



Dare County
2015 Hydrographic and Topographic Survey

Dare County, NC

Duck - Kitty Hawk - Kill Devil Hills

2015 Hydrographic and Topographic Survey Report

Prepared for:
Dare County, Duck, Kitty Hawk,
and Kill Devil Hills, North Carolina

Prepared by:

CB&I

July 2015



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ABSTRACT

CB&I Coastal Planning & Engineering, Inc. (CB&I) was contracted by Dare County to provide a hydrographic and topographic survey for the support of a beach nourishment project consisting of seventy-two (72) profile stations ranging from Salt House Road in the community of Pine Island to 9th Avenue in the Town of Southern Shores. CB&I surveyors conducted the beach and hydrographic survey May 5, 2015 through May 12, 2015.

The physical monitoring in Dare County included Hydrographic and Topographic surveys of the beach and offshore areas. The monitoring data is necessary to observe and assess beach conditions to aid in the design of the beach nourishment project. Once a project is constructed, monitoring surveys are necessary to continually observe the performance of the nourishment project as well as assess effects of said project on adjacent shorelines.

The scientific monitoring processes provide information necessary to plan, design, and optimize initial beach nourishment projects and future renourishment projects. The information gathered may potentially reduce the need for, and cost of, unnecessary work as well as potentially reducing any environmental impact that may have occurred or been expected.



SURVEY METHODOLOGIES

The beach profile surveys were conducted in accordance with the Minimum Performance Standards for the U.S. Army Corps of Engineers (USACE), Engineering and Design Hydrographic Surveying Manual (EM 1110-2-1003).

This survey is in accordance with Chapter 56.1606 of the North Carolina Administrative Code (NCAC) specifications established by The North Carolina Engineering and Land Surveying Act (GS89C). In addition, all hydrographic surveying was conducted under the direct supervision of an American Congress of Surveying and Mapping (ACSM) Certified Hydrographer (CH). Included in this Hydrographic and Topographic Survey Report are twenty one (21) maps visualizing profiles, one (1) project location map, and seven (7) plan view maps. The plan view maps show reduced true position elevation data collected during the survey. The location of all published control, as well as control found and used for survey purposes, is presented in the Monument Information Report provided in **Appendix 1**.

Vertical data was collected in the North American Vertical Datum of 1988 (NAVD88). All Horizontal data is provided in the North Carolina State Plane Coordinate System, North American Datum of 1983/1990 (NAD 83/90). Profile data is presented in xyz format relative to NAVD88 in **Appendix 2**. Profile plots are provided in **Appendix 3**. Ground digital photography obtained during the survey is provided in **Appendix 4**. Copies of all field book pages are provided in **Appendix 5**.

The field survey and data collection activities encompassed four (4) phases. Brief descriptions of each survey phase, including methodologies and quality control/quality assurance procedures, are described below.

Phase One: Control Reconnaissance/Establishment/Verification

Prior to the start of the survey, reconnaissance of the monuments was conducted to confirm that survey control was in place and undisturbed. Real Time Kinematic Global Positioning System (RTK GPS) was used to locate and confirm survey control for this project. The horizontal and vertical accuracy of control data meets the accuracy requirements as set forth in the Engineering and Design Hydrographic Surveying Manual (EM 1110-2-1003). In order to achieve required accuracy, the Hydrographic and Topographic surveys were controlled using 2nd order monuments, specifically Caffey and Y254 from the National Geodetic Survey (NGS). Horizontal and vertical positioning checks were conducted at the beginning and end of each day using at least two 2nd order monuments in the project area. The RTK GPS utilizes statistical methods to ensure accuracy of RTK GPS data remains within the 95% confidence interval. The control check shots were acquired using a minimum of five (5) epochs which results in a high accuracy location. Results from control checks are displayed showing northing, easting, monument elevation, inverses, horizontal and vertical root mean square error, location description and photographs as indicated in the Monument Information Report (**Appendix 1**).



Phase Two: Beach Profiles

Upon completion of the control reconnaissance survey, beach/upland and nearshore operations were initiated. Cross-sections of the beach in the project area were surveyed using extended rod RTK GPS rovers, standard RTK GPS rovers, and differential leveling techniques. Extended rod RTK GPS rovers were used to augment RTK GPS survey capability into the nearshore. The current systems allow surveyors from CB&I to collect the entire beach profile with RTK GPS technology. Incorporation of RTK GPS into monitoring surveys greatly reduces the potential for human error during data collection and reduction.

Profiles commenced from the onshore control point and extend seaward overlapping the offshore data. Nearshore portions of the profiles were surveyed by two (2) surveyors with an Extended Rod Trimble R8 RTK GPS rover who entered the water wearing Personal Floatation Devices (PFD). Trimble TSC3 data collectors are equipped with Bluetooth technology allowing wireless communication with the GPS receiver. The rover system allows surveyors from CB&I to reach a maximum water depth of eleven (11) feet. The nearshore survey extended seaward to a point overlapping the offshore portion of the profiles by at least fifty (50) feet.

The upland portion of the survey commenced at the waterline and extended 150 feet landward of the vegetation line or until an obstacle was encountered. The upland portions of the profiles were surveyed using an RTK GPS. Elevations were taken at approximately twenty-five (25) foot intervals along each profile line, with decreased interval width for features that require additional consideration (i.e., scarp, berm, etc.). To maintain online accuracy surveyors utilized the RTK GPS feature *stakeout point*. *Stakeout point* allows surveyors to maintain the profile azimuth without relying on survey lath or conventional compass bearings allowing surveyors to maintain a three (3) foot profile line variance.

Phase Three: Nearshore/Offshore Profiles

The Nearshore/Offshore profiles were conducted at each required profile station. The profiles were obtained from the surf zone seaward to an elevation no less than negative twenty-five (-25) feet NAVD88. The landward limits of the nearshore profiles were based on a minimum overlap of fifty (50) feet beyond the seaward extent of beach profiles. Soundings were presented at a maximum of twenty-five (25) foot intervals with an Odom Hydrotrac, sufficient to provide an accurate depiction of the seafloor.

Nearshore/offshore profiles were collected using an Odom Hydrotrac single frequency sounder with digitizer on CB&I's twenty-eight (28) foot Parker survey vessel with a centrally located hull-mounted transducer. Data was digitally stored using HYPACK Software. A Trimble R8 RTK GPS and a TSS DMS 25 motion compensator was used onboard the survey vessel to provide instantaneous tide and heave corrections. Manual tide readings were taken while conducting the onshore portion of the profile to verify onboard tide readings. In order to maintain the vessel navigation along the profile lines, HYPACK navigation software was used. This software provided horizontal position to the sounding data allowing real-time review of the



data in plan view or cross-section format. HYPACK also provided navigation to the helm to minimize deviation from the online azimuth.

Horizontal and vertical positioning checks were conducted at the beginning and end of each as described in phase one (1) of the survey. The sounder was calibrated via bar-checks and a sound velocity probe at the beginning and end of the day. The DIGIBAR PRO sound velocity meter offers a fast additional calibration for sound velocity as compared to the traditional bar-check. Bar-checks were performed from a depth of five (5) feet to a depth of at least twenty-five (25) feet. Analog data showing the results of the bar-check calibration was displayed on the sounder charts at five (5) foot increments during descent of the bar. Offshore data was collected within two (2) weeks of onshore data collection for each line.

Profile data for stations D-21, D-22, and D-23 were obtained by CB&I employees in the upland areas only, at the request of the Army Corps of Engineers Field Research Facility (FRF) in Duck, North Carolina. Subsequent profile data for the nearshore and offshore environments at these locations were obtained post-survey from The FRF, which conducted their monthly survey on May 19th, 2015.

Phase Four: Data Reduction/Submittals

Upon completion of the field work, data was edited and reduced with HYPACK, Trimble Business Center, and CB&I's internal software programs. The offshore raw digital data was viewed in HYPACK and a comma delimited file was created and exported to Autodesk Civil 3D for the availability to produce plan view plots. The offshore RTK GPS tide data that was collected was compared to the manually collected RTK GPS nearshore tide data, as well as observed and predicted tides for data verification purposes. The onshore and offshore data were merged and a representative cross-section was derived for each profile line. Data obtained from the FRF was converted from meters into U.S. Survey Feet, and joined with the upland datasets from CB&I using propriety programs. The Entire Data Set was then plotted using CB&I proprietary internal programs.

The final plots were edited and reviewed with comparisons to previous years; seawalls, boardwalks, rocks, data gaps, and other features were noted. The final approved cross-sections can be viewed in **Appendix 4**.

MAP PREPARATION:



Upon completion of the surveys and data reduction, the survey maps were prepared in Autodesk Civil 3D. In order to avoid congestion, the survey maps do not show all of collected elevations but enough to give an accurate depiction of the cross sections. The survey maps display profile data and control monument locations plotted against National Agriculture Imagery Program (NAIP) 2012 aerial photographs. These aerials, the most recent available, represent the Dare County region following Hurricane Sandy. They should be used for visual reference only, and do not represent the beach conditions at the time of this survey.

GROUND DIGITAL PHOTOGRAPHY:

Surveyors from CB&I collected three (3) digital photos at a mid-beach location at each profile location. The three (3) photos included one (1) in each shore-parallel direction and one (1) landward toward the dune or upland area.



SURVEY REPORT NOTES

Survey Title: Dare County, NC 2015 Hydrographic and Topographic Survey

Prepared Date: July 2015

Prepared For: Dare County (Kill Devil Hills, Kitty Hawk, Town of Duck)

Prepared By: CB&I Coastal Planning & Engineering, Inc.

Dates of Survey: May 5, 2015 through May 12, 2015

Survey Location: Town of Duck (PI-17, PI-18, D-01 to D-35, SS-01, SS-02, Reference Points 0+00 to 329+88.80)

Notes:

1. Digital data files encompassing the following have also been provided in the following formats listed.
 - *Monument Information Report (Appendix 1)*
 - *ASCII file (profile xyz data). Digital only (Appendix 2)*
 - *Profile Plots (Appendix 3)*
 - *Ground Digital Photography (Appendix 4)*
 - *Project field book pages. Digital only (Appendix 5)*
2. The information on this map represents the results of the survey on the dates indicated and can only be considered as indicating the general conditions existing at the time.
3. The coordinates shown are in US survey feet based on the vertical and horizontal data that was collected and presented relative to the North American Vertical Datum of 1988 (NAVD88) and the North Carolina State Plane Coordinate System, North American Datum of 1983/2011 (NAD83/2011).
4. Vertical measurements are based on first order monuments Caffey, 865 1370 C Tidal, 865 1370 D Tidal, 865 1370 K Tidal, C255, and Y254 per published NGS coordinates.
5. Underground and subaqueous improvements and/or utilities were not located as part of this survey and should be field verified prior to any dredging or construction activities.



*Dare County
2015 Hydrographic and Topographic Survey*

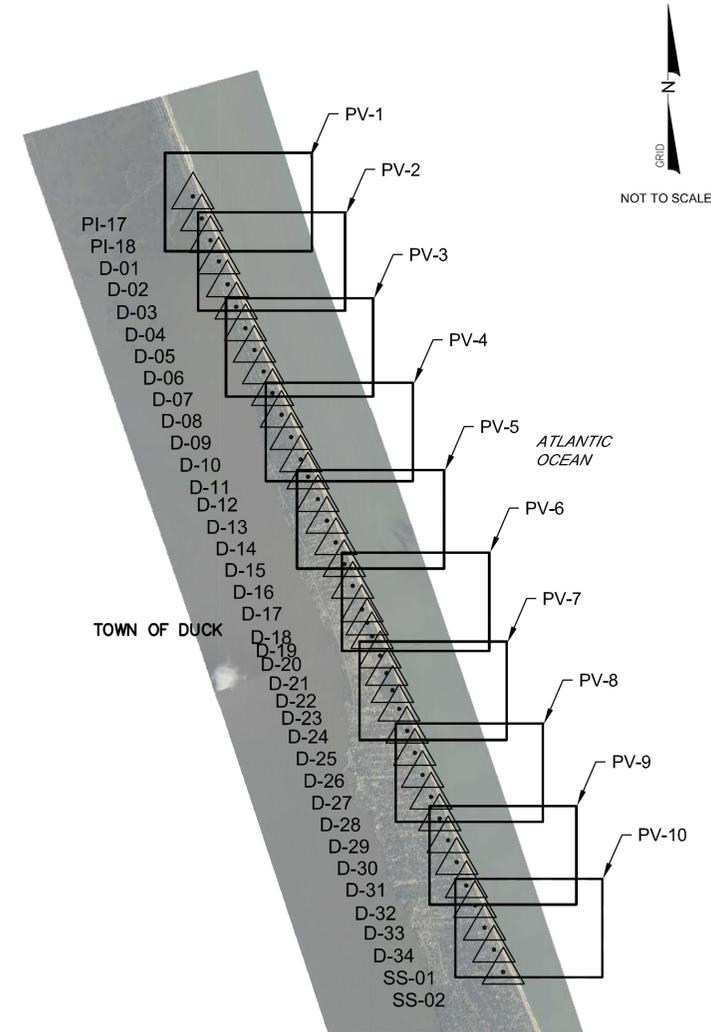
6. Refer to CB&I field book No. 481 for the onshore portion and CB&I Navbook No. 41 for the offshore survey.
7. Aids to navigation were not located during this survey.
8. Soundings were collected using an Odom Hydrotac, Single Frequency, survey grade sounder. The sounder was calibrated prior to the start of the survey following manufacturers recommended procedures.
9. This survey was conducted in Dare County for use as a Hydrographic and Topographic survey.

2015 TOWN OF DUCK PRE-CONSTRUCTION TOPOGRAPHIC AND HYDROGRAPHIC SURVEY



INDEX TO SHEETS	
1	COVER SHEET AND PROJECT LOCATION MAP
2-11	PROJECT PLAN VIEWS

CONTROL USED BY CB&I 2015					
STATION	NOTE	NORTHING	EASTING	ELEV.	AZ.
PI-17	REF. PT.	920098.86	2950657.32	N/A	70
PI-18	REF. PT.	919175.36	2951025.99	N/A	70
D-01	REF. PT.	918267.75	2951387.52	N/A	70
D-02	REF. PT.	917384.44	2951733.76	N/A	70
D-03	REF. PT.	916429.37	2952102.95	N/A	70
D-04	REF. PT.	915495.29	2952464.03	N/A	70
D-05	REF. PT.	914597.97	2952849.30	N/A	70
D-06	REF. PT.	913696.93	2953224.38	N/A	70
D-07	REF. PT.	912798.76	2953607.33	N/A	70
D-08	REF. PT.	911897.95	2953983.04	N/A	70
D-09	REF. PT.	910994.82	2954356.65	N/A	70
D-10	REF. PT.	910066.74	2954759.12	N/A	70
D-11	REF. PT.	909133.14	2955158.05	N/A	70
D-12	REF. PT.	908412.53	2955461.41	N/A	70
D-13	REF. PT.	907478.35	2955874.29	N/A	70
D-14	REF. PT.	906578.33	2956252.15	N/A	70
D-15	REF. PT.	905677.78	2956628.57	N/A	70
D-16	REF. PT.	904767.65	2956978.72	N/A	70
D-17	REF. PT.	903863.92	2957333.66	N/A	70
D-18	REF. PT.	902886.47	2957718.79	N/A	70
D-19	REF. PT.	902331.03	2957932.45	N/A	70
D-20	REF. PT.	901760.74	2958139.73	N/A	70
D-21	REF. PT.	900958.69	2958472.08	N/A	70
D-22	REF. PT.	900228.83	2958754.03	N/A	70
D-23	REF. PT.	899515.64	2958992.70	N/A	70
D-24	REF. PT.	898739.78	2959267.16	N/A	70
D-25	REF. PT.	897824.26	2959601.68	N/A	70
D-26	REF. PT.	896902.26	2959928.60	N/A	70
D-27	REF. PT.	895981.88	2960250.61	N/A	70
D-28	REF. PT.	895072.97	2960604.07	N/A	70
D-29	REF. PT.	894166.25	2960963.56	N/A	70
D-30	REF. PT.	893257.57	2961317.69	N/A	70
D-31	REF. PT.	892350.69	2961676.73	N/A	70
D-32	REF. PT.	891379.42	2962078.13	N/A	70
D-33	REF. PT.	890553.16	2962439.37	N/A	70
D-34	REF. PT.	889616.07	2962839.65	N/A	70
SS-01	REF. PT.	888697.67	2963230.41	N/A	70
SS-02	REF. PT.	887775.76	2963618.96	N/A	70



NOTE:

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- ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD) 1988.
- DATE OF AERIAL PHOTOGRAPHY: OCTOBER 31, 2012.

