3. Analysis of Alternatives

Section 2D above discusses the several alternatives developed for the West side and East side sections of Twin Harbors. The following descriptions explain, for each option, the alternatives in more detail and advantages and disadvantages based on how it compares to the other alternatives. Overall, each side of the park was analyzed using applicable criteria, leading to a Preferred Alternative comprised of the select the alternatives from each side.

3A. Alternatives Considered

Description & Analysis of the West Side Alternatives

The predesign process has determined that the focus of most development at Twin Harbors will be west of SR105. For clarity, we have divided the west half into four main design zones (Figure 12):

- Historic Dune Area
- Dune & Backdune Area
- Existing Camping Area
- Day Use Area
Figure 12: THSP Alternative Zones

Zones of Design Interventions

- Day Use Area
- Existing Camp Area
- Habitat Restoration/Mitigation
  (Close Campground on E. side of SR 105)
- Historic Dune Area
- Dune & Backdune Area

Twin Harbors State Park Renovation | Predesign Report | 16 | July 14, 2020
The **Historic Dune Area** is the portion of the site bounded by the current west side entry road to the north, SR105 to the east, the property line to the south, and the wetlands in the center of the site to the west. It is undeveloped except for some pedestrian trails and interpretive signage, which make up the Shifting Sands trail.

The **Dune & Backdune Area** is the portion of the site that runs north-south along the west edge of the park. It is bounded to the east by the wetlands in the center of the site. The west boundary is the beach and seashore conservation area. Part of this zone is steeply sloped back dune areas, and some of this zone is relatively flat and suitable for campsite development. A day-use area exists in the southwest portion of this zone.

The **Existing Camping Area** is the portion of the site in the northeast corner of the park. The boundaries are Schafer Island Beach Approach Road to the north, SR105 to the east, the current west side entry road to the south, and the undeveloped forested wetlands to the west. Part of this zone is wetland and floods during heavy rains. Some portions are steep dune slopes.

The **Day-Use Area** is the portion of the site along Schafer Island Beach Approach Road. It includes a parking lot, restrooms, and access to the beach, trails, and campground.

A **vehicular entrance/circulation** discussion addresses how people access the state park:

- Determines the most advantageous location of the entrances and welcome center
- Analyzes on whether to include road improvements on SR105

**Alternative 1W: No Action**

The 1W: No Action Alternative assumes no improvements would occur on site. The existing campground, recreational facilities, and administration and maintenance areas remain in the current configuration with no further impacts to current wetlands. However, many campsites exist in wetlands on the east side of the park (Figure 13). Several campsites on the west side flood during the winter and shoulder seasons, limiting available sites during that time. Current flooding and safety concerns limit public use and enjoyment, especially on the east side of the park, which also costs operations staff time and money. Staff conduct routine maintenance of facilities or implement necessary short-term fixes. Sometimes staff need to employ extraordinary solutions beyond routine maintenance to keep the park functional at a basic level of service. In the long-term, the cost will continue to rise as facilities break down or are simply lost and require replacement in to keep the park operations functional. This alternative would maintain the existing camping on-site, including:

- 114 existing standard campsites available
- 42 existing utility campsites available
- 94 existing campsites closed
- Five cabins and two yurts
- Four primitive sites
- One group camp

**Alternative 1W Advantages**

- No development costs
- No mitigation costs with no new impacts
Alternative 1W Disadvantages

- Limited recreation opportunities
- Extremely high operation & maintenance cost
- Low current occupancy numbers
- Flooding issues which close portions of the park
- Much of the camping is in wetlands
**Alternative 2W: 152 Campsites**

Alternative 2W maximizes camping on the west side of the park while minimally impacting critical areas (Figure 14). Raising existing campsites located in wetland areas would prevent flooding of facilities. Deluxe cabins would be built on the secondary back dune area to create a unique camping experience. This alternative provides 152 total camp and cabin sites including:

- 52 utility campsites
- 73 standard campsites
- Five walk-in sites
- 22 cabins (five existing standard cabins, ten new deluxe cabins, five new standard cabins, and two additional standard cabins to replace existing yurts)

**Historic Dune Area (Camp Area B):** A large one-way campground loop with a large play meadow in the center of that loop provides potential use as a group camping area. The loop also includes two new comfort stations and parking. The relocated staff housing is nearby.

