

# Oil & Gas Resource Assessment of Sandoval County and Relationship of Potential Resources to Ground Water

## SUMMARY

This project, submitted to the Sandoval County Planning and Zoning Division for funding, will develop an assessment of the potential for oil and natural gas resources throughout Sandoval County. The entire county will be assessed including areas historically productive of oil and gas in the northwestern part of the county and nonproductive areas in the remainder of the county. Key geologic parameters relevant to oil and natural gas potential will be mapped across the county. Mapping of potentially productive strata will enable assessment of depth to potentially productive reservoirs across the county. Pertinent aspects of aquifers, including the distribution of aquifers prevalent in the county and depth to the base of the aquifer interval, will also be mapped in a reconnaissance manner. This, in conjunction with projected depth to potentially productive oil and gas reservoirs, will allow for assessment of the effect of oil and natural gas production on aquifers. Also evaluated in this regard will be the effect of modern drilling and well completion technologies on oil and natural gas production and potential effects of modern drilling and production technologies on aquifers. The project will last approximately 9½ months. The contract shall cost Sandoval County \$62,009.07.

## SCOPE OF WORK

**Professional Services.** The New Mexico Bureau of Geology and Mineral Resources, a Division of New Mexico Institute of Mining and Technology, will provide the Sandoval County Planning and Zoning Division with an assessment of the potential for oil and gas resources throughout Sandoval County, New Mexico.

1. Areas to be analyzed and assessed. Areas the assessment will cover all of Sandoval County including the historically productive northwestern parts of the county as well as nonproductive parts of the county. Nonproductive parts of the county have recently drawn interest for exploratory oil and natural gas drilling. Exploratory drilling may result in the discovery of viable, producible resources and therefore lead to future oil and natural gas production.
2. Geologic information to be included in the project. Key geologic parameters will be mapped across the county. Parameters to be evaluated include identification of stratigraphic units (“formations”) that have oil and gas potential, lithology and type of reservoirs, hydrocarbon shows encountered by previous exploratory drilling, petroleum source rock parameters and distribution, areas of current and historical production, and areas that have the potential for future oil and natural gas production, which will be mapped by stratigraphic unit. Mapping of potentially productive strata will allow

assessment of depth to potentially productive reservoirs across the county. Pertinent aspects of aquifers will also be mapped in a reconnaissance manner, including the distribution of aquifers prevalent in the county and the depth to the base of the aquifer interval. This, in conjunction with projected depth to potentially productive oil and gas reservoirs, will allow for assessment of the effect of oil and natural gas production on aquifers. Also evaluated in this regard will be the effect of modern drilling technologies on both oil and natural gas production and on aquifers.

3. ***Products.*** The final project report will include a thorough written report as well as maps and other figures that illustrate the variation in geologic parameters relevant to oil and natural gas potential and to project-relevant aspects of aquifers. The maps will have coverage across Sandoval County. An appendix will contain data used in the analysis so that independent verification of maps and analyses will be possible. Key maps and relevant data will be presented as a basic GIS project. To facilitate transparency, the final project report will be published online as an open-file report of the New Mexico Bureau of Geology and Mineral Resources, although issuance of the open-file report may post-date the project termination date for logistical reasons.
4. ***Time frame.*** The proposed start date of the project is July 1, 2017. The proposed termination date is May 11, 2018 or 9½ months after the start date if the start date occurs after July 1, 2017.

**Delivery of work product.** The contractor shall provide the deliverables listed below to the Sandoval County Planning and Zoning Division by the termination date.

- a. Project report discussing the oil and natural gas potential of Sandoval County as well as other geologic information described above and the assessment of effects of oil and natural gas production on aquifers.
- b. Maps and other figures that illustrate the variation in geologic parameters relevant to oil and natural gas potential.
- c. Maps and other figures that illustrate relevant aspects of aquifer geology in the county.
- d. An appendix of data used in the report, in one or more databases.
- e. A GIS project that has themes of data relevant to oil and gas resource assessment as well as project-relevant aquifer assessment.

## **COMPENSATION**

The Sandoval County Planning and Zoning Commission shall pay the contractor \$62,009.07 for the services and products described above. A budget for the project costs is described below.

**Budget**

**Direct Costs**

*Salaries and benefits*

Broadhead, Petroleum geologist (740.75 hours, 40%)	\$ 17,537.17
Mansell, GIS Specialist (80 hours, 4%)	2,088.92
<u>Aquifer hydrogeologist (160 hours, 9%)</u>	<u>4,615.38</u>
<i>Subtotal salaries</i>	<i>\$ 24,241.47</i>
Fringe benefits @ 59.4%	\$ 14,399.43

*Travel*

Travel to Roswell to obtain geologic/geophysical Data from Jim Manatt of Thrust Energy, Inc.	
Per diem, 1 day @ \$135.00/day	\$ 135.00
Mileage, 330 miles @ \$0.54/mi	<u>178.20</u>
<i>Subtotal travel</i>	<i>\$ 313.20</i>

*Other direct costs*

Supplies, well log and map duplication, etc.	\$ 1,000.00
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***Total Direct Costs*** **\$ 39,954.41**

**Indirect Costs:**

Indirect costs @ 55.2%	<u>\$ 22,054.66</u>
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**TOTAL COSTS** **\$ 62,009.07**

Approved by:



Michael Springfield

Sandoval County Planning & Zoning Division Director

7/17/17

Date



Cleve McDaniel

Vice President for Administration and Finance

New Mexico Institute of Mining and Technology

7/12/17

Date