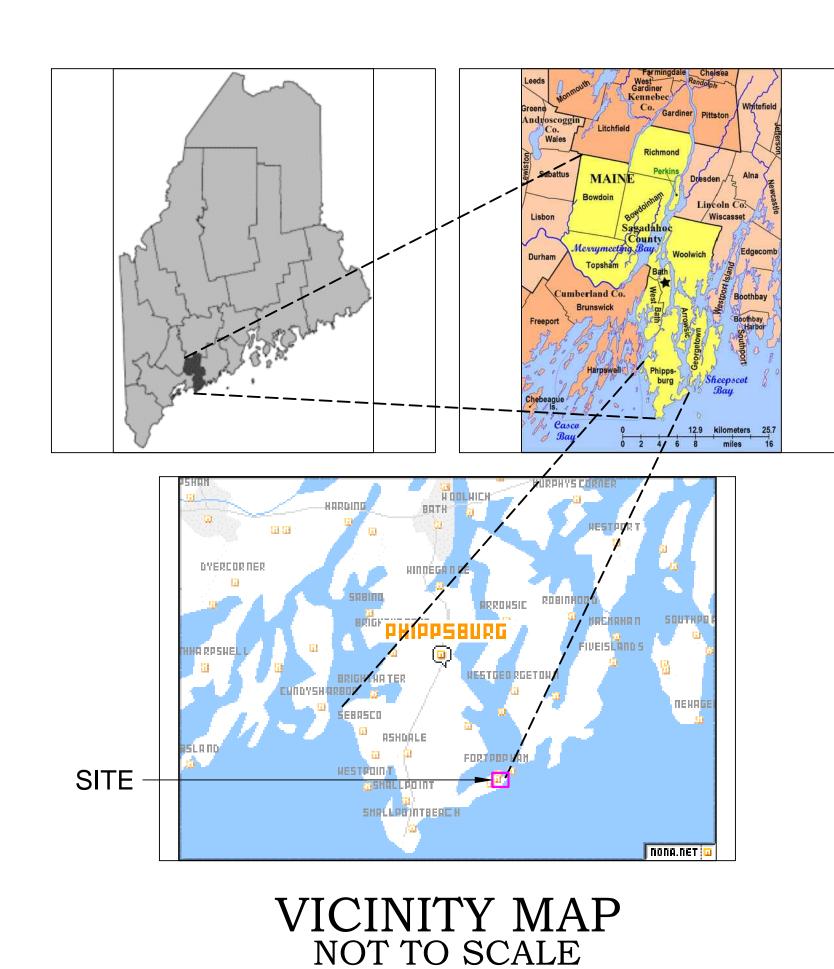
## POPHAM BEACH SHORELINE RESTORATION

## CONCEPTUAL DESIGN OPTIONS

POPHAM BEACH, PHIPPSBURG, MAINE





POPHAM BEACH BIRD'S-EYE VIEW

## LIST OF SHEETS

CONCEPTUAL OPTION 5

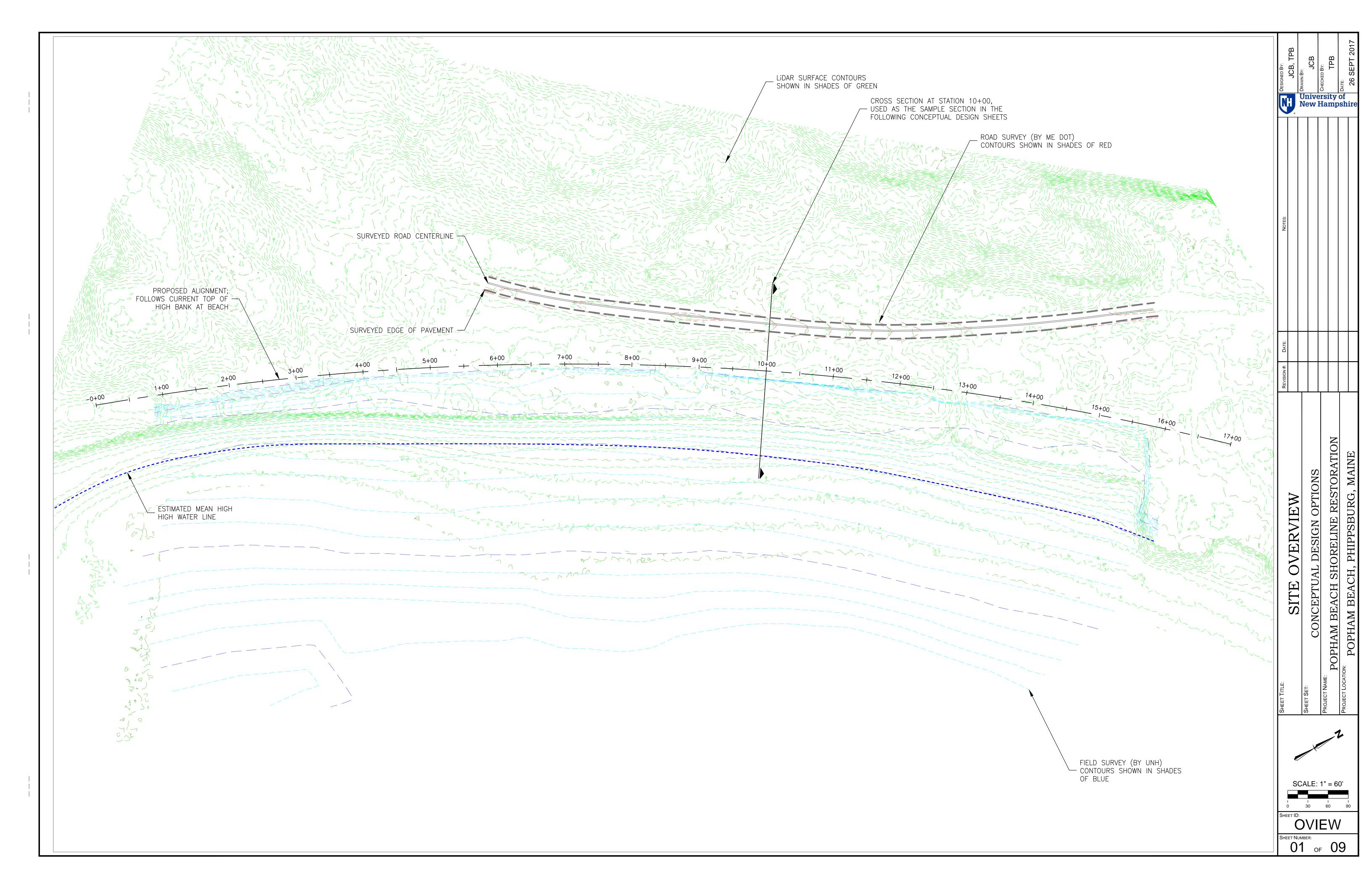
<u>10</u>	SHEET ID	SHEET TITLE
. •	OVIEW	SITE OVERVIEW
2.	AERIAL	SITE OVERVIEW WITH AERIA
3.	OPT1	CONCEPTUAL OPTION 1
1.	OPT2	CONCEPTUAL OPTION 2
5.	OPT3	CONCEPTUAL OPTION 3A
5.	OPT4	CONCEPTUAL OPTION 3B
7.	OPT4A	CONCEPTUAL OPTION 4A
3.	OPT5	CONCEPTUAL OPTION 4B

## NOTES

1. THESE ARE CONCEPTUAL DESIGN SHEETS AND SHOULD NOT BE USED FOR CONSTRUCTION PURPOSES.

OPT6







<u>OPTION 1:</u> DO NOTHING; ALLOW NATURAL FORCES TO CONTINUE TO ERODE BEACH AND DUNES. University of New Hampshire CONCEPTUAL DESIGN OPTIONS
POPHAM BEACH SHORELINE RESTORATION
POPHAM BEACH, PHIPPSBURG, MAINE CONCEPTUAL OPTION APPROXIMATE MEAN HIGH \_\_\_\_\_ HIGH WATER; 5.0' NGVD83 PROJECTED BEACH EROSION PROJ. 2100 MHHW PROJ. 2050 MHHW CURRENT MHHW \*PROFILE HERE TAKEN FROM CROSS SECTION AT 10+00; SECTION HAS 4:1 VERTICAL EXAGGERATION; GROUND REFLECTS DATA FROM ROAD SURVEY, FIELD SURVEY, AND LIDAR DATA\* -100 -50 50 100 SHEET NUMBER: 09