**Dune & Backdune Area (Camp Area D):** A new road extends south from Schafer Island Beach Drive Approach Road with a mix of back-in and pull-through sites. The road loops up onto the back dune, which is the location of the new cabins. Additional parking and comfort station with a trail extension lead to walk/bike-in sites. Finally, an ADA accessible boardwalk reaches the top of the back dune.

**Existing Camping Area (Camp Areas A and C):** The site is graded in Camp Area A to reduce flooding. A new road between Camp Area A and existing entry drive creates a Camp Area C. Addition of a noise berm on the eastern edge of Camp Area C to buffer from SR105.

**Day-Use Area:** Provide new or realigned trails or boardwalks through wetland areas.

**Vehicular Entrance/Circulation:** Includes a new welcome center on Schafer Island Beach Approach Road with other operational improvements such as a new dump station. The existing entrance to the campground remains open to visitors as a secondary entry/exit access point.

**Alternative 2W Advantages**

- Increase in recreation activities and accessible viewpoints
- Great views from cabins on top of the dune
- Minimal wetland and buffer impacts
- Increase revenue potential due to more available campsites & cabins year-round
- Raises elevation of existing campsites to prevent flooding
- Eliminating highway crossing creates improved safety
- Reduced maintenance and operation cost
- New campsite are a better experience for visitors. Although fewer in number than the existing campground, the locations are preferable nearer to the beach, include utility hookups, and are sited to create more privacy

**Alternative 2W Disadvantages**

- Highest capital investment
- Unique O&M challenges with the addition of camping and cabins on the back dune
- Wetland and buffer impacts require mitigation
- Increased cabin maintenance needs with more walk-in cabins as compared to existing conditions
- Higher level of buffer and wetland impacts than existing conditions, and alternative 3 W
Figure 14: Alternative 2W: 152 Campsites
**Alternative 3W: 130 Campsites**

Alternative 3W (Figure 15) maximizes the number of campsites, while generally avoiding direct impact to critical areas. Direct impacts are limited to the wetland buffers, except in the western portion of the existing camping loop, which is already in a wetland. Active and passive recreation opportunities are explored, such as a play meadow, expanded trails, playground, and overlook viewpoint on the back dune. Cabins on top of the back dune, but unlike Alternative 2W, are primarily walk-to cabins. However, accommodations such as a drop-off drive, carts, nearby parking, and paved surfaces allow for greater accessibility to these cabins. Further methods can be explored in design development. Walking distances from the parking would range from directly adjacent to the cabins to 575 ft. This alternative would provide 130 total camp and cabin sites, including:

- 48 standard sites
- Six primitive camping sites
- 54 utility sites
- 22 cabins (five existing standard cabins, ten new deluxe cabins, five new standard cabins, and two additional standard cabins to replace existing yurts)
- Open spots for hiker/biker camping

**Historic Dune Area (Camp Area B):** Featured is a sizeable one-way loop of campsites with a mixed play meadow, tree canopy, and fire ring in the center. It also includes additional two comfort stations, parking, and new staff housing fronting the NE corner of the loop. Enhancement of existing trails to ensure more year-round use.

**Dune & Backdune Area (Camp Area D):** A new route that extends from Schafer Island Beach Drive Approach Road to the south creating Camp Area D along the backside of the dune. No RV sites in this loop. The proposed access road, aligned to the back dune, provides a drop off location and access to the walk-in cabins. Added park amenities include a new comfort station and parking. A spur trail linking the southern loop trail leads to walk/bike-in sites. Two ADA accessible boardwalks, including one from a parking lot at the southern loop and one at the north portion of Camp Area D, link the day-use area with the park’s secondary dune. Update and reconfigure the existing trails in the area.

