



SOUTH PORTAGE COVE

HARBOR EXPANSION PROJECT

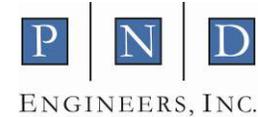
HAINES, ALASKA



Prepared for:



Prepared by:



August 26, 2010

SOUTH PORTAGE COVE HARBOR EXPANSION



Presentation Outline

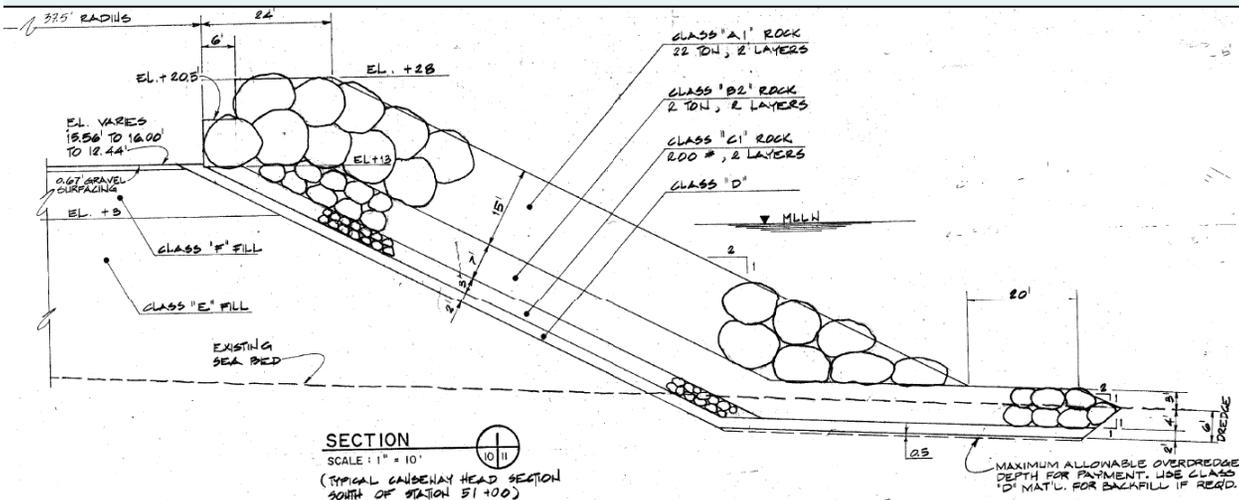
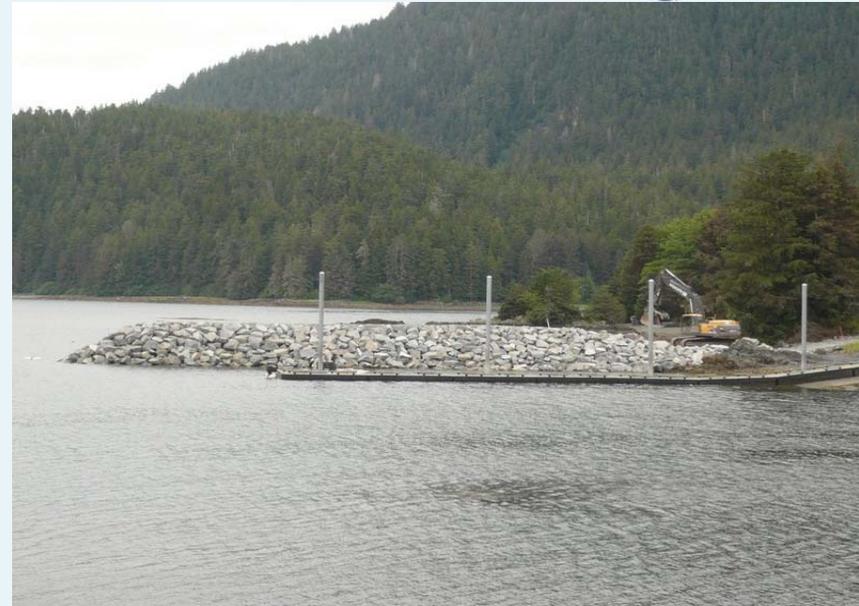


- Concept Layouts 1-5
- Wave Analysis for each concept
- Cost Estimates & Possible Phasing Strategies
- Recent Near Shore Test Pit Investigation

SOUTH PORTAGE COVE HARBOR EXPANSION



Rubble Mound Breakwater



Nome – Left
Sitka - Right

SOUTH PORTAGE COVE HARBOR EXPANSION



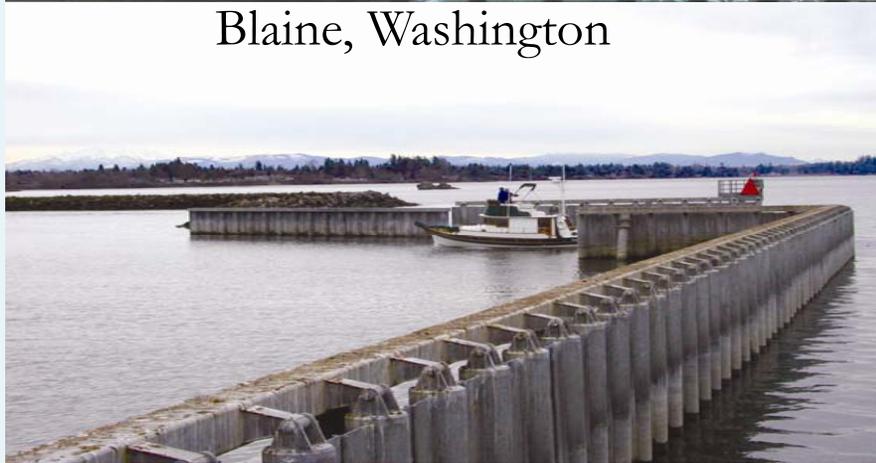
Partial & Complete Penetrating Wave Barriers



Blaine, Washington



Skagway



SOUTH PORTAGE COVE HARBOR EXPANSION

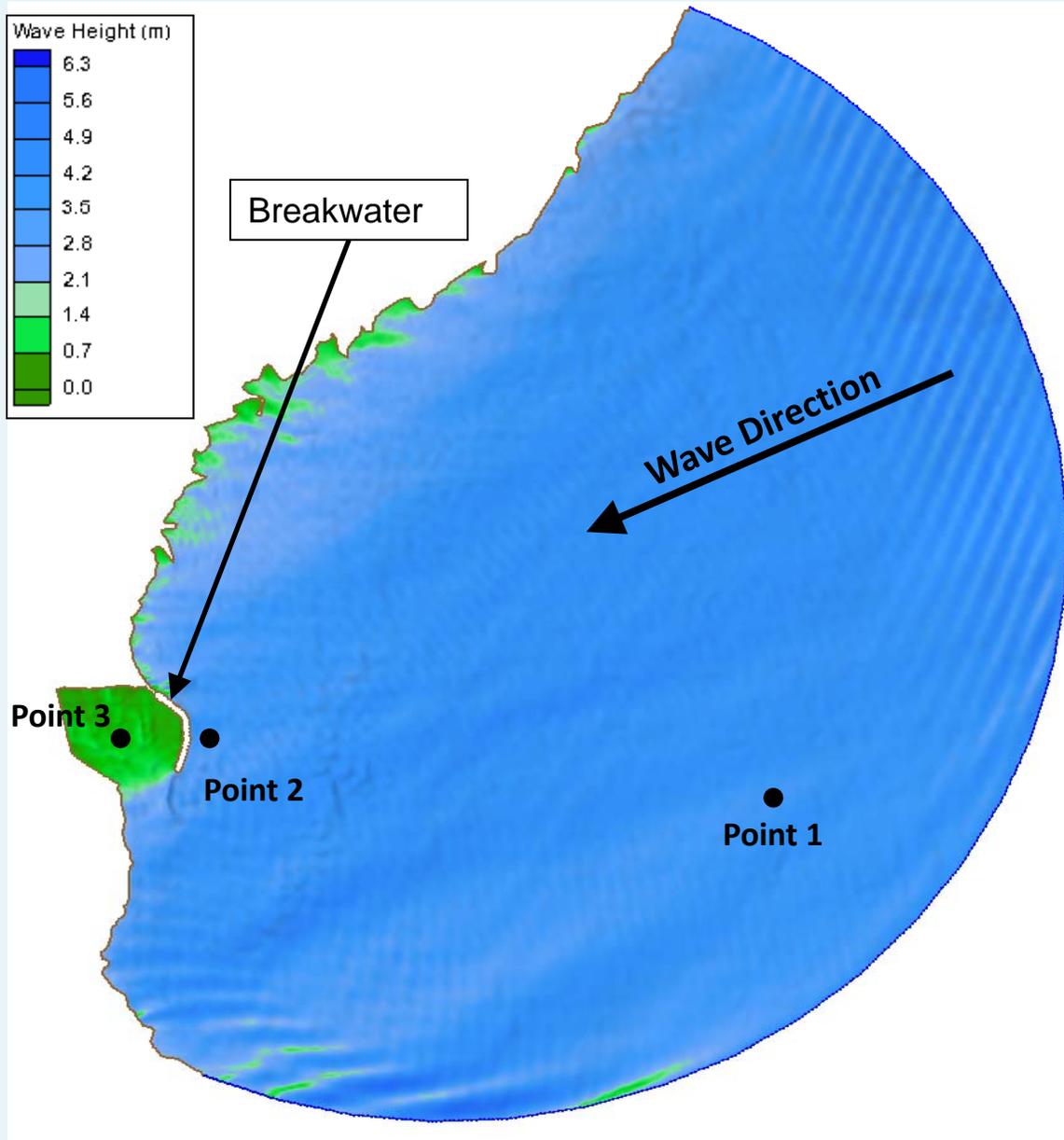
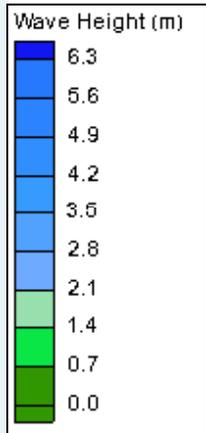


Summary - CGWAVE Model Results



Concept	Tide (feet, MLLW)	Input Wave (Point 1)			Output (Point 2)	Output (Point 3)
		H (feet)	T (sec)	Direction (degrees)	H1 (feet)	H2 (feet)
East-northeast waves						
Existing	+17	7.5	5.0	067.5°	7.3	1.2
1	+17	7.5	5.0	067.5°	7.3	0.4
2	+17	7.5	5.0	067.5°	7.3	0.3
3	+17	7.5	5.0	067.5°	7.4	0.4
4	+17	7.5	5.0	067.5°	6.9	0.3
5	+17	7.5	5.0	067.5°	7.1	0.06
East-southeast waves						
Existing	+17	7.0	4.5	112.5°	7.3	2.4
1	+17	7.0	4.5	112.5°	7.2	0.7
2	+17	7.0	4.5	112.5°	7.0	0.6
3	+17	7.0	4.5	112.5°	6.9	0.5
4	+17	7.0	4.5	112.5°	6.4	0.2
5	+17	7.0	4.5	112.5°	6.6	0.1

SOUTH PORTAGE COVE HARBOR EXPANSION



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Existing Marina – ENE Wave

(Low Pt Direction)

Offshore Wave

Height: 7.5 Feet

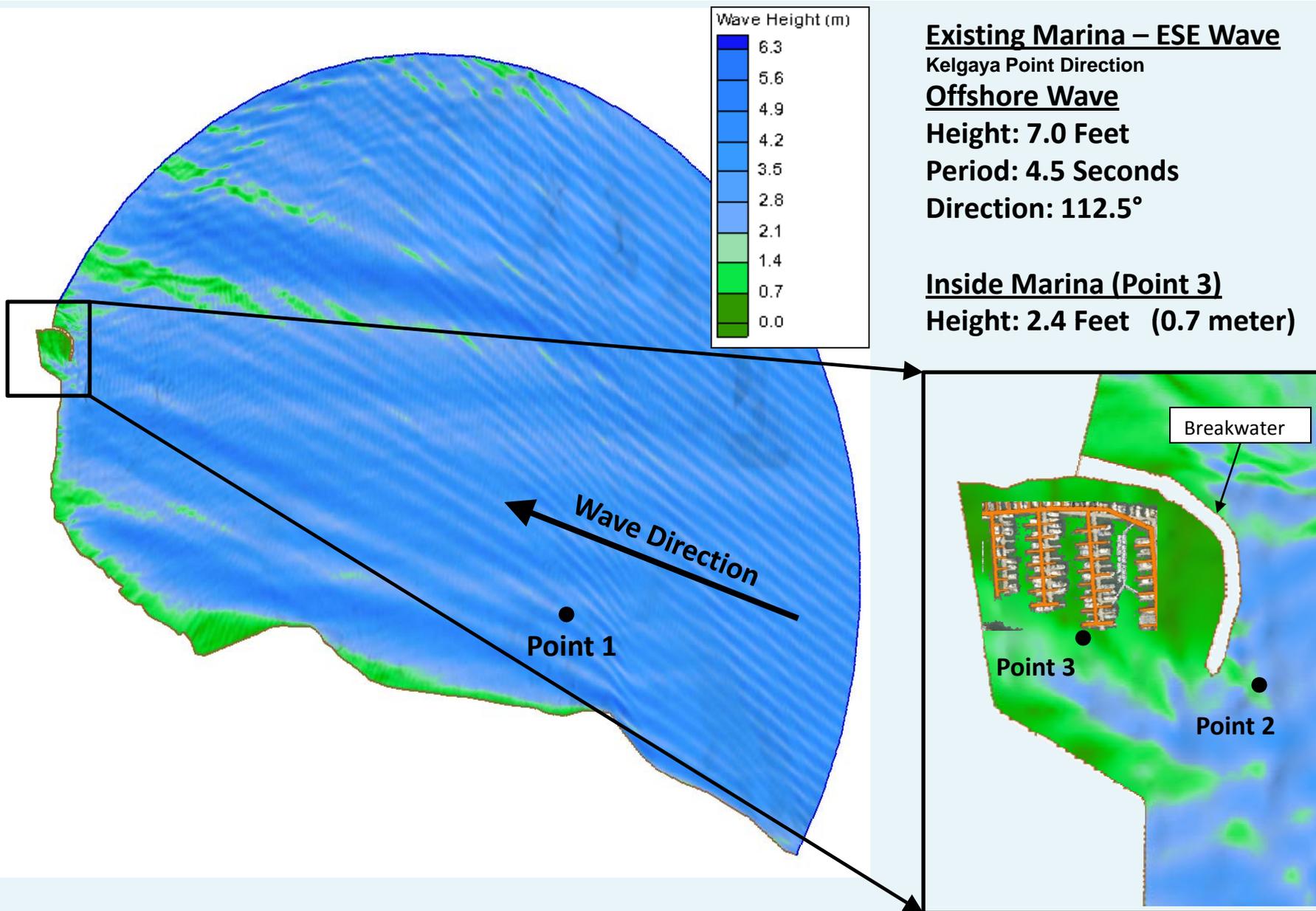
Period: 5.0 Seconds

Direction: 067.5°

Inside Marina (Point 3)

