

BALD HEAD ISLAND SETTLEMENT MONITORING SURVEYS
REPORT 13
MARCH 2007

Introduction

The 13th set of monitoring surveys for the Settlement Agreement between the Village of Bald Head Island and the United States Army Corps of Engineers was taken in March 2007. The criteria to be used in examining the surveys is to be a continuous passage through Smith Island Channel, Baldhead Shoal Channel Reach 1 and Baldhead Shoal Channel Reach 2 with a minimum bottom width of 500 feet at a depth of -42 feet mean lower low water (mllw). This report is the last in this series because navigation channel maintenance dredging is currently taking place. Dredging started on February 28, 2007 and is scheduled to be completed in April/May 2007.

Data

The 12th set of monitoring surveys taken in January 2007 is displayed in Figure 1 and is labeled January 2007 Surveys. Figure 2 is a plot of surveys taken in March 2007 and Figure 3 is a difference plot between the January and March surveys. Figure 4 is a difference plot between the January 2005 and March 2007 surveys.

A plot for Smith Island Channel of the navigable widths at a depth of -42 feet mllw (navigable depth) is shown in Figures 5 and 6. MLLW is 2 inches lower than mlw at Bald Head Island. Plots of the minimum channel cross sections at stations 41+00 and 42+00 are shown in Figures 7 and 8. The baselines for the cross section plots are shown in Figure 1. At the time of the Smith Island Channel survey (March 19, 2007), dredging was complete in this reach, so channel widths shown are a post-dredging condition.

A plot for Baldhead Shoal Channel Reach 1 of the navigable widths at a depth of -42 feet mllw is contained in Figures 9 and 10. Plots of the minimum channel cross sections in the vicinity of the spit at stations 23+00, and 24+00 are shown in Figures 11, and 12.

A plot for Baldhead Shoal Channel Reach 2 of the navigable widths at a depth of -42 feet mllw is contained in Figures 13 and 14. Plots of the minimum channel cross sections at stations 45+00 and 46+00 are shown in Figures 15 and 16. Reach 2 is before dredging.

At the time of the Baldhead Shoal Reach 1 & 2 survey (March 9, 2007), dredging had not yet occurred in these reaches, so channel widths show a pre-dredging condition

Conclusion

The minimum navigable width at a depth of -42 feet mllw is less than 500 feet at Stations 22+00, 23+00 and 24+00 in Baldhead Shoal Channel Reach 1. Points are greater than 500 feet in the other 2 channels.

