City and Utilities Commissions
Joint Workshop

Securing Our Resources
January 18, 2007
Information Validation in Process
WATER SUPPLY STRATEGIES 2007-2016

• Enhance conservation through policy, education, conservation devices, developer-builder options, and rate structure.

• On existing UC property, develop draught tolerant alternate source employing non-potable/potable sources (up to 5mgd) employing surficial wells and/or multiple deep saline acquifer wells for withdrawal and/or injection to supply non-potable pond storage or potable supply piped to Glencoe.

• Secure up to (5mgd) of local water co-product generation, local private ownership with a UC purchase option or local partnership contract.

• Enhance local interconnection plans to include remote status and operation.

• Incorporate emergency potable water processing capability.
SHORT-TERM IRRIGATION WATER NEEDS

SUMMARY

• Current build rates ~125 units/month.
• Each unit creates a net deficit in irrigation of 470 gpd.
  
  (200 gpd X 65% WRP reuse = 130 less 600 gpd irrigation demand = 470 gpd shortfall)
• Irrigation surplus is currently 1,250,000 gpd.
• 2,660 new units will eliminate the surplus.
• @ 125 units/month, in 22 months (or November, 2008) there will be a need for irrigation water.

So, in less than three years, we need a reliable answer.

WHERE DO WE OBTAIN THIS WATER?
Is the UC Land Suitable?
Our Aquifer

The Floridan Aquifer
Source: SJWMD 2005 Water Supply Plan
Note: Depth indicated is total depth of test well. Most wells were backplugged.
Water-Wise Plan Elements

Need:
• Irrigation (Bright Water) supplies will be exhausted in less than three years.

Design Criteria:
• Drought and hurricane tolerant.
• Modular to meet growing demand.
• Supply irrigation or potable demand.
• Portable capability for emergency conditions.
• Cost effective.
• Mitigate risk.

Facility Criteria:
• UC property can supply irrigation quality water to supplement WRP production and pond storage.
• Harvest rain water from the UC I-95 Property--TARGET ~ 1,600,000 gallons/day
• Store, blend, and supplement irrigation water needs from the lower Floridan aquifer—TARGET~2,000,000 gallons/day additional.
• Use appropriate modular (add another unit as needed) water purifying technology to produce irrigation or potable water.
• Interconnect harvest piping systems to lower Floridan storage, irrigation pond, and raw water well systems.

Next Steps (Phase 1):
• Determine test locations.
• Drill ~1200 depth confirmation/monitoring well and evaluate results (~$750k?).
• Install pilot surficial well(s) and evaluate results (~$250k?).
• Examine (through RFQ) non-traditional water sourcing technologies.
• Analyze results for next implementation phase.

EXAMPLE ONLY
Land Profile Calculation Estimate

829 acres less 160’ FP&L easement, potential 130’ Williamson Blvd, and FP&L 230 kV transmission substation = ~759 acres.

Market Perspective:

• FMPA loan remaining debt $8.1 Mil (9-30-2020) $689,025 (P&I) (~$6.2Mil forecasted for year-end)
• @ $25k/acre X 759 = $18,975,000 (Volusia Property Appraiser 2007 @ $10k/acre)
  $1,618,772 tax potential for $400 million base (4.04693 mills/sale or lease)
  $6 Mil (UC Developer agreements 1139 ERU’s) and other CIAC
  Economic multiplier 3:1
• Commercial/Residential Development—highland potential environmental contamination affecting water harvesting.
Resource Perspective:

• 436 acres wetland mitigation credits? @ ~$25k/acre? ($10.9 Mil)
• 2-20? MW Renewable Bio Plants (@$60Mil plant/$1.5Mil, $249k tax) Electric risk $2 Mil/yr use 11,638 mmbtu (1,280 tons)/day using ~9,500 btu/kwh heat rate, LP boiler (traditional). Current controllable biomass can produce ~5 MW. Environmentally must be compatible with water harvesting concept. Non-traditional thermal sources may be more efficient and would be evaluated.
• 323 acres (highland) lease @ ~$??k/acre biofuel sand/slash pine forest 10-year cycle 288,000 mmbtu/yr or 819 mmbtu/day (90 tons) @$2/mmbtu = ~$597k/yr fuel cost avoidance.
• City tipping Fees for bio solid waste ~$750k/yr--57 tons/day or 520 mmbtu/day.
• Additional needed bio solid waste fees and fuel stock ~1,100 tons/day. Hog fuel or waste water plant solids may become fuel.
• 3 Acres for 3MG reuse storage tank-- ~$300k cost avoidance
• @ $1.00/1000 net, irrigation water $2,372,500 (6%--~$145k)
• Economic multiplier from plant 7:1
• FPL Transmission Substation (~$12 Mil = $49k taxes)
• Renewable generation Carbon Tax value??
• Retain Highlands Land Value and augment with other alternative water harvesting technologies.
Aquifer to Aquifer ASR
This land was acquired by eminent domain for “public use.”

- Most of the land area will be used to secure our future potable and irrigation water sources.
- Water Harvesting will be accomplished in the magenta areas and stored in the lower (or upper in some cases) Floridan aquifer.
- Water harvesting processing will occur in the central rectangle area with the addition of a private lease purchase renewable power plant using the yellow for fuel laydown.
- Proposed FP&L 230 kV substation.
- Williamson Blvd through connector along west property line.

New Potable Well locations and harvested raw water will be connected by manifold piping to Glencoe. Harvested irrigation water will be manifolded to the storage pond or bright water mains as appropriate. Based upon performance, refinements to water sourcing needs are adjustable.
Energy-Wise Plan Elements

- Conservation Pilot Assessment
  - General
    - Energy conservation education
    - Customer consultation
    - Capacity RFP
    - RFP purchase power contracts (short/long term)
    - RFP innovative demand-side management programs
    - RFQ energy services companies
    - Solar thermal/electric programs
    - Green building codes, builder, and consultation
    - Rate design incentives
    - Real-time pricing/metering
  - Residential
    - Self-audit materials
    - Conservation surveys
    - Duct leakage repair
    - Weatherization
    - Infared scanning service
  - Commercial
    - Self-audit materials
    - Lighting Service
    - Conservation surveys
    - Infrared scanning service
    - Thermal energy systems (geothermal, storage/exchange/recovery, etc.)
- Partnership in Renewable Energy Modular Design Plants on UC land
  - 20 MW power contract with lease/purchase option
  - (Biomass) fuel compatible with water harvesting
  - Water production potential
- Distributed generation.
- Partnership to purchase power from renewable sources interconnected to UC transmission.

EXAMPLE ONLY