard techniques for gamma log interpretation, usually the proven AEC method (area under the gamma ray curve times the k factor equals the grade times thickness (Scott et al., 1960)).

Magnum carried out radiometric down-hole gamma-ray logging of holes it had drilled throughout the San Rafael Project area. Concerning this work, the gamma portion of the down-hole logging tool was calibrated to the uranium content by probing standardized test pits containing similar mineralization type and anticipated grade, located at the US Department of Energy facility in Grand Junction, Colorado. Probe work was performed by Century Geophysical and Jet West Geophysical Services. Down-hole gamma-ray probe runs were usually conducted right after or within a few hours of completion of drilling the hole, almost always within a maximum of 24 hours of doing so. Probe results were reported in 0.5 foot increments, with thickness and grade of mineralized intervals based on 0.025%, 0.050%, and 0.100% e $U_3O_8$  cutoffs. Water factor, casing factor, K-factor, and dead time were all taken into account in the calculations. Because the host upper sandstone unit of the upper part of the Salt Wash Member is relatively flat-lying in the Deep Gold deposit area, only dipping gently 2° to 3° basinward to the east, and all of Magnum's drill holes are vertical, uranium-bearing intervals determined from the gamma-ray probe work appear to closely represent the estimated true thickness of mineralization.

## **15.0 SAMPLE PREPARATION, ANALYSES AND SECURITY**

No surface samples were collected by Magnum during visits to the property because the mineralization of the Deep Gold, Down Yonder, and other deposits of interest lies at a depths of 200 to over 1,000 feet below the surface. The historic mine drifts that enter the BM claims from the west side, mostly on the Big G claim group, are flooded in the down dip portions, and not readily accessible. The water table is near the Homeland Uranium (Utah) property line. Furthermore, because no historic drill core or cuttings are known to have been archived, no possibility of obtaining samples for analysis from these sources exists. It is recommended that normal procedures be required for establishing sample identification (drill core or cuttings) and that Quality Assurance/Quality Control (QA/QC) and chain of custody/security protocol be established and followed in storing and transporting samples to a registered geochemical assay laboratory. It is recommended that all Magnum drill samples generated during 2009 and beyond for geochemical analysis be sent to Energy Laboratories, Casper, Wyoming. This lab is one of the premier prep facilities for uranium-bearing drill core/drill cuttings and for geochemical uranium assays in the United States. Century Geophysical, Salt Lake City, Utah, who is an industry leader in this type of work, was employed by Magnum to radiometrically probe a number of holes drilled on a number of targets during 2007-2009 with excellent quality control and results. Jet West Geophysical Services LLC of Farmington, New Mexico also was used for some of the logging. In some cases, holes were probed by both companies as a check between one another in terms of calibration, instrumentation, and procedural methods in order to maintain Quality Control/Quality Assurance. Results were found to be comparable, thus removing any factors that could materially impact the accuracy and reliability of these results or bias them in any way.

In summary, no samples were collected or prepared because the sampling methods employed are geophysical in nature (down-hole gamma ray probe, see Section 14.0) and not by direct geochemical analysis in a conventional lab.

## **16.0 DATA VERIFICATION**

Historic drill-hole locations and drill data were originally hand drafted on 1:4,800 scale mylar maps. Data recorded on the maps includes collar elevation, elevation of the top of the mineralized horizon, thickness of mineralization, and grade of intercept. The original survey data for both the collar location and down-hole drift were not available, however, down-hole drift annotations for selected holes are posted on a Pioneer UraVan drill hole location map (Casey,

1980). Some drill hole locations are marked in the field by a stake, but information on most stakes has since faded. There are a couple of holes that contain a stake that can be read and tied into the historic Pioneer Uravan Map. There also were a couple of holes that contained a stake that could be read and tied into the historic Conoco Map. The drill maps were scanned, digitally rectified, and the down-hole deviations assumed to be a straight line between the collar and bottom of hole locations. This assumption could introduce some error in the actual three dimensional location of any specific datum point, but the relative location of the datum point to other data points is considered to be reasonably accurate.

These data were checked against other historic hand-drafted maps of the District. Additionally, file folders of all down-hole gamma-ray logs for each Pioneer and some Conoco holes are archived in Homeland Uranium's office in Nucla, Colorado. In order to assure accuracy, all holes used in the resource calculation were cross-checked to establish that the depths to mineralization indicated on the map correlate with the actual drill logs. All holes were then digitized, and locations were rectified and printed out on a 1:4,800 scale map registered to a USGS topographic map in NAD 27 UTM coordinate space. The data were input as electronic data via a spreadsheet in a computer program utilized for the development of the resource given in this report. The input data were double-checked for accuracy and the resulting map was confirmed by overlying the resource map generated with the original mylar map print to assure accuracy and completeness. The resultant data and map were used to construct the polygon resource maps. Some of the 2008 drill holes in the Down Yonder area were spot cored through the mineralized horizon so the core could be chemically assayed for uranium, vanadium and other elements. The chemical uranium was compared to the  $eU_3O_8$  to define accuracy and to determine if disequilibrium is an issue. The core was analyzed at the Energy Laboratories facility in Casper, Wyoming. QA/QC procedures for sample handling were strictly adhered to.

It must be emphasized that the accuracy of any resource estimate ultimately depends upon the accuracy of the samples used. In most sandstone-hosted uranium deposits,  $eU_3O_8$  values are not chemical or other direct analyses, but are radiometric equivalents based on counts of gamma radiation received per time interval at a detector. Proper probe calibration to similar type and grades of expected mineralization is important to guarantee that a systematic bias is not introduced in the values. The radiometric data from geophysical logs were provided to Magnum by outside sources. Instrumentation used for logging the holes was calibrated at U.S. Department of Energy facility test pits in Grand Junction, Colorado, designed and built for that specific purpose. The personnel interpreting the geophysical data were trained in that regard.

## 17.0 ADJACENT PROPERTIES

Within the entire San Rafael Uranium Project area, which comprises approximately 4,300 acres and includes much of the historic Tidwell Mineral Belt proper throughout the western one-fourth of its extent, Homeland Uranium (Utah) has identified several mineralized trends and significant uranium targets containing additional resources, many of which have been identified by previous exploration and mining efforts. Most of these targets are within, adjacent to, or exist as extensions of areas of known mineralization or past production in the core of the San Rafael Uranium District proper. Energy Fuels has acquired and amassed an extensive database pertaining to historic work conducted on its land position from a number of sources including, but not limited to, public and private data collections, historic major and junior uranium exploration company archives, and government uranium mineral property classified files and archives, many of which show the potential for mineralization in the upper sandstone of the Salt Wash Member of the Upper Jurassic Morrison Formation. This sandstone horizon hosts the mineralization at the Deep Gold deposit, Down Yonder deposit, 4484 deposit, North deposit, and the Jackrabbit deposit, the locations of which are shown in Figure 3 of this report and have been cited in Magnum Uranium Corp. press releases during 2006 and 2007 (Magnum Uranium Corp. Press Releases dated 8/22/06, 12/5/06, 6/12/07, 8/10/07, 8/22/07, and 10/25/07). Those previous disclosures and earlier Technical Reports discuss the Hollie claims as adjacent properties. EFR purchased the Hollie claims in January 2011, so that area is now part of the land controlled by Homeland Uranium (Utah) .

Claim blocks owned by other parties lie adjacent to and/or partially overlap Homeland Uranium (Utah)'s land position (Fig. 3). They are: 1) the large group of Polaris, Taurus, Orion, Nova, and some Saharan claims-adjacent to and within one mile held by Uranium Group in sections 30 and 31, T21S, R15E, continuing south in section 6, T22S, R15E, and westerly through sections 1, 2, and 3, T22S, R14E; 2) North Exploration LLC still holds the southwest part of section 26, T21S, R14E under claims DU 1-8; 3) Also to the southwest and west are the 17 Big G claims held by Kyle Kimmerle along with several 8 Ball claims held by Kimmerle and Ted and Larette Thompson in sections 22 and 27, T21S, R14E; 4) Little Jack 1 & 2 held by Kimmerle and Jupiter 1-4 held by Kelly Dearth join the northwest part of Magnum's land in sections 10 and 15, T21S, R14E.; and 5) 20 CRP claims held by Penney Bassett, Rick Burgess and Clifford Phillips as a notch in the northwest part of the BM claim block, covering the reclaimed Snow and Probe Mines, in sections 14, 15, 22, and 23, T21S, R14E. These CRP claims are senior to the BM claims.

A number of major past producing properties and mines and/or known deposits owned and worked by major and junior uranium companies, past and presently active, lie immediately



adjacent to Homeland Uranium (Utah)'s San Rafael Uranium Project area. Many historic mines produced from the area of the Big G claims where the Salt Wash is much shallower. The deeper mines accessed by shafts are Atlas Minerals' Snow and Probe mines, which collectively produced nearly 1.0 million pounds of  $U_3O_8$  (252,554 tons @ 0.187%  $U_3O_8$ , Wilbanks, 1982) during the period 1973 – 1982 and lie on Quaterra Resources' adjacent CRP claim block. Underground workings of some of the older mines locally extend into Homeland Uranium (Utah)'s property. At the present, however, Homeland Uranium (Utah) does not have access agreements with any of the neighboring property owners to allow access. Furthermore, the workings on the Homeland Uranium (Utah) property are all believed to be currently flooded.

This report does not address to any degree any of the above properties adjacent to the San Rafael Uranium Project joint venture area. Historic data available for the adjoining properties were used to a limited extent in the preparation of this report.

## **18.0 MINERAL PROCESSING AND METALLURGICAL TESTING**

No mineral processing and/or metallurgical testing have been conducted by Homeland Uranium (Utah) or Energy Fuels on the San Rafael Project and none is known to have been conducted by any of the previous major uranium companies working on the deposit. Apparently the mineralization is amenable to standard extraction techniques as over 4 million pounds of uranium from the San Rafael Uranium District have been recovered using conventional milling methods. Most of the mined-material was successfully processed at the Atlas uranium-vanadium mill in Moab, Utah. Results of previous historic mining in the District indicate that the uranium to vanadium ratio in mined material is about 1:1 to 1:2 (Trimble and Doelling, 1978). Total reported production from the District averages a slightly higher recovered  $U_3O_8:V_2O_5$  ratio of 1:1.35.

Historic mining in the Tidwell District and specifically at Atlas Minerals' Snow and Probe mines, immediately adjacent to Homeland Uranium (Utah)'s land position boundary (Fig. 3), has been by conventional underground methods using shaft and tunnel, room-and-pillar, and split shooting techniques (Gordon, 1982). With the groundwater table generally at a depth of 500 to 800 feet at the Deep Gold deposit, as determined by the results of Pioneer Uranium's and Atlas' historic drilling, mining below this level, such as at the Snow and Probe, requires dewatering (Pinnick, 1975; Gordon, 1982). However, with most of Homeland Uranium (Utah)'s known uranium mineralization below the ground-water table (west end of the Jackrabbit is not), it may be possible that this mineralization can be mined by In-Situ Leaching (ISL) methods. ISL

methods work for some permeable sandstone-hosted uranium deposits below the water table, i.e., water-saturated deposits, which are not suitable for conventional mining.

## **19.0 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES**

Because of the erratic nature of the mineralization inherent in peneconcordant uranium deposits, it is often difficult to determine geologic controls on ore/waste contacts or even the outlines of mineralized areas with a degree of certainty sufficient to increase the accuracy of resource estimates. Because of the difficulty in locating precise ore/waste boundaries, resource estimation methods in common use are either polygonal or statistical. Both methods have been successfully applied in the evaluation of resources at many prospects and operating mines within the Salt Wash sandstone uranium deposits.

For the purpose of this Technical Report, no economic evaluation of the uranium deposits described herein was performed. Thus, the determination of the size and grade of the deposit that follows is solely a mineral resource estimate of the amount of uranium and vanadium contained within the deposits. Mineral Resources are not economic “reserves” because no economic evaluation has been performed and economic viability has not been demonstrated. Although more drilling needs to be performed at all these deposit areas, and is recommended in Section 22.0 of this Report, many of the uranium deposits within the San Rafael Uranium Project area are relatively coherent and can be considered an Indicated Resource. Where data points are farther apart, but drill hole information suggests mineralization correlates well within the host sandstone, Inferred Resources have been assigned.

There are no changes to the mineral resource estimates, and no mine development work has been done in the San Rafael Uranium Project area, since the last Technical Report was prepared and submitted (Gatten, 2011)

### ***19.1 Deep Gold Deposit, 4484 Deposit, and North Area Resources***

With the purchase of the Hollie claims from Titan by EFR in January 2011, the Deep Gold deposit is now controlled in its entirety by Homeland Uranium (Utah). The proximity of the 4484 deposit and North area mineral resource areas can now be discussed with the Deep Gold deposit since the combined areas would make a logical single mining unit serviced by a central shaft for access.

Resources for this report were calculated by the perpendicular-bisector polygon method using bisectors one-half the distance between the nearest drill-hole locations. Because the Deep Gold deposit was drilled on about 100 foot centers, the resulting polygons have about a 10,000 ft<sup>2</sup> (100

ft x 100 ft) area of influence. There are a few polygons larger than this in the south portion of the deposit area because of the wider drill spacing. If a mineralized polygon was situated straddling the property boundary separating the eastern, Hollie Claims portion of the deposit from the western portion of the deposit, then the polygon is divided as its area applies to each property. The purpose of maintaining this separation is the differing royalty rate that will be applied to the two portions on the deposit if mining takes place.

Specific to the Deep Gold resource area, polygons were constructed around every hole containing mineralization with a G x T (grade x thickness) value > 0.20. The polygons shown on the Deep Gold Mineral Resource map are color-coded so that pale yellow color indicates polygons containing a G x T of 0.20 to 0.39. None of these pale yellow colored polygons were used in the resource calculation. The pink colored polygons represent a G x T cutoff of 0.40 and a G x T range of 0.40 to 0.99. The red colored polygons contain G x T values equal to or greater than 1.00 (equivalent of 10 feet of 0.10% U<sub>3</sub>O<sub>8</sub>). Some selected polygons with G x T cutoffs slightly below 0.40 (dark yellow color) were included in the indicated resource category because they lend and show continuity to the deposit. Polygons were constructed with their sides being half the distance to the nearest hole. Resulting individual polygons define the area of influence surrounding each hole. Polygonal boundaries are perpendicular bisectors of lines connecting adjacent holes. If no bounding hole was available, then mineralization was extended out from the hole not more than 75 feet in radius and that side of the polygon was left open (not bounded by a line). The area of each polygon, in square feet, was calculated by computer, with the areas listed in Table 19-1 in Appendix I. If weak mineralization or no mineralization was present in a hole, then a polygon was not constructed and the hole was considered to be barren. Table 19-1 contains the following data on every hole: 1) hole number; 2) thickness of intercept; 3) grade (% eU<sub>3</sub>O<sub>8</sub>); 4) pounds/ton; 5) G x T ; 6) polygon area; 7) polygon volume; 8) tons; and 9) pounds U<sub>3</sub>O<sub>8</sub> indicated.

For indicated mineral resources, the mineralized polygon is bracketed by drilling and a line denoting the boundary of the area of Influence between holes is shown, generally the area where the drill spacing was about 100 feet between holes. For the inferred mineral resource given in this report, the mineralized trend is not fully defined or bracketed by drilling, but it is reasonable, given the transmissivity of the host rock and the amount of drilling performed, that mineralization in the projected paleo-stream channel extends beyond the portion of the last hole defined by assays. The inferred polygon is the weighted average and average thickness of the nearest hole(s) from which the projection is made.

A tonnage factor of 14 cubic feet per ton was used in this calculation, based on direct specific gravity measurements of 91 mineralized Salt Wash sandstone plugs from the adjacent Down Yonder deposit. The average specific gravity is 2.37 g/cm<sup>3</sup>, which translates to a tonnage factor

of 13.5, however, a slightly more conservative tonnage factor of 14 cf/ton is used in the resource calculation. The Down Yonder deposit's depth below surface, host rock characteristics, and stratigraphic position are the same, or similar, as those found at the Deep Gold deposit, and other deposits; as such, support using this tonnage factor for the resource calculation estimation throughout the entire San Rafael Project. All uranium grades are given in  $eU_3O_8$  (equivalent uranium) as determined by radiometric readings from a down-hole gamma-ray probe. By taking the volume of each polygon and dividing by the tonnage factor, the tons of rock contained within the polygon are determined. Then by multiplying the tons of rock by the grade (pounds of contained  $eU_3O_8$ /ton), the pounds of  $U_3O_8$  are determined.

The Indicated Mineral Resource given in Table 19.1-1 was calculated for the Deep Gold deposits contained within Section 23 using an approximate 0.40 G x T cutoff. The Indicated Mineral Resource for the 4484 deposit is shown in Table 19.1-2. The North deposit drill hole intercepts yield an Indicated Mineral Resource for that area shown in Table 19.1-3. The total in-place Indicated Mineral Resource for the Deep Gold and the satellite deposits in the north-central part of Homeland Uranium (Utah)'s San Rafael Project is of 450,231 tons @ 0.247%  $U_3O_8$  containing 2,219,353 pounds  $U_3O_8$ . Using the historic District average recovered  $U_3O_8:V_2O_5$  ratio of 1:1.35, this same tonnage could yield approximately 2,996,127 pounds  $V_2O_5$  at an average grade of 0.33%  $V_2O_5$ . All holes used in the indicated mineral resource calculation are shown on Tables 19-3 IND and 19-4 IND in Appendix I.

