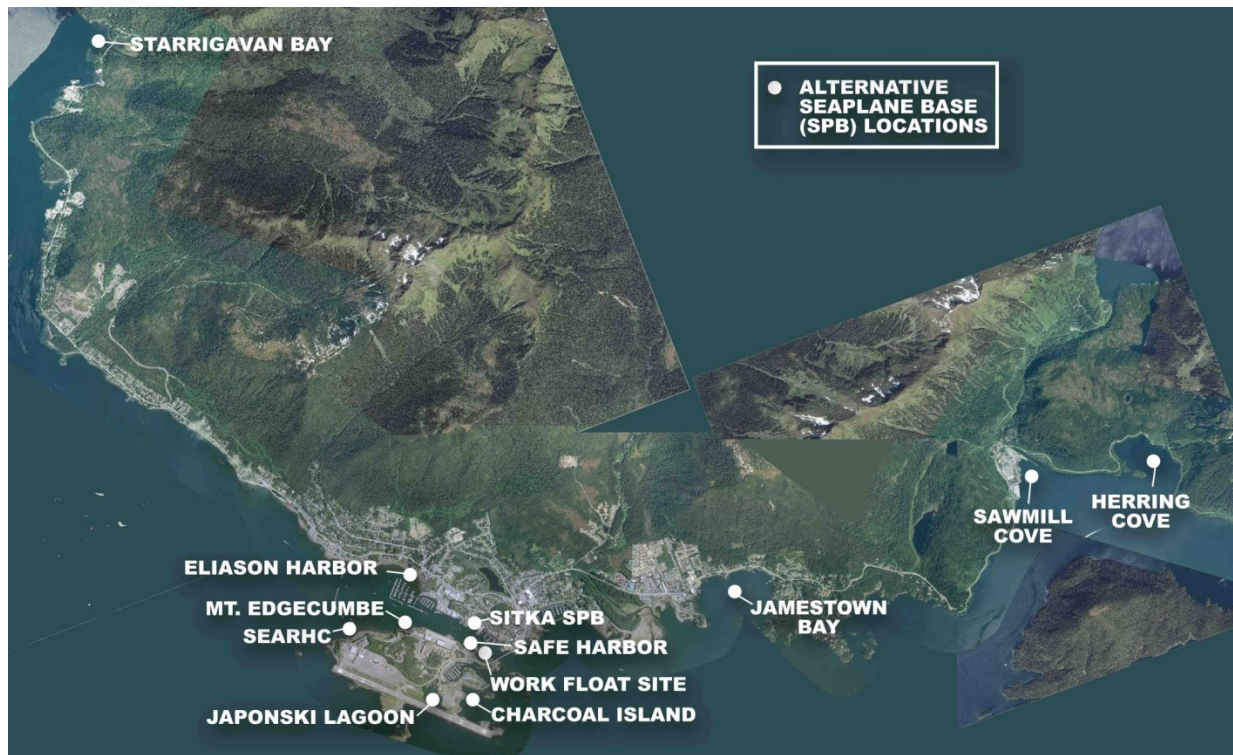


## **6.0 ALTERNATIVE SITES**

### **6.1 Previous Study**

As explained previously, the evaluation of sites builds upon the siting analyses presented in the “Sitka Seaplane Base Master Plan” (HDR, 2002). The 2002 plan evaluated twelve alternative sites for their ability to safely accommodate anticipated demand and resolve deficiencies at the existing SPB. The sites considered were:

- Charcoal Island
- Jamestown Bay
- Sawmill Cove
- Herring Cove
- Starrigavan Bay
- Thomsen Harbor/Turnaround area
- Sitka Rocky Gutierrez Airport lagoon
- Former Safe Harbor site next to Japonski Island
- Work float site to Japonski Island
- Site near Mount Edgecumbe High School on Japonski Island
- Site west of Southeast Alaska Regional Health Consortium (SEARHC) on Japonski Island
- Existing SPB site in Sitka Channel



**Figure 5: Previously Evaluated Sites**

Sites determined by that study to have fatal flaws were eliminated from further consideration. Although “fatal flaws” included characteristics that made the site unworkable from an environmental or capacity perspective, most sites were eliminated because they could not provide a safe operating or docking environment.

Three sites were selected for further evaluation:

- Former Safe Harbor site on Japonski Island
- Site near Mount Edgecumbe High School on Japonski Island
- Site west of SEARHC on Japonski Island

Ultimately, the 2002 study recommended the site west of SEARHC on Japonski Island for further environmental and design investigations, citing several advantages over the other sites evaluated including the potential that the new site could result in decreased aircraft noise along the most heavily developed stretch of the channel. However, two concerns with this site were identified: a potential increase in aircraft noise and vehicular activity in the immediate area, and

it was not clear that alternate access to the site through the United States Coast Guard property could be acquired.

## 6.2 Current Study

The purpose of the current study was to re-evaluate three potential seaplane base sites and recommend a preferred site for more detailed design and environmental investigations. Sites evaluated during the 2002 study were visited and key seaplane operators, staff from the CBS and FAA, the Sitka Port and Harbors



**Figure 6: Re-evaluated Sites**

Commission, and other individuals identified by CBS were interviewed. It was agreed that the previous study was justified in removing potential SPB sites outside the Sitka Channel from further consideration. The current study focused on the re-evaluation of three potential SPB sites in Sitka Channel, referred to here as:

1. The Existing SPB site
2. The Eliason Harbor Site
3. The Japonski Island Site

Conceptual layouts were developed for each site based upon the facility requirements identified in Section 5.0. For each of the three sites, the layout that best met the project's purpose and need was selected for a comparison evaluation against alternatives from the other sites. The objective of this comparison was to identify a preferred site as the basis for further more detailed analysis. It is anticipated that further refinements will be made to the conceptual layouts recommended for the site during the project's environmental and design phases.

At each site, the goal of the conceptual layout was to provide the following features:

- 12 vehicle parking spaces
- Fuel storage and distribution system
- On-site aircraft maintenance capability

- A drive-down ramp to the SPB floats
- Electricity and potable water
- Parking slips for 14 based aircraft and positions for 3 to 5 transient aircraft
- Safe access between the parking positions and the water operating area
- Minimize environmental impacts
- Accommodate future growth

### 6.2.1 Existing Seaplane Base Site

The existing SPB site is severely constrained by adjacent development, a fact which initially caused CBS to eliminate this site for new development. Due to interest in the site expressed by local pilots, a considerable effort was made to find a conceptual layout in this location that would address the project's purpose and need. Four layout alternatives (Layouts 1A through 1D) were developed and evaluated for this site. However, SSS provided a letter to CBS citing objections to the noise and traffic generated by the existing SPB and any proposed expansion of the facility (Appendix B).

