

Arizona Natural Gas Storage

Arizona Corporation Commission

March 2, 2011



ANGS

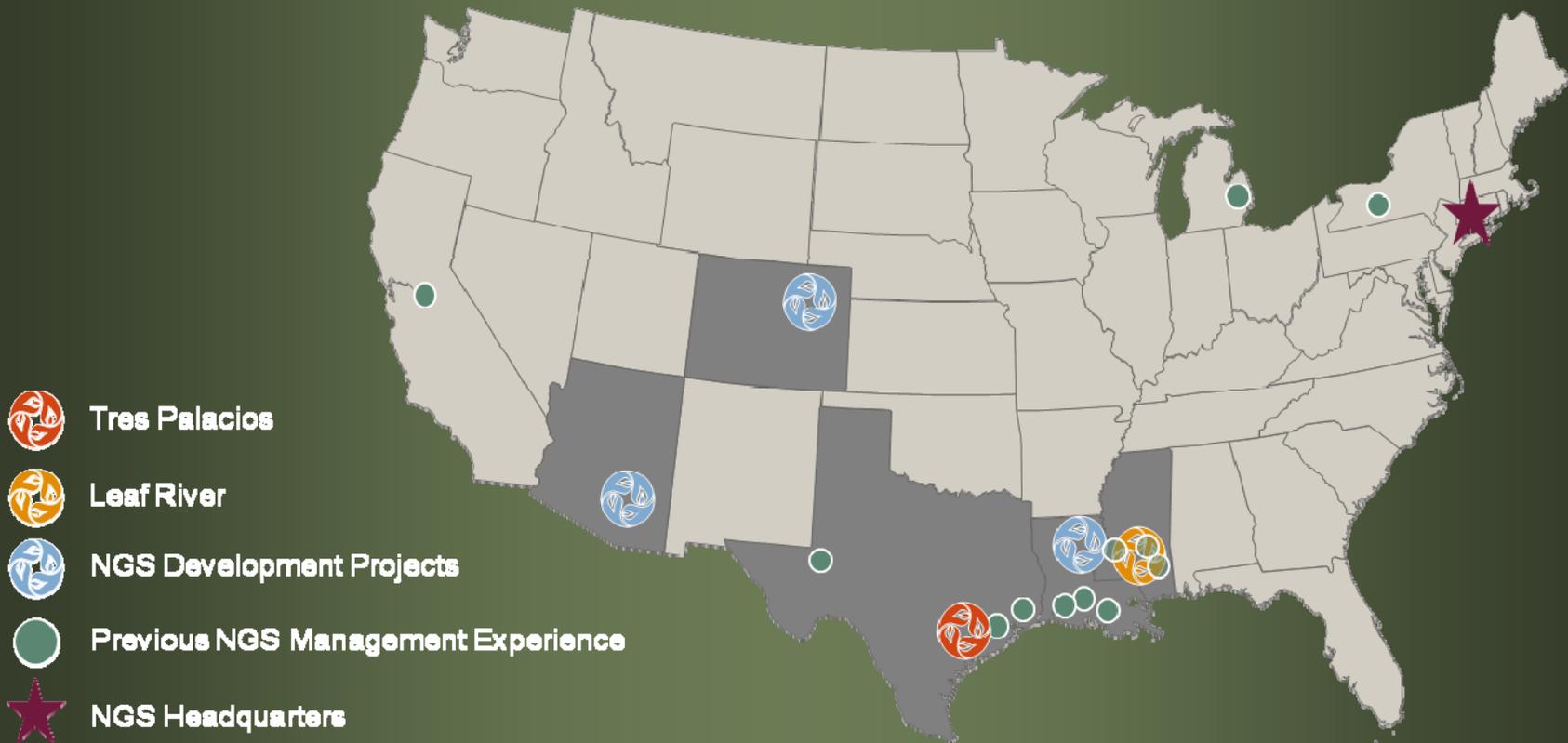
ARIZONA NATURAL GAS STORAGE LLC

Introduction

- Dan Pastor – Tetra Tech, Inc.
 - Facility Permitting
 - Environmental Compliance
 - Water Management
 - Geotechnical Engineering

