Technical Report on the Ambrosia Lake Uranium Project,

McKinley County, New Mexico, USA

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# Table of Contents

1 **Summary** ........................................................................................................... 6  
   1.1 Property Description and Ownership................................................................. 6  
      1.1.1 Location and Access.................................................................................. 6  
      1.1.2 Project History....................................................................................... 6  
      1.1.3 Ownership............................................................................................... 7  
      1.1.4 Environmental Liabilities and Permitting.................................................. 7  
      1.1.5 Geology and Mineralization..................................................................... 7  
   1.2 Exploration Drilling and Data Quality................................................................. 8  
   1.3 Metallurgy and Mineral Processing.................................................................... 8  
   1.4 Mineral Resource Estimates.............................................................................. 8  
   1.5 Development and Operations............................................................................ 8  
   1.6 Project Economics............................................................................................ 8  
   1.7 Conclusions and Recommendations................................................................ 8  
2 **Introduction** ....................................................................................................... 10  
   2.1 Terms of Reference and Purpose of the Report............................................... 10  
   2.2 Qualifications of Author................................................................................... 10  
      2.2.1 Details of Site Inspection........................................................................... 11  
3 **Reliance on Other Experts** ................................................................................. 12  
   3.1 Sources of Information and Extent of Reliance............................................... 12  
4 **Property Description and Location** .................................................................. 13  
   4.1 Property Titles................................................................................................. 14  
      Mineral Rights.................................................................................................. 16  
      Surface Rights.................................................................................................. 16  
      Lease Obligations............................................................................................. 16  
      Patented Mining Claims.................................................................................... 16  
      Unpatented Mining Claims............................................................................... 16  
      Nature and Extent of Issuer’s Interest................................................................. 16  
      Royalties, Agreements and Encumbrances......................................................... 16  
   4.2 Environmental Liabilities and Permitting......................................................... 16  
5 **Accessibility, Climate, Local Resources, Infrastructure and Physiography** ....18  
   5.1 Topography, Elevation and Vegetation............................................................... 18
5.2 Access to the Property ................................................................. 18
5.3 Climate and Physiography .......................................................... 19
5.4 Local Resources and Infrastructure ............................................ 19
5.5 Sufficiency of Surface Rights ..................................................... 19

6 History ......................................................................................... 21
6.1 Prior Ownership and Ownership Changes .................................. 21
6.2 Previous Exploration and Development .................................... 21
6.4 Historic Uranium Production from the Project Area .................. 23

7 Geologic Setting and Mineralization ........................................... 25
7.1 Regional, Local and Property Geology
  7.1.1 Regional Geology ............................................................. 25
  7.1.2 Local and Property Geology
    Stratigraphy ........................................................................ 25
    Structural Features ............................................................ 31
    Ground Water ................................................................. 33
7.2 Uranium Mineralization
  7.2.1 Controls on Mineralization .............................................. 33
  7.2.2 Mineralogy .................................................................... 35
  7.2.3 Disequilibrium .............................................................. 35

8 Deposit Types ............................................................................ 36
  Primary ("Trend") Deposits .......................................................... 36
  Redistributed Deposits ............................................................. 36
  Roll-Fronts ............................................................................. 37
  Remnant Deposits .................................................................... 37

9 Exploration .................................................................................. 40

10 Drilling ......................................................................................... 44

11 Sample Preparation, Analysis and Security ................................. 45
  11.1 Radiometric Assaying ......................................................... 45
  11.2 Drill Cuttings ..................................................................... 47
  11.3 Core Samples .................................................................... 47
  11.4 Security Measures ............................................................. 47
Tables

Table 1: Historical Mineral Resources Estimates for Ambrosia Lake Project ............................................. 7
Table 2: Recommended Confirmation and Exploration Drilling by Target Area .............................................. 9
Table 3: Historical Mineral Resources for Ambrosia Lake Project ............................................................. 23
Table 4: Historic Uranium Production from Ambrosia Lake Project ......................................................... 24
Table 5: Section 13 Confirmation Drilling Results ..................................................................................... 43
Table 6: Reported Mineral Resources on Adjacent Lands ......................................................................... 61
Table 7: Summary of Recommended Drilling on the Ambrosia Lake Project ........................................... 65
Table 8: Estimated Costs for Recommended Program ................................................................................ 67

Figures

Fig. 1: Location map of New Mexico and Ambrosia Lake project .............................................................. 13
Fig. 2: Ambrosia Lake project lands ....................................................................................................... 15
Fig. 3: Overview of Ambrosia Lake area ................................................................................................. 18
Fig. 4: Northwest New Mexico map ..................................................................................................... 20
Fig. 5: Map of historical drilling, Ambrosia Lake district ..................................................................... 22
Fig. 6: Exposure of Westwater Canyon Member, Poison Canyon sandstone ..................................... 27
Fig. 7: Generalized geologic map of the Ambrosia Lake project area .................................................. 29
Fig. 8: Stratigraphic Section, Ambrosia Lake area ............................................................................... 30
Fig. 9: Structural elements of the San Juan Basin .................................................................................. 32
Fig. 10: Map of Poison Canyon mine .................................................................................................. 34
Fig. 11: Depiction of types of sandstone-hosted uranium deposits at the Ambrosia Lake project ....... 38
Fig. 12: Detail of occurrence of primary uranium mineralization and associated minerals .............. 38
Fig. 13: Map and cross-section of mineralization in the Section 23 mine ............................................. 39
Fig. 14: Overview of Mesa Redonda area ............................................................................................... 41
Fig. 15: Pathfinder Mines exploration drill holes in Section 5 at Mesa Redonda ................................. 41
Fig. 16: Example of half-amplitude grade calculation from gamma-ray logs ................................... 47
Fig. 17: Location map of Ambrosia Lake project targets ...................................................................... 64
1 Summary:

The Ambrosia Lake uranium project of Westwater Resources, Inc. (“the Company”) encompasses substantial portions of the western and southern parts of the Ambrosia Lake mining district, which has been the largest single source of uranium produced in the United States. Considerable exploration and mining has been carried out on lands that make up the project and on adjoining properties, and this activity continued for an extended period from the 1950s through the late 1990s. With the exception of a three-hole confirmation drilling program undertaken on the Section 13 target in 2010 the Company has done little work on the project area.

As a central part of the preparation of this Technical Report the author reviewed the extensive data files of the Company in order to evaluate the merits of the geology and mineral resource potential of the Ambrosia Lake project. It is the author’s opinion that the Ambrosia Lake project is a project of merit, and warrants further work.

Although the Ambrosia Lake mining district, which is the site of the project, is the largest uranium mining area in the United States there are no active mines or any known exploration programs in the district at this time.

1.1 Property Description and Ownership:

The Ambrosia Lake project is owned by the Company, and is comprised of approximately 24,555 acres (9,941 hectares) of deeded mineral rights that are distributed through the project area in a “checkerboard” pattern.

The project covers a large portion of the Ambrosia Lake mining district, which was the largest source of uranium production in the United States.

1.1.1 Location and Access

The project area is situated in west-central New Mexico, approximately 70 miles (112 kilometers) west of the city of Albuquerque and 20 miles (32 kilometers) north of the town of Grants. Access to the region of the project is excellent, as a paved transcontinental highway (US I-15) traverses an area south of the project. An all-weather paved highway (NM-509) bisects a portion of the project and connects with I-15 a short distance west of Grants. Local unmaintained ranch trails and former mine access roads provide access to most of the project area.

1.1.2 Project History:

The project is situated within the boundaries of the Ambrosia Lake mining district, which is the largest uranium mining area (in terms of pounds of U₃O₈ production) in the United States. Initial exploration for sandstone-hosted uranium deposits started in the early 1950s while commercial production commenced in the mid-1950s and continued uninterrupted until the late 1990s. During the active mining period of the Ambrosia Lake mining district nearly 22 million pounds of U₃O₈ were produced from eight mines on Company-owned properties in the project area.

Historical estimates of remaining mineral resources (not compliant with any current mineral resource code, and not verified) for properties in the Ambrosia Lake project area are:
Table 1: Historical Mineral Resource Estimates for the Ambrosia Lake Project.

<table>
<thead>
<tr>
<th>Property (Section, Township, Range)</th>
<th>Pounds of U$_3$O$_8$</th>
<th>Estimated By</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 - 13 N – 9 W</td>
<td>855,313</td>
<td>Nelson (WWR, 2008)</td>
</tr>
<tr>
<td>5 – 14 N – 10 W</td>
<td>688,913</td>
<td>Pathfinder Mines</td>
</tr>
<tr>
<td>7 – 14 N – 10 W</td>
<td>630,425</td>
<td>Pathfinder Mines</td>
</tr>
<tr>
<td>23 – 14 N – 10 W</td>
<td>1,211,502</td>
<td>Yancey (1997)</td>
</tr>
<tr>
<td>27 – 14 N – 10 W</td>
<td>2,263,568</td>
<td>Smith (WWR consultant)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>6,819,359</td>
<td>-</td>
</tr>
</tbody>
</table>

1.1.3 Ownership:

The Ambrosia Lake project is owned in its entirety by Westwater Resources, Incorporated. As such, none of the lands that the Company controls are leased from third-parties or are mining claims. The Company’s ownership is restricted to the mineral estate only, and there is no ownership by WWR of the surface estate. Ownership of the mineral estate on the project lands does not include the rights to coal resources, as those rights were retained by the previous property owner, Santa Fe Pacific Minerals.

1.1.4 Environmental Liabilities and Permitting:

Although there has been significant uranium production from underground mines on certain of the land parcels that make up the project area, there are no known environmental liabilities attached to any of the properties. The Company does not have any active permits or other governmental authorizations to conduct exploration or mining operations.

1.1.5 Geology and Mineralization:

Uranium mineralization at the Ambrosia Lake project is hosted in fluvial sandstones of the Westwater Canyon Member and the Poison Canyon sandstone (of economic usage) of the upper Jurassic age Morrison Formation. Other, small-scale uranium deposits are hosted within the Jurassic age Todilto limestone in the southern part of the project area, but they are not discussed in this report due to the relatively small magnitude of those deposits.

Sandstone-hosted uranium deposits in the project area display a range of geological characteristics that permit a segregation into one of four deposit types: 1) Primary, 2) Redistributed, 3) Roll-front, or 4) Remnant.

Primary deposits represent the oldest mineralizing event and the deposits are generally quite large and are of the highest grade. Redistributed deposits, derived from the oxidation and redistribution of primary deposits are also large in size, but at grades that are generally lower in grade than primary deposits. Roll-front deposits are smaller than either primary or redistributed deposits (although some workers consider them to be a type of redistributed deposit) and are low to intermediate grade, Remnant deposits are generally small and localized concentrations of uranium.
mineralization that are remnants of primary deposits that were otherwise remobilized primary deposits.

1.2 Exploration Drilling and Data Quality:
The Company holds a very large collection of exploration data relating to its Ambrosia Lake properties. The data, which is comprised of gamma-ray/S-P/resistivity logs (originals and/or “blue-line” copies), a limited number of lithologic logs, drill hole location and mine maps, cross-sections and technical reports, was generated by former operators of individual exploration projects and/or operating mines on the various property parcels that make up the project area. This data was developed by several companies, including AMAX Exploration, Homestake Mining Company, Kerr-McGee, Ranchers Exploration, Teton Exploration, United Nuclear and Utah International/Lucky Mc/Pathfinder Mines, all of which were well qualified and established exploration and mining companies. The data in the Company’s files is considered to be of a quality that is suitable for the evaluation of the uranium deposits at the Ambrosia Lake project.

1.3 Metallurgy and Mineral Processing:
There is no information in the Company files relating to historical studies of mineral processing or metallurgical characteristics of the uranium deposits of the Ambrosia Lake project. Westwater has not undertaken any such studies. Considering the amount of uranium produced from mines at the project, and the duration of historical mine production it would appear that the Ambrosia Lake project uranium deposits have metallurgical characteristics to adjoining deposits. Those deposits, as well as those mined on the Company’s properties, were processed at local mills (Kerr-McGee and Homestake) over very extended periods of time, therefore suggesting that there were no detrimental metallurgical characteristics relating to the Ambrosia Lake project mineralization.

1.4 Mineral Resource Estimates:
Estimates of mineral resources at the Ambrosia Lake project are historical in nature only and do not meet criteria established by any currently known mineral resource code such as set forth in the CIM Definition Standards for Mineral Resources and Mineral Reserves (CIM Code). As well, they do not meet the Mineral Resource and Mineral Reserve definitions in Canadian National Instrument 43-101 – Standards of Disclosure for Mineral Projects.

1.5 Development and Operations:
No feasibility studies, preliminary economic analyses or scoping studies have been undertaken by the Company with respect to future development or mining at the Ambrosia Lake project.

1.6 Project Economics:
No economic studies relating to uranium mining and/or uranium recovery operations have been carried out by the Company with respect to the properties that comprise the Ambrosia Lake project.

1.7 Conclusions and Recommendations:
The Ambrosia Lake project is considered to be a project of merit. Historical exploration and mining activities were undertaken on a number of the property tracts that comprise the project lands, as well as on adjoining lands, providing worthwhile evidence for the existence of uranium resources on project lands.
Three principal target areas have been identified in the project area: Mesa Redonda, Section 13 and Section 27, and a program of confirmation drilling and limited exploration (see table below) is recommended to confirm historical exploration data and advance the project to a stage of preparing compliant mineral resource estimates. The proposed program (please refer to Section 25) includes a total of 16 confirmation rotary and core holes, totalling 15,680 feet (4,779 meters) and a further 27 rotary holes, totalling 31,650 feet (9,647 meters) of exploration drilling at the Mesa Redonda and Section 27 targets. It is further recommended that hydrologic, mineralogical and metallurgical testing be undertaken on the core from the confirmation drill holes to determine the amenability of the in-place mineralization to in-situ recovery methods.

Table 2: Recommended Confirmation and Exploration Drilling by Target Area.

<table>
<thead>
<tr>
<th>Target</th>
<th>No. of Holes</th>
<th>Footage - Rotary</th>
<th>Footage – Core</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mesa Redonda</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confirmation</td>
<td>6</td>
<td>7,020</td>
<td>180</td>
</tr>
<tr>
<td>Exploration</td>
<td>18</td>
<td>23,100</td>
<td>0</td>
</tr>
<tr>
<td><strong>Section 13</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confirmation</td>
<td>7</td>
<td>6,140</td>
<td>160</td>
</tr>
<tr>
<td>Exploration</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Section 27</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confirmation</td>
<td>3</td>
<td>2,520</td>
<td>180</td>
</tr>
<tr>
<td>Exploration</td>
<td>9</td>
<td>8,550</td>
<td>0</td>
</tr>
<tr>
<td><strong>Confirmation Total</strong></td>
<td>16</td>
<td>15,680</td>
<td>520</td>
</tr>
<tr>
<td><strong>Exploration Total</strong></td>
<td>27</td>
<td>31,650</td>
<td>0</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td>43</td>
<td>47,380</td>
<td>520</td>
</tr>
</tbody>
</table>

The estimated costs for the recommended drilling programs are:

- Mesa Redonda target area: $622,500
- Section 13 target area: $155,550
- Section 27 target area: $265,650
2 Introduction:

2.1 Terms of Reference and Purpose of Report:

This Technical Report on the Ambrosia Lake uranium project was prepared for Westwater Resources, Incorporated (also referred to as “WWR” or “the Company” throughout this report), a Denver, Colorado, USA – based mineral resource firm that is listed on the NASDAQ stock exchange. The purpose of the Technical Report is to set forth the technical details relating to the geology and uranium mineralization on the Company's properties at Ambrosia Lake and to make appropriate recommendations as to future work that will be required to define the mineral potential of the project.