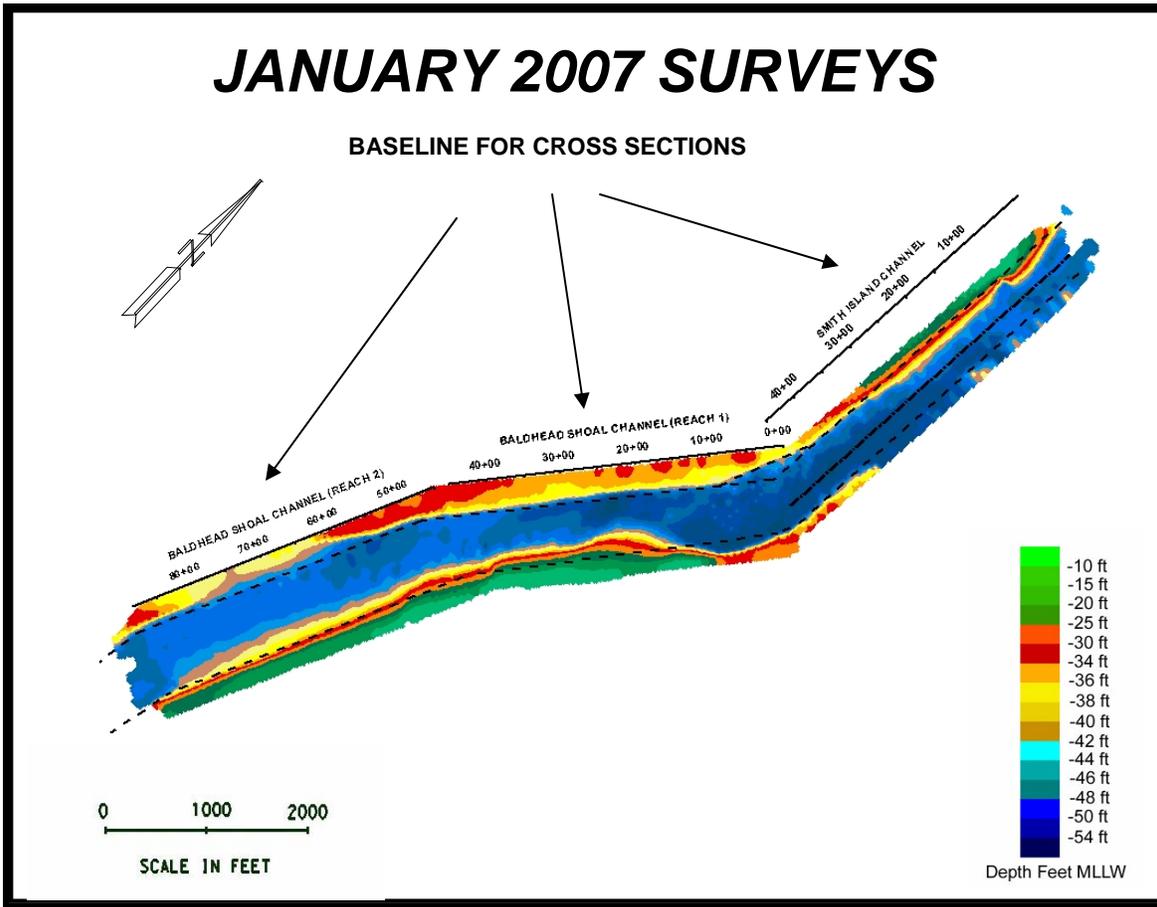


Figure 1 January 2007 Surveys

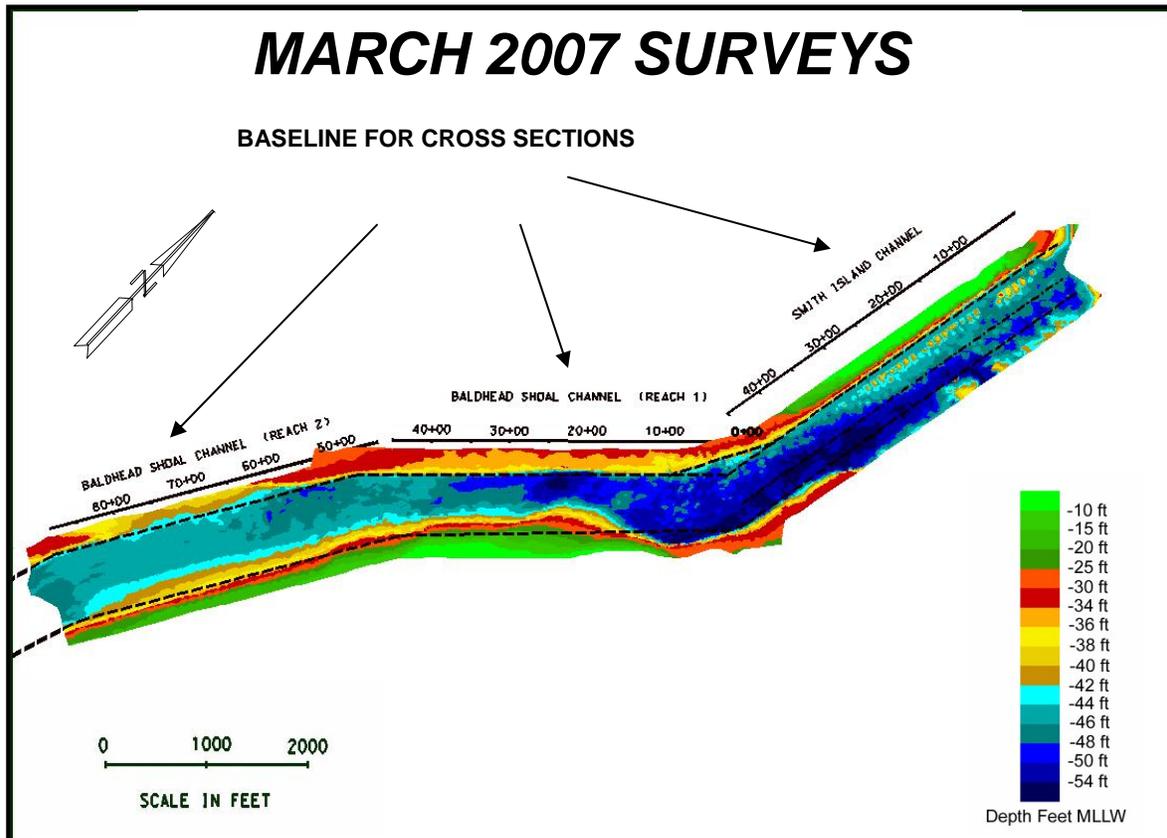


Figure 2 March 2007 Surveys

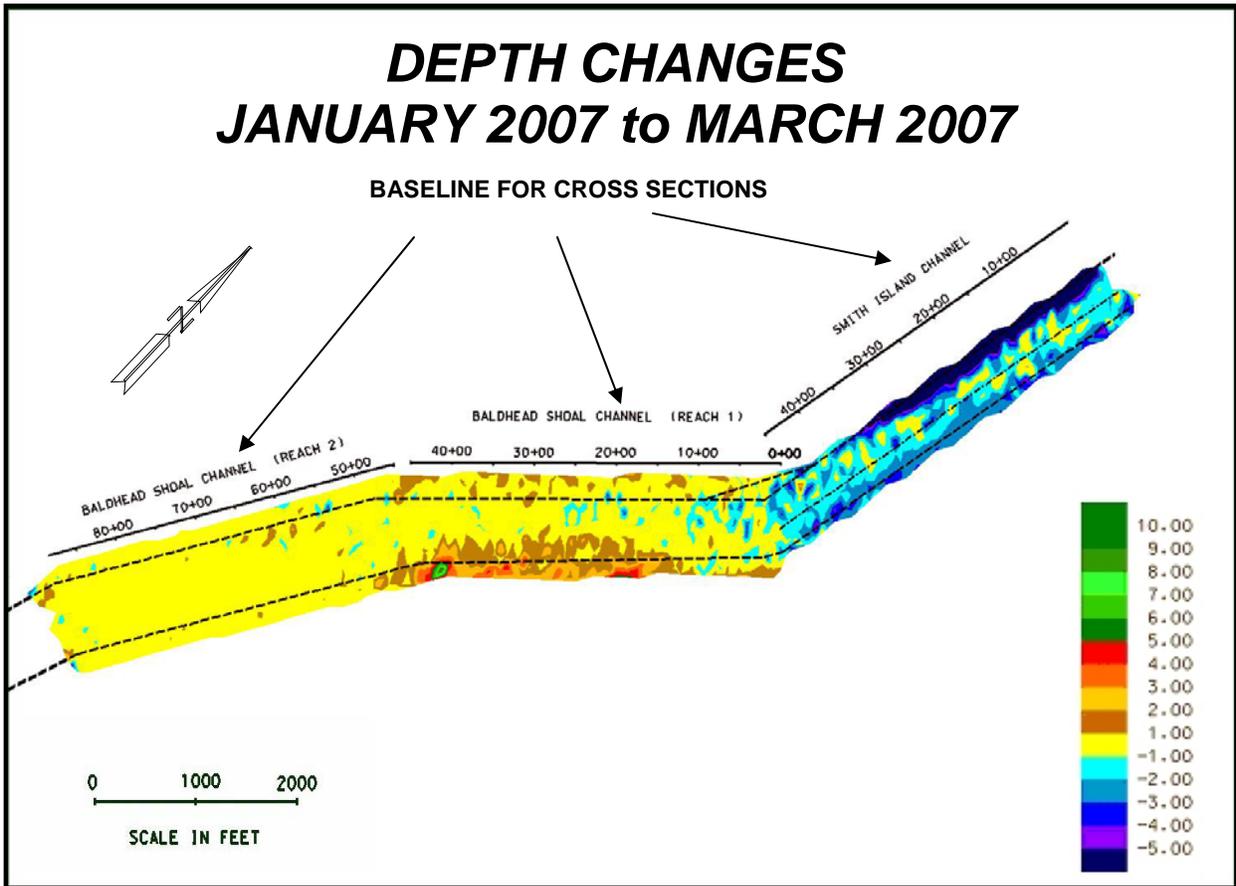


Figure 3 January 07 to March 2007 Depth Changes

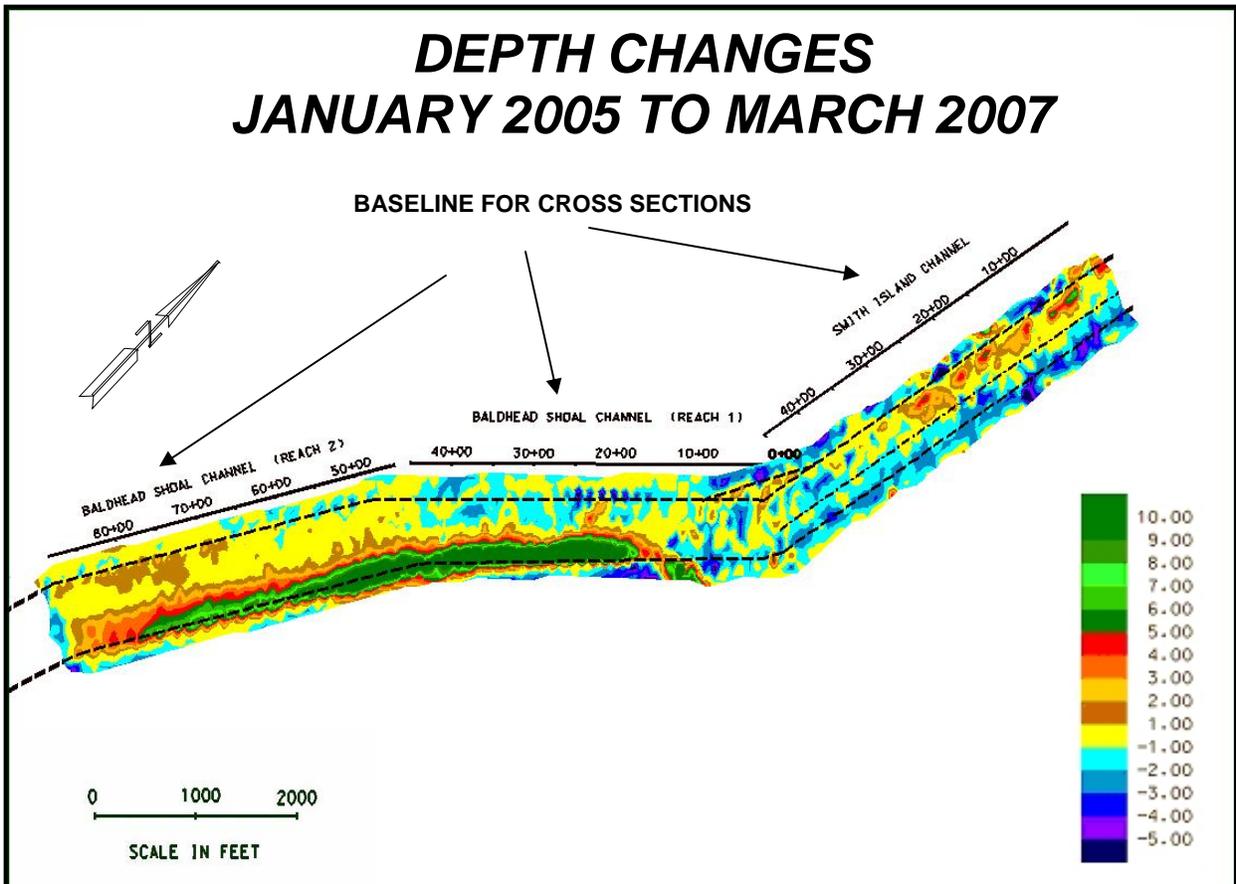


Figure 4 January 05 to March 07 Depth Changes

SMITH ISLAND CHANNEL NAVIGABLE WIDTHS

- | | | | | |
|--------|--------|--------|--------|--------|
| Jan-05 | Mar-05 | May-05 | Jul-05 | Sep-05 |