Height: 1.2 Feet (0.4 meter)

SOUTH PORTAGE COVE HARBOR EXPANSION



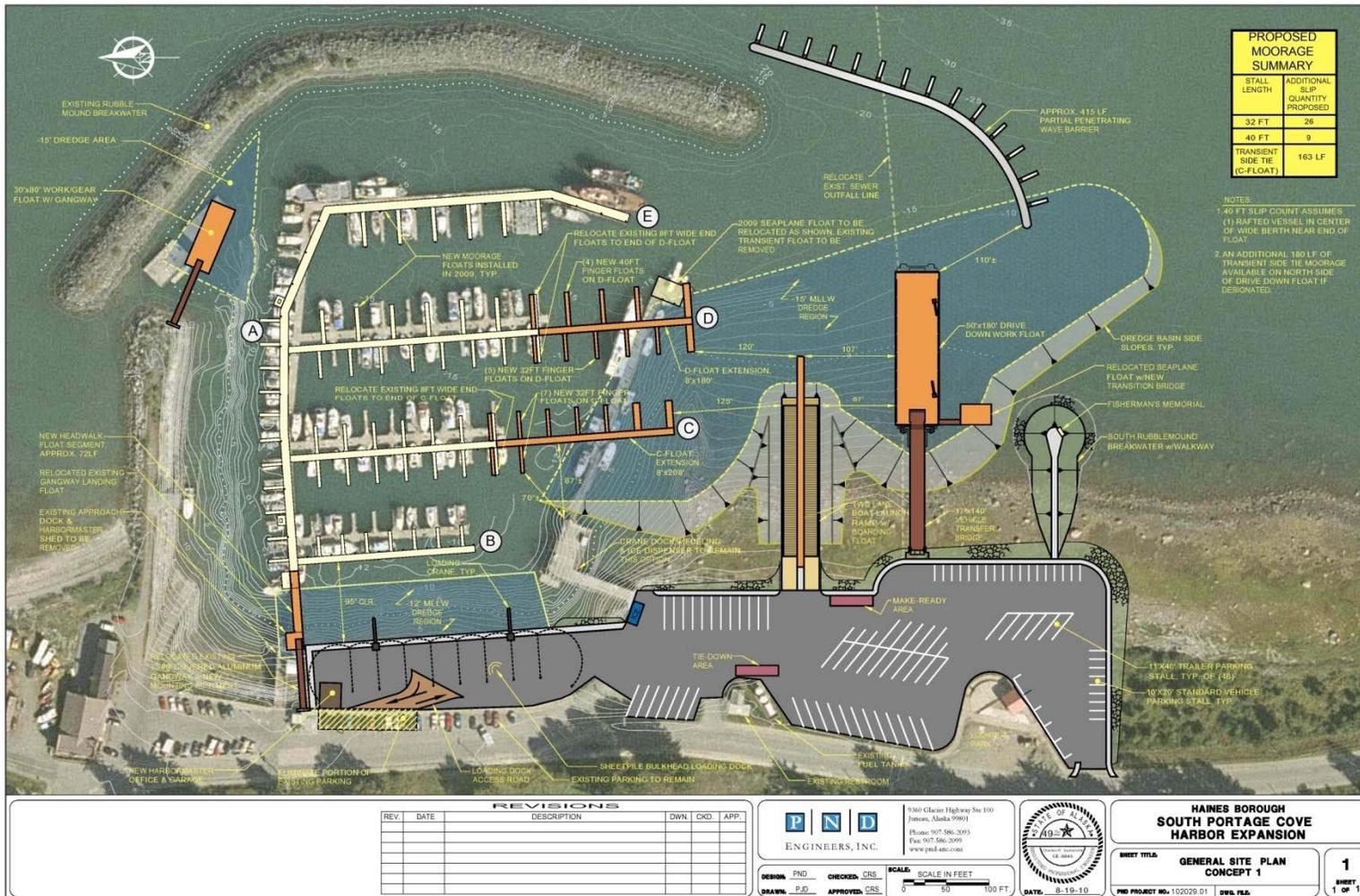
SOUTH PORTAGE COVE HARBOR EXPANSION



Concept No. 1



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SOUTH PORTAGE COVE HARBOR EXPANSION



Concept No. 1



Concept No. 1 Primary Design Features:

- Primary Basin Dredging to -15' M.L.L.W. **
- 50' x 180' Drive-Down Work Float w/ Loading Cranes **
- Two-Lane Boat Launch Ramp w/ Boarding Float **
- Upland Paving & Trailer Parking **
- Sheet Pile Bulkhead Commercial Loading Dock **
- New Harbormaster Office **
- 30'x80' Work Gear Float w/ Access Gangway **
- Remove Existing Transient Float **
- Existing Seaplane Float Relocated to Drive Down Float
- Increased Harbor Moorage – (26) 32' Slips, (9) 40' Slips, 163 LF Side-Tie Moorage
- Approximate 415 LF Partial Penetrating Wave Barrier
- South Rubble Mound Breakwater w/ Walkway & Fisherman's Memorial

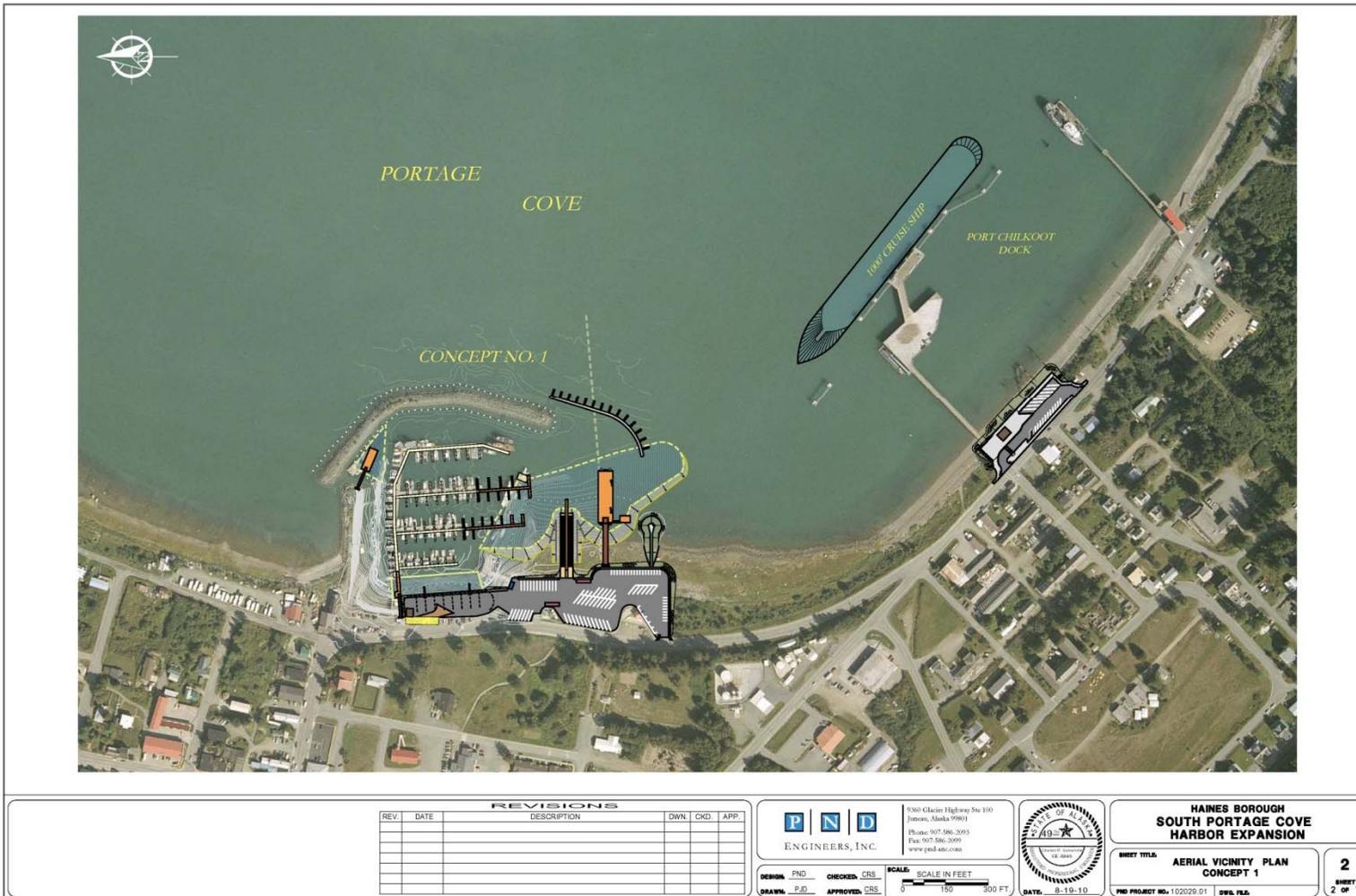
** Common to All Concepts

Estimated Total Project Costs Including Construction, Geotechnical & Environmental Site Investigations, Contingency, Final Design, Permitting, Compensatory Mitigation, Contract Administration & Inspection = \$32.8 Million

SOUTH PORTAGE COVE HARBOR EXPANSION



Concept No. 1 Vicinity Perspective



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REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.



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 Fax: 907-586-2099
 www.pnd-ast.com



