Background - Legislative Mandate

- 1987 – Hawai‘i Water Code (HRS Chapter 174C)
- Protect Hawai‘i’s surface & ground water resources
- Established the Commission on Water Resource Management (CWRM)
- Development of the Hawai‘i Water Plan – “a long range planning guide for CWRM”
Hawai‘i Water Plan

Protection Policies
- Water Resource Protection Plan
- Water Quality Plan

State Needs
- State Water Projects Plan
- Agricultural Water Use and Development Plan

County-Wide Demands
- County Water Use and Development Plans
- Land Use Consistency
Technical Approach

Guiding Principles

- Public Trust Doctrine – …waters of the State are held for the benefit of all citizens of the State.

- Water is a most precious resource & shall be used wisely – to be conserved, not wasted

- Highest quality water shall be used for the community’s highest beneficial uses

- Lower quality water (reuse water, surface water, brackish water) should be used whenever possible
Technical Approach

Key Tasks

- Inventory Existing Sources
- Inventory Existing Uses
- Identify Existing Water Systems
- Assess Land Use Plans & Policies
- Project Future Water Demands
- Identify Resource Options
- Obtain Stakeholder and Public Input & Review
Island of Kaua'i
CWRM Ground Water Hydrologic Units & Sustainable Yield
# Registered Wells

(Kilauea – Kalihiwai – Hanalei – Wainiha Aquifer Systems)

<table>
<thead>
<tr>
<th>Code</th>
<th>Aquifer System</th>
<th>Total # of Wells</th>
</tr>
</thead>
<tbody>
<tr>
<td>20105</td>
<td>Kilauea</td>
<td>55</td>
</tr>
<tr>
<td>20201</td>
<td>Kalihiwai</td>
<td>25</td>
</tr>
<tr>
<td>20202</td>
<td>Hanalei</td>
<td>7</td>
</tr>
<tr>
<td>20203</td>
<td>Wainiha</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Island of Kaua'i</td>
<td>360</td>
</tr>
</tbody>
</table>
# Declared Surface Water Diversions

(Kilauea – Kalihiwai – Hanalei – Wainiha Aquifer Systems)

<table>
<thead>
<tr>
<th>Code</th>
<th>Aquifer System</th>
<th>Total # of Declared Diversions</th>
</tr>
</thead>
<tbody>
<tr>
<td>20105</td>
<td>Kilauea</td>
<td>17</td>
</tr>
<tr>
<td>20201</td>
<td>Kalihiwai</td>
<td>13</td>
</tr>
<tr>
<td>20202</td>
<td>Hanalei</td>
<td>13</td>
</tr>
<tr>
<td>20203</td>
<td>Wainiha</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>Island of Kaua'i</td>
<td>292</td>
</tr>
</tbody>
</table>
Alternative Water Sources

In Order to Conserve Water...

RECYCLED WATER
IN USE

DO NOT DRINK
DO NOT WASH HANDS

WASH HANDS WITH CLEAR WATER, IF YOU COME IN CONTACT WITH RECYCLED WATER
Inventory Existing Uses (by CWRM Categories)

- Domestic
- Industrial
- Irrigation
- Military
- Municipal
- Agriculture
Technical Approach
Agricultural Water Use Projections

- Working with County Planning, State Department of Agriculture & Agribusiness Development Corporation
- AWUDP to determine most reasonable projection – use rate of 3,400 gpad
- Important Agricultural Lands Study as the basis
- Select crops that can be propagated with ambient rainfall whenever possible
- Utilize capability of existing and former irrigation systems – rehabilitate & repair – AWUDP initial focus
- Maximize use of lower quality water (reuse water, surface water, brackish water) whenever possible
Identify Existing Water Systems

- County DOW Systems
- Privately-owned Public Water Systems
- Irrigation Systems
- Reclaimed Water Systems
- Individual Systems – typically catchment
Assessment of Land Use Plans & Policies

- Initial Assessment
  (Island-wide comparison)
  - Preliminary evaluation of sustainability of land use policies
  - Identification of “sensitive” and “less-sensitive” areas
  - Concept of “Full Build-out” scenarios
  - Application of standard water planning methods to existing land use plans and policies
  - Focus on domestic demands and groundwater sources

Full Build-out Scenario – ALL land area to be developed to its theoretical maximum extent
<table>
<thead>
<tr>
<th>DEMAND/SUSTAINABLE YIELD (MGD)</th>
<th>SUSTAINABLE YIELD (WRPP)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>GENERAL PLAN FULL BUILD-OUT SCENARIO</td>
<td></td>
</tr>
<tr>
<td>ZONING FULL BUILD-OUT SCENARIO</td>
<td></td>
</tr>
</tbody>
</table>
Full Build-Out Water Demand - 20105 Kilauea
(Domestic, Commercial, & Industrial Demands)

- SY = 5

- General Plan Full Build-Out Scenario = 1.23
- Zoning Full Build-Out Scenario = 1.16

DRAFT
10/2015
Full Build-Out Water Demand - 20201 Kalihiwai
(Domestic, Commercial, & Industrial Demands)

