Site-specific development of Alternatives:

Long Creek

Most likely Potential Sources =
Septic, Pets for Subdivision
Cattle, Feral Hogs, Pets for Upper Watershed
Long Creek Subdivision

**OWTS**

- Avg build year 1980
- 61 permits
- Average Lot ~26,000 ft\(^2\)
- Spray Application
  - Septic or Aerobic Tanks
- Drip Emitters
  - Aerobic Tanks
- 25 year life cycle
- Equivalent Annual Cost Index
  - 0.36

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**Long Creek Subdivision**

Centralized local wastewater treatment

Low Pressure System + Local WWTP Package Plant

- 95 residential lots (95 grinder pumps)
- Average lot size = 0.6 acres
- Volume treated 0.029 MGD
- WWTP discharge into lake
- 25 year life cycle
- Potential Load Reduction = 100 %
- EAC Index = 0.77
Long Creek Subdivision
Alternatives Ranking

<table>
<thead>
<tr>
<th>BMP Alternative</th>
<th>Watershed % Reduction</th>
<th>Time to Implement</th>
<th>Equivalent Annual Cost Index</th>
<th>Score</th>
<th>Feasibility (Constraints/Considerations)</th>
<th>Funding</th>
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</thead>
<tbody>
<tr>
<td>Septic System Replacement</td>
<td>75%</td>
<td>&lt;1 yr</td>
<td>5</td>
<td>0.38</td>
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<tr>
<td>Local Centralized Wastewater Treatment - Independent</td>
<td>100%</td>
<td>2-5 yrs</td>
<td>3</td>
<td>0.28</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Regional Wastewater Treatment</td>
<td>100%</td>
<td>5-10 yrs</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetative Filter Strips</td>
<td></td>
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</tr>
</tbody>
</table>

Site-specific development of Alternatives:

Sky Harbor
Sky Harbor Subdivision
OWTS

- 271 Permits, 753 parcels;
  Avg. year for subdivision 1981
  Avg. Lot Size 15,250 ft²
- Repair/Replace
  - Significant land could be suitable
    for conventional drainfields and
    leaching chambers
  - Large lots suitable for spray
    irrigation
  - 25% conventional, 12.5%
    leaching chambers, 12.5% drip
    emitters, 50% spray application
- 25 year life cycle
- Equivalent Annual Cost Index
  - 0.26
- Pollutant Load Reduction
  - 13%
Sky Harbor Subdivision
Centralized Wastewater Treatment

Low Pressure System + Local WWTP Package Plant

- 754 lots (754 grinder pump units)
- 1 Lift Station
- Average lot size = 0.35 acres
- Volume treated 0.226 MGD
- WWTP discharge into lake
- 25 year life cycle
- Potential load reduction = 13%
- EAC Index = 0.27

Mixed System + Local WWTP Package Plant

- Low Pressure
  - 242 lots
- Gravity
  - 512 lots
- 1 Lift Station
- Avg lot size 0.35 acres
- Volume treated 0.226 MGD
- WWTP discharge into lake
- 25 year life cycle
- Potential load reduction = 13%
- EAC Index = 0.18
Sky Harbor Subdivision
Wet Ponds

- TCEQ Guidelines for Wet Ponds:
  - Design to remove 80% of total suspended solids (TSS)
  - Drainage size limits 10 acres – 640 acres
  - Continuous base flow must be available or make up water provided

- Contributing watersheds to Sky Harbor
  - Bee Creek Tributary (375 acres)
    - Produces 6,714 lbs of TSS annually
    - Requires 1.6 acre surface area to remove 80% TSS (assume 3ft depth)
  - Bee Creek (3419 acres)
    - Produces 61,496 lbs of TSS annually
    - Requires 15 acres surface area to remove 80% TSS (assume 3ft depth)

To treat both watersheds for 80% TSS removal:
- 12 wet ponds
- Sizes: 0.5 acres-2.5 acres
- 10 of 12 ponds may need make up water source and development

Costs include excavation and haul, outfall structure, maintenance items, erosion and sedimentation controls, vegetation, make up water
- 754 lots in subdivision
- 25 year life cycle
- Potential concentration reduction = 65%
- EAC Index = 0.48
Sky Harbor Subdivision  
Cove Circulation Systems

Intake-Discharge Circulation System

- 4 day water turnover rate
- 3 discharge points
- 64 hp pump
- PVC pipe
  - 5,590 linear feet
  - 12"-24" diameter
- 754 lots in subdivision
- 15 year life cycle
- Potential concentration reduction = 39%
- EAC index = 0.11

