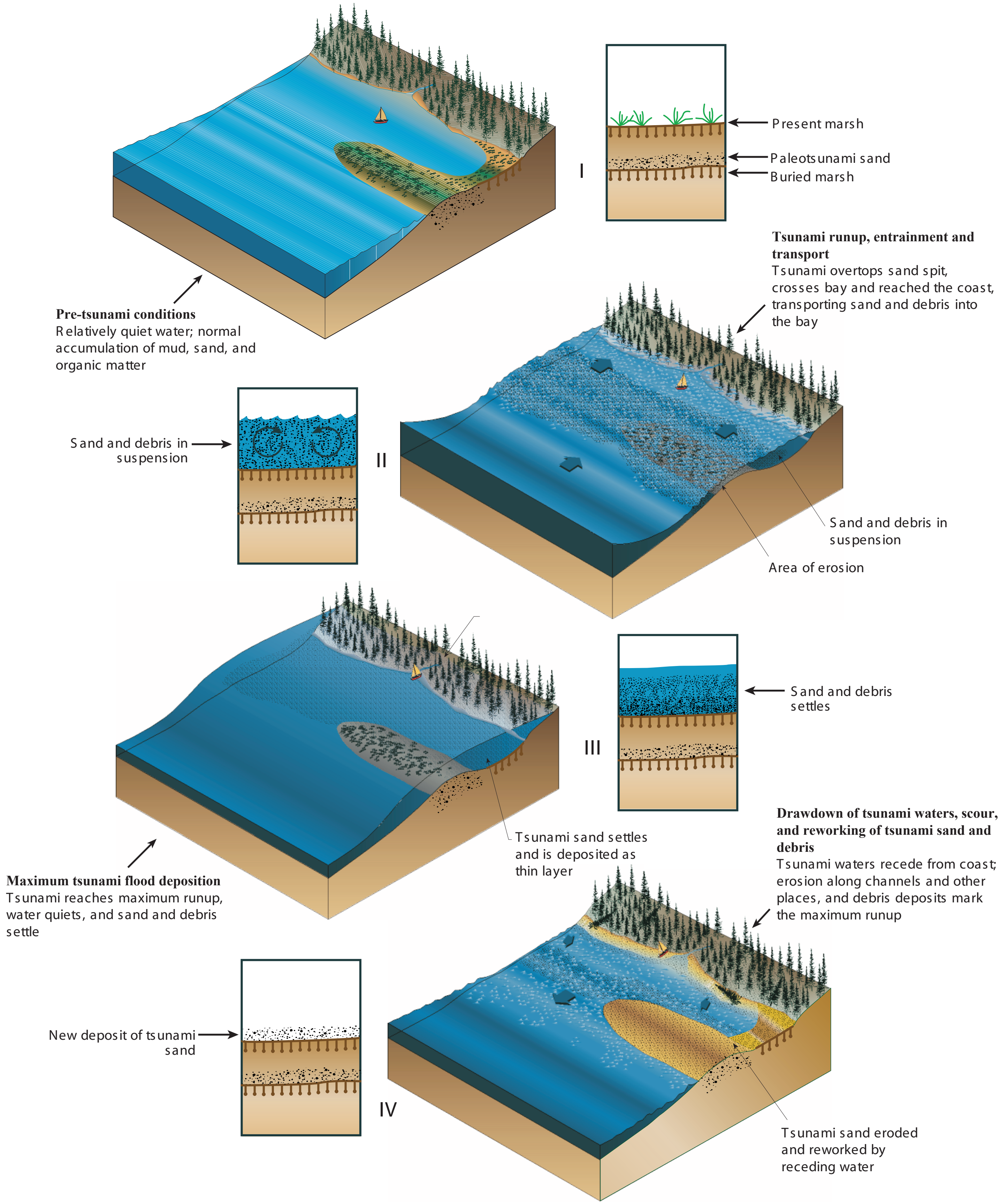

FSAR UPDATE
HUMBOLDT BAY ISFSI
FIGURE 2.6-86
Diagrams illustrating progression of tsunamis at the coast, and stratigraphic columns in the quiet water of bays and ponds.

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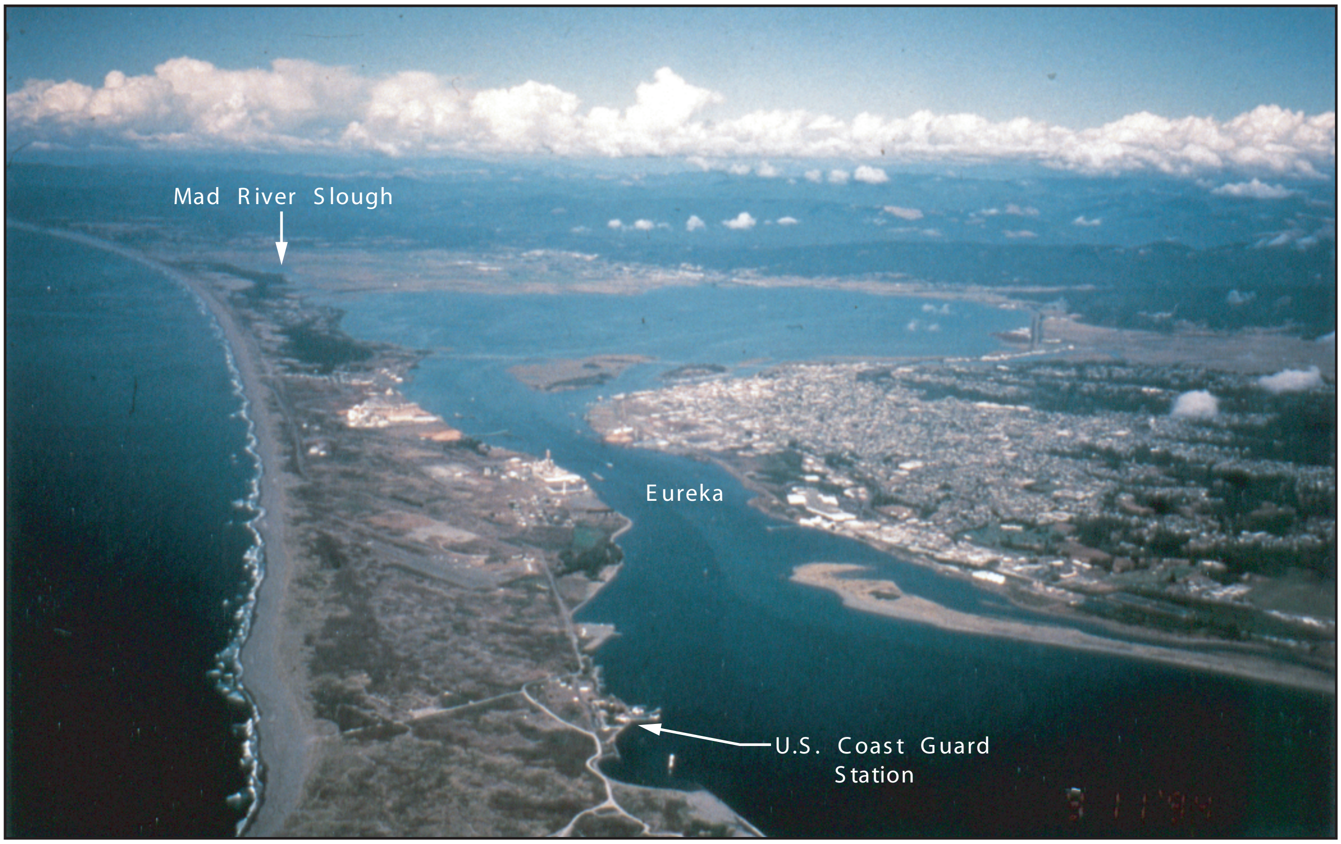
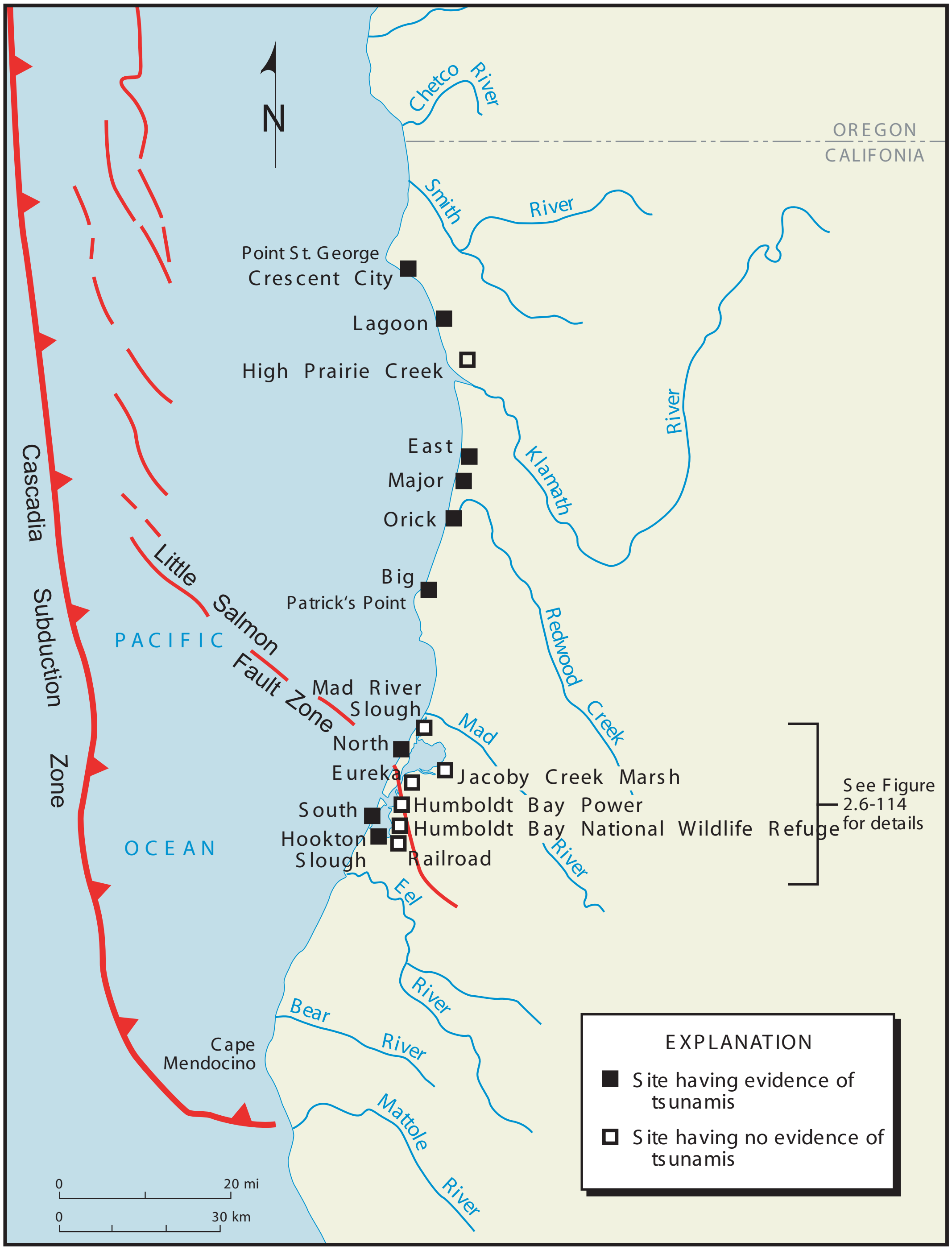
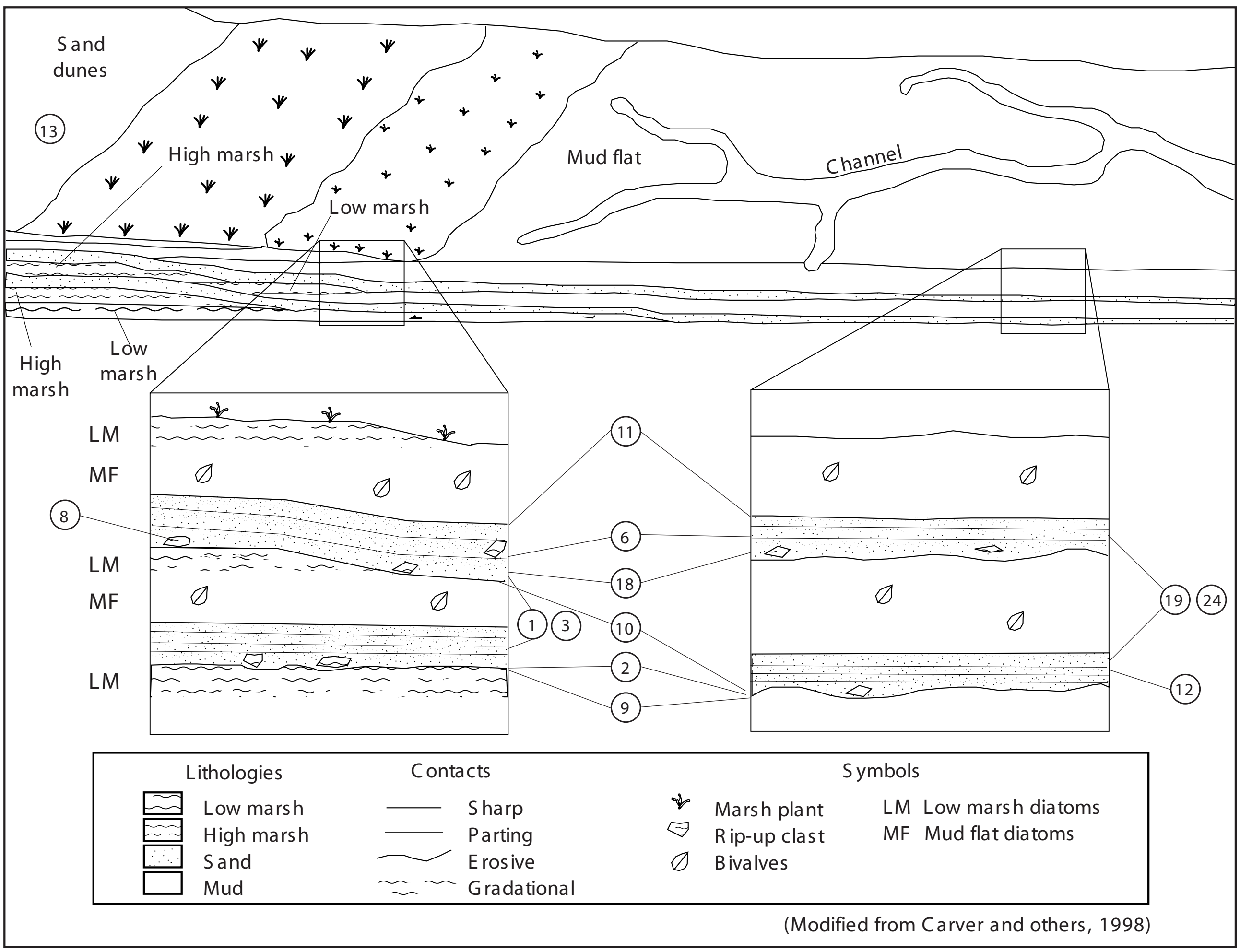