The Inferred Mineral Resources estimated by the method described above are shown in Table 19.1-1 for the Deep Gold deposit, Table 19.1-2 for the 4484 deposit, and Table 19.1-3 for the North Area deposit. Combined, the total Inferred Mineral Resources for the north-central part of Homeland Uranium (Utah)'s San Rafael Project is of 84,365 tons @ 0.329%  $U_3O_8$  containing 554,505 pounds  $U_3O_8$ . Using the historic District average recovered  $U_3O_8:V_2O_5$  ratio of 1:1.35, this same tonnage could yield approximately 748,582 pounds  $V_2O_5$  at an average grade of 0.45%  $V_2O_5$ . There is no guarantee that the vanadium will be recoverable at a mill when it occurs at this grade. The cost of operating the vanadium circuit must be weighed against the  $V_2O_5$  at the time the material is fed to a mill. All holes used in the indicated mineral resource calculation are shown on Tables 19-3 INF and 19-4 INF in Appendix I.

**TABLE 19.1-1. DEEP GOLD RESOURCE**

<b>DEEP GOLD WEST (BM Claims)</b>	<b>INDICATED RESOURCE U<sub>3</sub>O<sub>8</sub></b>	<b>INDICATED RESOURCE V<sub>2</sub>O<sub>5</sub></b>	<b>INFERRED RESOURCE U<sub>3</sub>O<sub>8</sub></b>	<b>INFERRED RESOURCE V<sub>2</sub>O<sub>5</sub></b>
<b>TONS</b>	<b>144,600</b>		<b>37,450</b>	
<b>GRADE (%)</b>	<b>0.229%</b>	<b>0.31%</b>	<b>0.355%</b>	<b>0.48%</b>
<b>POUNDS/TON</b>	<b>4.58</b>	<b>6.18</b>	<b>7.11</b>	<b>9.6</b>
<b>POUNDS</b>	<b>663,400</b>	<b>894,000</b>	<b>266,100</b>	<b>359,000</b>
<b>DEEP GOLD EAST (Hollie Claims)</b>	<b>INDICATED RESOURCE</b>		<b>INFERRED RESOURCE</b>	
<b>TONS</b>	<b>158,200</b>		<b>-</b>	
<b>GRADE(%)</b>	<b>0.311</b>	<b>0.42%</b>	<b>-</b>	
<b>POUNDS/TON</b>	<b>6.22</b>	<b>8.4</b>	<b>-</b>	
<b>POUNDS</b>	<b>983,300</b>	<b>1,328,400</b>	<b>-</b>	
<b>DEEP GOLD TOTAL</b>				
<b>TONS</b>	<b>302,800</b>		<b>37,450</b>	
<b>GRADE (%)</b>	<b>0.272%</b>	<b>0.37%</b>	<b>0.355%</b>	<b>0.48%</b>
<b>POUNDS/TON</b>	<b>5.44</b>	<b>7.34</b>	<b>7.11</b>	<b>9.0</b>
<b>POUNDS</b>	<b>1,646,700</b>	<b>2,223,000</b>	<b>266,100</b>	<b>359,000</b>

*Note to Above Table: All Values Rounded*

**TABLE 19.1-2. 4484 DEPOSIT RESOURCE**

<b>4484 Deposit (BM Claims)</b>	<b>INDICATED RESOURCE U<sub>3</sub>O<sub>8</sub></b>	<b>INDICATED RESOURCE V<sub>2</sub>O<sub>5</sub></b>	<b>INFERRED RESOURCE U<sub>3</sub>O<sub>8</sub></b>	<b>INFERRED RESOURCE V<sub>2</sub>O<sub>5</sub></b>
<b>TONS</b>	<b>121,800</b>		<b>29,533</b>	
<b>GRADE (%)</b>	<b>0.19%</b>	<b>.25%</b>	<b>0.33%</b>	<b>0.47%</b>
<b>POUNDS/TON</b>	<b>3.77</b>	<b>5.09</b>	<b>6.56</b>	<b>9.31</b>
<b>POUNDS U<sub>3</sub>O<sub>8</sub></b>	<b>459,333</b>	<b>620,100</b>	<b>193,780</b>	<b>275,096</b>

**TABLE 19.1-3 NORTH DEPOSIT RESOURCE**

North Deposit (BM Claims)	INDICATED RESOURCE U <sub>3</sub> O <sub>8</sub>	INDICATED RESOURCE V <sub>2</sub> O <sub>5</sub>	INFERRED RESOURCE U <sub>3</sub> O <sub>8</sub>	INFERRED RESOURCE V <sub>2</sub> O <sub>5</sub>
<b>TONS</b>	<b>25,655</b>		<b>17,385</b>	
<b>GRADE (%)</b>	<b>0.221%</b>	<b>0.30%</b>	<b>0.27%</b>	<b>0.37%</b>
<b>POUNDS/TON</b>	<b>4.20</b>	<b>6,0</b>	<b>5.44</b>	<b>7.35</b>
<b>POUNDS U<sub>3</sub>O<sub>8</sub></b>	<b>113,343</b>	<b>153,013</b>	<b>94,611</b>	<b>127,724</b>

### ***19.2 Jackrabbit Area***

There are many mineralized historic exploration drill holes throughout the San Rafael Project area other than those listed in the previous section. Although these holes indicate uranium mineralization in the Salt Wash sandstone and the resource could be large, considering the depth to much of this mineralization and the fact these areas are so isolated, no Indicated Mineral resource is assigned to them. One exception to this approach is the Jackrabbit area in the west-central part of the claim group. The Salt Wash host horizon is much shallower here (200-500 feet deep) and the mineralized holes are in small clusters and follow a definite northeast trend as do the sandstone channels. Part of the Magnum drill program conducted in 2007 identified this trend. Seven of the 15 holes drilled in 2007 in this area intersected ore-grade mineralization, including SR-3-07 with 6.5 feet of 0.907% eU<sub>3</sub>O<sub>8</sub>, and SR-13-07 with 5.0 feet of 0.212% U<sub>3</sub>O<sub>8</sub>, and SR-11-07 with 2.5' of 0.418% eU<sub>3</sub>O<sub>8</sub>. Collectively, the seven holes align to define a northeast-trending mineralized zone that currently is 2,600 feet long and open on both ends.

Magnum drilled another 9 holes (3,732 ft) in the Jackrabbit deposit in early 2009 as offsets to the three holes mentioned above. One of the 2009 holes, which is SR-37-09, encountered 2.0 feet of 0.46% eU<sub>3</sub>O<sub>8</sub>. All the others, except one, were mineralized, and cut intervals of sandstone containing between 0.01% and 0.08% U<sub>3</sub>O<sub>8</sub>. Since the depth to mineralization is shallow here, it was affordable for historic drilling to be on closer spacing. However, the spacing is still sufficient for similar sized polygons of indicated resources as used elsewhere. There are many Atlas holes in the northern part of the Jackrabbit deposit associated with the Snow Mine. The Indicated Mineral Resource assigned the Jackrabbit deposit, as shown in Table 19.2-1, is 28,820 tons @ 0.340% U<sub>3</sub>O<sub>8</sub> containing 195,945 pounds U<sub>3</sub>O<sub>8</sub>. Using the historic District average recovered U<sub>3</sub>O<sub>8</sub>:V<sub>2</sub>O<sub>5</sub> ratio of 1:1.35, this same tonnage could yield approximately 264,525 pounds V<sub>2</sub>O<sub>5</sub> at an average grade of 0.46% V<sub>2</sub>O<sub>5</sub>. All holes used in the mineral resource calculation are shown on Tables 19-5 IND and 19-5 INF in Appendix I.

Because the linearity of the mineralized pods following the dominant channel trend, it is reasonable to infer additional resources exist here. The historic Snow Mine drill holes and some

of the underground workings limited the size of inferred resource blocks. The Inferred Mineral Resources estimate is shown in Table 19.2-1 for the Jackrabbit deposit. This Inferred Mineral Resources is 7,940 tons @ 0.209% U<sub>3</sub>O<sub>8</sub> containing 33,261 pounds U<sub>3</sub>O<sub>8</sub>. Using the historic District average recovered U<sub>3</sub>O<sub>8</sub>:V<sub>2</sub>O<sub>5</sub> ratio of 1:1.35, this same tonnage could yield approximately 44,903 pounds V<sub>2</sub>O<sub>5</sub> at an average grade of 0.248% V<sub>2</sub>O<sub>5</sub>. There is no guarantee that the vanadium will be recoverable at a mill when it occurs at this grade. Cost of operating the vanadium circuit must be weighed against the V<sub>2</sub>O<sub>5</sub> at the time the material is fed to a mill.

**TABLE 19.2-1. JACKRABBIT DEPOSIT RESOURCE**

North Deposit (BM Claims)	INDICATED RESOURCE U <sub>3</sub> O <sub>8</sub>	INDICATED RESOURCE V <sub>2</sub> O <sub>5</sub>	INFERRED RESOURCE U <sub>3</sub> O <sub>8</sub>	INFERRED RESOURCE V <sub>2</sub> O <sub>5</sub>
<b>TONS</b>	<b>28,820</b>		<b>7,940</b>	
<b>GRADE (%)</b>	<b>0.340%</b>	<b>0.46%</b>	<b>0.209%</b>	<b>0.28%</b>
<b>POUNDS/TON</b>	<b>6.80</b>	<b>9.18</b>	<b>4.18</b>	<b>5.66</b>
<b>POUNDS U<sub>3</sub>O<sub>8</sub></b>	<b>195,945</b>	<b>264,525</b>	<b>33,261</b>	<b>44,903</b>

### *19.3 Down Yonder Area*

Historically, an economic scoping study of the Down Yonder resource was performed using the scenario of sinking a shaft or by driving a mile-long decline, with the results looking viable for that time, the late 1970s. However, for this report, no economic evaluation of the mineralization described herein was performed. Thus, the determination of the size of the deposit that follows is solely a mineral resource estimate. Note that mineral resources that are not mineral reserves do not have demonstrated economic viability. As previously mentioned, in Section 8.2 and Table 8-3 of this report, at least eight different estimates have been performed on the mineralization in the Down Yonder resource. The estimate below is the only one that is compliant by definitions laid out under NI 43-101 guidelines.

Locations of all available drill holes in Sections 35 and 36 were derived from historic maps and fitted to a U.S.G.S. Topographic map and rectified. Polygons were constructed around every hole containing mineralization with a G x T (grade x thickness) value of greater than 0.25, although there were several polygons that did not meet the criteria but were surrounded by stronger mineralized holes, that were included in the resource estimates. Polygons were constructed with the sides of the polygons being half the distance to the nearest hole. Resulting individual polygons define the area of influence surrounding each hole. Polygonal boundaries are perpendicular bisectors of lines connecting adjacent holes. If no bounding hole was available, then mineralization was extended out from the hole not more than 150 feet and the side of the

polygon is left open (not bounded by a line). The area of each polygon, in square feet, was calculated by computer and the areas are listed in Table 19-6 IND and Table 19-6 INF in Appendix I. If weak mineralization or no mineralization was present in a hole, then a polygon was not constructed and the hole was considered to be barren.

Mineralization occurring within 100 feet from the hole annulus is considered indicated mineralization (dark pink color), whereas mineralization between 100 and 150 feet from the hole is considered inferred (light pink color), as shown on the Down Yonder Mineral Resource map. Inferred resources contained within the yellow polygons could be reasonably assumed along the trend of the projected paleochannel, containing a roughly 50:50 sand:shale ratio, and bound on both or several sides by mineralized drill holes).

The area (square feet) of the indicated circles/polygons was calculated by a computer program. The grade and thickness information for the indicated and inferred categories are shown on Table 2. As previously mentioned, intercepts were calculated by hand off copies of Conoco computer printouts given in 0.5 foot intervals.

The several historic resource estimates by previous operators of the Down Yonder area were discussed above in Section 8, Table 8-3. The estimated contained uranium determined by the previous Technical Report (Pancoast, 2008) (~729,100 pounds  $U_3O_8$  as an Indicated Resource and 1,100,000 pounds  $U_3O_8$  Inferred Resource) is within the range of the amount of uranium contained by seven of the eight historic estimates. These estimates range from 931,000 to 2.1 million pounds and average 1.64 million pounds  $U_3O_8$ . Furthermore, the grade of 7 of the 8 historic estimates, which range in between 0.108%  $U_3O_8$  and 0.26%  $U_3O_8$  and average 0.186%  $U_3O_8$ , match almost exactly the average grade calculated in the Pancoast 43-101 compliant resource estimate.

Conoco used a tonnage factor of 14 cubic feet per ton in their resource calculations. This factor has been verified, based on the average density of sandstone analyzed from the 2008 core samples. This is a notable change from the previous Technical Report (Pancoast, 2008). Also new to this report is the inclusion of the drilling done by Magnum in 2008, after the Pancoast report was completed (see Section 13, Table 13-2). All uranium grades are given in  $eU_3O_8$  (equivalent uranium) as determined by a down-hole gamma-ray probe. By taking the volume of each polygon and dividing by the tonnage factor, the tons of rock contained within the polygon are determined. Then by multiplying the tons of rock by the pounds of contained uranium/ton, the pounds of uranium are determined.

The total in-place Indicated Mineral Resource for the Down Yonder deposit in the southeastern part of Homeland Uranium (Utah)'s San Rafael Project is of 278,979 tons @ 0.177%  $U_3O_8$  containing 989,272 pounds  $U_3O_8$ . Using the historic District average recovered  $U_3O_8:V_2O_5$  ratio of 1:1.35, this same tonnage would yield approximately 1,335,521 pounds of  $V_2O_5$  at an average



grade of 0.24%. All holes used in the mineral resource calculation are shown on Tables 19-6 IND in Appendix I.

The Inferred Mineral Resources estimated by the method described above are shown in Table 19.3-1 for the Down Yonder deposit. The total Inferred Mineral Resources for the southeastern part of Homeland Uranium (Utah)'s San Rafael Project is of 361,525 tons @ 0.176% U<sub>3</sub>O<sub>8</sub> containing 1,271,780 pounds U<sub>3</sub>O<sub>8</sub>. Using the historic District average recovered U<sub>3</sub>O<sub>8</sub>:V<sub>2</sub>O<sub>5</sub> ratio of 1:1.35, this same tonnage could yield approximately 1,716,903 pounds V<sub>2</sub>O<sub>5</sub> at an average grade of 0.24% V<sub>2</sub>O<sub>5</sub>. There is no guarantee that the vanadium will be recoverable at a mill when it occurs at this grade. The cost of operating the vanadium circuit must be weighed against the V<sub>2</sub>O<sub>5</sub> at the time the material is fed to a mill. All holes used in the mineral resource calculation are shown on Tables 19-6 INF in Appendix I.

The resources shown in the following table for the Down Yonder deposit contained within the State Section 36 Mineral Lease and adjacent BM claims was calculated using a 0.25 G x T cutoff:

**TABLE 19.3-1. DOWN YONDER DEPOSIT RESOURCE**

<b>Down Yonder Deposit (ML-49311BM Claims)</b>	<b>INDICATED RESOURCE U<sub>3</sub>O<sub>8</sub></b>	<b>INDICATED RESOURCE V<sub>2</sub>O<sub>5</sub></b>	<b>INFERRED RESOURCE U<sub>3</sub>O<sub>8</sub></b>	<b>INFERRED RESOURCE V<sub>2</sub>O<sub>5</sub></b>
<b>TONS</b>	<b>278,979</b>		<b>361,525</b>	
<b>GRADE (%)</b>	<b>0.177%</b>	<b>0.24%</b>	<b>0.176%</b>	<b>0.24%</b>
<b>POUNDS/TON</b>	<b>3.54</b>	<b>4.79</b>	<b>3.53</b>	<b>4.76</b>
<b>POUNDS U<sub>3</sub>O<sub>8</sub></b>	<b>989,272</b>	<b>1,335,521</b>	<b>1,271,780</b>	<b>1,716,903</b>

## 20.0 OTHER RELEVANT DATA AND INFORMATION

### Radiometric Equilibrium

Because the down-hole gamma-ray probe is an indirect method of determining the uranium content of the rock, results by this method are usually correlated with cuttings or drill core sampled from the same interval in order to determine if the equivalent uranium content indicated by the gamma-ray probe is in “equilibrium” with the actual chemical uranium content of the rock as determined by the lab. This determination is commonly performed by collecting hundreds of samples and comparing them to the equivalent uranium determined by the probe to ascertain whether the deposit is in “positive disequilibrium” (chemical uranium content is greater than equivalent uranium), “equilibrium” (chemical and equivalent uranium are in 1:1 association), or “negative disequilibrium” (equivalent uranium is greater than chemical uranium). Because limited data were available for the evaluation of radiometric equilibrium at the San Rafael Project, this determination cannot yet be made. The major deposits of the San Rafael Project occur at depths of roughly between 775 and 1,050 feet below the surface, are completely below the modern water table (not all the Jackrabbit deposit), and not subjected to oxidizing surface waters; therefore, mineralization is not expected to exhibit significant disequilibrium. Quantitatively, the information available on the Tidwell Uranium District, including the Snow and Probe mines, does not specifically address radiometric equilibrium, which historically does not appear to be a factor because over 4 million pounds of  $U_3O_8$  were produced.

Additional historic sampling methods that address disequilibrium include geochemical check assay work conducted by Conoco on their core drill-hole 15A, which shows 4.5 feet of 0.24%  $U_3O_8$  at a depth of 968.0 feet, compared to 4.0 feet grading 0.21%  $eU_3O_8$  at a depth of 967.5 feet as determined by gamma-ray probe work. Some geochemical check assay work was conducted on a core hole drilled by Union Carbide in 1974 (Pinnick, 1975). Specifically, a comparison of chemical assays and the radiometric probe results on Union Carbide core hole UC36-33B shows 5.5 feet chemically of 0.092%  $U_3O_8$  and 5.5 feet radiometrically of 0.104%  $eU_3O_8$ . Finally, of five holes centered around Conoco drill-hole 36-24 that Union Carbide attempted to reopen and re-probe, only hole 36-24 had casing in the hole and was re-probed to its full depth. A comparison of Conoco’s original radiometric probe results and Union Carbide’s re-probe results show 9.0 feet of 0.108%  $eU_3O_8$  and 9.0 feet of 0.08%  $eU_3O_8$ , respectively (Pinnick, 1975).