The Technical Report was prepared in a manner that is consistent with the format and guidelines set forth in Canadian National Instrument 43-101. As the report was prepared by a Qualified Person who is not independent of Westwater Resources the report is not in accordance with National Instrument 43-101.

Westwater Resources holds an extensive collection of technical data pertaining to its Ambrosia Lake properties, and adjoining lands, including gamma-ray/S-P/Resistivity geophysical logs, drill hole location and mine maps and some technical reports that were prepared by the various firms that carried out exploration and development drilling programs on the properties and adjoining lands, and underground mines in the overall project area. While the data sets that the Company holds are not complete records of all of the historical work carried out on the properties, they are generally sufficient to provide a clear and unbiased picture of the geology and mineral resource potential of the properties. The data in the Company's possession, and the various reports and publications that are listed in Section 27 – References of this report served as the basis for this Technical Report.

Included in the Company's data set are some historical mineral resource estimates pertaining to the Ambrosia Lake properties, or adjoining lands. These “resource estimates” are clearly historical in nature, and do not correspond to any currently known and accepted mineral resource codes (for instance the JORC Code or the CIM code). While these historical estimates may have been considered as accurate reflections of the mineral resources for a particular mineral deposit when they were prepared, and they may be cited at appropriate points within this Technical Report, the data in the estimates should be treated as “historical” in nature. While they may be considered as reflections of the in-place mineralization for the subject deposit, they should not be relied upon.

Otherwise, there are no current mineral resource estimates for the Westwater Resources Ambrosia Lake uranium project that are considered as “current” within the context of the CIM Code, the JORC Code or any other mineral resource code that is set forth in NI 43-101.

Units of measurement used in this report comply with the imperial system, with their metric equivalents parenthetically stated. Some calculations may have been “rounded”, thereby introducing a small degree of error in certain instances. Conversion factors cited in the Australasian Institute of Mining and Metallurgy Monograph 9: Field Geologists' Manual, Third Revised Edition – 1995 provided the basis for all conversions of measurements between the imperial and metric systems.

2.2 Qualifications of the Author:

This Technical Report on the Ambrosia Lake uranium project was prepared by Dean T. (Ted) Wilton, who is the Chief Geologist of Westwater Resources, Inc. As such he is not independent of the Company. Mr. Wilton is a graduate of the New Mexico Institute of Mining & Technology, where
he majored in Geology. He has more than forty years of continuous experience in grass-roots and brownfields mineral exploration, as well as development and production geological experience for gold, potash and uranium. His experience includes approximately 18 years of applicable uranium experience and more than 40 years of mineral exploration and production experience. He is a Registered Professional Geologist (PG) in the US states of Kentucky (112390) and Wyoming (PG-2664), is a Certified Professional Geologist as certified by the American Institute of Professional Geologists (AIPG CPG-7659) and is a Member in good standing of the Australian Institute of Geoscientists (MAIG-6384). As such, he fulfills the requirements as a Qualified Person as defined by Canadian National Instrument 43-101 and a Competent Person under the Joint Ore Reserve Committee (JORC) code.

2.2.1 Details of Site Inspection:

The author has visited the area of the Ambrosia Lake project numerous times in his career. For the purpose of this report he most recently examined the project area June 8 and 9 and again from September 22 through September 25, 2017. During these site visits examinations were made of the various properties that are part of the Ambrosia Lake project, drill hole locations were checked against historical reports and maps, and various geological observations were made.

The zones of sandstone-hosted uranium mineralization that are the principal subject of this Technical Report are situated at depths of approximately 200 feet to 1,200 feet (61 to 365 meters) beneath ground surface. Many of these uranium deposits were formerly accessible through underground mine shafts and adits, but all known mines on the subject properties have been sealed and reclaimed, and the mine workings are no longer accessible for examination or sampling.
3 Reliance Upon Other Experts:

The historical exploration, geological, geophysical, mineral resource estimates and mine production data that were used in the preparation of this report were prepared by the engineering, exploration and geological personnel of several exploration and mining companies including AMAX Exploration, Homestake Mining Company, Kerr-McGee Nuclear, Pathfinder Mines, Inc., Teton Exploration Drilling Company Inc., and United Nuclear Corporation. With the exception of Teton, which was the exploration subsidiary of United Nuclear all of these companies operated underground mines in the Ambrosia Lake area or open pit and underground uranium mines in Wyoming (Pathfinder Mines). Additional information was prepared by Robert B. Smith, who was a consultant to the Company, and who had extensive experience as a mine geologist at Ambrosia Lake for Homestake Mining Company.

As set forth in the References section (Item 27) of this report, there is an extensive body of reports and maps prepared in large part by geologists and geochemists of the New Mexico Bureau of Geology and Mineral Resources (formerly known as the Bureau of Mines and Mineral Resources), the US Geological Survey, the former US Atomic Energy Commission, various universities, and members of the uranium industry. This published data was reviewed during the preparation of this report and included in this text as appropriate.

The historical data was used extensively in the preparation of the report, as were other sources of data. The historical information was compared with published references to the extent possible, and was also compared with observations made during various site visits to the extent allowable. As such, the author considers the historical information to be relevant to the evaluation of the Ambrosia Lake project, and it is generally considered to be reliable within the context of the report.

The reader is cautioned that there are citations of “mineral resource estimates” that are historical in nature. While these estimates are considered to be relevant to the project evaluation, they were prepared utilizing methodologies that are no longer in general use by the mining industry. These cited resources do not comply with modern mineral resource codes, such as the CIM Code or the JORC Code. Further, some of these estimates used the term “ore” for which the author is aware that such classification is no longer be applicable. As such, the reader is cautioned that there are no compliant mineral resources or mineral reserves identified at the Ambrosia Lake project.

In spite of the cautions set forth above, the author considers the information used in the evaluation of the Ambrosia Lake Technical Report to be relevant and generally reliable for the employed purpose.
4 Property Description and Location:

The Ambrosia Lake project is located in west-central New Mexico, approximately 70 air miles (112 kilometers) west-northwest of Albuquerque, which is the largest city in the State. The nearest population center to the project area is the town of Grants, which is located approximately 20 miles (32 kilometers) due south of the center of the project area.

![Figure 1: Location map of New Mexico and the Ambrosia Lake project.](image-url)
4.1 Property Titles:

The Company purchased the mineral estate for the properties that comprise the Ambrosia Lake project through the acquisition of Uranco, Incorporated, then a subsidiary of the Santa Fe Railroad ("Santa Fe"). The Uranco acquisition, which was completed in March, 1997, encompassed a significant portion of the former Santa Fe Railroad land grant covering certain areas of the Grants mineral belt of west-central New Mexico. Deeds conveying the properties from the various Santa Fe subsidiaries to Uranco have been filed with the relevant County Clerks and Recorders and are matters of public record. With respect to the Ambrosia Lake project lands the deeds were recorded with the McKinley County Clerk and Recorder’s office in Gallup, New Mexico and copies of the recorded deeds are in the Company’s files. A fully executed copy of the formal document setting forth the acquisition of Uranco from Santa Fe by Uranium Resources, Inc. is in the Company files.

The Ambrosia Lake project is comprised of nine full and partial Sections situated in Township 13 North, Range 9 West, totaling approximately 5,509.04 acres (approximately 2,229.43 hectares), fifteen full Sections in Township 13 North, Range 10 West, totaling approximately 9,562.12 acres (3,869.52 hectares), and fifteen Sections in Township 14 North, Range 10 West, totaling about 9,485.19 acres (approximately 3,838.52 hectares). Combined, the project land position is comprised of thirty-nine full and partial Sections totaling approximately 24,555.63 acres (about 9,941.23 hectares).

The author of this report is not a landman or attorney; as such the reader should consult with individuals who hold appropriate qualifications to research further the title to the Ambrosia Lake properties.
Figure 2: Ambrosia Lake project lands.
Mineral Rights:
The properties that comprise the Ambrosia Lake project are held in fee (deeded) by the Company’s wholly-owned subsidiary Uranco, Incorporated. Within Townships 13 North, Range 9 West and Township 14 North, Range 10 West the Company owns all of the mineral rights on the subject properties, exclusive of any coal, which was reserved to Santa Fe. Within those properties situated in Township 13 North, Range 10 West Westwater owns all of the mineral rights (excepting the coal rights) for Sections 1, 3, 11, and 13, and owns the “uranium and associated minerals” rights for Sections 5, 7, 9, 15, 17, 21, 27, 29, 31, 33 and 35. Collectively, the mineral rights held by the Company within the three Townships encompass approximately 24,555.63 acres (9,941.23 hectares). Legal descriptions of the individual property parcels are detailed in Appendix 2: Property Description.

Surface Rights:
The Company has surface access rights, as provided for in a Surface Use and Access Agreement with the Jerry Elkins Cattle Company for properties situated in Sections 1, 3, 5, 7, 9, 13, 15, 17, 21 and 23, Township 14 North, Range 10 West. Access to the surface for mineral-related activities appears to be available through provisions of New Mexico law, but this is an item that should be researched more thoroughly.

Lease Obligations:
There are no lease obligations as requirements for the Company to hold the Ambrosia Lake properties.

Patented Mining Claims:
The Company does not hold any patented mining claims that are part of the Ambrosia Lake project.

Unpatented Mining Claims:
There are no unpatented lode mining claims that comprise any part of the project.

Nature and Extent of Issuer’s Interest:
With the exception of the Elkins Cattle Company royalty obligation, the Company’s interest in the Ambrosia Lake project lands is 100 percent.

Royalties, Agreements and Encumbrances:
Within the surface use and access agreement between the Company and the Elkins Cattle Company (the owner of the surface estate), covering certain lands in Township 14 North, Range 10 West a provision has been made for the payment of a 2 percent gross production royalty for mineral production from the specific property parcel only.

There are no other known royalties or encumbrances related to the lands of the Ambrosia Lake project, and there are no known agreements (other than the Elkins surface use and access agreement) that affect the properties.

4.2 Environmental Liabilities and Permitting:
Although there was historical mining on Sections 15, 23, 25, and 31 of Township 14 North, Range 10 West, and Section 7, Township 13 North, Range 10 West, a site examination has revealed that mining-related surface disturbances have been reclaimed. Numerous areas have limited evidence
of exploration drilling (primarily weathered drill cuttings), but the overall level of disturbance is minimal.

To the best of the Company’s knowledge none of its properties in the Ambrosia Lake project area are subject to any environmental review or study, or are under the jurisdiction of any State or federal authorities regarding environmental liabilities at the properties.

The Company previously (2007) held a Sub-Part 3 Minimal Impact Exploration permit for exploration drilling in Section 13, Township 13 North, Range 9 West, but this permit has expired and the reclamation bond covering these activities has been released by the State. There are no other current active or inactive permits relating to the Ambrosia Lake project.
5 Accessibility, Climate, Local Resources, Infrastructure and Physiography:

5.1 Topography, Elevation and Vegetation:

The topographic setting of the project area is a broad northwesterly trending valley that is approximately 4 to 6 miles (6.5 to 9.5 kilometers) in width and 10 miles (16 kilometers) in length. The valley is flanked on the northeast and northwest sides by a series of small to large mesas that rise 800 to 1,000 feet (244 to 305 meters) above the valley floor. The west and southwest flanks of the valley are defined by a shallow (less than 5 degrees) dip slope developed on the upper contact of the Dakota Sandstone. The floor of the valley ranges from approximately 6,900 feet to 7,100 feet (2,103 to 2,164 meters) above sea level. A small seasonal lake (Ambrosia Lake) is present in the northernmost part of the project area, otherwise surface waters (run-off from melting snow or summertime thunder storms) are restricted to arroyos and small and normally dry stream beds.

Sparse to moderate mixed grasses dominate the valley floor, along with isolated stands of mesquite and pinion pine. Mesquite and pinion, with and oak trees, typical of a semi-arid high desert climate are present mostly along the flanks of the mesas.

5.2 Access to the Property:

Access to the project area is very good. New Mexico State Highway 605 (the San Mateo Road), a well-maintained two-lane paved highway extends north-northeast form the village of Milan into the southern part of the project area (a distance of approximately 11 miles, or 18 kilometers) to the
junction with State Highway 509 (the Ambrosia Lake Road), which extends north to northwest for a distance of about 9 miles (14.5 kilometers) where it crosses the northern end of the project area.

Numerous unmaintained dirt roads, tracks and former mine access roads cross essentially all parts of the project area. During periods of precipitation these unmaintained roads may become impassible due to muddy and slippery ground conditions.

5.3 Climate and Physiography:

The climate at the Ambrosia Lake project is typical of west-central New Mexico, dry and windy. Summers are warm, with temperatures ranging from about 50° F (9.9° C) at night to 80° F (26.6° C) during the day. Winter temperatures range from about 10° F (-12° C) at night to 40° F (4.4° C) during the day. Annual overall precipitation is approximately 11 inches (279 millimeters) of water, mostly from afternoon thunder showers in July and August. The project area receives about 12 inches (305 millimeters) of snow annually.

5.4 Local Resources and Infrastructure:

The region of the Ambrosia Lake project has sufficient resources and infrastructure to support future mining operations in the Ambrosia Lake area. The nearby towns of Grants and Milan, which were local and regional supply centers for the former mines of the Ambrosia Lake mining district, have machine and welding shops, material supply vendors, and similar services.

Industrial level electrical power is readily available, as a very large electrical substation, which serviced the former underground mines and the two uranium processing mills in the project area is situated within the overall project boundaries.

Although the Grants area was formerly the largest uranium mining area in the United States, and had a very experienced mining and milling workforce, it is likely that the experienced miners and support staff have retired, thereby requiring training of new personnel. Officials of the Grants branch of New Mexico State University previously expressed a strong willingness to establish skilled trades training programs to support new mining ventures in the region.

Transportation resources suitable to support future mining and processing ventures are adequate. US Interstate Highway I-40, a major east-west all-season transcontinental highway, crosses west-central New Mexico approximately 11 miles (18 kilometers) south of the project. A major transcontinental railroad line of the Burlington Northern Santa Fe Railway (BNSF) parallels I-40, and a spur line from the BNSF crosses the northern and western parts of the project area.

5.5 Sufficiency of Surface Rights:

The Ambrosia Lake project area has sufficient surface conditions for the construction of mining-related facilities, including shops, office buildings, warehouses, shafts, hoisting equipment, stockpiles and waste rock storage areas.