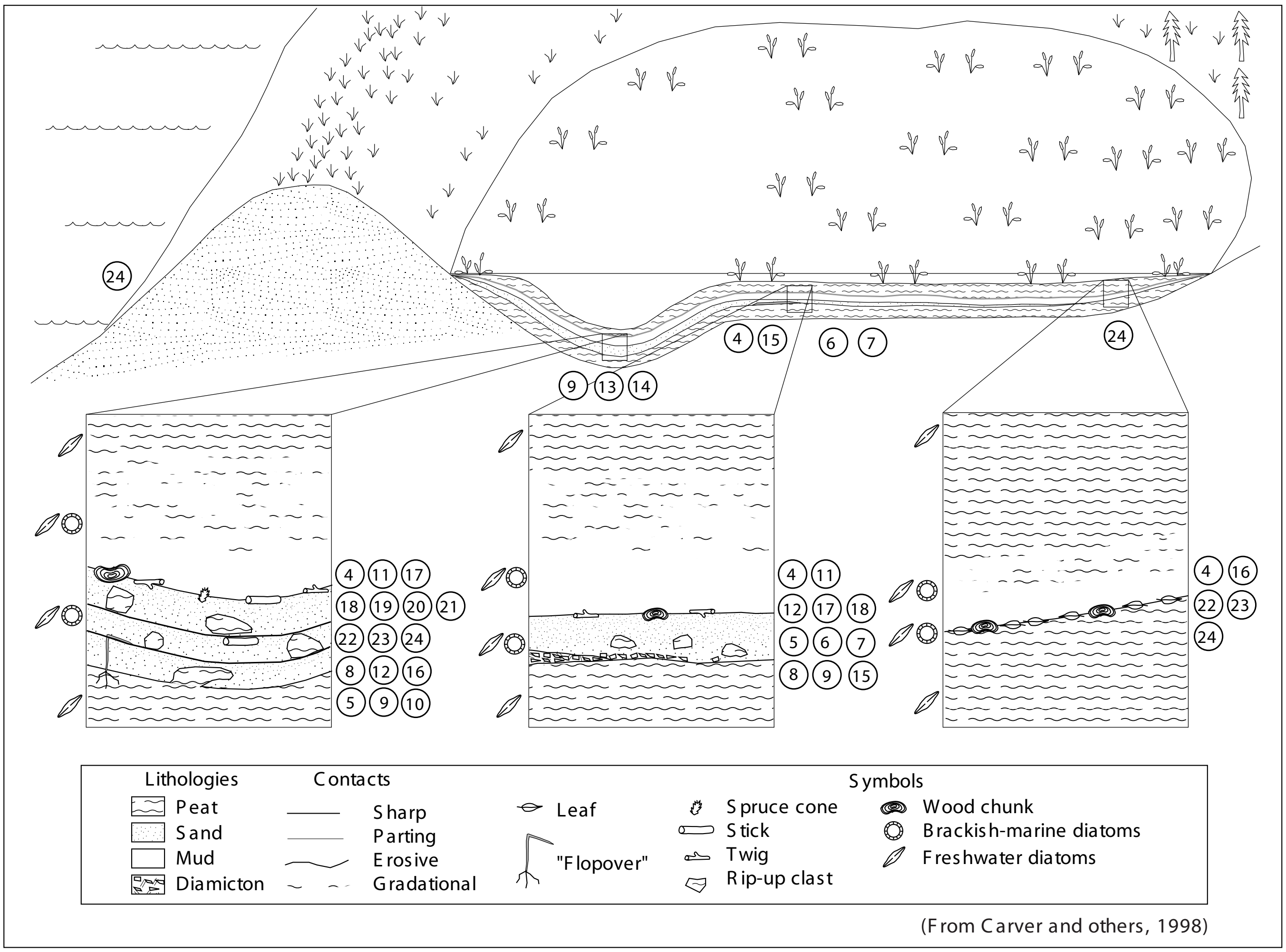
FSAR UPDATE
HUMBOLDT BAY ISFSI
FIGURE 2.6-87
North Spit, Humboldt Bay (foreground), and Arcata Bay (background). View is to the north from above the bay entrance. The Mad River Slough is located in the marshland on the north side of Arcata Bay. The Humboldt Bay Power Plant is just out of the picture to the lower right.



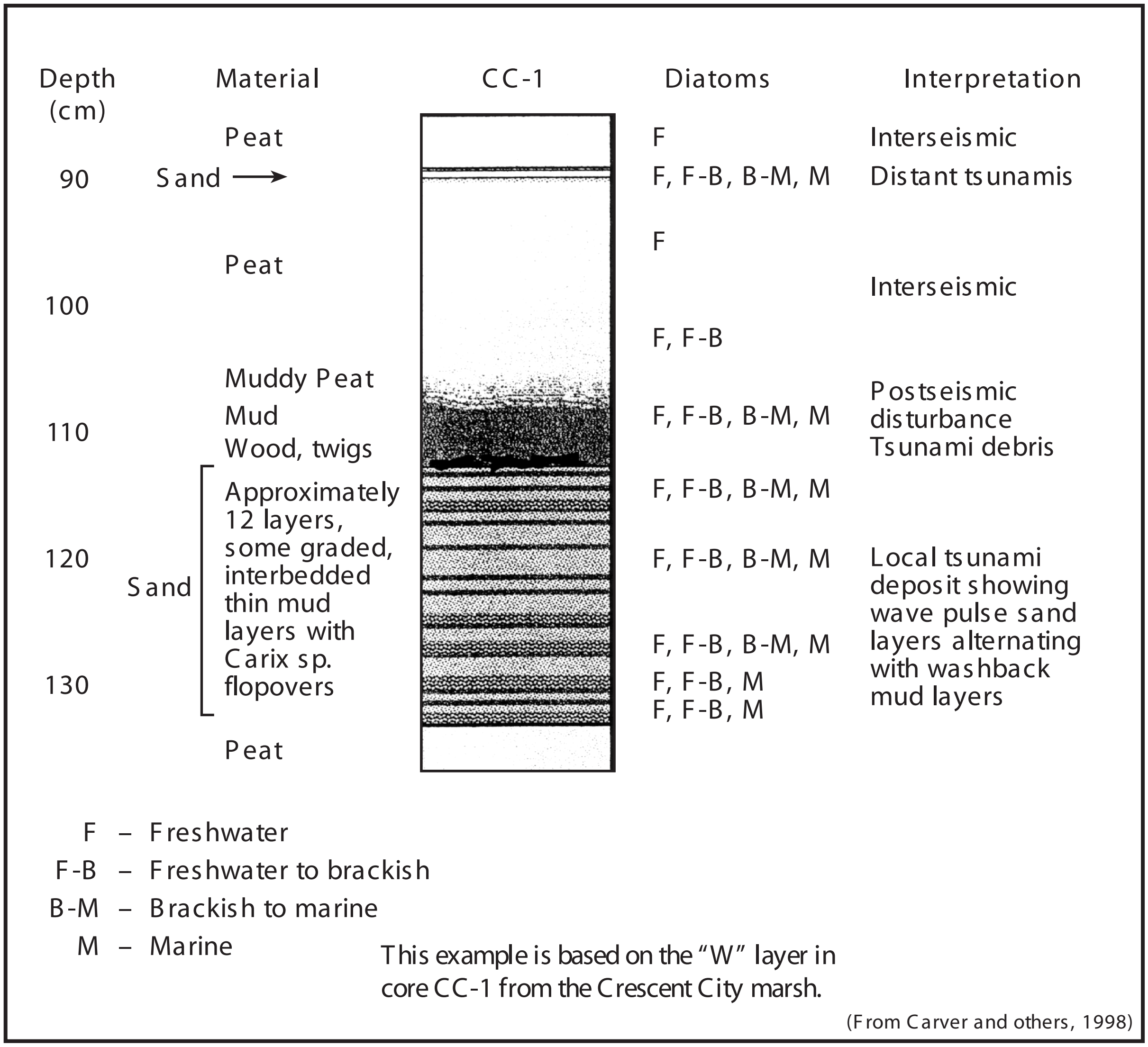
FSAR UPDATE
HUMBOLDT BAY ISFSI
FIGURE 2.6-88 COASTAL SITES INVESTIGATED FOR EVIDENCE OF PALEOTSUNAMIS IN NORTHWESTERN CALIFORNIA



FSAR UPDATE
HUMBOLDT BAY ISFSI
FIGURE 2.6-89
Cross section of a typical intertidal marsh. Figure shows the idealized relationship between tsunami sand deposits and stratigraphic and biostratigraphic features caused by coseismic subsidence. The key to the numbers is shown in Table 2.6-23.



FSAR UPDATE
HUMBOLDT BAY ISFSI
FIGURE 2.6-90
Cross section of a typical coastal freshwater marsh. Figure shows an idealized tsunami sand layer interbedded with peat and mud. The key to the numbers is shown in Table 2.6-23.