*Alternative Layout 1A:* This alternative (Figure 7) is an attempt to meet the SPB requirements within the CBS-owned property footprint of the existing SPB. CBS property at the existing site is limited, consisting of two vehicle parking spaces on Katlian Street and a 10-foot to 12-foot-wide corridor for the walkway leading from the street to the SPB floats. Because of the lack of upland property, the conceptual layout for this alternative does not include additional parking spaces, a fuel storage or distribution system, an on-site maintenance facility, or a drive-down ramp. Electricity and potable water is included. Because of the proximity of adjacent buildings and docks, only enough parking slips and positions for 10 based aircraft and two transients could be accommodated. Access to the slips nearest to the shore is constrained by a taxi lane that is only 68 feet wide nearest to the SSS plant, far below the FAA recommended 225-foot minimum. This would reduce wingtip clearances for a taxiing Beaver to about 10 feet. This site is well protected from wind and wave action. Dredging would be required to provide adequate depth for the floats and for maneuvering the seaplanes. Conflicts with the movement of large boats loading/offloading at the SSS plant would continue. The distance between the SPB and the focus

of seabird activity at the SSS outfall would be unchanged. This layout could not be easily expanded to accommodate future growth. This alternative is estimated to cost \$4.6 million. Detailed cost estimates for each alternative can be found in Appendix A.



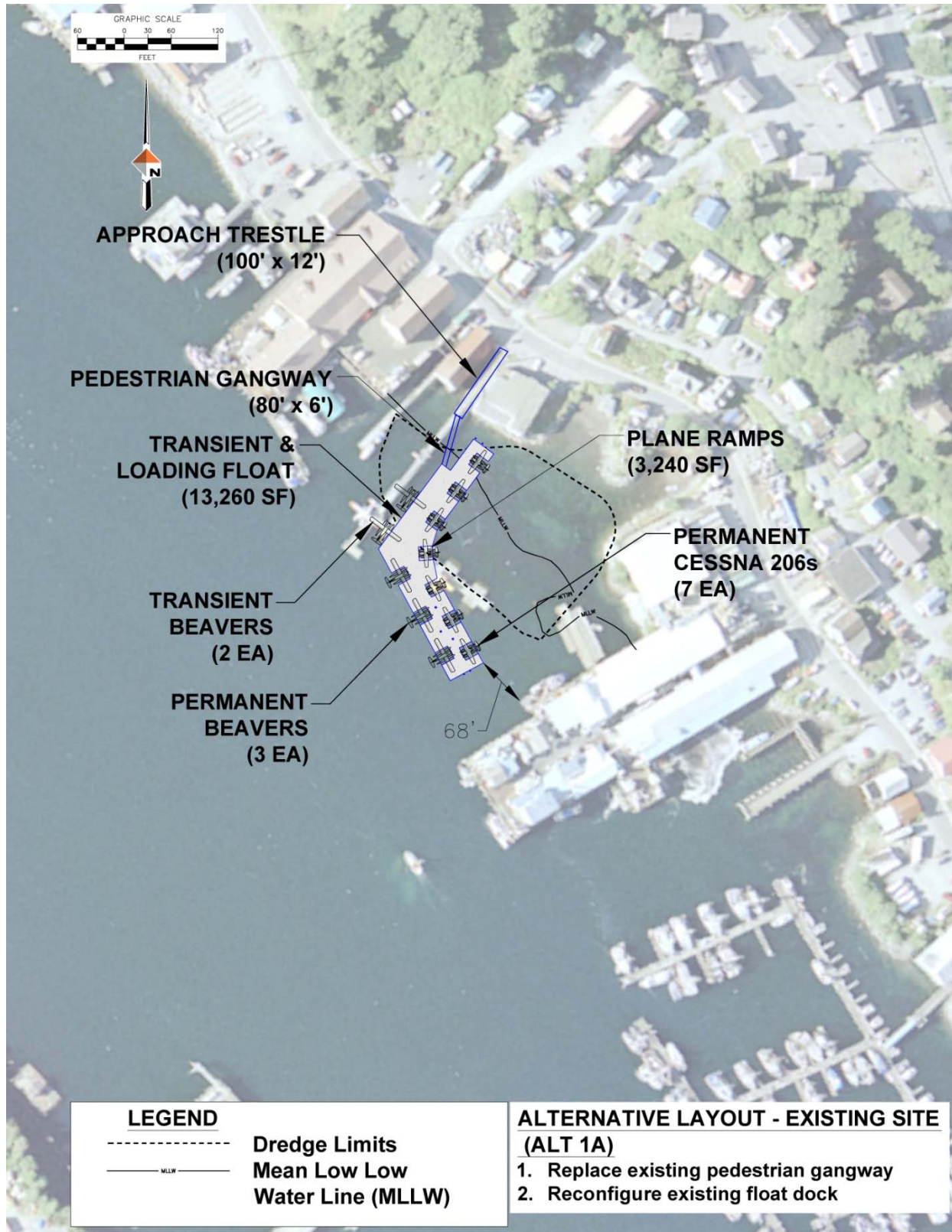


Figure 7: Alternative Layout 1A - Existing Site

*Alternative Layout 1B:* This alternative (Figure 8) would require the purchase of additional property at the existing SPB site. The specific parcels acquired to provide 12 parking spaces, a fuel storage or distribution system, and a drive-down ramp could vary depending upon the SPB's final design and the availability of willing sellers. Figure 8 shows a building immediately north of the approach trestle as acquired to provide parking, fuel storage, and a drive-down ramp. Alternately, lots on the north side of Katlian Street could be acquired for parking and/or a lot on the south side of the Sitka Tribes of Alaska building could be acquired for fuel storage, parking, and a drive-down ramp. Electricity and potable water is included. Because of the proximity of adjacent buildings and docks, only enough parking slips and positions for 10 based aircraft and 2 transients could be accommodated and facilities for on-site aircraft maintenance were not included. Access to the slips nearest to the shore is constrained by a taxi lane that is only 68 feet wide nearest to the SSS plant, far below the FAA recommended 225-foot minimum for safe maneuvering. This would reduce wingtip clearances for a taxiing Beaver to about 10 feet. This site is well protected from wind and wave action. Dredging would be required to provide adequate depth for the floats and for maneuvering the seaplanes. Conflicts with the movement of large boats loading/offloading at the SSS plant would continue. The distance between the SPB and the focus of seabird activity at the SSS outfall would be unchanged and this layout could not be easily expanded to accommodate future growth. This alternative is estimated to cost \$5.1 million.