| Oct-05 | Nov-05 | Jan-06 | Mar-06 | May-06 |
| Jul-06 | Sep-06 | Nov-06 | Jan-07 | Mar-07 |

Navigable widths are measured at -42 ft mllw

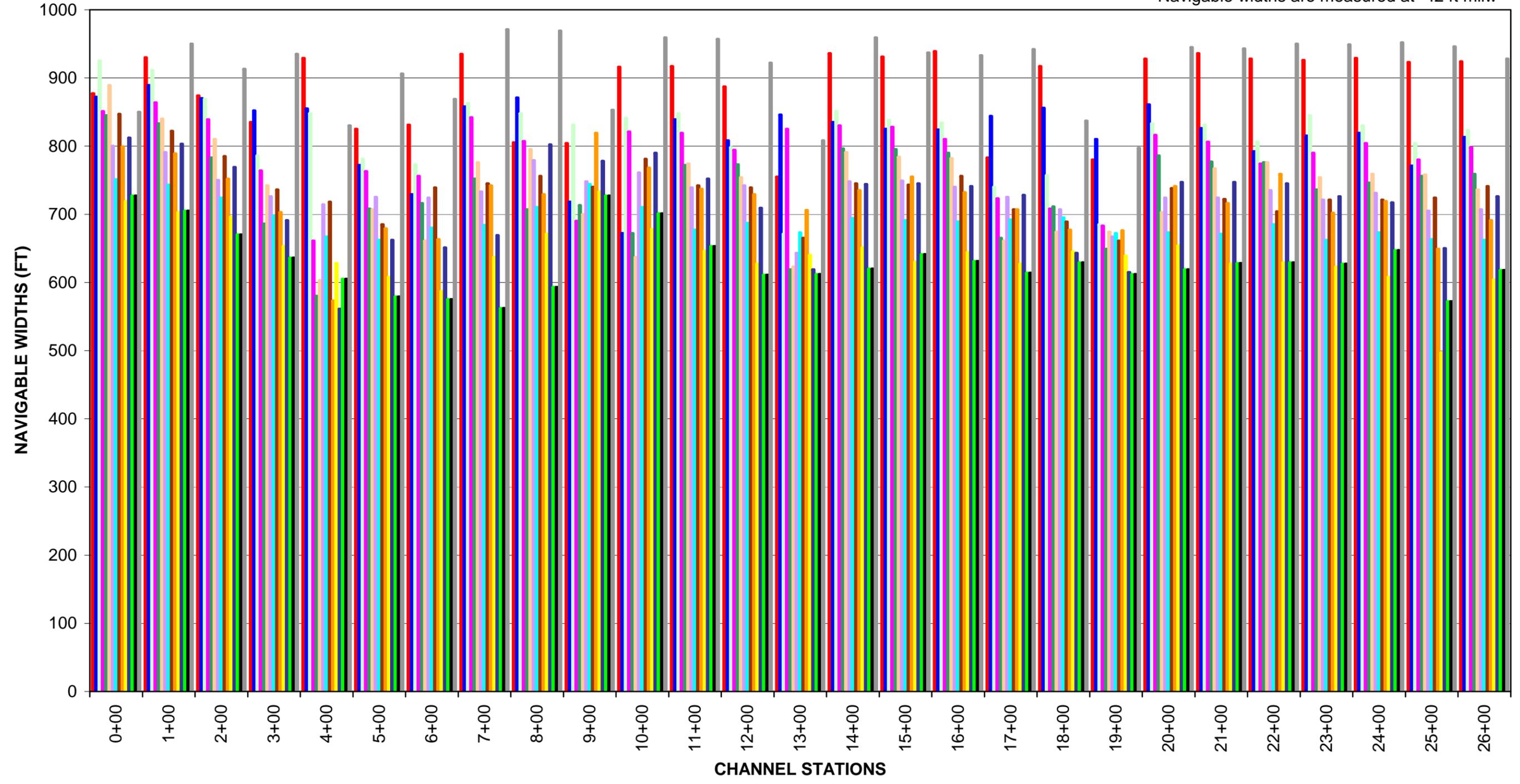


Figure 5 Smith Island Channel Navigable Widths – Stations 0+00 – 26+00

SMITH ISLAND CHANNEL NAVIGABLE WIDTHS

- | | | | | |
|--------|--------|--------|--------|--------|
| Jan-05 | Mar-05 | May-05 | Jul-05 | Sep-05 |
| Oct-05 | Nov-05 | Jan-06 | Mar-06 | May-06 |
| Jul-06 | Sep_06 | Nov-06 | Jan-07 | Mar-07 |

