

Produced Water Research

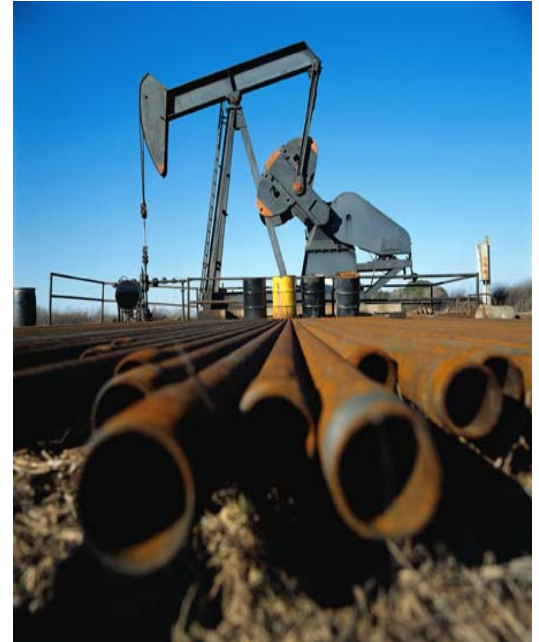
Background

As the US expands the development of fossil energy resources to meet our ever-increasing demand for energy, we must address the environmental issues associated with this development. For every barrel of oil produced, approximately 10 barrels of brackish or saline water is generated. Presently we generate over 5 billion gallons a day of produced water. In the past, this water was handled as a waste and reinjected, often at significant cost to the producer. As the US demand for fresh water outstrips available supplies, we are increasingly turning to desalination to create fresh water. Because of the large volumes of brackish produced water being generated, the treatment of this water is increasingly being looked at as a way to supplement our limited fresh water resources in many parts of the country. Several issues still must be addressed to use this water including:

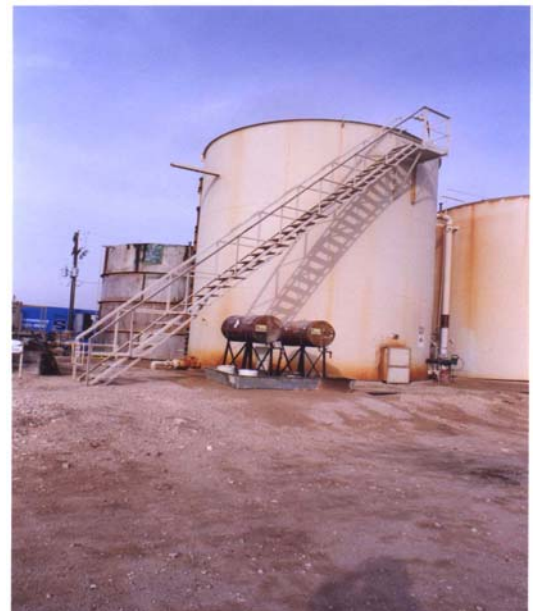
- Costs of treatment and removal of organic contamination,
- Disposal of the associated concentrate from treatment,
- The treatment level required for beneficial reuse, and
- The regulatory and policy issues associated with produced water used for beneficial reuse.

Approach

To support these efforts, Sandia is leveraging our energy engineering, geotechnical engineering, and research capabilities. Our technical expertise in salt and brine chemistry, geology, engineering, renewable energy, environmental technology, materials science, and oil and gas technology all provide valuable support for researching the treatment of produced water. These capabilities should help us increase the beneficial use of produced water and supplement fresh water resources.



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Produced Water Tank Battery

Existing Produced Water Research Projects

Sandia is working in partnership with private industry and state and federal agencies on several projects to address the economic and environmental issues of beneficial reuse and disposal of produced water.

Examples include:



Crop studies using treated produced water.

Environmental and Policy Issues

- Sandia is working with the Bureau of Land Management and the Ground Water Protection Council to help assess the contamination potential and remediation needs of brackish water contamination of fresh ground water through abandoned wells.
- Providing technical assistance to the Soil Conservation Service on the regulatory and policy issues of treatment and reuse of produced water.

Produced Water Treatment

- Supporting state and federal agencies and producers in evaluating the use of desalination technologies for the treatment of produced water for beneficial reuse for surface water discharge applications.
- Supporting state agencies and producers in evaluating commercial treatment and pretreatment technologies for reuse of produced water.
- Working with federal and state agencies and producers in evaluating novel treatment and pretreatment technologies for treatment of Coal Bed Methane produced water for beneficial reuse for rangeland rehabilitation and livestock watering in northern New Mexico. Coordination with the Bureau of Reclamation to develop the roadmap for future produced water pretreatment, treatment, and desalination research and development.
- Coordination of the development of a National Desalination Research Facility in New Mexico to coordinate inland desalination technology development and testing to address inland applications, like produced water treatment.

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