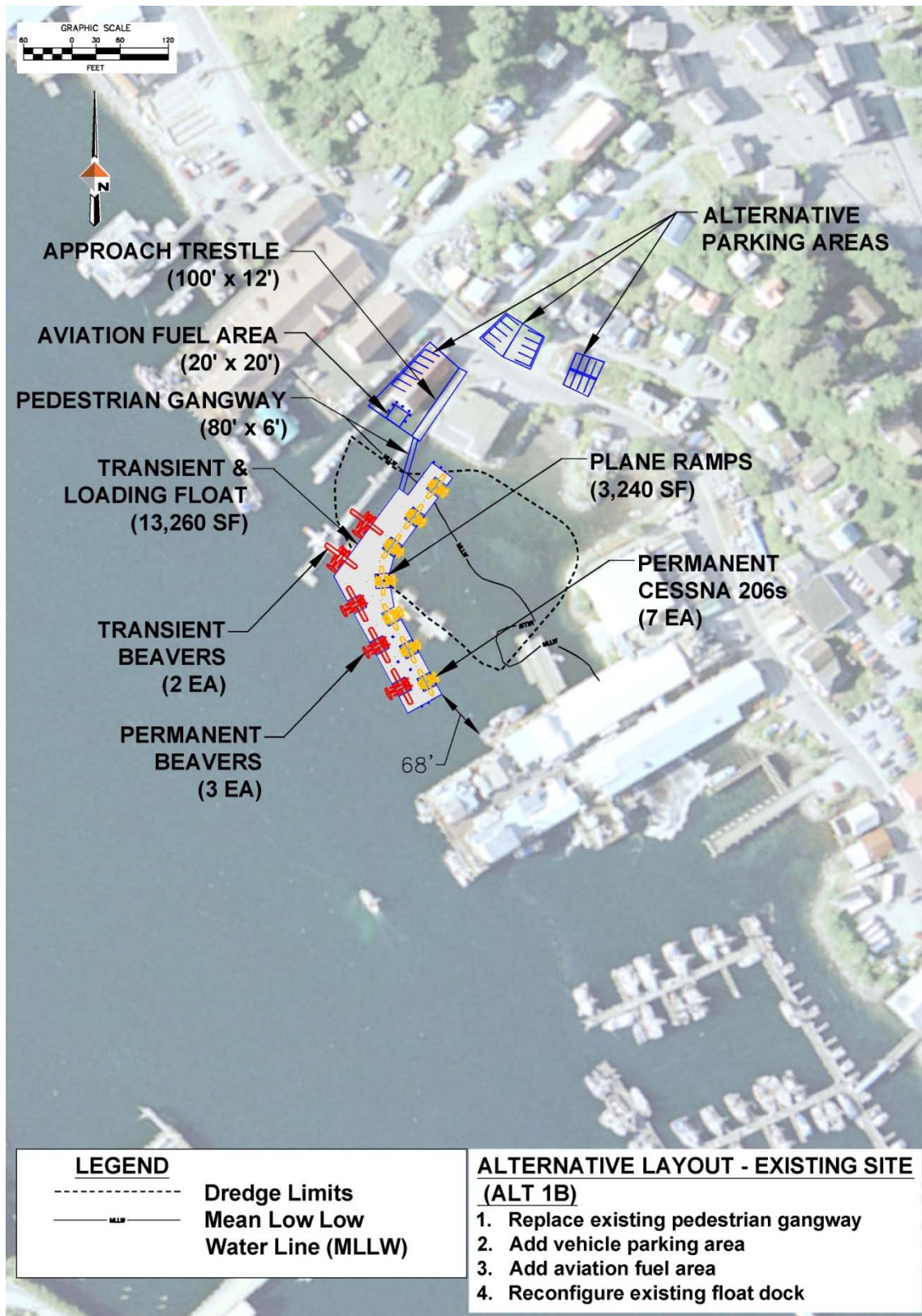


Figure 8: Alternative Layout 1B - Existing Site



*Alternative Layout 1C:* This alternative (Figure 9) was developed in response to a request from local pilots who requested the evaluation of an H-shaped float layout. This alternative would require the purchase of additional property at the existing SPB site. The specific parcels acquired to provide 12 parking spaces, a fuel storage or distribution system, and a drive-down ramp could vary depending upon the SPB's final design and the availability of willing sellers. Figure 9 shows several possible acquisition scenarios. Electricity and potable water is included. Because of the proximity of adjacent buildings and docks, only enough parking slips and positions for 13 based aircraft and two transients could be accommodated and facilities for on-site aircraft maintenance were not included. Access to the slips nearest to SSS is constrained by a taxi lane that is 96 feet to 59 feet wide, far below the FAA recommended 225-foot minimum for safe maneuvering. This would reduce wingtip clearances for a taxiing Beaver to about 5 feet at the narrowest point. Access to the slips on the interior of the facility is via a taxi lane that is 84 feet wide, also far below the FAA recommended minimum. Such a taxi lane would provide a clearance of about 18 feet between the wingtip of a taxiing Beaver and the tails of parked aircraft. This site is well protected from wind and wave action. Dredging would be required to provide adequate depth for the floats and for maneuvering the seaplanes. Conflicts with the movement of large boats loading/offloading at the SSS plant would increase and boat moorage on the north side of SSS may be severely restricted. The distance between the SPB and the focus of seabird activity at the SSS outfall would be unchanged. This layout could not easily be expanded to accommodate future growth. Since it is doubtful that access to/from any of the slips could be accomplished in a consistently safe manner, and boat access to the SSS plant is restricted, a cost estimate was not developed for this alternative.