As the surface estate over the various tracts that comprise the project are held by various private parties, agreements will need to be negotiated with the surface owners. A large part of the northern portion of the project area is covered by an existing surface use and access agreement with the Elkins Cattle Company, and that agreement makes provision for the use of the surface estate. It is recommended that the transaction documents (deeds, etc.) for the other surface tracts that the Santa Fe Railroad sold to private parties be researched to determine if reservations for post-sale mining-related surface uses were provided for.
Figure 4: Northwest New Mexico map depicting the regional location and access to the Ambrosia Lake project area.
6  **Project History:**

Westwater Resources’ Ambrosia Lake uranium project covers a substantial portion of the historic Ambrosia Lake mining district and adjoining lands situated immediately south of the main part of the mining district. The project has a long and extensive history of exploration and mining operations, as it was the principal mining area of the Grants Mineral Belt and the largest uranium producing area in the United States.

6.1  **Prior Ownership and Ownership Changes:**

The properties that comprise the Ambrosia Lake project were owned in fee (deeded) by subsidiaries of the Santa Fe Railroad from the time that they were granted to that organization by the United States government prior to 1920. Until the sale by Santa Fe to Westwater in 1997 subsidiaries of Santa Fe were the sole owners of the entire mineral estate that comprises the Ambrosia Lake project.

As exploration for sandstone-hosted uranium deposits commenced in the 1950s and continued into the mid-1990s Santa Fe frequently leased the various tracts that comprise many of the Ambrosia Lake project lands to exploration and mining companies such as AMAX, Homestake Mining, Kerr-McGee, Lucky Mc/Pathfinder Mines, Ranchers Exploration & Development, United Nuclear, and UNC-Homestake Partners. All of these companies operated uranium mines in the Grants Mineral Belt, except for the Lucky Mc/Pathfinder organization, which was an important uranium mine operator in the Gas Hills and Shirley Basin districts of Wyoming. While these companies, and others carried out exploration activities and operated mines (Homestake, Kerr-McGee, United Nuclear-Homestake partners) on certain of the project lands, all of their activities were carried out under lease arrangements.

Westwater (then known as Uranium Resources, Incorporated) acquired the project properties through the purchase of Uranco, Incorporated (then a wholly-owned subsidiary of Santa Fe) in March, 1997.

6.2  **Previous Exploration and Development:**

The Ambrosia Lake mining district, site of the Ambrosia Lake project of Westwater Resources, has been a site for extensive uranium exploration and development since the 1950’s, and was the most significant uranium producing area in the United States. Many of the individual property parcels currently held by the Company were the sites of extensive exploration programs and several of these parcels were the locations of previously operated uranium mines, as depicted in Table 2 (below).
Figure 5: Map of historical drilling, Ambrosia Lake area. Data current to 1980, derived from aerial photograph analysis.
6.3 Historic Mineral Resource and Mineral Reserve Estimates:

Mineral resource estimates were prepared for seven of the property parcels that are included within the Company's Ambrosia Lake project area. Each of these estimates were prepared prior to the adoption of National Instrument 43-101. At the same time the classification of mineral resources in these estimates are not consistent with any known current resource code, such as the CIM or JORC codes, therefore the estimates are not considered to be compliant with the CIM or JORC codes or with the stipulations of NI 43-101.

Historical resource estimates for seven individual properties are tabulated below. Estimates for mineralization in Section 13, Township 13 North, Range 9 West and Section 27, Township 14 North, Range 10 West were prepared by a former employee and a consultant to the Company, and their work appears to be consistent with methodologies that have been employed in the uranium mining industry of New Mexico for many years. Resources estimated for Sections 5 and 7, Township 14 North, Range 10 West were prepared by the geological and engineering staff of Pathfinder Mines Corporation, a highly qualified uranium exploration and mining company. A former employee of the Company and third-party consultant to Westwater Resources checked these estimates and concurred with them. Resources reported for Sections 23 and 25, Township 14 North, Range 10 West were estimated by a well-qualified independent consultant to Rio Algom Mining Corporation.

Table 3: Historical Mineral Resource Estimates for Ambrosia Lake Project.

<table>
<thead>
<tr>
<th>Property (Section, Township, Range)</th>
<th>Pounds of U₃O₈</th>
<th>Estimated By</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 - 13 N – 9 W</td>
<td>855,313</td>
<td>Nelson (WWR, 2008)</td>
</tr>
<tr>
<td>5 – 14 N – 10 W</td>
<td>688,913</td>
<td>Pathfinder Mines</td>
</tr>
<tr>
<td>7 – 14 N – 10 W</td>
<td>630,425</td>
<td>Pathfinder Mines</td>
</tr>
<tr>
<td>23 – 14 N – 10 W</td>
<td>1,211,502</td>
<td>Yancey (1997)</td>
</tr>
<tr>
<td>27 – 14 N – 10 W</td>
<td>2,263,568</td>
<td>Smith (WWR consultant)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>6,819,359</td>
<td>-</td>
</tr>
</tbody>
</table>

6.4 Historic Uranium Production from the Project Area:

Eight underground mines were developed and operated on lands that now comprise the Ambrosia Lake project, including three mines that were very large uranium producers.

Five of the mines were situated in the southern part of the project area, is Sections 1, 7, 13 and 21 of Township 13 North, Range 9 West and Section 5 of Township 13 North, Range 10 West. With the exception of the Section 1 mine, these mines produced limited amounts of uranium from the Poison Canyon unit of the Morrison Formation, and were amongst the first producers of sandstone-hosted uranium from the Ambrosia Lake area. Cumulative production from the former mines in the project area totaled 110,387 short tons (100,141 tonnes) at an average grade of 0.163% U₃O₈ and containing 361,424 pounds of U₃O₈ (McLemore and Chenoweth, 1991).
Mines developed to exploit Westwater Canyon primary and redistributed uranium deposits were situated primarily in the northern part of the project area (except for the Section 1 mine) and the production from these deposits was appreciable. Collectively, the Westwater Canyon-hosted deposits yielded 5,681,725 short tons (5,154,375 tonnes) that averaged 0.189% $\text{U}_3\text{O}_8$, containing 21,446,723 pounds of $\text{U}_3\text{O}_8$ (McLemore and Chenoweth, 1991). Additional production was derived from “stope leaching” and mine water recovery from the Section 23 and Section 25 mines, but production details are not available for inclusion in this report.

Historical production details are:

**Table 4: Historic Uranium Production from Ambrosia Lake Project Lands**

<table>
<thead>
<tr>
<th>Mine</th>
<th>Sec.</th>
<th>Twp.</th>
<th>Rge.</th>
<th>Tons (Short)</th>
<th>Grade (% $\text{U}_3\text{O}_8$)</th>
<th>Pounds ($\text{U}_3\text{O}_8$)</th>
<th>Host Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 1</td>
<td>1</td>
<td>13 N</td>
<td>9 W</td>
<td>148,066</td>
<td>0.57%</td>
<td>1,699,127</td>
<td>Westwater</td>
</tr>
<tr>
<td>Isabella</td>
<td>7</td>
<td>13 N</td>
<td>9 W</td>
<td>76,748</td>
<td>0.15%</td>
<td>237,060</td>
<td>Poison Canyon</td>
</tr>
<tr>
<td>Section 13</td>
<td>13</td>
<td>13 N</td>
<td>9 W</td>
<td>1,689</td>
<td>0.19%</td>
<td>6,312</td>
<td>Poison Canyon</td>
</tr>
<tr>
<td>Doris</td>
<td>21</td>
<td>13 N</td>
<td>9 W</td>
<td>31,950</td>
<td>0.18%</td>
<td>118,052</td>
<td>Poison Canyon</td>
</tr>
<tr>
<td>Section 5</td>
<td>5</td>
<td>13 N</td>
<td>10 W</td>
<td>23</td>
<td>0.12%</td>
<td>54</td>
<td>Poison Canyon</td>
</tr>
<tr>
<td>Section 15</td>
<td>15</td>
<td>14 N</td>
<td>10 W</td>
<td>1,213,814</td>
<td>0.15%</td>
<td>3,625,924</td>
<td>Westwater</td>
</tr>
<tr>
<td>Section 23</td>
<td>23</td>
<td>14 N</td>
<td>10 W</td>
<td>2,528,797</td>
<td>0.19%</td>
<td>9,679,773</td>
<td>Westwater</td>
</tr>
<tr>
<td>Section 25</td>
<td>25</td>
<td>14 N</td>
<td>10 W</td>
<td>1,791,048</td>
<td>0.18%</td>
<td>6,444,889</td>
<td>Westwater</td>
</tr>
</tbody>
</table>

Source: McLemore and Chenoweth, 1991
7 Geological Setting and Mineralization:

7.1 Regional and Local Geology:

7.1.1 Regional Geology:

The Ambrosia Lake project is located in the Ambrosia Lake mining district, near the central part of the Grants Mineral Belt, on the southern flank of the San Juan Basin. The Grants Mineral Belt is situated on the northeastern flank of the Zuni Uplift and the southern edge of the San Juan Basin within an area referred to as the Chaco Slope. The San Juan Basin, comprising an area of approximately 10,600 square miles (27,400 square kilometers) (Kelley, 1955) is a significant geological and topographic feature that covers much of the northwest portion of New Mexico, and is an important geological and physiographic feature within the Colorado Plateau geologic province. Within the area of the Grants Mineral Belt, rocks ranging in age from Pennsylvanian through upper Cretaceous are exposed, with surface exposures of the older rocks generally restricted to the area immediately north of the Zuni Uplift. Younger marine Cretaceous rocks cover the northerly portion of the mineral belt and obscure the host rocks for the uranium deposits.

The Mt. Taylor volcanic field, which is comprised of dominantly basalt flows and “plugs”, covers a portion of the eastern segment of the Grants Mineral Belt immediately to the east of the Ambrosia Lake mining area. These igneous rocks, which are Pliocene in age, range from basalt and diabase to rhyolite in composition (Moench and Schlee, 1967).

The Grants Mineral Belt is a west-northwest trending zone of sandstone-hosted (and lesser limestone-hosted) uranium deposits that extends from the western edge of the Rio Grande Rift, east of the Pueblo of Laguna, west-northwesterly to the vicinity of the city of Gallup, for a distance of more than 100 miles (161 kilometers). Locally, the belt attains a maximum width of approximately 25 miles (40 kilometers), but is more commonly 6 to 10 miles (9.6 to 16 kilometers) in width. This belt of uranium deposits includes mining districts north of Laguna, Marquez (that portion of the Laguna district that contains uranium deposits only in the Westwater Canyon Member of the Morrison Formation), the Ambrosia Lake-San Mateo area (north of Grants), Smith Lake, Crownpoint, and Church Rock. Collectively, the deposits of the belt have provided more than 340 million pounds of U₃O₈, ranking as the fourth largest uranium producing region in the world (McLemore and others, 2013), and the world’s largest sandstone-hosted uranium district.

Sandstone-hosted uranium deposits of the Grants Mineral Belt are hosted primarily in the Jackpile Member, Poison Canyon sandstone (informal unit of economic usage only), and the Westwater Canyon Member of the upper Jurassic aged Morrison Formation. Limestone-hosted uranium deposits have been discovered in the upper Jurassic age Todilto limestone.

7.1.2 Local Geology:

Stratigraphy:

A thick sequence of sedimentary rocks, ranging in age from Triassic through upper Cretaceous (Baird and others, 1980; Jacobsen, 1980; Moench and Schlee, 1967; Schlee and Moench, 1963) is present within the Ambrosia Lake project area (see Figure 6: Stratigraphic Section, Ambrosia Lake project area). The oldest rocks exposed in the project area are sandstones of the Triassic age Wingate Sandstone. Unconformably overlying the Wingate are eolian sandstones of the upper Jurassic - age Entrada Sandstone, which is, in turn overlain by the Todilto Limestone, the Summerville Formation and the Bluff Sandstone.
The upper Jurassic-age Morrison Formation, which overlies the above-discussed units, is the host unit for nearly all of the significant uranium deposits in the Grants Mineral Belt. It has been subdivided by various workers into four Members (in ascending order) in the southern portion of the San Juan Basin - the Recapture Member, the overlying Westwater Canyon Member, the Brushy Basin Member (figure 5), and the upper-most member the Jackpile sandstone, which is present only in the eastern-most part of the Grants Mineral Belt and is absent in the Ambrosia Lake project area. For economic purposes one informal unit has also been designated - the Poison Canyon sandstone, which is positioned at the top of the Westwater Canyon Member to near the base of the overlying Brushy Basin Member. There are some differences of opinion as to whether the Poison Canyon is a distinct sandstone within the lower part of the Brushy Basin Member (Hilpert, 1963) or is the uppermost sand of the Westwater Canyon Member (Santos, 1963) that interfingers with the lower portion of the Brushy Basin. Exact thicknesses of the individual members of the Morrison Formation are difficult to determine due to the interfingering nature if sandstone and mudstone units at the Recapture-Westwater Canyon contact and the Westwater Canyon-Brushy Basin contact.

The **Recapture Member** of the Morrison Formation is the lowermost unit of the Morrison Formation. It ranges from 50 to 600 feet (15 to 183 meters) in thickness, and is about 50 feet (15 meters) thick in the Ambrosia Lake project area (Moench and Schlee, 1967). It is comprised of inter-bedded mudstones, siltstone, sandstones, and occasional limestone. Moench and Schlee (1967) report that the unit normally greyish-red on surface exposures, while fresh exposures of the various lithologies are grey (limestone), greyish-green (mudstone), or greyish-yellow (sandstone).

The **Westwater Canyon Member** is the principal host of important uranium deposits within the Grants Mineral Belt, and it ranges from about 30 to 270 feet (10 to 82 meters) in thickness in the project area. While the unit conformably overlies the Recapture Member there is evidence, on a local scale, of Westwater Canyon channels “scoured” into the uppermost parts of the underlying stratigraphic interval, or some interfingering of lower Westwater sands with the uppermost Recapture units (Santos, 1963).

The Westwater Canyon is primarily a greyish-yellow to pale orange sandstone that is poorly sorted, ranging in size from fine to coarse-grained. The yellow, orange and red (primarily restricted to mine exposures) coloration is due to iron oxide cement of individual sandstone units, reflecting the degree of oxidation of the unit. It is comprised of rounded to subrounded quartz and angular feldspar and chert grains, and is sub-arkosic to arkosic in composition. Individual sandstone lenses are generally cemented to varying degrees by calcite, iron oxides or clays (Santos, 1970). Heavy minerals of detrital origin generally comprise less that 0.5 percent of the sandstones (Santos, 1963). Carbonaceous material is present as coalified (and silicified) tree branches and trunks, although not commonly within mineralized zones (Santos, 1970), and as humate. The humate-rich intervals are commonly weakly to very strongly mineralized (unmineralized humate lenses are rare) and the humate imparts a distinctive dark brown to gray to black coloration to the sandstone.

