Uinta Basin
Baseline Water-Quality Study

Janae Wallace
October 2009 update
OBJECTIVES

• Create database of springs, creeks, wells
• Create database of water quality
• Create GIS data- chemistry maps
• Create baseline water quality (spatially and temporally)- 2009, 2010, 2011
• Document changes in water quality
Proposed Sample Sites for Ground-Water Quality Sampling in the Uinta Basin
by Janae Wallace
Database Sources
(previous reports)

- Wally Gwynn - (UGS) springs and wells (~90 data entries)
- USGS (1987- map only)
- Utah Division of Drinking Water (psw)
- Industry - (Kerr McGee, Anadarko, Westport Resources) ~120 data entries
- Zhang and others (2009) ~57 data entries
Legend

Total Disolved Solids
- 0 to 3000
- 3001 - 10,000
- 10,001 - 50,000
- 50,001 or greater

Stream
Road
Lake
Study-area

Approximate Area of Principal Recharge

Birds Nest Aquifer

TDS for Uinta Basin Oil/Gas Wells
Uintah County, Utah
2009 Events

- Recon during March 2009 (BLM, DWQ, and DOGM staff)- 50 wells proposed (most unavailable)
- 4 sampling trips - June, July, August (twice)
- 15 sites - 2 springs, 2 creeks, 11 wells
- Resample October 2009
- Constituents sampled: General Chemistry (Mg, Ca); Nutrients (NO₃); Metals (As, Pb, Se, Ba); TOC; VOCs
Park Canyon
(USGS)

Domestic-Willow Creek

Seep Ridge/Willow Creek
Seep Ridge
Domestic Well
1964
Rabbit Mtn
OSEC dry hole

BLM- Seep Ridge
Public-Supply Sources

- 4-star (2 wells, same aquifer)
- Bonanza (inactive)
- Desert Power (treated Green River)
- Roosevelt, Myton, Duchesne, Gusher (out of study area)
Seep Ridge
USGS
Park Canyon
<table>
<thead>
<tr>
<th>Well ID</th>
<th>Depth</th>
<th>Level</th>
<th>Date</th>
<th>( \text{NO}_3 )</th>
<th>TDS</th>
<th>Fm</th>
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<tbody>
<tr>
<td>Park</td>
<td>750</td>
<td>57/350</td>
<td>June</td>
<td>&lt;0.1</td>
<td>1428</td>
<td>Birds N</td>
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<tr>
<td>Park-USGS</td>
<td>193+</td>
<td>Flowing</td>
<td>June</td>
<td>&lt;0.1</td>
<td>796</td>
<td>Green R</td>
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<tr>
<td>Big Pack</td>
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<td>June</td>
<td>&lt;0.1</td>
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<td>Willow-domestic</td>
<td>711</td>
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<td>June</td>
<td>&lt;0.1</td>
<td>936</td>
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<td>Willow Creek</td>
<td>Surf</td>
<td>Surface</td>
<td>June</td>
<td>&lt;0.1</td>
<td>562</td>
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<td>80&amp;60</td>
<td>49&amp;23</td>
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<td>Seep ridge</td>
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Legend
Total Disolved Solids
- well  spring  creek
- 0 - 1000 mg/L
- 1001 - 1500 mg/L
- 1501 - 2000 mg/L
- 2001 - 2500 mg/L
- 2501 mg/L or greater

- Uinta Basin Boundary
- River
- Roads
- Water Body
- Douglas Creek Aquifer
- Birds Nest Aquifer
- BLM UT (oil shale lease area)
- Tribal Lands

UGS 2009 TDS Data in the Uinta Basin
Legend
Nitrate Concentration
- Well
- Spring
- Creek
- 1 - 3 mg/L
- 3.0 - 5.0 mg/L
- 5.1 - 10.0 mg/L
- 10.1 - 20.0 mg/L
- Uinta Basin Boundary

River
- Roads
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Location Map

UGS 2009 Nitrate Data in the Uinta Basin

www.geology.utah.gov