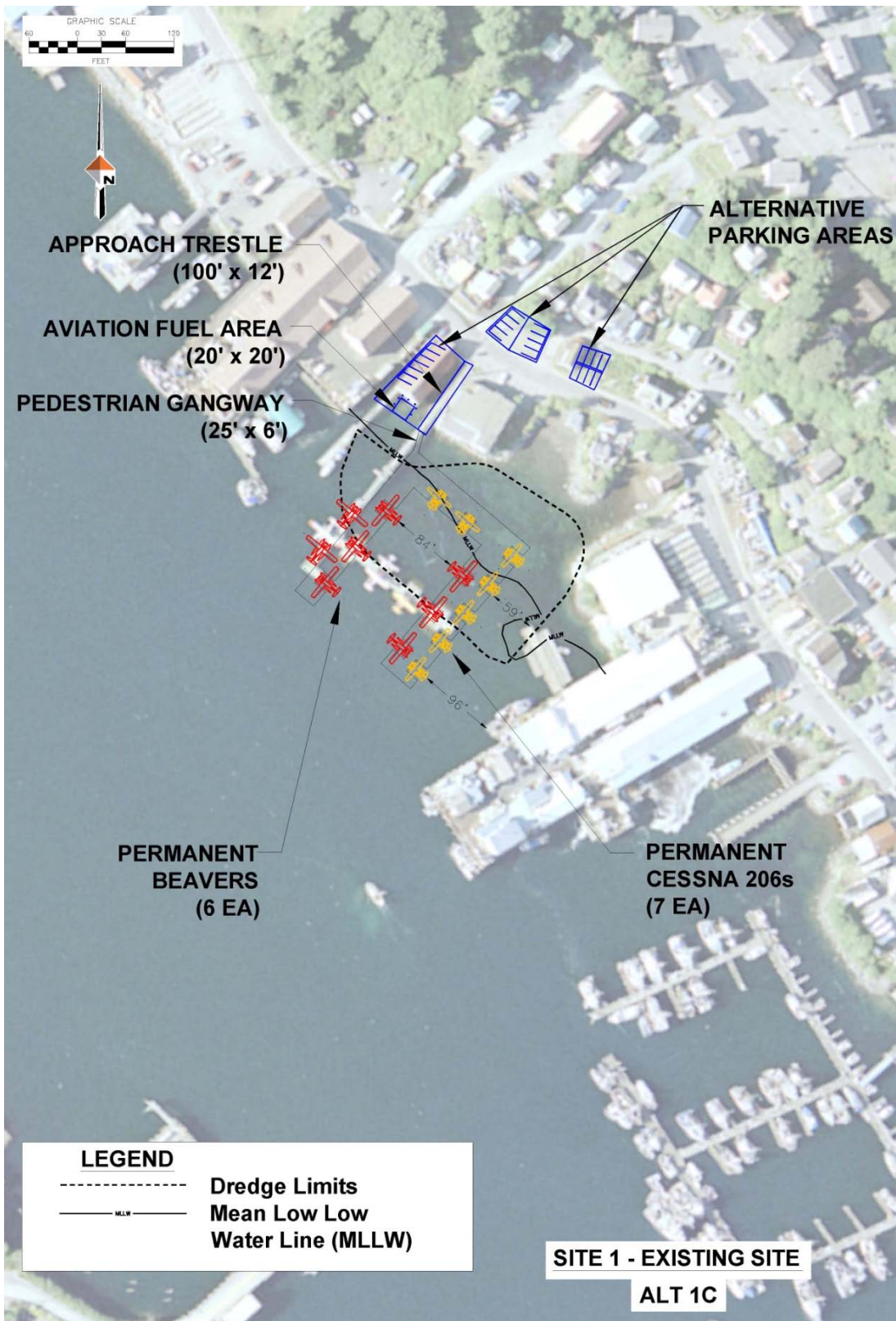


Figure 9: Alternative Layout 1C - Existing Site

*Alternative Layout 1D:* This alternative (Figure 10) was also developed in response to a request from local pilots who requested the evaluation of an H-shaped float layout. Alternative Layout 1D is very similar to Alternative 1C. Alternative 1D would require the purchase of additional property at the existing SPB site. The specific parcels acquired to provide 12 parking spaces, a fuel storage or distribution system, and a drive-down ramp could vary depending upon the SPB's final design and the availability of willing sellers. Figure 10 shows one possible acquisition scenario. Electricity and potable water is included. The interior taxi lane has been expanded to 150 feet to make the slips on the inside of the floats more accessible and increase the total number of slips for based aircraft to 14. Because of space constraints, facilities for on-site aircraft maintenance were not included. Access to the slips nearest to SSS is rendered impossible by a taxi lane that is 31 feet wide at its widest, effectively reducing the SPBs capacity to 9 based aircraft and two transients. Access to the slips on the interior of the facility is via a taxi lane that is 150 feet wide, still below the FAA recommended minimum but providing wingtip clearances for a Beaver of about 51 feet. This site is well protected from wind and wave action. Dredging would be required to provide adequate depth for the floats and for maneuvering the seaplanes. The distance between the SPB and the focus of seabird activity at the SSS outfall would be unchanged. Boat access to the north side of the SSS facility would be eliminated. This layout could not be easily expanded to accommodate future growth. Since this alternative does not meet the project's capacity goal and eliminates boat access to part of the SSS plant, a cost estimate was not developed.