**HAINES BOROUGH
 SOUTH PORTAGE COVE
 HARBOR EXPANSION**

DESIGN: PND CHECKED: CRS
 DRAWN: PJD APPROVED: CRS

SCALE: SCALE IN FEET
 0 150 300 FT

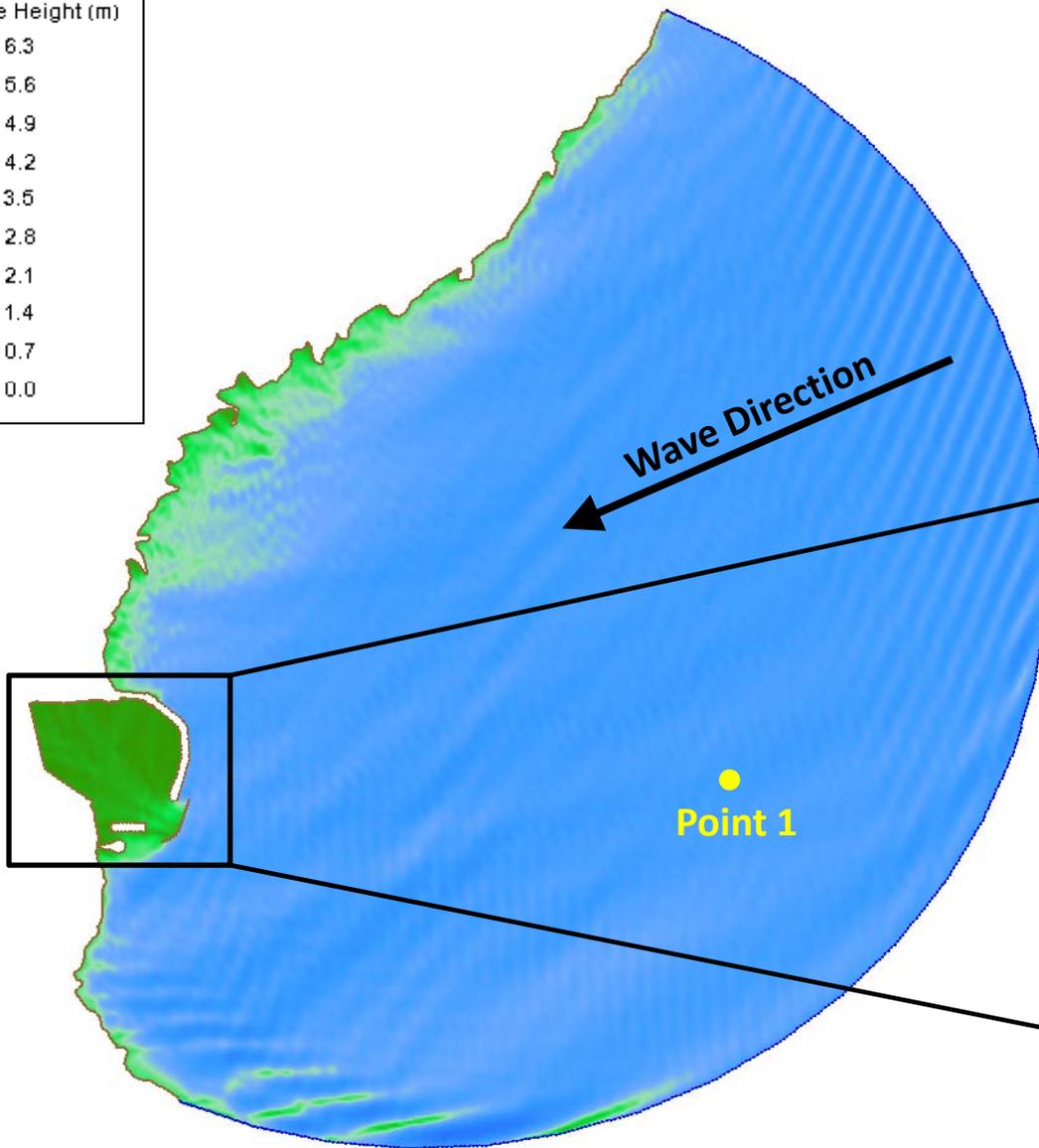
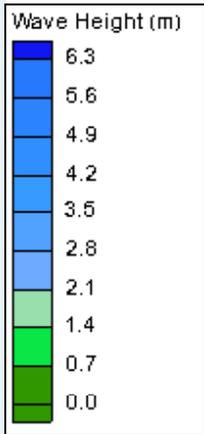
DATE: 8-19-10

SHEET TITLE: **AERIAL VICINITY PLAN
 CONCEPT 1**

2
 SHEET
 2 OF 10

PND PROJECT NO.: 102029 01 DES. FILE:

SOUTH PORTAGE COVE HARBOR EXPANSION



Concept 1– ENE Wave

Offshore Wave

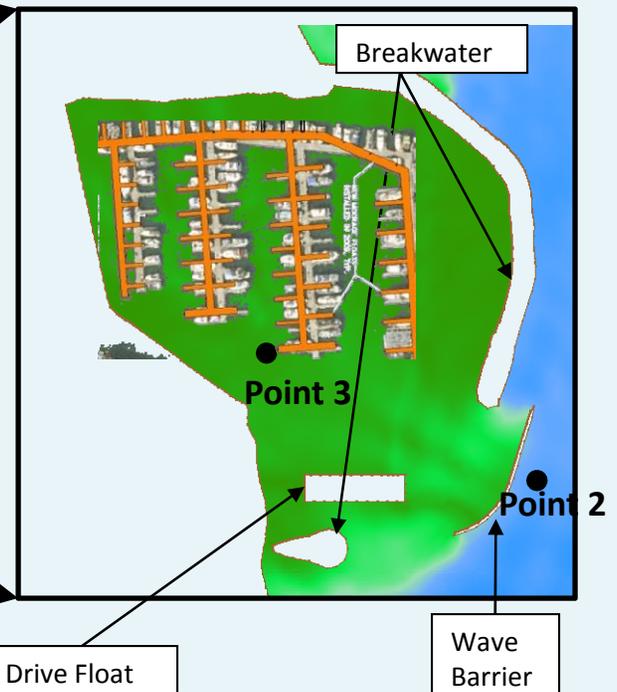
Height: 7.5 Feet

Period: 5.0 Seconds

Direction: 067.5°

Inside Marina (Point 3)

Height: 0.3 Feet (0.1 meter)



SOUTH PORTAGE COVE HARBOR EXPANSION



Concept 1– ESE Wave

Offshore Wave

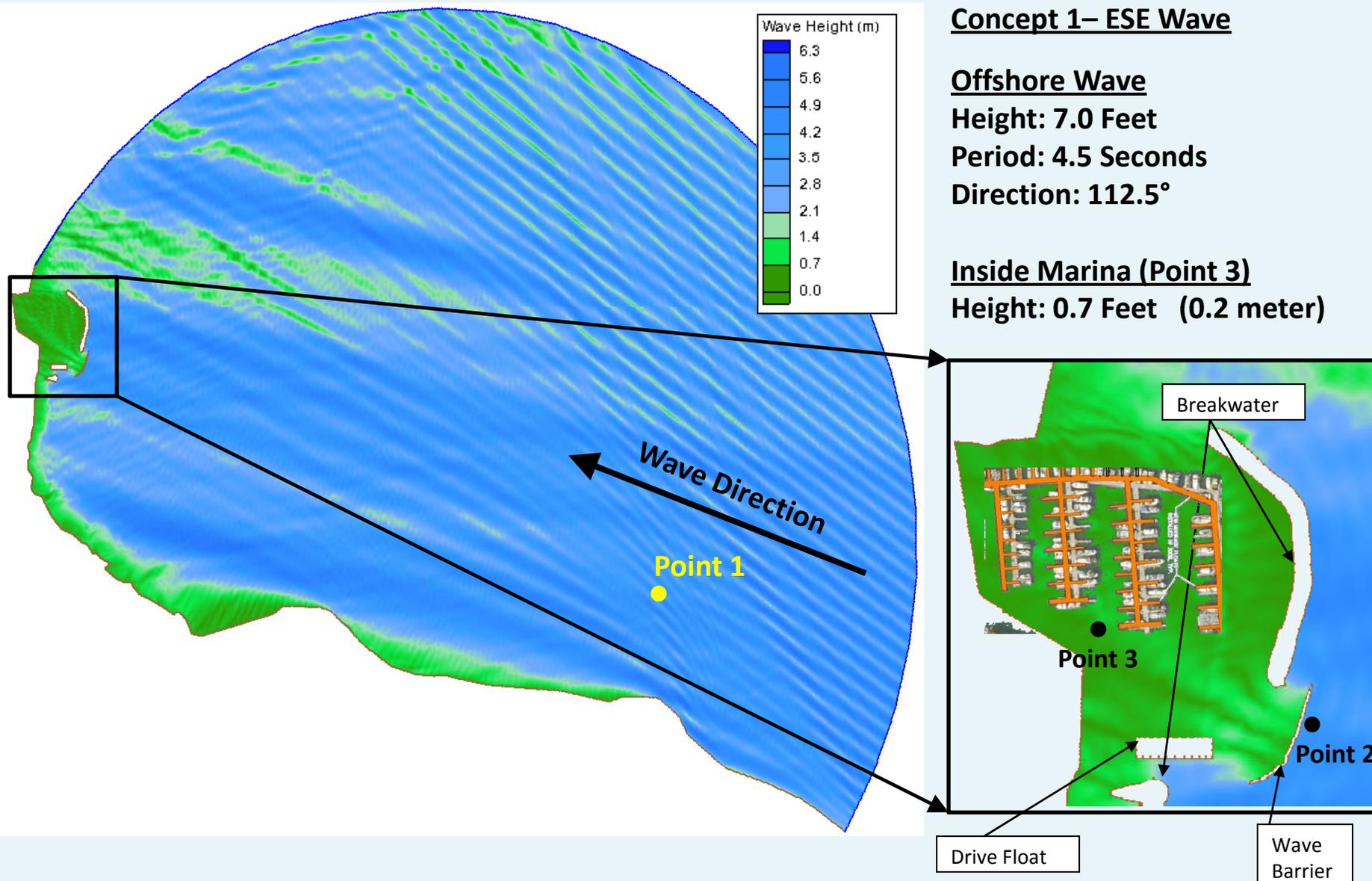
Height: 7.0 Feet

Period: 4.5 Seconds

Direction: 112.5°

Inside Marina (Point 3)

Height: 0.7 Feet (0.2 meter)



SOUTH PORTAGE COVE HARBOR EXPANSION



Concept No. 2



Concept No. 2 Notable/Differing Design Features:

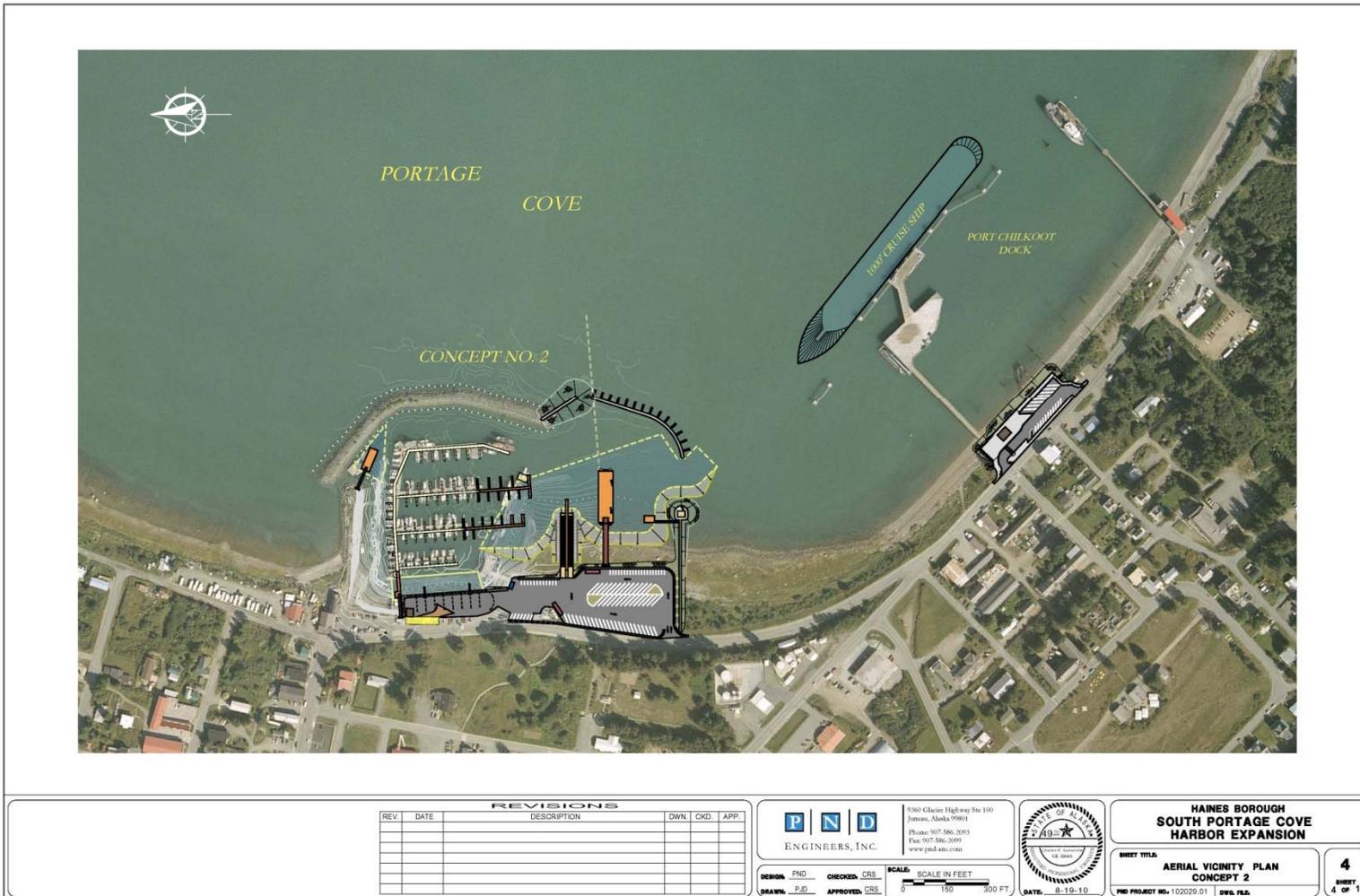
- Primary Basin Dredging Extended Southward
- Harbor Moorage (Same as Concept No. 1) – (26) 32' Slips, (9) 40' Slips, 163 LF Side-Tie Moorage
- Approximate 415 LF Partial Penetrating Wave Barrier (Same as Concept No. 1)
- Existing Seaplane Float Relocated to South Rubble Mound Breakwater
- Lookout Park Relocated to Seaward End of South Rubble Mound Breakwater
- Rubble Mound Breakwater Stub Extension
- Increased Upland Trailer Parking

Estimated Total Project Costs Including Construction, Geotechnical & Environmental Site Investigations, Contingency, Final Design, Permitting, Compensatory Mitigation, Contract Administration & Inspection = \$35.7 Million

SOUTH PORTAGE COVE HARBOR EXPANSION



Concept No. 2 Vicinity Perspective



REVISIONS					
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**HAINES BOROUGH
SOUTH PORTAGE COVE
HARBOR EXPANSION**