LEGEND:	
D-16	RANGE MONUMENT
ARCH	SECOND ORDER MONUMENT
ID	IDENTIFICATION
MON.	MONUMENT
M, DATE	MONUMENT DATE
M, ELEV	MONUMENT ELEVATION
AZ	AZIMUTH
PV	PLAN VIEW
CS	COVER SHEET
CD	CONTROL DATA
CB&I	CHICAGO BRIDGE & IRON
INC	INCORPORATED
NAVD	NORTH AMERICAN VERTICAL DATUM 1988
NAD	NORTH AMERICAN DATUM 1983/90
NC	NORTH CAROLINA
PH.	PHONE
C.O.A.	CERTIFICATE OF AUTHORIZATION
COMM.	COMMISSION
NO.	NUMBER
REF. PT.	REFERENCE POINT
U.S.	UNITED STATES OF AMERICA

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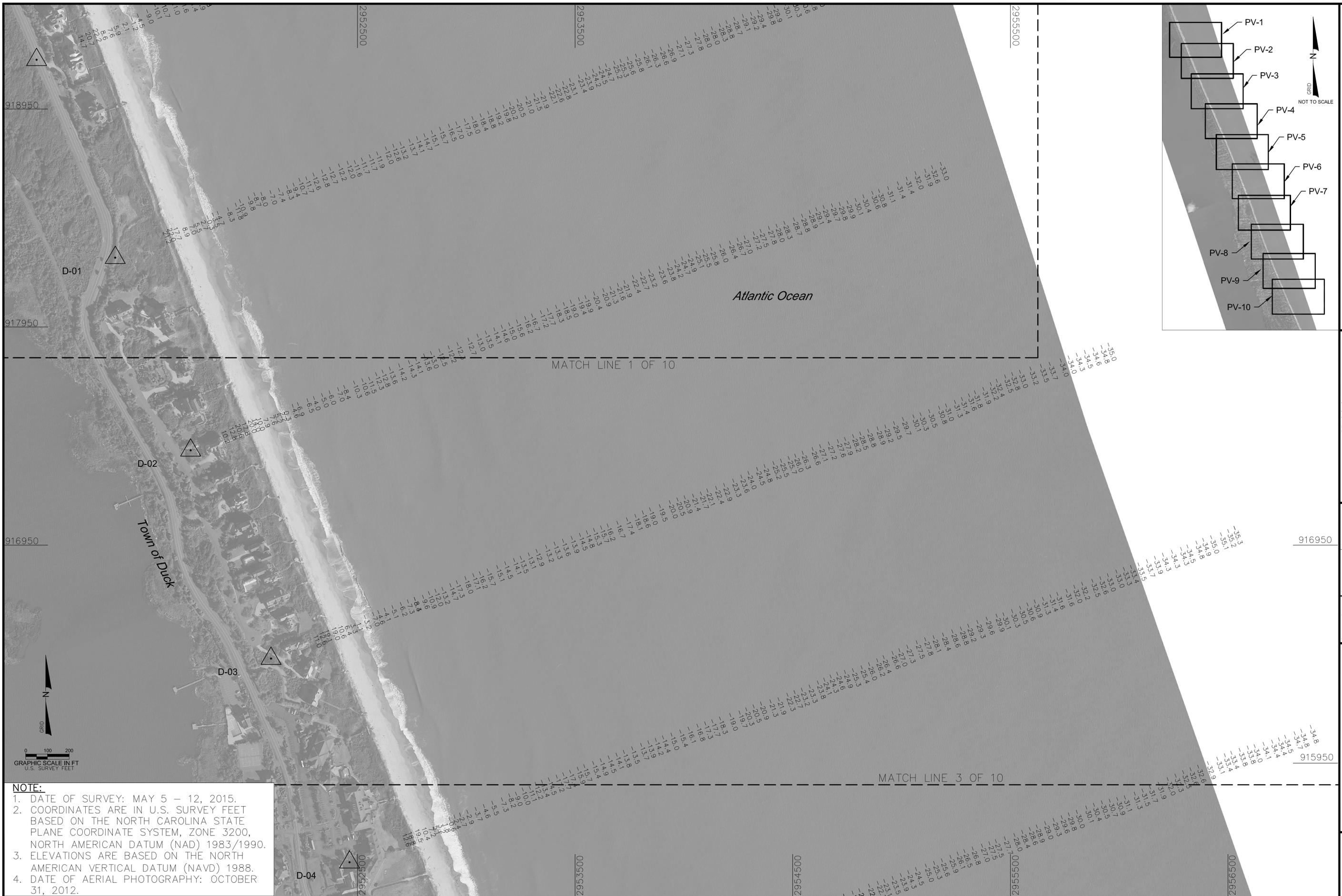
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2015 TOWN OF DUCK
 PRE-CONSTRUCTION
 TOPOGRAPHIC AND HYDROGRAPHIC SURVEY

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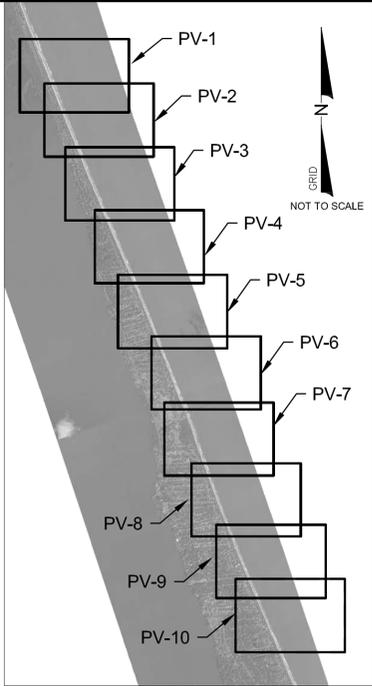
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SHEET 1 OF 11



NOTE:

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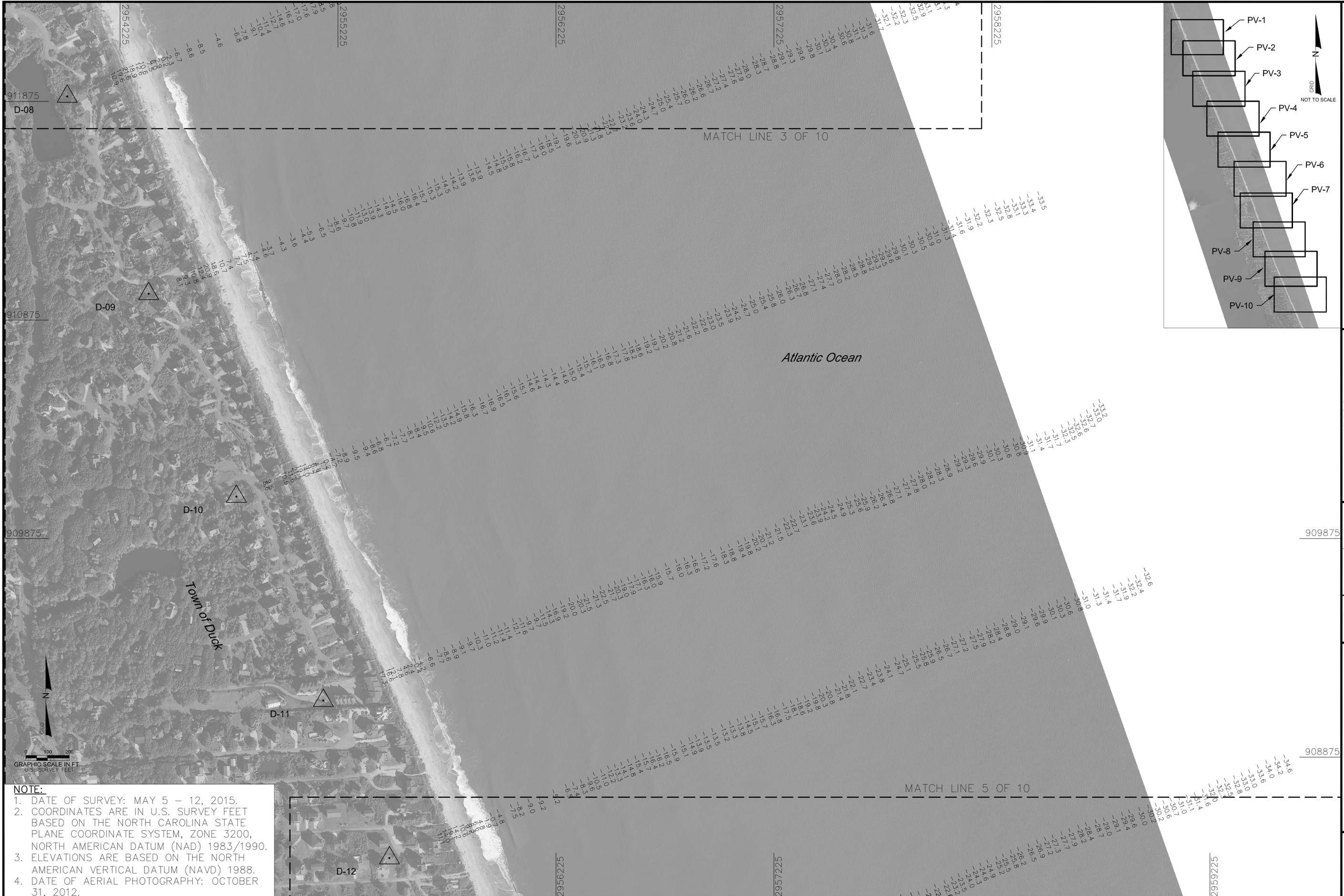
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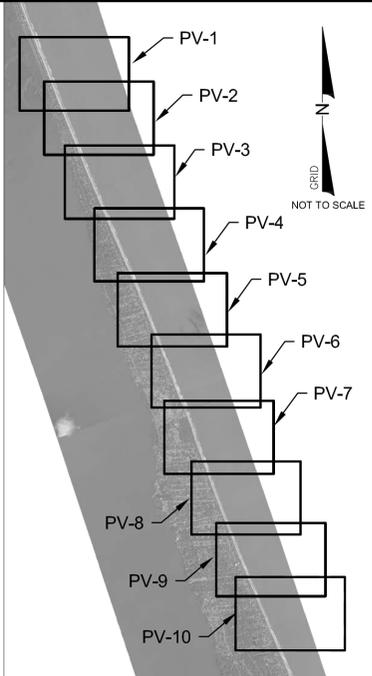
2015 TOWN OF DUCK
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PV-2
 SHEET 3 OF 11



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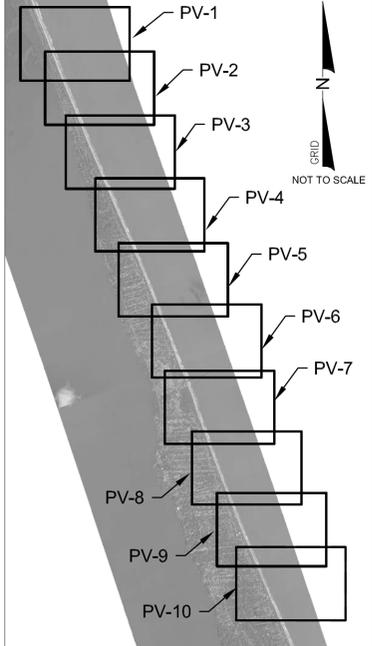
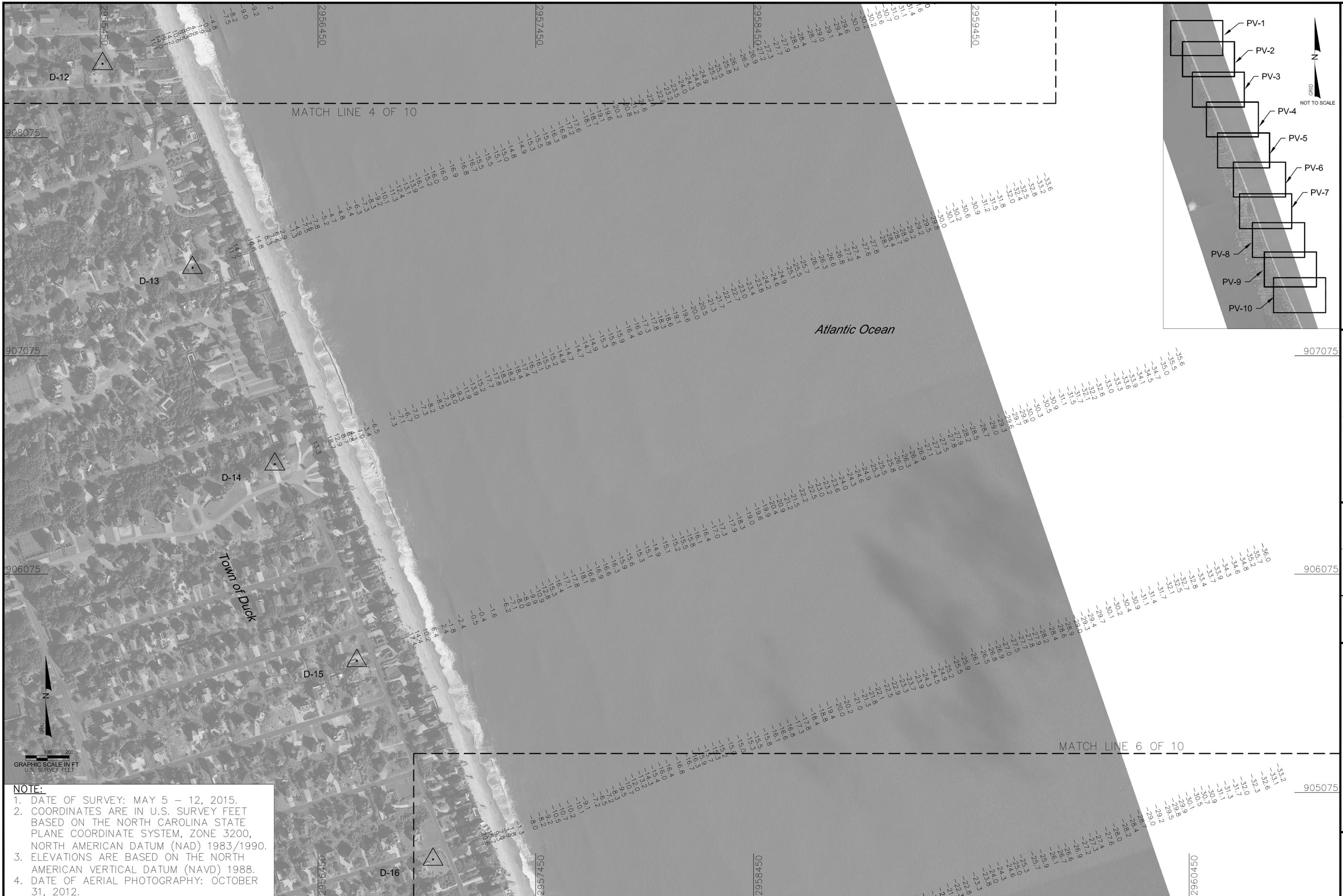
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2015 TOWN OF DUCK
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 SHEET 5 OF 11