**Existing Camping Area (Camp Areas A and C):** A new road traces the top of the historic dune crest, which connects the existing Camp Area A loop with the current entry drive to create Camp Area C. The new road flows in a one-way northerly direction. Features a noise berm on the eastern edge to buffer campers in Camp Area C from SR105. Reconfigures existing Camp Area A campsites with some grading to prevent flooding; sites are typically 70-ft on-center. Also added to the area is a group camp pinwheel.

**Day Use Area:** Includes additional recreation opportunities such as a playground, amphitheater, trails, and boardwalks through the wetlands.

**Vehicular Entrance/Circulation:** Add a new welcome center on Schafer Island Beach Approach Road to create a new entrance to the park. Set back the Welcome Center from SR105 to provide for vehicular queuing. The dump station is on the same road and at the exit-only drive near the staff housing. Retain the existing entrance to keep open as an exit access point for visitors, and a secondary entrance access for staff and emergencies.
Figure 15: Alternative 3W: 130 Campsites
Alternative 3W Advantages

- Increased recreation opportunities and accessible viewpoints
- Great views from cabins on top of the dune
- Impacts are limited to wetland buffers since in this alternative wetlands are not filled. The exception is the western portion of the existing camping loop already located in a wetland
- Increase revenue potential due to more available campsites & cabins year-round
- Raises elevation of existing campsites to prevent flooding
- Eliminating highway crossing creates improved safety
- Reduced maintenance and operation cost
- New campsites are a better experience for visitors. Although fewer in number than the existing campground, the locations are preferable nearer to the beach, include utility hookups, and are sited to create more privacy
- Fewer campsites and roads on the south end improve wildlife corridor

Alternative 3W Disadvantages

- High development cost, but not as much as Alternative 2W
- More wetland and buffer impacts that require mitigation
- Increased cabin maintenance needs with more walk-in cabins as compared to existing conditions.
- Higher level of buffer and wetland impacts than existing conditions
<table>
<thead>
<tr>
<th>Alternative</th>
<th>Summary</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
</table>
| 1W: No Action | | • Low development cost with most of the infrastructure existing and low mitigation cost with no new development into critical areas | • Limited opportunities for recreation and views  
• Extremely high O&M cost and effort, low occupancy numbers create low revenue  
• Overall low sustainability of the park in the long term |
| 2W: 152 Campsites | | • Increase in recreation activities and accessible viewpoints  
• Great views from cabins on top of the dune  
• Minimal wetland and buffer impacts  
• Increase revenue potential due to more available campsites & cabins year-round  
• Raises elevation of existing campsites to prevent flooding  
• Eliminating highway crossing creates improved safety  
• Reduced maintenance and operation cost  
• New campsites are a better experience for visitors. Although fewer in number than the existing campground, the locations are preferable nearer to the beach, include utility hookups, and are sited to create more privacy | • Highest capital investment  
• Unique O&M challenges with the addition of camping and cabins on the back dune  
• Wetland and buffer impacts require mitigation  
• Increased cabin maintenance needs with more walk-in cabins as compared to existing conditions.  
• Higher level of buffer and wetland impacts than existing conditions, and alternative 3 W |
| 3W: 130 Campsites | | • Increased recreation opportunities and accessible viewpoints  
• Great views from cabins on top of dunes  
• Impacts are limited to wetland buffers since wetlands are not filled in this alternative. The exception is the western portion of the existing camping loop already located in a wetland  
• Increase revenue potential due to more available campsites & cabins year-round  
• Raises elevation of existing campsites to prevent flooding  
• Eliminating highway crossing creates improved safety | • High development cost, but not as much as Alternative 2W  
• More wetland and buffer impacts that require mitigation  
• Increased cabin maintenance needs with more walk-in cabins as compared to existing conditions.  
• Higher level of buffer and wetland impacts than existing conditions |
Alternative Summary