Sky Harbor Subdivision  
Alternatives Ranking

<table>
<thead>
<tr>
<th>BMP Alternative</th>
<th>Watershed % Reduction</th>
<th>Time to Implement</th>
<th>Equivalent Annual Cost index</th>
<th>Score</th>
<th>Feasibility (Constraints/ Considerations)</th>
<th>Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Septic System Replacement</td>
<td>9%</td>
<td>1 yr</td>
<td>5</td>
<td>0.26</td>
<td>3</td>
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</tr>
<tr>
<td>Local Centralized Wastewater Treatment - Independent</td>
<td>13%</td>
<td>1-2 yrs</td>
<td>3</td>
<td>0.18</td>
<td>4</td>
<td>BW mixed</td>
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<tr>
<td>Regional Wastewater Treatment</td>
<td>13%</td>
<td>1-10 yrs</td>
<td>1</td>
<td></td>
<td>8</td>
<td></td>
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<tr>
<td>Cove Circulation Systems (Fountains, etc.)</td>
<td>39%</td>
<td>2-1 yrs</td>
<td>4</td>
<td>0.11</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Catchment Basin</td>
<td>65%</td>
<td>4-2 yrs</td>
<td>3</td>
<td>0.48</td>
<td>1</td>
<td>2 acre pond</td>
</tr>
</tbody>
</table>

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Site-specific development of Alternatives:

Port Ridglea East

Most likely Potential Sources = Septic, Dogs
Port Ridglea East Subdivision
Summary - OWTS

- 231 permits (all conventional); 248 parcels
- Avg. lot 10,900 ft²
- Soil survey
  - “Null” for both depth to bedrock and depth to restrictive layer
  - Septic tank absorption field suitability “Very Limited”
- Repair/Replace
  - Conventional systems with drip emitters
- 25 year life cycle
- Equivalent Annual Cost Index
  - 0.45
- Pollutant Load Reduction = 75%

Port Ridglea East Subdivision
Centralized Wastewater Treatment

Low Pressure System + Local WWTP Package Plant

- 248 residential lots (248 grinder pumps)
- Avg. size 0.25 acres
- Volume treated 0.074 MGD
- WWTP discharge into lake
- 25 year life cycle
- Potential load reduction = 100%
- EAC Index = 0.28
Port Ridglea East Subdivision
Cove Circulation Systems

Intake-Discharge Circulation System

- 4 day water turnover rate
- 10 discharge points
- 18 hp pump & 10 hp pump
- PVC pipe
  - 7,010 linear feet
  - 6”-18” diameter
- 248 lots in subdivision
- 15 year life cycle
- Potential concentration reduction = 30%
- EAC Index = 0.14

Port Ridglea East & Nassau Bay II
Regional (Centralized) Wastewater Treatment-Aggregation 1

- 371 lots served
- 1.5 mi interceptor
  - Layout represents broad location potential for infrastructure
- Assume no lift stations
- Volume treated 0.111 MGD
- 25 year life cycle
- Potential load reduction = 98%
- EAC Index = 0.28
Port Ridglea East & Nassau Bay II
Regional (Centralized) Wastewater Treatment - Aggregation 2

- 953 lots served
- 1.5 mi interceptor
  - Layout represents broad location potential for infrastructure
- Assume 2 lift stations
- Volume treated 0.286 MGD
- 25 year life cycle
- Potential load reduction = 98%
- EAC Index = 0.33

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Port Ridglea East Subdivision
Alternatives Ranking

<table>
<thead>
<tr>
<th>BMP Alternative</th>
<th>Watershed % Reduction</th>
<th>Time to Implement</th>
<th>Equivalent Annual Cost index</th>
<th>Score</th>
<th>Feasibility (Constraints/Considerations)</th>
<th>Funding</th>
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<tbody>
<tr>
<td>Septic System Replacement</td>
<td>75%</td>
<td>&lt;1 yr</td>
<td>5</td>
<td>0.45</td>
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<td>ET bed only recommended disposal method due to lot sizes</td>
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<tr>
<td>Septic Maintenance Pump-out pilot program</td>
<td>0%</td>
<td>&lt;1 yr</td>
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<tr>
<td>Local Centralized Wastewater Treatment - Independent</td>
<td>100%</td>
<td>2-5 yrs</td>
<td>3</td>
<td>0.28</td>
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<tr>
<td>Local Centralized Wastewater Treatment - Aggregate</td>
<td>100%</td>
<td>5-10 yrs</td>
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<td>0.28</td>
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<tr>
<td>Regional Wastewater Treatment</td>
<td>100%</td>
<td>5-10 yrs</td>
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<tr>
<td>Cove Circulation Systems (Fountains, etc)</td>
<td>30%</td>
<td>2-1-2 yrs</td>
<td>4</td>
<td>0.14</td>
<td>4</td>
<td>10</td>
</tr>
</tbody>
</table>