At present, there is not enough historic geochemical assay and radiometric probe information to conclusively determine if the chemical and radiometric uranium contents of the system are in equilibrium or not, but this information coupled with mining information in the District and region suggests that there is not a disequilibrium problem.

## 21.0 INTERPRETATION AND CONCLUSIONS

This report summarizes the uranium resources of the Deep Gold, Down Yonder, and other smaller deposits located in the San Rafael Uranium Project area, Emery County, Utah. The objective of this report is to describe the mineralization comprising the deposits and to complete an estimate of uranium resources. That objective has been met. The available data define most of the mineralization at about 775 to 970 feet below the surface in the upper sandstone horizon of the Salt Wash Member of the Upper Jurassic Morrison Formation. The mineralization is well defined by drilling, and the estimate meets or exceeds the CIM definitions for indicated and inferred mineral resources.

No economic evaluation of the mineralization was performed for this report. Thus, the estimate is a Mineral Resource. The Mineral Resource for the entire San Rafael Project comprises an indicated mineral resource of 758,050 tons @ 0.225%  $U_3O_8$  containing 3,404,600 lbs  $U_3O_8$  and an Inferred Mineral Resource of 453,800 tons @ 0.205%  $U_3O_8$  containing 1,859,600 lbs  $U_3O_8$ . Using the historic District average recovered  $U_3O_8:V_2O_5$  ratio of 1:1.35, this same tonnage could yield Indicated Mineral Resources of approximately 4,596,000 pounds  $V_2O_5$  at an average grade of 0.30%  $V_2O_5$ . The same Inferred Mineral Resource tonnage could yield approximately 2,524,000 pounds  $V_2O_5$  at an average grade of 0.28%  $V_2O_5$ . The mineral resource is broken out by Indicated and Inferred as shown in Table 3-1, below for the various deposits within the project area. (Worksheets for the various mineral resource areas' estimations are in Appendix I).

The tonnage portion of the resource estimate is considered to be slightly conservative based on actual ore mined versus that indicated by surface drilling at the adjacent Snow, Lucky, and Probe mines. These mines collectively produced approximately 1.0 million pounds  $U_3O_8$  from upper Salt Wash sandstone. From start up through shut down, actual production figures for Atlas Minerals' Snow Mine show that it produced 455% more tons of material and 281% more pounds of  $U_3O_8$  than the original reserves indicated by surface drilling (Wilbanks, 1982).

It is recommended that about 100 holes be drilled to further define resources in the Deep Gold and Down Yonder deposits. It is further recommended that hole deviation measurements be performed and recorded as well as spot coring to address any possible disequilibrium which, as of this writing, does not appear to be a problem.

Past mining in the Tidwell Mineral Belt produced vanadium as a co-product. Vanadium resource estimates were included as part of this report based on reported recovered amounts from historic mining. However, no information on the grade of vanadium is available for the numerous historic drill holes used in the resource estimation. There is no guarantee that the

estimated vanadium will be recoverable at a mill, especially considering the grade. It is recommended that the feasibility of producing vanadium as a co-product be addressed during the next phase of exploration by analyzing the V<sub>2</sub>O<sub>5</sub> content in the spot cores. This would establish the Vanadium:Uranium ratio and enable one to predict how much contained vanadium is present in the deposits, which could have significant economic ramifications.

The resource estimate given in this report is considered to be conservative. The drilling that has been performed over three decades ago needs to be in-filled to tighten the hole spacing and bring much of the Inferred Mineral Resource portion into the Indicated Mineral Resource category.

## **22.0 RECOMMENDATIONS**

The following recommendations are appropriate as the Deep Gold and Jackrabbit deposits move toward development:

1. A 50 to 70 hole, 50,000 foot drilling program is recommended to increase the uranium resources. Total cost for this work is estimated at \$13 to \$16 per foot in the Deep Gold area and \$10 per foot in the Jack Rabbit area. Total cost for the drilling would be in the range of \$US \$600,000 to \$800,000.

- At least 10 holes of the recommended drill program should be spot cored through the mineralized horizon and this core should be used to assay for uranium in order to definitively establish the equilibrium parameters for the deposits, although at this time there appears to be no issue regarding disequilibrium.
- The core obtained from the recommended drill program should be analyzed for vanadium content. The uranium to vanadium ratio of the historic production from the Tidwell Mineral Belt was about 1:1.35. If vanadium can be recovered, then the commodity would enhance mine economics.
- Establish a QA/QC procedure regarding chain of custody for samples and analysis including developing standards, blanks, and duplicate samples for chemical assay.

2. Complete a detailed hydrologic investigation of the deposit, including the determination of hydrologic properties and current ground water levels and quality. It is estimated that this investigation will cost approximately US \$50,000.

3. Investigate the feasibility of using ISL as a means of extracting the uranium from the deposit, which might be the most cost-effective way of beneficiating the mineralization at depths of over 775 feet. Cost of this work is estimated at US \$250,000.

The following recommendations are appropriate as the Down Yonder deposit moves toward development.

1. Use additional drill logs and other pertinent data acquired from Magnum to continue to build on the excellent database that already exists.
2. Ground truth the deposit area. Search Section 36 for old Conoco drill hole sites not already found by Magnum, monument the holes and further define the drill hole locations, as the Conoco work was carried out before modern GPS methods of locating holes.
3. If open holes are identified during the ground truth search above, where possible, the open holes should be re-logged with modern geophysical logging equipment. (\$2.00/ft)
4. A 50-hole, 50,000-foot drilling program is recommended to increase the uranium resources. Total costs for this work are estimated at \$13.50 to \$16 per foot. Total cost for the drilling would be about US\$700,000.
  - It is recommended that at least 10 of these holes be spot cored through the mineralized horizon and the core be used to assay for uranium in order to definitively establish the disequilibrium parameters for the Down Yonder uranium resource, although at this time there appears to be no issue.
  - The core obtained from the recommended drill program should be analyzed for vanadium content. The uranium to vanadium ratio of the historic production from the Tidwell Mineral Belt was 1:135 and if the Down Yonder deposit does contain vanadium, then the commodity may enhance mine economics.
  - Establish a QA/QC procedure regarding chain of custody for samples and procedures for analytical procedures including developing standards, blanks, and duplicate samples for chemical assay.

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## 24.0 DATE AND SIGNATURE PAGE

I, O. Jay Gatten, Utah Professional Geologist, do hereby certify that:

1. I am a consulting geologist living at 150 East 600 North, Condo #12, Kaysville, UT 84037.
2. I graduated with a B.S. degree in Geology from Brigham Young University. located in Provo, Utah in July. 1964.
3. I am a Certified Professional Geologist # 04584 (CPG) with the American Institute of Professional Geologists.
4. I am a Utah Professional Geologist # 5222768-2250.
5. I have worked as a professional geologist for a total of 50 years.
6. I am a partner and the CEO of North American Mine Services Inc.
7. I am a "Qualified Person" as defined by Canadian National Instrument 43-101 by virtue of my education, qualifications, work experience, membership in the AIPG, and license with the State of Utah.
8. I have read the definition of "qualified person" set out in National Instrument 43-101 and certify that by reason of my education, professional registration, and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
9. I am responsible for the preparation of the entire Technical Report entitled "The San Rafael Uranium Project, Emery County, Utah." – 43-101 prepared for Pinion Ridge Mining LLC, Homeland Uranium Inc. (Utah) and Homeland Uranium Inc. (Canada), dated November 19, 2014..
10. I do have prior work experience on this Project area. I visited and worked in the Project area and surrounding region during parts of 1975, 1976, 2005, 2006 and 2007.
11. I am not aware of any material fact or material change with respect to the subject matter of this Technical Report that would affect the conclusions of this report..
12. I am independent of Pinion Ridge Mining LLC, Homeland Uranium Inc. (Utah), and Homeland Uranium Inc. (Canada) applying all of the tests in Section 1.4 of NI 43-101 at the time of authoring this Technical Report.
13. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with same.
14. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority.

*Signed and Sealed*  
*November 19, 2014*

**"O. Jay Gatten"**

O. Jay Gatten, Utah Professional Geologist #5222768-2250



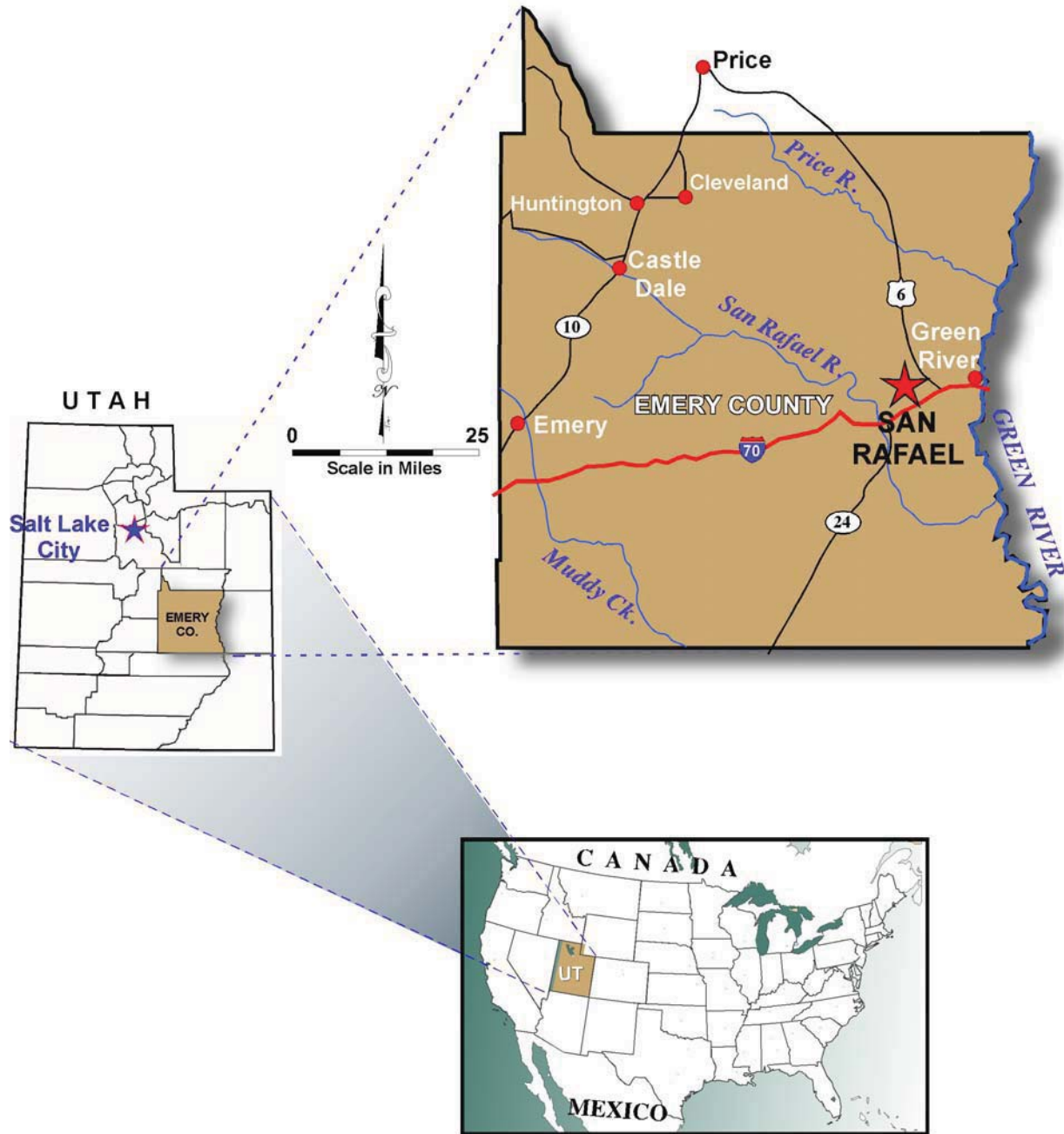


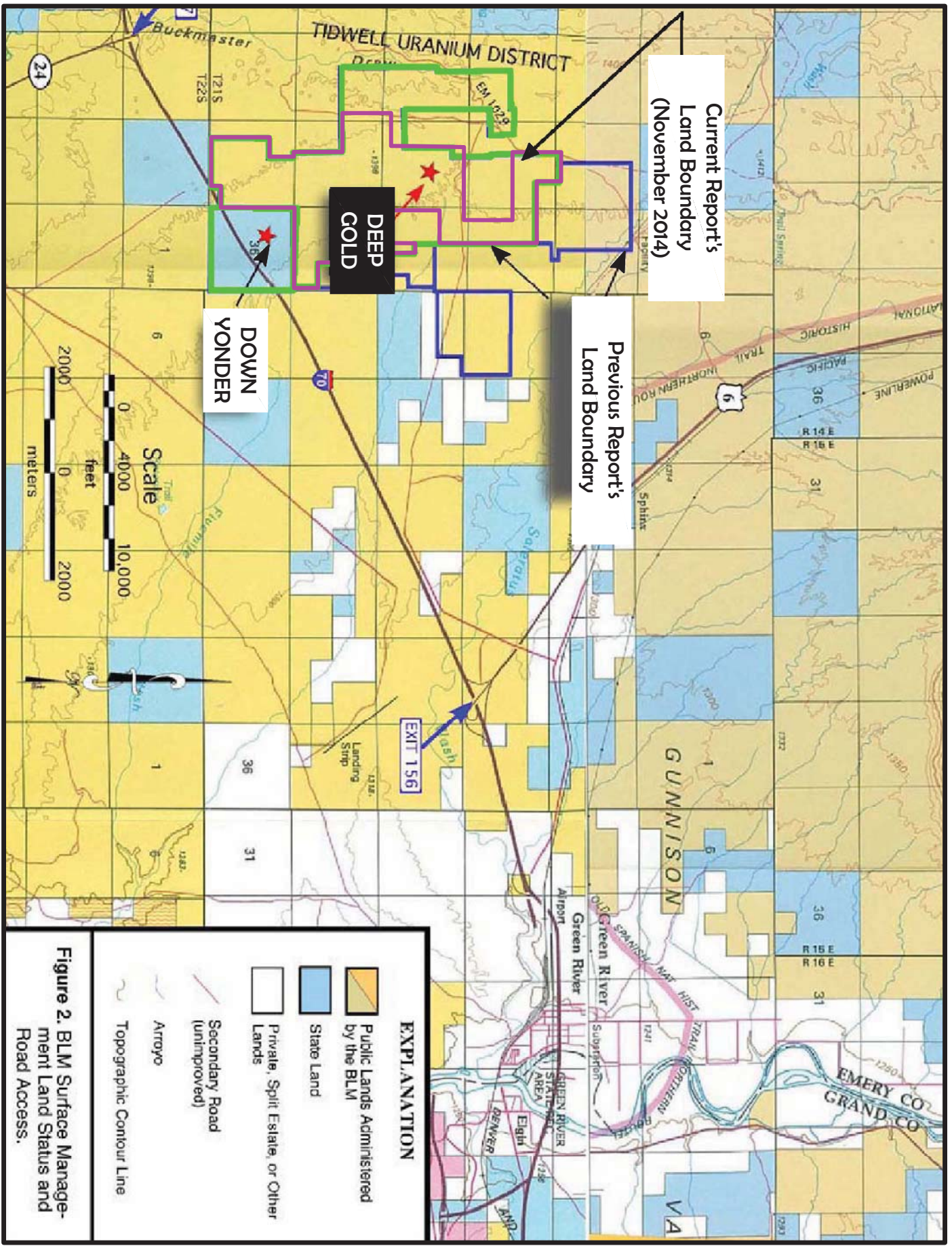
**25.0 ADDITIONAL REQUIREMENTS FOR TECHNICAL  
REPORTS ON DEVELOPMENT PROPERTIES AND  
PRODUCTION PROPERTIES**

NOT APPLICABLE TO THIS PROPERTY

**26.0 ILLUSTRATIONS**

**Figure 1.** General Location Map of the San Rafael Uranium District







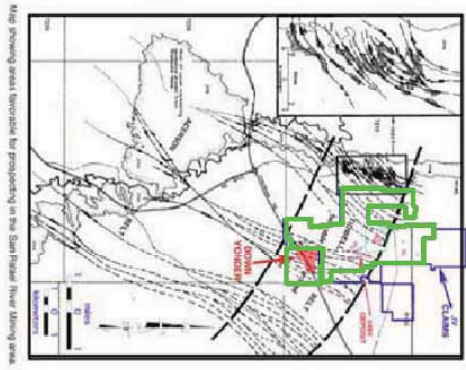
# SAN RAFAEL PROJECT LAND OUTLINE AND DEPOSITS

## EXPLANATION

-  Drill-Indicated Deposit
-  Mined-out Deposit
-  Border of "BM" Claims JV between Magnum Minerals and Energy Metals
-  Interstate 70

