Tonight’s Agenda/Objectives

1. Review scope and purpose of Amendment 5
2. Present results of field work completed through Amendment 5
   - Topographical Survey
   - Environmental Assessment
   - Geotechnical Borings
3. Summarize estimated cost impacts
4. Gain direction from Council on next steps:
   - Resolution 12-33: Complete Facilities Plan for Windjammer Vicinity as defined by Resolution 12-17
   - Resolution 12-34: Expand Windjammer Vicinity to include adjacent property and complete Facilities Plan
Resolution 12-17 (August 14, 2012)

• Proceed with Facilities Plan based on Windjammer Vicinity
• Minimize space impacts on Windjammer Park to the extent possible
• Continue public process:
  – Define the best location within the Windjammer Vicinity
  – Define layout and other desirable features based on the final location
Amendment 5 Scope and Purpose

• Technical detail to help select the best location (3 to 4 acres) for the new WWTP
• Field work including:
  – Phase 1 topographical survey to establish elevations and flood protection requirements
  – Environmental assessment to better define permitting and wetland mitigation requirements
  – Geotechnical borings to characterize soils, better estimated design requirements and cost
October 16, 2012 City Council Direction

- Include adjacent property (Freund property) in scope of Amendment 5

Does Freund property provide technical/cost advantages relative to Windjammer Vicinity?
Amendment 5 Current Status

- Phase 1 survey work complete (Attachment 1)
- Environmental assessment completed based on October 30, 2012 site visit (Attachment 2)
- Geotechnical borings completed on October 30 and 31 (Attachment 3)
- Additional engineering analysis completed to compare three sites
  - Windjammer Vicinity (Charrette)
  - Freund
  - Windjammer Vicinity (Alternate)
Field Work Summary
Phase 1 Topographical Survey
100-Year Floodplain (EI 12.5 NAVD 88)
Regulations for Floodplain Development

- **Orange Book (Criteria for Sewage Works Design, ’08)**
  - **G2-1.5.2 Flood Protection**: Locate unit processes above the 100-year flood/wave action or adequately protect from 100-year flood/wave action

- **Oak Harbor Municipal Code 17.20**
  - **17.20.190(2) Nonresidential Construction**: Locate construction above the base flood elevation or floodproof structure to 1 ft above base flood elevation
  - **17.20.190(3) Critical Facilities**:
    - Construction permissible if no feasible alternative
    - Lowest floor > 3 feet above base flood elevation
Summary of Flood Protection Requirements

• Portions (or all) of sites being considered lie within 100-year flood plain (12.5 NAVD 88)
  – Recommend elevating grade and/or structures to 13.5
  – Additional protection for “critical facilities” (e.g. electrical)
• Southern portions of Windjammer Vicinity sites must be elevated approximately 3 feet
  – Retaining wall or sloped fill
• Existing grade at Freund property is an average of ~6.5 feet below 100-year flood elevation
  – Retaining wall/levee
  – Fill site
  – New/improved access to site is needed
• 100-year flood elevation [+12.5] more conservative than Mean Higher High Water (MHHW) + sea level rise [approx. + 11.3]
Field Work Summary
Environmental Assessment
Summary of Environmental Assessment

- Wetland ditches at both Windjammer (Charrette) and Freund sites
- Federal, state, Oak Harbor permit approvals required for wetland fill/buffer impacts
- Windjammer (Charrette) Site
  - Wetland ditch along southern boundary may be filled as result of project
  - Mitigation costs estimated between $150,000 and $275,000
  - Risk of delays and/or cost increases relatively low (limited tidal water connection)
- Freund Site
  - Wetland ditches along boundaries would be filled as result of project
  - Site adjacent to mitigation wetland; portion may be filled for access
  - Mitigation costs estimated from $400,000 to $800,000
  - Risk of delays and/or cost increases relatively high (tidal water connection; impact to previous mitigation wetland)
Field Work Summary
Geotechnical Assessment
Geotechnical Boring Site Plan
Geotechnical Cross Sections

Notes:
1. The subsurface conditions shown are based on interpolation between widely spaced explorations and should be considered approximate; actual subsurface conditions may vary from those shown.
2. Refer to Figure 2 for location of Cross Section.
3. This figure is for informational purposes only. It is intended to assist in the identification of features discussed in a related document. Data were compiled from sources as listed in this figure. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this figure. This figure is a copy of a master document. The master hard copy is stored by GeoEngineers, Inc. and will serve as the official document of record.
Geotechnical Cross Sections