- Reduced maintenance and operation cost
- New campsites are a better experience for visitors. Although fewer in number than the existing campground, the locations are preferable nearer to the beach, include utility hookups, and are sited to create more privacy
- Fewer campsites and roads on south end improve wildlife corridor

West Side Alternatives Evaluation

State Parks used the following design criteria and scoring to analyze and evaluate the West side alternatives. For each of the following criteria, the optional designs were assigned a ranking based on a scale of 1-5. A score of 1 means the alternative ranks very negatively for that criteria, while a score of 5 means the alternative ranks very positively for that criteria. The criteria were not weighted since all are considered equally important.

Aesthetics
The visual appeal, intact environment, privacy, and noise analysis of the option

1 = Low visual appeal, crowded, and noisy for visitors with a disrupted environment
3 = Moderate visual appeal, privacy, noise, and a semi-intact environment
5 = Excellent visual diversity, quiet, private, and cohesive design characteristics with an intact environment

Capital
The cost associated with developing the option (includes permitting and mitigation)

1 = Higher up-front cost for State Parks
3 = Moderate up-front cost for State Parks
5 = Lower up-front cost for State Parks

Critical Area Impact
The amount of impact on critical areas and associated buffers by the design

1 = Greatly impacts critical areas
3 = Moderately impacts critical areas
5 = Impacts less on critical areas

Environmental Value
The degree to which the alternative positively affects the environment, percentage of area left undeveloped, and fragmentation of habitat

1 = Design does not provide environmental enhancements
3 = Design provides moderate environmental enhancements
5 = Design provides a high number of environmental enhancements
Recreational Experience
The availability and condition of leisure and recreational opportunities of the option

A. Recreational experience quantity:
   1 = Removal of recreation opportunities
   3 = Neutral
   5 = Added recreation opportunities

B. Recreational experience quality:
   1 = Low-quality recreational experience
   3 = Moderate quality recreational experience
   5 = High-quality recreational experience

Maintenance cost
The amount of operation and maintenance needed to keep the park functional

1 = High cost of on-going maintenance
3 = Moderate cost of on-going maintenance
5 = Lower cost of on-going maintenance

Revenue
The amount of potential revenue generated from the option

1 = Design takes away revenue potential
3 = Neutral
5 = Design adds potential revenue streams

Sustainability
The long-term functionality of the option based on revenue and maintenance

1 = Design is not sustainable (provides low revenue and high maintenance)
3 = Neutral
5 = Design is very sustainable over time (provides high revenue and low maintenance)

Table 2: Quantitative Analysis of Criteria for West Side Alternatives

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Aesthetics</th>
<th>Capital</th>
<th>Critical Area Impact</th>
<th>Environmental Value</th>
<th>Maintenance</th>
<th>Recreational Experience Quantity</th>
<th>Recreational Experience Quality</th>
<th>Revenue</th>
<th>Sustainability</th>
<th>Total</th>
<th>Cost Estimate (Escalated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1W: No Action</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>23</td>
<td>Ongoing Costs</td>
</tr>
<tr>
<td>2W: 152 Campsites</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>30</td>
<td>$40.7 Mil</td>
</tr>
<tr>
<td>3W: 130 Campsites</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>34</td>
<td>$32.5 Mil</td>
</tr>
</tbody>
</table>

Note: Ranking based on 1-5 scale (1 = lowest value; 5 = highest value)

Alternative 3W: 130 Campsites scored the highest and is the preferred option for the West side of Twin Harbors State Park
Description & Analysis of the East side

The East side project area includes all State parkland on the east side of SR105. This portion of the Twin Harbors State Park currently consists of a campground, the administration and maintenance facility for the South Beach Area, and staff housing. The 51-acre site consists of roughly 45 acres of wetlands. This section compares the relative advantages and disadvantages to evaluate and screen three East side alternatives, including one no-action option.

