Cadiz on the Fast Track?

Presented by:
Amy Steinfeld, Shareholder
About Cadiz

☀ California NR company founded in 1983.

☀ Founders identified aquifer in Mojave Desert using NASA data.

☀ 45,000 acres & water rights.

☀ 20 years of organic farming
Cadiz Location:
200 Miles Northeast of Los Angeles
Phase 1: Conservation & Supply

Put water that otherwise would evaporate to beneficial use throughout Southern California:

✦ Intercept 32,500 AFY before evaporates.
✦ Conserve 1.6 MAF of water that would otherwise evaporate.
✦ Create new 50-year supply for 400,000 people throughout So. Cal. via Public Water Providers
✦ In-lieu storage up to 150,000 AF in wet yrs.

**Permitted Infrastructure**

✦ Complete construction of well-field (20+ wells), natural gas power source and ancillary facilities.
✦ Construct 43-mile pipeline within existing active railroad to avoid adverse impacts.
✦ Connect to existing Colorado River Aqueduct to bring water to So. Cal.
Facilities & Location

- Wellfield Area
- Colorado River Aqueduct Tie-In
- RR ROW Pipeline Route
- Fenner Gap
- New York and Providence Mountains (Source of Rainwater)
- Bonanza Spring
- Dry Lakes
- You Are Here
Phase 2 – Imported Water Storage

- Import surplus water for storage in the aquifer system when available and return to agencies when needed.
- Total storage capacity = 1 million acre-feet.
- Programmatic EIR approved; additional permitting necessary.
- 220 miles of existing natural gas pipeline to be re-purposed.
- Construction of recharge basins
GEOLOGY & HYDROLOGY
Overview of Watershed

- 1,300 sq. mile watershed area, size of Rhode Island.
- 17-34 MAF of water in aquifer (in alluvium), comparable to Lake Mead.
- Excellent water quality, low TDS (avg. 300).
- Natural recharge = 32,000 AF/year.
- 1 MAF storage capacity.
Cadiz Area Hydrology

- Closed basin watershed system, not connected to Colorado River.
- Precipitation in 7,000-ft. mnts. percolates down through porous soils, moves downhill to aquifer.
- Water flows through alluvial, carbonate, and fractured granitic rock.
- Water table deep below ground surface; 700 ft bfs at wellfield.
- Groundwater moves very slowly down mountains to aquifer then on to dry lakes where turns saline.
- Finally, it evaporates at dry lakes, forever wasted.
Dry lakes act as pump, moving water from ground to air (evaporation) ... Project will shift pumping from dry lakes to Project wellfield and put that water to beneficial use.
Used USGS hydrology model to determine aquifer’s scale, productivity, recharge rate.

Examined topography, precip./temp., soils, geology, and vegetation.

New technical studies:

- Groundwater Modeling & Impact Analysis
- Springs Studies
- Effects on Cadiz & Bristol Playas
- Biological Resource Assessment
- Estimated Evaporation Study

10 new wells at Project site drilled to depths of up to 2,000 ft. bgs.
To determine potential effects of pumping on the aquifer and desert ecosystem, models were run using three scenarios, assuming three recharge rates:

- 32,000 AFY (expected)
- 16,000 AFY
- 5,000 AFY

For ALL scenarios, NO NEGATIVE IMPACT on aquifer, flora, fauna, springs, or desert ecosystem.
LEGAL FRAMEWORK, PERMITTING & NEXT STEPS
Legal Framework

• Project’s proposed extraction and export of water is consistent with all legal principles applicable to water management in California.

• The California Constitution requires maximum reasonable and beneficial use of available groundwater. Article X, Section 2.

• Water Code Section 106 provides a legislative declaration that domestic use is the highest use of water in the State.

• Groundwater may be extracted for off-site appropriative uses so long as there is available groundwater supply that is surplus to the present cumulative needs of overlying owners.

• The Project will not harm any other legal user of water and will not compromise the “No Injury Rule”
Permitting & Third Party Peer Review

- **Groundwater Stewardship Council:** A 13-member unpaid peer review panel found project can be operated without significant impacts, May 2011.

- **CEQA/Environmental Impact Report:** 18-month public process, 100 day public comment, multiple public meetings, EIR certified by Santa Margarita Water District in July 2012.

- **County Groundwater Ordinance:** San Bernardino County Board of Supervisors approved independent groundwater management plan. October 2012.
GMMMP protects Mojave Desert flora, fauna, springs, and aquifer.

- 40 monitoring features, action criteria, and corrective actions.
  - Water Quality
  - Springs
  - Vegetation
  - Subsidence
  - Saline Water Migration
  - Air Quality (for dust)

- Drawdown Maximum = 80 Feet at Wellfield

- GMMMP includes action triggers designed to identify potential impacts before they take effect, and before they are irreversible.

- Enforcement by County and SMWD.
Primary Project opponents: the Center for Biological Diversity and Tetra Technologies Inc. (mining company)

Key environmental concerns: (a) impact on desert flora and fauna; (b) impact on springs in mountains; and (c) impact on air quality.