Navigable widths are measured at -42 ft mllw

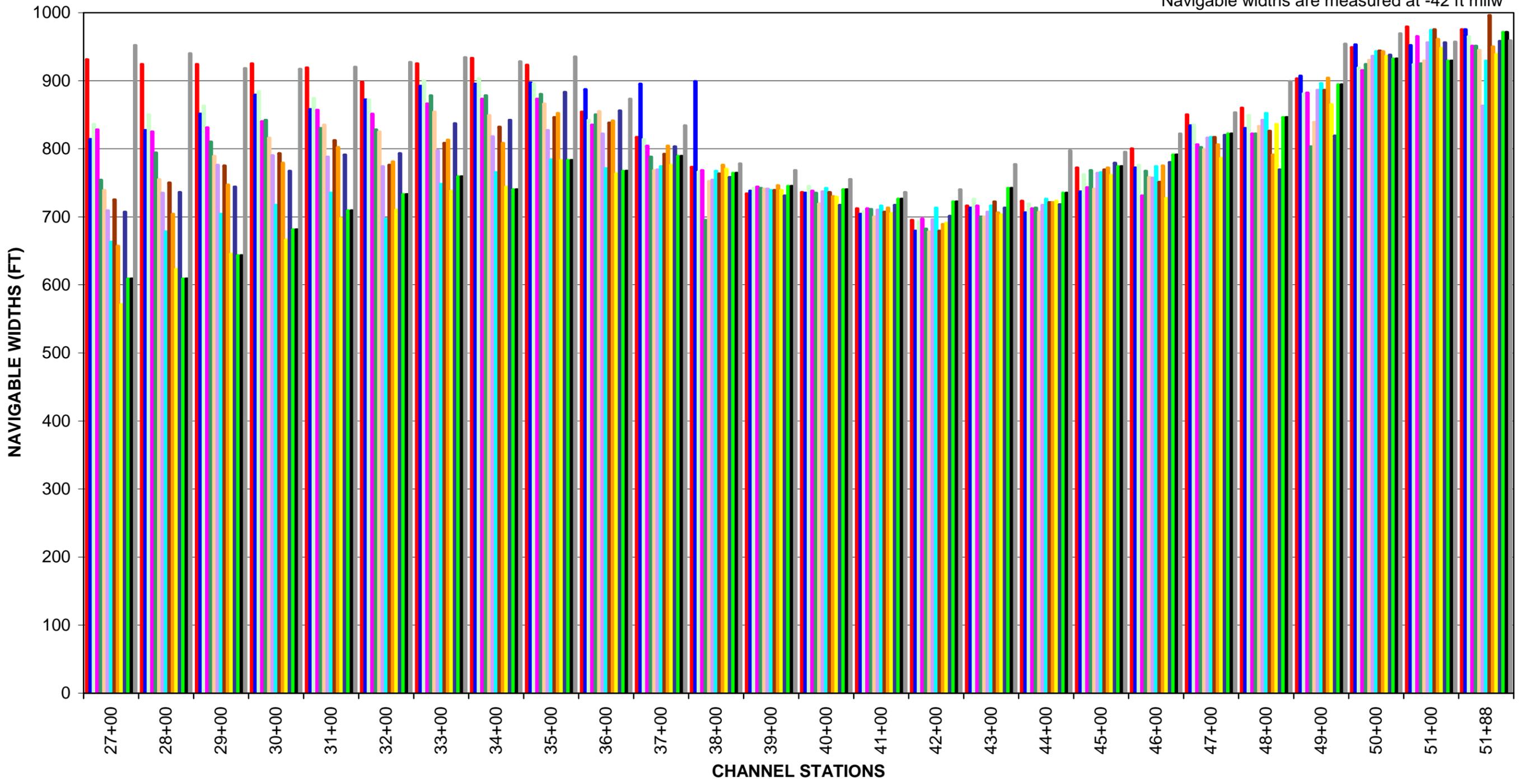


Figure 6 Smith Island Channel Navigable Widths – Stations 27+00 – 51+88

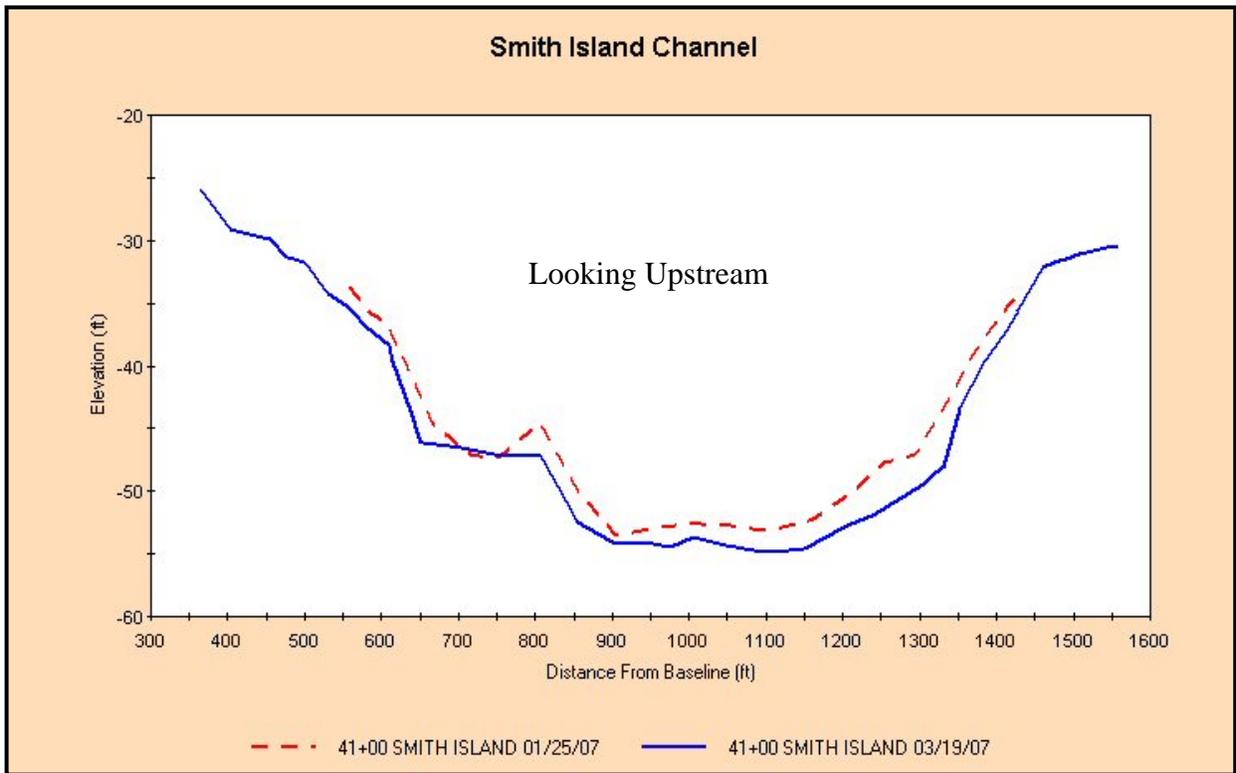


Figure 7 Smith Island Station 41+00

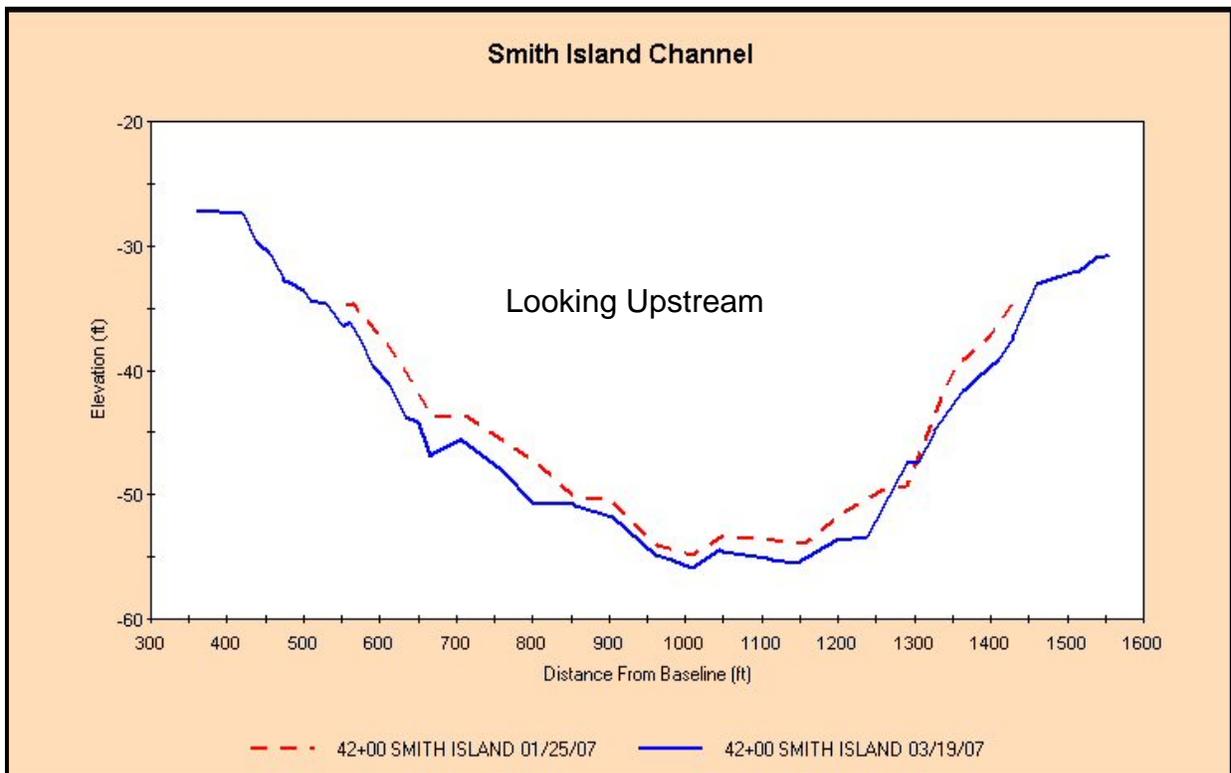


Figure 8 Smith Island Shoal Station 42+00

BALDHEAD SHOAL CHANNEL (REACH 1) NAVIGABLE WIDTHS

- | | | | | |
|--------|--------|--------|--------|--------|
| Jan-05 | Mar-05 | May-05 | Jul-05 | Sep-05 |
| Oct-05 | Nov-05 | Jan-06 | Mar-06 | May-06 |
| Jul-06 | Sep-06 | Nov-06 | Jan-07 | Mar-07 |