FSAR UPDATE
HUMBOLDT BAY ISFSI
FIGURE 2.6-91 IDEALIZED DETAILED SECTION SHOWING MULTIPLE GRADED SANDS IN A TSUNAMI DEPOSIT

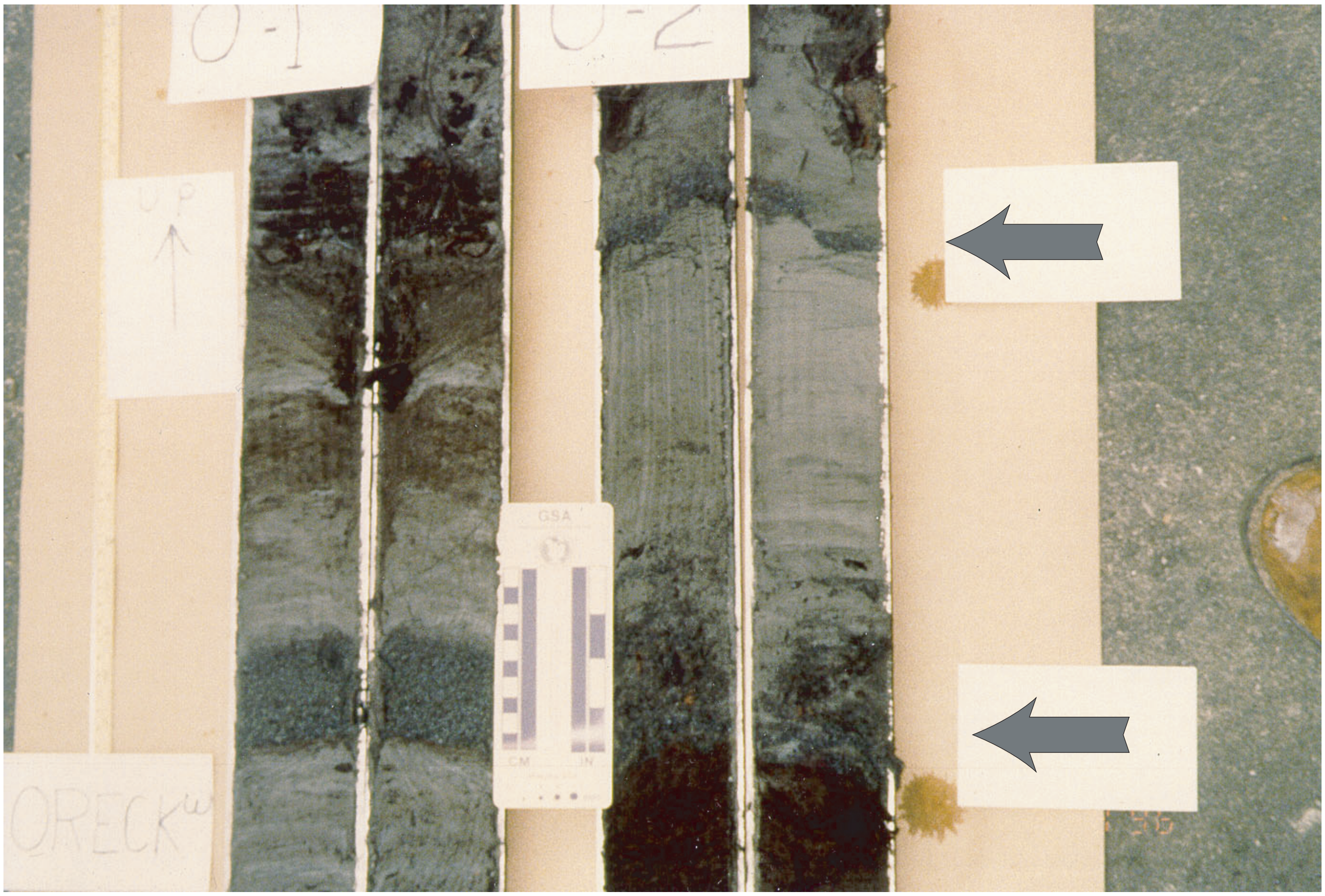
FSAR UPDATE
HUMBOLDT BAY ISFSI
FIGURE 2.6-92
Gouge coring at Crescent City marsh. Hans Abramson, collecting a gouge core in the marsh, is employing a typical technique for obtaining a reconnaissance core.

FSAR UPDATE

HUMBOLDT BAY ISFSI

FIGURE 2.6-93
TYPICAL GOUGE CORE. THE FINGER POINTS TO A THIN LAYER OF FINE-GRAINED TSUNAMI SAND, WHICH IS INTERBEDDED WITH MARCH PEAT

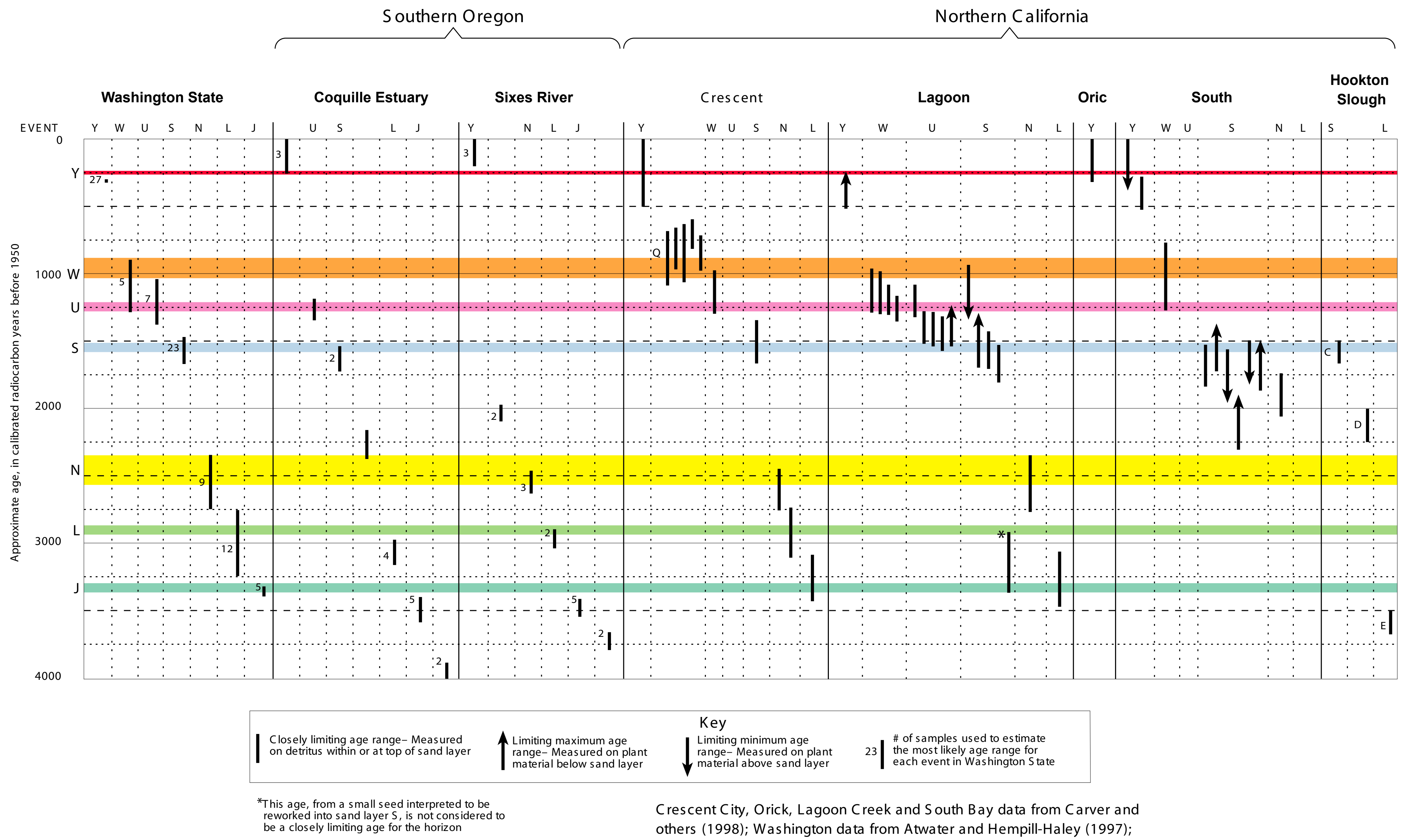
FSAR UPDATE
HUMBOLDT BAY ISFSI
FIGURE 2.6-94
Drilling using the Vibracore at Lagoon Creek.
The 3-inch-diameter core tube is shown in position
before being driven into marsh sediments.



FSAR UPDATE

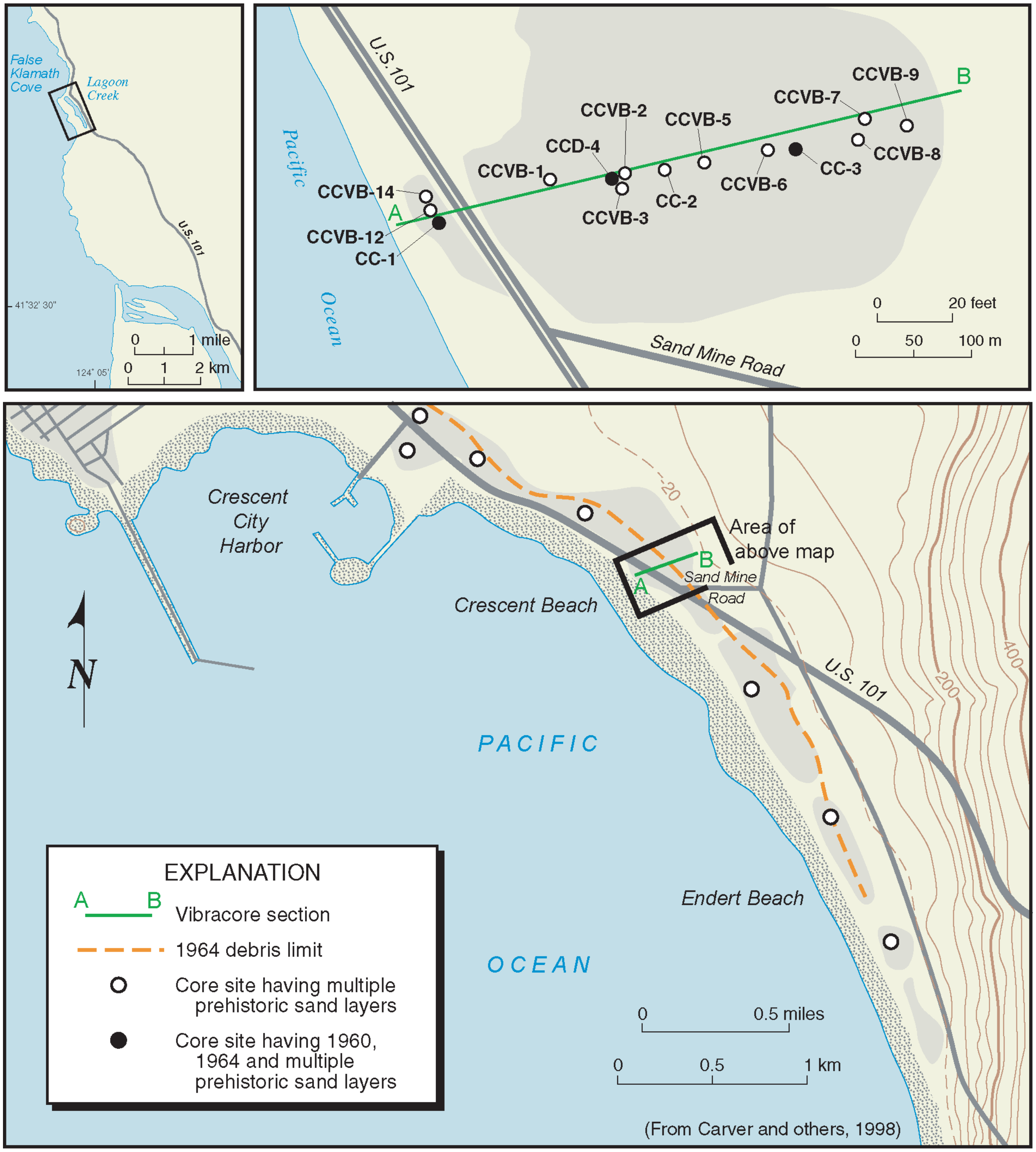
HUMBOLDT BAY ISFSI

FIGURE 2.6-95
TYPICAL DRIVE CORES.
THE TWO SPLIT-SAMPLE TUBES SHOW
TSUNAMI SANDS (ARROWS) IN CORES
FROM THE ORICK MARSH



Crescent City, Orick, Lagoon Creek and South Bay data from Carver and others (1998); Washington data from Atwater and Hempill-Haley (1997); Hookton slough data from Patton and others, (2002); and Oregon data from Kelsey and others (2002).

FSAR UPDATE
HUMBOLDT BAY ISFSI
FIGURE 2.6-96
Comparison of ages for Cascadia earthquakes from tsunami data between northern California and Washington. Width of lines showing Cascadia events ("Y", "W", "U", "S", "N", "L", and "J") from Kelsey and others , 2002).