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Cross Section B-B'
Summary of Geotechnical Assessment

• Ground improvements needed at all sites
• Dewatering, shoring, and flood protection will also impact cost
• Sites to north, west and center of Windjammer Vicinity are preferred
  – Highest ground elevation
  – Shallowest to till (25 to 30 feet)
• Park site: deeper to till; additional flood control
• Freund, east sites most difficult/costly
  – Lowest ground elevation
  – Deepest to till (40+ feet)
Cost Comparison
Windjammer Charrette Concept
Conceptual Plan View (August 14, 2012)

Building Key

1. Potential Community Building (cost not included)
2. Administration Building
3. Maintenance Shop
4. Headworks
5. Aeration Basins (buried beneath road)
6. Membrane Bioreactor (MBR) Building
7. Mechanical Building
8. Electrical Building
9. Chemical Building
10. Solids Building
11. Odor Control Building

North
Windjammer Charrette Concept
Conceptual Site Section View (August 14, 2012)
Total Project Cost Components
Windjammer (Charrette) Layout

- Outfall: $2.9
- WW Conveyance: $7.6
- WWTP: $83.0 (Total)

Total Estimated Cost: $93.5 (Total)
WWTP Project Cost Components
Windjammer (Charrette) Layout

Estimated Cost (Millions)

- $65.9
- $2.1
- $15.0
- $83.0 (WWTP)
- $68.0 (Construction + Land)

Cost (Millions)

- Soft Costs (25%)
- Land Acquisition
- WWTP Construction
Approximately 17% of WWTP Costs are “Variable” Based on Site
Sitework is Largest Variable Cost Component

- Land Acquisition: $2.1
- Architectural Premium: $1.6
- Added Structural: $0.8
- Geotechnical Premium: $1.7
- Wastewater/Effluent Piping: $0.4
- Sitework: $5.2

Total Variable Cost: $11.7
Sitework Cost Elements
Windjammer (Charrette) Layout

- Allowance (Wetlands Mitigation)
- Allowance (Flood Protection)
- Allowance (Stormwater Mgmt.)
- Allowance (Clear/Demo)
- Base Sitework Estimate

Estimated Cost (Millions)

$0.0
$1.0
$2.0
$3.0
$4.0
$5.0
$6.0
$7.0

$5.2 Sitework
$1.2 Site Allowances
Property Adjacent to Windjammer Vicinity
Conceptual Plan View

Building Key

1. Administration Building
2. Maintenance Shop
3. Headworks
4. Aeration Basins (below grade)
5. Membrane Bioreactor (MBR) Building
6. Mechanical Building
7. Electrical Building
8. Chemical Building
9. Solids Building
10. Odor Control Building
11. UV Building

North

Conceptual Facility Layout
Property Adjacent to Windjammer Vicinity
Conceptual Site Section View
Offsetting Costs for Alternate (Freund) Property Relative to Windjammer (Charrette) Layout

**Lower Cost**
- Property acquisition (Assessed value)
- Demolition/clearing
- Aeration basin structure

**Higher Costs**
- Wastewater/effluent conveyance
- Geotechnical
- Sitework
  - Flood Protection
  - Wetland Mitigation
Sitework Cost Element Comparison
Windjammer (Charrette) & Freund Layouts

<table>
<thead>
<tr>
<th>Allowance (Wetlands Mitigation)</th>
<th>Allowance (Flood Protection)</th>
<th>Allowance (Stormwater Mgmt.)</th>
<th>Allowance (Clear/Demo)</th>
<th>Base Sitework Estimate</th>
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<tr>
<td>$2.0</td>
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<td>$4.0</td>
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</table>

Allowances increase due to Flood Protection and Wetlands Mitigation
Windjammer Alternate Concept
Conceptual Plan and Perspective View (8/14/12)

View From Pioneer Way Looking Toward Park

Building Key

1. Potential Community Building (cost not included)
2. Administration Building
3. Maintenance Shop
4. Headworks
5. Aeration Basins (buried beneath buildings)
6. Membrane Bioreactor (MBR) Building
7. Mechanical Building
8. Electrical Building
9. Chemical Building
10. Solids Building
11. Odor Control Building
## Lower Costs for Windjammer (Alternate) Layout Relative to Windjammer (Charrette) Layout

### Same Cost
- Property acquisition (Assessed value)
- Demolition/clearing
- Wastewater/effluent conveyance

### Lower Costs
- Aeration basin structure
- Geotechnical
- Sitework
  - Flood Control
  - Wetland Mitigation
Sitework Cost Element Comparison
Windjammer (Charrette) & Windjammer (Alternate)

