

Halama Street, Maui, Hawaii

TRANSECT	ST(ft/yr)	SETBACK(ft)	TRANSECT	ST(ft/yr)	SETBACK(ft)	TRANSECT	ST(ft/yr)	SETBACK(ft)
402	-1.1	79.0	452	-2.0	127.1	502	1.3	NO EROSION
403	-1.0	77.3	453	-1.9	119.2	503	1.4	NO EROSION
404	-1.0	72.6	454	-1.7	109.9	504	1.5	NO EROSION
405	-0.8	64.2	455	-1.5	97.9	505	1.5	NO EROSION
406	-0.7	58.6	456	-1.2	82.7	506	1.5	NO EROSION
407	-0.7	59.4	457	-1.1	77.6	507	1.5	NO EROSION
408	-0.8	66.7	458	-1.2	85.9	508	1.5	NO EROSION
409	-0.9	71.0	459	-1.5	100.0	509	1.6	NO EROSION
410	-0.9	72.1	460	-1.6	103.8	510	1.6	NO EROSION
411	-0.9	70.5	461	-1.4	97.4	511	1.7	NO EROSION
412	-0.8	67.3	462	-1.4	93.0	512	1.8	NO EROSION
413	-0.7	62.4	463	-1.4	93.7			
414	-0.7	58.9	464	-1.4	96.3			
415	-0.7	60.3	465	-1.5	100.1			
416	-0.6	66.5	466	-1.6	105.5			
417	-0.9	72.3	467	-1.7	112.2			
418	-1.0	75.8	468	-1.8	114.0			
419	-1.0	76.9	469	-1.7	110.7			
420	-1.0	77.0	470	-1.6	105.6			
421	-1.1	78.8	471	-1.6	102.6			
422	-1.1	81.9	472	-1.6	102.5			
423	-1.2	85.5	473	-1.5	101.8			
424	-1.3	89.3	474	-1.5	98.5			
425	-1.3	90.4	475	-1.4	92.9			
426	-1.3	88.1	476	-1.2	86.6			
427	-1.2	87.0	477	-1.2	83.1			
428	-1.3	89.2	478	-1.1	81.4			
429	-1.5	97.6	479	-1.1	79.3			
430	-1.8	116.3	480	-1.1	78.7			
431	-2.3	141.2	481	-1.1	81.2			
432	-2.6	156.8	482	-1.2	83.3			
433	-2.7	162.4	483	-1.1	82.0			
434	-2.7	161.7	484	-1.0	75.8			
435	-2.7	158.4	485	-0.8	66.1			
436	-2.6	156.9	486	-0.7	59.4			
437	-2.6	157.4	487	-0.8	65.0			
438	-2.7	159.3	488	-1.1	79.9			
439	-2.7	160.7	489	-1.2	86.2			
440	-2.7	160.0	490	-1.2	82.8			
441	-2.6	156.4	491	-1.0	74.5			
442	-2.5	151.0	492	-0.8	63.9			
443	-2.4	143.4	493	-0.5	51.8			
444	-2.2	137.0	494	-0.3	39.9			
445	-2.2	135.3	495	-0.1	28.0			
446	-2.3	139.7	496	0.2	NO EROSION			
447	-2.3	141.0	497	0.5	NO EROSION			
448	-2.3	138.9	498	0.7	NO EROSION			
449	-2.2	136.1	499	0.9	NO EROSION			
450	-2.2	133.2	500	1.1	NO EROSION			
451	-2.1	132.0	501	1.2	NO EROSION			

SHORELINE CHANGE RATES

- Blue bar: Accretion Rate
- Red bar: Erosion Rate

Historical shoreline positions are measured every 66 ft along the shoreline. These sites are denoted by yellow shore-perpendicular transects. Changes in the position of the shorelines through time are used to calculate shoreline change rates (ft/yr) at each transect location.

Annual shoreline change rates are shown on the shore-parallel graph. Red bars on the graph indicate a trend of beach erosion, while blue bars indicate a trend of accretion. Approximately every fifth transect and bar of the graph is numbered. Where necessary, transects have been purposely deleted to maintain consistent along-shore spacing. As a result transect numbering is not consecutive everywhere.