Alternative 1E: No Action

In alternative 1E, the site continues uses for recreation, operations, and staff housing. The problem of high maintenance and flooding still exists, however, and this alternative will require more resources to operate the park as facilities break down beyond repair requiring eventual replacement. Remaining hardscaping associated with recreational, maintenance, administrative, and park housing will continue to impede both surface and subsurface water flow on the east side. Permanently closed campsites will continue to deteriorate over time with the result of wetlands remaining disconnected and prone to flooding with little benefit for improved habitat.

Alternative 1E Advantages

- Lowest capital cost
- Only option with recreational activities

Alternative 1E Disadvantages

- Highest maintenance demand to keep the park functional
- An abundance of negative impacts onto the local habitat
- Consistent flooding issues
- Low occupancy
- Unused camping and other infrastructure
Alternative 2E: Closure of East Side with Modest Habitat Restoration

Alternative 2E assumes the project closes the east campground and removes most of the above-ground infrastructure (such as buildings, asphalt roads, water/electrical stands) (Figure 17). Relocated are the administration and maintenance facility to Grayland Beach State Park. Access to the existing lift station is maintained, and the existing boneyard relocated adjacent to the lift station. Reseeding of native species occurs in areas disturbed by demolition, while treating/removing invasive, non-native species. State Parks explores the potential for a possible land transfer to WDFW or WSDOT (transfer details not addressed in this report).

While this alternative provides some ecological benefit through modest habitat restoration (removal of infrastructure and revegetation of disturbed areas), it does not provide on-site mitigation for unavoidable wetland and wetland buffer impacts on the west side of SR105. Instead, this alternative assumes completion of project mitigation completed through the purchase of mitigation banking credits.

**Alternative 2E Advantages**
- Reduction of maintenance over existing conditions
- Limited monitoring needed as mitigation for west side impacts are off-site. Some existing knotweed on the east side to control
- Modest rehabilitation of previous habitat before development

**Alternative 2E Disadvantages**
- No direct rehabilitating of the existing fragmented wetlands
- Considerable cost associated with the purchasing of off-site mitigation banking credits
- Elimination of recreational opportunities
Alternative 3E: Closure of East Side with Intensive Habitat Restoration

Alternative 3E assumes the east campground is closed (Figure 18). More intensive restoration of wetland habitat arises on-site to meet mitigation requirements because of the West side work. Relocation of the administrative and maintenance facilities to Grayland Beach occurs, just as in alternative 2E. Work also includes the removal of the staff residence. Access to the existing lift station needs to be maintained, and the site boneyard relocated adjacent to the sewage facility.

This alternative provides on-site mitigation for project impacts to wetland buffers. However, the purchase of mitigation banking credits mitigates direct wetland impacts. On-site mitigation includes rehabilitation of wetlands through the removal of all roads and portions of historic fill. On the existing campground areas, preserve native vegetation by stripping and grubbing, if feasible. This work includes restoration of soil structure primarily through removal of the vehicular circulation system and scarifying the native soil. Additionally, work involves revegetating mitigation areas with appropriate native species, including container planting, bare-root planting, seeding, and control of invasive, non-native species.

Restoration of the entire east side property is ideal. However, intensive restoration work is limited to acreage needed to meet mitigation requirements for proposed development impacts on the west side of the park. In remaining areas, less intensive restoration will include removal of all above-ground infrastructure (all buildings, roads, water/electric stands, etc.) and revegetation by seeding with appropriate native species and treat/remove non-native species. An exception is maintaining access paving and facilities for the lift station and relocated boneyard.