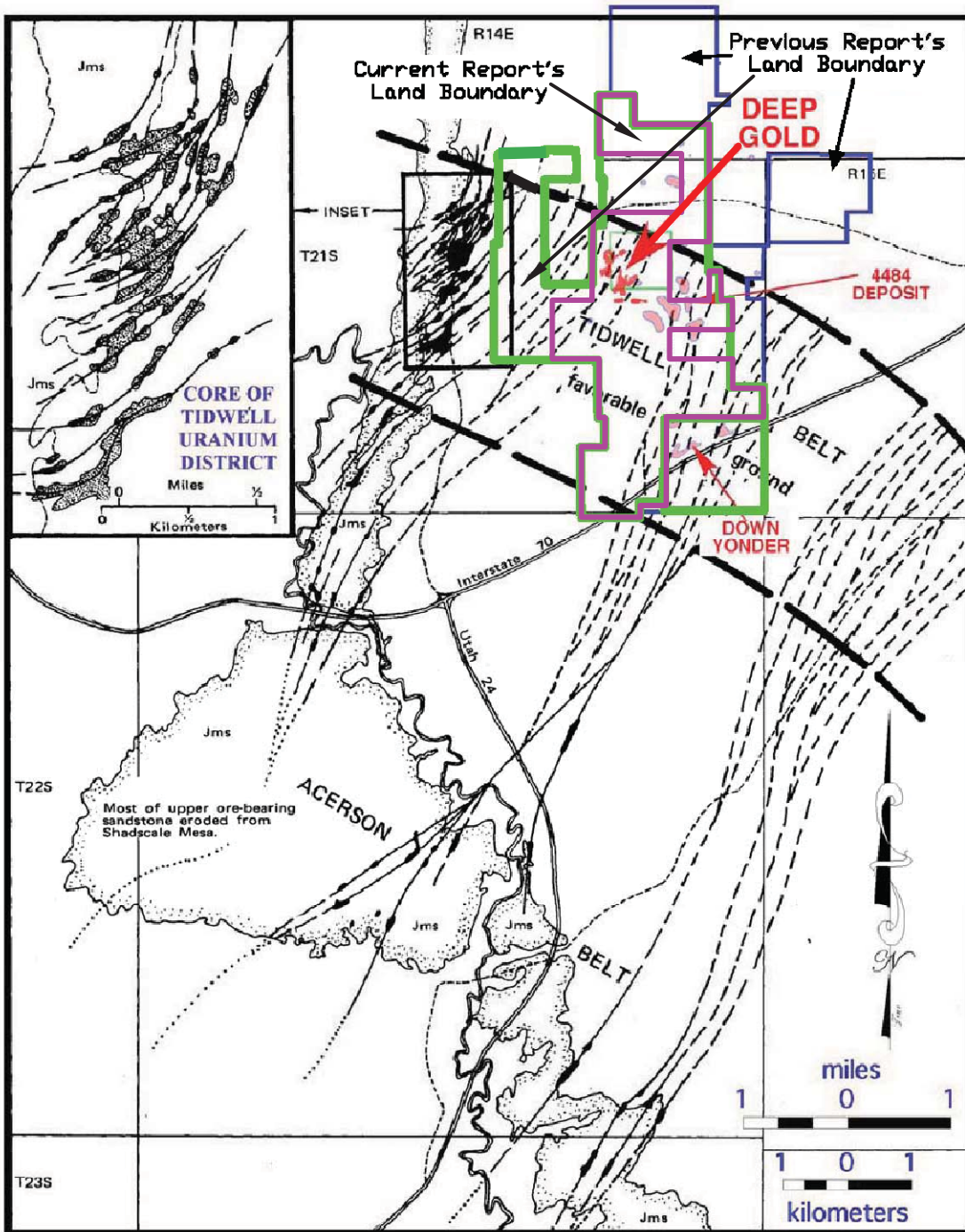
Coordinate System = UTM NAD 27

**Figure 3.** Deep Gold Uranium Project Claim/Lease Location

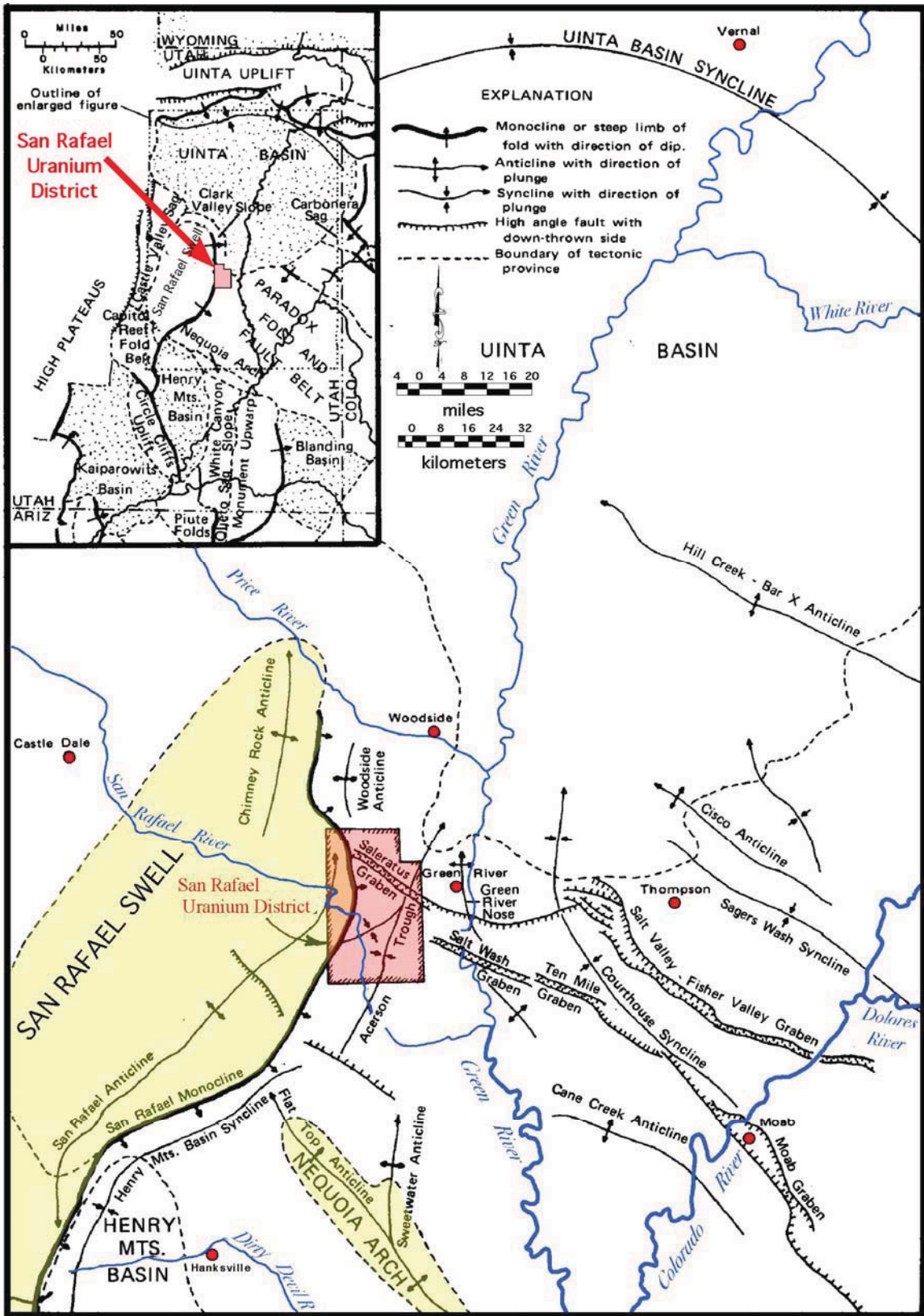


Map showing areas favorable for prospecting in the San Rafael River along area.

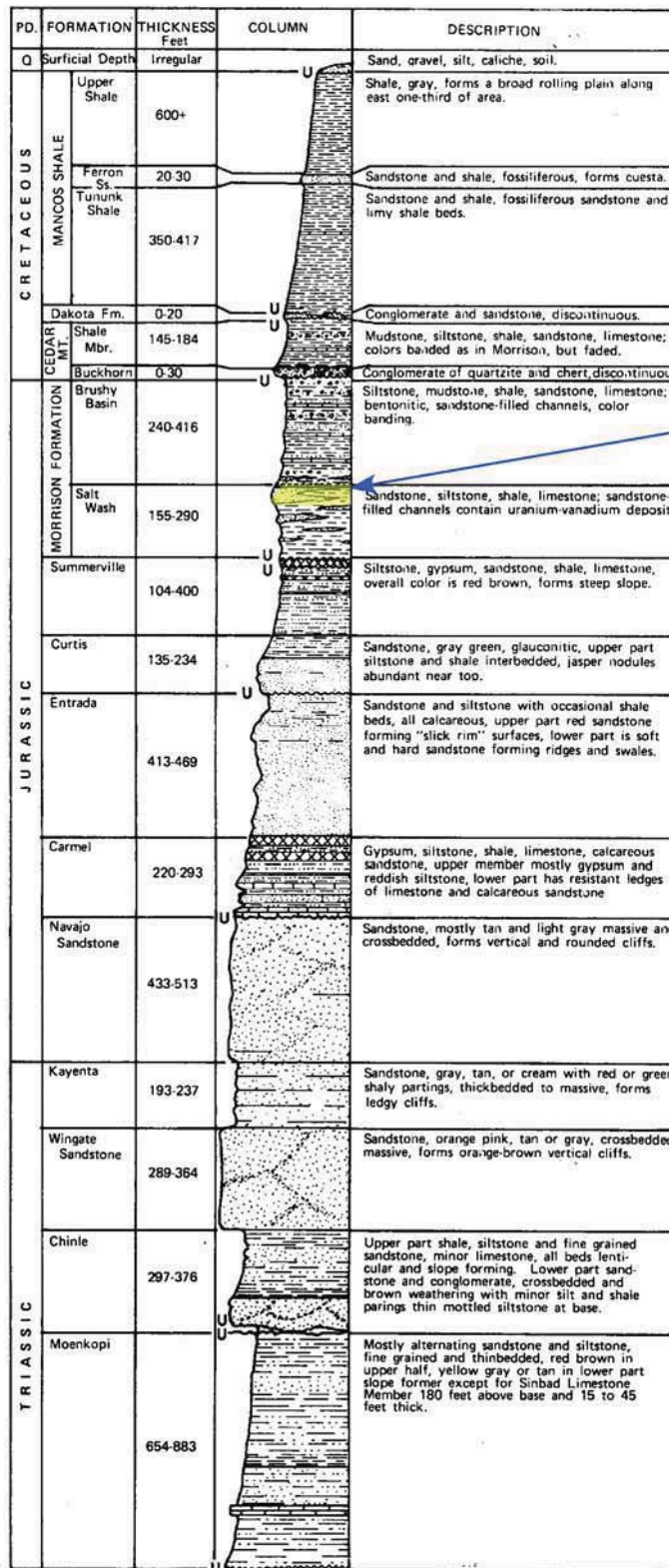




**Figure 4.** Upper Salt Wash trunk channel stream trends as projected north-northeastward from the Acerson Mineral Belt and channel system. Adapted from Trimble and Doelling, 1978. Jms = Jurassic Morrison Formation



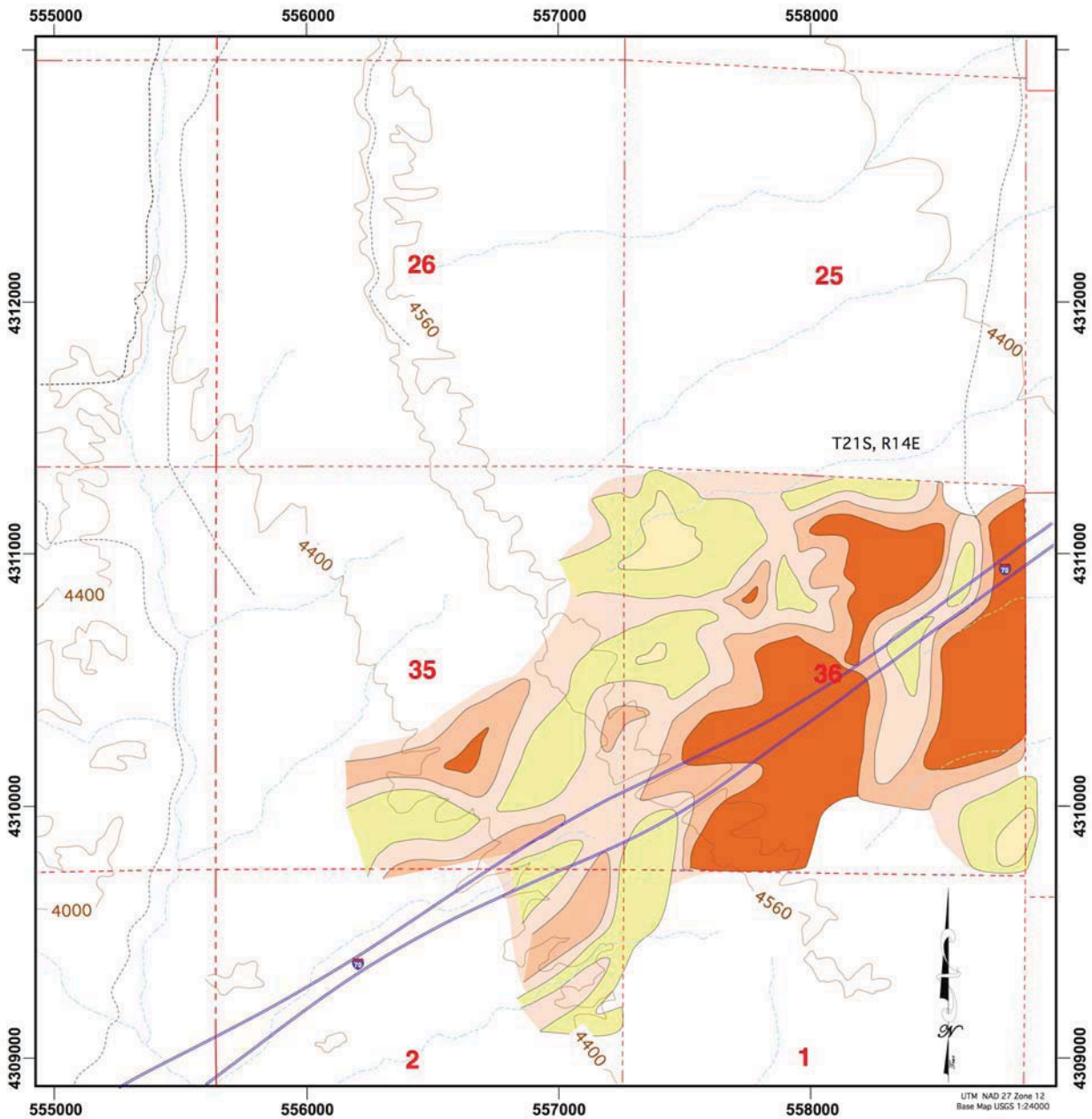
**Figure 5.** Map showing the Acerson Trough and surrounding structures and tectonic divisions. Modified from Trimble and Doelling, 1978.



Host

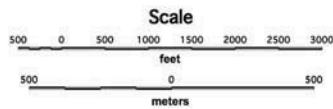
Figure 6. Generalized stratigraphic section in the vicinity of the San Rafael Uranium Project (adapted from Trimble and Doelling, 1978).



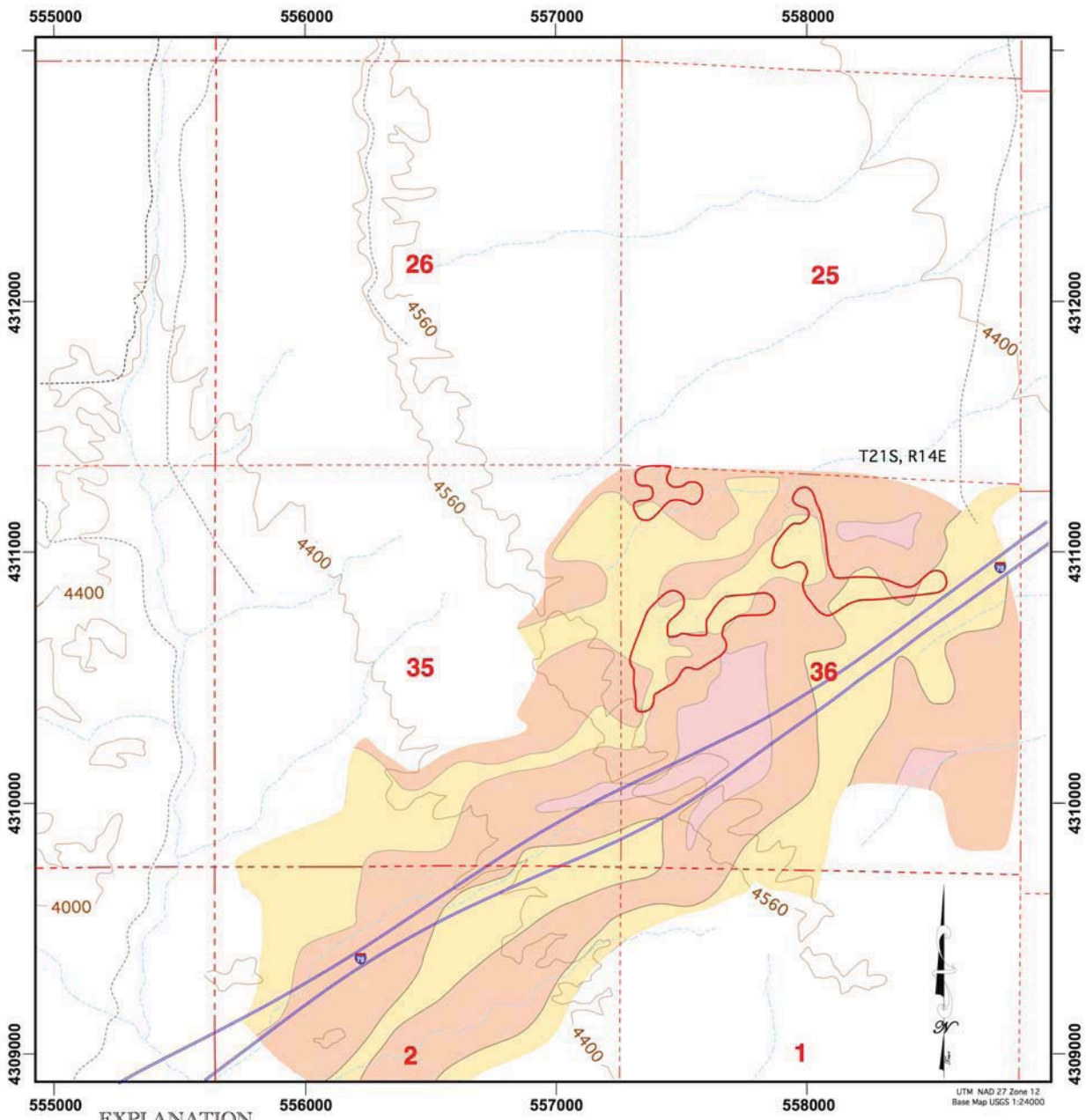


**EXPLANATION**

- >600 feet
- 580-600 feet
- 570-580 feet
- 560-570 feet
- <560 feet



<b>DOWN YONDER</b> Emery County, Utah	
Isopach of datum marker near the base of the Mancos to the shale underlying Salt Wash-hosted uranium mineralization	
Figure 8	<small>Issued For:</small> 