FSAR UPDATE

HUMBOLDT BAY ISFSI

FIGURE 2.6-97
LOCATION OF CORES IN CRESCENT CITY MARSH

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Crescent City Marsh Site

FSAR UPDATE
HUMBOLDT BAY ISFSI
FIGURE 2.6-98 **CRESCENT CITY** **VIEW TO WEST**

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FSAR UPDATE

HUMBOLDT BAY ISFSI

FIGURE 2.6-99
CRESCENT CITY MARSH

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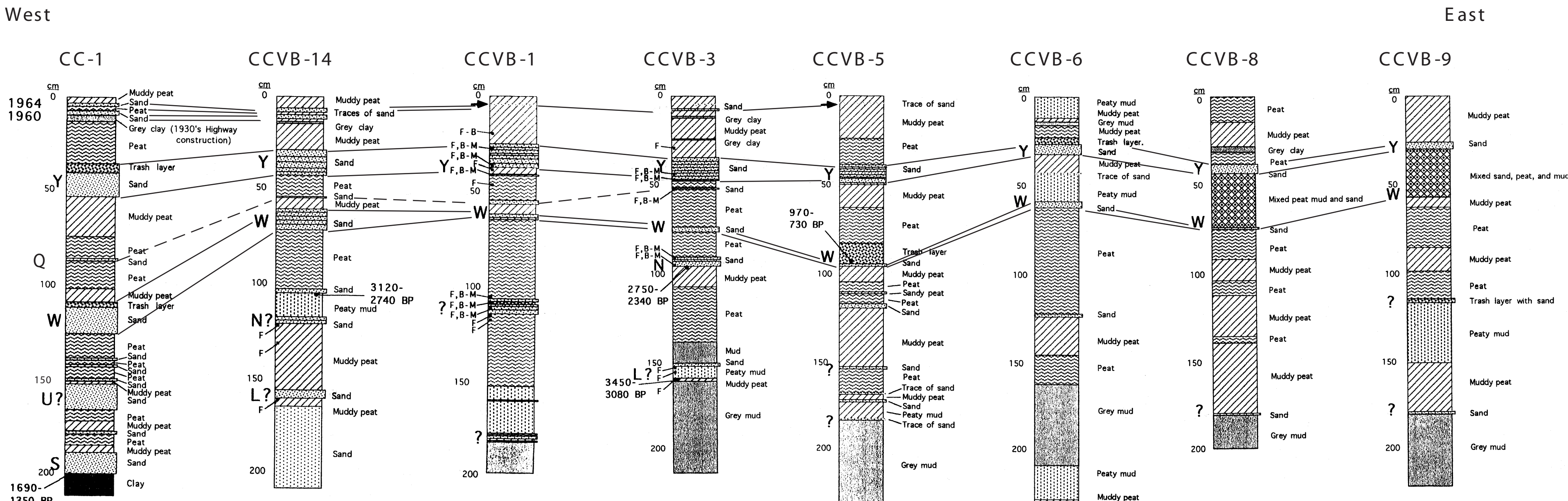

(From Carver and others, 1998)

Capital letters ("Y", "W", "U", "S", "N" and "L") designate sand layers correlated to dated Cascadia subduction zone earthquakes, queried layers are uncorrelated sand layers interpreted to be of Cascadia origin, arrows indicate sand layers from distant-source tsunamis. BP dates refer to calibrated radiocarbon years before 1950. "Q" is a local event intermediate between "Y" and "W".

FSAR UPDATE
HUMBOLDT BAY ISFSI
FIGURE 2.6-100 CORRELATION OF TSUNAMI SANDS IN SELECTED CORES ACROSS CRESCENT CITY MARSH

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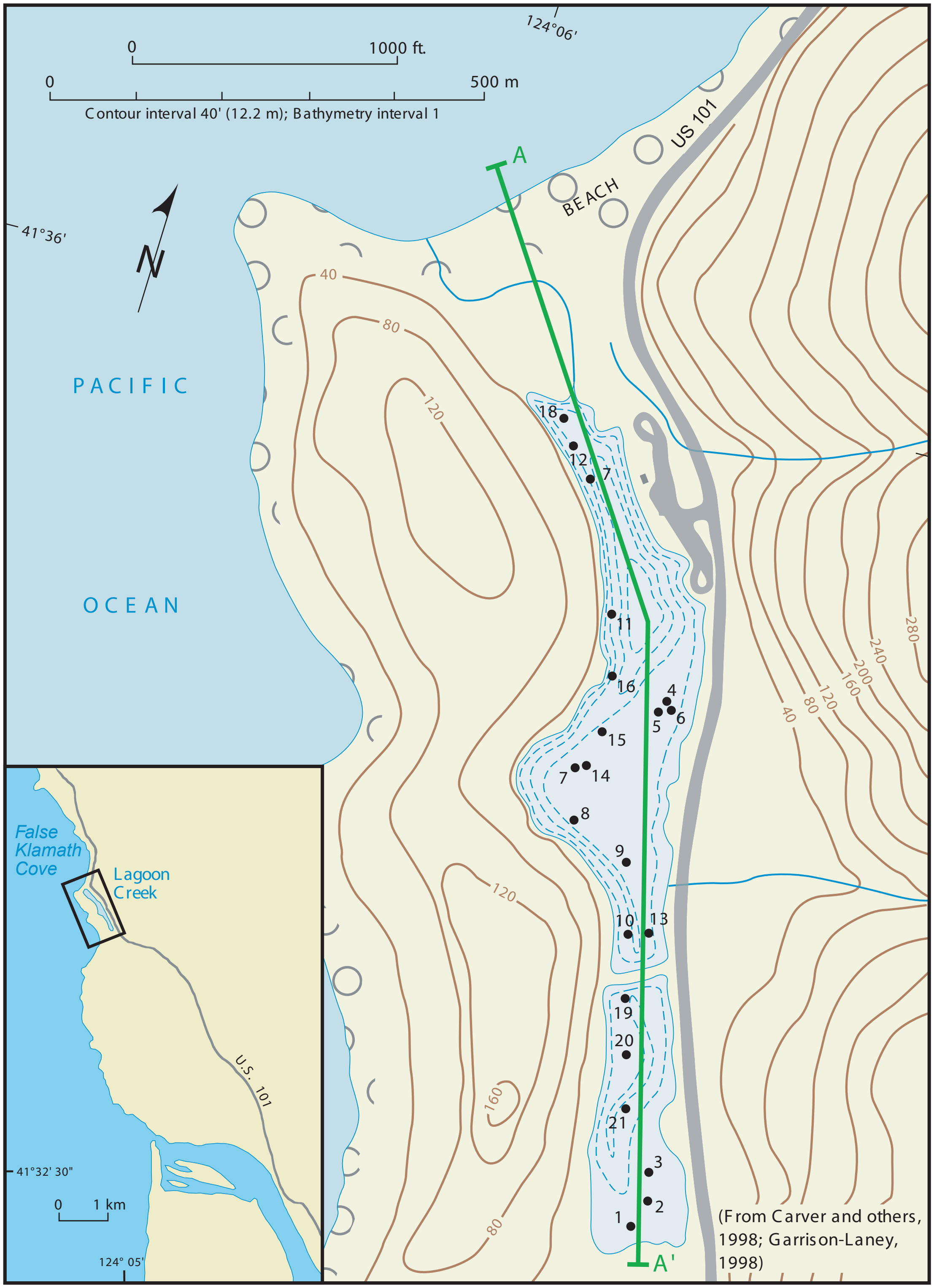


FSAR UPDATE
HUMBOLDT BAY ISFSI
FIGURE 2.6-101
Location of cores in the Lagoon Creek marsh. Map shows topography, bathymetry (dashed contours) and vibracore locations. Cross section A-A' is shown on Figure 2.6-105.

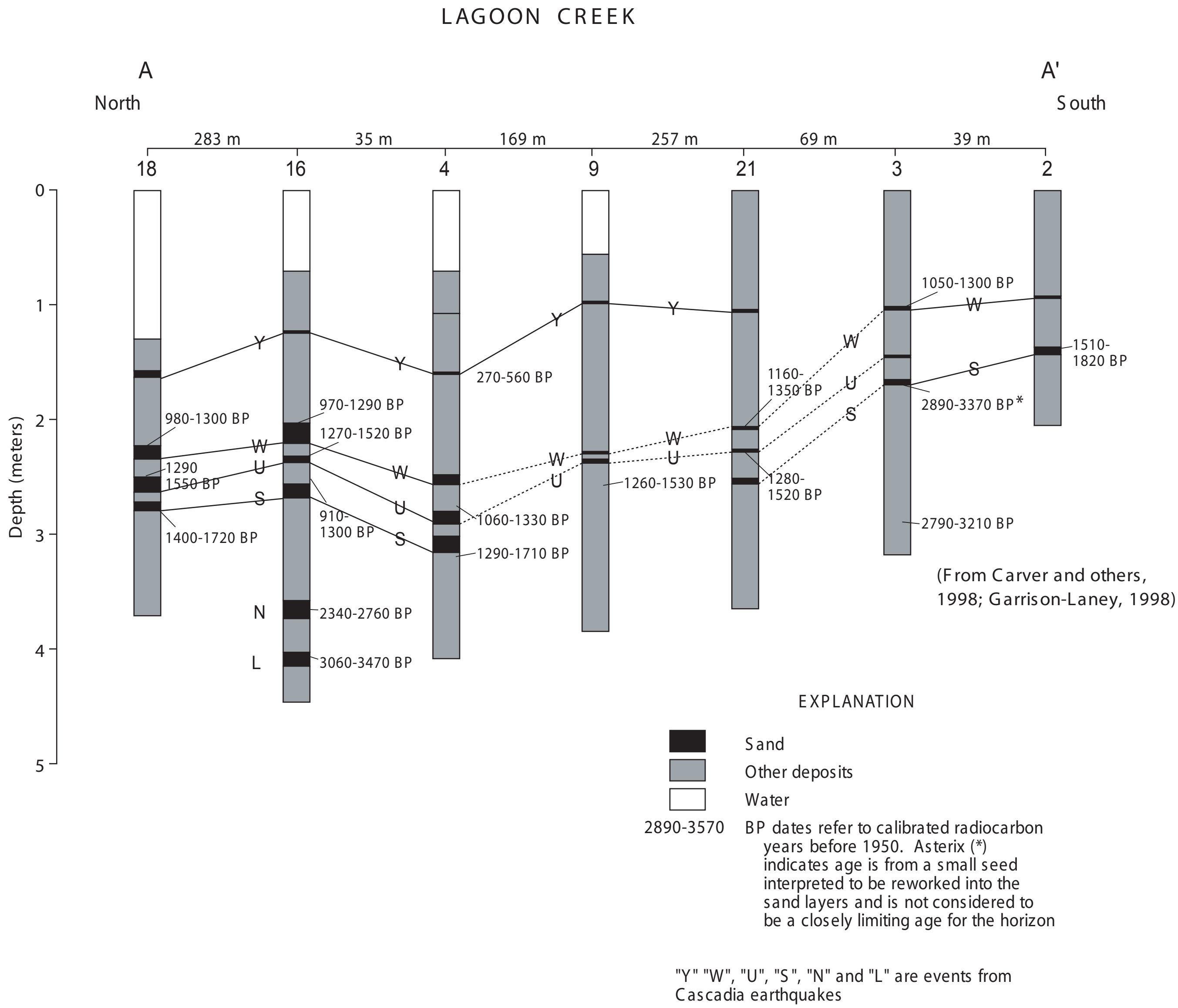
FSAR UPDATE
HUMBOLDT BAY ISFSI
FIGURE 2.6-102
The Lagoon Creek pond and marsh. View is to the south, showing the beach ridge, pond, and marsh in this narrow valley. Tsunami sand layers were found in the marsh sediments inland to the upper end of the marsh visible in this photograph.

FSAR UPDATE
HUMBOLDT BAY ISFSI
FIGURE 2.6-103
Wilson Creek and Lagoon Creek . Wilson creek during the Pleistocene flowed around where the sea bluffs are today and down Lagoon Creek to Redwood Creek. Sea erosion has cut off Lagoon Creek from Wilson Creek, leaving Lagoon Creek as a stable site undisturbed by stream erosion.