Alternative 3E Advantages

- Reduction of existing maintenance need, and improvement of existing habitat
- Increase in environmental value with soil restoration and intensive plantings of natives
- Reconnection of fragmented wetlands and habitats
- Increase in edge and interior habitat

Alternative 3E Disadvantages

- Significant monitoring costs with mitigation conducted on-site
- Eliminated recreational opportunities
Figure 18: Alternative 3E East side Plan
### Table 3: Summary of the Overall Advantages and Disadvantages of East Side Alternatives

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Advantages</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Disadvantages</strong></td>
<td></td>
</tr>
<tr>
<td><strong>1E: No Action</strong></td>
<td>• Upfront costs are low with the continuation of the available recreation on-site.</td>
</tr>
<tr>
<td></td>
<td>• An abundance of negative habitat impacts and a demand for maintenance to keep the park functional for use, which combined leave the site not sustainable in the long-term.</td>
</tr>
<tr>
<td><strong>2E: Closure of East side with Modest Habitat Restoration</strong></td>
<td>• A reduction of park maintenance needs with a limited monitoring needed to begin to rehabilitate the park</td>
</tr>
<tr>
<td></td>
<td>• Habitat is enhanced.</td>
</tr>
<tr>
<td></td>
<td>• Loss of recreation access/opportunity</td>
</tr>
<tr>
<td></td>
<td>• No direct rehabilitation of the fragmented wetlands, high costs associated with purchasing mitigation banking credits, eliminated recreation</td>
</tr>
<tr>
<td></td>
<td>• Cannot achieve full site restoration as a result of the investment into the closure of the park</td>
</tr>
<tr>
<td><strong>3E: Closure of East side with Intensive Habitat Restoration</strong></td>
<td>• A reduction of the maintenance needs of the park while drastically increasing the environmental value of the park with the restoration of soil structure and rehabilitation of native plantings and wetlands.</td>
</tr>
<tr>
<td></td>
<td>• A high cost and associated monitoring exist due to on-site mitigation</td>
</tr>
<tr>
<td></td>
<td>• Cannot complete full park rehabilitation, and there is the elimination of any recreational opportunities</td>
</tr>
</tbody>
</table>

### East Side Alternatives Evaluation

The following summarizes the design criteria and scoring used to evaluate the east side alternatives. For each criterion, optional designs were ranked based on a scale of 1-5. A score of 1 means the alternative ranks negatively for that criteria, while a score of 5 means the alternative ranks positively for that criteria. Appendix E: East Side Advantages and Disadvantages Breakdown provides an in-depth description of the advantages and disadvantages of each option based on various criteria. The criteria used in the assessment of the alternatives represent a mix of qualitative values:

**Aesthetics**

The visual appeal, intact environment, privacy, and noise analysis of the alternative

1 = low visual appeal, crowded, and noisy for wildlife with a disrupted environment  
3 = moderate visual appeal, privacy, noise, and a semi-intact environment  
5 = excellent visual diversity, quiet, private, and cohesive design characteristics with an intact environment

**Capital**

The cost associated with developing the alternative (includes permitting and mitigation)

1 = higher Capital cost for State Parks  
3 = moderate Capital cost for State Parks  
5 = lower Capital cost for State Parks
Environmental Value
The degree to which the alternative positively affects the environment, percentage of area left undeveloped, and fragmentation of habitat

1 = alternative does not provide environmental enhancements
3 = alternative provides moderate environmental enhancements
5 = alternative provides high environmental enhancements

Maintenance and monitoring cost
The amount of operation and maintenance needed to keep the park functional as well the on-going cost for monitoring the mitigation and invasive species control

1 = high cost of on-going maintenance and monitoring
3 = moderate cost of on-going maintenance and monitoring
5 = lower cost of on-going maintenance and monitoring

Recreational experience
The availability and condition of leisure and recreational opportunities of the alternative

1 = low-quality recreation experience or lack thereof
3 = moderate recreational experience and quality
5 = high-quality recreation experience and quality

Sustainability
The long-term functionality of the alternative-based on resource impacts. Sustainability considerations include landscape stewardship and resource consumption