**EXPLANATION**

THICKNESS OF THE UPPER SALT WASH SAND

- >80 FEET
- 40 - 80 FEET
- <40 FEET

Down Yonder

Inferred & Indicated Resource

**SCALE**

500 0 500 1000 1500 2000 2500 3000

feet

500 0 500

meters

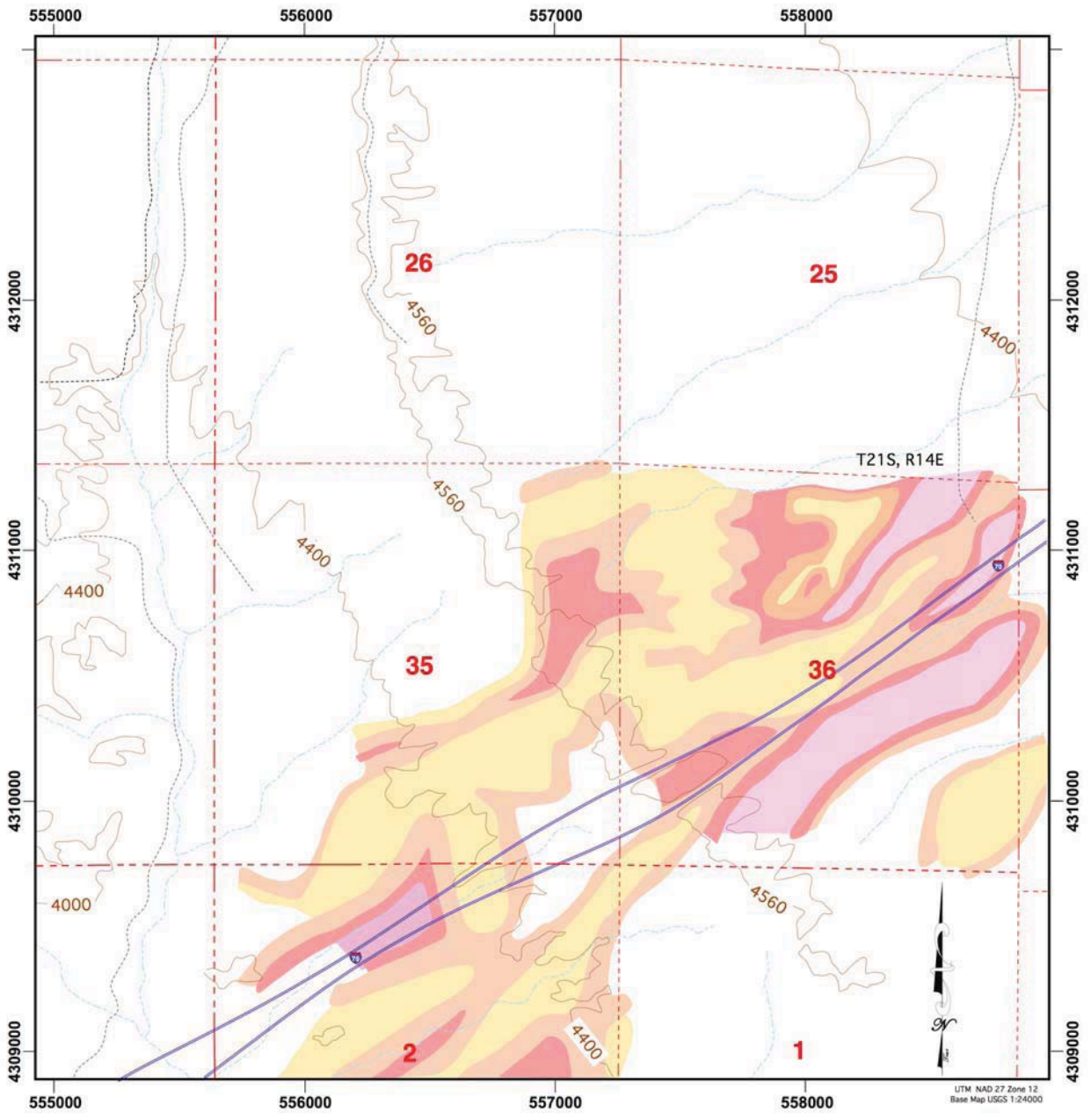
**DOWN YONDER**  
Emery County, Utah

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Isopach Map of the Gross Thickness of the Upper Salt Wash Sand Unit

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**Figure 9** Issued For: M&M

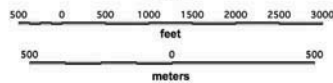


UTM NAD 27 Zone 12  
Base Map USGS 1:24000

**EXPLANATION**

- <0.40 mud:sand
- 0.40-0.70 mud:sand
- 0.70-1.00 mud:sand
- >1.00 mud:sand

**Scale**



**DOWN YONDER**

Emery County, Utah

Mudstone/Sandstone ratio map  
of the upper Salt Wash sand unit

Figure 10

Issued  
For:



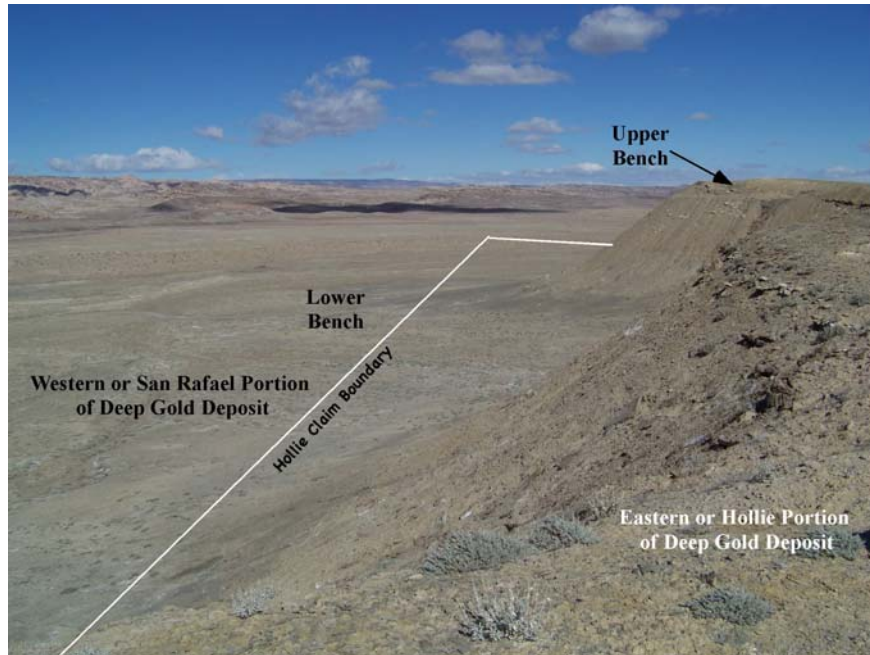


**Plate 1.** Historic drill-hole location monuments, eastern (Hollie) portion of Deep Gold deposit



**Plate 2.** Typical topography in the San Rafael – Deep Gold Uranium Deposit area





**Plate 3.** Eastern and Western Portions of the Deep Gold deposit



**Plate 4.** View looking southwest to the San Rafael Swell and its extreme eastern edge containing the San Rafael Reef



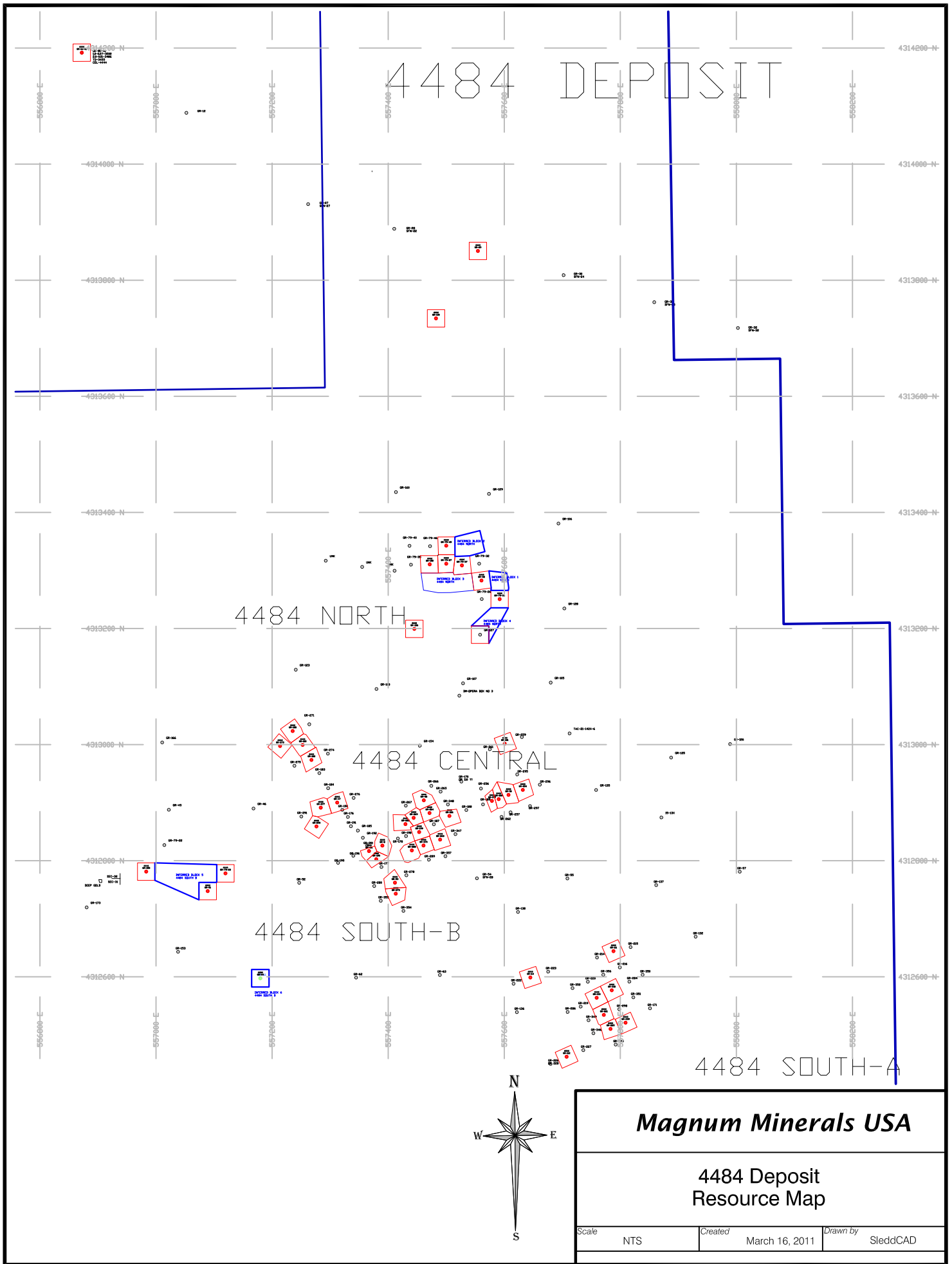
**Plate 5.** Typical upper sandstone of the Salt Wash member on the west edge of the San Rafael Uranium District - host to uranium deposits in the Tidwell District and the Deep Gold deposit



**Plate 6.** Typical Brushy Basin Member variegated mudstone and bentonitic shale overlain by blocks of Buckhorn Conglomerate on the west edge of the San Rafael Uranium District



**Plate 7.** View from I-70 to the northeast of the Tununk, Ferron and Blue Gate (Upper Mancos)  
Members of the Mancos Shale



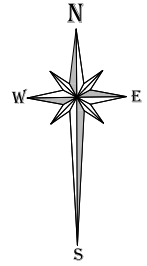
4484 DEPOSIT

4484 NORTH

4484 CENTRAL

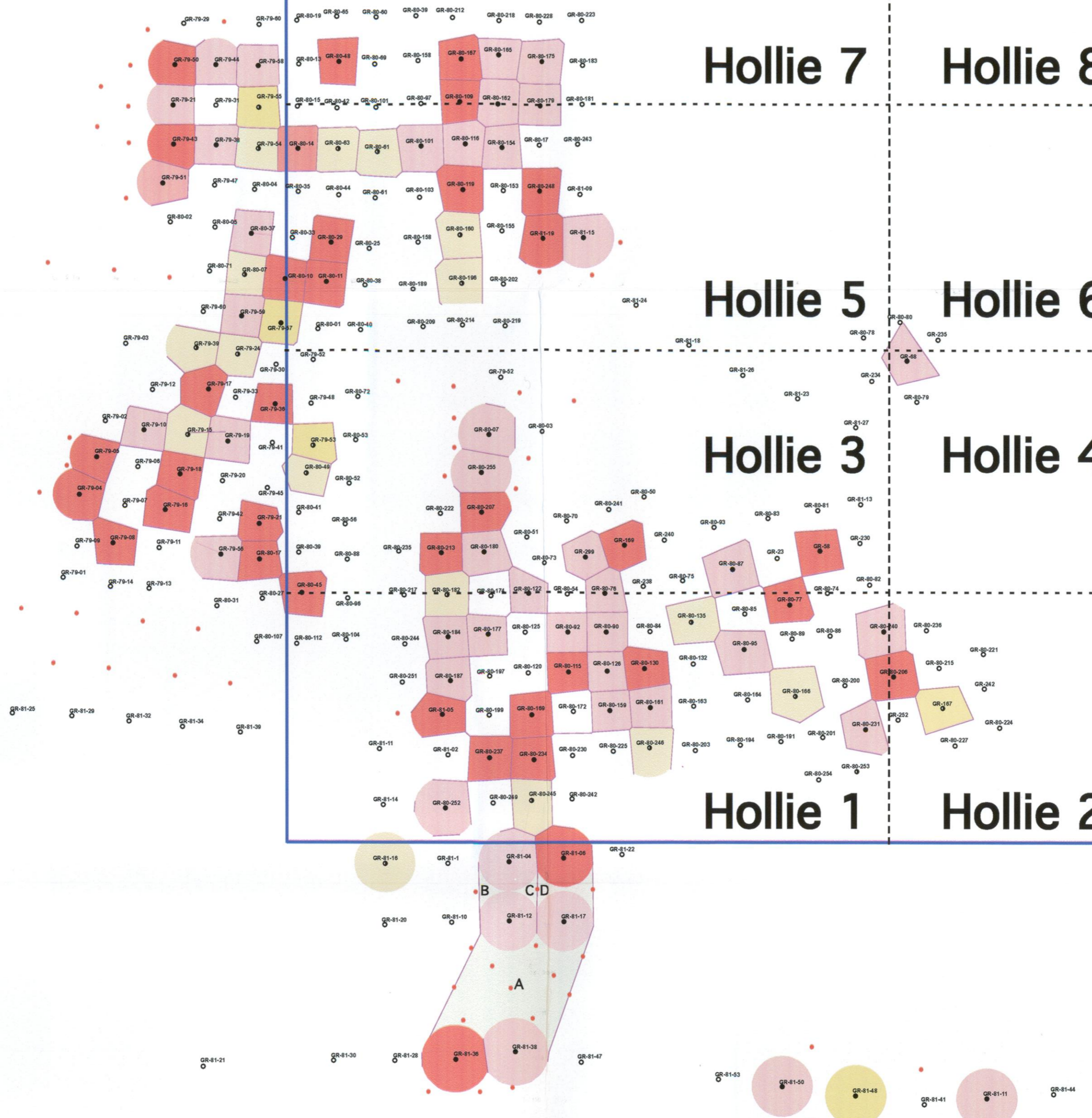
4484 SOUTH-B

4484 SOUTH-A



<b>Magnum Minerals USA</b>		
<b>4484 Deposit Resource Map</b>		
Scale	Created	Drawn by
NTS	March 16, 2011	SleddCAD

# QUATERRA



## EXPLANATION










-  High-grade Block Used in Resource Calculation With  $GxT > 1.0$
-  Mineralized Block Used in Resource Calculation that meets cutoff  $GxT = 0.40 - 0.99$
-  Mineralized Block used in Resource Calculation  $GxT = 0.39$
-  Weakly Mineralized Block not used in Resource Calculation  $GxT = 0.20-0.38$
-  Inferred Resource
-  Drill Hole  $> 4'$  x 0.10%  $U_3O_8$
-  Drill Hole  $3'-4'$  x 0.10%  $U_3O_8$
-  Barren Drill Hole
-  Proposed Magnum Drill Hole 2008 50 HOLE PROGRAM 45,000 ft. Program



