Presentation Overview

- BPU Direction on Groundwater
- Water Master Plan Emergency Storage
- Groundwater Basin Description
- Historical and Current Groundwater Use
- Emergency Groundwater Investigation
- USGS Groundwater Study
- Groundwater Master Plan Recommendation
BPU Resolution No. 776

- September 2003 – Council directed Utilities staff to ask BPU to evaluate role of local supply in meeting water supply needs
- November and December 2003 – BPU met in Study Session and General Session
- December 4, 2003 – BPU adopted Resolution No. 776
  - Directed Utilities to pursue development of water sources to provide reliable water supply through the General Plan Building Horizon
  - Include development of local groundwater, additional recycled water use, additional supplies from SCWA and other sources as they become available
  - Evaluate sources based on supply reliability, cost, timing and environmental impact
BPU Study Session

- January 2010 BPU Study Session
  - Overview of current Groundwater Program
  - Review of Groundwater Basin
  - Update on Emergency Groundwater Program

- Board Direction to begin developing Groundwater Master Plan
Emergency Storage/Supply

- Groundwater is a part of the emergency supply portfolio
- Aqueduct Zone storage deficit
- Storage vs Water Quality
Groundwater Basin Description

- Santa Rosa Valley Groundwater Basin
  - Healdsburg Area Sub-basin
  - Santa Rosa Plain Sub-basin
  - Rincon Valley Sub-basin

- The City overlies portions of groundwater basins
  - Santa Rosa Plain Sub-basin
  - Rincon Valley Sub-basin
  - Kenwood Valley Groundwater Basin
Groundwater Yield

- Groundwater storage estimates range from 950,000 af to 4,300,000 af

- Groundwater budget
  - Average annual natural recharge (1960-1975) = 29,300 af
  - Average annual pumpage (1960-1975) = 29,700 af

- USGS Study will provide updated data
Groundwater Quality

- Overall Groundwater Quality is good
- Constituents of Concern
  - Iron
  - Manganese
  - Hardness
  - Some color and taste issues in private wells
- City’s Farmers Lane Wells
  - Slightly elevated concentrations of iron and manganese
  - Temperature
Groundwater Level Monitoring

- DWR Groundwater Level Monitoring
  - Historically included 75 wells in Santa Rosa Plain and Rincon Valley sub-basins
  - 28 wells are currently actively monitored on either a semi-annual or monthly basis
    - Most wells monitored since 1989
    - Many extend back to 1970s

- City and Other Agency Groundwater Levels

- New groundwater monitoring requirements (CASGEM)
City’s Use of Local Groundwater

- Prior to 1959, City relied primarily on groundwater for water supply
- By 1980, City relied solely on purchased water from SCWA for water supply
- In July 2005, City converted Farmers Lane wells from emergency to active status
- City began using Farmers Lane wells in 2007 to provide supplemental supply during peak summer months
- Future groundwater use anticipates emergency supply and supply during peak summer months
City of Santa Rosa Wells

- Farmers Lane Wells No. 1 and 2
  - Provide potable water supply
- Carley Well & Peters Spring Well
  - Provide landscape irrigation
  - Also permitted as emergency stand-by wells
- Farmers Lane Well No. 3
  - Only used for minor amounts of landscape irrigation
- Leete Well
  - Only permitted as emergency stand-by wells
- Inactive Wells
  - Freeway Well: Out of service due to contamination by others
  - Sharon Park Well: Inactive due to severe sanding
Farmers Lane Wells

- Farmers Lane Wells No. 1 and 2
  - Wells are 800 feet and 1,000 feet deep and draw water primarily from the Sonoma Volcanics
  - Water levels have been in an artesian condition for several decades
  - Groundwater treatment system for iron and manganese removal and disinfection
City’s Potable Groundwater Use

Maximum Annual Pumpage = 2,300 af/yr

Total estimated municipal pumpage from 2000 to 2006 was 161 af, or an average of about 27 af/yr.
Emergency Groundwater Investigation

- In 1998, City completed well field Study identified steps to develop additional 8.7 million gallons per day of emergency groundwater supply
- Adopted Capital Improvement Program for development of emergency groundwater resources
- Test borings have been drilled at 5 locations
Test boring Process