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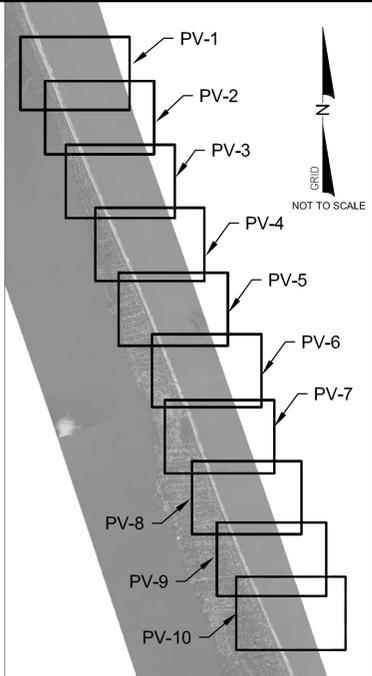
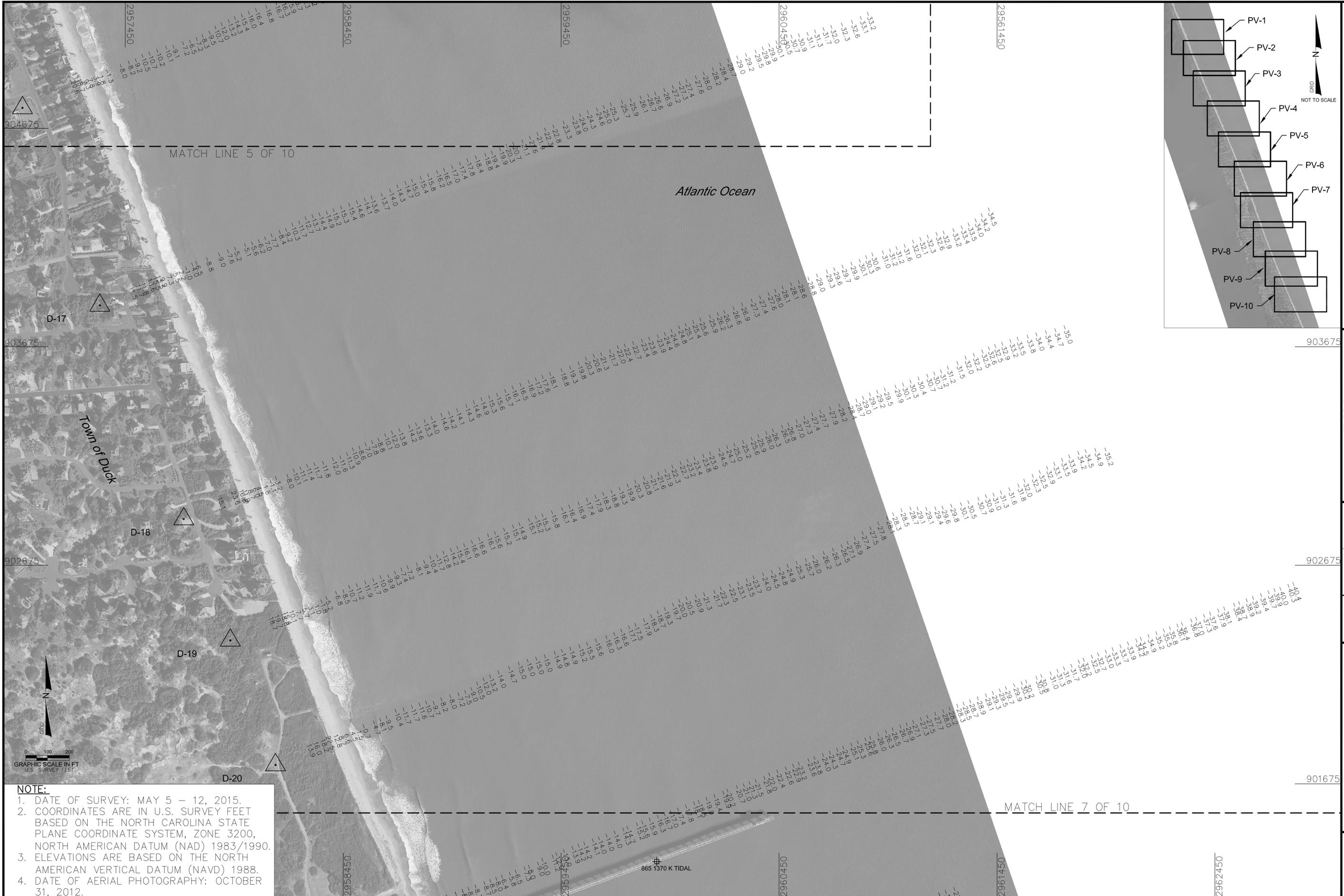
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2015 TOWN OF DUCK
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PV-5
 SHEET 6 OF 11



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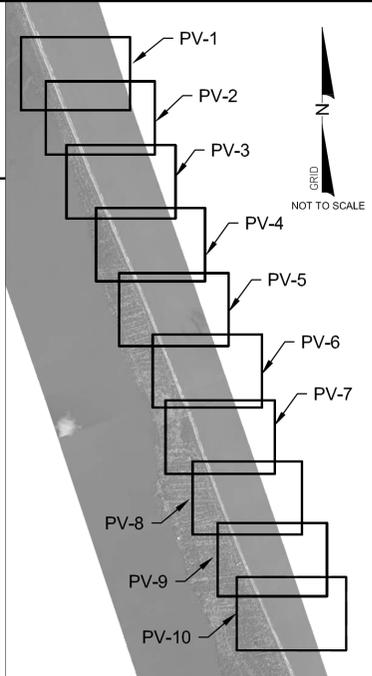
2015 TOWN OF DUCK
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PV-6
 SHEET 7 OF 11



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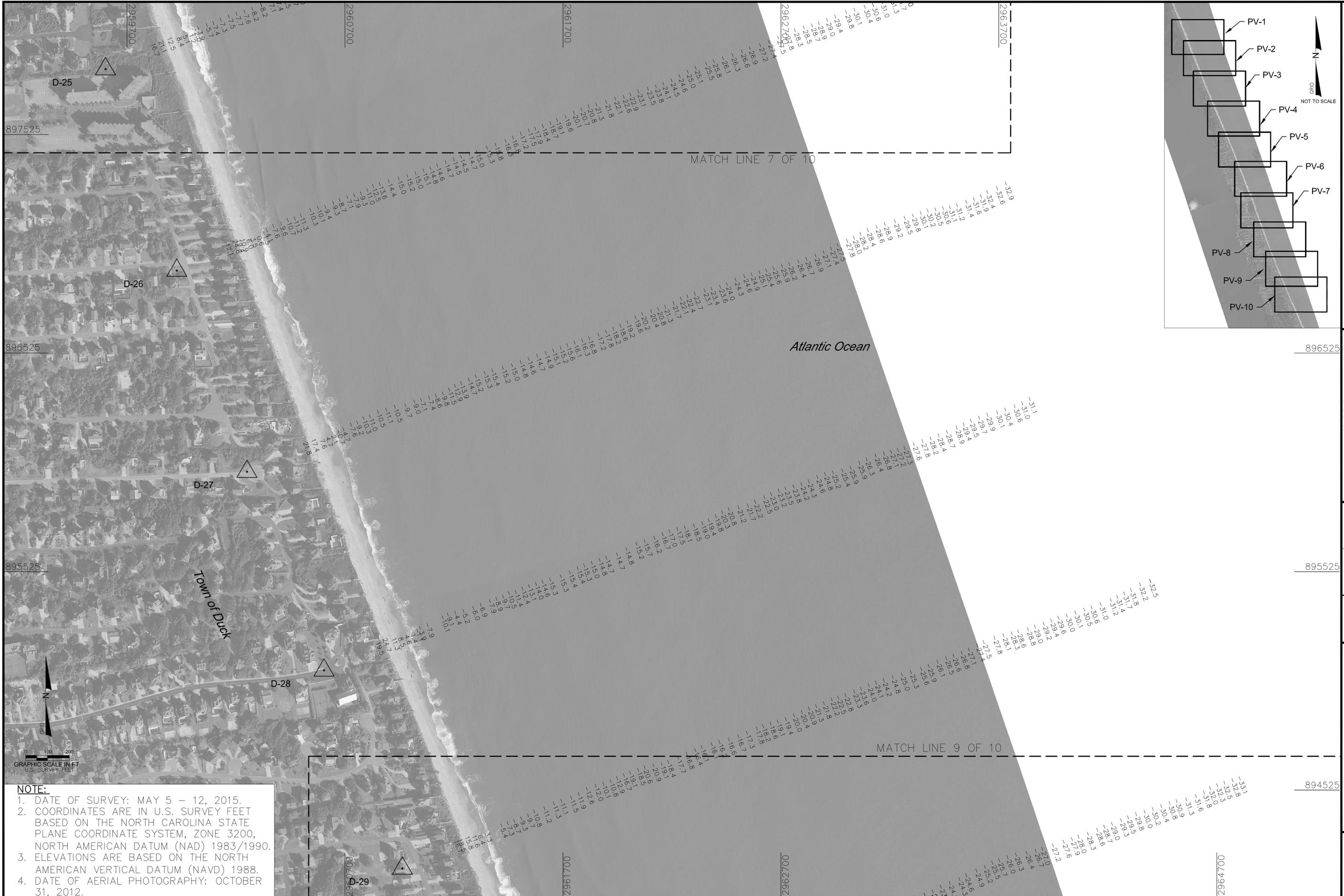
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2015 TOWN OF DUCK
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DRAWING NO.
PV-7
 SHEET 8 OF 11



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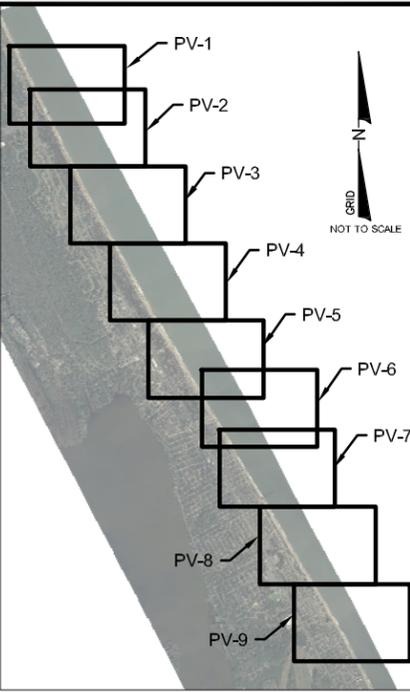
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2015 TOWN OF DUCK
 PRE-CONSTRUCTION
 TOPOGRAPHIC AND HYDROGRAPHIC SURVEY

DRAWING NO.
PV-8
 SHEET 9 OF 11



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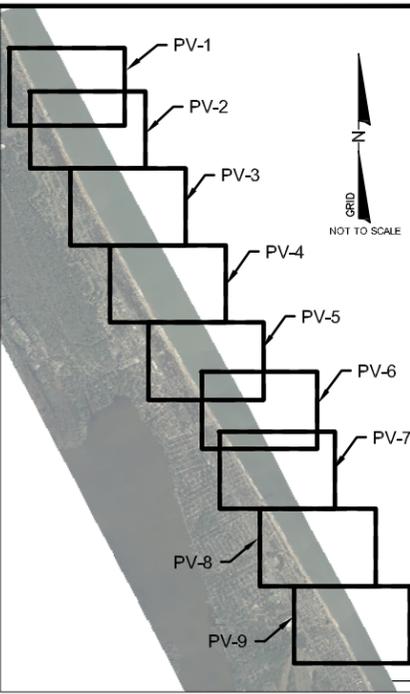
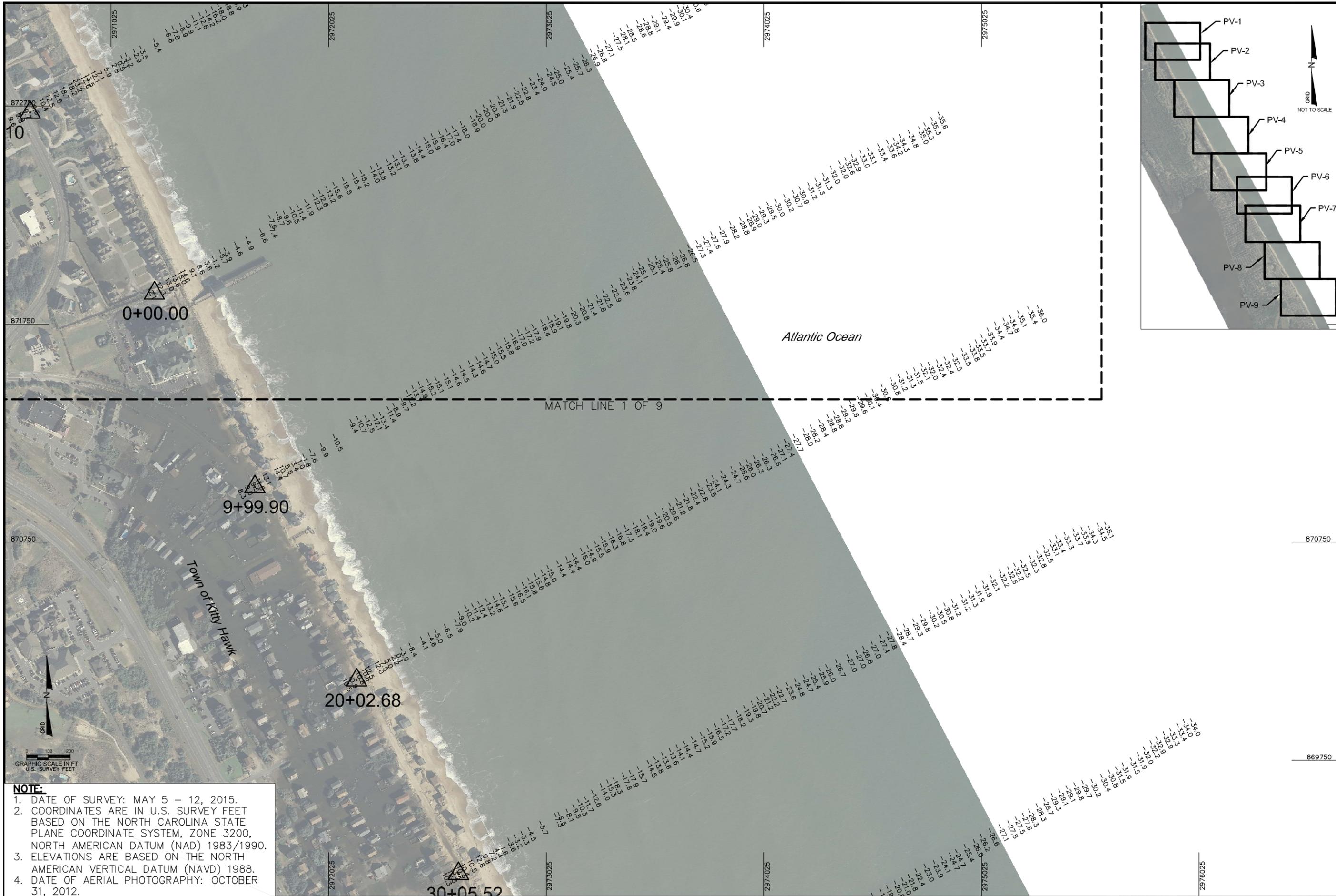
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No.	Description

Designed by: NIL	Checked by: NIL
Drawn by: C.J.W.	Reviewed by: AMB
Date: 05/20/15	Submitted by: NIL
Proj. Scales: AS NOTED	Comm. No.:
	154521

Reference Files:
 2015 KILL DEVIL HILLS AND KITTY HAWK
 PRE-CONSTRUCTION
 TOPOGRAPHIC AND HYDROGRAPHIC SURVEY

DRAWING NO.
PV-1
 SHEET 2 OF 10



NOTE:

1. DATE OF SURVEY: MAY 5 – 12, 2015.
2. COORDINATES ARE IN U.S. SURVEY FEET BASED ON THE NORTH CAROLINA STATE PLANE COORDINATE SYSTEM, ZONE 3200, NORTH AMERICAN DATUM (NAD) 1983/1990.
3. ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD) 1988.
4. DATE OF AERIAL PHOTOGRAPHY: OCTOBER 31, 2012.