SY = 11

General Plan Full Build-Out Scenario = 5

Zoning Full Build-Out Scenario = 2.22
Full Build-Out Water Demand - 20203 Wainiha
(Domestic, Commercial, & Industrial Demands)

SY = 24

General Plan Full Build-Out Scenario = 0.54
Zoning Full Build-Out Scenario = 0.29
<table>
<thead>
<tr>
<th>Code</th>
<th>Aquifer System</th>
<th>Sustainable Yield (2008 WRPP)</th>
<th>Full Build-Out</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>General Plan</td>
</tr>
<tr>
<td>20101</td>
<td>Koloa</td>
<td>30</td>
<td>19.37</td>
</tr>
<tr>
<td>20102</td>
<td>Hanama‘ulu</td>
<td>36</td>
<td>20.10</td>
</tr>
<tr>
<td>20103</td>
<td>Wailua</td>
<td>43</td>
<td>2.50</td>
</tr>
<tr>
<td>20104</td>
<td>Anahola</td>
<td>17</td>
<td>10.35</td>
</tr>
<tr>
<td>20105</td>
<td>Kilauea</td>
<td>5</td>
<td>1.23</td>
</tr>
<tr>
<td>201</td>
<td>LI HUE</td>
<td>131</td>
<td>53.55</td>
</tr>
<tr>
<td>20201</td>
<td>Kaliihiwai</td>
<td>11</td>
<td>4.98</td>
</tr>
<tr>
<td>20202</td>
<td>Hanalei</td>
<td>34</td>
<td>3.04</td>
</tr>
<tr>
<td>20203</td>
<td>Wainiha</td>
<td>24</td>
<td>0.54</td>
</tr>
<tr>
<td>20204</td>
<td>Napali</td>
<td>17</td>
<td>0.00</td>
</tr>
<tr>
<td>202</td>
<td>HANALEI</td>
<td>86</td>
<td>8.56</td>
</tr>
<tr>
<td>20301</td>
<td>Kekaha</td>
<td>10</td>
<td>4.96</td>
</tr>
<tr>
<td>20302</td>
<td>Waimea</td>
<td>37</td>
<td>0.32</td>
</tr>
<tr>
<td>20303</td>
<td>Makaweli</td>
<td>26</td>
<td>1.46</td>
</tr>
<tr>
<td>20304</td>
<td>Hanapepe</td>
<td>22</td>
<td>0.52</td>
</tr>
<tr>
<td>203</td>
<td>WAI MEA</td>
<td>95</td>
<td>7.26</td>
</tr>
<tr>
<td>TOTAL</td>
<td>Island of Kua‘i</td>
<td>312</td>
<td>69.37</td>
</tr>
</tbody>
</table>
PROJECTED DEMAND

DEMAND (MGD)

GENERAL PLAN FULL BUILD-OUT SCENARIO

ZONING FULL BUILD-OUT SCENARIO

EXISTING DEMAND

EXISTING POPULATION

PROJECTED WATER DEMAND

PROJECTED POPULATION GROWTH

HIGH GROWTH

MEDIUM GROWTH

LOW GROWTH

TIME
Technical Approach
Identify Resource Options

- Watershed Protection
- Consistently apply demand-side measures
  - Conservation Programs and Policies
  - Xeriscape/Landscape management
  - If necessary – reduce allowable development density
- Maximize use of lower quality water (reuse water, surface water, brackish water) whenever possible
- Develop and maintain conventional water system infrastructure prudently
Challenges
Limited Information

- Based on the best available information
- Information on stream diversion and instream use is limited – WRPP
- AWUDP projections not available and information on irrigation system capacities limited
- Requires reasonable judgment & assumptions
Challenges
Opportunity to Focus Future Efforts

- Identification of data needs
- Identification of “sensitive” areas requiring more detailed evaluation and careful land use planning
- Linking of land planning policies with infrastructure & resource availability
Implementation Plan

- Kauai Water Plan 2020
  - Infrastructure Masterplan
  - 20-year CIP

- Initiation of New Programs
  - Findings of WUDP assessment
  - Identification of “sensitive” areas requiring more detailed evaluation and careful landuse planning
Kauai WUDP - Proposed Timeline

<table>
<thead>
<tr>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Advisory Group Meeting #1</td>
<td>Advisory Group Meeting #2</td>
</tr>
<tr>
<td></td>
<td>Project Description approved by CWRM</td>
<td>Present Preliminary Findings to CWRM</td>
</tr>
<tr>
<td>Preliminary Analyses</td>
<td>Draft WUDP</td>
<td>Present Draft WUDP to CWRM</td>
</tr>
<tr>
<td></td>
<td>Public Meeting #1</td>
<td>Pre-Final WUDP</td>
</tr>
<tr>
<td></td>
<td>Develop WUDP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Present Pre-Final WUDP to Kauai Board of Water Supply</td>
<td></td>
</tr>
</tbody>
</table>
Stakeholder Advisory Committee

Dee Crowell          Debra Lee-Jackson
Landis Ignacio       Jerry Ornellas
Ian Kagimoto         Tom Shigemoto
Peter Kea            Shawn Shimabukuro