The sandstones are interbedded with a few laterally persistent mudstone intervals and several discontinuous mudstone lenses. The mudstone intervals are more common thicker and more continuous in the upper one-third of the Westwater Canyon, whereas the lower two-thirds of the Member is strongly dominated by sandstone lenses (Santos, 1970).

Two major facies of the Westwater Canyon have been identified, a dominant sandstone facies that comprises much of the unit throughout the extent of the Grants Mineral Belt, and a conglomeratic sandstone facies that is present in an area north of the city of Gallup and extending to the east (Santos, 1970). The area of the Ambrosia Lake project is along the eastern transitional zone between these two major facies (Santos, 1970). Santos reported (1970) that individual facies
changes are more abrupt south of the Ambrosia Lake area than to the north, and the area to the south hosts more mudstone. Overall, mudstone lenses may range from 1 to 40 feet (0.3 to 12 meters) in thickness.

![Figure 6: Exposure of (in ascending order) Westwater Canyon Member sandstone (pale orange unit), Poison Canyon sandstone (isolated white outcrops), Brushy Basin Member (medium gray exposures) and Dakota Sandstone (capping Mesa Montanosa).](image)

Situated within the uppermost part of the Westwater Canyon Member (Santos, 1963), or in the lower part of the overlying Brushy Basin Member (Hilpert, 1963; Bell, 1986) is a distinct sandstone that has been given the informal name of the Poison Canyon Sandstone. Tessendorf (1980) subdivided the Poison Canyon into four distinct units. The lowermost unit is a light green variegated mudstone that is from 15 to 25 feet (5 to 8 meters) in thickness. Overlying this mudstone is a “lower sandstone” that is 25 to 40 feet (8 to 12 meters) thick. This “lower sandstone” is yellowish gray to medium gray in color, fine to medium grained, and is quartzose to feldspathic in composition, comprised of quartz, with lesser amounts of microcline, plagioclase and volcanic material. Overlying the “lower sandstone” is a “middle shale” unit that is actually a thin 0 to 15 foot (0 to 5 meters) thick light green variegated mudstone. Overlying the “middle shale” unit is Tessendorf’s “upper Poison Canyon sandstone” that is described as a 20 to 30 foot (6 to 9 meters) thick yellowish gray to medium fine to medium grained sandstone. It is comprised of quartz, microcline with lesser amounts of plagioclase and volcanic fragments, and it is well cemented by calcite (Tessendorf, 1980). Overall, the mudstone units of the Poison Canyon appear very similar to mudstones in the lower portion of the overlying Brushy Basin Member and the sandstones are compositionally identical to the underlying sands of the Westwater Canyon Member. One apparent distinguishing feature between the sandstones of the Westwater Canyon Member and the Poison Canyon sandstone is data from paleocurrent studies that show an overall easterly to east-southeasterly current direction for sandstones in the upper portion of the Westwater Canyon Member, and dominant northeasterly orientation for the Poison Canyon sandstones (Turner-Peterson, 1986).
Conformably overlying the Westwater Canyon Member is the **Brushy Basin Member**, a thick unit comprised primarily of variegated mudstones and claystones, which ranges in thickness from 220 to 300 feet (67 to 91 meters) in the project area. The mudstone and claystone units are greyish-red, greyish-green to greenish-grey in color and form distinctive rounded outcrops. Several sandstone beds are present within the Brushy Basin throughout the Grants Mineral Belt, and certain of these sandstones have economic significance for hosting uranium deposits.

The upper-most unit of the Morrison Formation in the Ambrosia Lake project area is the **Brushy Basin Member**, which is a 60 to 200 foot (18 to 61 meters) thick sequence of variegated mudstone, claystone and clayey sandstone. In certain locations within the Grants Mineral Belt (Smith Lake and Mariano Lake mining districts) sandstones of the Brushy Basin Member are hosts to important uranium deposits, but no such mineralization has been identified in the Ambrosia Lake project area. The mudstone and claystone facies of the Brushy Basin that are various shades of grayish-green in color, with occasional intervals that are various shades of red or yellow. The clay mineralogy is dominated by montmorillonite and mixed layer chlorite-montmorillonite that were derived from the alteration and devitrification of volcanic ash (Santos, 1970).

The Morrison Formation is unconformably overlain by the Cretaceous-age Dakota Sandstone, which in turn is overlain by the Mancos Shale, Gallup Sandstone, Crevasse Canyon Formation and Point Lookout Sandstone (Thaden and others, 1966).
Figure 7: Generalized Geologic map of the Ambrosia Lake project area (modified from Dillinger, 1990).
Figure 8: Stratigraphic Section, Ambrosia Lake project area (from Rautman, 1980).
**Structural Features:**

The project area is situated within a feature known as the Chaco Slope, a northerly dipping homocline that is one of two major structural elements of the San Juan Basin (Santos, 1970). The Chaco Slope is bordered on the north by the present-day basin proper and on the south by the north flank of the Zuni Uplift. The regional dip of the Chaco Slope is on the order of 2\(^\circ\) to 5\(^\circ\) to the north or northeast, but in many areas, it has been modified by folds and faults (Santos, 1970). Santos (1970) reports that the Ambrosia Lake area occupies the most structurally disrupted part of the Chaco Slope, and geological mapping at a scale of 1: 24,000 (Santos, 1966 (b); Santos and Thaden, 1966; Thaden and others, 1966; Thaden and others, 1967) clearly demonstrates the complexity of structure at Ambrosia Lake, and it is primarily manifested project area by normal and strike-slip faults (Santos, 1970).

The axial plane of the ancestral basin feature (precursor to the present-day San Juan Basin), which was pre-Jurassic in age, was centered immediately north of the Grants Mineral Belt, as determined from stratigraphic studies. The pre-Morrison structural event and resultant fold played an important role on the deposition of the host rocks within the Ambrosia Lake project area. With the reactivation of the flanking Zuni Uplift and generally concurrent development of the basin syncline the axis of the basin proper migrated northward to its present-day location during the late Cretaceous to early Tertiary Laramide event (Kirk and Condon, 1989) (Figure 7).

The Ambrosia Dome, a central structural feature in the northern part of the project area is thought to be post-Dakota (upper Cretaceous) in age. Although there is an apparent thinning of the Westwater Canyon along the flank of the fold, Santos (1970) reported that an otherwise uncommon lower mudstone unit is present near the base of the Westwater Canyon, and it has an appearance to units in the upper part of the underlying Recapture Member. As such, the apparent thinning of the Westwater Canyon on the flanks of the Ambrosia Dome does not indicate a pre-Morrison structural "high" (Santos, 1970).

Geologic mapping (Santos, 1966 (b); Santos and Thaden, 1966; Thaden and others, 1966; Thaden and others, 1967) clearly demonstrates a complex setting of faulting and fracturing within the area of the Ambrosia Lake project. Important sets of faults define the western (Ambrosia Lake fault zone) and eastern (San Mateo fault zone) sides of the Ambrosia Lake project (Dillinger, 1990; Santos, 1966 (b); Santos and Thaden, 1966; Thaden and others, 1966; Thaden and others, 1967). Both fault zones display a general north to northeasterly orientation. Individual faults within the Ambrosia Lake fault zone display both strike-slip and normal offset (Thaden and others, 1966) while the San Mateo fault zone is dominated by normal faults (Santos, 1966).

The northwest end of the Ambrosia Lake mineralized system is bounded by the Ambrosia Lake fault zone, with few Westwater Canyon-hosted primary (trend) deposits present immediately west of the mapped fault zone, Mineralization appears to bend in a northerly to northeasterly along the trend of the Ambrosia Lake fault complex. Redistributed uranium mineralization in the northern part of the project area (Township 14 North, Range 10 West) is strongly controlled by northwesterly and northeasterly normal and strike-slip faults and associated fracture sets, particularly in the former Dysart Number 1, Section 15, Section 23 and Section 25 mines (Cronk, 1963; Gould and others, 1963). These structural features played a dominant role in the localization of redistributed mineralization in this part of the project area (for instance see figure 11).
Figure 9: Regional structural elements of the San Juan Basin (after Dahlkamp, 2010).
Ground Water:

The Westwater Canyon Member of the Morrison Formation, the principal host to the uranium mineralization in the project area, is the primary groundwater aquifer as well. Kelly and others (1980) describe the groundwater setting in the Ambrosia Lake area as “the Westwater Canyon is an artesian aquifer which yields moderate to large amounts of good-quality water to wells. The coefficients of transmissivity are in the range of 100-300 square feet per day. In outcrop area, total dissolved solids are 500 ppm or less, but in the Ambrosia Lake area, the dissolved-solids concentrations are higher,” Sandstones of the Brushy Basin Member have yielded small amounts of water (Kelly, 1980), but specific data on water quality and yields is not available.

7.2 Uranium Mineralization:

7.2.1 Controls on Mineralization:

Uranium mineralization in the Ambrosia Lake project area is controlled by a complex combination of host rock characteristics, the presence and nature of chemical reductants, structural features and post-depositional oxidation by migrating groundwater. The nature of the controls varies with the type of deposit, however.

Primary-type mineralization (see Section 8 “Deposit Types”) is principally controlled by the porosity and permeability characteristics of the host rock, and presence of a suitable reductant to precipitate uranium from groundwater. These deposits are strongly elongate in a north 70° west orientation, reflecting the general regional orientation of thickness contours of the Westwater Canyon Member (Kirk and Condon, 1989). Within this alignment the primary mineralization appears preferentially associated with the Westwater Canyon host rocks ranging in thickness between about 230 to 250 feet (70 to 76 meters), although there is some mineralization in the northern part of the project area that hosted in a thinner sequence of Westwater, in the range of 160 to 220 feet (49 to 67 meters) in overall thickness. Mineralization is localized within, or in close proximity to very thick and sandy Westwater Canyon, having a sandstone-to-mudstone ratio greater than 10 (Kirk and Condon, 1989). Primary uranium deposits are situated in reduced sandstones, basinward from the Tertiary-aged regional redox interface.

Redistributed deposits (Section 8, “Deposit Types”), which are the product of remobilization of “primary-type” mineralization by post-depositional oxidized groundwater, are controlled in large part by the presence of faulting and/or fracturing of the host sandstones, as clearly demonstrated by the localization of redistributed mineralization along brotherly trending fracture sets in the Poison Canyon mine (Tessendorf, 1980), as well as the former Section 15, Section 23 and Section 25 mines of Homestake Mining Company in Township 14 North, Range 10 West (Gould and others, 1963). Often redistributed mineralization was mobilized and redeposited within sandstones in close proximity to primary mineralization, as well demonstrated in the Section 23 mine (see figure 11), although, as demonstrated in the Poison Canyon mine, redistributed mineralization may be more than 1,000 feet (300 meters) from the nearest primary-type mineralization (see figure 8). A review of various published data suggests that structural control of redistributed mineralization is more prevalent in Township 14 North, Range 10 West than in other parts of the Ambrosia Lake mining district.
Figure 10: Map of the Poison Canyon mine showing the strong association of redistributed uranium mineralization with faulting (After Tessendorf, 1980)
7.2.2 Mineralogy:

The primary (trend) type of uranium deposits at the Ambrosia Lake project are intimately associated with organic carbon, commonly referred to as “humate”. As such, humate is a critical mineral within the primary deposits because of its role as the chemical reductant causing the precipitation of uranium from the mineralizing ground water. To a lesser extent humate is present in the redistributed deposits in the project area and in remnant deposits. Swanson and Palacas (1963) defined humate as “a collective term for the group of gel-like solid humic substances in sediments, coal-like in composition and appearance, that were carried in colloidal suspension or true solution by natural waters, and that were flocculated or precipitated from these waters on entering a different chemical environment. Humate is dark brown to black and is semi-lustrous. It generally appears as a structureless matrix filling voids and coating grains of a sediment; as such, humate may be confused with some hydrocarbons or asphaltites that fill interstices of a rock, but humate lacks the odor, viscosity, and other characteristics of oil and has distinctly different chemical composition and solubility characteristics.” In primary-type deposits uranium mineralization is intimately associated with humate.

While a range of uranium minerals may be present within a given deposit at Ambrosia Lake uraniferous humate (often referred to as urano-organic complexes in the historic literature) and coffinite \((\text{U(SiO}_4\text{)}\text{\cdot}_x\text{\cdot}(\text{OH})\text{\cdot}_x)\) are the most common mineral forms in primary deposits, while coffinite and uraninite \((\text{UO}_2)\) are the most common uranium mineral species in redistributed deposits.

Important associated minerals in primary deposits include jordisite \((\text{MoS}_2)\) and pyrite \((\text{FeS}_2)\), while minerals associated with uranium mineralization in redistributed deposits include barite \((\text{BaSO}_4)\) pyrite, ferroselite \((\text{FeSe}_2)\), marcasite \((\text{FeS}_2)\), montrosite \((\text{V}_2\text{O}_3\cdot\text{H}_2\text{O})\) and calcite \((\text{CaCO}_3)\). Mineral associations with roll-front type deposits have not been reported.

7.2.3 Disequilibrium:

Data on the nature of disequilibrium of the uranium mineralization at the Ambrosia Lake project is very limited. Some published commentary discusses the range of disequilibrium characteristics of primary versus redistributed mineralization in a few of the mines in the Ambrosia Lake mining district, with the overall conclusion that the uranium mineralization is in general radiometric equilibrium.

At the Mesa Redonda uranium deposit, Pathfinder Mines (1980) analyzed twenty-two samples of core from three holes in the deposit to determine both chemical and radiometric assay values. Of the twenty-two samples six (27 percent) returned lower chemical grades than the radiometric assays indicated, whereas 63 percent of the chemical assays were greater than the radiometric assays for the same samples. Overall, the assays that returned higher radiometric assays (as compared to chemical values) fell within a range of 0.04 to 0.257 % \(\text{eU}_3\text{O}_8\), whereas the samples that returned higher chemical values ranged from 0.048 to 2.058 % \(\text{U}_3\text{O}_8\). With the exception of three samples that returned radiometric assays between 0.100 and 0.257 % \(\text{eU}_3\text{O}_8\) the general trend is for the Mesa Redonda deposit to be out of equilibrium in favor of the chemical grades. Pathfinder (1980) concluded that chemical assays are 8 to 28 percent higher than the corresponding radiometric assays.
8 **Deposit Types:**

A substantial majority of the uranium deposits in the Grants Mineral Belt, including those that are situated within the Ambrosia Lake project area, occur as sandstone-hosted deposits hosted by fluvial clastic rocks of the upper Jurassic-age Morrison Formation. Limestone-hosted uranium deposits are also present within parts of the Mineral Belt, immediately south and southeast of the Ambrosia Lake project area, but they are not a topic of evaluation in this Technical Report.

Several varieties of sandstone-hosted deposits have been identified in the in the Grants Mineral Belt, with several examples of each known to be present at the Ambrosia Lake project area (Kittel, and others, 1967; Granger and Santos, 1986, McLemore, 2010).