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 www.CBI.com

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 FAX (561) 391-9116
 C.O.A. FL #0228
 C.O.A. LA. #2531

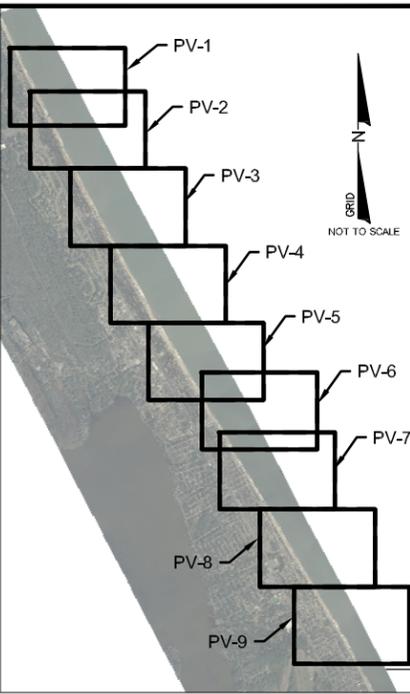
REVISED	DATE	DESCRIPTION

Checked by:	ML
Designed by:	ML
Drawn by:	CJW
Date:	05/20/15
Proj. No.:	AS NOTED
Submitted by:	AMB
Reviewed by:	AMB
Comm. No.:	154521

Reference File:
 2015 KILL DEVIL HILLS AND KITTY HAWK
 PRE-CONSTRUCTION
 TOPOGRAPHIC AND HYDROGRAPHIC SURVEY

DRAWING NO.
PV-2

SHEET 3 OF 10



NOTE:

1. DATE OF SURVEY: MAY 5 – 12, 2015.
2. COORDINATES ARE IN U.S. SURVEY FEET BASED ON THE NORTH CAROLINA STATE PLANE COORDINATE SYSTEM, ZONE 3200, NORTH AMERICAN DATUM (NAD) 1983/1990.
3. ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD) 1988.
4. DATE OF AERIAL PHOTOGRAPHY: OCTOBER 31, 2012.

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 C.O.A. LA. #2531

REVISIONS	
No.	Description

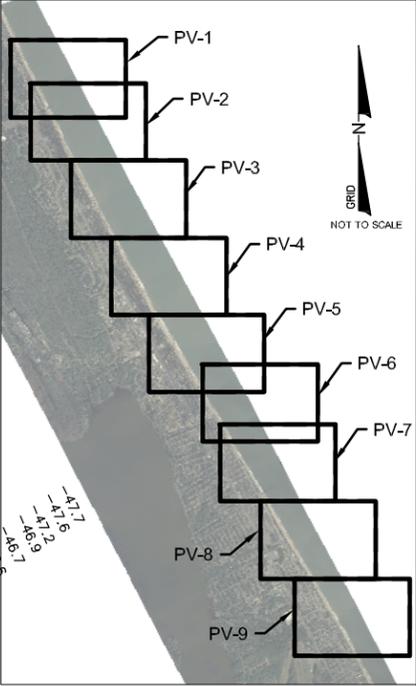
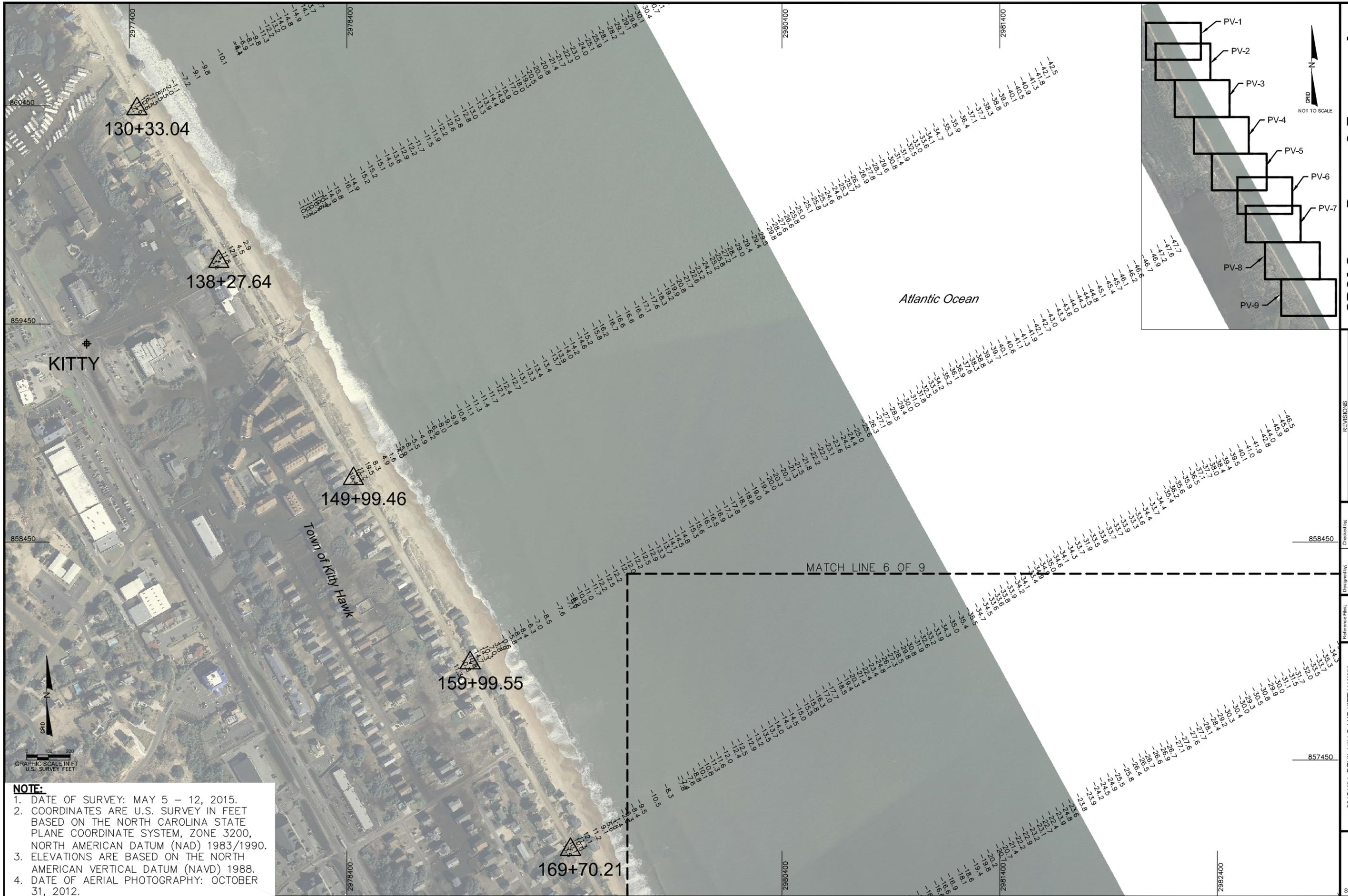
Checked by:	ML
Designed by:	ML
Drawn by:	CJW
Date:	05/20/15
Proj. No.:	AS NOTED
Revised by:	AMB
Submitted by:	ML
Comm. No.:	154521

Reference Files:

2015 KILL DEVIL HILLS AND KITTY HAWK
 PRE-CONSTRUCTION
 TOPOGRAPHIC AND HYDROGRAPHIC SURVEY

DRAWING NO.
PV-3

SHEET 4 OF 10



NOTE:
 1. DATE OF SURVEY: MAY 5 – 12, 2015.
 2. COORDINATES ARE U.S. SURVEY IN FEET BASED ON THE NORTH CAROLINA STATE PLANE COORDINATE SYSTEM, ZONE 3200, NORTH AMERICAN DATUM (NAD) 1983/1990.
 3. ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD) 1988.
 4. DATE OF AERIAL PHOTOGRAPHY: OCTOBER 31, 2012.

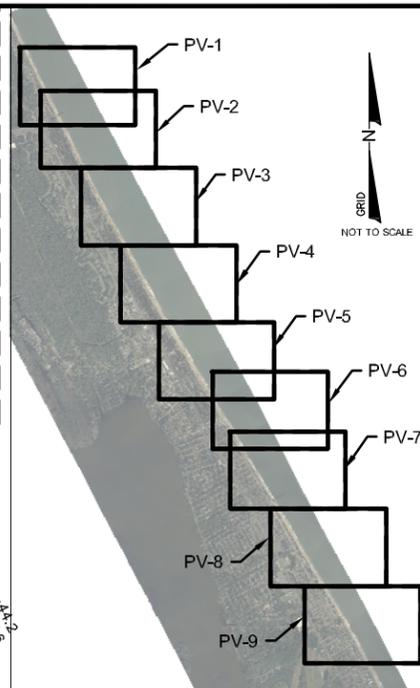
CB&I COASTAL PLANNING & ENGINEERING, INC.
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 C.O.A. FL #4028
 C.O.A. LA #2531

REVISED BY	DATE	DESCRIPTION

Designed by:	ML	Checked by:	ML
Drawn by:	CJW	Reviewed by:	AMB
Date:	05/20/15	Submitted by:	ML
Proj. No.:	AS NOTED	Comm. No.:	154521

Reference Files:
 2015 KILL DEVIL HILLS AND KITTY HAWK
 PRE-CONSTRUCTION
 TOPOGRAPHIC AND HYDROGRAPHIC SURVEY

DRAWING NO.
PV-5
 SHEET 6 OF 10



NOTE:

1. DATE OF SURVEY: MAY 5 – 12, 2015.
2. COORDINATES ARE IN U.S. SURVEY FEET BASED ON THE NORTH CAROLINA STATE PLANE COORDINATE SYSTEM, ZONE 3200, NORTH AMERICAN DATUM (NAD) 1983/1990.
3. ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD) 1988.
4. DATE OF AERIAL PHOTOGRAPHY: OCTOBER 31, 2012.

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REVISIONS	
No.	Description

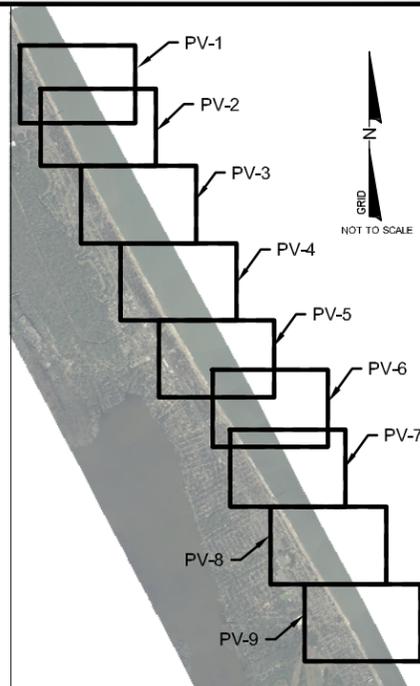
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Date:	05/20/15
Proj. Scale:	AS NOTED
Checked by:	ML
Reviewed by:	AMB
Submitted by:	ML
Comm. No.:	154521

Reference Files:

2015 KILL DEVIL HILLS AND KITTY HAWK
 PRE-CONSTRUCTION
 TOPOGRAPHIC AND HYDROGRAPHIC SURVEY

DRAWING NO.
PV-7

SHEET 8 OF 10



NOTE:
 1. DATE OF SURVEY: MAY 5 – 12, 2015.
 2. COORDINATES ARE IN U.S. SURVEY FEET BASED ON THE NORTH CAROLINA STATE PLANE COORDINATE SYSTEM, ZONE 3200, NORTH AMERICAN DATUM (NAD) 1983/1990.
 3. ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD) 1988.
 4. DATE OF AERIAL PHOTOGRAPHY: OCTOBER 31, 2012.

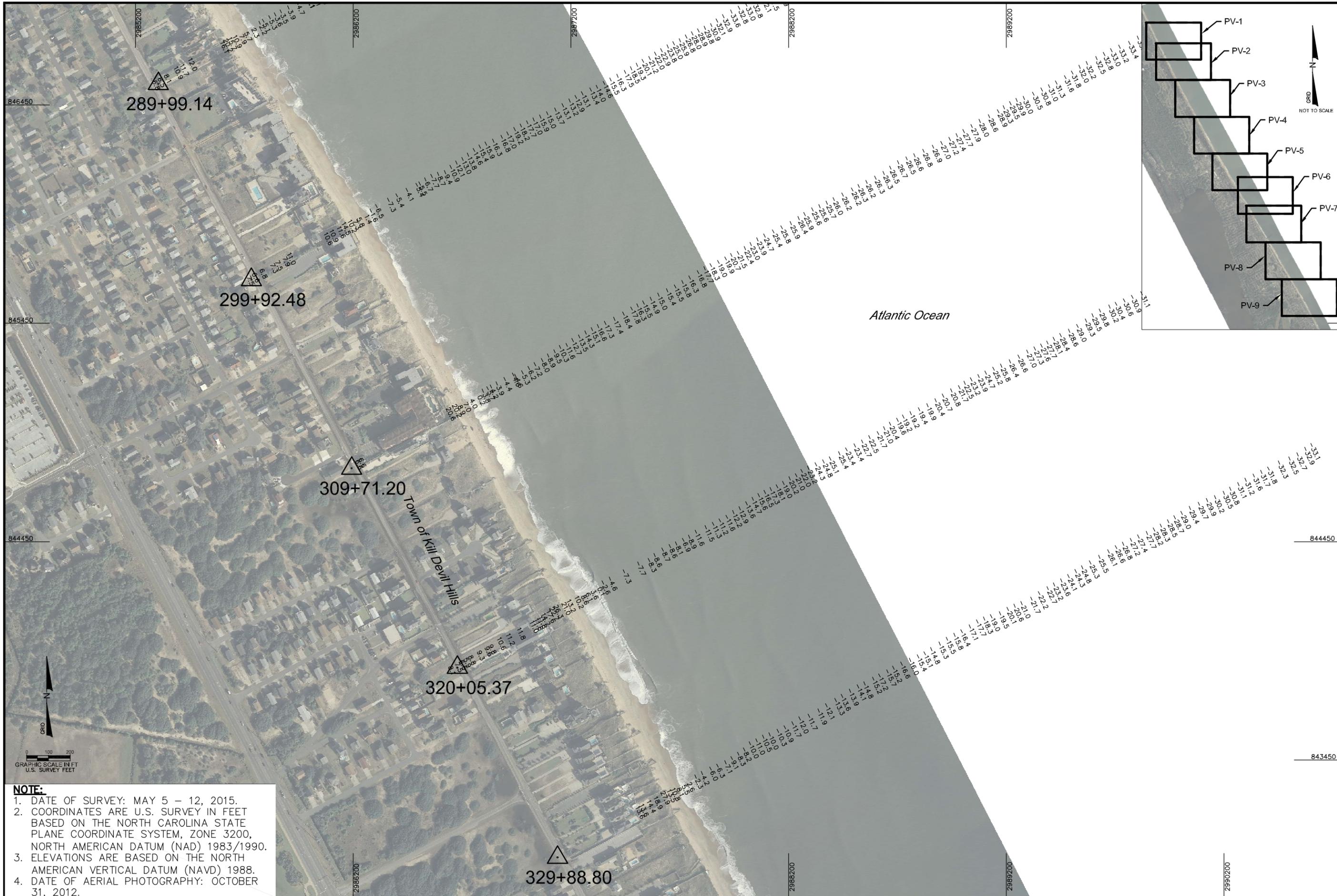
CB&I COASTAL PLANNING & ENGINEERING, INC.
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REV. NO.	DATE	DESCRIPTION

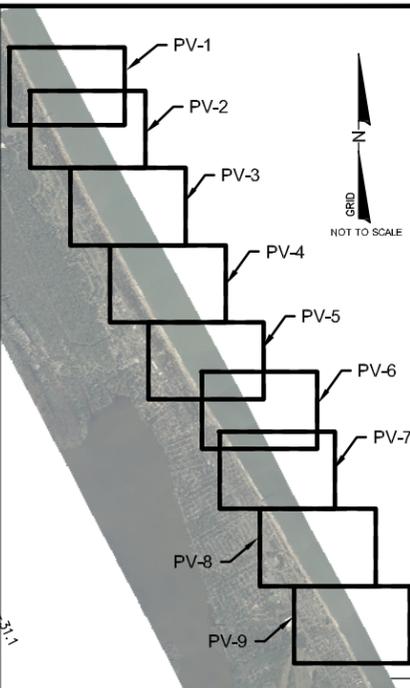
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Drawn by:	CJW
Date:	05/20/15
Proj. No.:	AS NOTED
Reviewed by:	AMB
Submitted by:	ML
Comm. No.:	154521

Reference Files:
 2015 KILL DEVIL HILLS AND KITTY HAWK
 PRE-CONSTRUCTION
 TOPOGRAPHIC AND HYDROGRAPHIC SURVEY

DRAWING NO.
PV-8
 SHEET 9 OF 10



NOTE:
 1. DATE OF SURVEY: MAY 5 – 12, 2015.
 2. COORDINATES ARE U.S. SURVEY IN FEET BASED ON THE NORTH CAROLINA STATE PLANE COORDINATE SYSTEM, ZONE 3200, NORTH AMERICAN DATUM (NAD) 1983/1990.
 3. ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD) 1988.
 4. DATE OF AERIAL PHOTOGRAPHY: OCTOBER 31, 2012.