Figure 8. Deep Gold Resource Polygon Map



QUATERRA

BM CLAIMS

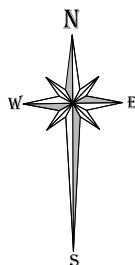
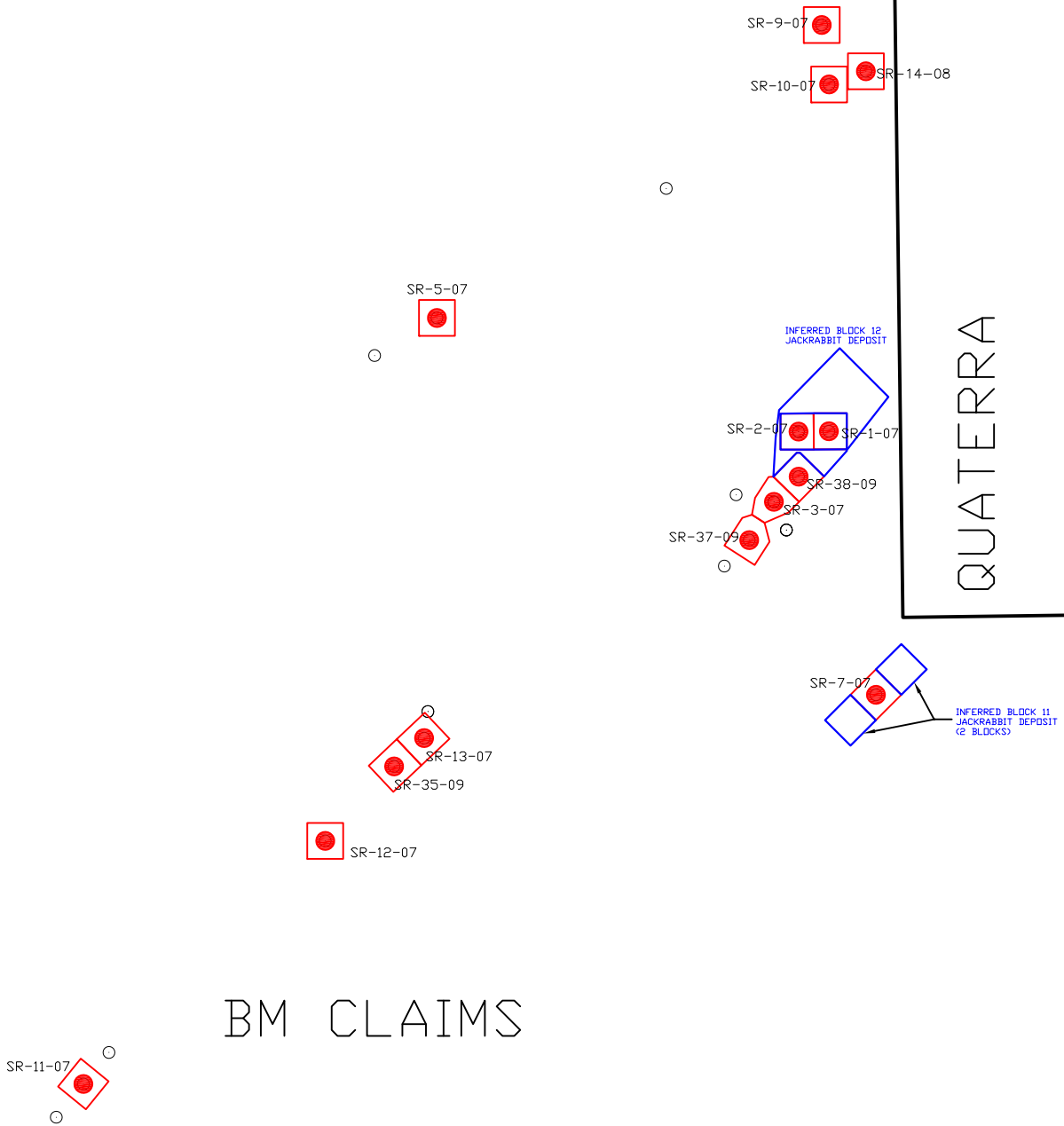
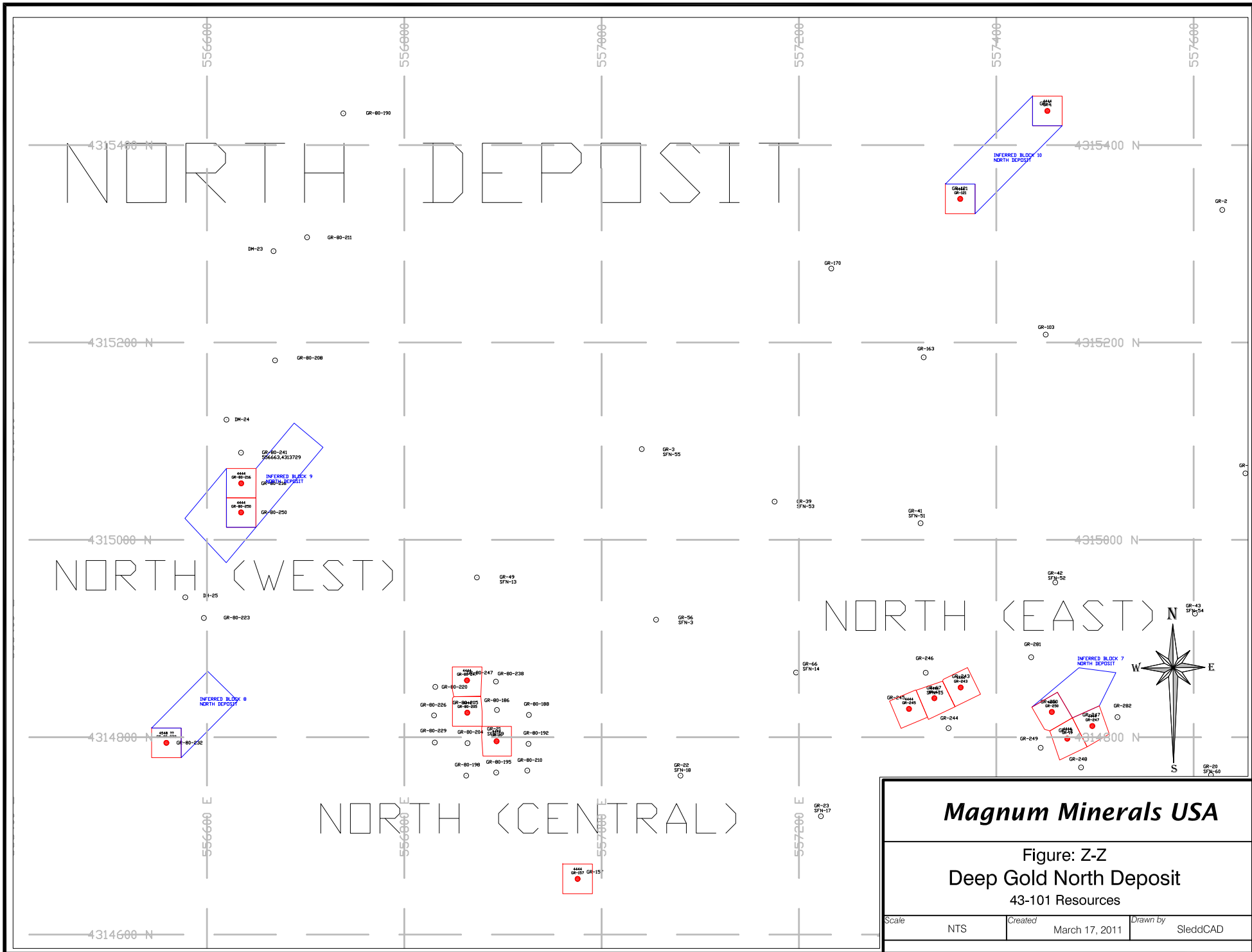


Figure: X-X  
Jackrabbit Deposit  
43-101 Resources

Scale	NTS	Created	March 16, 2011	Drawn by	SleddCAD
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**Magnum Minerals USA**

Figure: Z-Z  
Deep Gold North Deposit  
43-101 Resources

Scale	NTS	Created	March 17, 2011	Drawn by	SleddCAD
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# APPENDIX 1

## DEEP GOLD RESOURCE CALCULATION WORKSHEET

Table 19-1

## MAGNUM DEEP GOLD WEST

Hole Number	Intercept	Grade % eU3O8	lbs./ton	GxT	Polygon Area (sq. ft.)	Volume (cu. ft.)	Tons	Pounds U3O8
GR-79-50	13.5	0.12	2.40	1.62	11,134	150,309	10,736	25,767
GR-79-44	0.8	0.50	10.00	0.40	10,825	8,660	619	6,185
GR-79-59	0.9	0.80	16.00	0.72	10,378	9,340	667	10,675
GR-79-21	3.5	0.21	4.20	0.74	10,589	37,062	2,647	11,118
GR-79-55	7.3	0.05	1.00	0.37	10,297	75,168	5,369	5,369
GR-79-43	5.6	0.22	4.40	1.23	10,820	60,592	4,328	19,043
GR-79-38	5.6	0.14	2.80	0.78	10,007	56,039	4,003	11,208
GR-79-51	7.9	0.07	1.40	0.55	11,286	89,159	6,369	8,916
GR-80-37	0.9	0.49	9.80	0.44	10,169	9,152	654	6,406
GR-80-10	1.0	1.35	27.00	1.35	5,857	5,857	418	11,296
GR-79-59	6.5	0.07	1.40	0.46	9,560	62,140	4,439	6,214
GR-79-57	1.5	0.26	5.20	0.39	6,544	9,816	701	3,646
GR-79-17	4.7	0.42	8.40	1.97	10,628	49,952	3,568	29,971
GR-79-36	10.4	0.13	2.60	1.35	7,469	77,678	5,548	14,426
GR-79-10	6.0	0.14	2.80	0.84	9,948	59,688	4,263	11,938
GR-79-19	5.4	0.18	3.60	0.97	10,972	59,249	4,232	15,235
GR-79-05	5.4	0.76	15.20	4.10	9,885	53,379	3,813	57,954
GR-79-18	11.9	0.18	3.60	2.14	10,146	120,737	8,624	31,047
GR-79-04	2.7	0.83	16.60	2.24	12,430	33,561	2,397	39,794
GR-79-16	7.7	0.50	10.00	3.85	10,897	83,907	5,993	59,934
GR-79-21	4.2	0.46	9.20	1.93	8,865	37,233	2,660	24,467
GR-79-08	6.9	0.17	3.40	1.17	10,235	70,622	5,044	17,151
GR-79-56	1.1	0.84	16.80	0.92	12,105	13,316	951	15,979
GR-80-17	1.1	1.04	20.80	1.14	9,088	9,997	714	14,852
GR-80-45	0.9	2.30	46.00	2.07	1,151	1,036	74	3,404
GR-81-16	5.0	0.07	1.40	0.35	15,731	78,655	5,618	7,866
GR-81-004	7.5	0.21	4.20	1.58	14,928	111,960	7,997	33,588
GR-81-006	1.9	0.57	11.40	1.08	13,765	26,154	1,868	21,296
GR-80-14	1.5	0.41	8.20	0.62	2,344	3,516	251	2,059
GR-81-12	8.2	0.07	1.40	0.57	17,226	141,253	10,090	14,125
GR-81-17	3.4	0.13	2.60	0.44	17,299	58,817	4,201	10,923
GR-81-36	3.8	0.51	10.20	1.94	21,178	80,476	5,748	58,633
GR-81-38	6.4	0.08	1.60	0.51	21,367	136,749	9,768	15,628
GR-81-50	3.4	0.24	4.80	0.82	17,672	60,085	4,292	20,601
GR-81-48	1.2	0.23	4.60	0.28	17,672	21,206	1,515	6,968
GR-81-11	3.5	0.11	2.20	0.39	17,672	61,852	4,418	9,720
<b>A</b>	<b>5.5</b>	<b>0.16</b>	<b>3.20</b>	<b>0.87</b>	<b>58,094</b>	<b>316,612</b>	<b>22,615</b>	<b>72,369</b>
<b>B</b>	<b>7.8</b>	<b>0.14</b>	<b>2.80</b>	<b>1.09</b>	<b>2,130</b>	<b>16,614</b>	<b>1,187</b>	<b>3,323</b>
<b>C</b>	<b>7.8</b>	<b>0.14</b>	<b>2.80</b>	<b>1.09</b>	<b>1,812</b>	<b>14,134</b>	<b>1,010</b>	<b>2,827</b>
<b>D</b>	<b>2.7</b>	<b>0.28</b>	<b>5.60</b>	<b>0.76</b>	<b>4,934</b>	<b>13,322</b>	<b>952</b>	<b>5,329</b>
<b>E</b>	<b>4.1</b>	<b>0.78</b>	<b>15.60</b>	<b>3.20</b>	<b>39,896</b>	<b>163,574</b>	<b>11,684</b>	<b>182,268</b>
<b>TOTAL</b>							<b>182,045</b>	<b>929,516</b>
<b>DEEP GOLD WEST TOTAL</b>		<b>GRADE</b>	<b>LBS/TON</b>	<b>AVG. THICKNESS</b>	<b>TONS INDICATED</b>	<b>POUNDS INDICATED</b>	<b>TONS INFERRED</b>	<b>POUNDS INFERRED</b>
		<b>0.26</b>	<b>5.11</b>	<b>4.7</b>	<b>144,598</b>	<b>663,402</b>	<b>37,447</b>	<b>266,114</b>

<b>DEEP GOLD EAST (HOLLIE)</b>								
Hole Number	Intercept	Grade % e U3O8	lbs./ton	GxT	Polygon Area (Sq. Ft.)	Volume	Tons	Pounds
GR-80-048	5.3	0.28	5.60	1.48	10,291	54,542	3,896	21,817
GR-80-167	1.5	0.67	13.40	1.01	10,316	15,474	1,105	14,811
GR-80-165	2.6	0.25	5.00	0.65	9,395	24,427	1,745	8,724
GR-80-175	0.8	0.75	15.00	0.60	11,344	9,075	648	9,723
GR-80-109	2.1	1.97	39.32	4.03	9,443	19,358	1,383	54,369
GR-80-162	1.3	0.52	10.40	0.68	11,110	14,443	1,032	10,729
GR-80-179	2.2	0.26	5.20	0.57	10,551	23,212	1,658	8,622
GR-80-014	1.5	0.41	8.20	0.62	8,346	12,519	894	7,333
GR-80-101	3.0	0.16	3.20	0.48	12,202	36,606	2,615	8,367
GR-80-116	2.9	0.18	3.60	0.52	10,523	30,517	2,180	7,847
GR-80-154	0.8	0.52	10.40	0.42	9,554	7,643	546	5,678
GR-80-119	4.1	0.30	6.00	1.23	11,860	48,626	3,473	20,840
GR-80-248	3.6	0.86	17.20	3.10	10,635	38,286	2,735	47,037
GR-80-029	2.6	0.42	8.40	1.09	10,344	26,894	1,921	16,137
GR-81-019	1.6	1.44	28.80	2.30	12,679	20,286	1,449	41,732
GR-81-015	1.4	0.34	6.80	0.48	14,162	19,827	1,416	9,630
GR-80-10	1.0	1.35	27.00	1.35	4,895	4,895	350	9,440
GR-80-011	7.1	0.45	9.00	3.20	10,803	76,701	5,479	49,308
GR-79-57	1.5	0.26	5.20	0.39	3,482	5,223	373	1,940
GR-79-36	10.4	0.13	2.60	1.35	1,428	14,851	1,061	2,758
GR-79-053	2.8	0.14	2.80	0.39	9,006	25,217	1,801	5,043
GR-80-007	4.3	0.11	2.20	0.47	14,622	62,875	4,491	9,880
GR-80-255	3.2	0.27	5.40	0.86	13,679	43,773	3,127	16,884
GR-80-207	5.8	0.17	3.40	0.99	10,950	63,510	4,536	15,424
GR-80-213	5.9	0.20	4.00	1.18	10,048	59,283	4,235	16,938
GR-80-180	2.7	0.16	3.20	0.43	11,340	30,618	2,187	6,998
GR-169	5.2	0.59	11.80	3.07	10,122	52,634	3,760	44,363
GR-299	3.5	0.16	3.20	0.56	9,394	32,879	2,349	7,515
GR-80-122	3.3	0.21	4.20	0.69	8,887	29,327	2,095	8,798
GR-80-045	0.9	2.30	46.00	2.07	9,647	8,682	620	28,528
GR-80-076	3.8	0.14	2.80	0.53	9,096	34,565	2,469	6,913
GR-80-087	6.7	0.09	1.80	0.60	13,219	88,567	6,326	11,387
GR-058	6.0	0.37	7.40	2.22	10,758	64,548	4,611	34,118
GR-80-077	0.9	2.72	54.40	2.45	10,415	9,374	670	36,423
GR-80-090	2.5	0.36	7.20	0.90	9,528	23,820	1,701	12,250
GR-80-092	7.0	0.12	2.40	0.84	9,584	67,088	4,792	11,501
GR-80-177	1.3	0.57	11.40	0.74	9,485	12,331	881	10,041
GR-80-184	2.7	0.17	3.40	0.46	10,393	28,061	2,004	6,815
GR-80-187	4.8	0.13	2.60	0.62	10,431	50,069	3,576	9,298
GR-80-115	6.8	0.15	3.00	1.02	9,667	65,736	4,695	14,086
GR-80-126	3.1	0.25	5.00	0.78	8,817	27,333	1,952	9,762
GR-80-130	3.5	0.94	18.80	3.29	10,004	35,014	2,501	47,019
GR-80-095	6.7	0.07	1.40	0.47	13,015	87,201	6,229	8,720
GR-80-161	10.7	0.06	1.20	0.64	10,080	107,856	7,704	9,245
GR-80-159	3.5	0.17	3.40	0.60	9,321	32,624	2,330	7,923

