William Bow
Civil Engineer
Introduction to William Bow

- CEO and Principal Engineer, Bow Engineering & Development, Inc.
- 44 years of civil engineering experience with planning, design, and construction administration
- Bow has extensive knowledge in hydraulic design, hydrologic analysis, utility system design, subdivision site development, trenchless construction techniques, highway and roadway planning, master planning, and drainage/water/sewer system design
Potable Water Demand

- Kauai Average Daily Demand: single family 500 gal/unit multi-family 350 gal/unit
- Fire Protection: 2000 GPM 2 HR Duration
- HoKua Place is expected to use an average of approximately 0.4 MGD of potable water at full build-out.
- Proposed well to service Hokua Place
- 2 water reservoirs at 313 foot and 214 foot elevation, 700,000 Gal total capacity required for HoKua Place

<table>
<thead>
<tr>
<th>Service Zone</th>
<th>Ave Demand GPD</th>
<th>Max Demand GPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>313-Foot Zone</td>
<td>121,476</td>
<td>182,214</td>
</tr>
<tr>
<td>214-Foot Zone</td>
<td>285,446</td>
<td>428,169</td>
</tr>
<tr>
<td>Project Total</td>
<td>406,922</td>
<td>610,383</td>
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</table>
FIGURE 4
HYDRAULIC MODEL OF DOW’S 313-FOOT SERVICE ZONE IN THE VICINITY OF KAPAA HIGHLANDS

LEGEND:

- EXISTING PIPELINE
- NEW PIPELINE
- PIPE NODE
- KULANA SUBDIVISION PIPELINES

GRAPHIC SCALE:

NORTH
FIGURE 5
HYDRAULIC MODEL OF DOW’S
214-FOOT SERVICE ZONE IN THE
VICINITY OF KAPAA HIGHLANDS
Wastewater Disposal

- Average daily flow rate of wastewater 0.21 MGD
- Maximum daily flow 1.06 MGD, peak daily flow 1.31 MGD at full build out
- HoKua Place will build 18-inch sewer line to connect to County wastewater system
Kauai County Wastewater Treatment Facilities

- 21-inch main sewer line on Kukui Street maximum capacity 3.23 MGD, existing use 1.82 MGD

- Per correspondence with DPW Wastewater Management Division (1/28/2021), prior to the COVID-19 pandemic, the Wailua Wastewater Treatment Plant was treating approximately 0.6 MGD daily average flow. The plant’s current treatment capacity is 1.0 MGD average daily flow.

- To accept the full flow of the HoKua development, the Wailua WWTP will need to undergo CIP projects to increase its design capacity. HG Kauai will schedule construction to coincide with CIP improvements.

- HoKua Place will contribute to cost of upgrading County wastewater system to accommodate HoKua Place
Storm Water Drainage and Detention

Kauai DPW Drainage Standards require installation of detention basins or other drainage facilities to maintain 2-year and 100-year storm flows at or below predevelopment flow rates.

The existing and proposed conditions were divided in basin areas based on their offsite discharge points. Increases in runoff were estimated at discharge points from existing to proposed condition.

Increase in storm water runoff due to the increase in impervious surface was used to determine the sizes needed for the proposed detention basins.

Detention Basin 1 will serve Multi-family 1, Park/Pool, and Roadway 1. Detention Basin 2 will serve Multi-Family 2, Single Family1, Single Family 2, Neighborhood Commercial, and Roadway 2.
## Detention Basin Sizing

<table>
<thead>
<tr>
<th>Existing Condition</th>
<th>Proposed Condition</th>
<th>Net (cfs)</th>
<th>Required Basin Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basin</td>
<td>Basin</td>
<td>Q&lt;sub&gt;100&lt;/sub&gt; (cfs)</td>
<td>Q&lt;sub&gt;100&lt;/sub&gt; (cfs)</td>
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<tr>
<td>E</td>
<td>Detention Basin 1</td>
<td>100.95</td>
<td>353.57</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B, D</td>
<td>Detention Basin 2</td>
<td>245.60</td>
<td>501.00</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
<td>346.55</td>
<td>854.57</td>
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</table>
Solid Waste Management

- Each household will generate an average of 18 pounds of solid waste per day
- Kauai County is updating Integrated Solid Waste Management Plan
- HoKua Place will comply with ISWMP mandates and encourage recycling of solid waste and green waste
- County provides single-family residences with solid waste collection on a weekly basis. A refuse transfer station is located in Kapa‘a town.
- Condo associations must contract for private solid waste disposal
- Central Kaua‘i Landfill in Kekaha has capacity to accommodate HoKua Place solid waste.