4 pronged approach, in parallel

1. Site selection  
   *Continuous*

2. Site ‘clearance’  
   *Continuous*

3. Site Work (preparation + drilling)  
   *Cyclical*, most expense

4. Data Reduction/Reporting  
   *Feeds back* into process
Test boring Site Selection Constraints

- Builds on Previous Studies (Bulletin 118, USGS, DWR, City WSA)
- Appropriate relative to Fault Traces, Monitoring, Geology, Recent GW Program Results
- In/Near Previous Target Areas (1989 & 1997)
- >50 Feet From Sewers
- >1,000 Feet From Known Toxic Release Sites
- >Half Acre Parcel Size With Good Access
- Preferably City-Owned Parcels
- Good Water Main Access/Supply (hydrant)
- Sufficient Sanitary Sewer Capacity
- Willing Property Owner (Access Agreement)
- Generally Feasible For Drilling Operations
Test boring Environmental Clearance

- Surveys
  - Biological Threatened and Endangered Species – City Staff
  - Cultural Survey – Outside Consultants
  - Wetland Survey – City Staff & Outside Agencies
- Prepare Either NOE or MND
- Public Comment Period (MND)
- Respond to Comments (MND)
- BPU Adoption (MND) – Next slated for 3/17
Test boring Site Preparation

- Install storm water controls
- Install sound wall
- Cuttings Disposal
- Sewer Discharge
- Water supply
- Access
- Trees
- Hardscape
- Parking
- Document site conditions
  - Photograph conditions
- Kick-off meeting
  - City
  - ECON
  - Driller
- PRMD Permit
  - Send permit info to driller
  - Driller completes and submits to PRMD
- Environmental clearances
  - Nesting bird survey (Feb 1 to Aug 31)
  - Others as may be required
- Public notifications
  - Residents
  - Public Safety
  - Park users
Test boring Site Logistics
Discharge Program
Discharge Program
Historical Work

North Village, January 2009
Northwest Community Park, July 2006
Place to Play Park, August 2006
Martha Way, January 2010
Doyle Park, July 2009

Explanation
- Test Boring
- Active Water Supply Well
- 1997 Target Area
- 1989 Target Area
- Major Highway
- Major Road
‘Take Home’ Points

- Test Borings ONLY. Not production wells
- Goal is to establish understanding, determine feasibility
- Even test boring efforts are complicated
- Test borings are ~ $500k each, depending
- 3 test borings per year – sustainable rate of progress
  - Budget reductions proposed – modest level of effort maintained
- Eventual shift into production well efforts
  - When? More data will determine
CIP Funding

Existing
FY 11/12  FY 12/13  FY 13/14  FY 14/15  FY 15/16

Original Budget
Proposed Reduction
USGS Study

- 5 year study of Santa Rosa Plain Subbasin
- Participants
  - Sonoma County Water Agency
  - Cal-American Water
  - City of Cotati
  - City of Rohnert Park
  - City of Santa Rosa
  - City of Sebastopol
  - City of Windsor
USGS Study Objectives

- Develop and updated assessment of the geohydrology and geochemistry of the Santa Rosa Plain Subbasin (SRP)
- Develop a multi-aquifer ground-water flow model for SRP
- Evaluate the hydrologic impacts of alternative ground-water management strategies on the basin
- Study estimated to be released in September 2011
Groundwater Master Plan

- Develop Santa Rosa’s groundwater strategy and recommend groundwater policies
- Compile relevant groundwater data in one place, including USGS Study and test boring data
- Define emergency and peaking groundwater demand
- Analyze aquifer storage options
Groundwater Master Plan

Consultants
Engineering &
Environmental Support

Water Resources
Policy
Studies
Master Plan
Development

Asset Management
Data Mgt
Mapping
Environmental

Local Operations
Well Operation

CIP
Test Borings
Construction Contracts
Recommendation

- Utilities Department recommends the Board, by motion, authorize staff to prepare and issue an RFP to prepare a Groundwater Master Plan
Questions