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REVISIONS	
No.	Description

844450	Checked by: NIL	Designed by: NIL
	Reviewed by: AMB	Drawn by: CJW
	Submitted by: 	Date: 05/20/15
	Comm. No.:	Proj. No.:
	154521	AS NOTED

Reference Files:
 2015 KILL DEVIL HILLS AND KITTY HAWK
 PRE-CONSTRUCTION
 TOPOGRAPHIC AND HYDROGRAPHIC SURVEY

DRAWING NO.
PV-9
 SHEET 10 OF 10



APPENDIX OVERVIEW

1) Monument Information Report

Data collected during the surveys is entered in a spreadsheet format and compared to data provided by NGS. This comparison shows differences in northings, eastings and elevation of NGS published control, what was collected in the field, and what was used during profile reduction.

2) Profile XYZ data (digital only)

Offshore survey data was converted into CB&I files. Onshore data was reduced by standard means of reduction and also entered into CB&I format and merged with the offshore data. CB&I format is used for in-house plotting, volume computations and other engineering analyses. The CB&I formatted data was converted into xyz format. The xyz data is provided in the datum collected NAVD88 as per state standards.

3) Profile Plots

Profile plots of this survey data compared with historical profile data.

4) Ground Digital Photography

CB&I surveyors collected three (3) digital photos at a mid-beach location at each profile location. The three (3) photos included one (1) in each shore-parallel direction and one (1) landward toward the monument. In addition, wherever possible a digital photo was taken of the control identification or stamping on the monument.

5) Field Book Pages (digital only)

This appendix includes copies of the field book pages used for the survey. Refer to CB&I field book No. 481 for the onshore portion. Navigation field book No. 41 for the offshore survey.

APPENDIX 1

MONUMENT INFORMATION REPORT

APPENDIX 1A: Town of Duck Monument Information

TOWN OF DUCK STATION INFORMATION

MAY 2015

DATUMS: NAD83/90 & NAVD88

STATION	NORTHING	EASTING	ELEVATION	AZIMUTH	NOTE
PI-17	920098.86	2950657.32	N/A	70	Reference Point
PI-18	919175.36	2951025.99	N/A	70	Reference Point
D-01	918267.75	2951387.52	N/A	70	Reference Point
D-02	917384.44	2951733.76	N/A	70	Reference Point
D-03	916429.37	2952102.95	N/A	70	Reference Point
D-04	915495.29	2952464.03	N/A	70	Reference Point
D-05	914597.97	2952849.30	N/A	70	Reference Point
D-06	913696.93	2953224.38	N/A	70	Reference Point
D-07	912798.76	2953607.33	N/A	70	Reference Point
D-08	911897.95	2953983.04	N/A	70	Reference Point
D-09	910994.82	2954356.65	N/A	70	Reference Point
D-10	910066.74	2954759.12	N/A	70	Reference Point
D-11	909133.14	2955158.05	N/A	70	Reference Point
D-12	908412.53	2955461.41	N/A	70	Reference Point
D-13	907478.35	2955874.29	N/A	70	Reference Point
D-14	906578.33	2956252.15	N/A	70	Reference Point
D-15	905677.78	2956628.57	N/A	70	Reference Point
D-16	904767.65	2956978.72	N/A	70	Reference Point
D-17	903863.92	2957333.66	N/A	70	Reference Point
D-18	902886.47	2957718.79	N/A	70	Reference Point
D-19	902331.03	2957932.45	N/A	70	Reference Point
D-20	901760.74	2958139.73	N/A	70	Reference Point
D-21	900958.69	2958472.08	N/A	70	Reference Point
D-22	900228.83	2958754.03	N/A	70	Reference Point
D-23	899515.64	2958992.70	N/A	70	Reference Point
D-24	898739.78	2959267.16	N/A	70	Reference Point
D-25	897824.26	2959601.68	N/A	70	Reference Point
D-26	896902.26	2959928.60	N/A	70	Reference Point
D-27	895981.88	2960250.61	N/A	70	Reference Point
D-28	895072.97	2960604.07	N/A	70	Reference Point
D-29	894166.25	2960963.56	N/A	70	Reference Point
D-30	893257.57	2961317.69	N/A	70	Reference Point
D-31	892350.69	2961676.73	N/A	70	Reference Point
D-32	891379.42	2962078.13	N/A	70	Reference Point
D-33	890553.16	2962439.37	N/A	70	Reference Point
D-34	889616.07	2962839.65	N/A	70	Reference Point
SS-01	888697.67	2963230.41	N/A	70	Reference Point
SS-02	887775.76	2963618.96	N/A	70	Reference Point

APPENDIX 1B: Kitty Hawk/ Kill Devil Hills Monument Information

KITTY HAWK STATION INFORMATION

MAY 2015

DATUMS: NAD83/90 & NAVD88

STATION	NORTHING	EASTING	ELEVATION	AZIMUTH	NOTE
0+00.00	871890.80	2971224.20	13.72	62.6	Reference Point
9+99.90	871003.30	2971685.80	9.51	62.6	Reference Point
-10+00	872720.97	2970653.00	100	62.6	Reference Point
-20+00	873607.16	2970189.67	100	62.6	Reference Point
20+02.68	870116.70	2972153.20	10.41	62.6	Reference Point
30+05.52	869230.00	2972621.70	9.78	62.2	Reference Point
40+23.88	868329.70	2973097.50	11.46	62.2	Reference Point
50+28.29	867441.70	2973566.70	11.17	62.2	Reference Point
60+50.00	866538.40	2974044.00	9.47	62.2	Reference Point
70+02.90	865695.80	2974489.10	9.25	62.2	Reference Point
80+15.19	864800.80	2974962.00	9.51	62.2	Reference Point
89+56.91	863968.20	2975401.90	9.55	62.2	Reference Point
99+99.71	863052.20	2975900.20	9.53	61.5	Reference Point
109+99.46	862189.90	2976406.10	9.84	59.6	Reference Point
119+99.14	861327.70	2976911.90	10.55	59.6	Reference Point
130+33.04	860436.00	2977435.10	10.3	59.6	Reference Point
138+27.64	859735.48	2977811.33	13.62	59.6	Reference Point
149+99.46	858740.05	2978430.26	9.68	59.6	Reference Point
159+99.55	857895.27	2978966.59	10.64	59.6	Reference Point
169+70.21	857040.44	2979427.66	8.91	59.6	Reference Point
179+87.62	856163.07	2979942.69	9.86	59.6	Reference Point
189+87.10	855301.16	2980448.64	9.45	59.6	Reference Point

KILL DEVIL HILLS STATION INFORMATION

MAY 2015

DATUMS: NAD83/90 & NAVD88

STATION	NORTHING	EASTING	ELEVATION	AZIMUTH	NOTE
199+93.01	854433.71	2980957.84	9.31	59.58	Reference Point
209+74.44	853579.14	2981440.37	8.82	60.53	Reference Point
219+99.94	852686.23	2981944.55	9.58	60.53	Reference Point
229+83.39	851830.15	2982428.55	8.16	60.52	Reference Point
240+41.84	850908.80	2982949.45	9.03	60.52	Reference Point
249+81.53	850076.05	2983384.80	8.64	61.9	Reference Point
260+17.44	849165.95	2983879.57	6.63	61.9	Reference Point
269+49.25	848341.66	2984314.02	6.77	62.2	Reference Point
279+80.81	847429.13	2984795.03	7.03	62.2	Reference Point
289+99.14	846547.02	2985305.30	6.28	62.2	Reference Point
299+92.48	845649.70	2985733.15	6.43	62.2	Reference Point
309+71.20	844785.81	2986193.06	5.56	61.97	Reference Point
320+05.37	843872.99	2986679.03	5.57	61.97	Reference Point
329+88.80	843003.79	2987138.95	5.68	62.1	Reference Point

The following appendices and sub-appendices are available in digital format only and can be found on the accompanying CD:

APPENDIX 2: Profile XYZ Data

Sub-Appendix 2A: Town of Duck
(File: DUCK_0515_NAVD_FINAL.xyz)

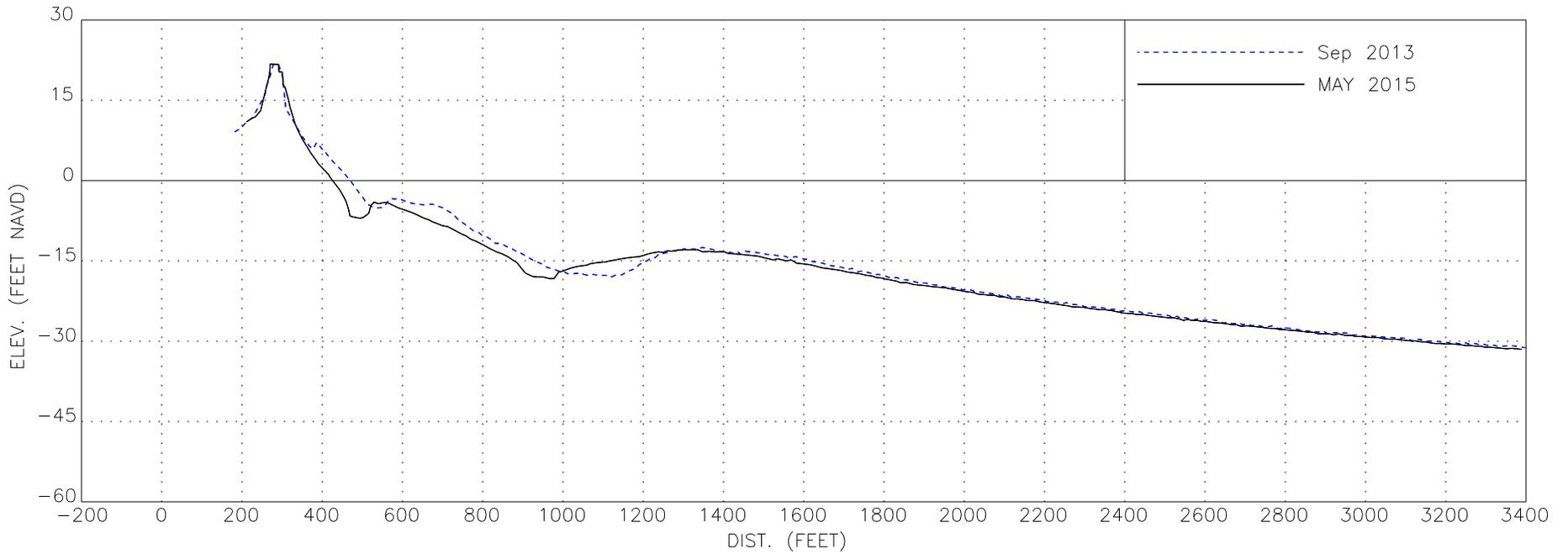
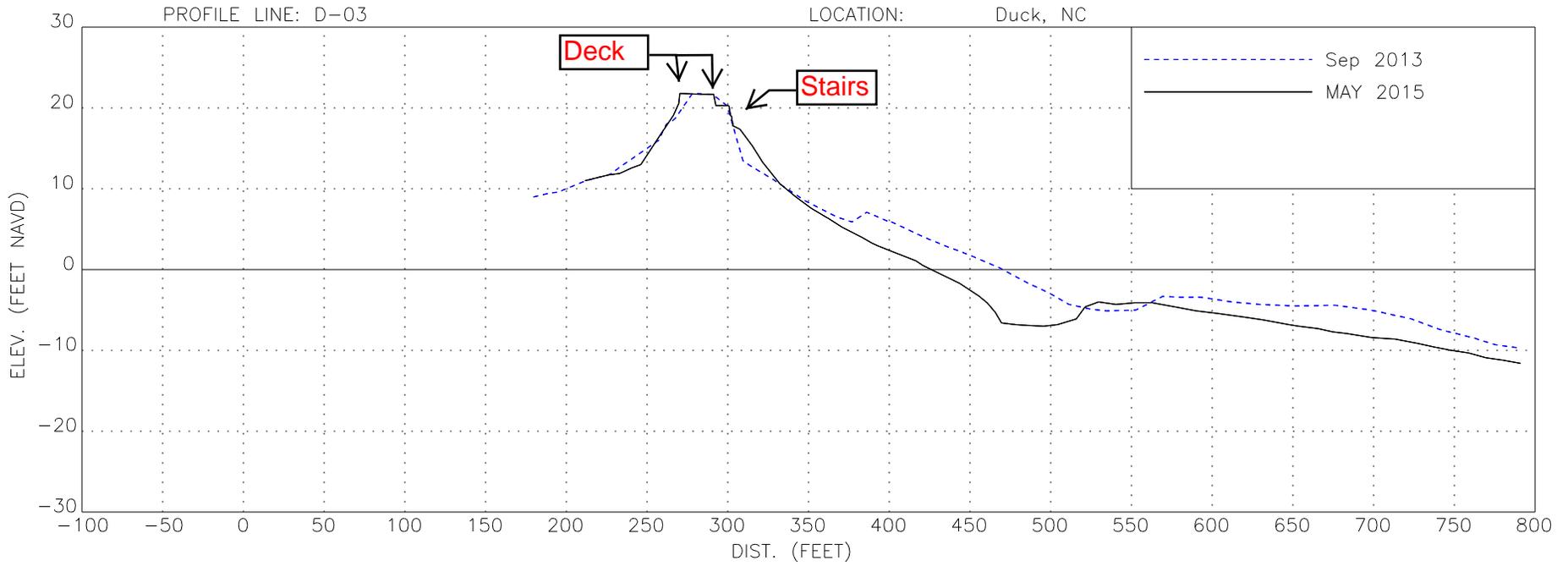
Sub-Appendix 2B: Kitty Hawk/Kill Devil Hills
(File: KDHKH_0515_NAVD_FINAL.xyz)