<b>DEEP GOLD EAST (HOLLIE) <i>Continued</i></b>								
Hole Number	Intercept	Grade % e U3O8	lbs./ton	GxT	Polygon Area (Sq. Ft.)	Volume	Tons	Pounds
GR-80-169	5.0	0.30	6.00	1.50	11,423	57,115	4,080	24,478
GR-81-005	5.9	0.17	3.40	1.00	11,488	67,779	4,841	16,461
GR-80-237	1.2	1.50	30.00	1.80	11,324	13,589	971	29,119
GR-80-234	4.0	0.75	15.00	3.00	10,703	42,812	3,058	45,870
GR-80-252	6.6	0.17	3.40	1.12	16,215	107,019	7,644	25,990
GR-167	1.0	0.39	7.80	0.39	11,420	11,420	816	6,363
GR-80-240	4.1	0.19	3.80	0.78	13,604	55,776	3,984	15,139
GR-80-206	10.1	0.22	4.40	2.22	12,801	129,290	9,235	40,634
GR-80-231	2.0	0.20	4.00	0.40	11,131	22,262	1,590	6,361
GR-068	2.7	0.16	3.20	0.43	11,319	30,561	2,183	6,985
GR-81-006	1.9	0.57	11.40	1.08	4,075	7,743	553	6,305
GR-81-004	7.5	0.21	4.22	1.58	3,033	22,748	1,625	6,857
							158,179	983,275
<b>DEEP GOLD EAST (HOLLIE) TOTAL</b>		<b>GRADE</b>	<b>LBS/TON</b>	<b>AVG. THICKNESS</b>	<b>TONS INDICATED</b>	<b>POUNDS INDICATED</b>	<b>TONS INFERRED</b>	<b>POUNDS INFERRED</b>
		0.31	6.22	3.8	158,179	983,275	-	-

**4484 AREA INDICATED MINERAL RESOURCES**  
 SW 1/4 Sec 24, NW 1/4 Sec 25, T21S, R14E

Table 19-3 IND

Hole ID	Stope ID	Interval depth	Collar	Area	Thick-ness	Grade % U <sub>3</sub> O <sub>8</sub>	Grade % V <sub>2</sub> O <sub>5</sub>	Mineralization		In Place	Pounds
								Base Eleva-tion	Tons of Material	Pounds U <sub>3</sub> O <sub>8</sub>	Pounds V <sub>2</sub> O <sub>5</sub>
GR-112	South A	1,061	4456	10,000	1.2	0.43	0.58	3395	857	7,371	9,951
GR-64	South A	1,056	4447	10,000	7.0	0.12	0.16	3391	5,000	12,000	16,200
GR-133	South A	1,068	4451	9,840	7.4	0.29	0.39	3383	5,201	30,167	40,725
GR-221	South A	1,064	4450	9,710	3.5	0.21	0.28	3386	2,428	10,196	13,764
GR-285	South A	1,067	4452	8,930	4.5	0.14	0.19	3385	2,870	8,037	10,850
GR-299	South A	1,070	4450	9,010	2.5	0.12	0.16	3380	1,609	3,861	5,213
GR-218	South A	1,076	4450	9,830	2.5	0.07	0.09	3374	1,755	2,458	3,318
GR-218	South A	1,072	4450	9,830	2.0	0.23	0.31	3378	1,404	6,460	8,721
GR-218	South A	1,069	4450	9,830	2.0	0.12	0.16	3381	1,404	3,370	4,550
GR-111	South A	1,074	4440	10,000	2.1	0.26	0.35	3366	1,500	7,800	10,530
GR-279	South B	1,028	4457	8,570	4.5	0.08	0.11	3429	2,755	4,407	5,950
GR-53	South B	1,022	4456	8,500	2.5	0.17	0.23	3434	1,518	5,161	6,967
GR-23	South B	1,022	4476	10,000	1.5	1.95	2.63	3454	1,071	41,786	56,411
GR-51	South B	1,008	4493	10,000	5.0	0.23	0.31	3485	3,571	16,429	22,179
GR-155	South B	998	4498	10,000	3.2	0.17	0.23	3500	2,286	7,771	10,491
GR-193	Central	1,033	4461	5,760	6.0	0.26	0.35	3428	2,469	12,837	17,329
GR-181	Central	1,027	4461	4,390	2.5	0.15	0.20	3434	784	2,352	3,175
GR-8	Central	1,043	4456	8,870	12.0	0.07	0.09	3413	7,603	10,644	14,369
(GR-8)	Central	1,033	4456	---	1.5	0.20	0.27	3423			
(GR-8)	Central	1,036	4456	---	1.5	0.14	0.19	3420			
(GR-8)	Central	1,043	4456	---	6.0	0.07	0.09	3413			
GR-290	Central	1,029	4470	9,950	6.0	0.10	0.14	3441	4,264	8,529	11,514
(GR-290)	Central	1,023	4470	---	1.5	0.18	0.24	3447			
GR-277	Central	1,020	4469	9,790	5.5	0.10	0.14	3449	3,846	7,692	10,384
GR-47	Central	1,016	4468	9,630	2.5	0.33	0.45	3452	1,720	11,350	15,322
GR-288	Central	1,044	4457	9,490	2.0	0.18	0.24	3413	1,356	4,881	6,589
GR-270	Central	1,030	4452	7,270	3.5	0.31	0.42	3422	1,818	11,269	15,212
GR-263	Central	1,057	4451	9,440	22.0	0.10	0.14	3394	14,834	29,669	40,053
(GR-263)	Central	1,036	4451	---	1.0	0.20	0.27	3415			
(GR-263)	Central	1,040	4451	---	3.0	0.25	0.34	3411			
(GR-263)	Central	1,051	4451	---	5.5	0.19	0.26	3400			
(GR-263)	Central	1,057	4451	---	3.0	0.06	0.08	3394			
GR-199	Central	1,038	4453	7,350	2.5	0.15	0.20	3415	1,313	3,938	5,316
GR-268	Central	1,049	4457	8,300	6.5	0.10	0.14	3408	3,854	7,707	10,405
GR-269	Central	1,030	4457	6,920	2.5	0.27	0.36	3427	1,236	6,673	9,008
GR-264	Central	1,034	4455	7,840	3.5	0.08	0.11	3421	1,960	3,136	4,234
GR-48	Central	1,045	4457	9,440	4.0	0.41	0.55	3412	2,697	22,117	29,857
GR-186	Central	1,054	4453	8,860	1.0	0.30	0.41	3399	633	3,797	5,126
GR-179	Central	1,069	4450	5,010	1.5	0.18	0.24	3381	537	1,932	2,609
GR-200	Central	1,059	4448	6,300	2.5	0.08	0.11	3389	1,125	1,800	2,430
GR-50	Central	1,066	4446	9,220	5.0	0.18	0.24	3380	3,293	11,854	16,003
GR-254	Central	1,065	4442	9,250	10.0	0.13	0.18	3377	6,607	17,179	23,191
(GR-254)	Central	1,058	4442	---	3.0	0.18	0.24	3384			
(GR-254)	Central	1,065	4442	---	4.5	0.17	0.23	3377			
GR-151	Central	1,056	4445	9,830	0.7	0.11	0.15	3389	492	1,081	1,460
GR-151	Central	1,061	4445	9,830	0.7	0.30	0.41	3384	492	2,949	3,981
GR-182	Central	1,119	4462	9,760	5.5	0.23	0.31	3343	3,834	17,638	23,811
GR-180	Central	1,125	4467	9,850	1.5	0.08	0.11	3342	1,055	1,689	2,280
GR-273	Central	1,124	4474	9,970	1.5	0.12	0.16	3350	1,068	2,564	3,461
GR-122	Central	1,130	4472	9,700	2.1	0.17	0.23	3342	1,455	4,947	6,678
GR-127	North	1,043	4438	10,000	3.1	0.18	0.24	3395	2,214	7,971	10,761
GR-156	North	1,042	4446	10,000	2.2	0.12	0.16	3404	1,571	3,771	5,091
GR-34	North	1,058	4438	10,000	2.0	0.32	0.43	3380	1,429	9,143	12,343
GR-38	North	1,035	4436	9,870	7.5	0.21	0.28	3401	5,288	22,208	29,980
GR-79-27	North	1,040	4440	9,590	0.8	1.34	1.81	3400	548	14,686	19,827
GR-152	North	1,031	4442	9,980	1.1	0.28	0.38	3411	784	4,391	5,928

GR-49	North	1,030	4438	9,800	1.0	0.62	0.84	3408	700	8,680	11,718
GR-37	North	1,043	4437	7,880	2.5	0.06	0.08	3394	1,407	1,689	2,280
GR-29	North	1,171	4423	10,000	0.7	0.18	0.24	3252	500	1,800	2,430
GR-130	North	1,059	4429	10,000	2.5	0.21	0.28	3370	1,786	7,500	10,125
<b>4484</b>		<b>TOTALS/AVERAGES</b>			<b>3.6</b>	<b>0.189</b>	<b>0.25</b>		<b>121,799</b>	<b>459,333</b>	<b>620,099</b>

**INDICATED RESOURCES:**

Notes:

Coordinates are scaled from maps

Hole id's in ( ) are intercepts included in preceding entries

Duplicate hole id's not in ( ) are intercepts separated by enough waste to be mined separately

Vanadium grades are listed where assays were taken, otherwise, estimated at the district average  $V_2O_5:U_3O_8$  ratio 1.35:1

Tonnage factor is 14 cu ft/ton

Cut-off  $U_3O_8$  grade of 0.06%

**4484 AREA INFERRED MINERAL RESOURCES**  
 SW 1/4 Sec 24, NW 1/4 Sec 25, T21S, R14E

**Table 19-3 INF**

Hole ID	Stope ID	Collar	*** Area	Thick ness	Grade % U <sub>3</sub> O <sub>8</sub>	Grade % V <sub>2</sub> O <sub>5</sub>	Base Elevation	Mineralization Tons of Material	In Place Pounds U <sub>3</sub> O <sub>8</sub>	Pounds V <sub>2</sub> O <sub>5</sub>
<b>Inferred Block 1</b>		North								
Reference Holes										
GR-34				2.0	0.32	0.43	3380			
GR-38				7.5	0.21	0.28	3401			
Block Avg/Totals		4440	10,590	4.8	0.23	0.28	3390	3,593	16,755	20,441
<b>Inferred Block 2</b>		North								
Reference Holes										
GR-27			10,000	0.8	1.34	1.81	3400			
GR-49			10,000	1.0	0.62	0.84	3408			
GR-37			10,000	2.5	0.06	0.08	3394			
Block Avg/Totals		4440	19,580	1.4	0.43	0.58	3400	2,005	17,174	23,186
<b>Inferred Block 3</b>		North								
Reference Holes										
GR-27			10,000	0.8	1.34	1.81	3400			
GR-152			10,000	1.1	0.28	0.38	3411			
GR-38			10,000	7.5	0.21	0.28	3401			
GR-37			10,000	2.5	0.06	0.08	3394			
Block Avg/Totals		4440	30,550	3.0	0.26	0.35	3400	6,492	33,878	45,735
<b>Inferred Block 4</b>		North								
Reference Holes										
GR-34			10,000	2.0	0.32	0.43	3380			
GR-127			10,000	3.1	0.18	0.24	3395			
Block Avg/Totals		4440	15,980	2.6	0.23	0.59	3390	2,911	13,674	34,132
<b>Inferred Block 5</b>		South B								
Reference Holes										
GR-155			10,000	3.2	0.17	0.23	3500			
GR-23			10,000	1.5	1.95	2.63	3454			
GR-51			10,000	5.0	0.23	0.31	3485			
Block Avg/Totals		4490	49,010	3.2	0.48	0.64	3480	11,319	107,799	145,528
<b>Inferred Block 5</b>		South B								
Reference Holes										
GR-61		4481	10,000	4.5	0.07	0.09	3470			
Block Avg/Totals		4490	10,000	4.5	0.07	0.09	3480	3,214	4,500	6,075

4484	<b>TOTALS/AVERAGES</b>	<b>3.1</b>	<b>0.328</b>	<b>0.47</b>		<b>29,533</b>	<b>193,780</b>	<b>275,096</b>
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**INFERRED RESOURCES:**

Notes: Coordinates are scaled from maps  
Hole id's in ( ) are intercepts included in preceding entries  
Duplicate hole id's not in ( ) are intercepts separated by enough waste to be mined separately  
Vanadium grades are listed where assays were taken, otherwise, estimated at the district average  
V<sub>2</sub>O<sub>5</sub>:U<sub>3</sub>O<sub>8</sub> ratio 1.35:1  
Tonnage factor is 14 cu ft/ton  
Cut-off U3O8 grade of 0.06%

**NORTH DEPOSIT INDICATED MINERAL RESOURCES**

**Table 19-4 IND**

SW 1/4 Sec 13, SE 1/4 Sec 14, NE 1/4 Sec 23, T21S, R14E

Hole ID	Stope ID	Interval depth	Collar	Area	Thick-ness	Grade % U <sub>3</sub> O <sub>8</sub>	Grade % V <sub>2</sub> O <sub>5</sub>	Mineralization Base Elevation	Tons of Material	In Place Pounds U <sub>3</sub> O <sub>8</sub>	Pounds V <sub>2</sub> O <sub>5</sub>
GR-247	East	1,123	4448	9,720	2.0	0.21	0.28	3325	1,389	5,832	7,873
GR-19	East	1,110	4449	10,110	5.0	0.26	0.35	3339	3,611	18,776	25,347
GR-250	East	1,121	4450	9,950	3.5	0.12	0.16	3329	2,488	5,970	8,060
GR-243	East	1,091	4455	9,550	3.0	0.23	0.31	3364	2,046	9,414	12,708
GR-67	East	1,078	4458	9,820	4.5	0.23	0.31	3380	3,156	14,520	19,601
GR-245	East	1,057	4458	9,650	1.5	0.13	0.18	3401	1,034	2,688	3,629
GR-21	Central	997	4489	9,870	3.5	0.20	0.27	3492	2,468	9,870	13,325
80-205	Central	976	4490	9,870	1.2	0.32	0.43	3514	846	5,414	7,309
80-247	Central	982	4490	9,760	0.8	0.24	0.32	3508	558	2,677	3,614
GR-157	Central	1,002	4482	10,000	0.8	0.10	0.14	3480	571	1,143	1,543
GR-157	Central	1,013	4482	10,000	0.7	0.19	0.26	3469	500	1,900	2,565
GR-157	Central	1,020	4482	10,000	0.7	0.17	0.23	3462	500	1,700	2,295
80-232	West	935	4548	10,000	0.7	0.19	0.26	3613	500	1,900	2,565
80-250	West	974	4547	9,910	1.0	0.13	0.18	3573	708	1,840	2,485
80-216	West	962	4546	9,910	0.7	0.64	0.86	3584	496	6,342	8,562
81-42	Isolated	942	4444	10,000	1.0	0.27	0.36	3502	714	3,857	5,207
GR-121	Isolated	1,079	4465	10,000	0.7	1.05	1.42	3386	500	10,500	14,175
GR-1	Isolated	1,117	4467	10,000	3.0	0.11	0.15	3350	2,143	4,714	6,364
GR-1	Isolated	1,145	4467	10,000	2.0	0.15	0.20	3322	1,429	4,286	5,786

<b>NORTH INDICATED RESOURCES:</b>	<b>TOTALS/AVERAGES</b>	<b>1.9</b>	<b>0.221</b>	<b>0.30</b>		<b>25,655</b>	<b>113,343</b>	<b>153,013</b>
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Notes: Coordinates are scaled from maps  
Hole id's in ( ) are intercepts included in preceding entries  
Duplicate hole id's not in ( ) are intercepts separated by enough waste to be mined separately  
Vanadium grades are listed where assays were taken, otherwise, estimated at the district average V<sub>2</sub>O<sub>5</sub>:U<sub>3</sub>O<sub>8</sub> ratio 1.35:1  
Tonnage factor is 14 cu ft/ton  
Cut-off U3O8 grade of 0.06%



**NORTH DEPOSIT INDICATED MINERAL RESOURCES**  
 SW 1/4 Sec 13, SE 1/4 Sec 14, NE 1/4 Sec 23, T21S, R14E

**Table 19-4 INF**

Hole ID	Stope ID	Collar	Area	Thick-ness	Grade % U <sub>3</sub> O <sub>8</sub>	Grade % V <sub>2</sub> O <sub>5</sub>	Base Eleva-tion	Mineralization Tons of Material	In Place Pounds U <sub>3</sub> O <sub>8</sub>	Pounds V <sub>2</sub> O <sub>5</sub>	
<b>Inferred Block 7</b>		East									
Reference Holes											
GR-247			9,720	2.0	0.21	0.28	3325				
GR-19			10,110	5.0	0.26	0.35	3339				
GR-250			9,950	3.5	0.12	0.16	3329				
Block Avg/Totals		4450	21,600	3.5	0.23	0.31	3330	5,400	24,852	33,550	
<b>Inferred Block 8</b>		West									
Reference Holes											
80-232			10,000	0.7	0.19	0.26	3613				
Block Avg/Totals		4550	33,160	0.7	0.19	0.26	3610	1,658	6,300	8,506	
<b>Inferred Block 9</b>		West									
Reference Holes											
80-250		4547	9,910	1.0	0.13	0.18	3573				
80-216		4546	9,910	0.7	0.64	0.86	3584				
Block Avg/Totals		4550	63,310	0.9	0.34	0.46	3580	3,844	26,138	35,286	
<b>Inferred Block 10</b>		Isolated									
Reference Holes											
GR-121		4465	10,000	0.7	1.05	1.42	3386				
GR-1		4467	10,000	3.0	0.11	0.15	3350				
Block Avg/Totals		4550	49,060	1.9	0.29	0.39	3580	6,483	37,321	50,383	
<b>NORTH DEPOSIT INFERRED RESOURCES:</b>	<b>TOTALS/AVERAGES</b>			<b>2.0</b>	<b>0.272</b>	<b>0.37</b>		<b>17,385</b>	<b>94,611</b>	<b>127,724</b>	