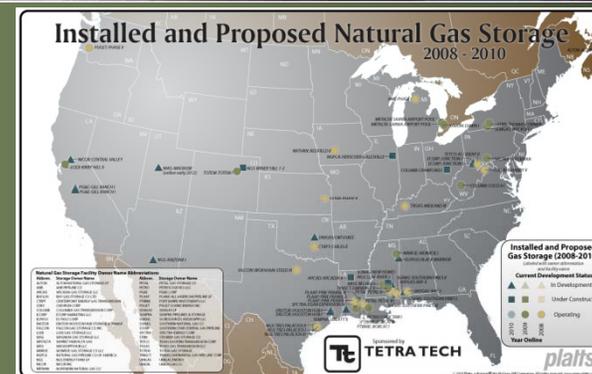
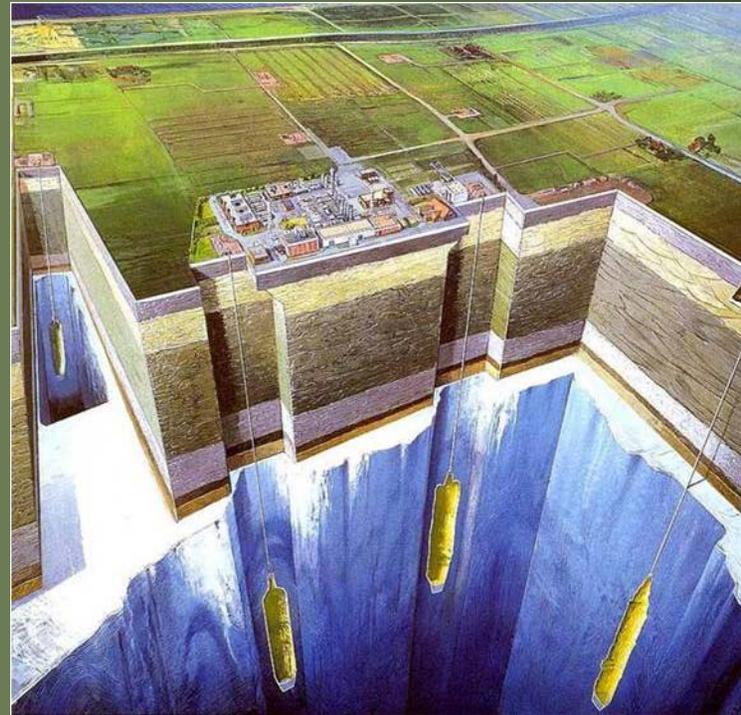