<u>OPTION 2:</u> IMPLEMENT ONLY SEAWEED MANAGEMENT AND STAKED TEMPORARY FENCING (E.G. SNOW FENCING) AT THE FRONT OF THE EXISTING DUNE. RESERVE FURTHER INVESTMENTS UNTIL LOSS OF ROAD IS IMMINENT AND THEN IMPLEMENT STABILIZATION MEASURES SELECTED FROM OTHER OPTIONS. INSTALL STAKED TEMPORARY FENCING (E.G. SNOW FENCING) AT THE FRONT OF THE EXISTING DUNE CONCEPTUAL DESIGN OPTIONS
POPHAM BEACH SHORELINE RESTORATION
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<u>OPTION 3:</u> IN ADDITION TO SEAWEED MANAGEMENT AND FENCING, INSTALL COIR 'PILLOWS' AT FRONT DUNE. PLANT W2ITH NATIVE SHRUBS AND BEACH GRASSES. PLANT SLOPES WITH NATIVE SHRUBS AND GRASSES INSTALL STAKED TEMPORARY FENCING (E.G. SNOW FENCING) AT THE FRONT OF THE EXISTING DUNE CONCEPTUAL DESIGN OPTIONS
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<u>OPTION 4:</u> IN ADDITION TO SEAWEED MANAGEMENT AND FENCING, INSTALL COIR 'PILLOWS' AT FRONT OF TOE OF DUNE. PLANT WITH NATIVE SHRUBS University of New Hampshire AND BEACH GRASSES. / EDGE OF PAVEMENT PLANT SLOPES WITH NATIVE SHRUBS AND GRASSES EXISTING ROAD INSTALL STAKED TEMPORARY FENCING (E.G. SNOW FENCING) AT THE FRONT OF THE EXISTING DUNE CONCEPTUAL DESIGN OPTIONS
POPHAM BEACH SHORELINE RESTORATION
POPHAM BEACH, PHIPPSBURG, MAINE OPTION APPROXIMATE MEAN HIGH HIGH WATER; 5.0' NGVD83 PROJECTED BEACH EROSION CONCEPTUAL PROJ. 2100 MHHW PROJ. 2050 MHHW CURRENT MHHW IMPLEMENT SEAWEED MANAGEMENT IN INTERTIDAL ZONE INSTALL COIR LOG AND MAT 'PILLOWS' AT TOE OF FRONT DUNE; WRAP COIR MATTING AROUND FACE OF COIR LOG AND AROUND SANDY MATERIAL, STAKE INTO GROUND TO LOCK MATTING TOGETHER, — AND AGAIN AT THE FACE TO HOLD THE PILLOW IN PLACE (ALSO\_ MAY BE MADE OF ROOT WADS) \*PROFILE HERE TAKEN FROM CROSS SECTION AT 10+00; SECTION HAS 4:1 VERTICAL EXAGGERATION; GROUND REFLECTS DATA FROM ROAD SURVEY, FIELD SURVEY, AND LIDAR DATA\* OPT4 -100 -50 50 100 SHEET NUMBER: 06 09

<u>OPTION 4A:</u> IN ADDITION TO SEAWEED MANAGEMENT AND FENCING, INSTALL COIR 'PILLOWS' AT FRONT DUNE OR CRIB WALL STRUCTURE. ADD BEACH SEDIMENT MATERIAL BEHIND PILLOWS TO TOE OF ROAD BANK; PLANT WITH NATIVE SHRUBS AND BEACH GRASSES. \_ PLANT SLOPES WITH NATIVE — EDGE OF PAVEMENT SHRUBS AND GRASSES EXISTING ROAD \_ BACKFILL WITH BEACH SEDIMENT MATERIAL BEHIND ROOT WAD TOE PROTECTION INSTALL STAKED TEMPORARY FENCING (E.G. SNOW FENCING) AT THE FRONT OF THE EXISTING DUNE CONCEPTUAL DESIGN OPTIONS
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POPHAM BEACH, PHIPPSBURG, MAINE OPTI APPROXIMATE MEAN HIGH HIGH WATER; 5.0' NGVD83 PROJECTED BEACH EROSION CONCEPTUAL PROJ. 2100 MHHW PROJ. 2050 MHHW CURRENT MHHW IMPLEMENT SEAWEED MANAGEMENT IN INTERTIDAL ZONE INSTALL COIR LOG AND MAT 'PILLOWS' AT TOE OF FRONT DUNE; WRAP COIR MATTING AROUND FACE OF COIR LOG AND AROUND SANDY MATERIAL, STAKE INTO GROUND TO LOCK MATTING TOGETHER, — AND AGAIN AT THE FACE TO HOLD THE PILLOW IN PLACE (ALSO\_ MAY BE MADE OF ROOT WADS) \*PROFILE HERE TAKEN FROM CROSS SECTION AT 10+00; SECTION HAS 4:1 VERTICAL EXAGGERATION; GROUND REFLECTS DATA FROM ROAD SURVEY, FIELD SURVEY, AND LIDAR DATA\* OPT4A -100 -50 50 100 Number: 07 of 09

