The production and disposal of water from tight-gas fields necessitates the use of many water disposal wells. Environmental concerns about produced water can be significant and associated with extraction, so it becomes an economic incentive to minimize the water shown and reuse produced water in hydroelectric development, and companies are actively pursuing these technologies. Reusing the water saves the need and production disposal requirements associated with high water losses. Rigorous effluent treatment can create solutions beyond water use, hence the increasing emphasis of regions with existing water needs. The need for water reuse, and production, and purification for decades for the basin is on sale and adds more to your site.

About 446 billion cubic feet (Bcf) of gas and 105 million barrels (bbls) of water were produced from the Uinta Basin in 2010. Although this product represents the work of professional scientists, the Utah Department of Natural Resources, Utah Geological Survey, makes no warranty or guarantee for its accuracy or completeness. The information contained herein is to be used only for information purposes and is not intended for commercial use or other purposes.

## References


## Table 1: Water Disposal Wells by County

<table>
<thead>
<tr>
<th>County</th>
<th>Number of Wells</th>
<th>Total Bbls Disposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duchesne</td>
<td>155</td>
<td>446,000</td>
</tr>
<tr>
<td>Uintah</td>
<td>334</td>
<td>432,000</td>
</tr>
<tr>
<td>Emery</td>
<td>34</td>
<td>404,000</td>
</tr>
</tbody>
</table>

## Figure 1: Drilling Activity and Production, Uinta Basin

- **Panel I**: Drilling activity in the Uinta Basin. The number of drilling permits has increased in recent years, indicating a growing interest in the basin.
- **Panel II**: Production volumes in million barrels. The production of both gas and water has been on the rise, with water production showing a significant increase.

## Discussion

Water management and drilling practices in the Uinta Basin vary with the size of the operation. Small oil and gas producers generally depend on outside vendors to haul and dispose of produced water at commercial disposal wells or evaporation ponds. Larger oil and gas producers construct or lease closed-loop, wastewater-handling and disposal facilities that allow for the capture and reuse of frac-water bases. While producing water from a single horizontal well, such facilities allow for better control and monitoring of water disposal.

Water treatment may include setting times which allow the release of the gas and control sediment. The water is then treated to remove dissolved solids and suspended solids. Produced water is then treated by other processes such as heating or evaporation for disposal. The treated water is then used for various purposes such as irrigation, drilling operations, or injection into disposal wells.

## Acknowledgments

Major funding for this ongoing research has been provided by the Research Partnership to Secure Energy for America (RPSEA), Sugar Land, Texas: Small Producer Program, for the Utah Geological Survey (UGS) Django project (Utah State Produced Water Management Tools and Options - GIS-Based Models and Statistical Analysis of State-Gas-Tight Reservoirs and Their Produced Water Stormers, Uinta Basin, Utah). The research was conducted by the UGS.

Data collection and construction of maps, graphs, and tables were constructed by Cheryl Gustin of UGS. The poster was designed by Nikki Simon of the UGS.

## Panel I

- **Drilling Activity and Production, Uinta Basin**

<table>
<thead>
<tr>
<th>Year</th>
<th>Drilling Permits</th>
<th>Spud</th>
<th>Gas Production</th>
<th>Water Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>1148</td>
<td>946</td>
<td>404 Bcf</td>
<td>93 million bbls</td>
</tr>
<tr>
<td>2011</td>
<td>1490</td>
<td>950</td>
<td>432 Bcf</td>
<td>100 million bbls</td>
</tr>
<tr>
<td>2012</td>
<td>10268</td>
<td>1087</td>
<td>466 Bcf</td>
<td>98 million bbls</td>
</tr>
</tbody>
</table>

## Panel II

- **Production Volumes in Million Barrels**

<table>
<thead>
<tr>
<th>County</th>
<th>Gas Produced</th>
<th>Water Produced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duchesne</td>
<td>446,000</td>
<td>432,000</td>
</tr>
<tr>
<td>Uintah</td>
<td>404,000</td>
<td>420,000</td>
</tr>
</tbody>
</table>

## Figure 2: Location of Drilled Oil Wells

- **Panel I**: The distribution of drilled oil wells across different counties in the Uinta Basin.
- **Panel II**: The location of oil production facilities in the basin, including major oil fields and associated infrastructure.

## Figure 3: Location of Evaporation Ponds

- **Panel I**: Map showing the location of evaporation ponds within the Uinta Basin.
- **Panel II**: Detailed view of the evaporation pond infrastructure and associated water management practices.
Aquifer/Reservoir Mapping

Jurassic Navajo/Nugget Sandstone

Jurassic Entrada Sandstone

Cretaceous Cedar Mountain Formation and Dakota Sandstone

Tertiary (Eocene) Green River Formation

Jurassic Navajo/Nugget Sandstone

Jurassic Entrada Sandstone

Cretaceous Cedar Mountain Formation and Dakota Sandstone

Tertiary (Eocene) Green River Formation

Discussion

Over 3600 water quality analyses are available from oil and gas wells and springs in and around the Uinta Basin, and various units have distinct water quality. More than half of the water analyses (51%) are from the Navajo/Nugget Sandstone, followed by the Glen Canyon Formation (26%) and the Entrada Sandstone (11%).

Over 340 water analyses, varied but predominantly carbonate-dominated trends may be discernable from the Mesaverde and Uinta Formations. The Wasatch-Colton Formations, which produced for hydrocarbons as widely as the first two units and various units have distinct water quality. More than half of the water analyses (51%) are from the Navajo/Nugget Sandstone, followed by the Glen Canyon Formation (26%) and the Entrada Sandstone (11%).

The Mesaverde Group and Uinta Formation are not producing reservoir/aquifer units being mapped in the Uinta Basin generally have less than 100 water quality analyses apiece, and it is likely that only local water quality trends may be discernible with the limited data from these poorly sampled units.