DESIGN: PND CHECKED: CRS
DRAWN: PJD APPROVED: CRS

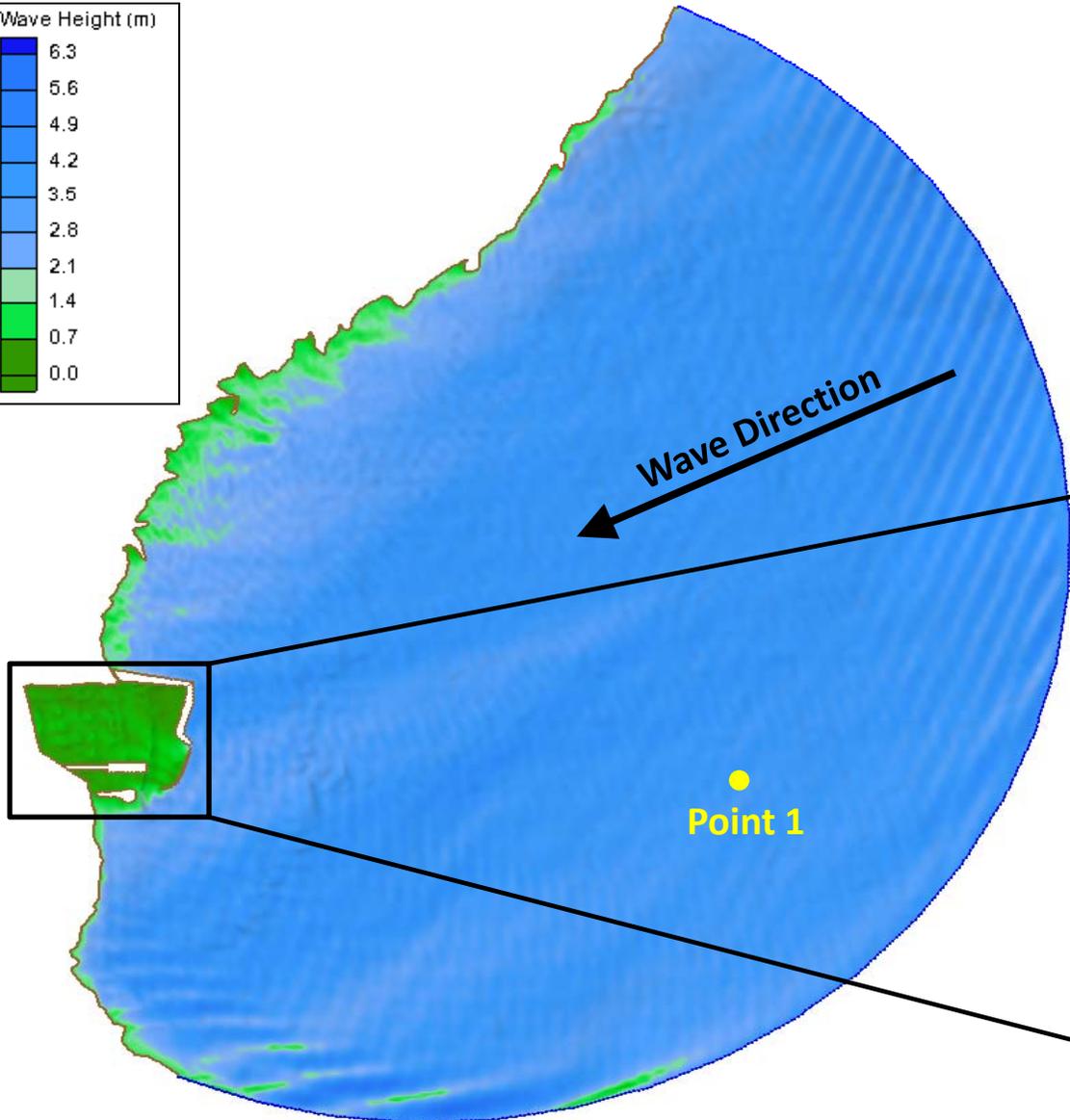
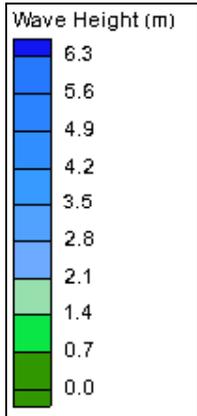
SCALE: SCALE IN FEET
0 100 200 FT

DATE: 8-19-10

SHEET TITLE:
**AERIAL VICINITY PLAN
CONCEPT 2**
PND PROJECT NO.: 102020 01 DWS: PLS

4
SHEET
4 OF 10

SOUTH PORTAGE COVE HARBOR EXPANSION



Concept 2 – ENE Wave

Offshore Wave

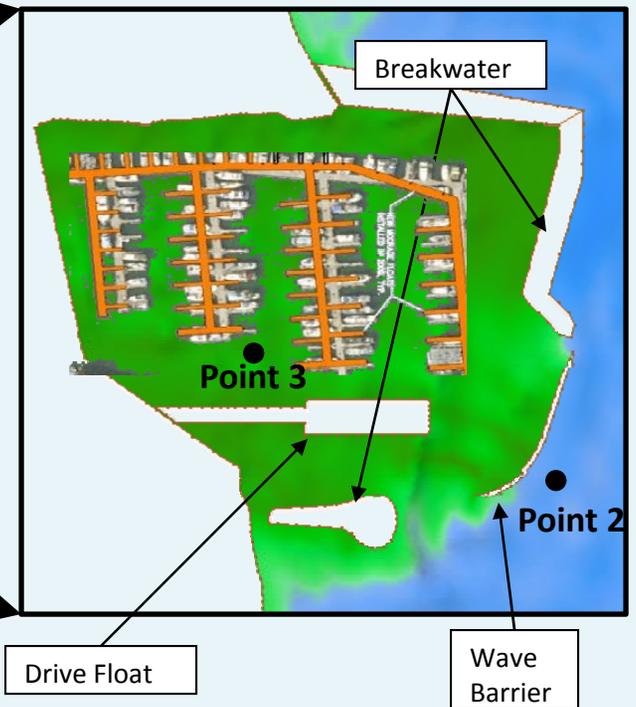
Height: 7.5 Feet

Period: 5.0 Seconds

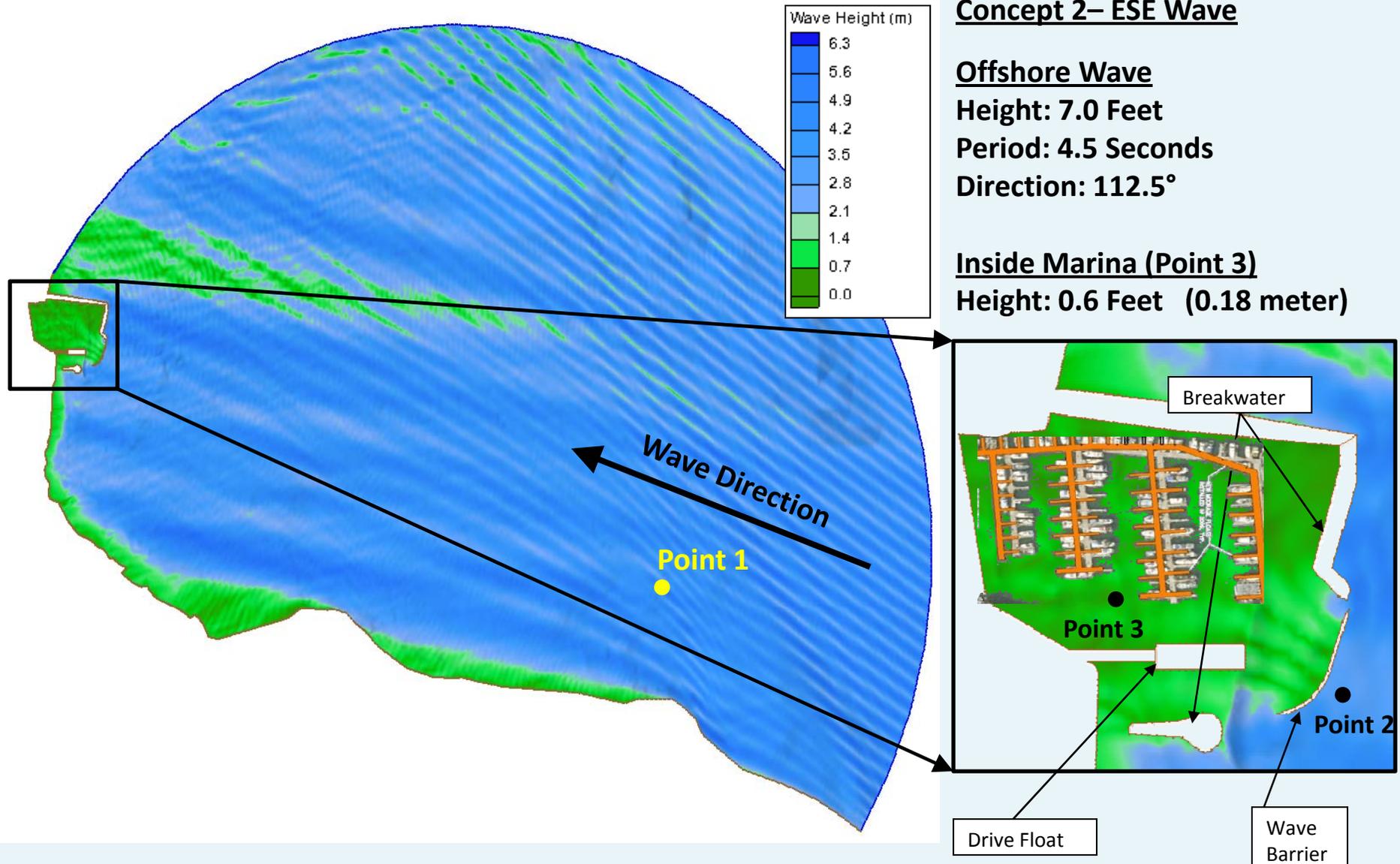
Direction: 067.5°

Inside Marina (Point 3)

Height: 0.3 Feet (0.1 meter)



SOUTH PORTAGE COVE HARBOR EXPANSION



SOUTH PORTAGE COVE HARBOR EXPANSION



Concept No. 3



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**HAINES BOROUGH
SOUTH PORTAGE COVE
HARBOR EXPANSION**

**GENERAL SITE PLAN
CONCEPT 3**

5
SHEET
OF 10

SCALE IN FEET
1" = 50'
100 FT

DATE: 6-19-10

PHD PROJECT NO.: 102029.01 | SHEET NO. 5

SOUTH PORTAGE COVE HARBOR EXPANSION



Concept No. 3



Concept No. 3 Notable/Differing Design Features:

- Drive Down Float & Boat Launch Ramp Moved Southward
- Increased Harbor Moorage – (32) 32' Slips, (12) 40' Slips, 390 LF Side-Tie Moorage
- Rubble Mound Breakwater Stub Extension & 415 LF Partial Penetrating Wave Barrier
- Existing Seaplane Float Relocated to Inside of Wave Barrier

Estimated Total Project Costs Including Construction, Geotechnical & Environmental Site Investigations, Contingency, Final Design, Permitting, Compensatory Mitigation, Contract Administration & Inspection = \$36.4 Million

SOUTH PORTAGE COVE HARBOR EXPANSION



Concept No. 3 Vicinity Perspective



REVISIONS					
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**HAINES BOROUGH
SOUTH PORTAGE COVE
HARBOR EXPANSION**

DESIGN: PND CHECKED: CRS
DRAWN: PJD APPROVED: CRS

SCALE: SCALE IN FEET
0 150 300 FT.