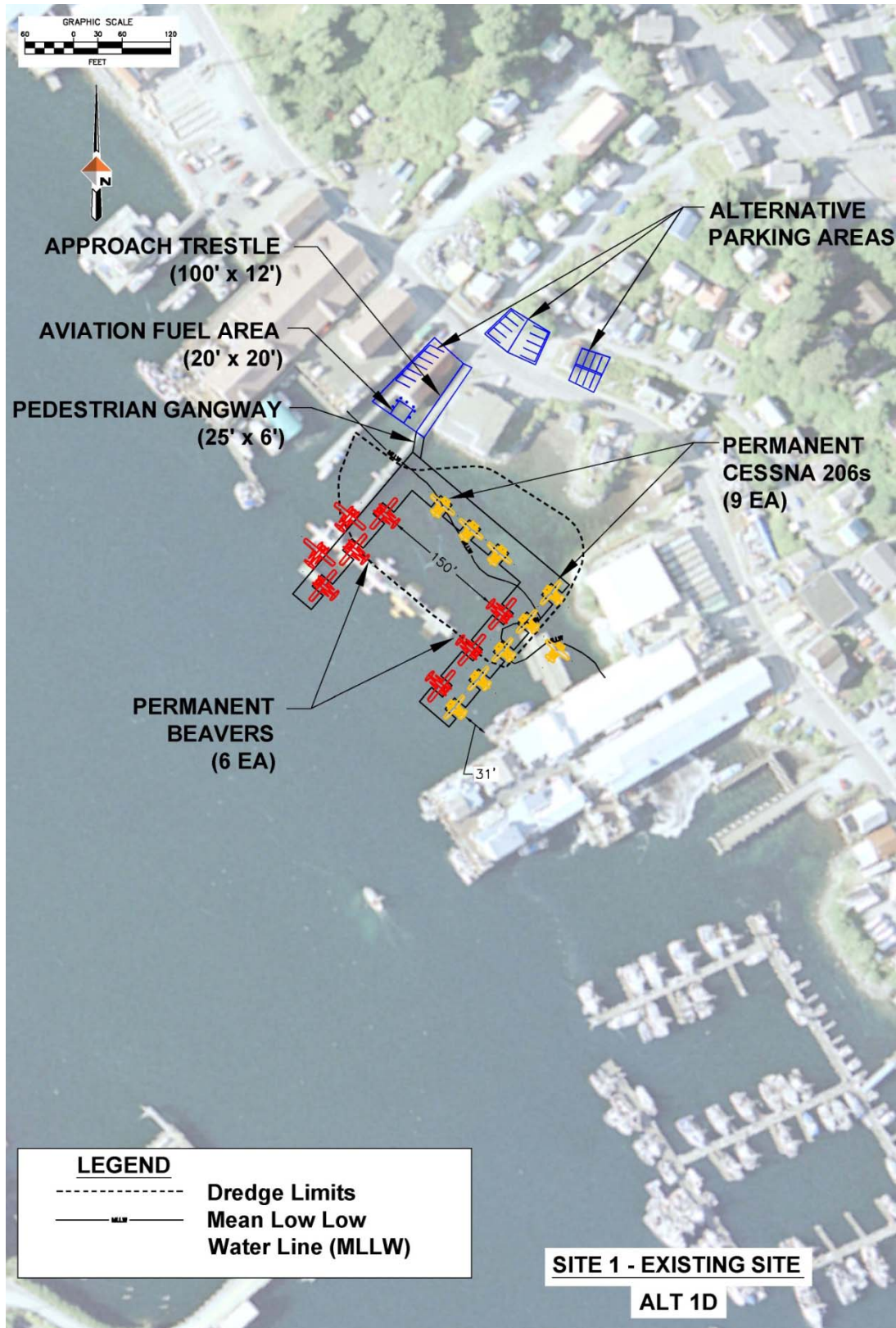


Figure 10: Alternative Layout 1D - Existing Site



Table 3 compares the four layouts at the existing SPB site. Although none of the four alternative layouts for the existing SPB met all of the facilities' requirements, Alternative Layout 1B was carried forward to be compared to alternative layouts from the other two potential sites.

**Table 3: Comparison of Existing SPB Layout Alternatives**

<b>Design Criteria</b>	<b>Alternative 1A</b>	<b>Alternative 1B</b>	<b>Alternative 1C</b>	<b>Alternative 1D</b>
12 parking spaces	No	Yes	Yes	Yes
Fuel storage & distribution system	No	Yes	Yes	Yes
On-site maintenance facility	No	No	No	No
Drive-down ramp	No	Yes	Yes	Yes
Electricity & potable water	Yes	Yes	Yes	Yes
14 based aircraft slips, 3-5 transient positions	No	No	No	No
Safe access/maneuvering to slips	Poor	Poor	Unworkable	Unworkable
Protected from wind and waves	Yes	Yes	Yes	Yes
Allows for future expansion	No	No	No	No
Minimal environmental impacts	No	No	No	No

6.2.2 Eliason Harbor Alternative

This alternative (Figure 12) is an attempt to meet the SPB requirements using CBS-owned property at Eliason Harbor. The conceptual layout for this site includes parking spaces, a fuel storage and distribution system, an on-site maintenance facility (two optional floating hangars), and a drive-down ramp. Electricity, a potable water distribution system, and seaplane parking slips and positions for 14 based aircraft and three transients are included. The floats are arranged in a linear fashion with seaplane parking positions on the east side to separate boat and seaplane traffic. Access to the slips is by a taxi lane that approximates the FAA recommended 225-foot minimum width. Extensive dredging would be required to provide adequate depth for the floats and for maneuvering the seaplanes. Some conflicts with the movement of boats moving to/from the harbor could be expected, but at a reduced level compared to the existing SPB. Water discharging from Turnaround Creek could be expected to freeze and render this site at least partially unusable during some winter months. Protection from easterly winds would be somewhat less than that experienced at the existing SPB site. The distance between the SPB and the focus of seabird activity at the SSS outfall would be increased by approximately 3,000 feet. Aircraft-generated noise from this facility may impact nearby structures. This layout is



estimated to cost \$13.2 million without the floating aircraft maintenance hangars and \$15.6 million with the floating hangars.

Note that the SPB floats shown in Figure 12 generally follow the alignment of the existing pilings that are positioned in the water just beyond the shoreline in Figure 11. Turnaround Creek is just outside the frame to the right.