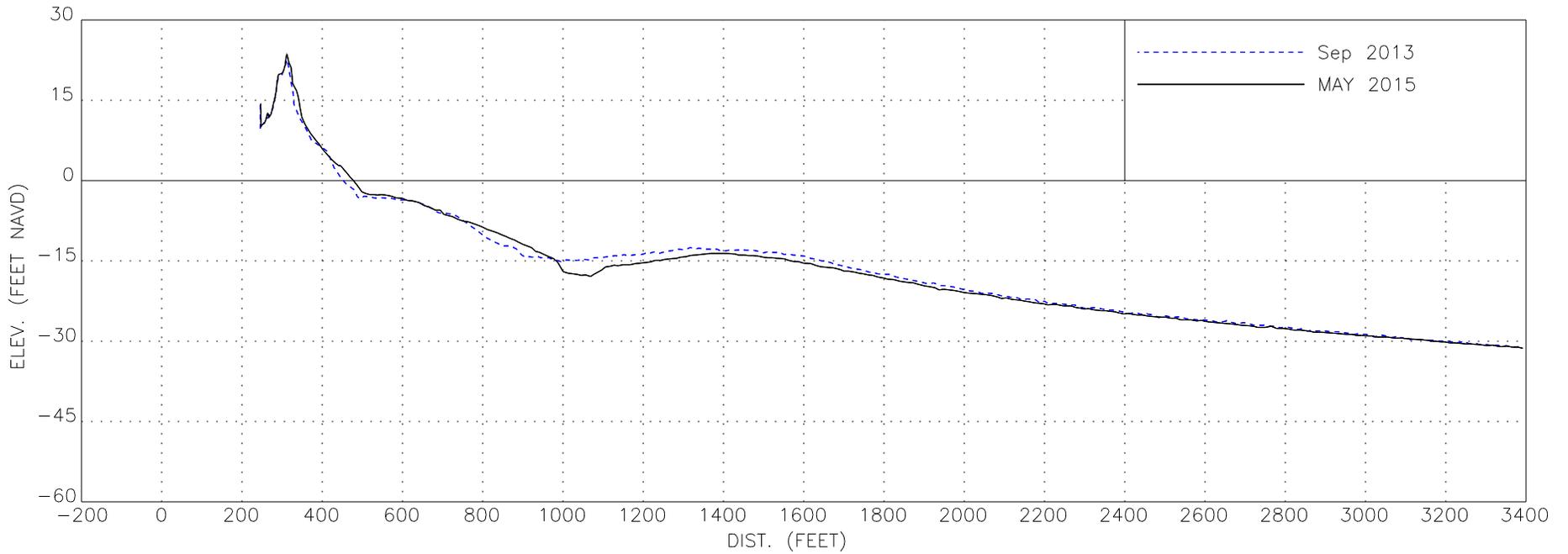
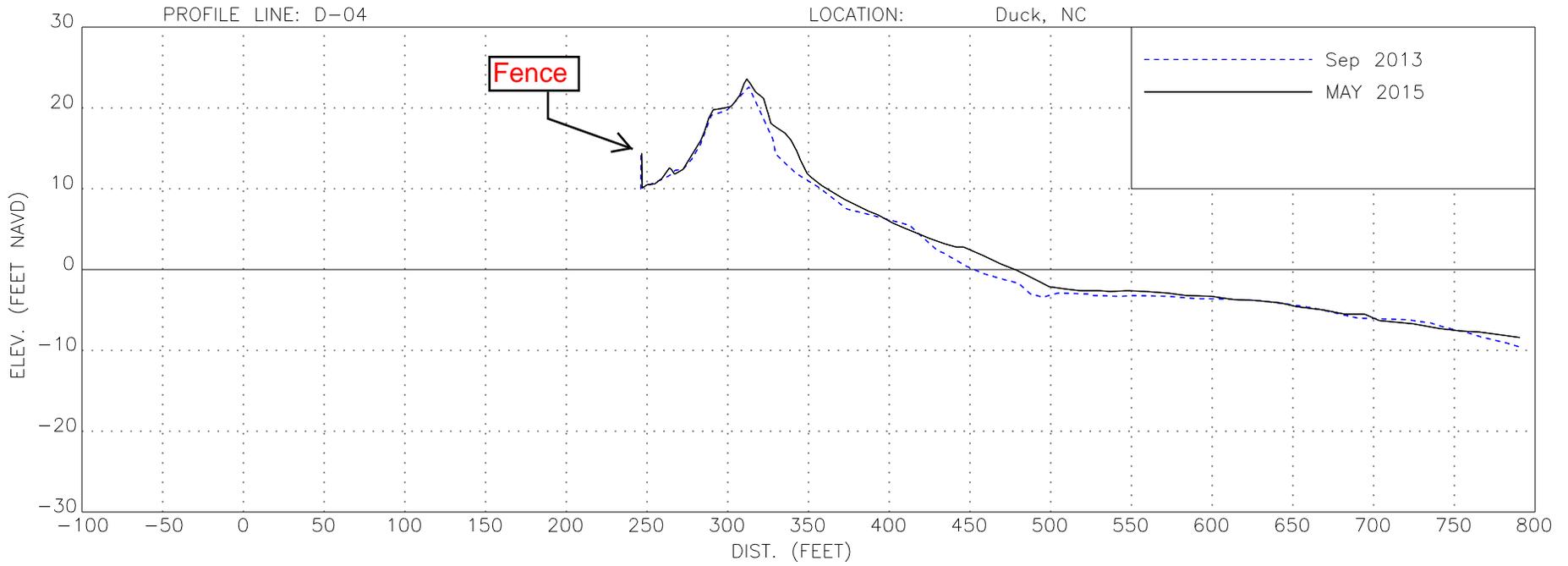
¹*2015 Dare County Post Construction Topographic and Hydrographic Survey Report.pdf* (and/or under the) ²Digital Products folder found on the accompanying CD

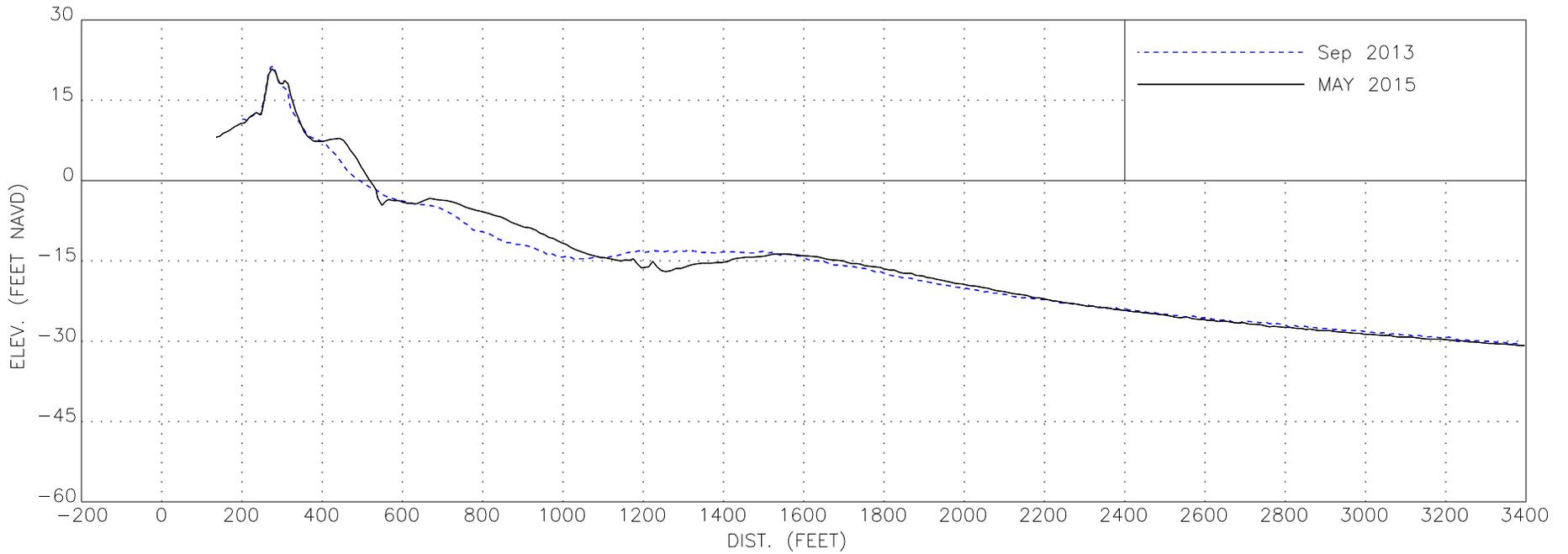
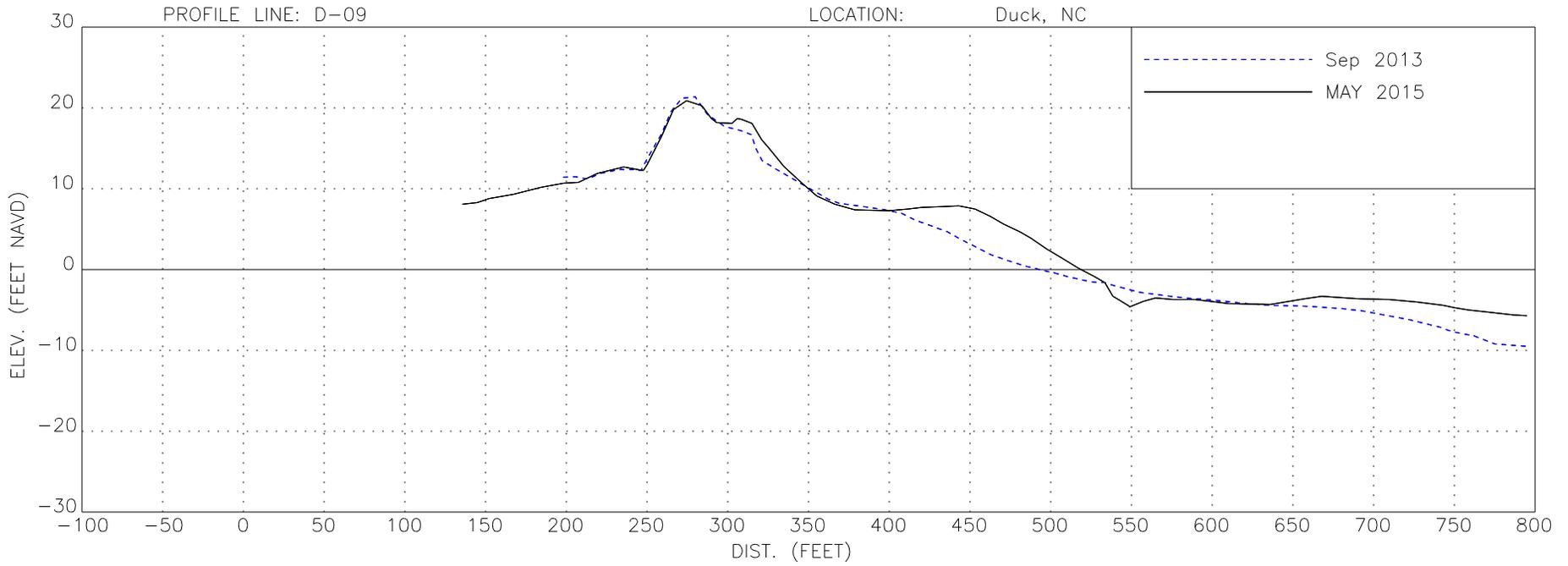
APPENDIX 3

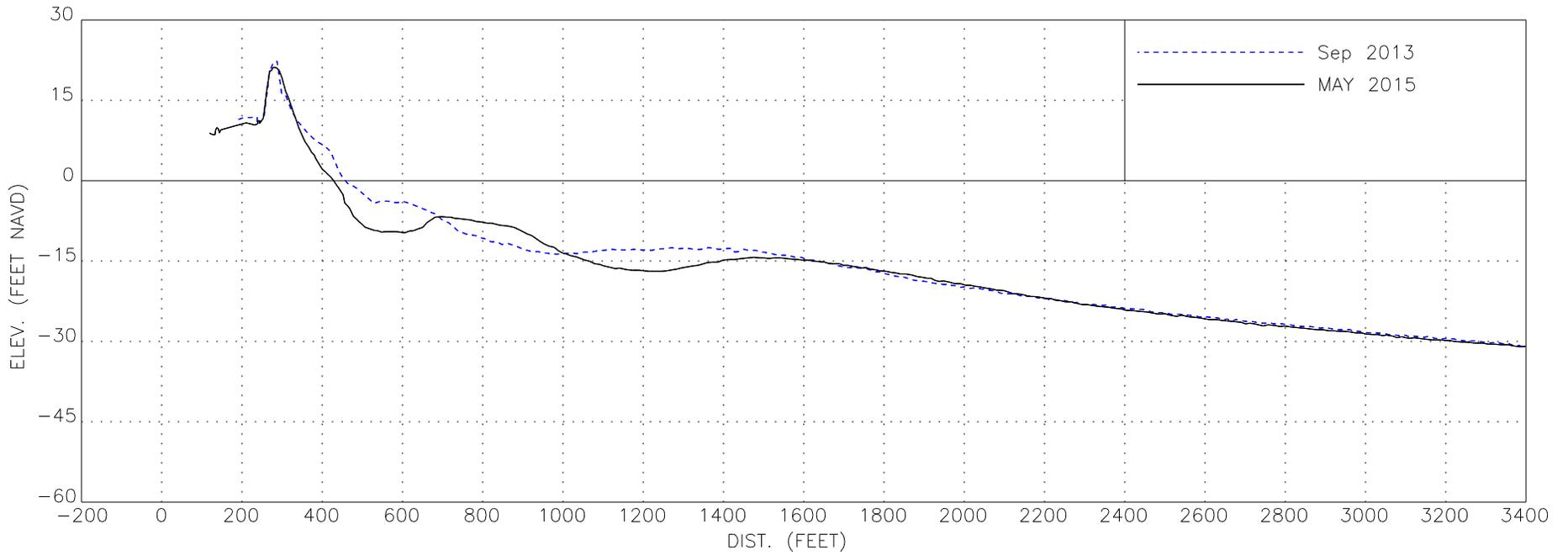
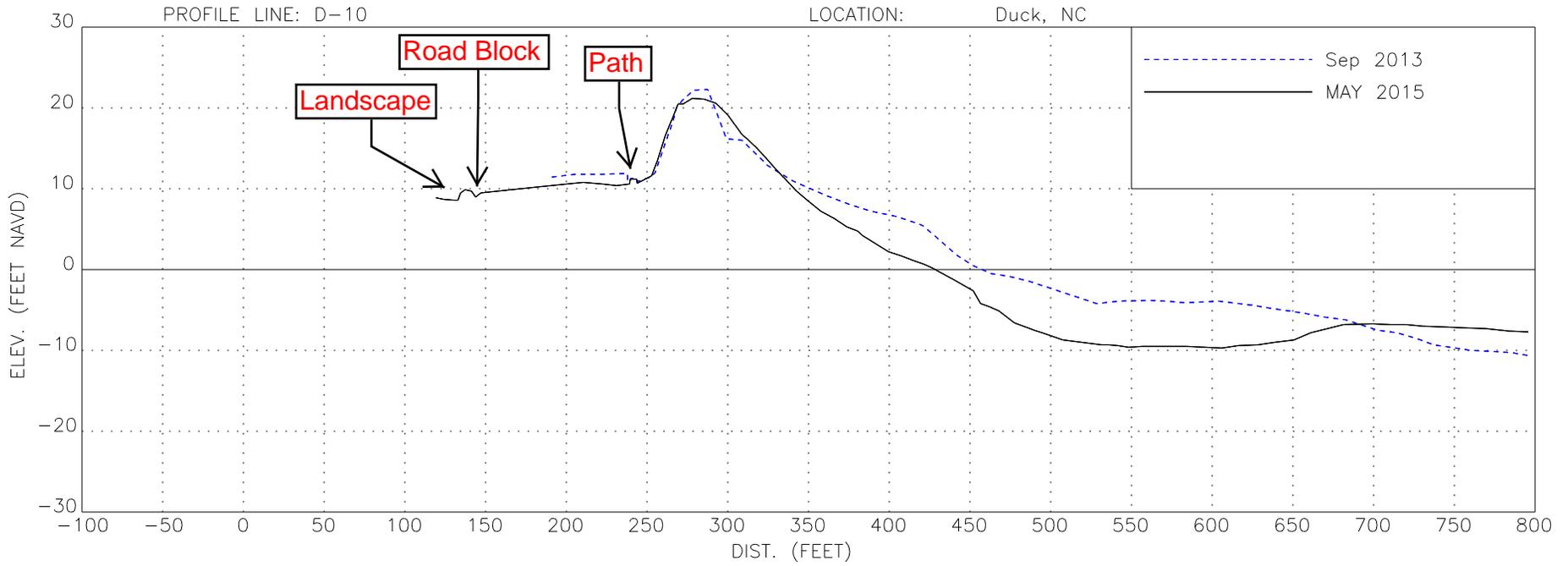
PROFILE PLOTS