FSAR UPDATE

HUMBOLDT BAY ISFSI

FIGURE 2.6-104
BEACH BERM AT LAGOON CREEK
23-FEET ABOVE MLLW. VIEW IS TO THE
NORTH FROM THE NORTHERN PART OF
THE LAGOON CREEK MARSH

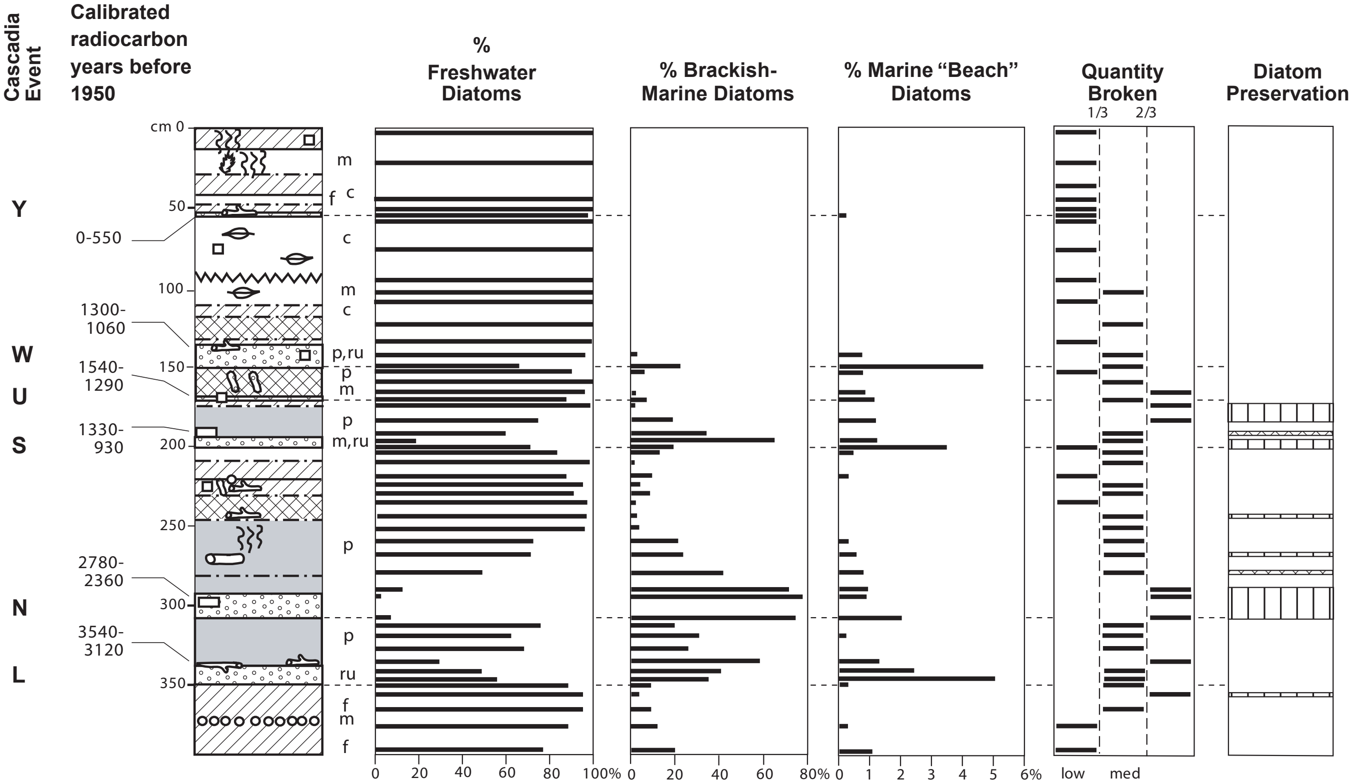


FSAR UPDATE

HUMBOLDT BAY ISFSI

FIGURE 2.6-105
CORRELATION OF TSUNAMI SANDS IN SELECTED CORES ACROSS LAGOON CREEK MARSH. THE LOCATION OF CROSS SECTION A-A' IS SHOWN IN FIGURE 2.6-101

CORE LC-16



(From Garrison-Laney, 1998)

LITHOFACIES CODES

Lithologies

- peat
- muddy peat
- peaty mud
- mud
- sand

Lithologic Modifiers

- s sandy
- m muddy
- p peaty
- c coarse
- f fine
- d detritus
- ru rip-ups
- leaves
- wood chunks
- charcoal
- stick
- twig
- spruce cone
- roots
- sand tunnel

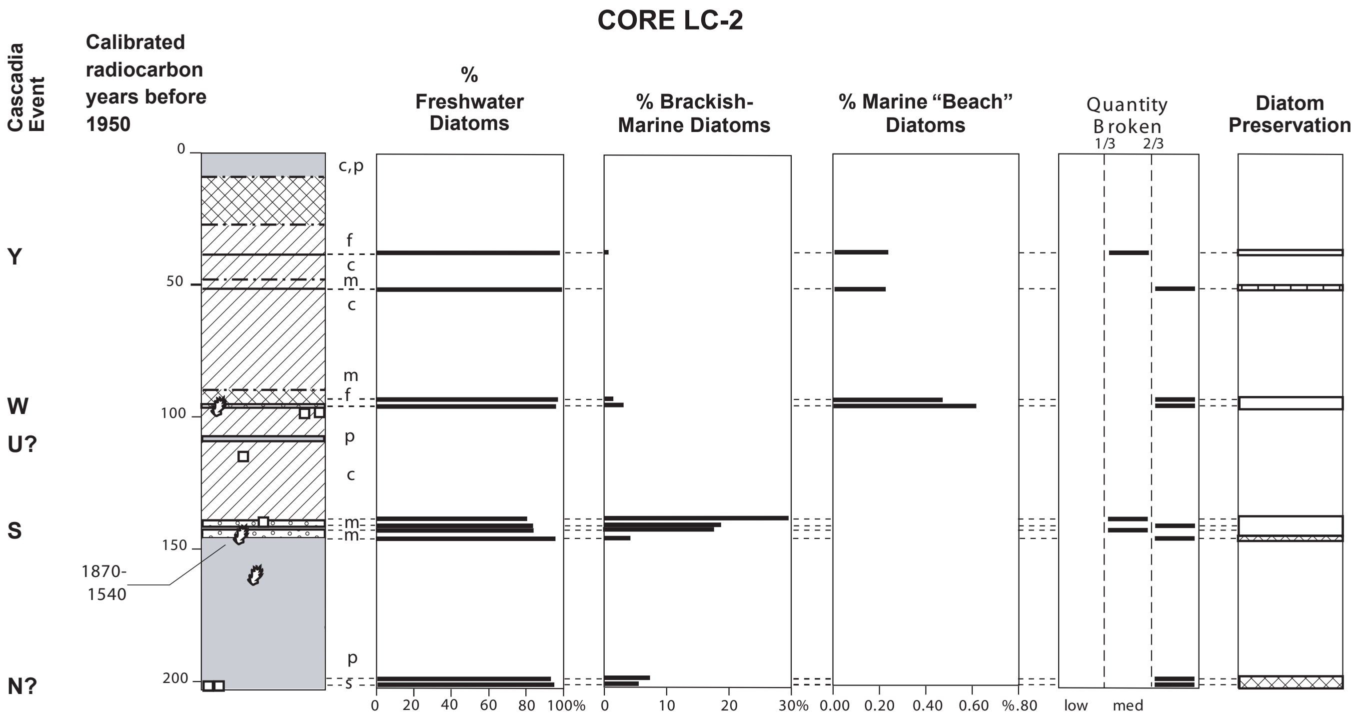
CONTACTS AND SYMBOLS

- Abrupt (≤1 mm)
- Sharp (1-3 mm)
- Gradational (4-10 mm)
- Diffuse (11-20 mm)
- Diffuse (≥ 50 mm)

DIATOM PRESERVATION

- Very good to excellent
- Moderate
- Fair to poor

FSAR UPDATE
HUMBOLDT BAY ISFSI
FIGURE 2.6-106 DETAILED STRATIGRAPHY OF CORE LC-16 FROM THE LAGOON CREEK MARSH. DIAGRAM SHOWS TYPICAL MARSH, SAND DEPOSITS AND DIATOMS NEAR THE COAST



(From Garrison-Laney, 1998)

LITHOFACIES CODES

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- muddy peat
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- stick
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- spruce cone
- roots
- sand tunnel

CONTACTS AND SYMBOLS

- Abrupt (≤1 mm)
- Sharp (1-3 mm)
- Gradational (4-10 mm)
- Diffuse (11-20 mm)
- Diffuse (≥50 mm)