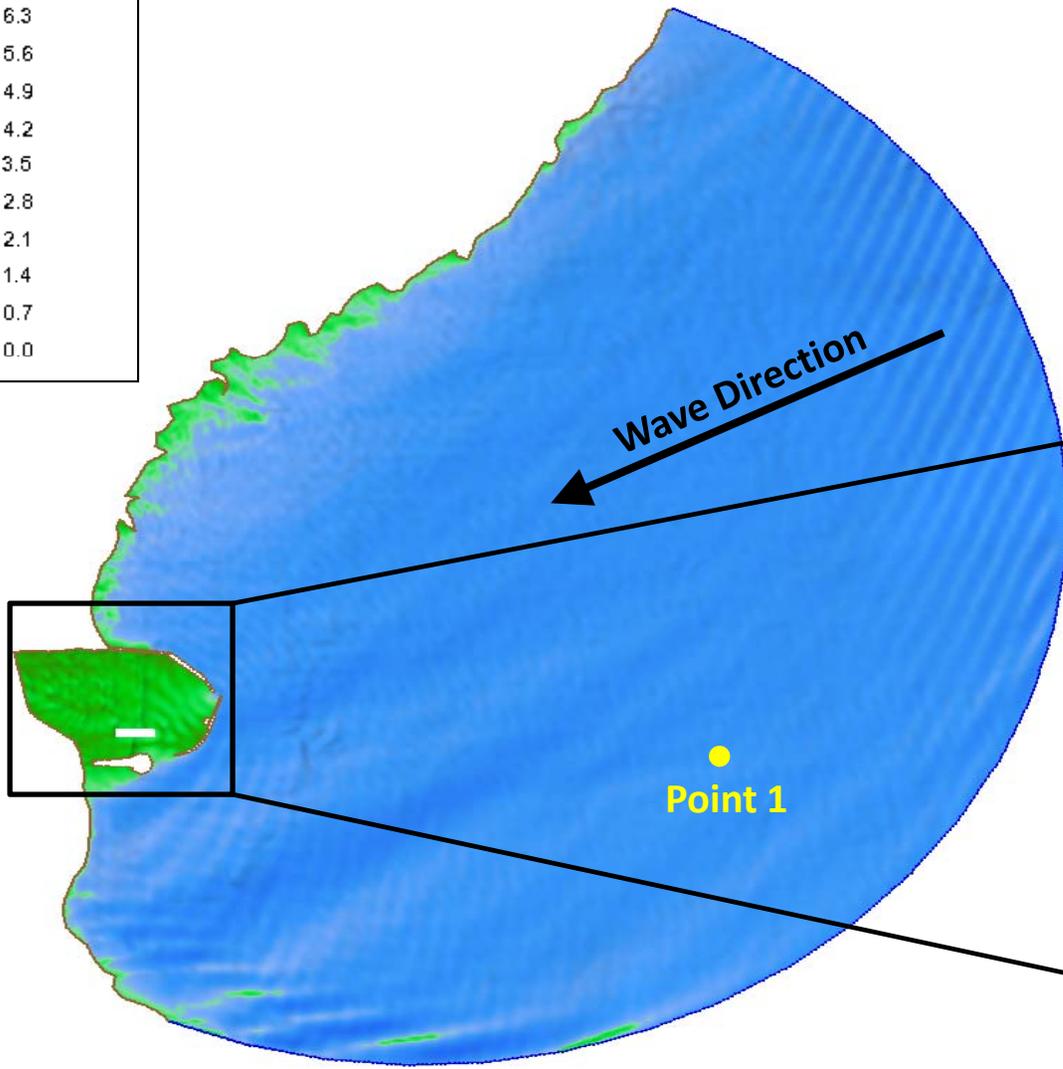
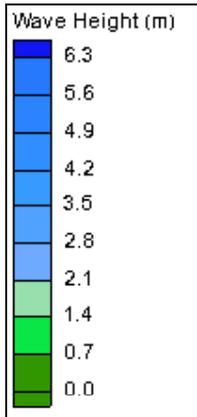
DATE: 8-19-10

SHEET TITLE: **AERIAL VICINITY PLAN
CONCEPT 3**

6
SHEET
6 OF 10

PND PROJECT NO.: 102029 01 DWS: YLS

SOUTH PORTAGE COVE HARBOR EXPANSION



Concept 3– ENE Wave

Offshore Wave

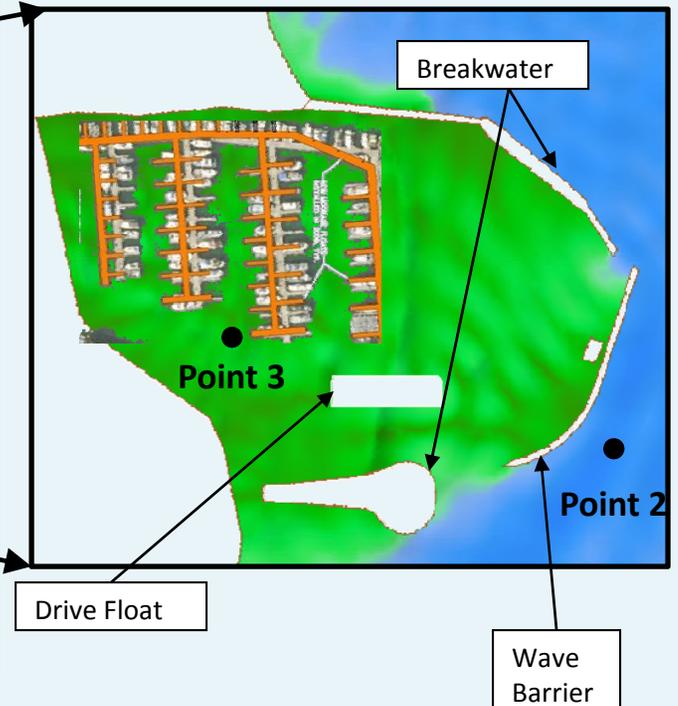
Height: 7.5 Feet

Period: 5 Seconds

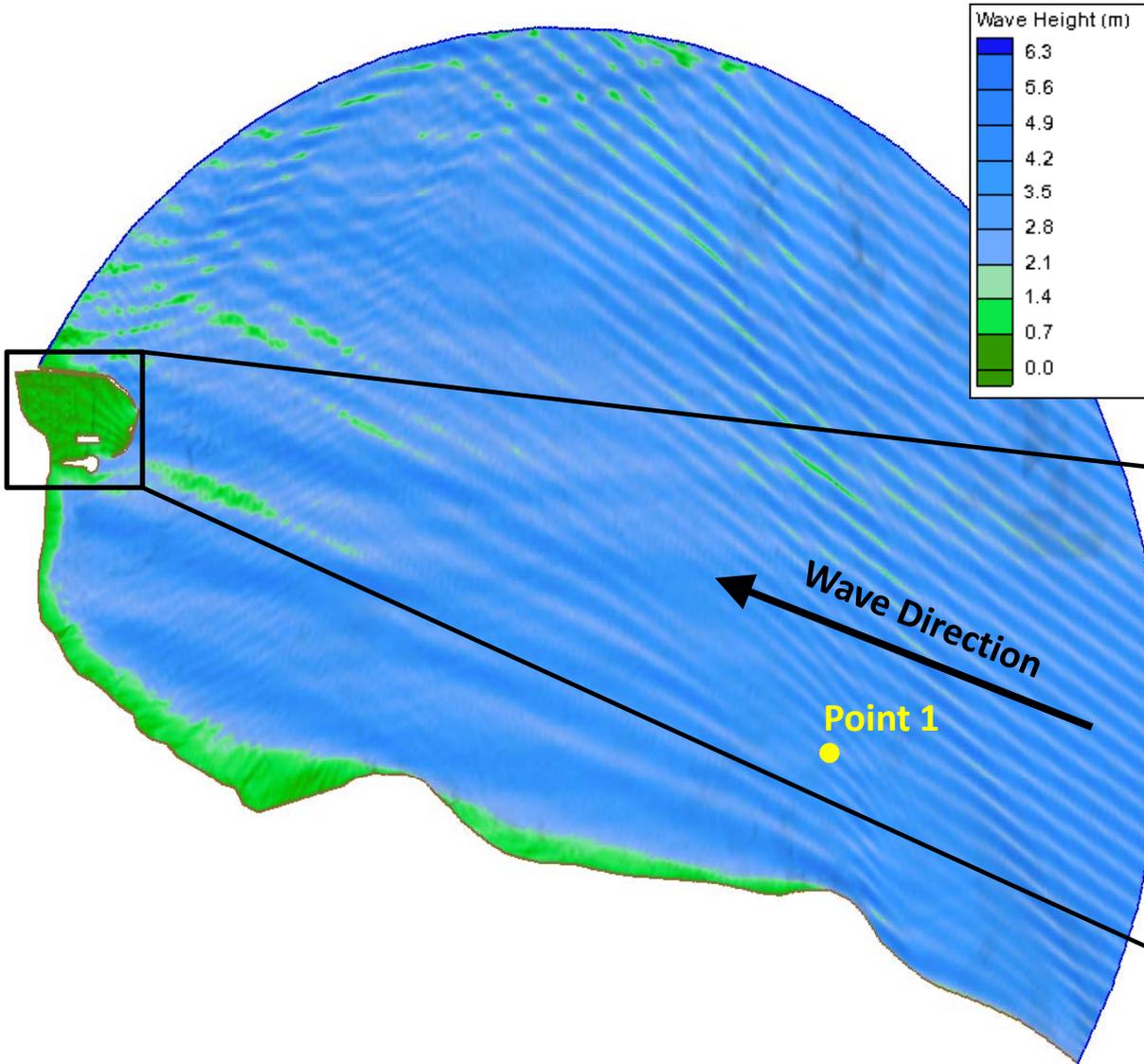
Direction: 067.5°

Inside Marina (Point 3)

Height: 0.4 Feet (0.12 meter)



SOUTH PORTAGE COVE HARBOR EXPANSION



Concept 3– ESE Wave

Offshore Wave

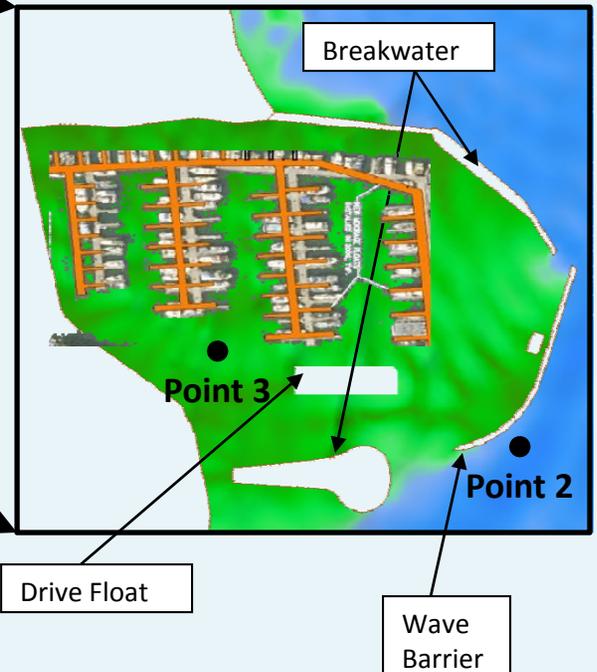
Height: 7.0 Feet

Period: 4.5 Seconds

Direction: 112.5°

Inside Marina (Point 3)

Height: 0.5 Feet (0.15 meter)



SOUTH PORTAGE COVE HARBOR EXPANSION



Concept No. 4



Concept No. 4 Notable/Differing Design Features:

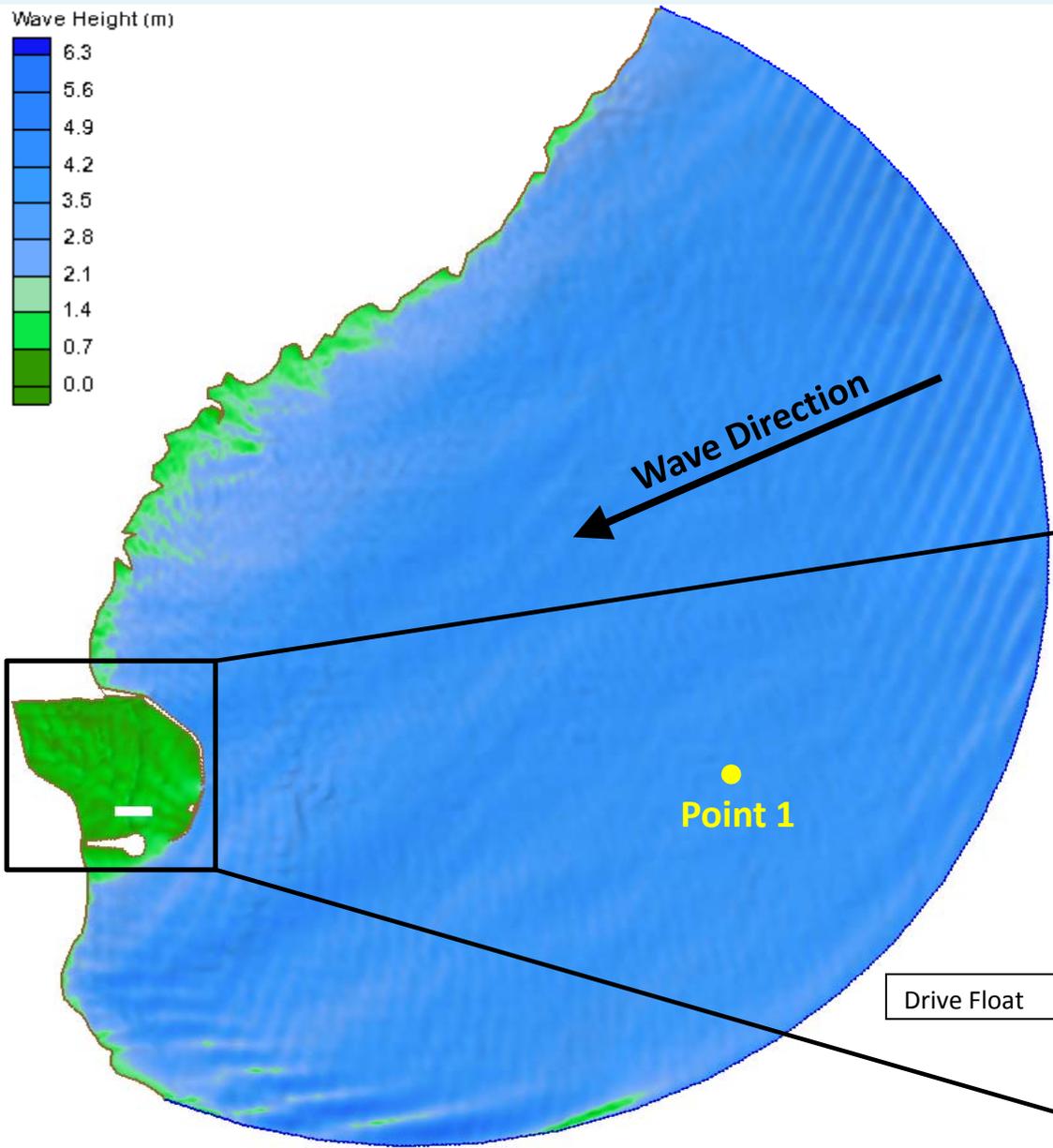
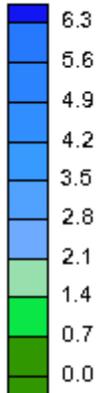
- Portion of Existing Rubble Mound Breakwater Shifted Eastward
- Increased Harbor Moorage – (14) 24' Slips, (46) 32' Slips, (12) 40' Slips, 648 LF Side-Tie Moorage
- 460 LF Partial Penetrating Wave Barrier
- Existing Crane/Fueling Dock Removed
- 16'x120' Fuel Float w/ Access Gangway
- Sheet Pile Bulkhead Commercial Loading Dock Extended Southward
- Existing Ice House & Chute Relocated to Loading Dock
- Additional Dredging