**Figure 11: Eliason Harbor site at Low Tide**

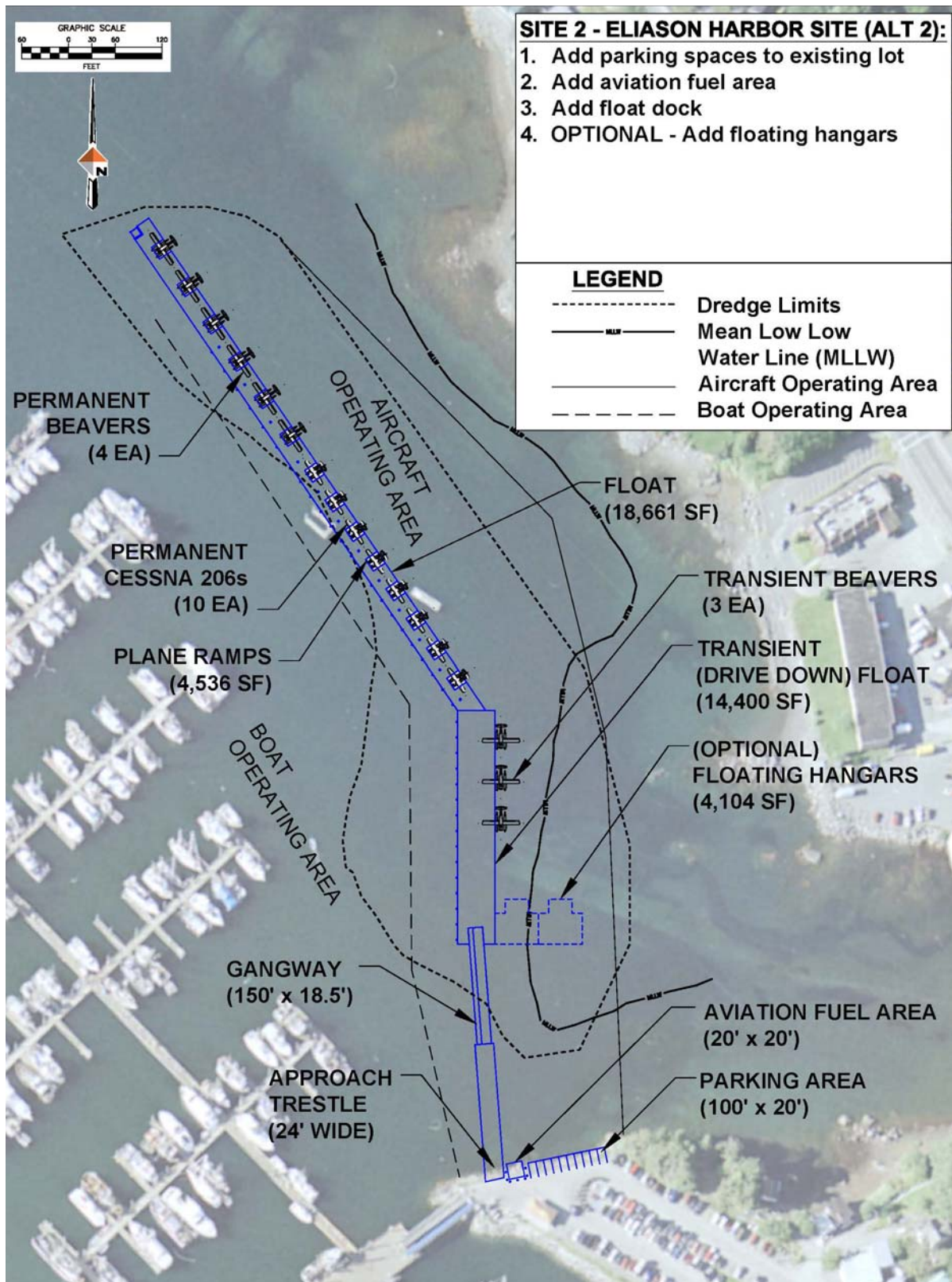


Figure 12: Alternative Layout 2 - Eliason Harbor Site

### 6.2.3 Japonski Island Alternative

*Alternative Layout 3A:* This alternative (Figure 13) is an attempt to meet the SPB requirements at a site at the north end of Seward Avenue on Japonski Island. The conceptual layout for this site includes 12 vehicle parking spaces, a fuel storage and distribution system, and a drive-down ramp. Although not shown in the figure, an on-site maintenance facility (an on-shore facility or two optional floating hangars) could be accommodated at this site. Electricity, a potable water distribution system, and seaplane parking slips and positions for 14 based aircraft and 5 transients are included. The floats are arranged to align all slips with the prevailing wind. This location is removed from areas of concentrated boat traffic and access to the slips is unrestricted. Dredging would not be required to provide adequate depth for the floats and for maneuvering the seaplanes. Protection from easterly winds would be somewhat less than that experienced at the existing SPB site and long period swells may penetrate the nearby breakwaters to reach the floats. The distance between the SPB and the focus of seabird activity at the SSS outfall would be increased by approximately 4,300 feet. Aircraft-generated noise from this facility may impact nearby structures, although a SPB at this location may also reduce noise in the channel by moving the water operating area further to the north. This layout is estimated to cost \$9.3 million without the floating aircraft maintenance hangars and \$11.7 million with floating hangars.

The SPB would be located on state-owned tidelands. Uplands owned by the State of Alaska Department of Education and Early Development would likely be required for access to the SPB, however, a final access location has not been determined.

Mount Edgecumbe High School provided two letters (Appendix B) expressing a lack of support for a SPB at this location, citing the agency's interest in using the property for other unspecified purposes in the future, possible impacts to nearby structures, increased vehicular traffic, and other concerns.