Navigable widths are measured at -42 ft mllw

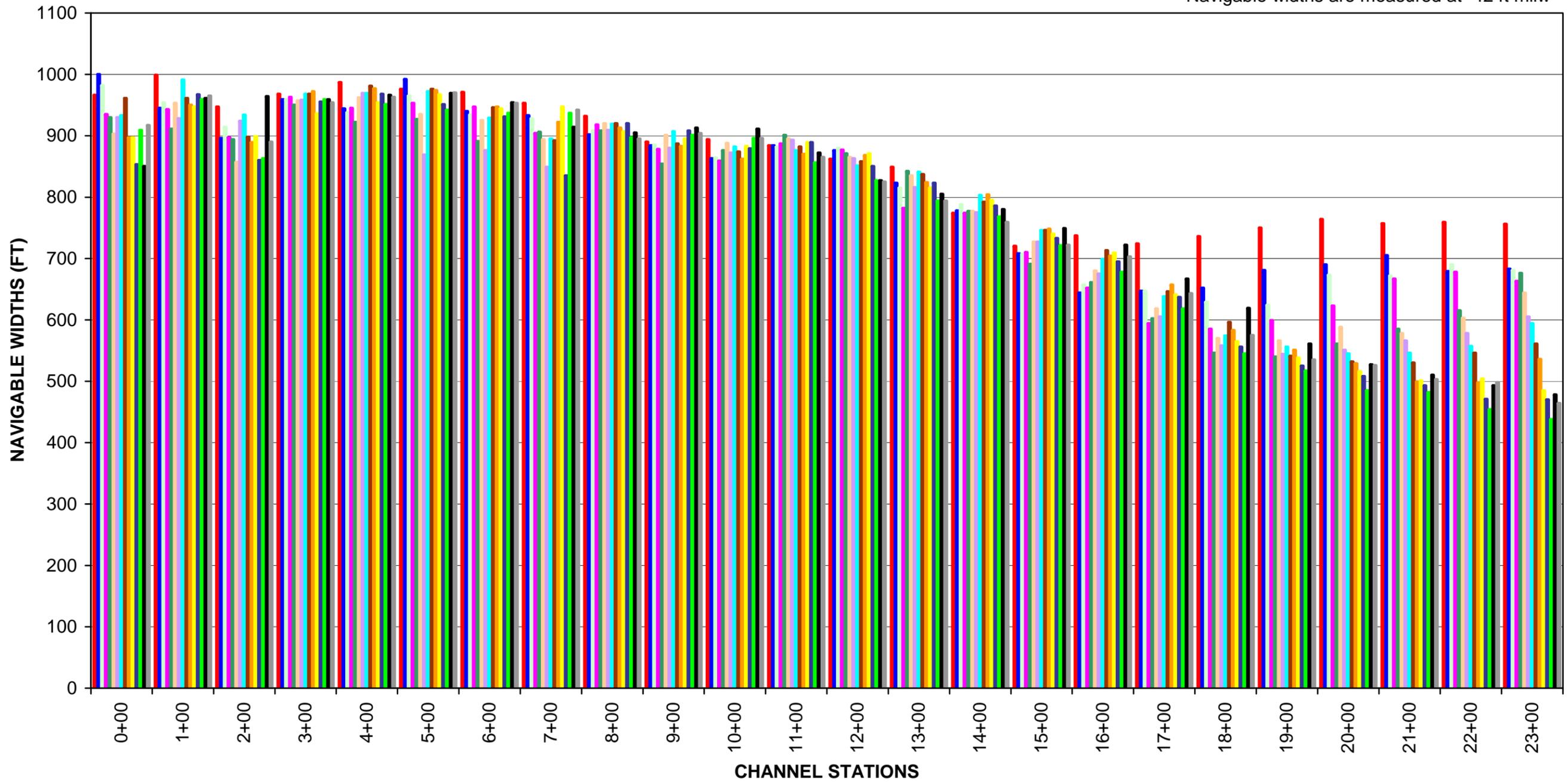


Figure 9 Baldhead Shoal Channel Reach 1 Navigable Widths – Stations 0+00 – 23+00

BALDHEAD SHOAL CHANNEL (REACH 1) NAVIGABLE WIDTHS



Navigable widths are measured at -42 ft mllw

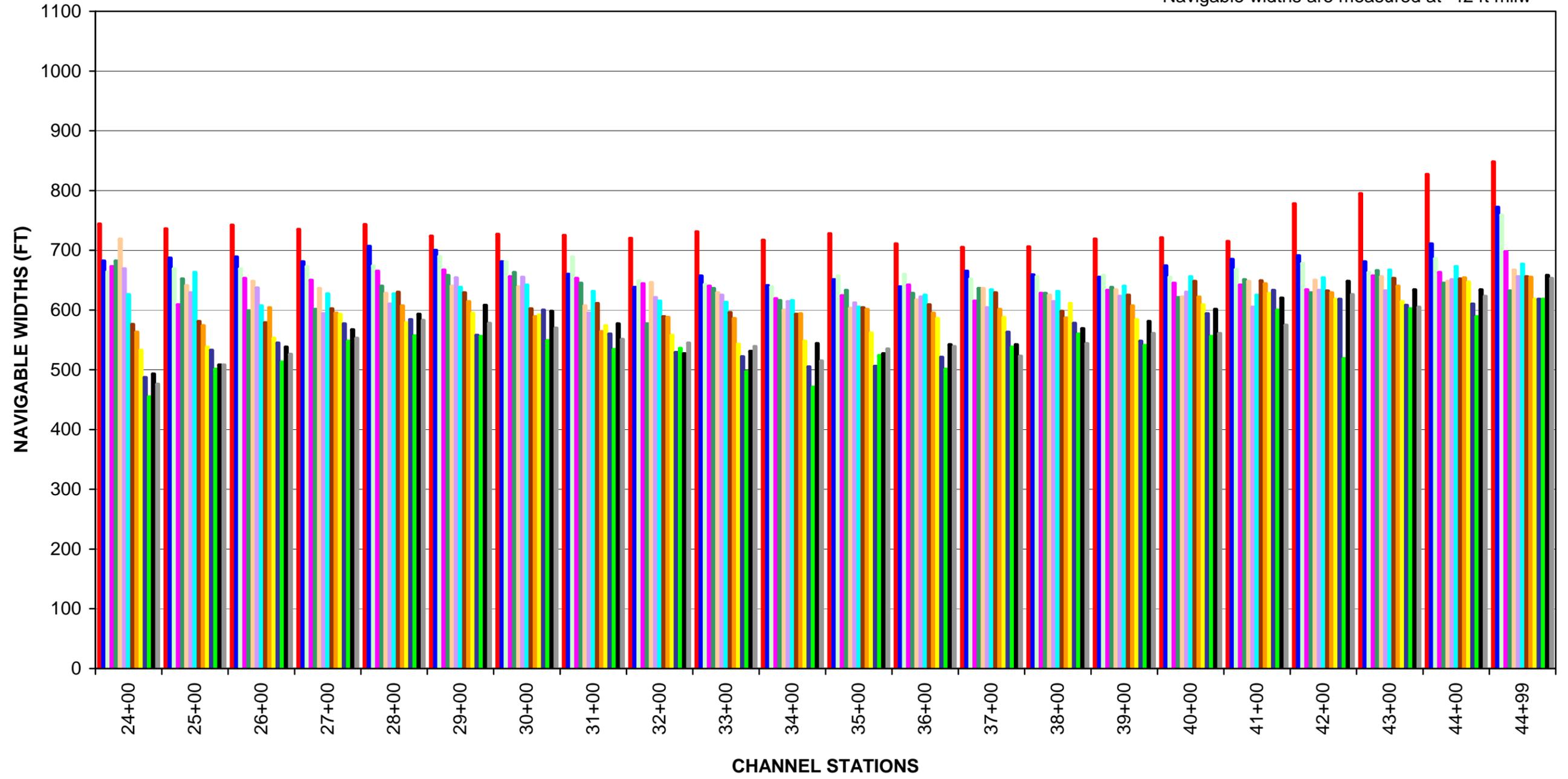


Figure 10 Baldhead Shoal Channel Reach 1 Navigable Widths – Stations 24+00 – 44+99