**Primary (“Trend”) Deposits:**

Primary deposits, which have also been described by various workers in the district as “*trend*” or “*pre-fault*” deposits, are the dominant type of sandstone-hosted uranium deposit in the project area. Primary deposits occur as tabular, somewhat undulatory bodies of uranium mineralization controlled in large part by the porosity and permeability characteristics of the host sandstones and by chemical (carbonaceous material) reductants within the host sandstones. These deposits are generally several feet (up to approximately 3 meters) thick, tens to a few hundred feet in width (a few tens to a hundred meters), and many hundreds to three thousand feet (a few hundred to a thousand meters) in length (Granger and others, 1961; Fitch, 1980). They are dominantly oriented in a west- northwest/east-southeasterly direction, somewhat mimicking the orientation of the host channel sands, and they are suspended within sandstone bodies (Turner-Peterson and Fishman, 1986). Clusters of primary deposits occur in the Ambrosia Lake project area as a series of three sub-parallel trends, and several deposits within one or more of these trends may extend almost end-to-end for a distance of nearly 8 miles (13 kilometers).

The formation of the primary deposits is considered to represent the earliest uranium mineralizing event in the Grants Mineral Belt (Turner and others, 1993) and they have been dated to be about 130 to 140 Ma in age (McLemore, 2010). The primary deposits are somewhat unusual, in comparison with other sandstone-hosted deposits (from a global perspective), because of their distinct association with humate, which acted as the reductant to precipitate uranium from uranium-rich ground waters. Uranium minerals, principally uraninite and coffinite, are intimately admixed with the aforementioned humate, filling the pore spaces and coating individual grains in the host sandstones (Turner-Peterson and Fishman, 1986).

Primary deposits are generally higher grade than other types of sandstone-hosted deposits, often averaging 0.20 percent U₃O₈ or more, and they have pronounced “ore-to-waste” boundaries (Figure 10). This type of deposit can be quite large, containing as much as 30 million pounds of U₃O₈. Primary deposits are generally enriched in arsenic, copper, molybdenum, selenium, sulfur and vanadium, as compared with unmineralized rock.

**Redistributed Deposits:**

Redistributed deposits, also known as “*post-fault*”, “*stack*”, or “*secondary*” deposits, are irregularly shaped zones of mineralization that were formed through the remobilization of primary deposits by moderate to strongly oxidizing groundwater. These remobilized deposits are hosted in sandstones, where they (unlike primary deposits) often cross lithologic boundaries and sedimentary structures, as well as along fault zones (horizontal and vertical extents), fractures and joint sets within the host sandstones. The redistributed deposits are the product of destruction of primary deposits by oxidation, and have little, if any, humate remaining associated with the mineralization. They
commonly cut across bedding features in the host rocks, and normally have greater vertical extents (8 or more feet (2.5 meters)) than primary deposits. Unlike primary mineralization, redistributed deposits are generally not enriched in molybdenum and are significantly depleted of organic carbon. Redistributed mineralization may be localized immediately adjacent to primary mineralization, or may have been remobilized and redeposited as far away as 1,000 to 1,500 feet (300 to 457 meters) from the primary mineralization (Wilton, 2017).

McLemore (2010) reported that redistributed deposits may “average” about 18.8 million pounds of $U_3O_8$ with an overall grade in the range of 0.15 to 0.16 percent $U_3O_8$. During the periods of peak uranium production in the Ambrosia Lake area redistributed deposits, although of lower overall grades than primary deposits, were considered to be more favorable for underground mining than primary deposits because of their greater vertical extent and appreciably greater tonnages than the thinner and more elongate primary deposits.

Available age date data for redistributed deposits (McLemore, 2010) suggest two separate oxidizing and redistribution events, 80 to 106 Ma, and a very young event of 3 to 12 Ma.

**Roll-Fronts:**

Some geologists who have worked in the Grants Mineral Belt have discussed the presence of “roll-fronts” at various locations within the mineral belt (Clark, 1980, McCarn, 1997, McLemore, 2007, Smith and McLemore, 2007), and in many instances, roll-fronts have been considered to be a form or type of redistributed deposit (McLemore, 2010). Yet there is some evidence to indicate that roll-fronts may also be a primary type of deposit, such as appears to be the case at the Mesa Redonda deposit, which is discussed elsewhere in this report.

Roll-front uranium deposits are generally localized at an oxidation-reduction interface (“redox boundary”) within a host sandstone. In cross-section view roll-fronts may appear to be crescent-shaped, with upper and lower “limbs” or “tails” of mineralization and a central “nose” of strong mineralization. In plan view the redox interfaces are highly irregular and unpredictable and sinuous, normally not corresponding to readily identifiable geologic features. In turn, the mineralized roll-fronts may occur along the redox boundary in a discontinuous manner that resembles “beads on a string”. The “limbs” of a roll-front vary in thickness from knife-edge to as much as three feet (1 meter), whereas the “nose” may attain a thickness of several feet (up to 3 meters) or more. Widths of roll-front systems are highly variable from deposit to deposit, as well as within a given mineralized system and may range from as little as 25 to 35 feet (7 to 10 meters) to as much as 100 to 150 feet (30 to 46 meters) in width. Unlike primary deposits, roll-front deposits tend to be localized at either the tops or bottoms of individual sandstone horizons, and it is not unusual for them to fill the entire sandstone interval, providing that the host unit is less than 30 feet (10 meters) in thickness.

There is some discussion in published literature as to the presence of “rolls” associated with various primary deposits in the Ambrosia Lake area. While these mineralized interval cross-cut sedimentary features they are not roll-fronts, which are the products of geochemical cells. Instead, these so-called “rolls” appear to be undulations within otherwise tabular primary deposits.

**Remnant Deposits:**

As the name of this style of deposit implies, remnant deposits are mineralized bodies that remained in their original location after strongly oxidizing groundwater remobilized portions of primary deposits. The remnant deposits are discrete bodies of mineralization in locally reduced host rocks that are completely surrounded by otherwise oxidized sandstone. Remnant deposits display generally ill-defined geometries in both their horizontal and vertical dimensions, and the magnitude of tons and grade of mineralized material is limited.
Figure 11: Depiction of types of sandstone-hosted uranium deposits in the Ambrosia Lake project area (After Dahlkamp, 2010; McLemore, 2010).

Figure 12: Detail of occurrence of primary uranium mineralization and associated minerals (After Dahlkamp, 2010)
Figure 13: Map and cross-section of mineralization in the Section 23 (T 14 N, R 10 W) uranium mine. Note the positions of trend (primary) and redistributed mineralization in the N – S cross section (After Granger and Santos, 1986; Dahlkamp, 2010).
9 Exploration:

The Grants Mineral Belt, and the Ambrosia Lake mining district in particular, was subject to some of the most intense and long-standing exploration efforts for sandstone-hosted uranium deposits of any area within the United States. While the degree of exploration in the Ambrosia Lake district was at a high level for an extended period of time quality discoveries were made over the entire period of activity and high-quality targets remain to be fully evaluated. Key considerations for additional exploration in the Ambrosia Lake project area include:

- Exploration targets associated with the various structures that comprise the Ambrosia Lake fault zone, particularly in the western part of Township 14 North, Range 10 West;
- Targets hosted in the Poison Canyon sandstone in the northwest part of the project area, as demonstrated by the Mesa Redonda target (see below);
- Assess the potential for discovery of redistributed mineralization “down-gradient” and along structures from remnant deposits; and
- Test roll-front targets near the “south trend” mineral deposits in the northern part of Township 13 North, Range 9 West.

With the above considerations in mind several important targets on the Company’s Ambrosia Lake project lands have been identified:

The **Mesa Redonda** uranium deposit, as currently defined is situated in parts of Sections 5, 7, and 17, Township 14 North, Range 10 West (as well as two adjoining tracts not currently controlled by the Company). The deposit is an important zone of roll-front style mineralization hosted in the Poison Canyon sandstone and the upper-most sandstones of the Westwater Canyon Member at depths ranging from 1,000 to about 1,200 feet (305 to 366 meters) beneath the surface. Local topographic variations, particularly in Sections 17 and 18, may add up to an additional 400 feet (122 meters) to the depth of the mineralized zones.

This zone of mineralization, which has been estimated to contain approximately 1.28 million short tons at an average grade of 0.148% U₃O₈, containing about 3.71 million pounds of U₃O₈ (Pathfinder, 1980) (approximately 1.32 million pounds of U₃O₈ on properties controlled by Westwater Resources). This estimate does not include any mineralization present in Section 9, which appears to be part of the same mineralizing system, based upon a study of gamma-ray logs that was done as part of this report. Multiple zones of mineralization were intersected in several drill holes, giving the appearance of “stacked” roll-fronts. Additionally, several holes (as identified from gamma-ray/S-P/Resistivity logs) displayed “noses” or “fill” characteristics (the main part of the roll-front) that completely occupy the vertical extent of the host sandstones. In other cases, “limbs” (or “tails”) are present at the upper and lower boundaries of individual sand units suggesting the geochemical cell that was responsible for the formation of the roll-front occupied the entire vertical extent of the sandstone body. Drilling along the projected trend of the roll-front system has partially delineated two “pods” of strong mineralization, but drilling between the two areas is sparse. The four drill holes between the two mineralized zones encountered low grade mineralization, but did not “close off” either pod. Drilling along the trend of the roll-front (both to the west-southwest and the east-northeast did not define the limits of the mineralization.
Figure 14: Overview of the Mesa Redonda target area.

Figure 15: Pathfinder Mines exploration drill holes (white pipes at toe of the mesa) in Section 5 at Mesa Redonda.
Data relating to the potential for discovery of a continuation of the roll-front system easterly into Section 4 is not available, although this area represents a viable exploration target. Wide-spaced drilling in Section 9, southeast of Section 5 encountered weak mineralization over much of the tract. Gamma-ray logs for several drill holes from this section display characteristics of “stacked roll-fronts”, but drill hole density is not suitable to support a mineral resource estimate.

The **Section 27 deposit** (Township 14 North, Range 10 West) is an excellent example of redistributed mineralization that was remobilized along an extensive set of northeast trending structures (Thaden and others, 1966) from the adjoining Section 28 mineralized zone (Smith and Peterson, 1978, 1980), which is a remnant deposit.

Mineralization is hosted in three distinct horizons in the Section 27 deposit: 1) as roll-fronts in the Poison Canyon sandstone (depth of 300 to 250 feet (91 to 106 meters)), 2) as roll-fronts and tabular bodies in the middle Westwater Canyon Member (depths of 400 to 450 feet (122 to 137 meters)), and 3) in the east-central part of the section as a persistent tabular zone of mineralization in the lowermost Westwater Canyon Member at the contact with the underlying Recapture Member of the Morrison Formation (depth of approximately 550 to 600 feet (167 to 183 meters)). This zone of mineralization displays a high degree of lateral continuity over distances of more than 950 feet (289 meters).

Historical drilling by Kerr McGee and Utah International was directed primarily toward a significant mineralized area in the east-central part of the section, as well as wide-spaced drilling in other areas of the property. Close-spaced drilling (for which the Company’s data files is incomplete) is noted in the northwest quarter of the section, although this is not considered to be an exploration target as the surface estate is a Navajo Allotment. Additional drilling along the mapped redox boundaries, primarily in the east-central part of the section would be expected to yield additional mineralization. Additional targets, associated with the northeast trending normal faults that controlled the movement of oxidizing ground water which remobilized the “primary/trend” mineralization from Section 28, also represent exploration targets on the Section 27 property.

Although historical resource estimates attribute nearly 1.75 million pounds of U$_3$O$_8$ to the Section 23 and Section 25 (Township 14 North, Range 10 West) properties, neither is considered to have potential for discovery of additional resources. The Section 23 deposit was operated as a large-scale underground mine by Homestake Mining Company, and the Section 25 deposit was exploited by United Nuclear Corporation. Operations were suspended prior to full depletion of the deposits, and the historical resources assigned to the two properties represent the remaining resources.

**Section 13, Township 13 North, Range 9 West** is a target area that hosts mineralization in the Poison Canyon sandstone unit, at a depth of approximately 800 feet (244 meters) from the surface. An historical (non-compliant) mineral resource estimate attributes 855,313 pounds of U$_3$O$_8$ (Nelson, 2008) to a deposit situated in the southeast quarter of the Section. The Company carried out a core drilling program comprised of three holes, generally confirming the thicknesses, grades and stratigraphic setting of the previously identified mineralized zone, but no update of the mineral resource was completed. All three of the holes encountered sandstone-hosted uranium mineralization in the Poison Canyon sandstone, and mineralized the intervals encountered in these holes is similar in character (grade, thicknesses, and stratigraphic position) to the uranium mineralization encountered by the historical drill holes in the same areas.
Uranium mineralization occurs as four different species in the Section 13 deposit (Horsch, 2011):
- Uraninite (UO$_2$);
- Coffinite (U(SiO$_4$)$_{1-x}$(OH)$_{4x}$);
- As low-level concentrations within carbon-rich material; and
- Uranium-bearing leucoxene, in association with ilmenite and rutile or anatase.

As such, the mineralization that was encountered in the three confirmation drill holes tabulated below is similar in mineralogical character to uranium deposits found elsewhere in the Ambrosia Lake mining district and the overall Grants Mineral Belt.

Analysis of regional exploration data, including drilling information in Section 13, by Company personnel (Nelson, 2007 a, b) identified an exploration target in the underlying Westwater Canyon Member, at depths in the range of 1,100 feet (335 meters). Several of the holes in Section 13 that penetrated the Westwater Canyon Member encountered “anomalous” to low grade levels of mineralization in the unit, but no systematic evaluation of the target has been carried out.

Following are details of the Company-confirmation drilling in Section 13:

<table>
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<tr>
<th>Table 3: Section 13 Confirmation Drilling Results.</th>
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<tbody>
<tr>
<td><strong>Hole No.</strong></td>
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<td><strong>URI – 7</strong></td>
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<td><strong>URI – 10</strong></td>
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Other targets have been identified in Sections 1, 3 and 5 of Township 13 North, Range 9 West were identified from historical exploration drilling by Nelson (2007 b), but geologic data supporting these targets is sparse.
10 Drilling:

The vast majority of the historical drilling carried out by various companies at the Ambrosia Lake project was “conventional open-hole rotary” drilling (sometimes referred to as “plug drilling”) utilizing truck-mounted rotary drilling equipment. This drilling method was standard operating procedure for the US uranium industry starting in the early 1950s and continuing to the present time.

Core drilling was commonly undertaken with the same type of drilling rig, but with a conventional core barrel placed on the bottom of the drill string in place of a tri-cone rock bit or blade bit (“drag bit”) used in conventional rotary drilling operations. Unlike wire-line core drilling, the core from a conventional core barrel can be recovered only by withdrawing the entire drill string from the drill hole.

The conventional rotary drilling method has proven to be suitable for defining the extent and magnitude of sandstone-hosted uranium deposits when supplemented with down-hole geophysical logging, continuously recording gamma-ray, S-P (spontaneous-potential) and single point resistivity measurements with a surface-recording geophysical logging unit (also known as a “probe truck”).