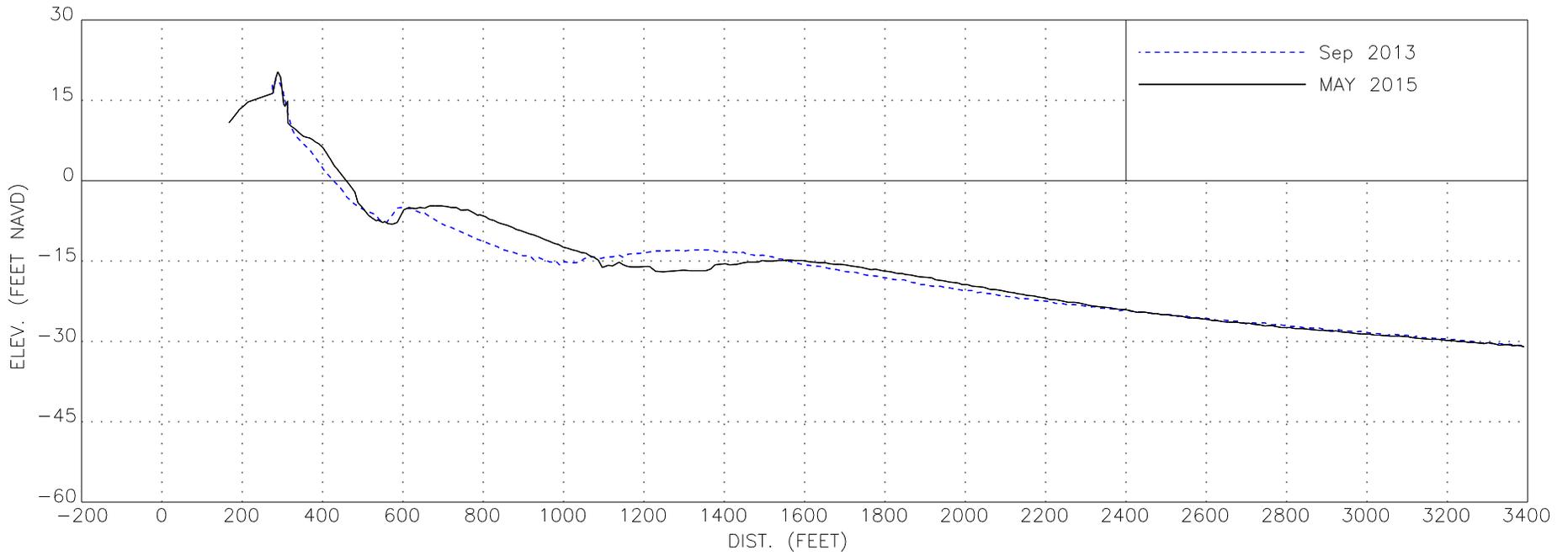
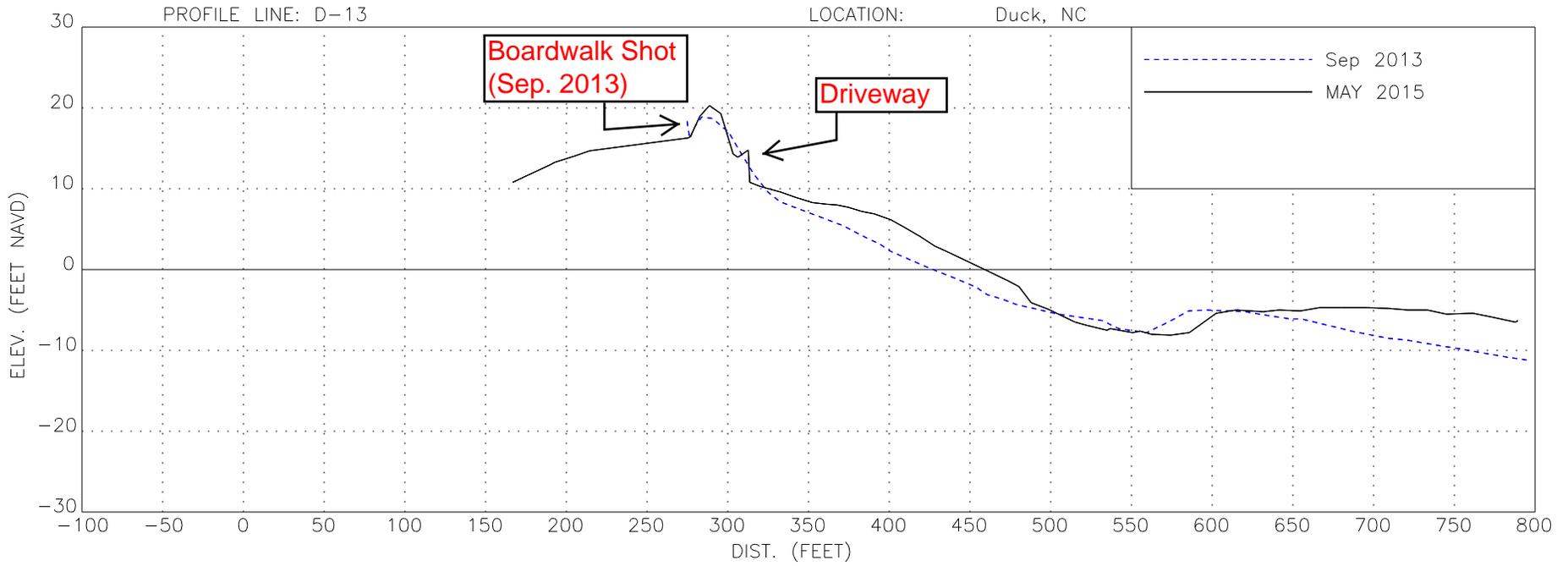
APPENDIX 3A: Town of Duck Beach Profiles Plots

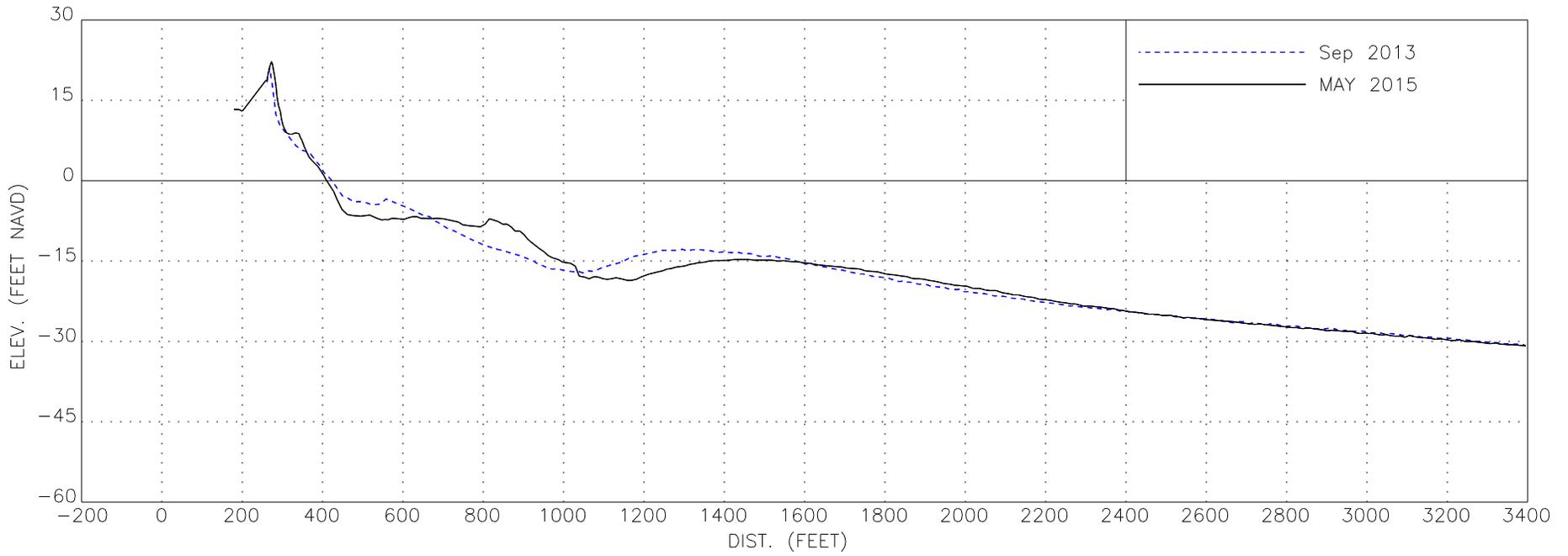
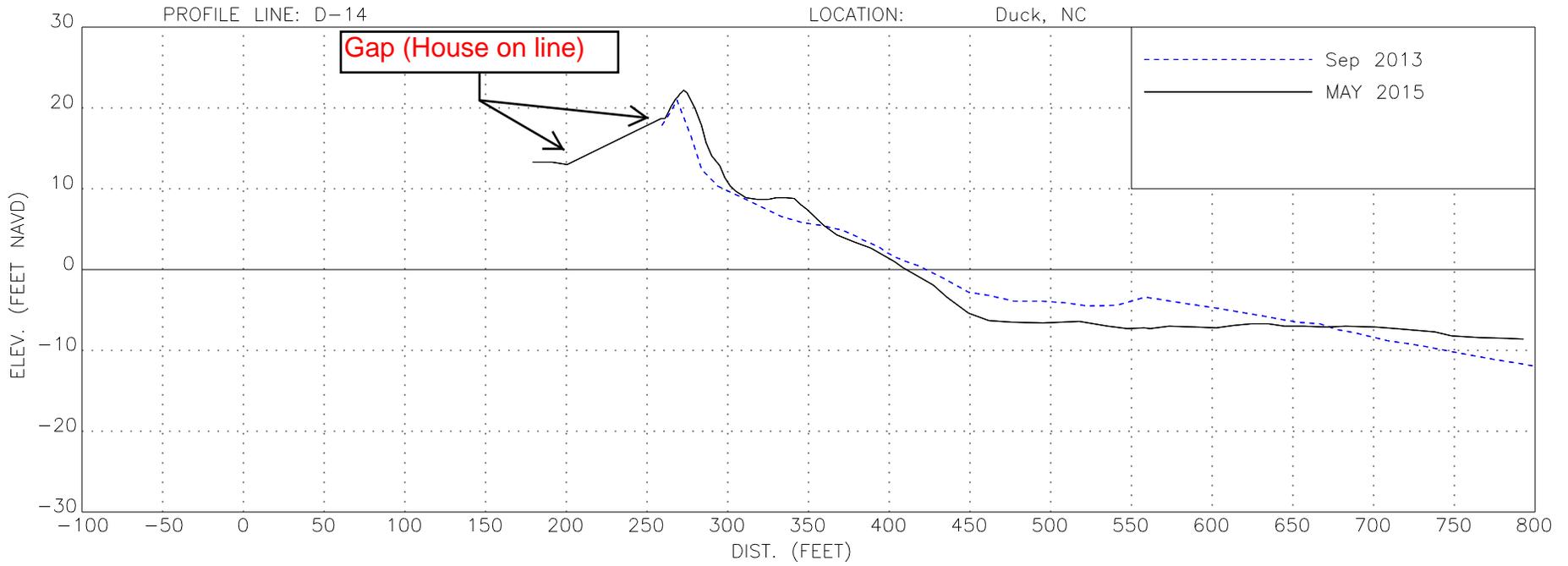


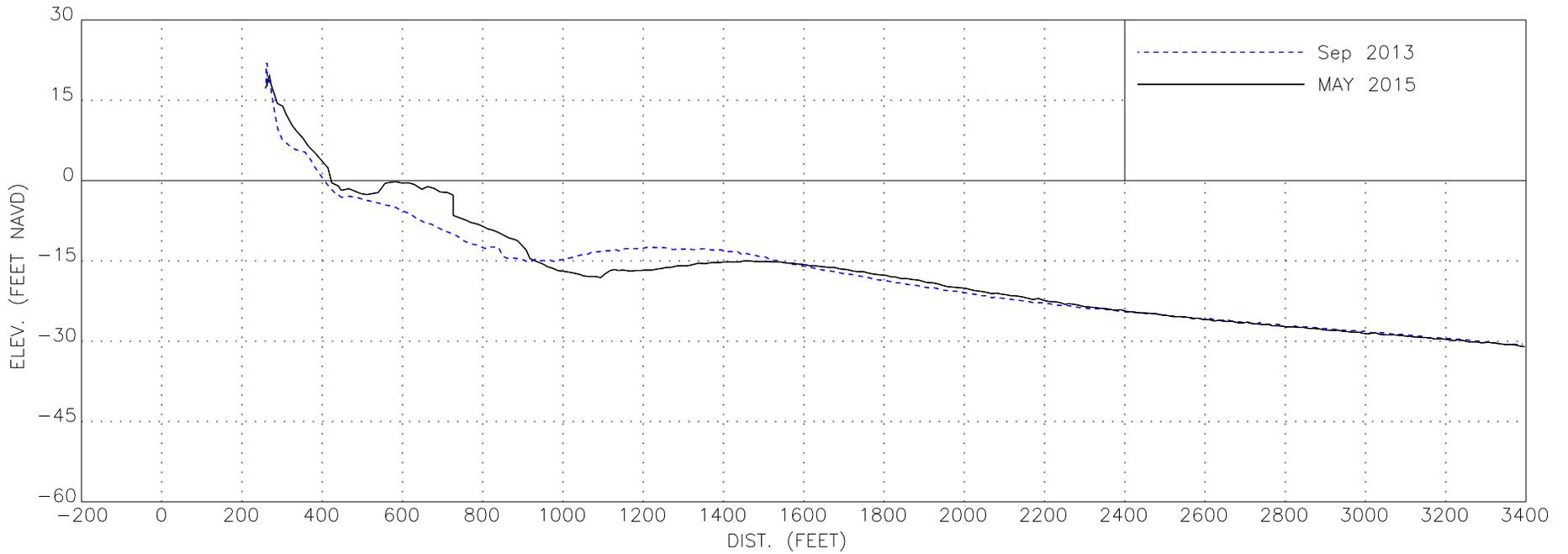
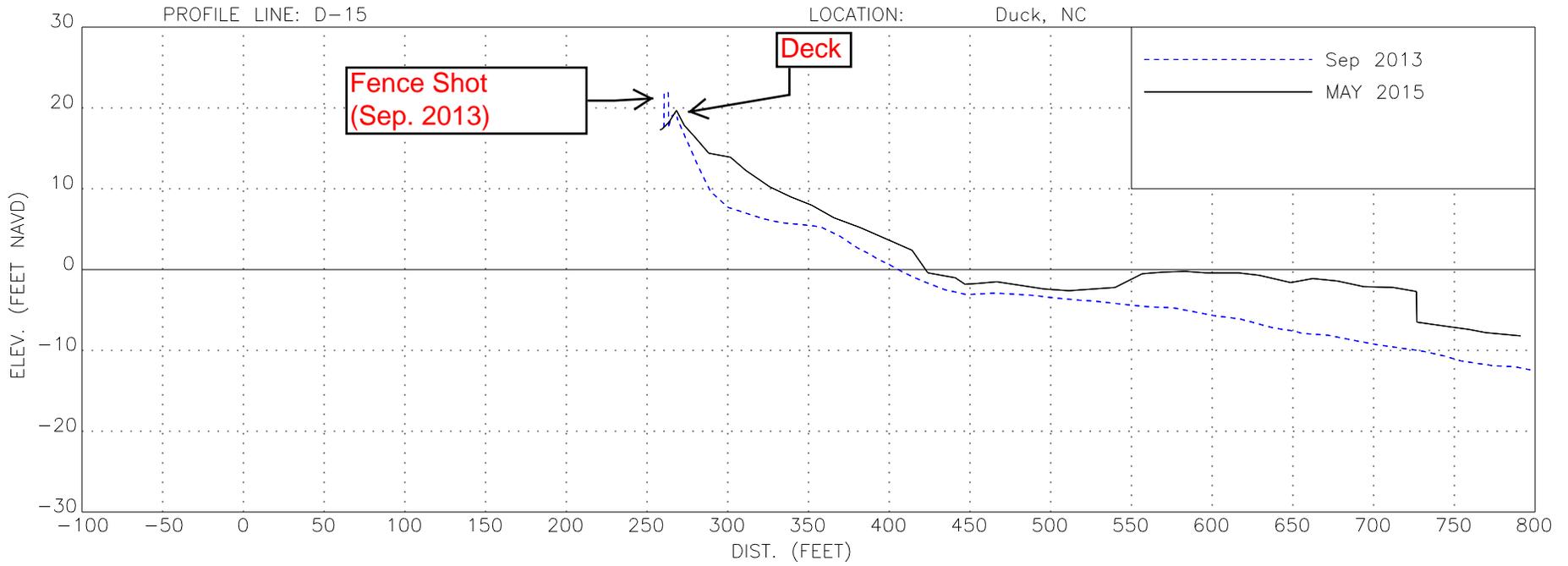