<u>OPTION 5:</u> UNTIL THE EROSIONAL SCARP REACHES 15' FROM THE ROAD, CONDUCT SEAWEED MANAGEMENT AND FENCING REGIME AS IN University of New Hampshire OPTION 2, THEN INSTALL STEEL SHEET PILE WALL JUST SEAWARD OF EROSIONAL SCARP AT ROAD, LEAVING APPROXIMATELY 2-3' ABOVE GROUND LEVEL. INDICATIONS FROM MAINE GEOLOGICAL SURVEY BORINGS IN ADJACENT AREAS ARE THAT LEDGE WILL BE REACHED AT 17-20'. INSTALL SHEET PILE NEAR ROAD EMBANKMENT TOE, LEAVING 2-3' EXPOSED ABOVE GROUND LEVEL EXISTING ROAD INSTALL STAKED TEMPORARY FENCING (E.G. SNOW FENCING) AT THE FRONT OF THE EXISTING DUNE CONCEPTUAL DESIGN OPTIONS
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<u>OPTION 6:</u> UNTIL THE EROSIONAL SCARP REACHES 15' FROM THE ROAD, CONDUCT SEAWEED MANAGEMENT AND FENCING REGIME AS IN University of New Hampshire OPTION 2, THEN INSTALL 'S' SLOPE JUST SEAWARD OF EROSIONAL SCARP AT ROAD; EXCAVATE FROM ROAD SHOULDER TO INSTALL 2:1 RIPRAP SLOPE USING LARGE DIAMETER STONE, CREATING A DITCH WITH A 10' WIDE FLOOR. EXCAVATE FROM TOE OF ROAD - SHOULDER TO INSTALL 2:1 RIPRAP SLOPE USING 4-TON STONE CREATE 10' WIDE BERM AT 10:1 / SLOPE, AND GRADE BACK UP AT 2:1 TO EXISTING GROUND POSSIBLE 2:1 CONSTRUCTION TRENCH FURTHER ARMOR BELOW BERM AT 2:1 TO SET TOE DOWN TO AT LEAST 5.0', WITH A FOOT LENGTH OF AT LEAST 10' INSTALL STAKED TEMPORARY FENCING (E.G. SNOW FENCING) AT THE FRONT OF THE EXISTING DUNE POPHAM BEACH SHORELINE RESTORATION POPHAM BEACH, PHIPPSBURG, MAINE CONCEPTUAL DESIGN OPTIONS **OPTION** APPROXIMATE MEAN HIGH 2.5' THICK LAYER OF 800-LB \_\_ ROCK BELOW 4-TON BOULDERS HIGH WATER; 5.0' NGVD83 PROJECTED BEACH EROSION CONCEPTUAL 1.0' THICK LAYER OF 6-IN PROJ. 2100 MHHW STONE BELOW 800-LB ROCK \_PROJ.\_2050\_MHHW\_\_ CURRENT MHHW LINE NATIVE MATERIAL WITH

- GEOTEXTILE FOR SUPPORT

AND PERMEABILITY IMPLEMENT SEAWEED MANAGEMENT IN INTERTIDAL ZONE \*PROFILE HERE TAKEN FROM CROSS SECTION AT 10+00; SECTION HAS 4:1 VERTICAL EXAGGERATION; GROUND REFLECTS DATA FROM ROAD SURVEY, FIELD SURVEY, AND LIDAR DATA\* -100 -50 50 100 SHEET NUMBER: 09 OF 09