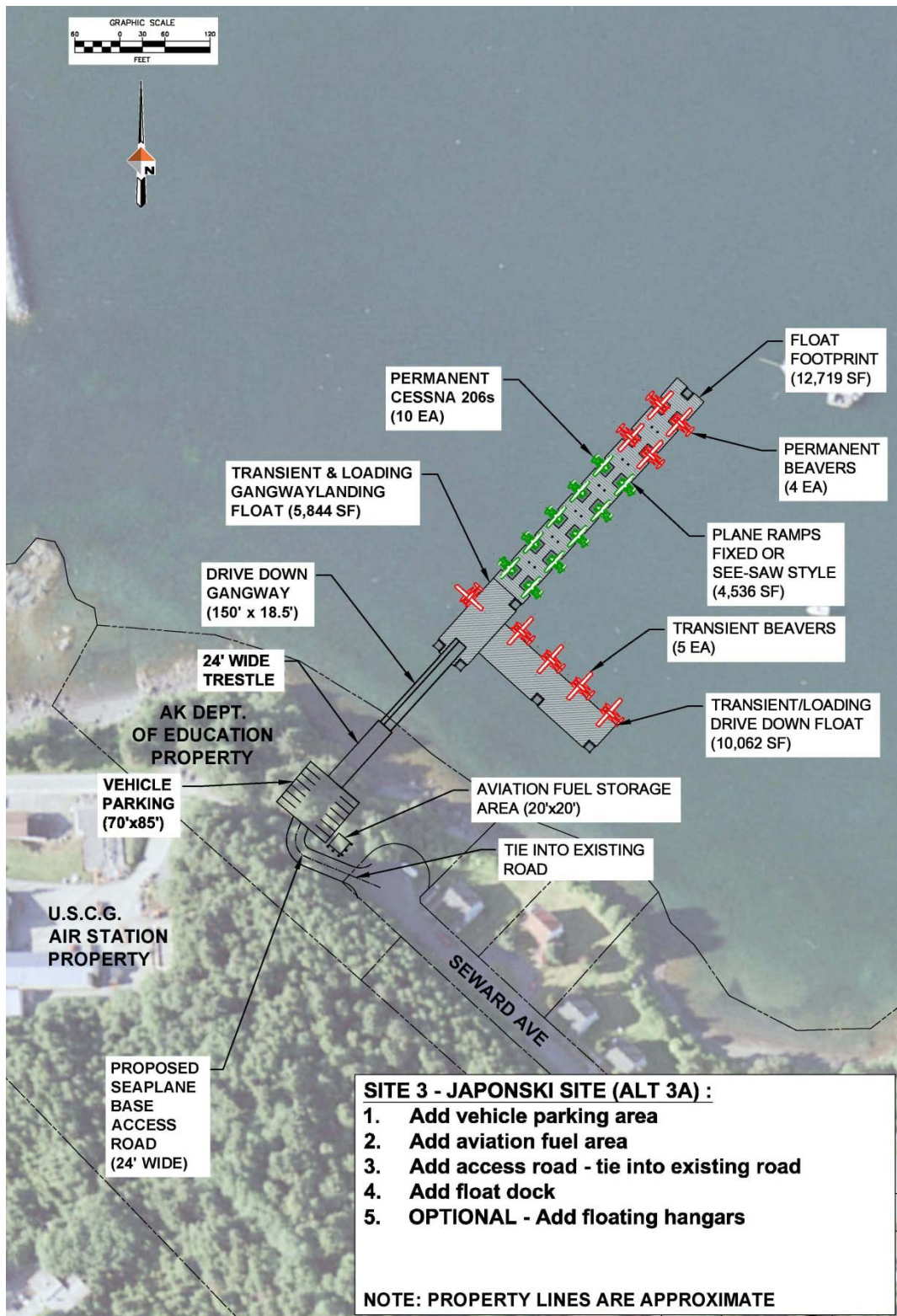


Figure 13: Alternative Layout 3A - Japonski Site

#### 6.2.4 Evaluation of Alternative Layouts

A set of evaluation criteria was developed to assist in the selection of a recommended alternative. The alternatives were given a rating for each criterion and the ratings were summed for an overall score. The summed scores were discussed during workshops with seaplane pilots and several other local residents and, where necessary, adjustments were made to reflect local knowledge and experience.

The ratings or values assigned for each criterion were arrived at through a process of comparing the alternatives--a “beauty contest” so to speak --where the “best” alternative for a given criterion was given the highest rating, and the “worst” alternative the lowest rating. No weightings were used to assign greater importance to any of the criterion.

The criteria used in evaluating alternatives are listed below, grouped by category:

##### Facility Requirements

- Wind protection: degree to which aircraft and SPB floats will be protected from wind
- Wave protection: degree to which aircraft and SPB floats will be protected from waves
- Icing: degree to which the site is exposed to icing in the winter
- Capacity: degree to which the layout meets the initial capacity goal of 14 based seaplane slips and 3 to 5 transient positions.
- Room for growth: degree to which the site could accommodate future growth in demand
- Aircraft maneuvering room: degree to which aircraft have space to maneuver to/from parking spaces in less than ideal conditions (wind, waves, currents)
- Taxi distance: distance between the SPB facility and designated water lane for takeoffs and landings
- Vehicle parking: provides 12 vehicle parking spaces
- Fueling facilities: provides storage space for fueling system
- Drive-down ramp: provides drive-down ramp to facilitate movement of passengers and equipment to the aircraft parking positions by car, truck, or van
- On-site aircraft maintenance: provides option to locate floating or onshore aircraft maintenance facilities



### Safety Concerns

- Wildlife hazards: Degree to which the site is protected from wildlife hazards (mainly birds)
- Potential conflicts with boat traffic: degree to which taxiing aircraft may encounter boat traffic

### Environmental Concerns

- Dredging or rock removal: degree to which dredging/rock removal is required
- Adjacent land uses: degree to which SPB operation is consistent with adjacent land uses

### Cost and Feasibility Concerns

- Capital cost
- Property acquisition: degree to which property must be acquired to construct the SPB
- Operating and maintenance cost: how much it may cost to operate and maintain the facility
- Revenue generating potential: degree to which the facility can be expected to generate revenue to cover its operating and maintenance costs

Each alternative was rated on these criteria. The results of this evaluation, summed by criteria category, follow in Table 4.

**Table 4: Sitka Seaplane Base Siting Study and Conceptual Design  
 Draft Evaluation Criteria**

Scoring Range 1 - 3 (worst - best); 0 = non-responsive  
 Unweighted criteria

Notes	SPB Site Selection Criteria	Alternatives		
		Eliason Harbor	Japonski Island	Existing SPB ALT 1B
<b>Facility Requirements</b>				
1	Wind protection	2	1	3
2	Wave protection	2	1	3
3	Icing	1	3	3
4	Capacity	3	3	1
5	Accommodate future growth	2	3	0
6	Aircraft maneuvering room	2	3	1
7	Taxi distance to takeoff area	3	3	2
8	Vehicle parking	3	3	3
9	Fueling facilities	3	3	3
10	Drive-down ramp to floats	3	3	1
11	On-site aircraft maintenance	3	3	0
Category Score Total		27	29	20
Category Rank		2nd Best	Best	3rd Best
<b>Safety Concerns</b>				
12	Wildlife hazards	2	3	1
13	Potential conflicts with boat traffic	1	3	1
Category Score Total		3	6	2
Category Rank		2nd Best	Best	3rd Best
<b>Environmental Concerns</b>				
14	Dredging and/or rock removal	1	3	2
15	Adjacent land uses	1	1	3
Category Score Total		2	4	5
Category Rank		3rd Best	2nd Best	Best
<b>Cost and Feasibility Concerns</b>				
16	Property acquisition	3	1	1
17	Capital cost	1	2	3
18	Operating and maintenance cost	1	2	3
19	Revenue generation potential	3	3	1
Category Score Total		8	8	8
Category Rank		Tie	Tie	Tie
<b>Cumulative Scores</b>		40	47	35
<b>Overall Ranking</b>		2nd Best	Best	3rd Best