Tetra was concerned about impacts on its dry lake salt mining ops.

They brought numerous legal cases challenging the Project’s CEQA approval and its underlying science. Six of these case went to court, and in 2014, the Superior Court Judge ruled against all petitions, finding no scientific deficiencies in the Cadiz GMMMP and EIR.

Opponents appealed. In 2016, the California Court of Appeal ruled for Cadiz in all 6 cases, found environmental review sound.
BENEFITS
## Cost Comparison

### Supplemental Water Supply Alternatives

<table>
<thead>
<tr>
<th>Project</th>
<th>Annual Yield</th>
<th>Unit Cost ($/AF)</th>
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</thead>
<tbody>
<tr>
<td><strong>Long-term Annual Supply</strong></td>
<td></td>
<td></td>
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<tr>
<td><em>Cadiz Valley Water Conservation Project</em></td>
<td>50,000</td>
<td>$875 - 1270</td>
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<tr>
<td>OCWD Groundwater Replenishment System</td>
<td>70,000</td>
<td>$900</td>
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<tr>
<td>West Basin Seawater Desalter</td>
<td>22,000 to 112,000</td>
<td>$1,366 to $1,835</td>
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<td>MWDOC - Dana Point Desalter</td>
<td>16,500</td>
<td>$1,403</td>
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<tr>
<td>Carlsbad Seawater Desalination</td>
<td>48,000 to 56,000</td>
<td>$2,014 to $2,257</td>
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<tr>
<td>Huntington Beach Seawater Desalination</td>
<td>56,000</td>
<td>$1,768 to $1,812</td>
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<tr>
<td>Camp Pendleton Seawater Desalination</td>
<td>56,000</td>
<td>$1,900 to $2,340</td>
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<tr>
<td>Elsinore Valley Repurified Water (Wildomar)</td>
<td>3,000</td>
<td>$1,312</td>
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<td>Central Basin Repurified Water (Southeast)</td>
<td>15,000</td>
<td>$1,672</td>
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<tr>
<td>MWD Untreated/Treated Tier 2 Rate</td>
<td>-</td>
<td>$735 - $1,032</td>
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<td><strong>Short-term/Dry-year Supply</strong></td>
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<tr>
<td>Buena Vista Water Storage District</td>
<td>12,000</td>
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<tr>
<td>Madera County Farmers</td>
<td>3,200</td>
<td>$2,190</td>
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<td>Riverdale Farmers</td>
<td>600</td>
<td>$1,800</td>
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Source: all numbers from 2014 public information
Benefits – Water Reliability & Environment

☀️ **Water Conservation.** Conserves 1.5 MAF of water over 50 yrs.

☀️ **Enhanced Water Supply.** Increases area’s long-term water supply reliability with a source not dependent on Colorado River or State Water Project.

☀️ **Protects Environment.** No harm to flora, fauna, aquifer, springs, or desert ecosystem.

☀️ **Broad Service Area.** Cadiz water to serve inland and coastal southern California.

☀️ **High Quality Water.** Cadiz water in CRA = lower TDS in CRA.

☀️ **Groundwater Storage.** 1 MAF underground storage capacity for imported water = reliability for water providers.
Benefits – Economy and Jobs

☀ $800 million total economic benefit from construction.

☀ 5,900 jobs created – 1,500/year during construction.

☀ 10% of jobs reserved for Veterans.

☀ $19.6 million in new state and local tax revenues in Phase 1 construction.

☀ $6 million/year in local tax revenue once Project is operational.
Innovations

- **Support DCP.** Enable 150,000 AF of in-lieu storage capacity in Phase 1; 850,000 AF of imported storage capacity in Phase 2.

- **Repurposing Existing Infrastructure.** Use 226 miles of existing natural gas pipelines for conveyance of water.

- **Desert Tortoise Preservation and Enhancement.** Partnership with San Diego Zoo Global for creation of 7,400 acres for desert tortoise conservation bank. Desert tortoise rearing and protection is underway.

- **Water Quality.** CR6 technology.

- **Helping Disadvantaged Communities.** Water for economically disadvantaged communities within Project Participant service areas.

- **Green Storage.** Dedication of storage capacity for environmental benefit.

- **Green Power.** In-pipe hydropower generation.
Steps to Breaking Ground

✔ Environmental Review with extensive public comment.
✔ Approval of Environmental Review by Lead Agency.
✔ Approval of groundwater management plan by San Bernardino County.
✔ Resolution of CEQA lawsuits and appeals.
✔ BLM decision permitting use of railroad ROW.
❖ Resolve new litigation re ROW.
❖ CRA tie-in and terms with Metropolitan Water District.
❖ Final design and final construction financing.
Questions?

For more information:
www.cadizinc.com
www.cadizwaterproject.com

Contact:
asteinfeld@bhfs.com
805.882.1409