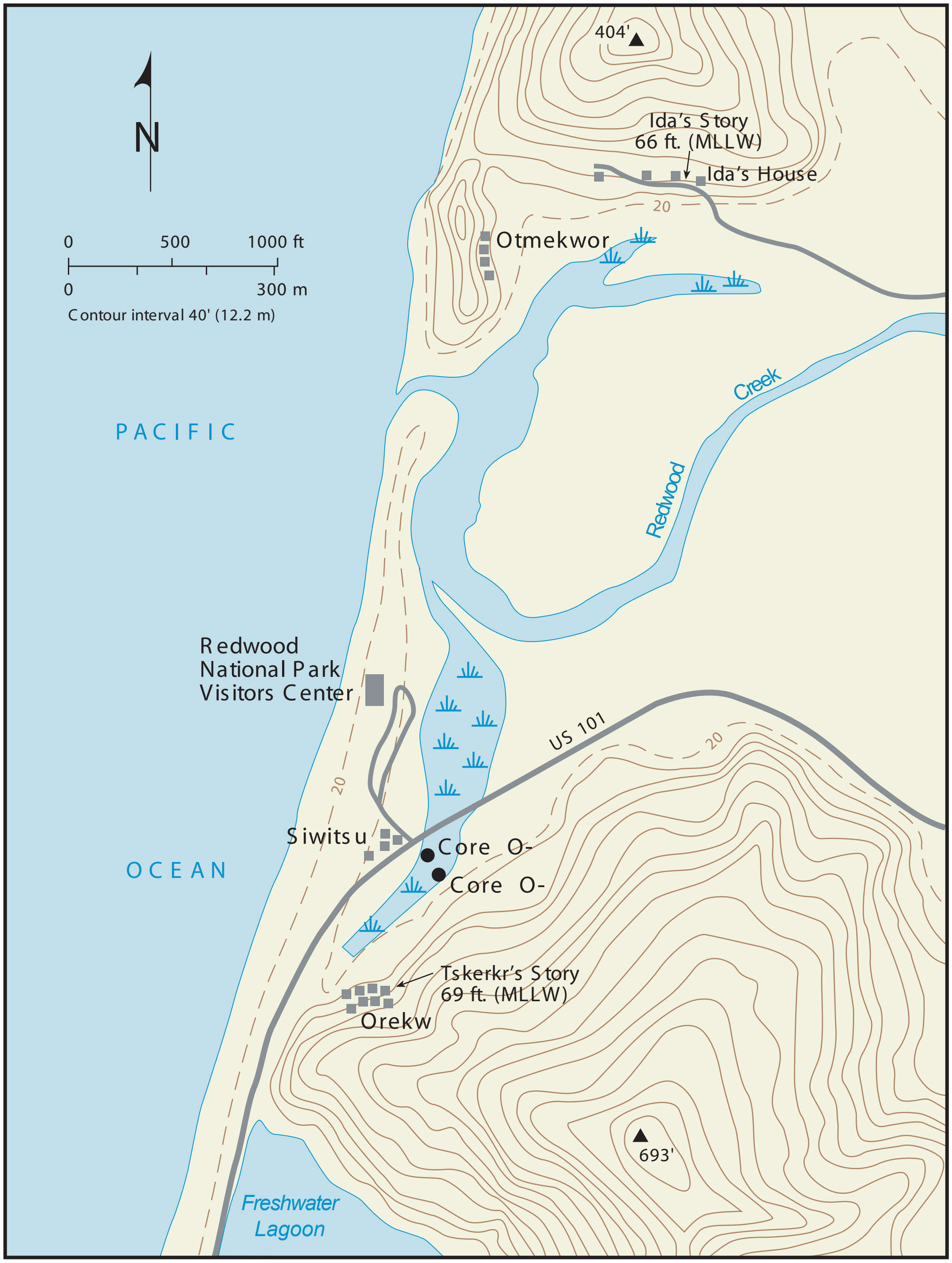
DIATOM PRESERVATION

- Very good to excellent
- Moderate
- Fair to poor

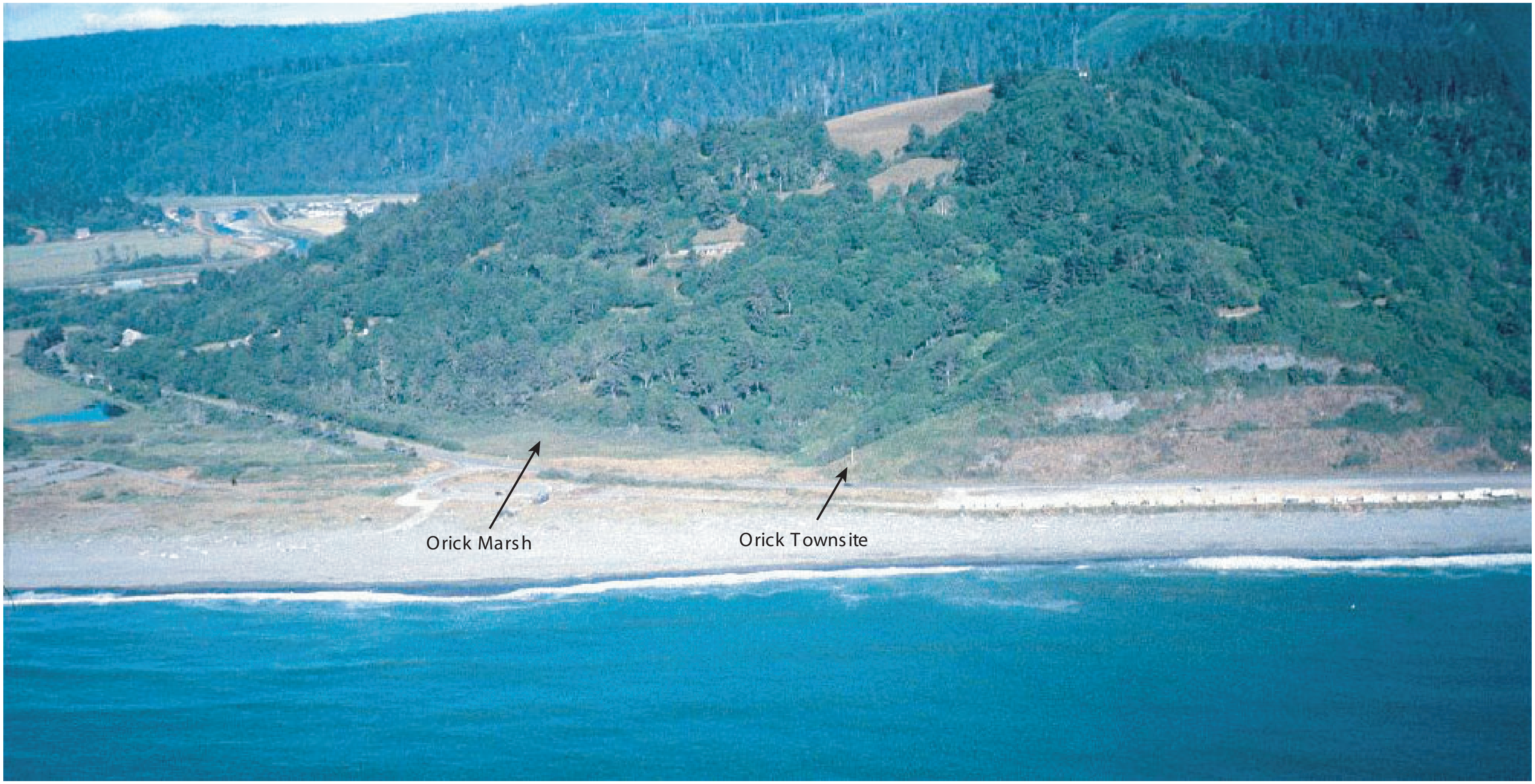
FSAR UPDATE

HUMBOLDT BAY ISFSI

FIGURE 2.6-107
DETAILED STRATIGRAPHY OF CORE LC-2 FROM THE LAGOON CREEK MARSH. DIAGRAMS SHOW TYPICAL MARSH, SAND DEPOSITS AND DIATOMS NEAR THE COAST



FSAR UPDATE
HUMBOLDT BAY ISFSI
FIGURE 2.6-108
Townsite of Orekw (Oreck) and location of cores in Orick marsh. Map shows the village Orekw, the site of Tskerkr's oral history, A Flood (Kroeber, 1976; Carver and Carver, 1996). Also shown is Ida's house site, where floodwaters came to "the front door." Both stories document flooding to about 66 and 69 feet elevation (MLLW). The cores from the Orick marsh record the "Y," as well as earlier tsunami intrusions, and one later tsunami.



FSAR UPDATE

HUMBOLDT BAY ISFSI

FIGURE 2.6-109
TOWNSITE OF ORICK AND THE ORICK MARSH AT THE MOUTH OF REDWOOD CREEK (ON LEFT SIDE OF PHOTO). THE TOWN WAS BUILT ON THE HILLSLOPE ABOVE THE BEACH AND MARSH

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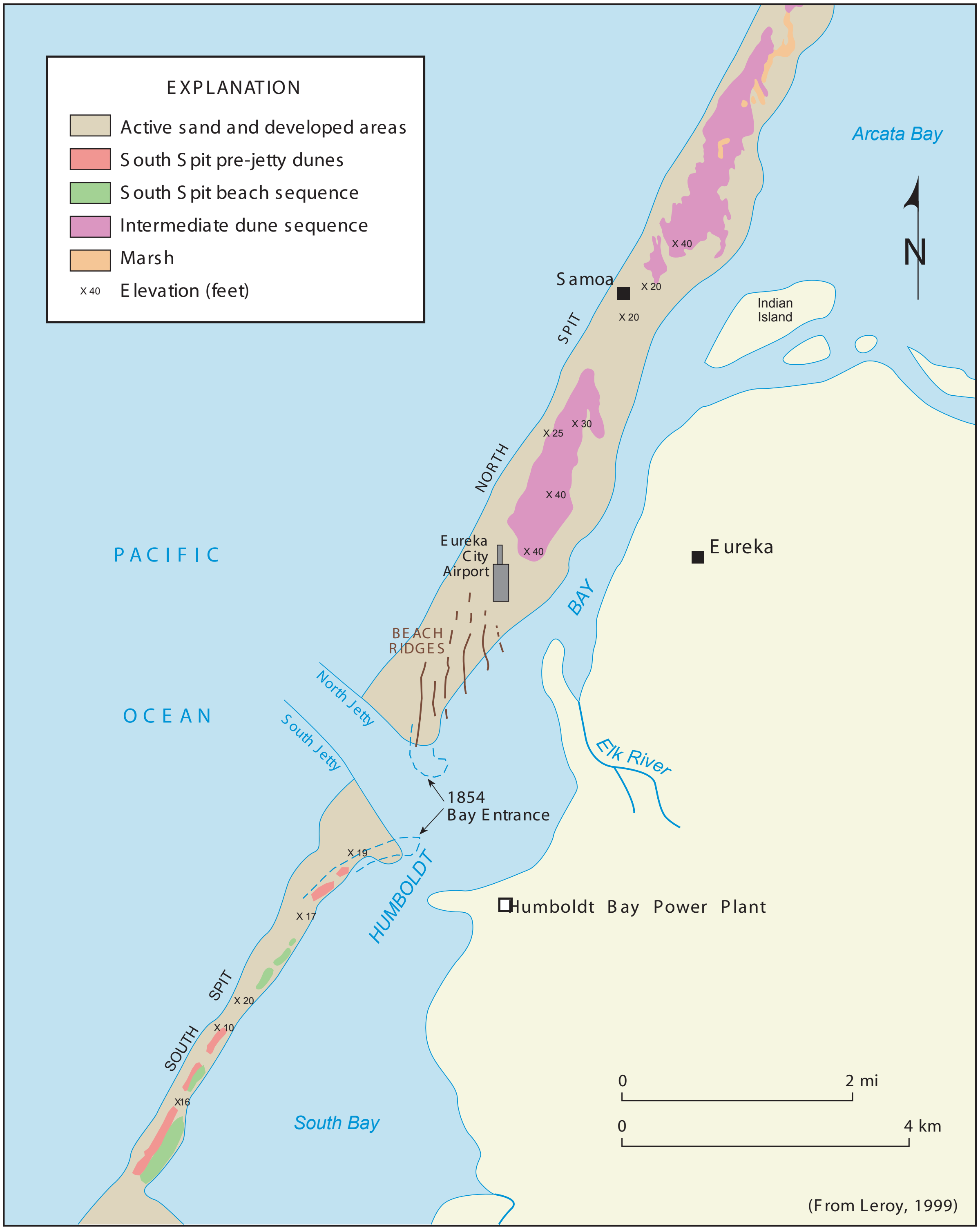
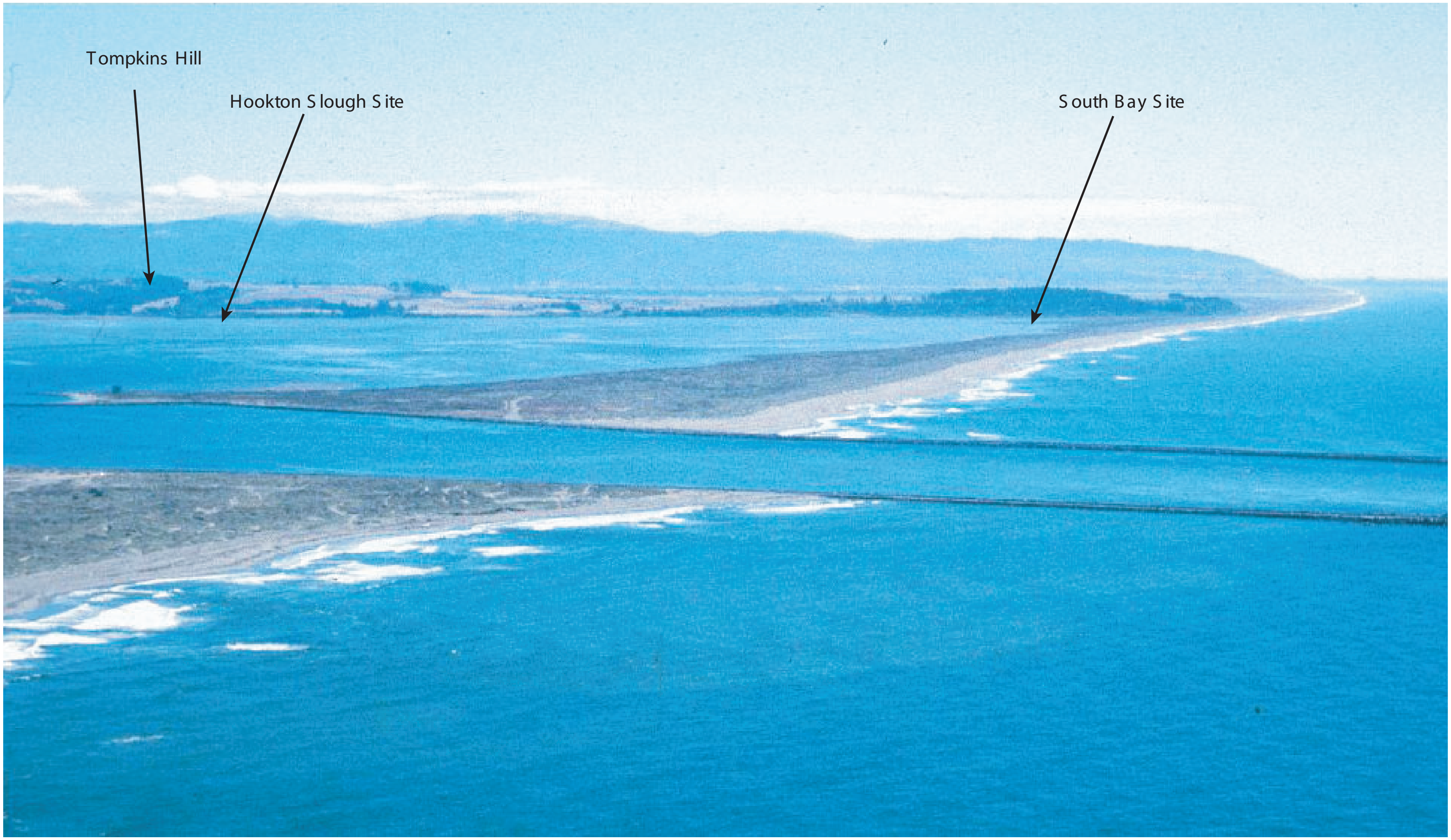


FSAR UPDATE
HUMBOLDT BAY ISFSI
FIGURE 2.6-110 GEOMORPHOLOGY OF THE NORTH AND SOUTH SPITS OF HUMBOLDT BAY

FSAR UPDATE

HUMBOLDT BAY ISFSI

FIGURE 2.6-111
SOUTH SPIT.
VIEW LOOKING NORTH FROM TABLE BLUFF.
SOUTHWESTERN HUMBOLDT BAY (SOUTH BAY)
MARSH SITE IS IN MIDDLE RIGHT OF PHOTO



FSAR UPDATE

HUMBOLDT BAY ISFSI

FIGURE 2.6-112
MOUTH OF HUMBOLDT BAY AND THE
SOUTH BAY HOOKTON SLOUGH SITES.
SOUTH BAY IS SEPARATED FROM EEL RIVER
VALLEY BY TOMPKINS HILL AND TABLE BLUFF