Estimated Total Project Costs Including Construction, Geotechnical & Environmental Site Investigations, Contingency, Final Design, Permitting, Compensatory Mitigation, Contract Administration & Inspection = \$47.4 Million

SOUTH PORTAGE COVE HARBOR EXPANSION



Wave Height (m)



Concept 4– ENE Wave

Offshore Wave

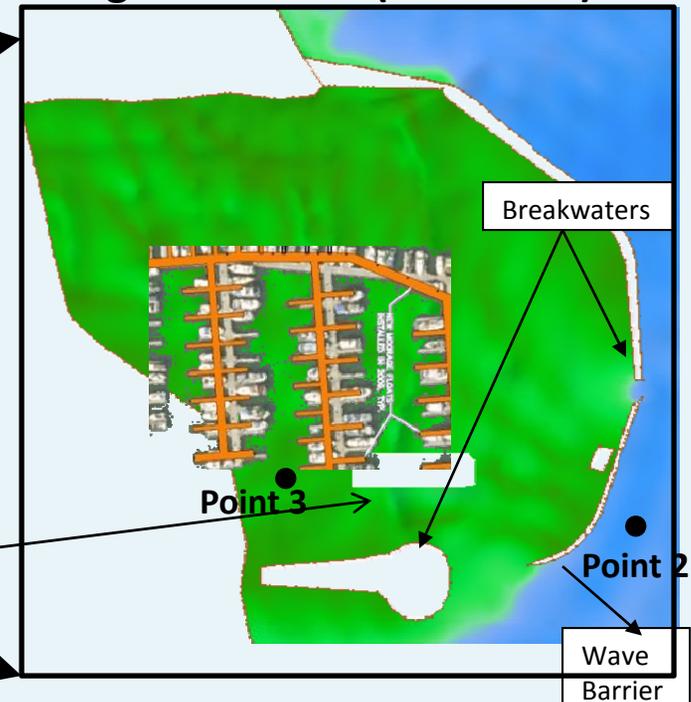
Height: 7.5 Feet

Period: 5.0 Seconds

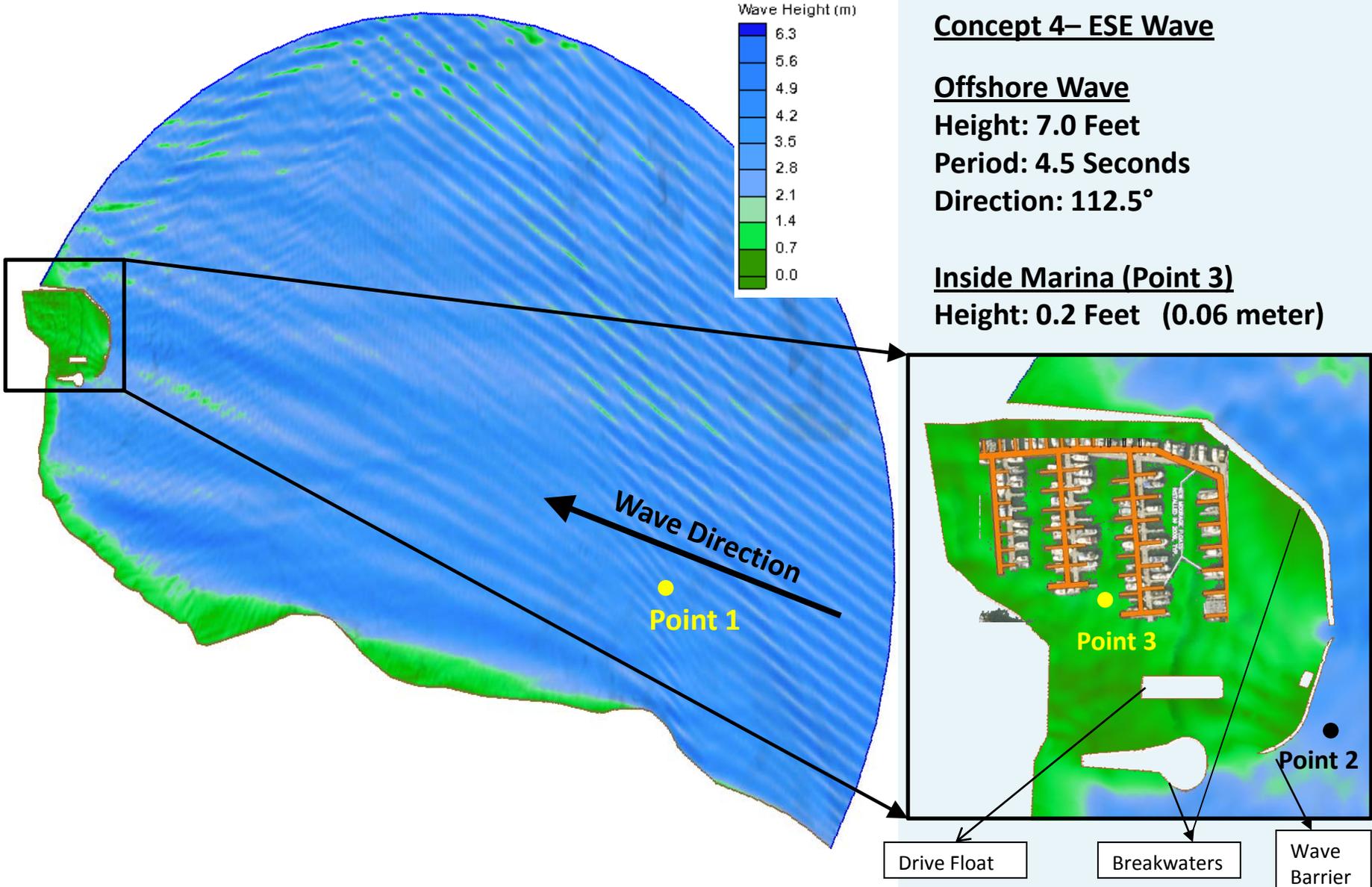
Direction: 067.5°

Inside Marina (Point 3)

Height: 0.3 Feet (0.1 meter)



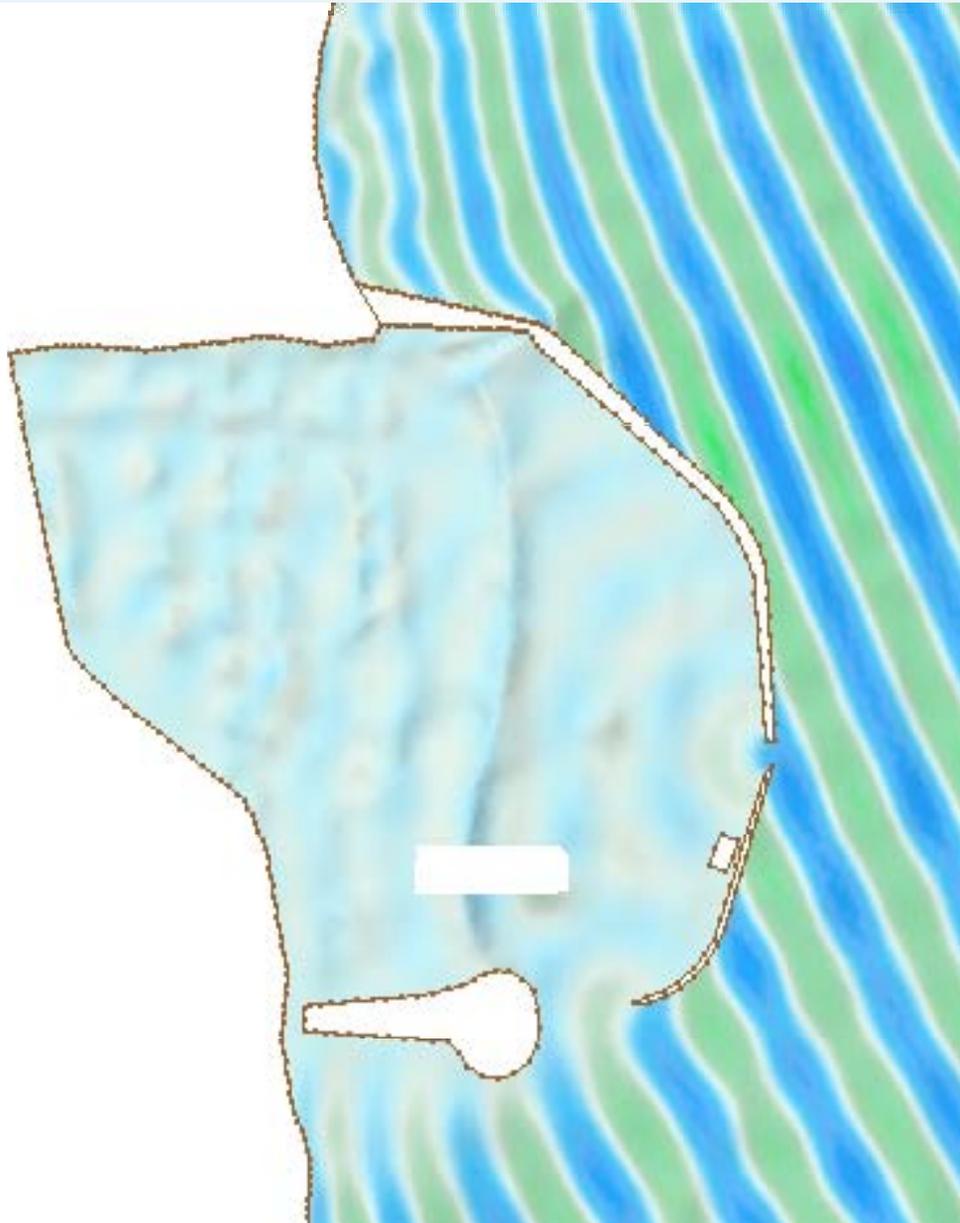
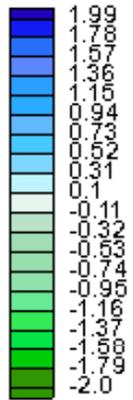
SOUTH PORTAGE COVE HARBOR EXPANSION



SOUTH PORTAGE COVE HARBOR EXPANSION



Sea Surface (m)



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Concept 4 – Sea Surface
(Run 4)

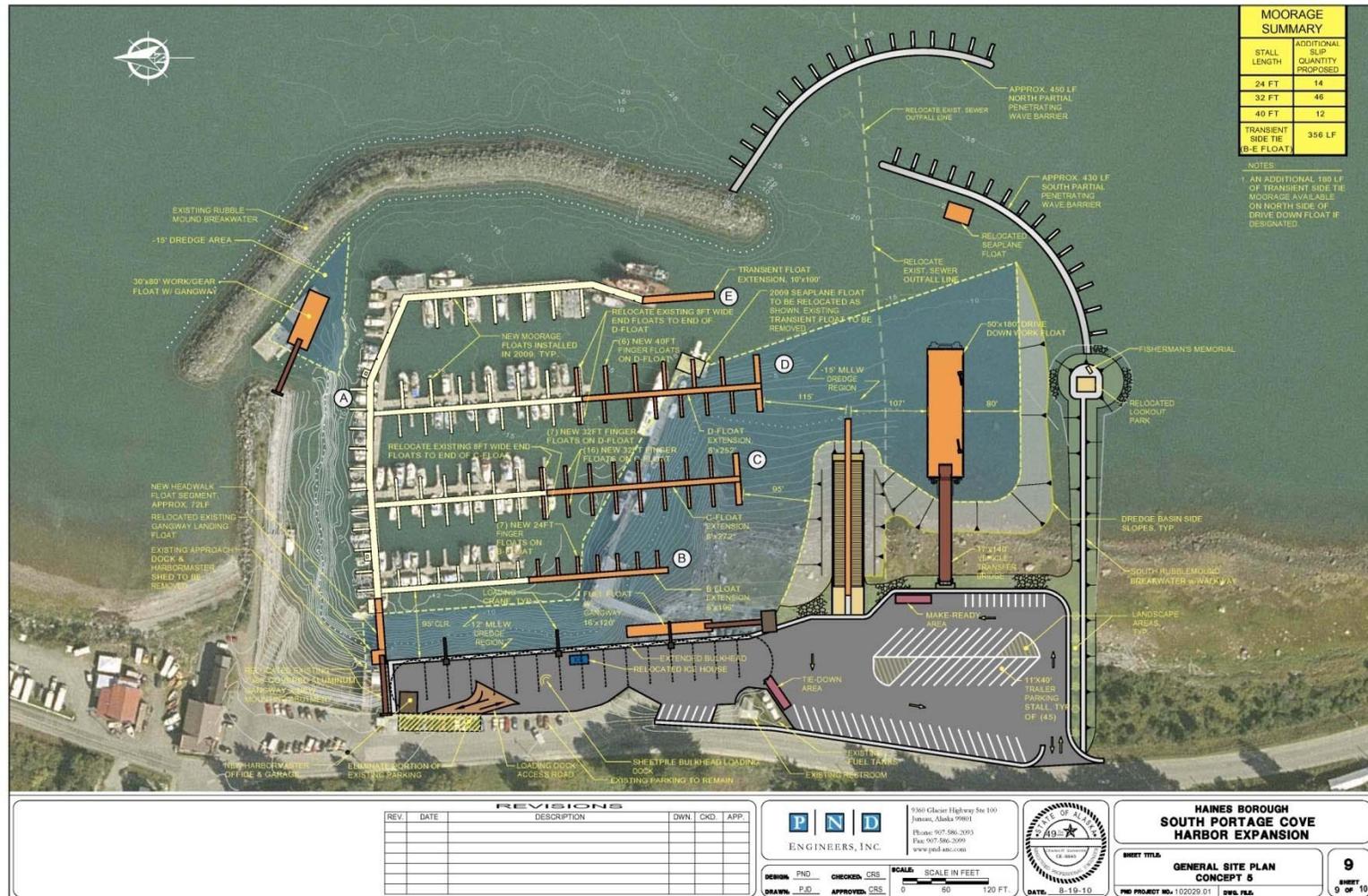
SOUTH PORTAGE COVE HARBOR EXPANSION



Concept No. 5



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MOORAGE SUMMARY	
STALL LENGTH	ADDITIONAL SLIP QUANTITY PROPOSED
24 FT	14
32 FT	46
40 FT	12
TRANSIENT SIDE THE B/E FLOAT	356 LF

