ISLAND COUNTY
WINTER TIDE ANALYSIS

WINTER 2011-2012

COMPILED BY

STANWOOD CAMANO FIRE DEPARTMENT

July 2011

27 June 2011

SUBJECT: Winter 2011-2012 Extreme Tide Analysis

The two attached tables are a comparison between winter high tide predictions from "www.Saltwatertides.com" and the predicted high tides that occurred on 4 February 2006 (Super Bowl Windstorm). The 2006 tides are used as the "Reference Tides" for eight coastal locations around Whidbey and Camano Islands.

TABLE 1 lists the eight locations and all the dates on which the predicted tides will equal or exceed the reference tides – that is those dates where flooding is more possible given other circumstances such as high wind and low atmospheric pressure.

TABLE 2 lists those dates on which predicted tides will exceed the reference tides. It also shows the maximum predicted tide level measured in feet during that series of days. These are those days where tidal flooding is more likely and increased awareness is necessary.

DISCUSSION: It should be remembered that none of these predicted tide levels by themselves will produce flooding or other damage unless combined with a strong on-shore wind. The February 2006 storm produced this combination of extreme high tide and extreme high on-shore winds – both conditions reaching maximum levels at almost the same time.

While this near perfect occurrence is rare, strong winds and a moderate high tide on 20 December 2007 produced enough of a storm surge to push water across roads on the west coast of Whidbey Island. Data from the National Weather Service indicates that a sustained wind across an expanse of water (reach) may increase effective tide levels. The following chart is provided for illustration. The wind speed is in knots.

HOURS	3	6	9	12	18+
Speed					
15kt	2 Ft	2	3	3	3 Ft
20 kt	3	4	4	4	4
25 kt	4	5	6	6	6
30 kt	5	7	7	7	7
35 kt	7	9	9	9	9
40 kt	9 Ft	10	10	10	10 Ft

Based on wind over water (reach) for 35 nautical miles

This information is presented only as an aide for recognizing the dates and locations of increased risk for tidal flooding and shoreline damage. Other risk factors also increase the potential for tidal flooding and those should be included in any storm preparation decisions.

Questions and comments related to this information should be addressed to
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TABLE 1 Dates with winter high tides that "Equal or Exceed" the 2006 flood reference levels.

Location	Admiralty Head	Bush Point	Coupeville Penn Cove	Crescent Harbor	Hansville*	Glendale	Sandy Point	Stanwood-Stilliguamish
Reference Tide in Feet	9.7	10.6	12.5	12.8	11.8	11.9	12.2	7.6
Month	**Days of Month**							
September, 2011						28	28	27-28
October, 2011			28	26-30		25-30	24-30	25-30
November, 2011	27-29	26-29	22-28	22-30	26-28	21-22, 24-30	19-30	21-30
December, 2011	14-15, 24-29	24-28	13-21, 24-28	12-30	16-17, 24-29	11-30	1-2, 11-30	1, 11-30
January, 2012	12-16, 23-24	13-15	10-17, 23-28	10-17, 23-28	11-16, 23-26	9-17, 22-28	9-18, 22-28	9-17, 21-28
February, 2012				8-13	10-12	8-13	8-13	8-14, 21-23
March, 2012				9-12		9-12		8-12
April, 2012						7-8	7-8	7-8
May, 2012								6-9

TABLE 1 lists the locations where extreme high tide levels were measured and where tidal flooding damage occurred in February of 2006. The "Reference Tide" levels are the predicted high tides on 4 Feb 2006. The high tides that day combined with the wind induced "storm surge" produced tidal flooding and beach erosion. The sustained high wind speed probably added 2-3 feet of height to the predicted tide level.

NOTE: To account for variance in measurement and wind conditions, the predicted tides included in the "equals" criteria are allowed to be within .25 ft or 3 inches of the reference tide. Example: If the reference tide is 9.7 ft., then the "equals:" criteria will also include days with tides from 9.45 feet thru to and greater than 9.7 ft. ***Hansville**: Hansville is the nearest tide reporting location to Double Bluff and Useless Bay on Whidbey Island. Hansville is on the north end of the Kitsap Peninsula, due south of Double Bluff.

TABLE 2 Dates with winter high tides that "Exceed" the 2006 flood reference levels.

Location	Admiralty Head	Bush Point	Coupeville Penn Cove	Crescent Harbor	Hansville*	Glendale	Sandy Point	Stanwood-Stilliguamish
Reference Tide in Feet	9.7	10.6	12.5	12.8	11.8	11.9	12.2	7.6
Month	**Day of Month**							
November, 2011			26-28: 12.8	26-28: 13.1		27-29: 12.3	26-28: 12.6	26-29: 7.9
December, 2011			24-28: 12.9	16-17: 12.9 24-29: 13.2	25-26: 11.9	14-19: 12.0 24-29: 12.4	15-18: 12.4 24-29: 12.7	15-19: 7.8 24-29: 7.9
January, 2012			11-16: 12.9 23-26: 12.6	11-15: 13.2 23-26: 12.9		11-16: 12.4 23-26: 12.1	11-16: 12.7 23-26: 12.4	11-16: 7.9 23-26: 7.8
February, 2012				10-12: 13.1		9-13: 12.3	9-13: 12.6	9-13: 7.9
March, 2012								

TABLE 2 indicates those locations and dates when the high tide is predicted to exceed the "Reference Tide" levels. The result is a greater risk of tidal flooding should there be a coinciding strong on-shore wind. Again, these high tide levels alone will not cause tidal flooding. The tide height in feet (in red) reflects the highest predicted tide in that series of days. Remember, all tides in the series exceed the reference tide level.

***Hansville**: Hansville is the nearest tide reporting location to Double Bluff and Useless Bay on Whidbey Island. Hansville is on the north end of the Kitsap Peninsula, due south of Double Bluff.