1 = design is not sustainable (environmental value is less than the maintenance & monitoring effort)
3 = neutral
5 = design is very sustainable over time (environmental value is greater than the maintenance & monitoring effort)

Table 4: Quantitative Analysis of Criteria for East Side Alternatives

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Aesthetics</th>
<th>Capital</th>
<th>Environmental Value</th>
<th>Maintenance and Monitoring Cost</th>
<th>Recreational Experience</th>
<th>Sustainability</th>
<th>Total</th>
<th>Cost Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative 1-E: No Action</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>12</td>
<td>Ongoing Costs</td>
</tr>
<tr>
<td>Alternative 2-E: Closure of East side with Modest Habitat Restoration</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>16</td>
<td>$3.6 Million</td>
</tr>
<tr>
<td>Alternative 3-E: Closure of East side with Intensive Habitat Restoration</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>18</td>
<td>$3.7 Million</td>
</tr>
</tbody>
</table>

Note: Ranking based on 1-5 scale (1 = lowest value; 5 = highest value)

Alternative 3E – Closure of East side with Intensive Habitat Restoration scored the highest and is the preferred option for the east side of Twin Harbors State Park. It is combined with the preferred option on the west side to determine the overall Preferred Alternative.
3B. Cost Estimates for Each Alternative

The total project cost estimate summary includes the costs for each alternative (Table 5: ROM Estimate of Probable Costs). The alternatives combine the west side and east side into total project costs. The Preferred Alternative is $36,163,000, which provides for consultant services, construction costs escalation, and agency administration. This cost includes a 10% construction contingency.

Table 5: ROM Estimate of Probable Costs

<table>
<thead>
<tr>
<th>Twin Harbors State Park Campground - Alternatives</th>
<th>Alternative 1</th>
<th>Alternative 2</th>
<th>Alternative 3 (Preferred)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost Item</td>
<td>No Action</td>
<td>152 Campsites</td>
<td>130 Campsites</td>
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<td>Direct Construction Costs Subtotal</td>
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<td>$28,838,348</td>
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<td>Direct Construction Costs Escalated</td>
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<td>Consultant Services Subtotal</td>
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<td>Consultant Services Subtotal Escalated</td>
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<td>Equipment Subtotal Escalated</td>
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<td>NA</td>
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<td>Artwork Subtotal</td>
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<td>Artwork Subtotal Escalated</td>
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<td>$10,000</td>
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<td>Agency Project Administration</td>
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<td>Agency Project Administration Escalated</td>
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<td>Other Project Costs</td>
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<td>Other Project Costs Escalated</td>
<td>-</td>
<td>$2,137,735</td>
<td>$737,606</td>
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<tr>
<td>Total Project</td>
<td>-</td>
<td>$35,711,314</td>
<td>$31,944,822</td>
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<tr>
<td>Total Project Escalated</td>
<td>-</td>
<td>$40,655,975</td>
<td>$36,162,665</td>
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<tr>
<td>Rounded Escalated Total</td>
<td>-</td>
<td>$40,656,000</td>
<td>$36,163,000</td>
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</tbody>
</table>

Note: See C-100 Form for contingency, escalation, and tax factors
### 3C. Schedule Estimates

<table>
<thead>
<tr>
<th>TWIN HARBORS STATE PARK</th>
<th>ESTIMATED SCHEDULE FOR EACH ALTERNATIVE</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>2020</td>
</tr>
<tr>
<td></td>
<td>Biennium</td>
</tr>
<tr>
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</tr>
</tbody>
</table>

**ALTERNATIVE 1 - NO ACTION**

**ALTERNATIVE 2 - E+W**

**ALTERNATIVE 3 - E+W**

<table>
<thead>
<tr>
<th>Pre-design Phase</th>
<th>Design and Permitting Phase</th>
<th>Bidding Phase</th>
<th>Construction Phase</th>
<th>Ongoing Maintenance</th>
<th>Monitoring</th>
</tr>
</thead>
</table>

*Figure 19: Schedule*