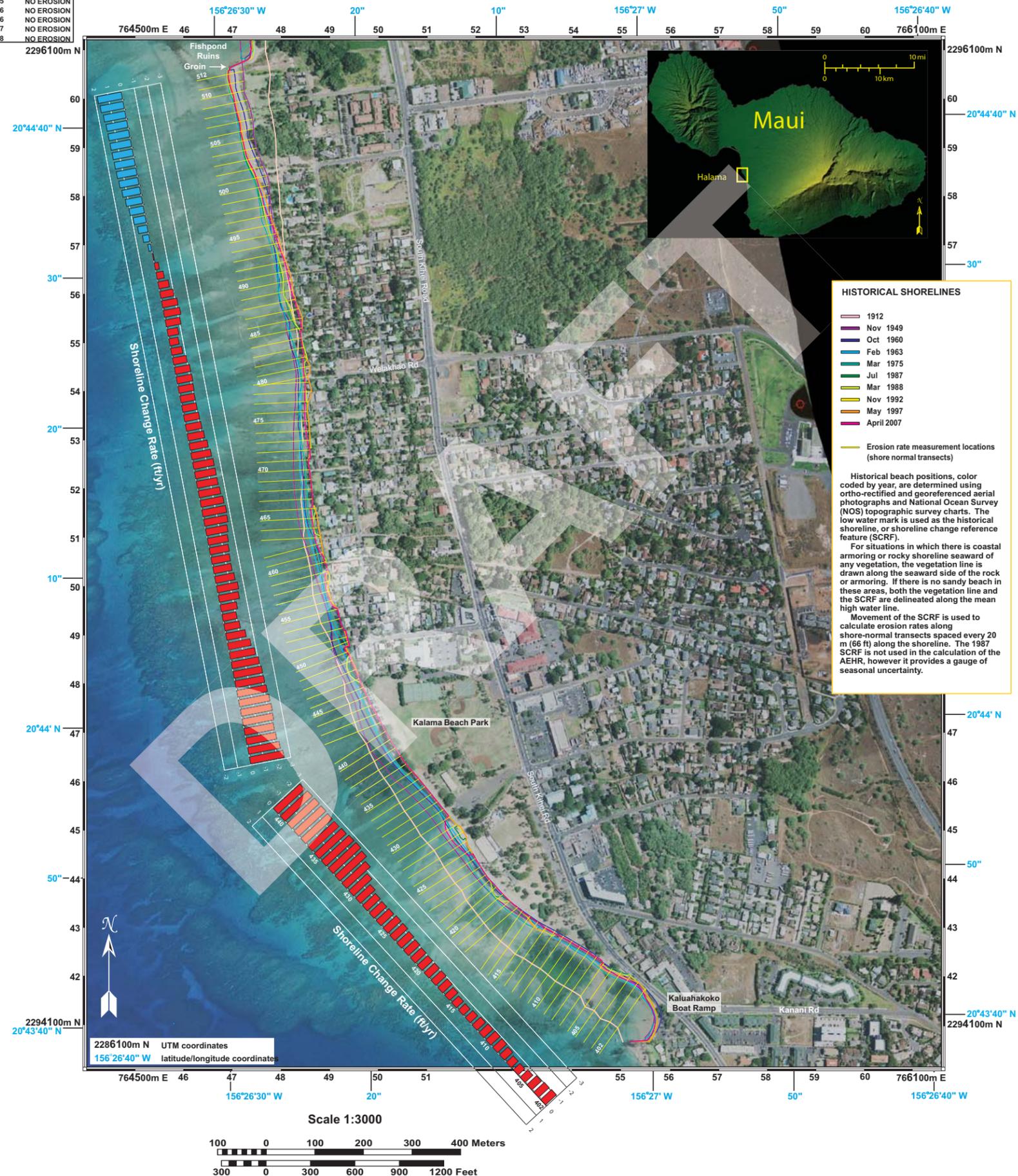
The ST method is used to calculate shoreline change rates for the study area. The rates are smoothed along shore using a 1-3-5-3-1 technique to normalize rate differences on adjacent transects. For more information on erosion rate methods and results see: <http://www.soest.hawaii.edu/asp/coasts/oahu/index.asp>

AREA DESCRIPTION

The Halama Street study area (transects 402 -512) is located on the south shore of Maui between the ruins of a Hawaiian fishpond and a groin in the north and Kaluahakoko Boat Ramp in the south. The shoreline is exposed to southerly swell in summer and Kona storm waves. A shallow fringing reef protects the shoreline from the full energy of open-ocean waves.

The central and southern portions of the Halama Street study area (transects 402 - 495) are characterized by chronic erosion and beach loss. Little or no beach has existed between transects 402 - 450 since the 1970's, transects 451 - 484 since the 1980's, and transects 485 - 495 since the 1990's. Waves break against revetments in this area at high tide. Only intermittent pockets of sand are found in small openings and at the base of revetments in this area in the 2007 air photos. For areas where the beach has been lost to erosion, shoreline change rates are calculated up to and including the first shoreline with no beach and show the rate at which the beach disappeared. The beach in the north of the study area (transects 496 - 512) has accreted against the south side of a groin. Expanding beach loss toward the north and accretion against the south side of the groin suggests that predominant sediment transport is to the north and that there is a threat of continued expansion of the extent of erosion and beach loss toward the north.

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HISTORICAL SHORELINES

- 1912
- Nov 1949
- Oct 1960
- Feb 1963
- Mar 1975
- Jul 1987
- Mar 1988
- Nov 1992
- May 1997
- April 2007
- Erosion rate measurement locations (shore normal transects)

Historical beach positions, color coded by year, are determined using ortho-rectified and georeferenced aerial photographs and National Ocean Survey (NOS) topographic survey charts. The low water mark is used as the historical shoreline, or shoreline change reference feature (SCRF).

For situations in which there is coastal armoring or rocky shoreline seaward of any vegetation, the vegetation line is drawn along the seaward side of the rock or armoring. If there is no sandy beach in these areas, both the vegetation line and the SCRF are delineated along the mean high water line.

Movement of the SCRF is used to calculate erosion rates along shore-normal transects spaced every 20 m (66 ft) along the shoreline. The 1987 SCRF is not used in the calculation of the AEHR, however it provides a gauge of seasonal uncertainty.