**Table 5: Explanatory Notes for Table 4**

Notes	
1	Japonski is exposed to southeast winds in summer and east winds in winter. Eliason is exposed to east winds in winter. Existing SPB sites are sheltered by adjacent development.
2	Japonski is partially exposed to swells due to the gap in the breakwater and to chop from the east and south. Eliason has less exposure to long period waves. Existing SPB receives some chop from the south.
3	Icing occurs seasonally at the outfall of Turnaround Creek close to the site of the proposed SPB.
4	The capacity objective is 12 to 14 slips for based aircraft and 3 to 5 positions available for transient aircraft. The Eliason and Japonski sites meet this objective. At the existing SPB site, 1B provides slips for 10 based aircraft and 2 transients.
5	The ability of the existing SPB alternative to be expanded is constrained by adjacent development. Eliason can be extended in a linear configuration, but the long narrow pier may create logistical problems for users, require more dredging, and may increase boat conflicts. Japonski can be expanded in various configurations.
6	Japonski is open with minimal boat traffic; Eliason is near boat harbor; Existing SPB taxi lanes do not meet FAA guidelines and conflict with the SSS plant.
7	Measured from the site to the north end of the designated water lane in Sitka Channel. Eliason = .8 mile; Japonski = .4 mile; Existing SPB Alternatives = .5 mile
8	All sites can accommodate 12 vehicle parking spaces.
9	All sites can accommodate fuel storage and distribution systems.
10	Existing SPB Alt 1B may not provide a drive-down ramp because of space constraints.
11	Existing SPB Alt 1B does not provide floating hangars or upland facilities because of space constraints.
12	The main wildlife hazard consists of birds attracted by the outfall from fish processing plants just south of the existing SPB. Although it is anticipated that this will diminish within the next few years because of stricter EPA/ADEC permitting requirements, a lower level of bird activity associated with the fish processing facilities may remain. Eliason is 3,000 feet from the fish processing plants, Japonski about 4,300 feet, and the existing SPB alternatives about 350 feet away.
13	Eliason is immediately adjacent to Eliason Harbor. Existing SPB site is in a busy area of the Sitka Channel. Japonski is away from most boat traffic.
14	Japonski does not require dredging or rock removal. Eliason requires significant dredging and rock removal at the outfall of Indian Creek. Alt 1B requires limited rock removal and some dredging.
15	Land use at Eliason harbor is C-1 (Commercial), Japonski is P (Public Lands District), existing SPB is W (Waterfront District). SPB is a permitted use in W and conditional use in P and C-1. However, R (Residential) land uses are less than .5 mile from Eliason and the existing SPB sites. Mount Edgecumbe High School and SEARHC are less than .5 mile from the Japonski site.
16	Eliason does not require the acquisition of additional property - site is owned by CBS.
17	Eliason = \$13.2 to \$15.6 million; Japonski = \$9.3 to \$11.7 million; Existing SPB Alt 1B = \$5.1 million
18	Eliason = \$8,868/year; Japonski = \$4,836/year; Existing SPB Alt 1B = \$2,820/year
19	Revenue estimate based entirely on number of seaplane slips.

## **7.0 RECOMMENDED SITE**

Based upon the analysis described in this report and input received from local officials, residents and pilots, this study recommends carrying the Japonski Island site forward for further environmental investigations and design. None of the alternative sites studied in this or the 2002 study are perfectly suited for the development of a seaplane base. Topography and existing development limit the choices available. However, of all the potential sites evaluated, the Japonski site has the most positive attributes and least negative attributes.

Although the construction of a new SPB at the existing site would be less expensive than at the other two sites because it would be smaller, a SPB at this site could not be designed to meet the project's capacity goal of 14 slips for based aircraft and 3 to 5 transient positions, provide on-site maintenance facilities, and safe access to/from the slips from the water operating area. Existing adjacent development would make right-of-way acquisition for vehicle parking, fuel storage, and a drive-down ramp very difficult and expensive. This site also could not accommodate future growth. An expanded SPB at the existing site would increase boat conflicts, particularly with boat traffic to SSS. SSS has also objected to the continued operation or expansion of the existing SPB.

The Eliason Harbor site would be the most expensive to develop. Extensive dredging required for the project would result in impacts to a sensitive near-shore tidal area and would very likely not make it through the permitting process. Although this site could accommodate the project's initial capacity goal, on-site maintenance facilities could be provided, and a taxi lane of adequate width would safe access to/from the slips from the water operating area, future expansion of the facility would create logistical challenges for users. Although the floats could be designed to segregate boat and seaplane traffic, occasional boat/seaplane conflicts at the northern entrance to the SPB could be expected. This site is away from the concentration of seabirds near the fish processing plants, but freezing fresh water from nearby Turnaround Creek would make the facility unusable during some winter months. Aircraft-generated noise could adversely impact nearby residences and businesses.

The Japonski Island site has a mid-range cost, can meet the project's capacity goal, can accommodate on-site maintenance, and can easily be expanded in the future to accommodate

growth. Access between the slips and the water operating area is open water free of obstructions. The site is removed from most boat traffic and away from the concentration of seabirds near the fish processing plants. Property may have to be acquired from the State of Alaska Department of Education and Early Development, however, access could be provided through Coast Guard or SEARHC property. Aircraft-generated noise from the SPB may increase for nearby residences and businesses, but it may also reduce noise in the Channel overall by moving the water operating area further to the north. This site was preferred by local seaplane pilots.

It is anticipated that this project would be eligible for environmental, design, and construction funding through the FAA's Airport Improvement Program (AIP). AIP funding would pay 93.75% of eligible project costs. The SOA typically provides half of the required match funding, or 3.125%. The CBS would be expected to provide the remainder. Based upon the preliminary cost estimate of \$11,700,000 for the Japonski Island Alternative with floating hangars, funding for the project would be as follows:

- \$10,968,750 - AIP
- \$365,625 - SOA
- \$365,625 - CBS

The Japonski Island Alternative layout and costs presented in this report will be further refined during the project's design and environmental phases.

## **8.0 PUBLIC INVOLVEMENT**

Appendix B contains a summary of public involvement efforts conducted during the preparation of this report, including personal and telephone interviews, correspondence, and meetings with user groups, the general public, and the CBS Port and Harbor Commission. On April 17, 2012, the Port and Harbor Commission issued a memorandum supporting the Japonski Island Alternative for further study.



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