Experience with NGS

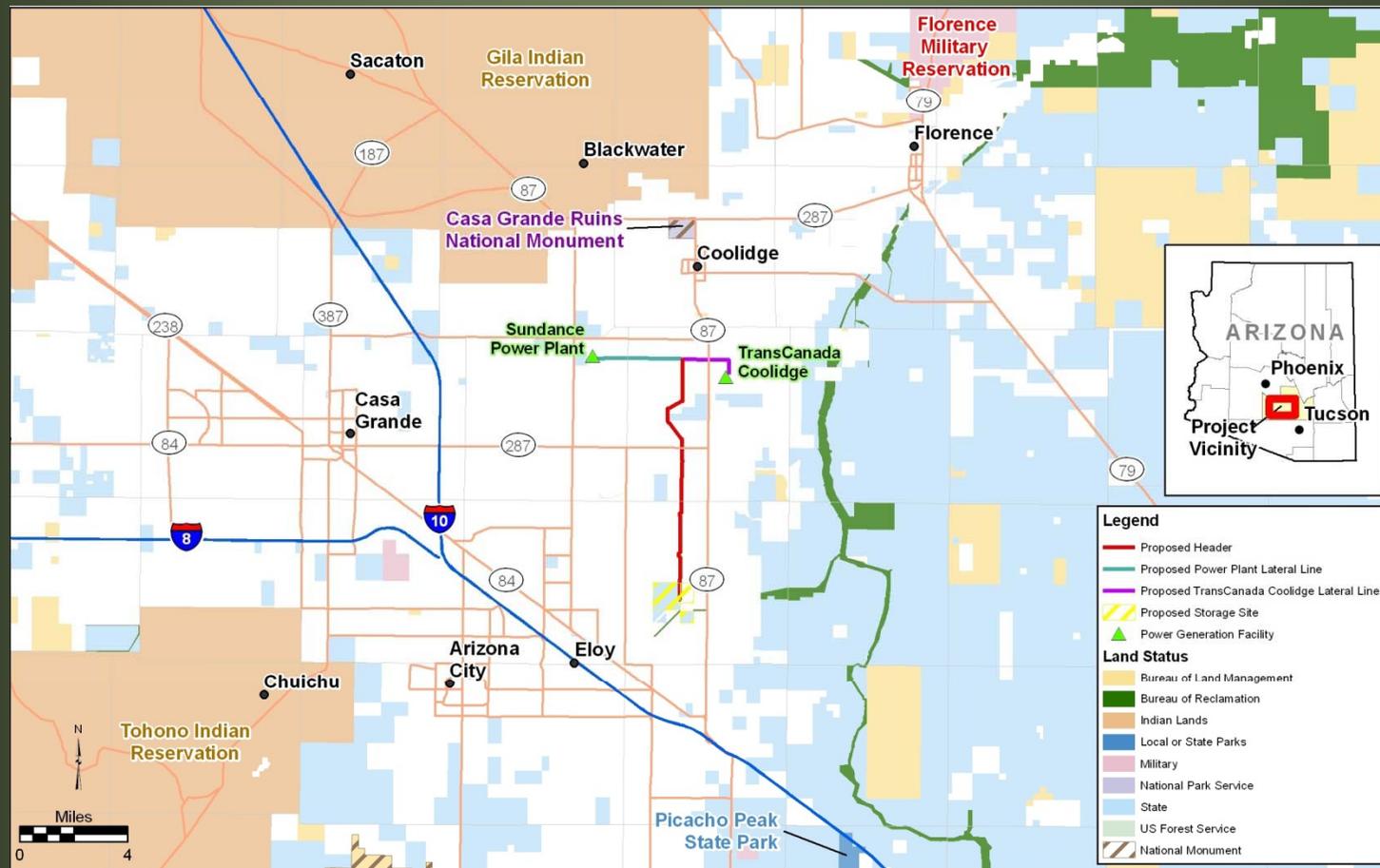


What is Underground Gas Storage?

- Takes in natural gas from pipeline systems and holds it until it's needed
- Stores the gas safely in salt caverns, deep underground
- Widely used in all areas of the country