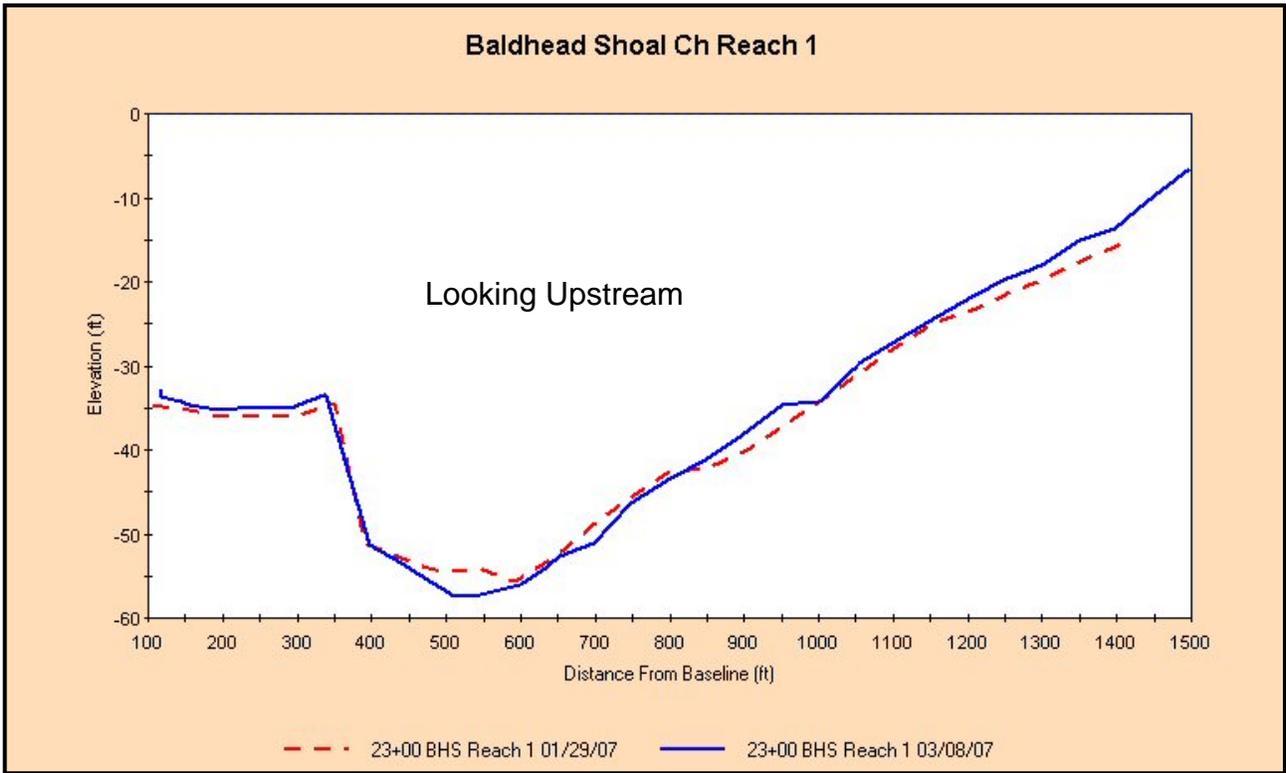


Figure 11 Baldhead Shoal Station 23+00

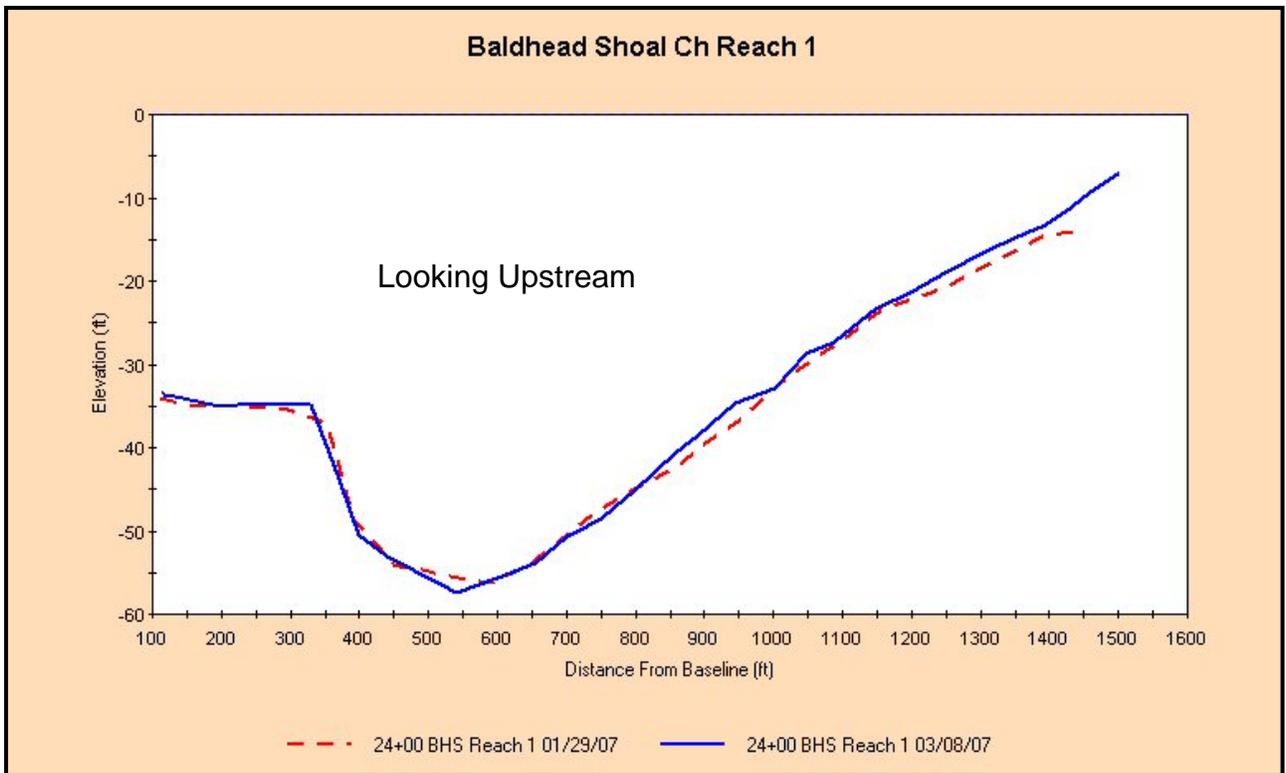


Figure 12 Baldhead Shoal Station 24+00

BALDHEAD SHOAL CHANNEL (REACH 2) NAVIGABLE WIDTHS

- | | | | | |
|--------|--------|--------|--------|--------|
| Jan-05 | Mar-05 | May-05 | Jul-05 | Sep-05 |
| Oct-05 | Nov-05 | Jan-06 | Mar-06 | May-06 |
| JUL-06 | Sep-06 | Nov-06 | Jan-07 | Mar-07 |