Notes: Coordinates are scaled from maps  
 Hole id's in ( ) are intercepts included in preceding entries  
 Duplicate hole id's not in ( ) are intercepts separated by enough waste to be mined separately  
 Vanadium grades are listed where assays were taken, otherwise, estimated at the district average  
 V<sub>2</sub>O<sub>5</sub>:U<sub>3</sub>O<sub>8</sub> ratio 1.35:1  
 Tonnage factor is 14 cu ft/ton  
 Cut-off U3O8 grade of 0.06%

**JACKRABBIT DEPOSIT INDICATED MINERAL RESOURCES****Table 19-5 IND**

SE 1/4 Sec 22, NW 1/4 and NE 1/4 Sec 27, T21S, R14E

Hole ID	Stope ID	Collar	Area	Thick- ness	Grade % U <sub>3</sub> O <sub>8</sub>	Grade % V <sub>2</sub> O <sub>5</sub>	Mineralization		In Place	
							Base Eleva- tion	Tons of Material	Pounds U <sub>3</sub> O <sub>8</sub>	Pounds V <sub>2</sub> O <sub>5</sub>
SR- 1-07	NE	4440	9,228	1.5	0.16	0.22	3949	989	3,184	4,298
SR- 2-07	NE	4444	9,228	1.0	0.13	0.17	4012	659	1,674	2,260
SR- 2-07	NE	4444	9,228	1.5	0.11	0.15	3963	989	2,155	2,910
SR- 3-07	NE	4449	9,866	1.5	0.19	0.25	3965	1,057	3,932	5,309
SR- 3-07	NE	4449	9,866	6.5	0.91	1.22	3955	4,581	83,093	112,175
SR- 5-07	NE	4437	10,000	0.5	0.12	0.16	4081	357	864	1,167
SR- 7-07	NE	4453	10,000	2.0	0.38	0.51	3910	1,429	10,829	14,619
SR- 9-07	NE	4467	10,000	4.0	0.45	0.60	3968	2,857	25,600	34,560
SR-10-07	NE	4463	10,000	3.0	0.18	0.24	3954	2,143	7,543	10,183
SR-14-07	NE	4460	10,000	1.0	0.12	0.16	3952	714	1,729	2,334
SR-37-09	NE	4449	10,412	2.0	0.46	0.62	3974	1,487	13,684	18,474
SR-38-09	NE	4449	9,894	2.5	0.08	0.11	3949	1,767	2,968	4,007
SR-11-07	SW	4389	10,000	2.5	0.42	0.56	4182	1,786	14,929	20,154
SR-12-07	SW	4406	10,000	1.0	0.21	0.28	4074	714	3,000	4,050
SR-13-07	SW	4412	10,745	5.0	0.21	0.29	4062	3,838	16,271	21,966
SR-35-09	SW	4409	10,745	4.5	0.07	0.09	4113	3,454	4,490	6,061
<b>JACKRABBIT</b>			<b>TOTALS/AVERAGES</b>	<b>2.5</b>	<b>0.340</b>	<b>0.46</b>		<b>28,820</b>	<b>195,945</b>	<b>264,525</b>

**INDICATED RESOURCES:**

## Notes:

Coordinates are scaled from maps

Hole id's in ( ) are intercepts included in preceding entries

Duplicate hole id's not in ( ) are intercepts separated by enough waste to be mined separately

Vanadium grades are listed where assays were taken, otherwise, estimated at the district average

V<sub>2</sub>O<sub>5</sub>:U<sub>3</sub>O<sub>8</sub> ratio 1.35:1

Tonnage factor is 14 cu ft/ton

Cut-off U<sub>3</sub>O<sub>8</sub> grade of 0.06%

**JACKRABBIT DEPOSIT INFERRED MINERAL RESOURCES**

**Table 19-5 INF**

SE 1/4 Sec 22, NW 1/4 and NE 1/4 Sec 27, T21S, R14E

Hole ID	Stope ID	Collar	Area	Thick-ness	Grade % U <sub>3</sub> O <sub>8</sub>	Grade % V <sub>2</sub> O <sub>5</sub>	Mineralization Base Eleva-tion	Tons of Material	In Place Pounds U <sub>3</sub> O <sub>8</sub>	Pounds V <sub>2</sub> O <sub>5</sub>	
<b>Inferred Block 11</b>											
Reference Holes											
SR- 7-07	NE	4453	10,000	2.0	0.38	0.51	3910				
Block Avg/Totals		4480	20,000	2.0	0.38	0.51	3910	2,857	21,657	29,237	
<b>Inferred Block 12</b>											
Reference Holes											
SR- 1-07	NE	4440	9,228	1.5	0.16	0.22	3949				
SR- 2-07		4444	9,228	1.0	0.13	0.17	4012				
SR- 2-07		4444	9,228	1.5	0.11	0.15	3963				
SR-38-09		4449	9,894	2.5	0.08	0.11	3949				
Block Avg/Totals		4445	43,790	1.6	0.11	0.15	3975	5,083	11,604	15,666	
<b>JACKRABBIT</b>		<b>TOTALS/AVERAGES</b>			<b>1.7</b>	<b>0.209</b>	<b>0.28</b>		<b>7,940</b>	<b>33,261</b>	<b>44,903</b>
<b>INFERRED RESOURCES:</b>											

Notes:

- Coordinates are scaled from maps
- Hole id's in ( ) are intercepts included in preceding entries
- Duplicate hole id's not in ( ) are intercepts separated by enough waste to be mined separately
- Vanadium grades are listed where assays were taken, otherwise, estimated at the district average
- V<sub>2</sub>O<sub>5</sub>:U<sub>3</sub>O<sub>8</sub> ratio 1.35:1
- Tonnage factor is 14 cu ft/ton
- Cut-off U3O8 grade of 0.06%

Table 19-6 IND

**DOWN YONDER AREA INDICATED MINERAL RESOURCES**

SW 1/4 Sec 25, NW 1/4 Sec 35, Section 36, T21S, R14E

Hole ID	Stope ID	Area	Thick-ness	Grade % U <sub>3</sub> O <sub>8</sub>	Grade % V <sub>2</sub> O <sub>5</sub>	Depth to Mineral	Mineralization	In Place	Pounds V <sub>2</sub> O <sub>5</sub>
							Tons of Material	Pounds U <sub>3</sub> O <sub>8</sub>	
35-57	35	17,672	1.9	0.28			2,442	13,673	18,462
35-66	35	17,672	1.0	0.37			1,309	9,713	13,112
35-75	35	17,672	1.0	0.39			1,309	10,079	13,607
36-11A	36	17,672	1.0	0.25			1,309	6,545	8,836
36-11B	36	17,672	3.6	0.24			4,582	21,994	29,691
36-11C	36	17,672	2.1	0.21			2,618	10,996	14,844
36-13B	36	17,672	1.6	0.11			1,964	4,321	5,833
36-13C	36	17,672	15.6	0.12			19,635	48,302	65,208
36-14	36	47,622	2.6	0.17			8,819	29,985	40,479
36-14A	36	43,035	2.1	0.18			6,376	22,954	30,987
36-14B	36	30,381	5.7	0.10			12,377	24,754	33,418
36-14D	36	Note 1	9.0	0.17					
DY-41-08	36	Note 1							
36-15	36	Note 2	5.5	0.31					
DY-40-08	36	Note 2							
36-15A	36	39,896	4.1	0.21			11,821	49,648	67,025
36-15B	36	46,978	0.5	0.60			1,740	20,880	28,188
36-15F	36	48,224	1.0	0.16			3,572	11,430	15,431
36-21	36	17,672	1.0	0.11			1,309	2,880	3,888
36-24	36	39,638	8.3	0.12			23,489	56,374	76,104
36-24B	36	17,672	1.0	0.45			1,309	11,781	15,904
36-24C	36	49,400	2.1	0.32			7,319	46,842	63,236
36-24D	36	48,028	1.0	0.16			3,558	11,386	15,371
36-24E	36	17,672	2.6	0.13			3,273	8,510	11,488
36-33B	36	17,672	3.6	0.13			4,582	11,913	16,083
36-33C	36	17,672	1.0	0.13			1,309	3,403	4,595
36-41	36	17,672	1.6	0.19			1,964	7,463	10,075
36-42	36	17,672	3.6	0.14			4,582	12,830	17,320
36-42A	36	17,672	2.6	0.11			3,273	7,201	9,721
36-42B	36	17,672	3.6	0.09			4,582	8,248	11,134
36-42C	36	17,672	1.0	0.21			1,309	5,498	7,422
36-43B	36	17,672	1.0	0.18			1,309	4,712	6,362
36-53	36	17,672	3.6	0.25			4,582	22,910	30,929
36-53A	36	17,672	1.0	0.48			1,309	12,566	16,965
36-53B	36	17,672	1.0	0.30			1,309	7,854	10,603
36-61	36	17,672	2.1	0.20			2,618	10,315	13,925
36-63	36	17,672	2.6	0.17			3,273	11,128	15,023
36-73	36	17,672	2.6	0.48			3,273	31,421	42,418
73-16	35	17,672	6.2	0.21			7,854	32,987	44,532
73-18	35	17,672	3.1	0.10			3,927	7,854	10,603
DY-05-08	36	17,672	1.6	0.09			1,964	3,417	4,613
DY-17-08	36	17,672	3.1	0.07			3,927	5,655	7,634
DY-22A-08	36	15,915	1.0	0.26			1,179	6,107	8,245

DY-23-08	36	32,484	2.6	0.09		6,015	11,068	14,941	
DY-24-08	36	33,245	3.6	0.34		8,619	58,264	78,657	
DY-26-08	36	31,900	2.1	0.20		4,726	18,904	25,520	
DY-27-08	35	37,377	1.0	0.10		2,769	5,593	7,551	
DY-27A-08	35	38,206	1.6	0.14		4,245	12,141	16,390	
DY-28-08	36	51,860	5.2	0.26		19,207	97,956	132,240	
DY-29-08	35	37,843	2.1	0.21		5,606	22,985	31,029	
DY-30-08	36	17,523	4.1	0.14		5,192	14,641	19,766	
DY-31-08	36	17,577	3.6	0.05		4,557	4,284	5,783	
DY-43-08	35	30,711	7.3	0.09		15,924	29,619	39,985	
DY-45-08	36	17,672	1.6	0.13		1,964	4,910	6,629	
Note 1	36	17,672	2.9	0.16		3,600	11,160	15,066	
Note 2	36	48,532	6.7	0.13		23,367	61,222	82,649	
<b>DOWN YONDER</b>			<b>3.0</b>	<b>0.177</b>	<b>0.24</b>		<b>278,979</b>	<b>989,272</b>	<b>1,335,521</b>
<b>TOTALS/AVERAGES</b>									

**INDICATED  
RESOURCES:**

Notes: Coordinates are surveyed or scaled from maps when they could not be found with certainty.  
Hole id's in ( ) are intercepts included in preceding entries  
Duplicate hole id's not in ( ) are intercepts separated by enough waste to be mined separately  
Vanadium grades are listed where assays were taken, otherwise, estimated at the district average  
 $V_2O_5:U_3O_8$  ratio  
1.35:1  
Tonnage factor is 14 cu ft/ton  
Indicated mineralization is within 75 ft of a drill hole. Some polygons are extended farther if mineralized intercepts correlate well in neighboring holes.  
Inferred mineralization is normally is between 75 ft and 150 ft from holes.  
Cut-off  $U_3O_8$  grade of 0.06%; one exception, DY-31-08

Note 1 Hole 36-15 and DY-41-08 are twins. Assay used is the average of the two holes.  
Note 2 Hole 36-14D and DY-40-08 are twins. Assay used is the average of the two holes.

Table 19-6 INF

**DOWN YONDER AREA INFERRED MINERAL RESOURCES**

SW 1/4 Sec 25, NW 1/4 Sec 35, Section 36, T21S, R14E

Hole ID	Stope ID	Area	Thick-ness	Grade % U <sub>3</sub> O <sub>8</sub>	Grade % V <sub>2</sub> O <sub>5</sub>	Mineralization		In Place	
						Depth to Mineral	Tons of Material	Pounds U <sub>3</sub> O <sub>8</sub>	Pounds V <sub>2</sub> O <sub>5</sub>
35-57	35	53,014	1.9	0.28	0.38		7,195	21,989	29,685
35-66	35	53,014	1.0	0.37	0.50		3,787	29,138	39,336
35-75	35	53,014	1.0	0.39	0.52		3,787	30,238	40,821
36-11A	36	48,348	1.0	0.25	0.34		3,453	17,907	24,174
36-11B	36	44,518	3.6	0.24	0.32		11,447	55,400	74,790
36-11C	36	38,428	2.1	0.21	0.28		5,764	23,911	32,280
36-13B	36	50,436	1.6	0.11	0.15		5,764	12,329	16,644
36-13C	36	50,147	15.6	0.12	0.17		55,878	137,070	185,045
36-21	36	52,722	1.0	0.11	0.15		3,766	8,592	11,599
36-24B	36	28,793	1.0	0.45	0.61		2,057	19,196	25,915
36-24E	36	38,574	2.5	0.13	0.18		6,888	18,573	25,074
36-33B	36	40,064	3.6	0.13	0.18		10,302	27,006	36,458
36-33C	36	45,650	1.0	0.13	0.18		3,261	8,792	11,869
36-41	36	48,349	1.6	0.19	0.26		5,526	20,414	27,559
36-42	36	47,278	3.6	0.14	0.19		12,157	34,320	46,332
36-42A	36	47,255	2.6	0.11	0.15		8,776	19,252	25,990
36-42B	36	43,799	3.6	0.09	0.12		11,263	20,439	27,593
36-42C	36	46,296	1.0	0.21	0.28		3,307	14,403	19,444
36-43B	36	47,875	1.0	0.18	0.24		3,420	12,767	17,235
36-53	36	42,650	3.6	0.25	0.34		10,967	55,288	74,639
36-53A	36	46,672	1.0	0.48	0.65		3,334	33,189	44,805
36-53B	36	43,810	1.0	0.30	0.41		3,129	19,471	26,286
36-61	36	53,014	2.1	0.20	0.27		7,952	30,945	41,776
36-63	36	51,469	2.6	0.17	0.23		9,559	32,406	43,748
36-73	36	39,674	2.6	0.48	0.65		7,368	70,531	95,217
73-16	35	53,014	6.2	0.21	0.28		23,478	98,960	133,596
73-18	35	36,649	3.1	0.10	0.14		8,115	16,288	21,989
DY-05-08	36	41,043	1.6	0.09	0.12		4,691	7,935	10,712
DY-17-08	36	41,038	3.1	0.07	0.10		9,087	13,132	17,728
DY-22A-08	36	32,972	1.0	0.26	0.35		2,355	12,651	17,079
DY-30-08	36	26,438	4.1	0.14	0.19		7,743	22,091	29,823
DY-31-08	36	32,026	3.6	0.05	0.06		8,235	7,805	10,537
DY-45-08	36	22,168	1.6	0.13	0.17		2,533	6,158	8,313
Note 1	36	40,963	2.9	0.16	0.21		8,485	25,868	34,922
					0.00				0
Inferred A	35	42,841	2.25	0.21	0.28		6,885	30,132	40,678
Inferred B	35	7,908	2.75	0.37	0.50		1,553	7,377	9,959
Inferred C	35	26,832	7.00	0.39	0.52		13,416	32,277	43,574
Inferred D	36	8,675	2.17	0.25	0.34		1,345	3,960	5,346
Inferred E	36	27,424	1.75	0.24	0.32		3,428	9,243	12,478
Inferred F	36	107,083	1.67	0.21	0.28		12,773	36,826	49,715
Inferred G	36	33,966	1.75	0.11	0.15		4,246	11,448	15,455
Inferred H	36	28,172	2.50	0.12	0.17		5,031	12,521	16,903
Inferred I	36	23,048	2.25	0.17	0.23		3,704	11,524	15,557
Inferred J	36	6,478	2.25	0.18	0.24		1,041	5,226	7,055
Inferred K	36	91,482	2.00	0.10	0.14		13,069	46,351	62,574
Inferred L	36	142,889	1.00	0.38	0.51		10,206	80,441	108,595
<b>4484</b>				<b>0.176</b>	<b>0.24</b>		<b>361,525</b>	<b>1,271,780</b>	<b>1,716,903</b>

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Vanadium grades are listed where assays were taken, otherwise, estimated at the district average  
 $V_2O_5:U_3O_8$  ratio 1.35:1

Tonnage factor is 14 cu ft/ton

Indicated mineralization is within 75 ft of a drill hole. Some polygons are extended farther if mineralized intercepts correlate well in neighboring holes.

Inferred mineralization is normally is between 75 ft and 150 ft from holes.

Cut-off  $U_3O_8$  grade of 0.06%; one exception, DY-31-08

Note 1

Hole 36-15 and DY-41-08 are twins. Assay used is the average of the two holes.

Note 2

Hole 36-14D and DY-40-08 are twins. Assay used is the average of the two holes.