Cuttings samples from rotary drilling were/are collected at the surface by a member of the drilling crew, normally on intervals of five feet (1.52 meters) or ten feet (3 meters), as directed by the site geologist. The samples were lifted to the surface by the drilling medium, either air, foam or drilling mud.

As the rotary drilling method was/is “rock destructive” and the uranium mineralization occurs as coatings on sand grains and as interstitial fillings between sand grains, rotary drill cuttings are not suitable for geochemical assays. Radiometric assays were/are determined from the continuously recorded gamma-ray responses in the drill holes. Chemical assays are obtained from core samples only.

Rotary cutting samples provided important information as to the lithologies encountered in the drill holes, including information about rock types, thicknesses, presence or absence of trace minerals (for instance pyrite), oxidation state of the various geologic units, and presence or absence of alteration of potential host rocks. Site geologists prepared lithologic descriptions from the cuttings samples. Thicknesses and depths to the upper boundaries of individual geologic units were/are determined by comparing cutting sample data with S-P and resistivity geophysical log data.
11 Sample Preparation, Analysis and Security:

It has been the domestic uranium industry practice since the late 1950s – early 1960s to explore for sandstone-hosted uranium deposits, such as those at the Ambrosia Lake project, with conventional open-hole rotary drills. As part of this “industry-standard” procedure grades of mineralization encountered in drill holes were generally determined by radiometric assaying, that is, calculating grades from gamma-ray logs, rather than by chemical analysis (chemical assaying) of drill hole samples. Chemical assays were performed on core samples, primarily to determine the “equilibrium state” of mineralized zones. With respect to the Ambrosia Lake project there are no chemical determinations of uranium grades within the Company’s extensive data base.

11.1 Radiometric Assaying:

The basic analysis tool that has been used to define the in-place uranium grades for the Ambrosia Lake project is the down-hole gamma log, which records at the surface the continuously detected gamma-ray values from a down-hole scintillation-type probe. The down-hole data is gathered as digital data on approximately 1-inch (25.4 millimeters) intervals as the radiometric probe is inserted or extracted from a drill hole.

The down-hole radiometric probe measures total gamma radiation from all naturally-occurring radioactive sources, including uranium, potassium and thorium-bearing minerals. In most uranium deposits, potassium and thorium provide a minimal component to the total radioactivity, measured by the instrument as counts per second (CPS). At the Ambrosia Lake project, the uranium content of the sandstones is high enough that the component of natural radiation that is contributed by potassium from feldspars in sandstone and primary thorium-bearing minerals are expected to be negligible.

The conversion of recorded radiometric values (CPS) to equivalent uranium concentrations has been demonstrated to be a reasonable representation of the in-place uranium grades in a drill hole. Thus, determined equivalent uranium grades (in effect, radiometric assays) are typically expressed as percent \( \text{eU}_3\text{O}_8 \) (“e” for equivalent) and should not be confused with \( \text{U}_3\text{O}_8 \) determination by standard XRF or ICP analytical procedures. Radiometric probing (gamma logs) and the conversion of gamma-ray values to \( \% \text{eU}_3\text{O}_8 \) data have been industry-standard practices used for in-situ uranium determinations since the 1950s.

A typical gamma probe is about 2 inches (5 centimeters) in diameter and about 3 feet (1 meter) in length. The probe has a standard sodium iodide (NaI) crystal that is common to both hand-held and down-hole gamma scintillation counters. The logging system consists of the winch mechanism to control the movement of the probe in and out of the hole and the digital data collection device (which interfaces with a portable computer and collects the radiometric data as CPS at defined intervals in the hole). Historical logs from the 1960’s typically generated only a hard copy analog graphical print-out, whereas modern geophysical instruments capture radiometric data in both digital and analog formats.

The radiometric data may require corrections prior to conversion to \( \% \text{eU}_3\text{O}_8 \) due to the shielding effects of water in the hole (water factor) or other drilling fluids which depress the gamma response, the instrumentation lag time in counting (dead time factor), and corrections for reduced signatures when the readings are taken inside drill rods or casing if present in the drill hole (casing factor). The water factor and casing factor account for reductions in radioactivity recorded by the probe reads while in water or inside casing, as the probes are typically calibrated for use in air-filled drill holes without casing. Water factor and casing factor corrections are made where necessary, and the correction factors are typically listed in the log header information.
Conversion of CPS to %eU₃O₈ is done by calibration of the probe against a source of known uranium (and thorium) concentration. This was typically done at the U.S. Department of Energy facilities in Grand Junction, Colorado, Casper, Wyoming, George West, Texas and/or Milan, New Mexico. The calibration calculation results in a “K-factor” for the probe; the K-factor allows for conversion of CPS to %eU₃O₈ grade, after corrections. An example of the conversion for thick (+2.0 ft) radiometric sources detected by the gamma probe would be stated as follows:

\[ 10,000 \text{CPS} \times K = 0.612\%eU₃O₈ \]

As the total CPS at the Ambrosia Lake project is dominantly from uraninite and/or coffinite or other uranium minerals, the conversion K-factor is used to estimate uranium grade, as potassium and thorium are not relevant in this geological environment at these levels of uranium grades. The calibration constants are only reliably accurate to source widths in excess of about 2.0 feet (0.61 meters).

The industry standard approach to estimating grade for a graphical plot is shown in Figure 14, and is referred to as the half-amplitude method.

The half-amplitude method follows the formula:

\[ GT = K \times A; \]

where GT is the grade-thickness product,

K is the probe calibration constant, and

A is the area under the curve (cm-CPS units).

The area under the curve is estimated by the summation of the 1.0 in (grade-thickness) intervals between E1 and E2 plus the tail factor adjustment to the CPS reading of E1 and E2, according to the following formula:

\[ A = \left[ \sum N + (1.38 \times (E1 + E2)) \right]; \]

where A is the area under the curve,

N is the CPS per unit of thickness, here 1.0 in, and

E1 and E2 are the half-amplitude picks on the curve.

This process is used in reverse for known grade (in the designed test pits) to determine the K factor constant for individual probes.

The procedure used can be a manual calculation off the analog graph, or modern equipment will also provide a digital print out of the converted data; this results in an intercept thickness and eU₃O₈ grade. Typically, current digital output equipment will generate aggregate values to 0.5ft down hole increments.

Historically preserved gamma logs with all the header information, including the K-factor, are essentially an analog equivalent to an assay certificate from an independent analytical lab; as it the case for the majority of the data from the Ambrosia Lake project.
11.2 Drill Cuttings:

Given the nature of sandstone-hosted uranium mineralization, which occurs as coatings on individual sand grains and as partial to total interstitial fillings between sand grains, drill cuttings are not suitable materials for chemical determinations (assaying) of actual uranium grades or the actual depth of mineralized intervals within drill holes.

11.3 Core Samples:

Other than petrographic data (QEMSCAN) data from core drilled by Westwater at the Section 13 target in 2010 there is no information relating to core samples for the Ambrosia Lake project.

11.4 Security Measures:

Information relating to security precautions regarding samples collected from the Ambrosia Lake project were not available to the author of this report.
12 Data Verification:

Technical data pertaining to the Ambrosia Lake project was developed by various companies who carried out exploration programs and conducted mining operations on the Ambrosia Lake properties when they were leased from the Santa Fe Railroad organization. As a requirement of the leases between Santa Fe and the operating companies the exploration and mine operating companies were required to provide copies of non-interpretive technical data on a periodic basis. When Westwater Resources acquired Uranco from Santa Fe the historical technical data from the operating companies was transferred to Westwater.

The nature and extent of technical data pertaining to the various property parcels that comprise the Ambrosia Lake project varies from property to property, and by reporting company. In essentially all cases copies of geophysical logs from drill holes completed on the properties were provided, along with drill hole location maps; lithologic logs for the respective drill holes are mostly absent, except for holes drilled by AMAX Exploration and Utah Intl./Pathfinder/Lucky Mc in Township 14 North Range 10 West. Technical reports were occasionally provided and mine maps for operations were periodically submitted. All of the technical data discussed in this report is present in the Company's files.

Site inspections were carried out by company personnel and consultants (Smith, 1996, 1998) and at various times by the author of this report during the period between 2012 and 2017. Drill hole locations were found in the field, but in many instances only evidence of drill holes (without identification numbers) were found, corresponding to locations on the historical drill hole maps. Evidence of drilling locations were also identified from aerial photographs and maps derived from them.

The Company undertook a three-hole confirmation drilling program to confirm previously defined (historical) uranium mineralization in the area of the Section 13 (Township 13 North, Range 9 West) target area in 2010. The results of this drilling generally replicated the thickness, grades, depths and stratigraphic positioning of mineralized zones encountered in historic drill holes.

It is the author's opinion that the historical data in the Company's files is generally representative of the geological characteristics of the project area. As such, it is considered to be reliable and suitable for the level of project evaluation within the context of this report, as it was collected by highly experienced mining and exploration companies. However, it is the author's opinion and recommendation that further work by Westwater include suitable levels of verification drilling, sampling and assaying be carried out on the properties.
13 **Mineral Processing and Metallurgical Testing:**

Uranium mineralization that was previously mined from the project area and adjoining properties was processed at several mills in the Grants Mineral Belt, primarily at either the nearby Kerr-McGee mill, the Phillips (later United Nuclear) mill, both of which were situated adjacent to the Ambrosia Lake project area, or the Homestake-New Mexico Partners mill, located 6 miles (9.5 kilometers) south of the project area.

Information relating to metallurgical testing of mineralization from the Ambrosia Lake properties was not available, and mill recovery data for mines that formerly operated in the project area was not accessible at the time this Technical Report was prepared.

As there are no longer any uranium processing plants in the Grants Mineral Belt new recovery facilities will need to be constructed for conventional mining operations. At such time metallurgical test work will be required for selection of a suitable mill design to process uranium mineralization from the Ambrosia Lake properties.

The author is not aware of any attempts to recover uranium in the Ambrosia Lake district by in-situ recovery methods, but historical recovery of uranium by “old-stope leaching” methods (Yancey and Associates, 1997; McLemore, Wilton and Pelizza, 2016; McLemore and Chenoweth, 2017) suggest that redistributed uranium deposits may be amenable to this metallurgical process.
14 Mineral Resource Estimates:

There are no modern mineral resource estimates that have been prepared for the Ambrosia Lake project. As discussed in the History section (Section 6) of this report, there are several historical mineral resource estimates that were prepared for specific tracts within the Ambrosia Lake project. None of the mineral resource estimates are considered to be current, nor are they known to be compliant with either the CIM Definition Standards for Mineral Resources and Mineral Reserves (CIM Code) or the Australian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code). Further, none of these historical estimates fulfil the requirements of the US Securities and Exchange Commission Guide 7 criteria for "non-reserve mineralized material".
15  **Mineral Reserve Estimates:**

There are no mineral reserves presently defined at the Ambrosia Lake project.
16 Mining Methods:

There are no active mining operations on any of the properties of the Ambrosia Lake project, or elsewhere in the Grants Mineral Belt.

Essentially all of the uranium production from the Ambrosia Lake project area was derived from conventional underground mines, although most of the uranium recovered from deposits hosted in the Todillo Limestone (nearby to the south boundary Ambrosia Lake project) was produced from near-surface small-scale open pits. A limited amount of production may have been recovered from a few small-scale open pits hosted in the Poison Canyon sandstone at its outcrop in the southernmost part of the project area.

Conventional underground mining was the principal method of uranium production in the Ambrosia Lake area. Uranium deposits were generally accessed through vertical shafts, although declines or adits were developed at a few of the mines in the southern part of the project area, at or near the outcrop of the Poison Canyon sandstone. Stoping methods varied, depending upon the nature of the uranium occurrence – open stoping was a preferred mining method for the thick and irregular shaped pods of redistributed mineralization, whereas room-and-pillar mining was the preferred method for the thinner mineralized zones of redistributed mineralization and primary deposits (Gay, 1963, Hohne, 1963).

United Nuclear and Kerr-McGee/Rio Algom Mining recovered uranium from mine water using a method referred to as “old stope leaching”. This “mining” method employed the development of “injections wells” that were drilled into otherwise abandoned mine workings (stopes) for which lixiviant was sprayed onto the ribs and pillars of the stopes to mobilize the in-place uranium mineralization, which was then recovered by pumping the uranium-enriched lixiviant to the surface through recovery wells. The lixiviant was then extracted through an ion exchange plant. Uranium production by this method commenced in 1963 and continued through 2002, with approximately 9.63 million pounds of U$_3$O$_8$ recovered primarily from deposits in the Ambrosia Lake area (McLemore and Chenoweth, 2017). The degree of production from “old stope leaching” may indicate potential for the production of U$_3$O$_8$ from redistributed and roll-front deposits in the project area.
17 Recovery Methods:

No studies have been carried out by the Company with respect to metallurgical processes that would be applicable to recovery of uranium from any of the mineralized zones at the Ambrosia Lake project.
18  **Project Infrastructure:**

18.1 **Roads and Access:**

Access throughout the project area is good, with two all-weather paved highways (New Mexico State Highways 509 and 605) traversing the southern part of the project area (Highway 605) and crossing the central and eastern edge of the northern part of the project (Highway 509). Numerous former mine access roads connect various parts of the project area with the State highways, as do unmaintained ranch roads and trails.

The Baca Spur, a dedicated rail line of the Star Lake Railroad, crosses the western and northern parts of the project and connects the El Segundo and Lee Ranch coal mines with an east-west transcontinental mainline of the Burlington Northern Santa Fe Railroad (BNSF) near the village of Prewitt, which is approximately 12 miles (19 kilometers) west of the project area.

18.2 **Water:**

Availability of water to support mining and milling operations has not been investigated. Large-scale industrial water rights are reportedly held by Rio Algom Mining, who hold some of the properties that adjoin the Ambrosia Lake project land parcels.

18.3 **Power:**

Electrical power, suitable for industrial use, appears readily available. A large-scale electrical substation, which is fed by a major east-west transmission line, is situated in Section36, Township 14 North, Range 10 West.

18.4 **Shared Mine and Mill Facilities:**

There are no existing mining and processing facilities in the project area.
19  **Market Studies and Contracts:**

The Company has not carried out any market studies related to the project, and it has no contracts in place to supply uranium from the Ambrosia Lake project.
20 Environmental Studies, Permitting and Social and Community Impact:

20.1 Environmental Studies:
There are no current environmental studies relating to the Ambrosia Lake project that have been prepared on behalf of the Company.

20.2 Environmental Issues:
While several of the individual property parcels that constitute parts of the Ambrosia Lake project are sites of former uranium mines, these locations appear to have been fully reclaimed by the former operators of the production facilities. The Company is not aware of any environmental issues that would negatively affect the properties, and the Company has not received any orders from either State or federal agencies that would require further reclamation or restoration activities.

20.3 Required Permits and Status:
Westwater Resources does not hold any active permits from any State of New Mexico or federal agencies to undertake exploration or mining activities at the Ambrosia Lake project. Future field programs covering exploration and/or development drilling activities will require relevant permits from the Mining and Minerals Division (MMD) of the New Mexico Energy, Minerals and Natural Resources Department. The New Mexico Mining Act of 1993, administered by the MMD, sets forth the requirements for drilling permits and mining permits.