NOTES:
1. AN ADDITIONAL 180 LF OF TRANSIENT SIDE THE MOORAGE AVAILABLE ON NORTH SIDE OF DRIVE DOWN FLOAT IF DESIGNATED.

REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.

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SCALE: SCALE IN FEET
0 50 100 FT

DATE: 8-19-10

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SOUTH PORTAGE COVE
HARBOR EXPANSION

SHEET TITLE:
GENERAL SITE PLAN
CONCEPT 5

PHD PROJECT NO: 102020.01 | DWG. FILE

9
SHEET
9 OF 10

SOUTH PORTAGE COVE HARBOR EXPANSION



Concept No. 5



Concept No. 5 Notable/Differing Design Features:

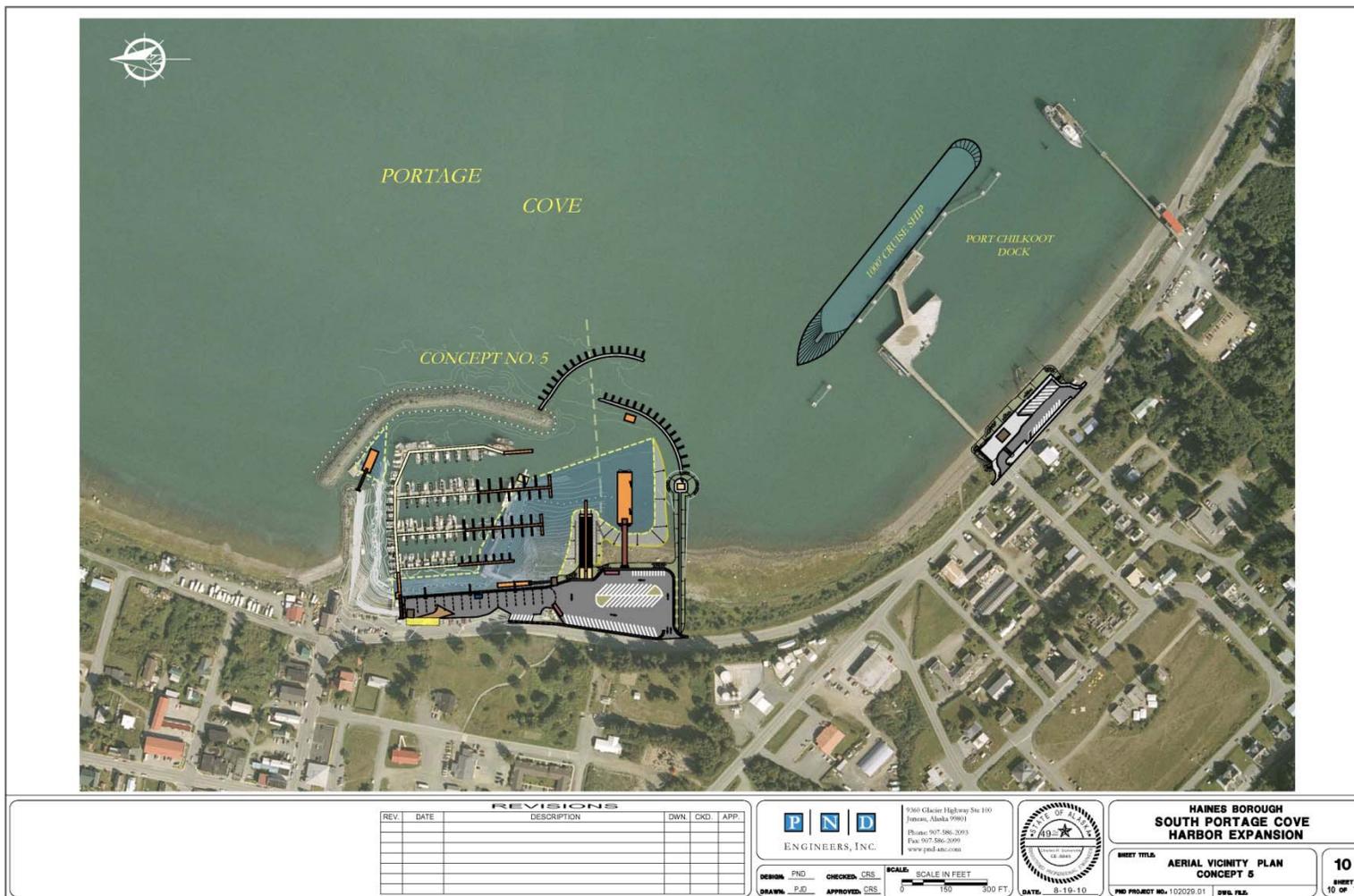
- Vessels Enter Harbor from East
- Additional Harbor Moorage – (14) 24' Slips, (46) 32' Slips, (12) 40' Slips, 356 LF Side-Tie Moorage
- (2) Partial Penetrating Wave Barriers, Approximately 430 LF & 450 LF

Estimated Total Project Costs Including Construction, Geotechnical & Environmental Site Investigations, Contingency, Final Design, Permitting, Compensatory Mitigation, Contract Administration & Inspection = \$49.2 Million

SOUTH PORTAGE COVE HARBOR EXPANSION



Concept No. 5 Vicinity Perspective



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**HAINES BOROUGH
SOUTH PORTAGE COVE
HARBOR EXPANSION**

**SHEET TITLE:
AERIAL VICINITY PLAN
CONCEPT 5**

10
SHEET
10 OF 10

DESIGN: PND CHECKED: CRS
DRAWN: PJD APPROVED: CRS

SCALE: SCALE IN FEET
0 100 200 FT

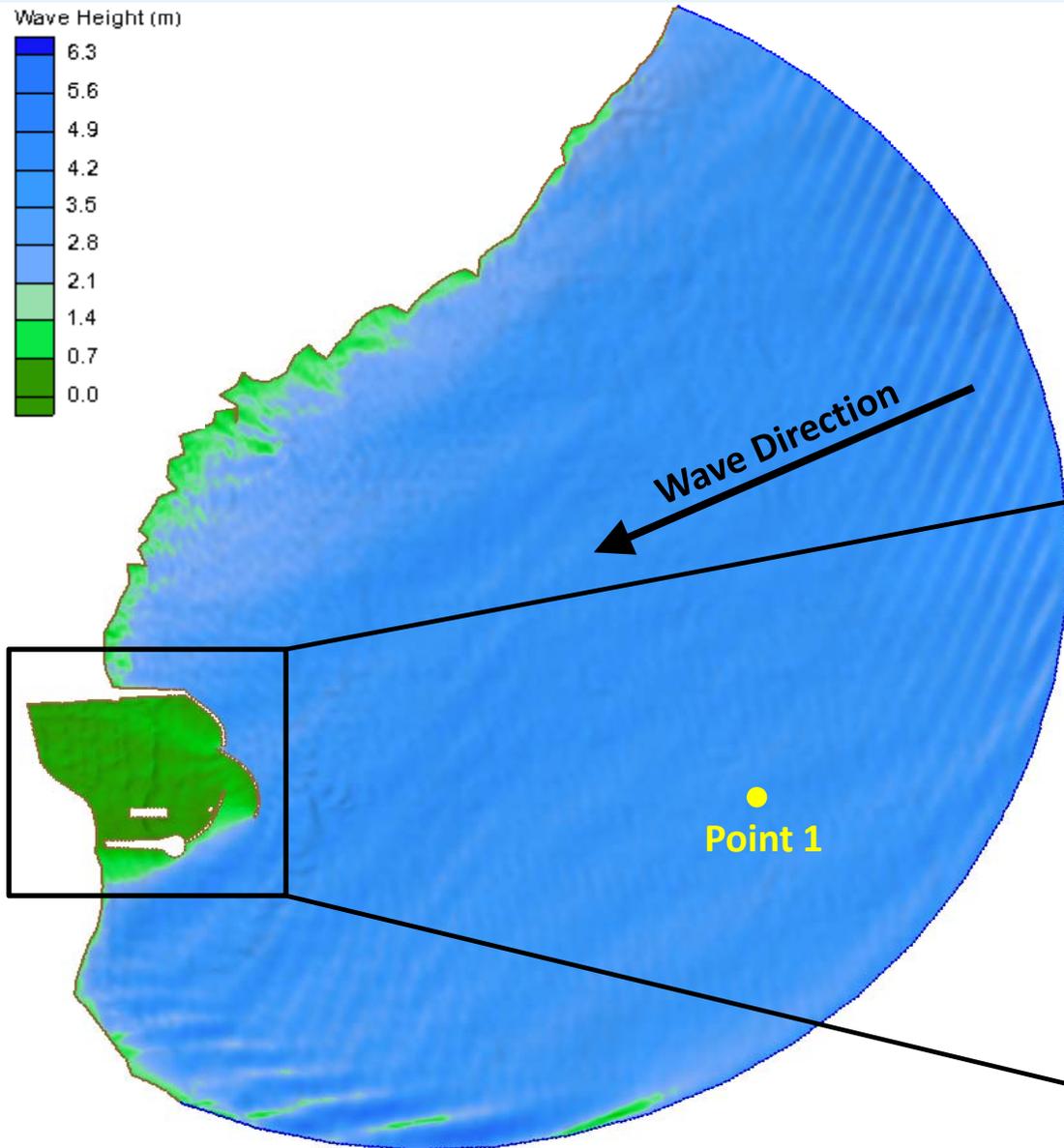
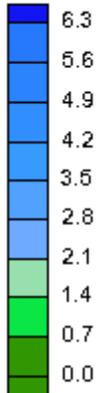
DATE: 8-19-10

PND PROJECT NO.: 100229 01 DES. FILE:

SOUTH PORTAGE COVE HARBOR EXPANSION



Wave Height (m)



Concept 5– ENE Wave

Offshore Wave

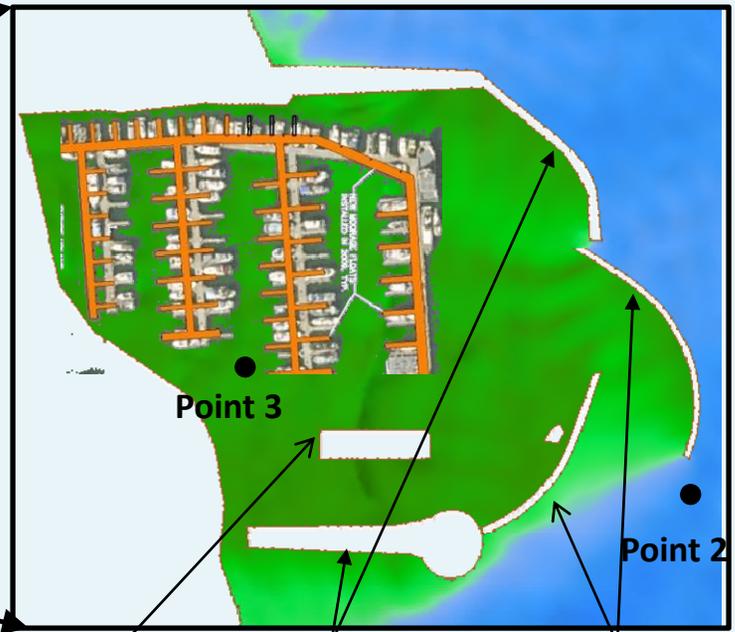
Height: 7.5 Feet

Period: 5.0 Seconds

Direction: 067.5°

Inside Marina (Point 3)

Height: 0.06 Feet (0.02 meter)