Allowances decrease due to Flood Protection and Wetlands Mitigation

- Allowance (Wetlands Mitigation)
- Allowance (Flood Protection)
- Allowance (Stormwater Mgmt.)
- Allowance (Clear/Demo)
- Base Sitework Estimate
“Variable” Cost Comparison for All Sites

- Windjammer (Charrette): $11.7
- Freund: $11.3
- Windjammer (Alternate): $10.1

Cost Breakdown:
- Land Acquisition
- Architectural Premium
- Added Structural
- Geotechnical Premium
- Wastewater/Effluent Piping
- Sitework
### “Variable” Cost Comparison for All Sites
Estimated Costs Shown in Millions ($)

<table>
<thead>
<tr>
<th>Item</th>
<th>Windjammer (Charrette)</th>
<th>Freund</th>
<th>Windjammer (Charrette)</th>
</tr>
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<tbody>
<tr>
<td>Land Acquisition</td>
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<tr>
<td>Architectural Premium</td>
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<td>Added Structural</td>
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<tr>
<td>Geotechnical Premium</td>
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<td>Wastewater/Effluent Piping</td>
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<td>$0.8</td>
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<tr>
<td>Base Sitework (Fixed)</td>
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<tr>
<td>Clearing &amp; Demolition Allowance</td>
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<tr>
<td>Stormwater Management Allowance</td>
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<td>Flood Protection Allowance</td>
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<td>Wetlands Mitigation Allowance</td>
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<tr>
<td>Subtotal, Sitework</td>
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<td>$4.6</td>
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<tr>
<td><strong>Total Site Specific Items</strong></td>
<td><strong>$11.7</strong></td>
<td><strong>$11.3</strong></td>
<td><strong>$10.1</strong></td>
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</table>
Total Cost Comparison for All Sites

<table>
<thead>
<tr>
<th>Site Specific Items</th>
<th>Soft Costs</th>
<th>Outfall</th>
<th>Conveyance</th>
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</thead>
<tbody>
<tr>
<td>Windjammer (Charrette)</td>
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<tr>
<td>Freund</td>
<td>$11.3</td>
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<td>Windjammer (Alternate)</td>
<td>$10.1</td>
<td>$50.0</td>
<td>$10.0</td>
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Summary of Technical & Cost Differences
Summary and Conclusions

1. Based on assessed value Freund site will likely be less costly to acquire

2. Based on technical field work, Freund site will likely have higher construction cost
   - Wastewater/effluent Conveyance
   - Geotechnical
   - Flood Protection
   - Wetland Mitigation

3. Very little difference in overall cost between sites

4. Means to reduce the cost of “variable” components will be considered regardless of tonight’s decision

5. Freund site presents higher risk due to environmental permitting and regulations for filling within the flood plain
Next Steps
Paths Forward Based on Tonight’s Decision

<table>
<thead>
<tr>
<th>Retain Windjammer Vicinity</th>
<th>Expand Windjammer Vicinity (Freund)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution 12-33</td>
<td>Resolution 12-34</td>
</tr>
<tr>
<td>1. Complete draft technical chapters of Facilities Plan</td>
<td>1. Amendment 6: Collect community input; compare locations using TBL+</td>
</tr>
<tr>
<td>2. Develop phasing/financing plan</td>
<td>2. Select final location/layout for WWTP with public input (Q1, 2013)</td>
</tr>
<tr>
<td>3. Final Public Open House/Council Workshop (Early 2013)</td>
<td>3. Complete draft technical chapters of Facilities Plan</td>
</tr>
<tr>
<td>4. Council resolution to submit draft plan (Q1, 2013)</td>
<td>4. Develop phasing/financing plan</td>
</tr>
<tr>
<td>5. Complete environmental documents for approval</td>
<td>5. Final Public Open House/Council Workshop (Q2, 2013)</td>
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<tr>
<td>6. Begin Preliminary Design</td>
<td>6. Council resolution to submit draft plan (Q2, 2013)</td>
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<td>a. <strong>Final location &amp; layout</strong> of WWTP with community input</td>
<td>7. Complete environmental documents for approval</td>
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<tr>
<td>b. Equipment procurement</td>
<td>8. Begin Preliminary Design</td>
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<tr>
<td></td>
<td>a. <strong>Final layout</strong> of WWTP with community input</td>
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<td></td>
<td>b. Equipment procurement</td>
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Questions?