As there are no lands held by the Company that are under administration by the US Bureau of Land Management or the US Forest Service permits or other authorizations are required from those two federal agencies.

Various federal agency permits will be required for the development of a new mine, including various requirements for adherence to federal rules regarding biological and cultural resource impacts, surface and groundwater impacts and impacts related to air quality. A new processing facility would require a Source Material License, which would be administered by the U. S. Nuclear Regulatory Commission.

The permitting process at both the State and federal levels is well established, with clear rules that have been in-place for long periods of time.

20.4 Social and Community Issues:
The development and operation of uranium mines and processing plants (mills) in New Mexico is a matter of public interest, in part due to the legacy issues of historic operations. As such there is considerable discussion amongst the local community as to future development of uranium mines and mills. Accordingly, the proponents of new operations should develop careful and well thought out public communication programs, and display a willingness to routinely interact with the local community.
21 **Capital and Operating Costs:**

No capital or operating cost studies have been carried out for the Ambrosia Lake project.
22 Economic Analysis:

As there are no defined mineral reserves at the Ambrosia Lake project, therefore no economic analyses have been carried out with respect to the project.
Adjacent Properties:

Westwater Resources’ Ambrosia Lake project is situated within the general boundaries of the Ambrosia Lake mining district, the single largest uranium mining center in the United States. Twenty-one important underground mines, each of which produced at least 1 million pounds of \( \text{U}_3\text{O}_8 \) (McLemore and others, 2002), were developed and operated in the Ambrosia Lake region between 1955 and 1988 (McLemore, 2010). Several of the mines in the district were situated on lands that are now part of WWR’s properties, while other mines are on lands that are contiguous with, or are in close proximity to the Ambrosia Lake project. Following are discussions of several of the “adjacent properties” (including former mines and undeveloped deposits) to the Ambrosia Lake project, and they are described in order to provide technical perspective as to the geology and uranium deposits on the nearby WWR properties at Ambrosia Lake:

Dysart No. 1 Mine, S 1/2 Section 11, Township 14 North, Range 10 West: The Dysart No. 1 underground uranium mine was one of the first underground mines in the Ambrosia Lake mining district to exploit uranium deposits hosted in the Westwater Canyon Member of the Morrison Formation. The upper portion of the Westwater Canyon ranges from 120 to 140 feet (37 to 43 meters) in thickness within the mine workings.

The mine, which commenced operation in 1961 produced approximately 900,000 short tons (816,466 tonnes) of material averaging 0.21% \( \text{U}_3\text{O}_8 \), containing about 3.78 million pounds of \( \text{U}_3\text{O}_8 \) from four distinct lenses (Cronk, 1963) that are part of a west-northwest-east-southeast trending zone of uranium deposits that are part of the so-called “north trend”. Significant uranium mineralization is restricted sandstone in the upper part of the Westwater Canyon, above the so-called “K shale”. Mineralization appears to be largely controlled by the porosity and permeability characteristics of the host sandstones, with the lowermost mineralized lens preferably deposited in a channel sand (Cronk, 1963). Cronk (1963) reported that in detail mineralization cuts across bedding at high angles in some instances, while in other localities the contact between mineralized and unmineralized rocks is gradational. Uranium mineralization was black in color (identification of uranium mineral species not reported), with some association with molybdenum (jordisite?) and native selenium. The deposit is situated on the northern flank of the Ambrosia Lake Dome. The Dysart No. mine workings are inaccessible, and it is considered to be mined out, although some mineralization is likely to be present with pillars in the mine workings.

La Jara Mesa Deposit, Sections 1, 2, 12-15, Township 12 North, Range 9 West: The La Jara Mesa uranium deposit is situated near the southeast boundary of the Ambrosia Lake project area. Several tabular bodies of uranium mineralization at La Jara Mesa are hosted in three sandstone lenses of the Poison Canyon unit of the Morrison Formation, over a wide-spread area. Uranium occurs as coffinite in close association with humate that served as the reductant for the formation of the deposit (Alief, 2006). Individual mineralized zones are generally elongate in a west-northwest to east-southeast orientation for distances of up to a few hundred feet, and the mineralized intervals range in thickness from a few inches to a few tens of feet (Alief, 2006).

A polygonal mineral resource estimate (Alief, 2006) outlined “measured” and “Indicated” resources of 940,576 short tons (858,276 tonnes) averaging 0.31% \( \text{U}_3\text{O}_8 \) containing 5,792,231 pounds of \( \text{U}_3\text{O}_8 \) at a cut-off grade of 0.15% \( \text{U}_3\text{O}_8 \). “Inferred” resources for the deposit were estimated to be 793,161 tons (719,544 tonnes) averaging 0.20% \( \text{U}_3\text{O}_8 \) and containing a further 3,172,653 pounds of \( \text{U}_3\text{O}_8 \) at a cut-off grade of 0.15% \( \text{U}_3\text{O}_8 \) (Alief, 2006). The deposit has not been developed.
Poison Canyon Mine, Sections 18 and 19, Township 13 North, Range 10 West: The Poison Canyon mine is located in the southern part of the Ambrosia Lake project area. The mine area is the site of at least three separate uranium deposits hosted in the Poison Canyon sandstone unit; a east-northeasterly trending zone of trend (or “primary”) mineralization and two strong zones of northerly trending redistributed mineralization. The redistributed mineralization displays a very strong spatial association with a northerly trending set of high angle fractures (Tessendorf, 1980) that appear to be part of the northerly trending (slightly west of north) Poison Canyon fault zone.

The primary-type mineralization displayed a negative disequilibrium (radiometric assays are greater than chemical assays) and the redistributed mineralization was also out of equilibrium, with chemical assays greater than equivalent radiometric assays (Tessendorf, 1980). The deposit is apparently mined out.

Section 28 Deposit, Section 28, Township 14 North, Range 10 West: The Section 28 deposit is situated on the southwest side of the Ambrosia Lake mineralized trend, and is completely surrounded by mineral rights that are owned by Westwater Resources. The bulk of the mineralization in the deposit has been classified as “remnant” (see Section 8 – “Deposit Types”) as defined by Smith and Peterson (1980). Uranium mineralization is hosted in various sandstone lenses of the Westwater Canyon Member and the Poison Canyon unit of the Morrison Formation. Unlike a number of nearby (east and northeast) uranium deposits, where mineralization is restricted to either the upper part of the Westwater Canyon Member or the Poison Canyon unit of the Morrison Formation, the mineralization in Section 28 is present through the entirety of the fluvial sandstone sequences of the Westwater Canyon and Poison Canyon (Smith and Peterson, 1980).

Smith and Peterson (1978) postulate that primary-type mineralization was formed in Section 28 during the same event that was responsible for the formation of the nearby large-scale Ambrosia Lake trend deposits to the north and northeast, and that post-mineral oxidizing groundwaters partially redistributed a portion of the precursor trend deposits. As such all of the uranium deposits in Section 28 are hosted in reduced sandstones that are completely surrounded by hematite-stained sandstones that are strongly oxidized. Both the Westwater Canyon and the Poison Canyon sandstones exhibit this feature.

Mineralized zones ae situated primarily in the central and northern parts of Section 28 and display an apparent weak northeasterly alignment, unlike many of the other deposits in the Ambrosia Lake area that are strongly aligned in an east-southeasterly direction. The northeasterly trend mimics to some extent a northeasterly trending fault of unknown age (Smith and Peterson, 1980). Some of the mineralization in the lower Poison Canyon sandstone and the upper and middle Westwater Canyon sands appears to trend northward onto the southern part of Section 21 and east-northeasterly into Section 27, both of which are owned by Westwater Resources. An historic mineral resource estimate (not consistent with any known current mineral resource code, and not compliant with the provisions of NI 43-101) estimated that the combined Westwater Canyon and Poison Canyon mineralized zones held 904,540 short tons (820,585 tonnes) that averaged 0.094% U₃O₈, containing 1,699,282 pounds of U₃O₈. This deposit has not been developed.

Rio Algom Mining LLC Properties, Township 14 North, Ranges 9 and 10 West: Rio Algom Mining, LLC, successor to Kerr-McGee (one of the important historic mining companies that operated in the Ambrosia Lake area), holds a large property package of deeded land in the southeastern part of Township 14 North, 10 West and the southwest part of Township 14 North, Range 9 West. Several of the properties, specifically Sections 12, 22, 24 and 26 of Township 14
North Range 10 West are contiguous with Westwater Resources properties, and are reported to host historical mineral resources (Behre Dolbear, 2007), as follows (note that the Rio Algom resources are historical in nature and do not comply with the provisions of any current mineral resource code, such as the CIM code or the JORC Code):

Table 4: Reported Mineral Resources on Adjacent Lands.

<table>
<thead>
<tr>
<th>Section, Township and Range</th>
<th>Tons (short)</th>
<th>Grade (%U3O8)</th>
<th>Pounds of U3O8</th>
<th>Adjoining WWR Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>12, T 14 N, R 10 W</td>
<td>560,000</td>
<td>0.09%</td>
<td>1,370,000</td>
<td>Extends onto Section 13</td>
</tr>
<tr>
<td>22, T 14 N, R 10 W</td>
<td></td>
<td></td>
<td>1,600,000</td>
<td></td>
</tr>
<tr>
<td>24, T 14 N, R 10 W</td>
<td></td>
<td></td>
<td>670,000</td>
<td>Extends into Sec’s 23 and 25</td>
</tr>
<tr>
<td>26, T 14 N, R 10 W</td>
<td>77,000</td>
<td>0.14</td>
<td>209,000</td>
<td>Part Section 27 deposit</td>
</tr>
</tbody>
</table>
24 **Other Relevant Data and Information:**

Other data pertaining to the geology and uranium occurrences and exploration results for work on various properties in the Ambrosia Lake project area may be available from third parties, or from the New Mexico Bureau of Geology and Mineral Resources in Socorro, New Mexico. It is the opinion of the author of this report that the additional sources of data may compliment the extensive data in the Company’s files.
Interpretation and Conclusions:

It is the opinion of the author of this report that Westwater Resources Ambrosia Lake project is a project of merit, and is worthy of additional work to advance it to the next stage of evaluation. Three appreciable uranium deposit targets: Mesa Redonda, Section 13 and Section 27, have been partially outlined by historical exploration programs, and they merit further evaluation. As well, the remaining resources in the Section 23 and Section 25 mines may be amenable to potential “stope leaching” activities.

The degree and intensity of historical exploration results and production derived from sandstone-hosted uranium deposits of the Westwater Canyon Member and the Poison Canyon sandstone are such that the mineralization present on the Company’s properties is similar to or identical to the material mined and processed in the past. As such, it would be amenable to mining and processing methods that are well known.

As is the case with any uranium project there is a range of risks and uncertainties that may impact the merits of the Ambrosia Lake project, including:

- Uranium prices, which were at the time of this report (February, 2018) at low levels;
- Confirmation of the historically-defined mineral resources to the extent that would support the development of a new mine in the project area;
- Discovery, through exploration of key areas of the Mesa Redonda, Section 13 and Section 27 uranium deposits, of additional uranium resources that would support economic development of the project;
- Confirmation metallurgical testing to ensure that mineralization at the Ambrosia Lake project is amenable to effective uranium extraction technologies;
- Issuance of required permits to develop a mine in a timely and efficient manner; and
- The construction of a suitable uranium processing plant (mill) in a reasonable proximity to the project.
Figure 17: Ambrosia Lake project exploration target locations.
26 Recommendations:

Although the historical mineral resource estimates that outline uranium mineralization on several of the individual properties that comprise the Ambrosia Lake project were prepared by individuals and mining companies that were competent and highly experienced in the evaluation of sandstone-hosted uranium deposits, these estimates are not current and are not considered to be compliant with any current mineral resource code. Although the author of this Technical Report does not doubt the validity or quality of the historical data, particularly the gamma-ray and electrical log geophysical data for the target areas, new confirmation drilling should be undertaken on several of the previously known uranium deposits in order to verify the extensive historical data for these deposits.

It is also the opinion of the author of this report that potential exists to expand the historically-defined resources at the Mesa Redonda, Section 27 (Township 14 North, Range 10 West) and Section 13 (Township 13 North, Range 9 West) mineral deposits.

Mesa Redonda Area:

- Drill three holes of approximately 1,200 feet (365 meters) each as “offsets” to existing holes in the Section 7 to confirm historical drilling results;
- Drill three holes of approximately 1,200 feet (365 meters) each in Section 5 to confirm the results from previous drilling;
- Drill 12 holes of 1,200 feet (365 meters each) to fill-in untested areas of mineralization in the south half of Section 5 and to test probable northeasterly extensions to the currently defined mineralized zone;
- Drill 6 holes to a depth of approximately 1,450 feet (442 meters) each to test for extensions of mineralization in the southeast quarter of Section 7;
- Acquire copies of all relevant Mesa Redonda data currently held by Ur Energy, Inc.;
- Acquire uncontrolled properties in Sections 8 and 18, Township 14 North, Range 10 West;
- Prepare a new mineral resource estimate for the Mesa Redonda deposit;
- Drill six holes of approximately 1,200 feet (365 meters) each to test the mineralization in Section 9, Township 14 North, Range 10 West;
- Carry out hydrological tests, and mineralogical and metallurgical studies to determine if the mineralization is amenable to various mining and processing methods.

Section 13 Target:

- Complete the ten-hole confirmation drilling program (three holes were previously completed) initiated by the Company in 2010. The proposed drilling program would include seven holes of approximately 900 feet (274 meters) each. Four of the holes would require core “tails” of approximately 40 feet (12 meters) per hole;
- Hydrological, mineralogical and metallurgical testing to determine the amenability of mineralization to in-situ recovery technique;
- Develop an up-to-date mineral geological and mineral resource model for the Section 13 uranium deposit.
Section 27 Target:

- Acquire copies of the historical drilling data for Section 27 from a third-party;
- Drill three confirmation holes, of approximately 900 feet (274 meters) each to confirm the historically and partially defined resource. All three holes should have core "tails" of approximately 60 feet (18 meters) each;
- Drill nine holes generally peripheral to the main mineralized areas in the east half of Section 27, and three holes across the projected trend of the graben in the northeast quarter of the Section. Holes are estimated to be 950 feet (290 meters) in depth each;
- Carry out hydrological, mineralogical and metallurgical studies of the mineralization to determine the amenability of the mineralization to in-situ recovery techniques.
- Develop a comprehensive geological model and mineral resource estimate for the property.

Table 5: Summary of Recommended Drilling on the Ambrosia Lake Project.