Drive Float

Breakwaters

Wave Barrier

SOUTH PORTAGE COVE HARBOR EXPANSION



Concept 5– ENE Wave

Offshore Wave

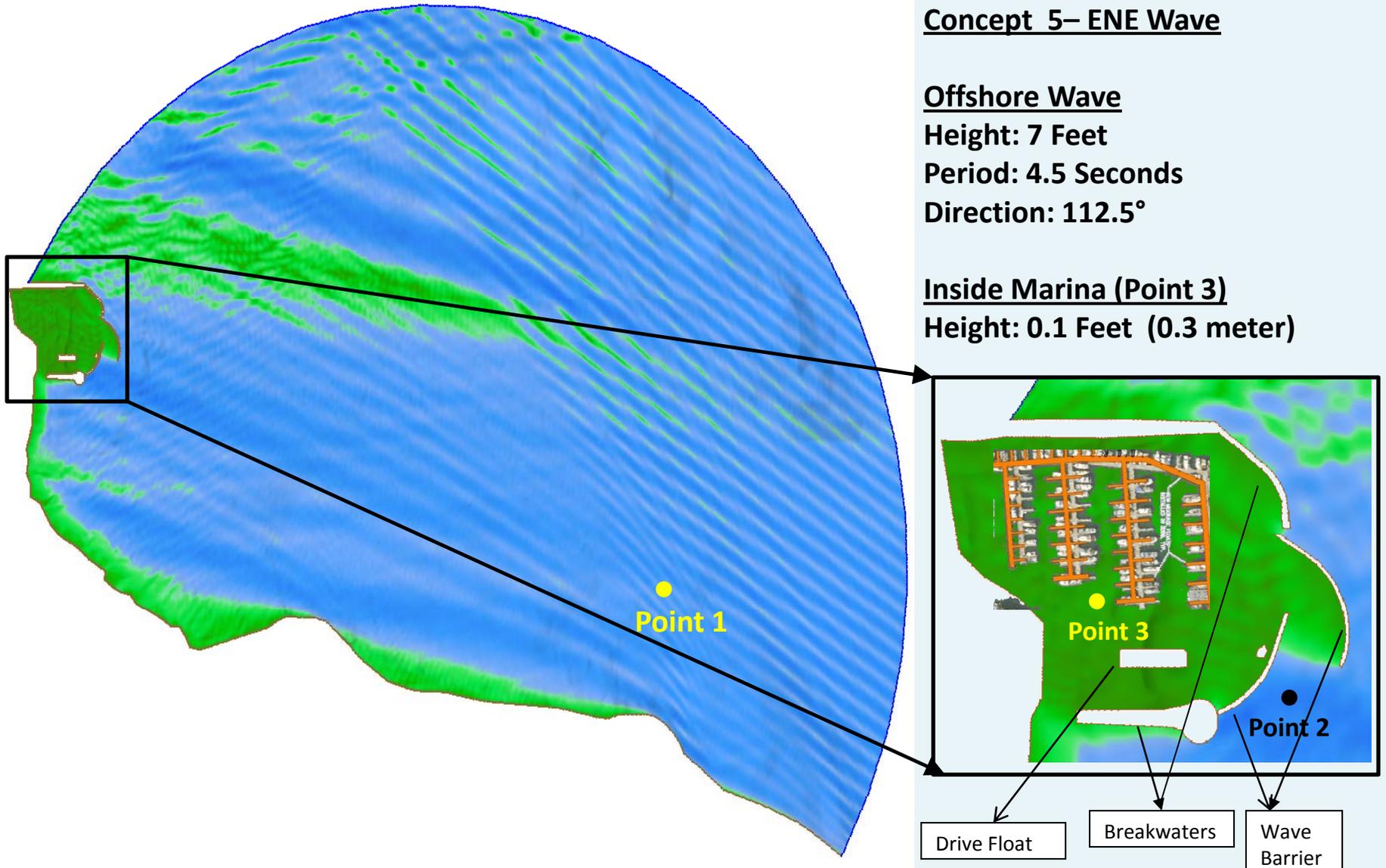
Height: 7 Feet

Period: 4.5 Seconds

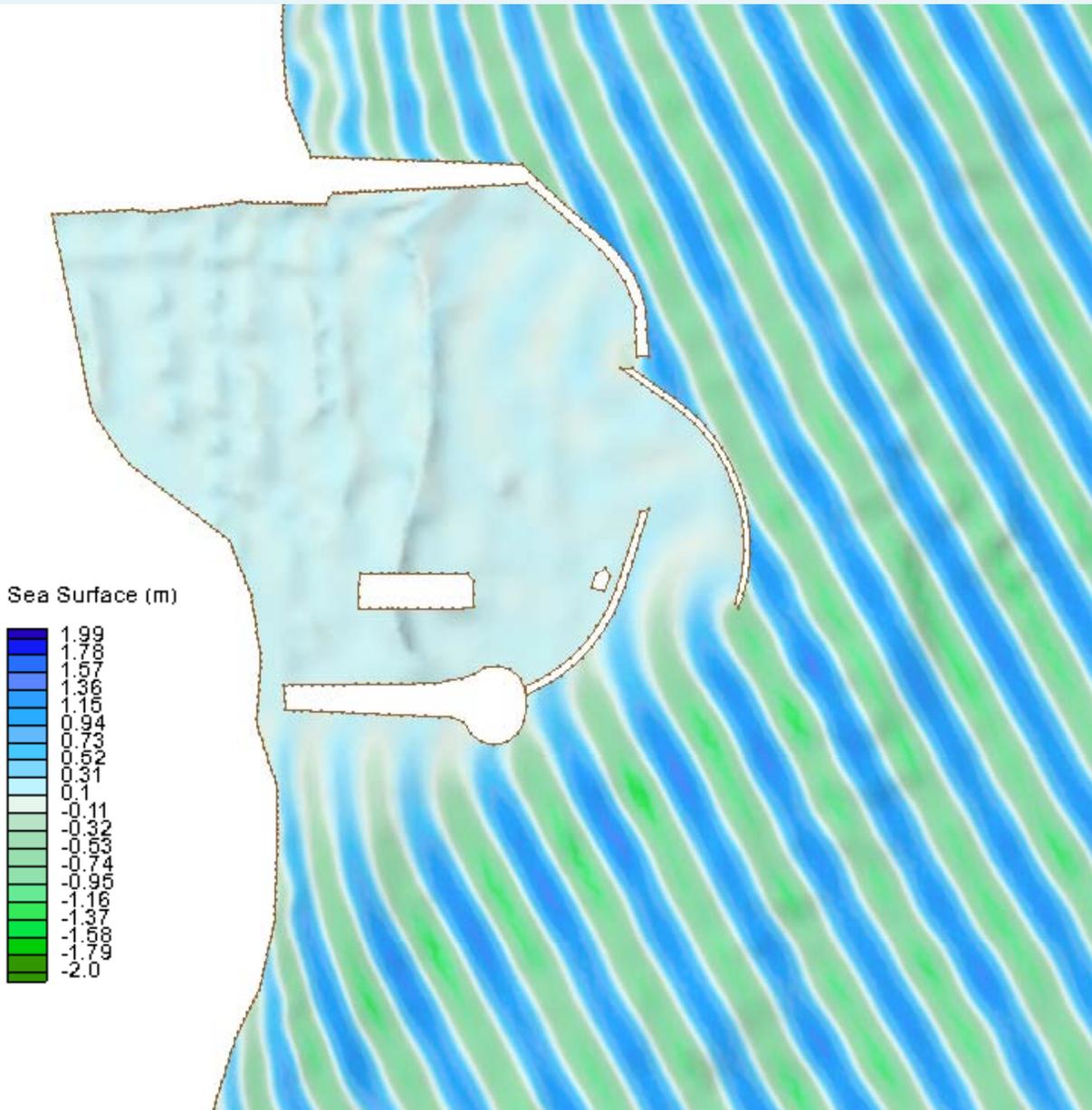
Direction: 112.5°

Inside Marina (Point 3)

Height: 0.1 Feet (0.3 meter)



SOUTH PORTAGE COVE HARBOR EXPANSION



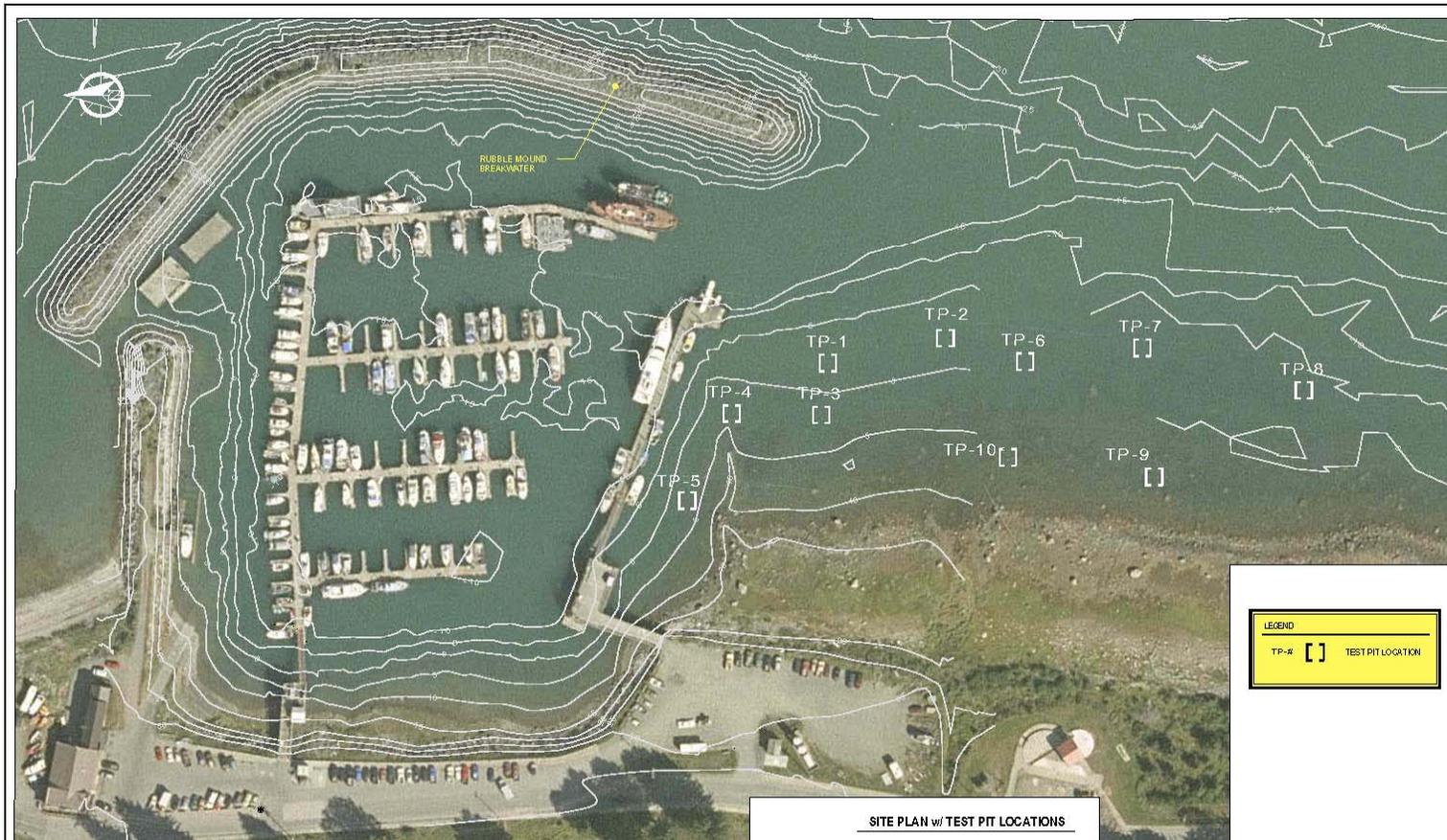
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Concept 5 – Sea Surface
(Run 5)

SOUTH PORTAGE COVE HARBOR EXPANSION



Near Shore Geotechnical Test Pit Investigation



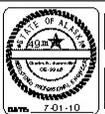
REVISIONS					
REV.	DATE	DESCRIPTION	DWN.	CHKD.	APP.

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1000 Glacier Highway Ste 100
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SCALE IN FEET
0 50 100 FT.

DATE: 7-31-10



**HAINES BOROUGH
SOUTH PORTAGE COVE
HARBOR EXPANSION**

**SITE PLAN WITH
TEST PIT LOCATIONS**

1
OF 1

PROJ. NO.: 102029.02

SOUTH PORTAGE COVE HARBOR EXPANSION



Test Pit Findings

- 10 Test Pits Dug w/ Large Excavator on July 19 & 20, 2010 Within & Near Proposed Dredge Region
- Depth of Pits to 20 ft, Elevation Approaching -20 M.L.L.W.
- Material Generally Consists of Dense Gravelly Sand w/ Cobbles & Occasional Boulders
- 2 ft to 3 ft Thick Layer of Clay Encountered Near the Surface in Test Pits 1 & 2 Only





SOUTH PORTAGE COVE

HARBOR EXPANSION PROJECT

HAINES, ALASKA



CONTACT

PND Engineers, Inc.

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Juneau, Alaska 99801
Phone: 907.586.2093

Dick Somerville, P.E.
e-mail: dsomerville@pndengineers.com