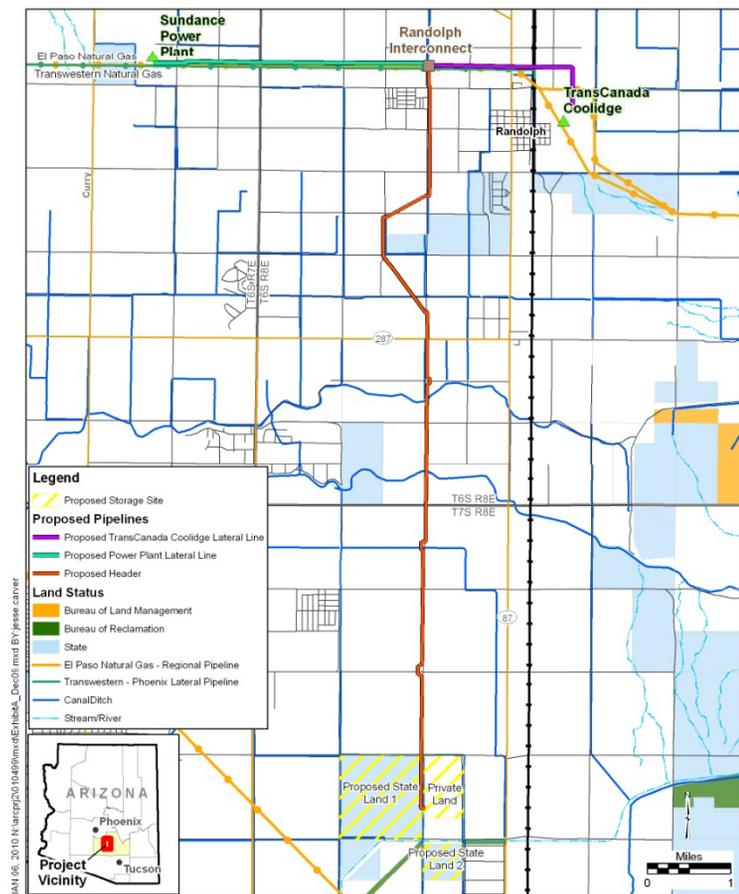
Project Location



Arizona Natural Gas Storage Project

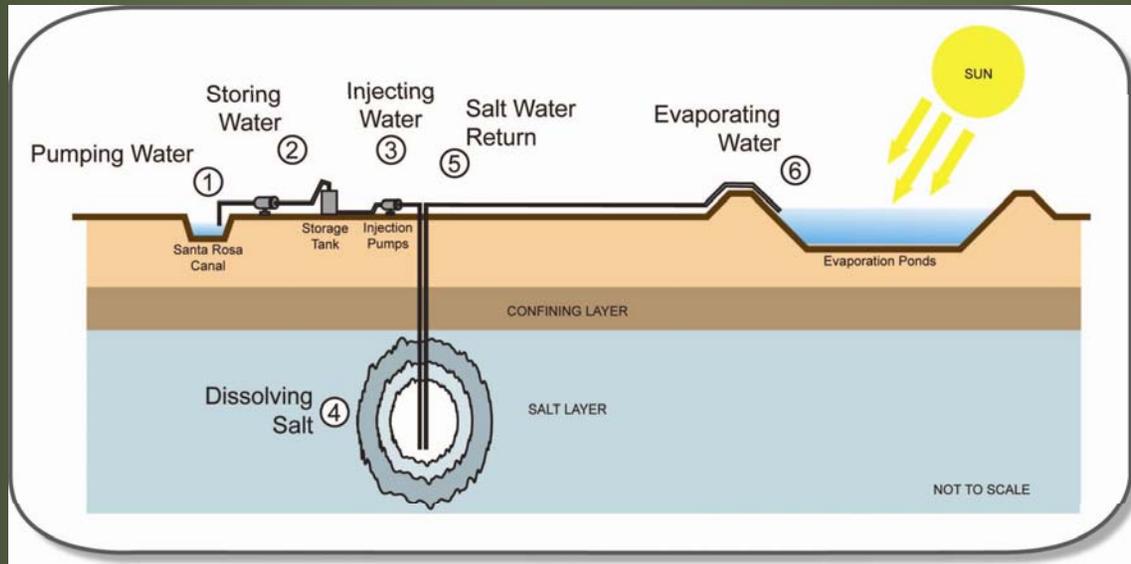
■ Pipelines

- 9.5 Mile Header (dual 24" pipelines)
- 2.3 Mile Lateral to TransCanada Coolidge (16" line)
- 3.3 Mile Lateral to Sundance Power Plant (12" line)



General Project Location
Arizona Natural Gas Storage LLC

How are the Salt Caverns Created?