Navigable widths are measured at -42 ft mllw

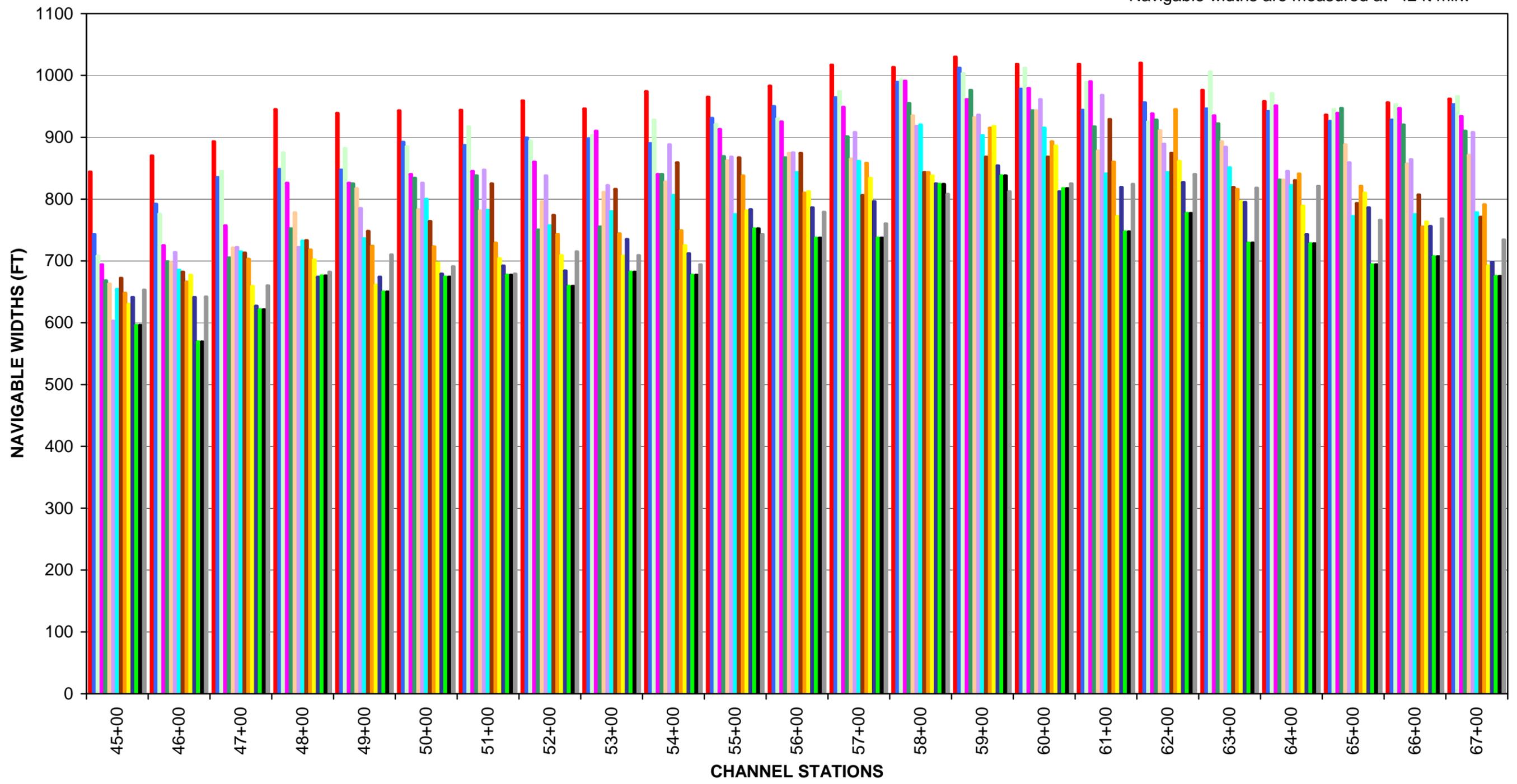


Figure 13 Baldhead Shoal Channel Reach 2 Navigable Widths – Stations 45+00 – 67+00

BALDHEAD SHOAL CHANNEL (REACH 2) NAVIGABLE WIDTHS

- | | | | | |
|--------|--------|--------|--------|--------|
| Jan-05 | Mar-05 | May-05 | Jul-05 | Sep-05 |
| Oct-05 | Nov-05 | Jan-06 | Mar-06 | May-06 |
| Jul-06 | Sep-06 | Nov-06 | Jan-07 | Mar-07 |