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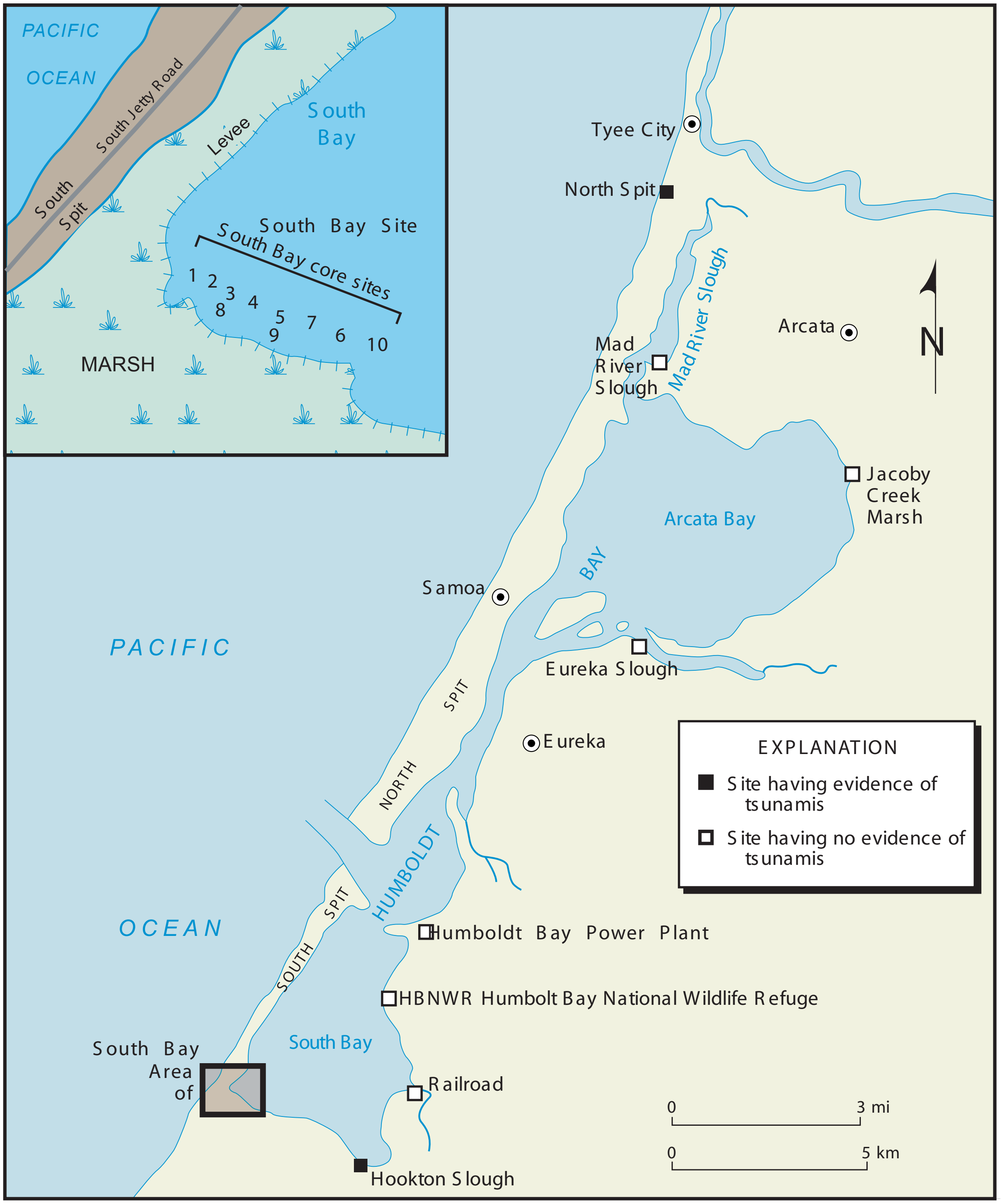
FSAR UPDATE

HUMBOLDT BAY ISFSI

FIGURE 2.6-113
LAG PEBBLES AT EL. 27 FEET (MLLW) ON THE SAND DUNES ON THE NORTH SPIT BELIEVED TO BE DEPOSITED BY A TSUNAMI THAT INUNDATED THE DUNES



FSAR UPDATE
HUMBOLDT BAY ISFSI
FIGURE 2.6-114 MAP OF THE NORTH SPIT SITE, SOUTH BAY, AND OTHER HUMBOLDT BAY MARSH SITES

FSAR UPDATE
HUMBOLDT BAY ISFSI
FIGURE 2.6-115 SOUTH BAY SITE. TABLE BLUFF IN THE MIDDLE OF THE PHOTO SEPARATES THE EEL RIVER VALLEY IN THE MIDDLE DISTANCE FROM SOUTH BAY ON THE LEFT

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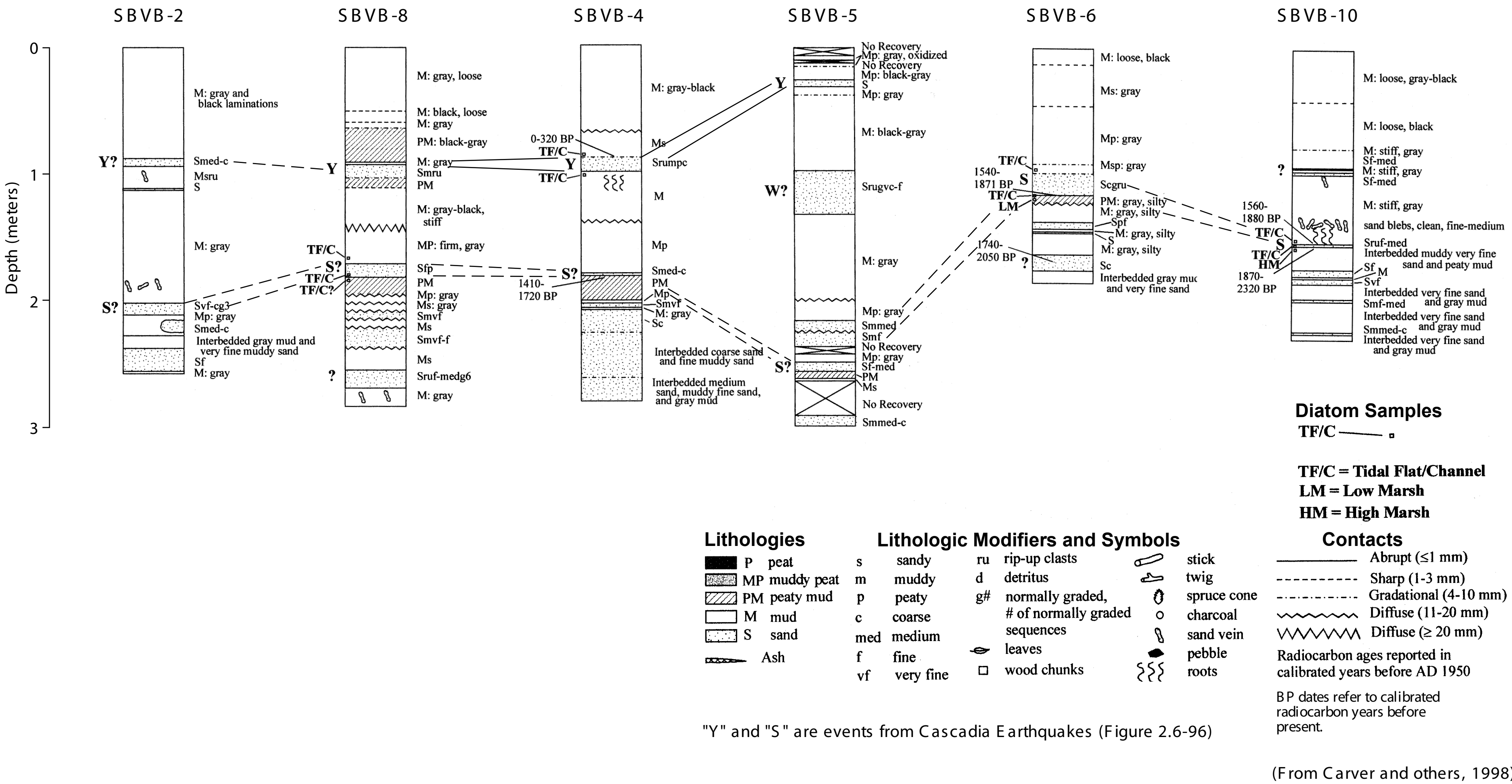
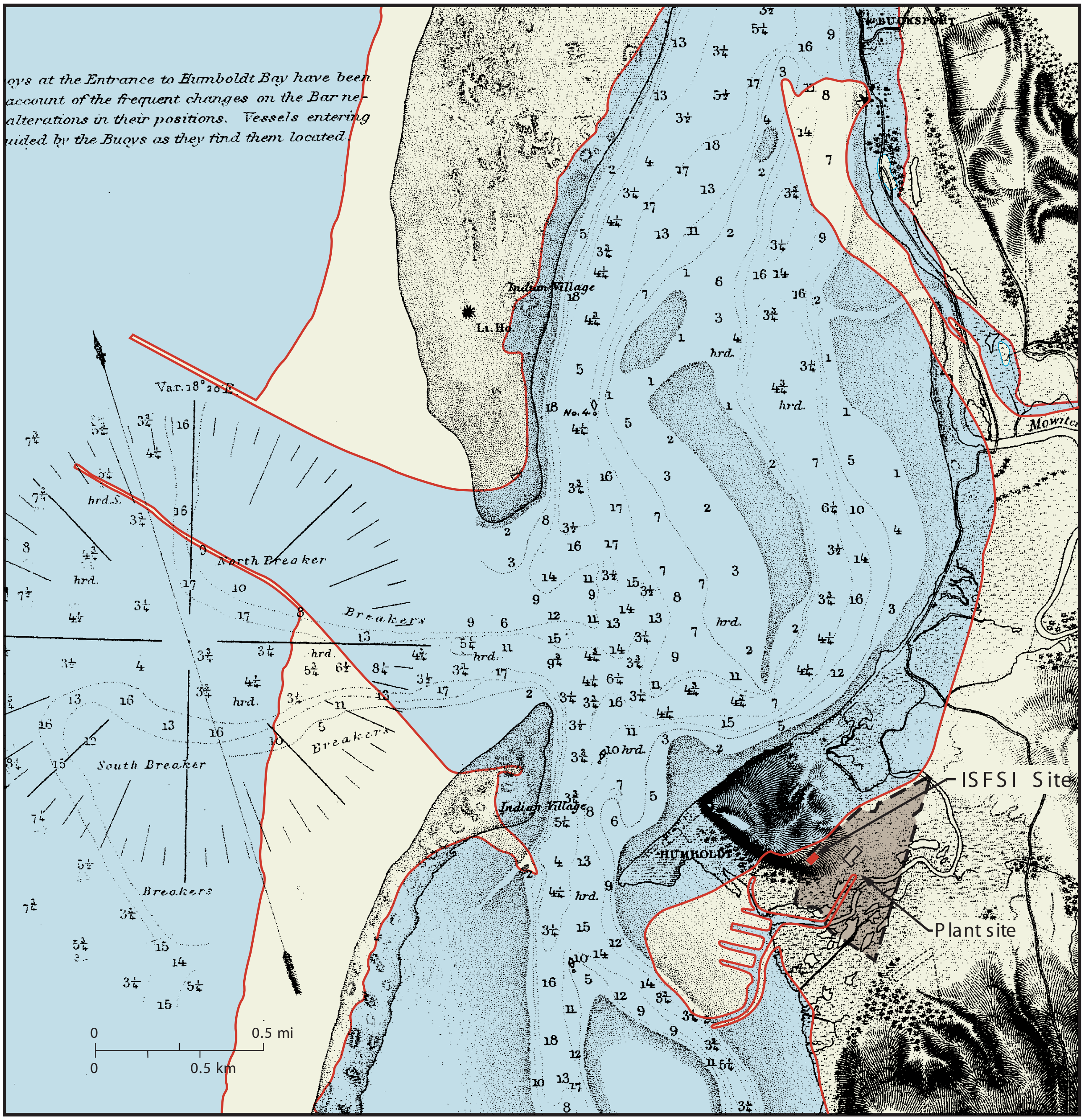
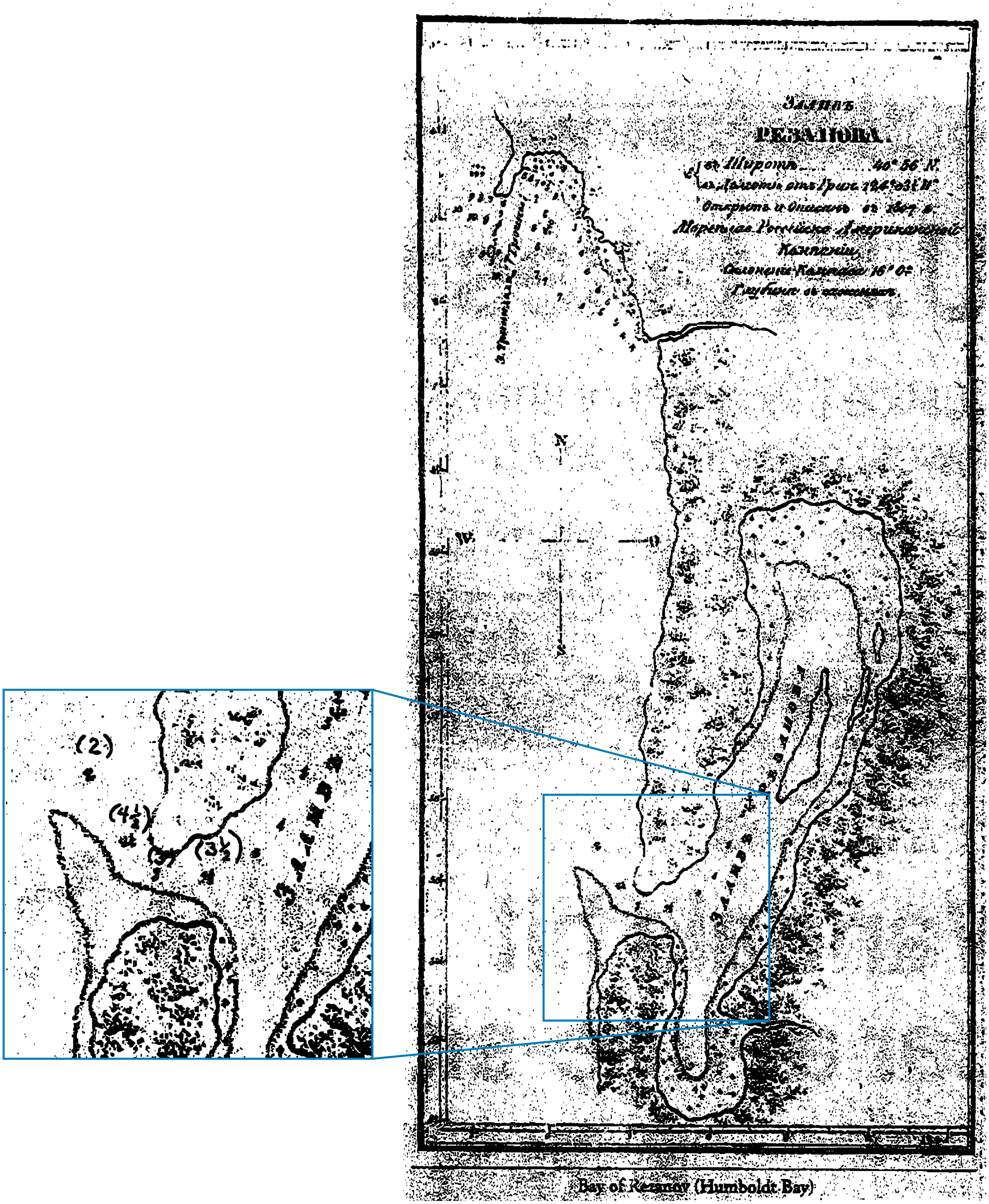