1. Water from Irrigation Canal (no additional chemicals)
2. Circulated Down Well Casing
3. Dissolves Salt
4. Salt Water Return
5. Solar Evaporation Ponds



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Why use Evaporation Ponds?

- ❑ Deep Injection is not feasible
 - No Suitable Injection Zone below Salt
 - Injection Above Salt
 - Risk Cavern Integrity
 - Risk of Impacts to Fresh Water Aquifer



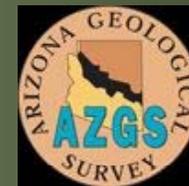
Federally Required Permits

- ❑ Federal Energy Regulatory Commission (FERC)
 - Certificate of Public Convenience and Necessity
- ❑ US Environmental Protection Agency (EPA)
 - Underground Injection Control (UIC) Class III Permit
- ❑ US Fish and Wildlife Service
 - Threatened and Endangered Species Consultation
- ❑ Native American Tribes
 - National Historic Preservation Act Consultation



State Required Permits

- Arizona Department of Environmental Quality
 - Aquifer Protection Permit (APP)
- Arizona Department of Water Resources
 - Dam Safety Permit
- Arizona Oil and Gas Conservation Commission
 - Permits for Drilling, UIC
 - Gas Storage Operations
- Pinal County Air Quality Control District
 - Industrial Source Permit



State Required Permits (cont.)

- Arizona State Land Department (ASLD)
 - Lease and Easement Agreement
- State Historical Preservation Office (SHPO)
 - National Historic Preservation Act Cultural Resources Consultations and Clearances
- Arizona Game & Fish Department
 - Project Evaluation
- Central Arizona Project (CAP)
 - Canal Crossing Permit



Questions





Extra Slides

Photographic Simulations



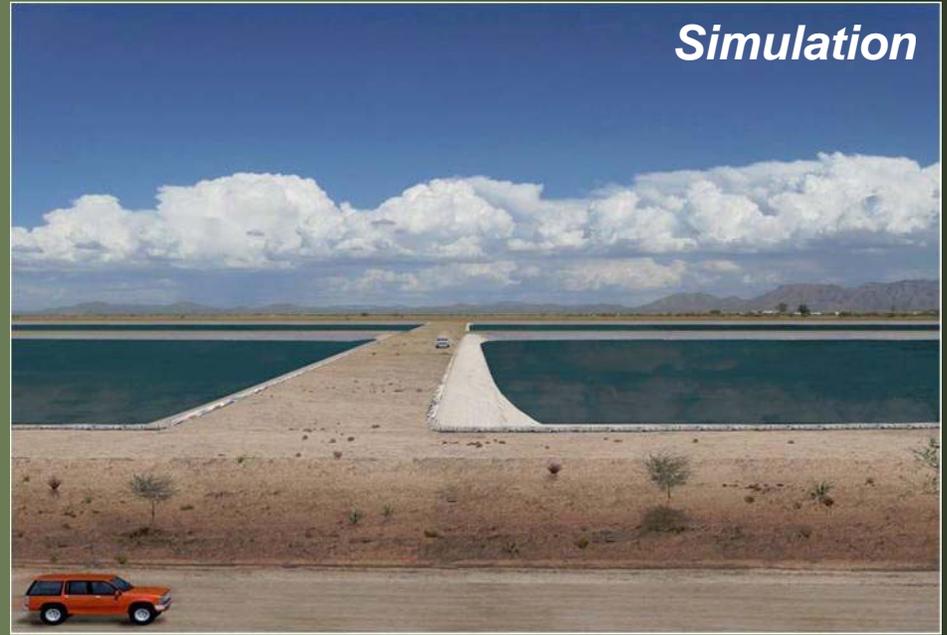
LaPalma & Arica Rd, Looking South

Photographic Simulations

Current view



Simulation



LaPalma, Looking East (Simulation is looking down from approximately 50 Feet above existing condition)