Navigable widths are measured at -42 ft mllw

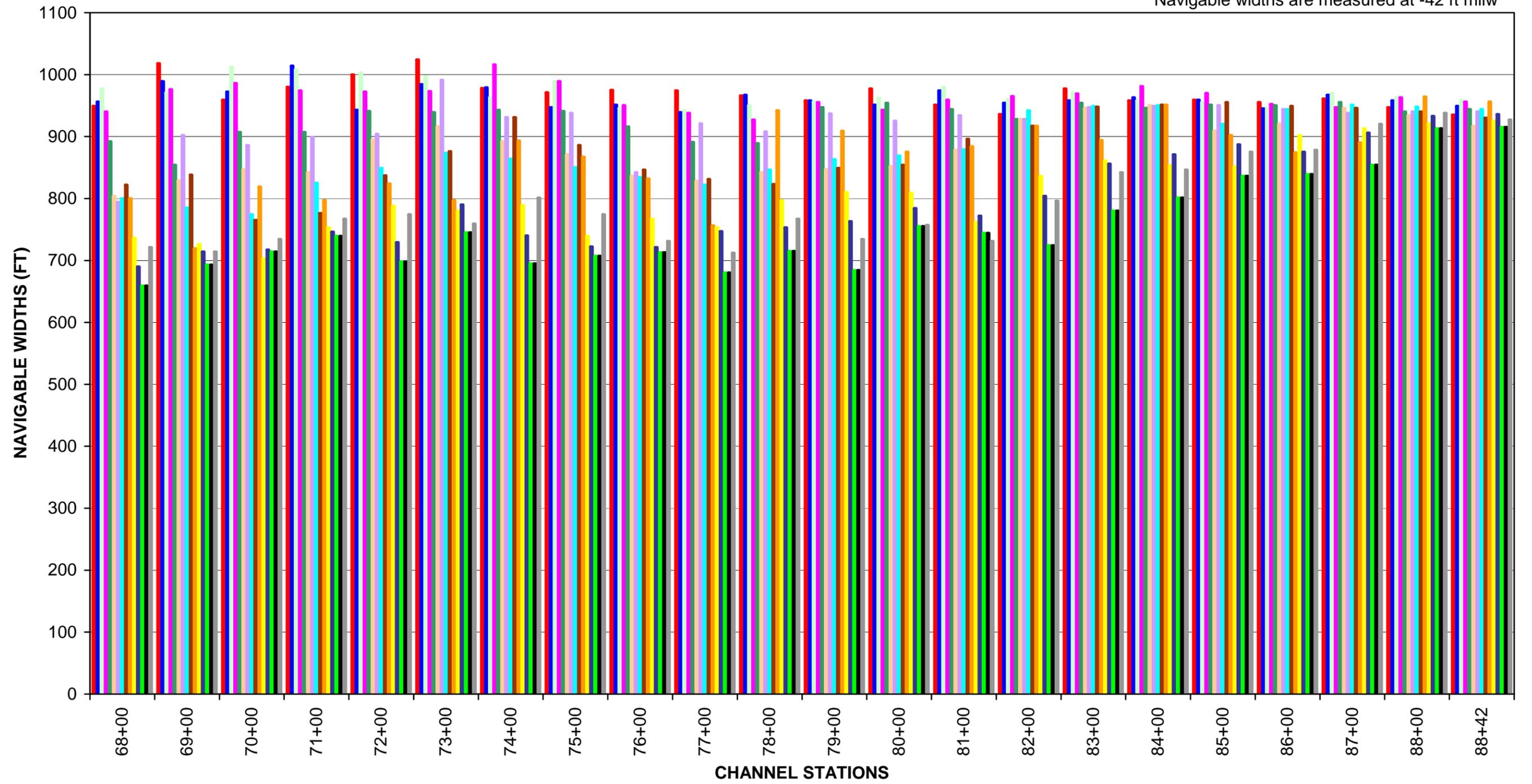


Figure 14 Baldhead Shoal Channel Reach 2 Navigable Widths – Stations 68+00 – 89+00

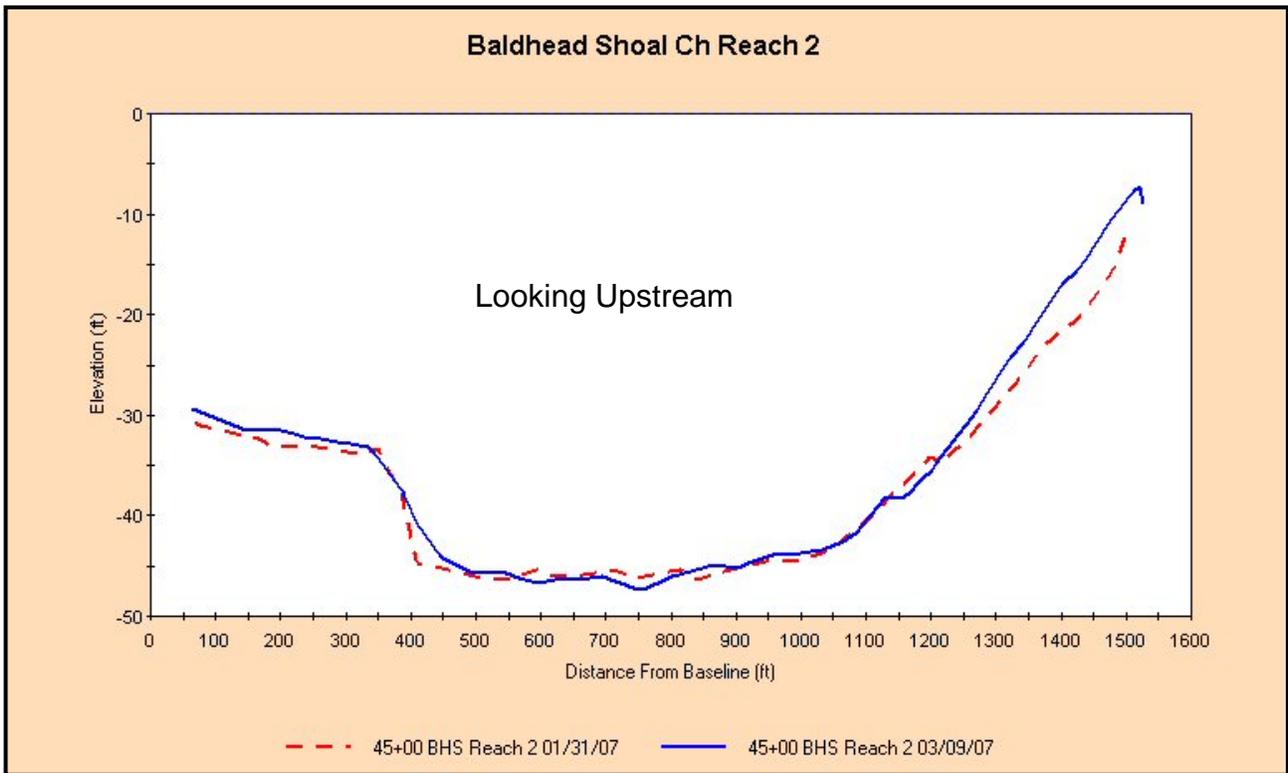


Figure 15 Baldhead Shoal Station 45+00

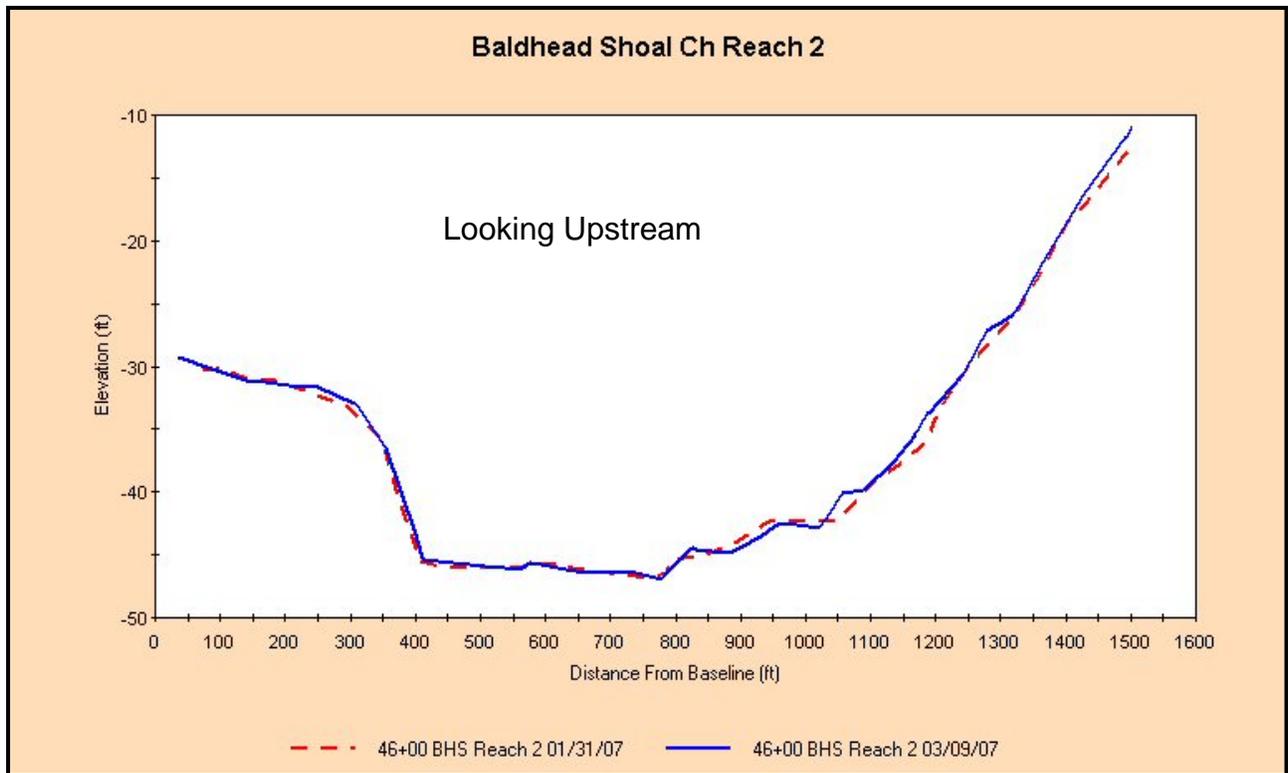


Figure 16 Baldhead Shoal Station 46+00