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Site-specific development of Alternatives:

Indian Harbor

Most likely Potential Sources = Septic, Dogs
Indian Harbor
Centralized Wastewater Treatment

Low Pressure System + Package Plant

- 1909 residential lots (1909 grinder pumps)
- Avg. lot size 0.36 acres
- 1 Lift station
- Volume treated 0.573 MGD
- 25 year life cycle
- Potential load reduction = 100%
- EAC Index = 0.25

Indian Harbor
Centralized Wastewater Treatment

Mixed System + Package Plant

- Low Pressure
  - 1119 lots
- Gravity System
  - 790 lots
- 1 Lift Station
- Volume treated 0.573 MGD
- WWTP discharged into lake
- 25 year life cycle
- Potential load reduction = 100%
- EAC Index = 0.24
Indian Harbor
Cove Circulation

Intake-Discharge Circulation System

- 4 day turnover rate
- 6 discharge points
- 27 hp pump
- PVC Pipe
  - 5,060 linear feet
  - 9” to 24” diameter
- 1909 lots in subdivision
- 15 year life cycle
- Potential concentration reduction = 33%
- EAC index = 0.10

Indian Harbor Subdivision
Alternatives Ranking

<table>
<thead>
<tr>
<th>BMP Alternative</th>
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<th>Equivalent Annual Cost index</th>
<th>Score</th>
<th>Feasibility (Constraint/ Considerations)</th>
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<tr>
<td>Weighting</td>
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<tr>
<td>Local Centralized Wastewater Treatment - Independent</td>
<td>100%</td>
<td>5-2-5 yrs</td>
<td>3</td>
<td>0.24</td>
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<td>Regional Wastewater Treatment</td>
<td>100%</td>
<td>5-10-15 yrs</td>
<td>1</td>
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<td>5</td>
<td>11</td>
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<tr>
<td>Cove Circulation Systems (Fountains, etc.)</td>
<td>33%</td>
<td>2-1-2 yrs</td>
<td>4</td>
<td>0.10</td>
<td>4</td>
<td>10</td>
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</table>
Site-specific development of Alternatives:

Nassau Bay II

Most likely Potential Sources = Septic, Dogs
Nassau Bay II
Centralized Wastewater Treatment

Low Pressure System + Local WWTP Package Plant

- 123 residential lots (123 grinder pumps)
- Avg lot size 0.6 acres
- Lift station
- Volume treated 0.037 MGD
- WWTP discharge into lake
- 25 year life cycle
- Potential load reduction = 98%
- EAC Index = 0.28

Nassau Bay II
Centralized Wastewater Treatment

Mixed System + Local WWTP Package Plant

- Low Pressure
  - 65 lots
- Gravity
  - 58 lots
- 1 Lift station
- Volume treated 0.037 MGD
- WWTP discharged into lake
- 25 year life cycle
- Potential load reduction = 98%
- EAC Index = 0.34
## Nassau Bay II Subdivision Alternatives Ranking

<table>
<thead>
<tr>
<th>BMP Alternative</th>
<th>Watershed % Reduction</th>
<th>Time to Implement</th>
<th>Equivalent Annual Cost Index</th>
<th>Score</th>
<th>Feasibility (Constraints/Considerations)</th>
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<tbody>
<tr>
<td>Local Centralized Wastewater</td>
<td>98%</td>
<td>5-10 yrs</td>
<td>2 0.28</td>
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<tr>
<td>Treatment - Independent</td>
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</tr>
<tr>
<td>Local Centralized Wastewater</td>
<td>98%</td>
<td>5-10 yrs</td>
<td>2 0.28</td>
<td>2</td>
<td>9</td>
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<tr>
<td>Treatment - Aggregate</td>
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<tr>
<td>Regional Wastewater Treatment</td>
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<td>10-15 yrs</td>
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