SAFETY ANALYSIS REPORT
HUMBOLDT BAY ISFSI
FIGURE 2.6-116
Correlation of tsunami sands in selected cores across the South Bay marsh.



Preliminary Survey of Humboldt Bay, California, U.S. Coast Survey, 1858 (edition of 1879), (original scale 1:30,000) (aids to navigation corrected to 1885). Depths are in feet below mean lower low water to lowest dotted line, then in fathoms. Red line delineates present shoreline and jetties from USGS Fields Landing 7.5 minute Quadrangle (1989). Brown area is plant site.

FSAR UPDATE
HUMBOLDT BAY ISFSI
FIGURE 2.6-117 PRESENT COASTLINE SUPERIMPOSED ON THE 1858 MAP OF MOUTH OF HUMBOLDT BAY

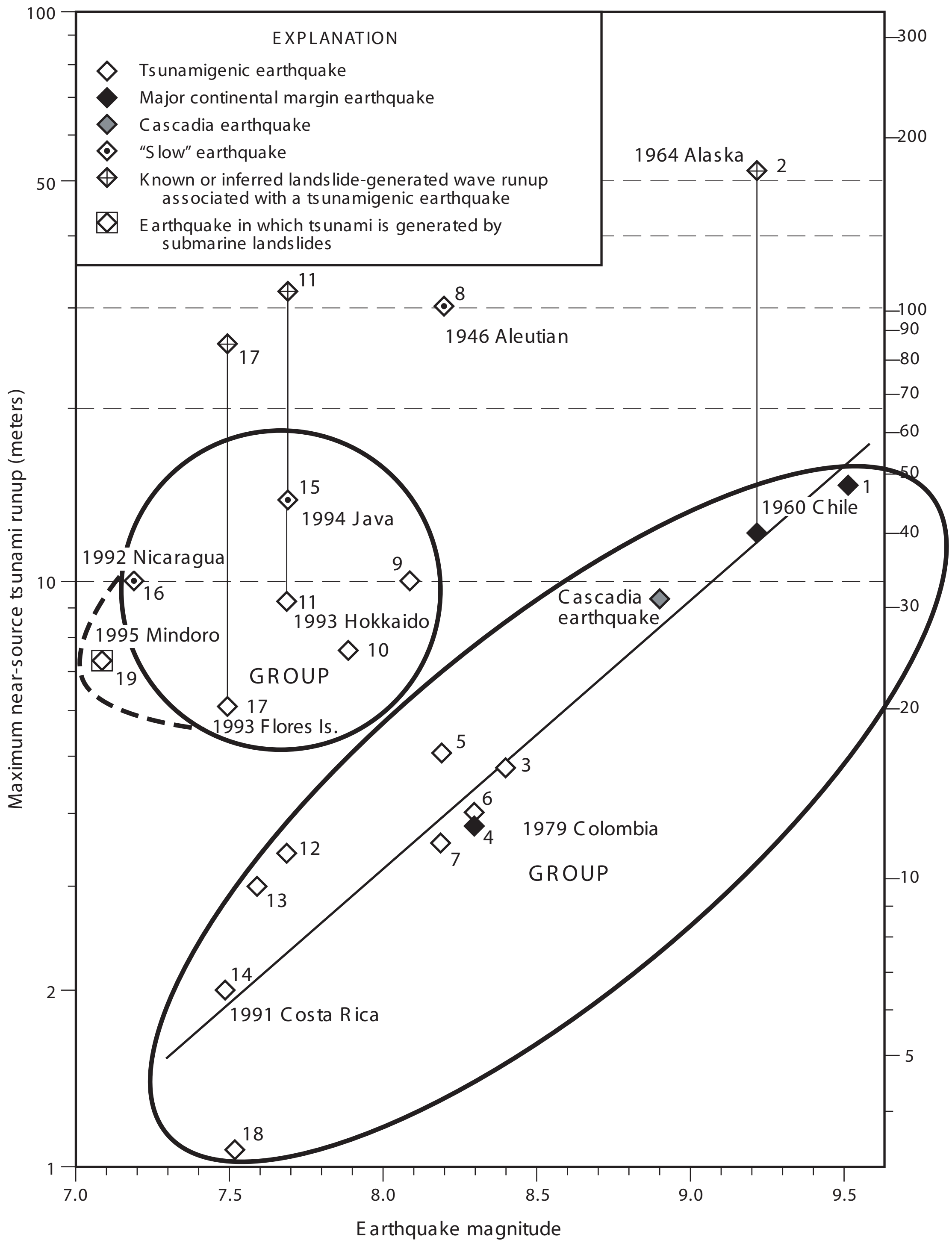


Soundings are in sazhens (Dr. Lydia Black, personal communication, 2001) (1 sazhen is about 7 feet); numbers in parentheses in the entrance channel clarify the original sounding. Original map in Golovnin, Vasili, undated, Voyage of Kamchatka and maps which accompany - Russian ed., Alaska State Historical Library, Juneau, Alaska

FSAR UPDATE

HUMBOLDT BAY ISFSI

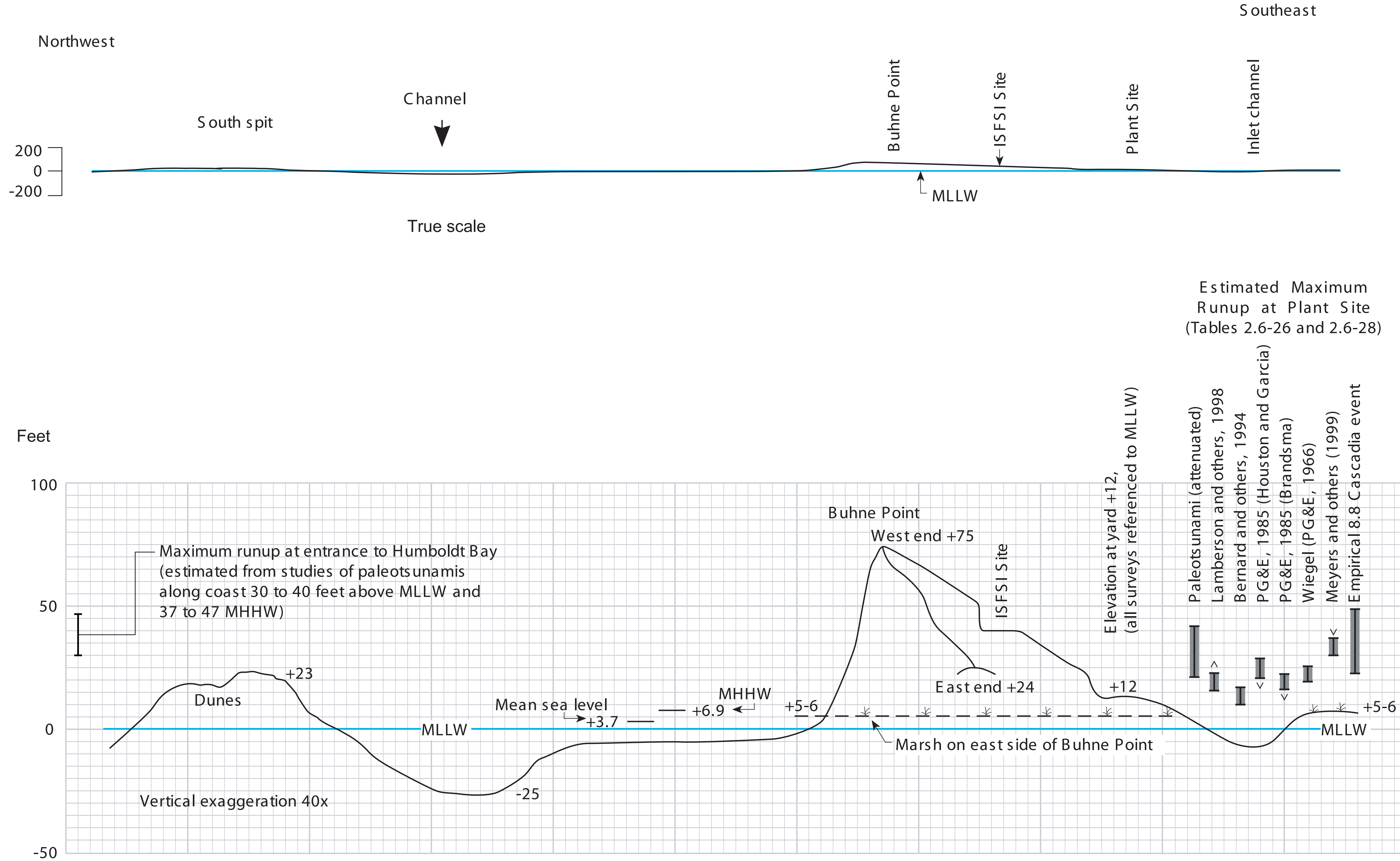
FIGURE 2.6-118
THE 1806 MAP OF HUMBOLDT BAY (BAY OF REZANOV) MADE BY RUSSIAN EXPLORERS



FSAR UPDATE

HUMBOLDT BAY ISFSI

FIGURE 2.6-119
PLOT OF MOMENT MAGNITUDE VERSUS AVERAGE MAXIMUM TSUNAMI RUNUP FOR THE BETTER-DOCUMENTED TSUNAMIGENIC EARTHQUAKES



EXPLANATION

- Range of tsunami runups between MLLW and MHHW
- Maximum runup estimate
- Minimum runup estimate

Notes:

1. MLLW is reference for bathymetry and topography at Humboldt Bay Power Plant and ISFSI sites.

FSAR UPDATE

HUMBOLDT BAY ISFSI

FIGURE 2.6-120
SCHEMATIC DIAGRAM SHOWING ESTIMATED TSUNAMI RUNUP HEIGHTS AT THE HUMBOLDT BAY ISFSI SITE