CHALLENGES OF IMPLEMENTING MUNICIPAL RECLAMATION AND RECHARGE IN ARIZONA: REUSE IT OR LOSE IT

GWPC ANNUAL FORUM
Salt Lake City, Utah
September 13-17, 2009

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Client Credits:

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<td>- Glendale Recharge Facility Expansion</td>
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<td>- Queen Creek Reuse and Feasibility Study</td>
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ARIZONA WATER SUPPLIES

- **Surface Water** – all supplies allocated
  - Salt River Project (SRP)
  - Central Arizona Project (CAP)
- **Groundwater** – statutory safe yield goal
- **Reclaimed Water** – final piece of portfolio
  - Direct reuse: irrigation and other uses
  - Indirect reuse: stored and recovered
OVERVIEW OF REUSE & RECHARGE IN ARIZONA

Regulatory and Permitting Framework:
- Arizona Groundwater Management Act (1980)
- Arizona Environmental Quality Act (1986)

Recharge Technology:
- Basins & Infiltration Galleries
- Wells
  - Vadose Zone
  - Injection
  - Aquifer Storage and Recovery

Representative Projects:
- Scottsdale Water Campus
- Surprise Vadose Zone Wells – Phase 1
- Glendale Recharge Facility Expansion
- Queen Creek Reuse and Recharge Feasibility Study
SCOTTSDALE WATER CAMPUS OBJECTIVES

- Integrated Water Resources Management approach
- Optimize reclaimed water supply (RWDS and Well Recharge)
- Produce potable quality source water (MF and RO)
- Meet Assured Water Supply (AWS) Designation
- Achieve safe yield goal and sustainable supplies
- Pioneered vadose zone well design
SURPRISE REUSE-RECHARGE FACILITY

- Resource management vs irrigation disposal
- Master plan, design, construction new facility
- Total recharge for long-term disposal compliance and supply management
PROJECT CHALLENGES AND ISSUES

- Permitting challenges – available aquifer “space” and modeling
- Reclaimed water quality (open storage) and enhanced filtration
- Incorporating system construction into ongoing treatment plant expansion
Vadose Zone Recharge Technology

- Footprint
- Cost
- Operation
- Maintenance
TYPICAL VADOSE ZONE WELLS

SURPRISE TANKS CENTER VADOSE ZONE RECHARGE FACILITY

BY:
HSI hydroSystems Inc.

LAN
Completed Wellhead & Injection Manifold

- Manual Gate Valve
- Pressure Gauge
- PRV
- Flowmeter
- Combo Air Release/Vacuum Valve
- Transducer Vent Line
- Gravel Pack Injection Line
- Gravel Feed Tube
- Notice: Reclaimed Water Do Not Drink
GLENDALE RECHARGE EXPANSION

- Subsequent phase under existing permit
- Expansion (4 wells) and rehabilitation of initial well (8 wells) system
- Six month recharge season plus redundancy to effluent recovery distribution system (ERDS)
- Design, test wells and filtration testing
- CMAR delivery method
GLENDALE RECHARGE FACILITY EXPANSION
PROJECT CHALLENGES AND ISSUES

- Ineffective performance of existing recharge system
- Filtration of reclaimed source water
- Integration of system operation with existing reuse system and recharge wells
- Dedication of booster capacity among existing wells, new wells and effluent recovery distribution system
QUEEN CREEK FEASIBILITY STUDY

- Maximize direct reuse and recharge for resource management
- Achieve water supply sustainability
- Comprehensive reclaimed system tied to multi-party IGA
- Pre-design through 3 implementation phases
- Implement through Design-Build-Finance
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<th><strong>PROJECT CHALLENGES AND ISSUES</strong></th>
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<td>• Feasibility stage to pre-design (maximize direct reuse or recharge)</td>
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<td>• Route alignment</td>
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<td>• Recharge siting and permitting</td>
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<td>• High capital costs</td>
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<td>• Funding and implementation challenges</td>
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SUMMARY

- Reclaimed water = renewable and sustainable supply
- Both direct reuse and recharge for storage are complementary management options
- Recharge well is effective technology
- Project design is site specific
Thank You!

Questions?

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