<table>
<thead>
<tr>
<th>Target</th>
<th>No. of Holes</th>
<th>Footage - Rotary</th>
<th>Footage – Core</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mesa Redonda</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confirmation</td>
<td>6</td>
<td>7,020</td>
<td>180</td>
</tr>
<tr>
<td>Exploration</td>
<td>18</td>
<td>23,100</td>
<td>0</td>
</tr>
<tr>
<td><strong>Section 13</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confirmation</td>
<td>7</td>
<td>6,140</td>
<td>160</td>
</tr>
<tr>
<td>Exploration</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Section 27</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confirmation</td>
<td>3</td>
<td>2,520</td>
<td>180</td>
</tr>
<tr>
<td>Exploration</td>
<td>9</td>
<td>8,550</td>
<td>0</td>
</tr>
<tr>
<td><strong>Confirmation Total</strong></td>
<td>16</td>
<td>15,680</td>
<td>520</td>
</tr>
<tr>
<td><strong>Exploration Total</strong></td>
<td>27</td>
<td>31,650</td>
<td>0</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td>43</td>
<td>47,380</td>
<td>520</td>
</tr>
</tbody>
</table>
### Table 6: Estimated Costs for Recommended Program

<table>
<thead>
<tr>
<th>Activity</th>
<th>Unit Cost (US$)</th>
<th>Total Cost (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mesa Redonda</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotary Drilling</td>
<td>$15.00/ft.</td>
<td>$451,800</td>
</tr>
<tr>
<td>Core Drilling</td>
<td>$50.00/ft.</td>
<td>$9,000</td>
</tr>
<tr>
<td>Geophysical Logging</td>
<td>$2.00/ft.</td>
<td>$60,600</td>
</tr>
<tr>
<td>Assays</td>
<td>$45.00/ft. of core</td>
<td>$8,100</td>
</tr>
<tr>
<td>Permitting</td>
<td>n/a</td>
<td>$35,000</td>
</tr>
<tr>
<td>Reclamation</td>
<td>n/a</td>
<td>$25,000</td>
</tr>
<tr>
<td>Geological Services</td>
<td></td>
<td>$33,000</td>
</tr>
<tr>
<td><strong>Sub-Total</strong></td>
<td></td>
<td><strong>$622,500</strong></td>
</tr>
<tr>
<td><strong>Section 13</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotary Drilling</td>
<td>$15.00/ft.</td>
<td>$92,100</td>
</tr>
<tr>
<td>Core Drilling</td>
<td>$50.00/ft.</td>
<td>$8,000</td>
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<tr>
<td>Geophysical Logging</td>
<td>$2.00/ft.</td>
<td>$12,600</td>
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<tr>
<td>Assays</td>
<td>$45.00/ft. of core</td>
<td>$7,200</td>
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<tr>
<td>Permitting</td>
<td>n/a</td>
<td>$15,000</td>
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<tr>
<td>Reclamation</td>
<td>n/a</td>
<td>$10,000</td>
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<tr>
<td>Geological Services</td>
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<td>$11,250</td>
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<tr>
<td><strong>Sub-Total</strong></td>
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<td><strong>$155,550</strong></td>
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<tr>
<td><strong>Section 27</strong></td>
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<tr>
<td>Rotary Drilling</td>
<td>$15.00/ft.</td>
<td>$166,050</td>
</tr>
<tr>
<td>Core Drilling</td>
<td>$50.00/ft/</td>
<td>$9,000</td>
</tr>
<tr>
<td>Geophysical Logging</td>
<td>$2.00/ft/</td>
<td>$22,500</td>
</tr>
<tr>
<td>Assays</td>
<td>$45.00/ft. of core</td>
<td>$8,100</td>
</tr>
<tr>
<td>Permitting</td>
<td>n/a</td>
<td>$25,000</td>
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<tr>
<td>Reclamation</td>
<td>n/a</td>
<td>$16,000</td>
</tr>
<tr>
<td>Geological Services</td>
<td></td>
<td>$19,000</td>
</tr>
<tr>
<td><strong>Sub-Total</strong></td>
<td></td>
<td><strong>$265,650</strong></td>
</tr>
</tbody>
</table>
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Turner-Peterson, Christine E., 1986; Fluvial Sedimentology of a Major Uranium-Bearing Sandstone – A Study of the Westwater Canyon Member of the Morrison Formation, San Juan Basin, New Mexico, in Turner-Peterson, Christine E., Elmer S. Santos and Neil S. Fishman (editors), 1986; A Basin Analysis Case Study: The Morrison Formation, Grants uranium Region, New Mexico; Energy Minerals Division, American Association of Petroleum Geologists AAPG Studies in Geology #22, pages 47 – 75.


Appendix 1: Glossary:

**Abbreviations:**

The following abbreviations may be used in this report:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Unit or Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>CoG</td>
<td>cut-off grade</td>
</tr>
<tr>
<td>Cm</td>
<td>Centimeter</td>
</tr>
<tr>
<td>cm$^2$</td>
<td>square centimeter</td>
</tr>
<tr>
<td>cm$^3$</td>
<td>cubic centimeter</td>
</tr>
<tr>
<td>Cfm</td>
<td>cubic feet per minute</td>
</tr>
<tr>
<td>CRec</td>
<td>core recovery</td>
</tr>
<tr>
<td>CTW</td>
<td>calculated true width</td>
</tr>
<tr>
<td>c U$_3$O$_8$</td>
<td>% U$_3$O$_8$ (chemical assay)</td>
</tr>
<tr>
<td>$^\circ$</td>
<td>degree (degrees)</td>
</tr>
<tr>
<td>dia.</td>
<td>Diameter</td>
</tr>
<tr>
<td>EIS</td>
<td>Environmental Impact Statement</td>
</tr>
<tr>
<td>e U$_3$O$_8$</td>
<td>Equivalent % U$_3$O$_8$ (radiometric assay)</td>
</tr>
<tr>
<td>$^\circ$F</td>
<td>degrees Fahrenheit</td>
</tr>
<tr>
<td>Ft</td>
<td>foot (feet)</td>
</tr>
<tr>
<td>ft$^2$</td>
<td>square foot (feet)</td>
</tr>
<tr>
<td>ft$^3$</td>
<td>cubic foot (feet)</td>
</tr>
<tr>
<td>G</td>
<td>Gram</td>
</tr>
<tr>
<td>Gal</td>
<td>Gallon</td>
</tr>
<tr>
<td>g/L</td>
<td>gram per liter</td>
</tr>
<tr>
<td>Gpm</td>
<td>gallons per minute</td>
</tr>
<tr>
<td>g/t</td>
<td>grams per tonne</td>
</tr>
<tr>
<td>Ha</td>
<td>Hectares</td>
</tr>
<tr>
<td>ICP</td>
<td>induced couple plasma</td>
</tr>
<tr>
<td>ID2</td>
<td>inverse-distance squared</td>
</tr>
<tr>
<td>ID3</td>
<td>inverse-distance cubed</td>
</tr>
<tr>
<td>Kg</td>
<td>Kilograms</td>
</tr>
<tr>
<td>Km</td>
<td>Kilometer</td>
</tr>
<tr>
<td>km$^2$</td>
<td>square kilometer</td>
</tr>
<tr>
<td>Kt</td>
<td>thousand tonnes</td>
</tr>
<tr>
<td>kt/d</td>
<td>thousand tonnes per day</td>
</tr>
<tr>
<td>kt/y</td>
<td>thousand tonnes per year</td>
</tr>
<tr>
<td>L</td>
<td>Liter</td>
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<tr>
<td>Lb</td>
<td>Pound</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Unit or Term</td>
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<tr>
<td>--------------</td>
<td>--------------</td>
</tr>
<tr>
<td>M</td>
<td>Meter</td>
</tr>
<tr>
<td>m²</td>
<td>square meter</td>
</tr>
<tr>
<td>m³</td>
<td>cubic meter</td>
</tr>
<tr>
<td>mg/L</td>
<td>milligrams/liter</td>
</tr>
<tr>
<td>Mm</td>
<td>Millimeter</td>
</tr>
<tr>
<td>mm²</td>
<td>square millimeter</td>
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<td>cubic millimeter</td>
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<td>Mt</td>
<td>million tonnes</td>
</tr>
<tr>
<td>MTW</td>
<td>measured true width</td>
</tr>
<tr>
<td>m.y.</td>
<td>million years</td>
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<tr>
<td>NI 43-101</td>
<td>Canadian National Instrument 43-101</td>
</tr>
<tr>
<td>%</td>
<td>Percent</td>
</tr>
<tr>
<td>Ppb</td>
<td>parts per billion</td>
</tr>
<tr>
<td>Ppm</td>
<td>parts per million</td>
</tr>
<tr>
<td>QA/QC</td>
<td>Quality Assurance/Quality Control</td>
</tr>
<tr>
<td>RC</td>
<td>reverse circulation drilling</td>
</tr>
<tr>
<td>RQD</td>
<td>Rock Quality Description</td>
</tr>
<tr>
<td>SG</td>
<td>specific gravity</td>
</tr>
<tr>
<td>SP</td>
<td>Self- Potential, a geophysical measurement</td>
</tr>
<tr>
<td>St</td>
<td>short ton (2,000 pounds)</td>
</tr>
<tr>
<td>T</td>
<td>tonne (metric ton) (2,204.6 pounds)</td>
</tr>
<tr>
<td>t/d</td>
<td>tonnes per day</td>
</tr>
<tr>
<td>t/y</td>
<td>tonnes per year</td>
</tr>
<tr>
<td>U₃O₈</td>
<td>Uranium oxide; “yellowcake”</td>
</tr>
<tr>
<td>µm</td>
<td>micron or microns</td>
</tr>
<tr>
<td>XRD</td>
<td>x-ray diffraction</td>
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Appendix 2: Property Description:

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<tr>
<th>Township</th>
<th>Range</th>
<th>Section</th>
<th>Aliquot Part</th>
<th>Acres</th>
<th>Hectares</th>
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<td>13 North</td>
<td>9 West</td>
<td>1</td>
<td>Lots 1-4, S/2 N/2, S/2</td>
<td>640.08</td>
<td>259.03</td>
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<tr>
<td></td>
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<td>3</td>
<td>Lots 1-4, S/2 N/2, S/2</td>
<td>640.24</td>
<td>259.09</td>
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<td>Lots 1-4, S/2 N/2, S/2</td>
<td>640.00</td>
<td>258.99</td>
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<td></td>
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<td>Lots 1-4, S/2 N/2, S/2</td>
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<td></td>
<td></td>
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<td>That portion lying west of State Route 509</td>
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<td>All</td>
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<td>258.99</td>
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<td></td>
<td></td>
<td>17</td>
<td>All</td>
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<td><strong>Township Total</strong></td>
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<td><strong>5,508.32</strong></td>
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<td>258.51</td>
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<td>Lots 1-4, S/2 N/2, S/2</td>
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<td>Description</td>
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<td>21</td>
<td>W/2 SW/4 SE/4 NE/4, N/2 NE/4, SW/4 NE/4, N/2 SE/4 NE/4, NW/4, S/2 SE/4, NW/4 SE/4</td>
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<td>All</td>
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<td>29</td>
<td>All</td>
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<tr>
<td>31</td>
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<tr>
<td>35</td>
<td>All</td>
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<td><strong>Township Total</strong></td>
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<td><strong>3,873.54</strong></td>
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<td>10 West</td>
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<td>247.12</td>
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<tr>
<td>15</td>
<td>All, except 29.98 ac. for Baca Rail Spur</td>
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</tr>
<tr>
<td>3</td>
<td>All</td>
<td>640.88</td>
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<tr>
<td>5</td>
<td>All</td>
<td>640.40</td>
<td>259.16</td>
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<tr>
<td>7</td>
<td>All</td>
<td>651.04</td>
<td>263.66</td>
<td></td>
<td></td>
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<tr>
<td>9</td>
<td>All</td>
<td>640.00</td>
<td>258.99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>All</td>
<td>640.00</td>
<td>258.99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>All except 31.4 ac. for gas line and Baca Rail Spur</td>
<td>607.54</td>
<td>245.86</td>
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<td>640.00</td>
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<td>All except 33.09 ac. for Baca Rail Spur</td>
<td>606.91</td>
<td>245.60</td>
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<td>23</td>
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<tr>
<td>25</td>
<td>All</td>
<td>640.00</td>
<td>258.99</td>
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<td>27</td>
<td>All</td>
<td>640.00</td>
<td>258.99</td>
<td></td>
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<tr>
<td>Township</td>
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<td>All except 32.24 ac. for Baca Rail Spur</td>
<td>607.76</td>
<td>245.95</td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>----</td>
<td>----------------------------------------</td>
<td>--------</td>
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<td>33</td>
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<td>All</td>
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<td></td>
<td>24,555.63</td>
<td>9,941.23</td>
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</tr>
</tbody>
</table>
Appendix 3: Author’s Certificate:

Dean T. (Ted) Wilton
Chief Geologist
Westwater Resources, Inc.
3536 Desert Fox Drive
Spanish Springs, Nevada 89436 USA
Mobile telephone: 775-276-2764
Email: twilton@radiumtrail.us

Certificate of Author:
I, Dean T. (Ted) Wilton do hereby certify that:

- I am currently employed, on a part-time basis, as the Chief Geologist of Westwater Resources, Incorporated,
- I graduated from the New Mexico Institute of Mining and Technology, Socorro, New Mexico in December, 1974. My major field of study was Geology and my minor field of study was Mining Engineering;
- I am a Certified Professional Geologists (CPG-7659) as defined by the American Association of Professional Geologists;
- I am a member in good standing of the Australian Institute of Geoscientists (MAIG-6384);
- I have been employed in the mineral exploration and production industry continuously for more than 44 years, since my graduation from university;
- I have read the definition of a “Qualified Person” as set forth in Canadian National Instrument 43-101 (“NI 43-101”) and certify that by reason of my education, affiliations with professional associations (as defined in NI 43-101) and past relevant work experiences I fulfill all of the requirements to be a “Qualified Person” for the purposes of NI 43-101. My relevant experience includes more than 18 years of experience in uranium exploration and production since graduation from university. My relevant uranium experience includes:
  - Vice President, Uranium Exploration, 1979-1981;
  - Chief Geologist, Neutron Energy, Inc., 2005-2010;
  - Chief Geologist, Westwater Resources (Uranium Resources, Inc.), 2012-present.
- I am responsible for the preparation of the entire Technical Report on the Ambrosia Lake Uranium Project, McKinley County, New Mexico, USA;
- I have had prior involvement in the Ambrosia Lake project through nearly six years of employment with Westwater Resources (previously known as Uranium Resources, Inc.);
- As of the date of this Certificate, and to the best of my knowledge, information and belief, this Technical Report contains all of the scientific and technical information relating to the Ambrosia Lake project;
- I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Report, for which such omission to disclose would make the report misleading;
• I am not independent of Westwater Resources, Incorporated;
• I have read Canadian National Instrument 43-101 and Form 43-101 F1, and the Technical Report has been prepared in compliance with the Instrument and Form;
• I consent to the filing of the Technical Report on the Ambrosia Lake Uranium Project with any stock exchange and other regulatory authority, and any publication by them, including electronic publication in the public company files, or on the website of Westwater Resources, Incorporated.

Dated March 30, 2018 in Spanish Springs, Nevada USA.

Dean T. Wilton
(Signed)