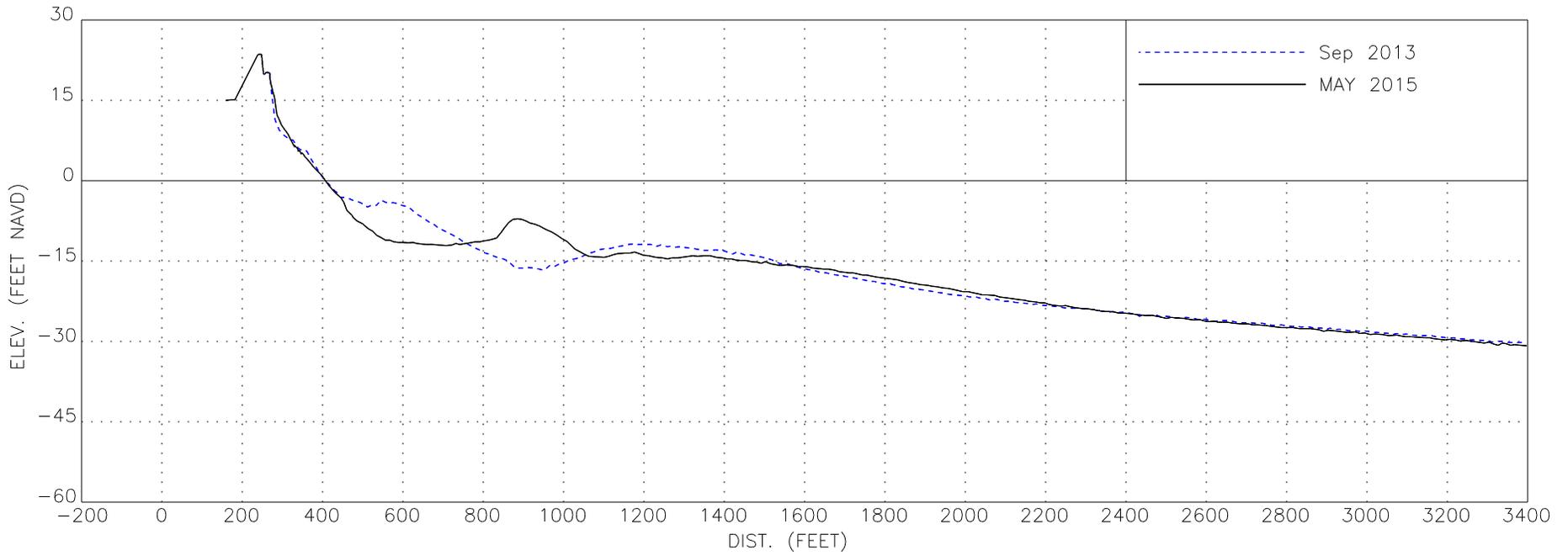
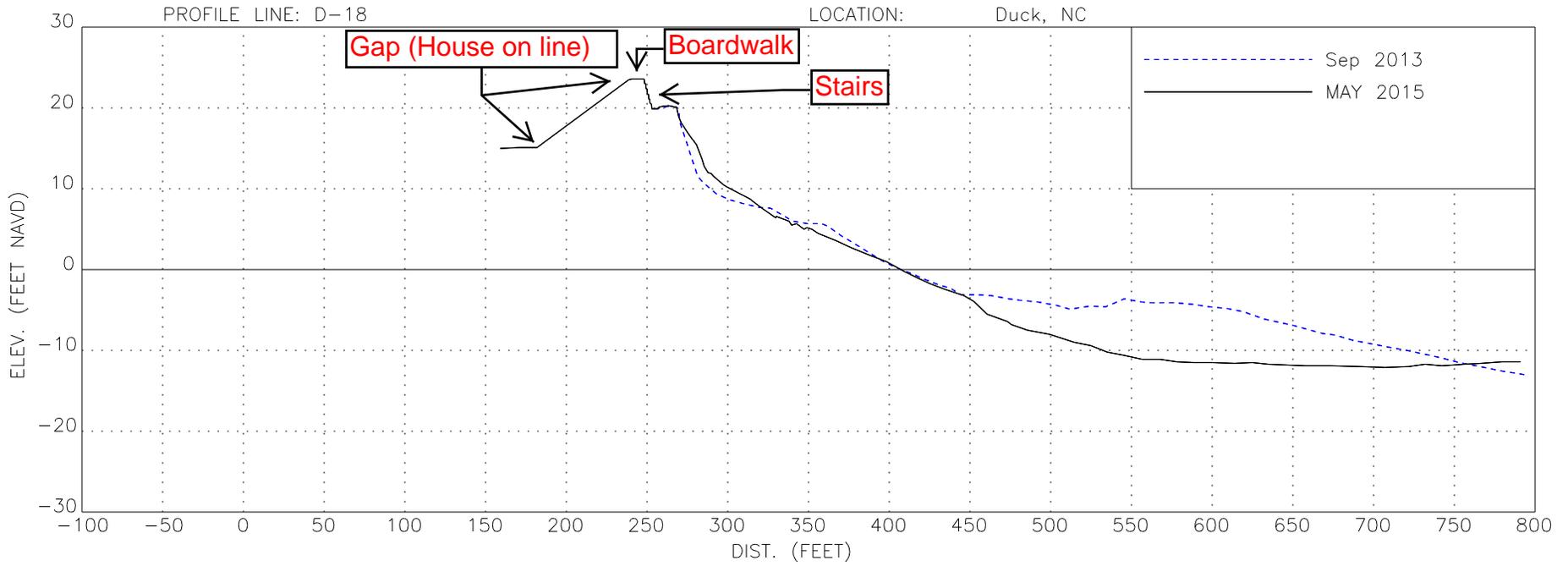


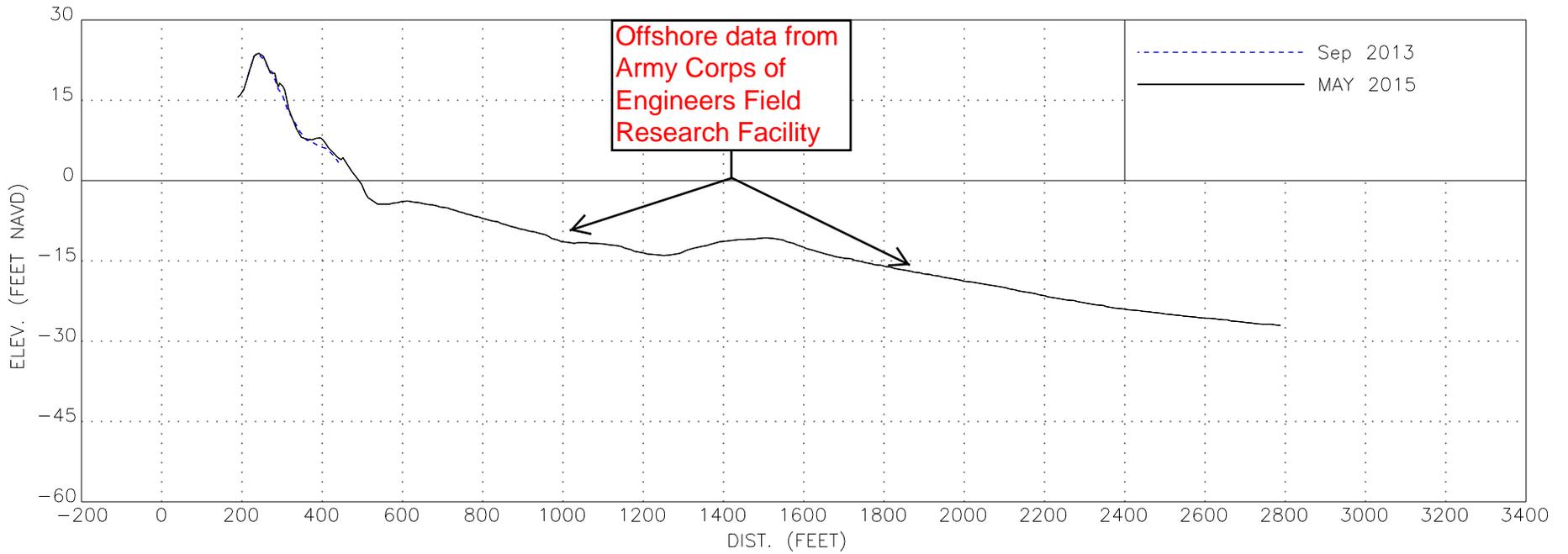
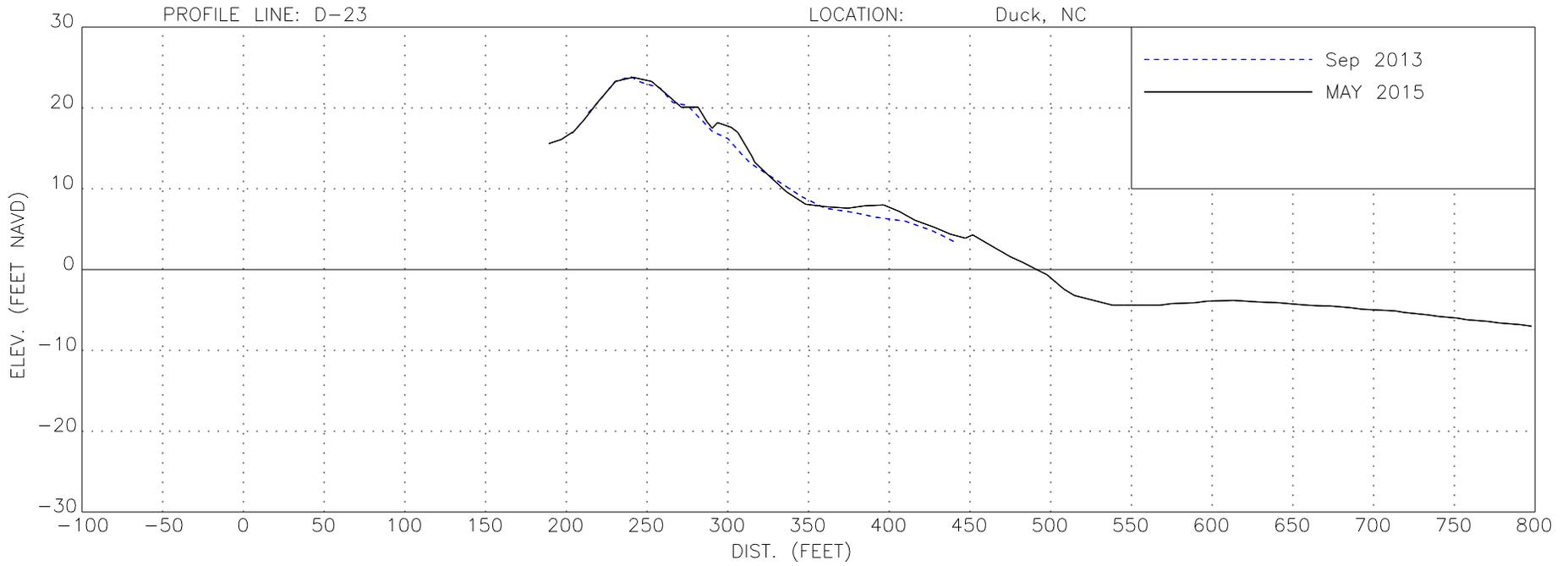


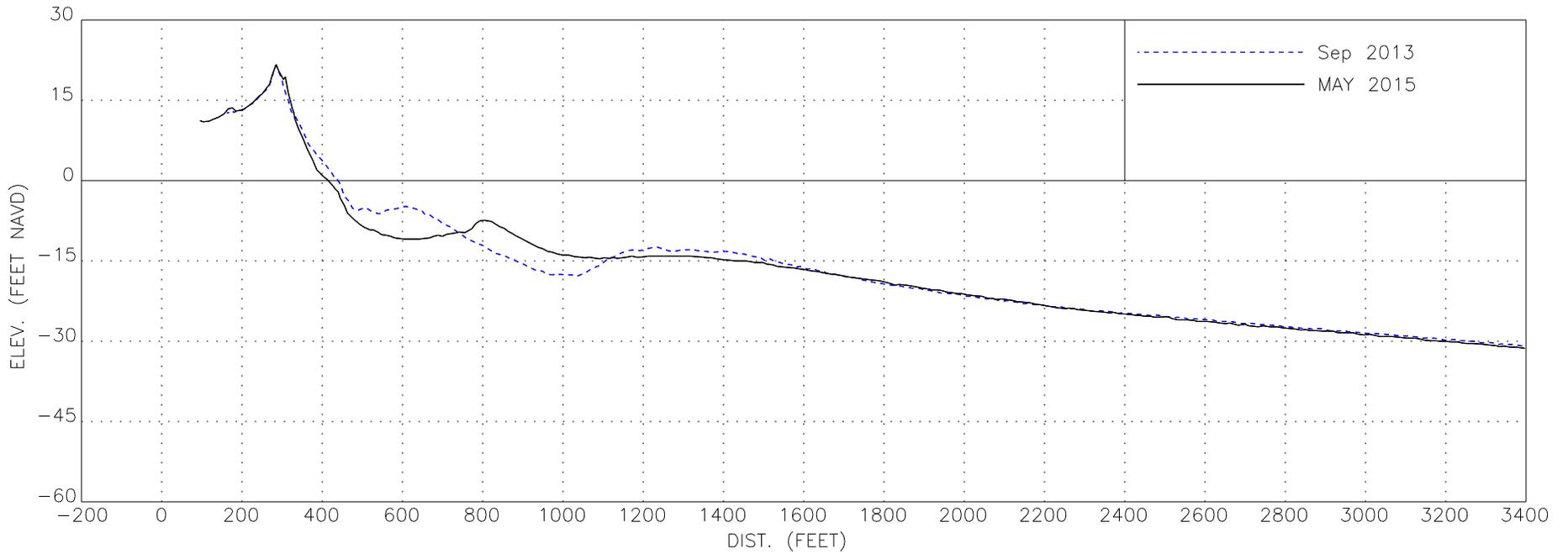
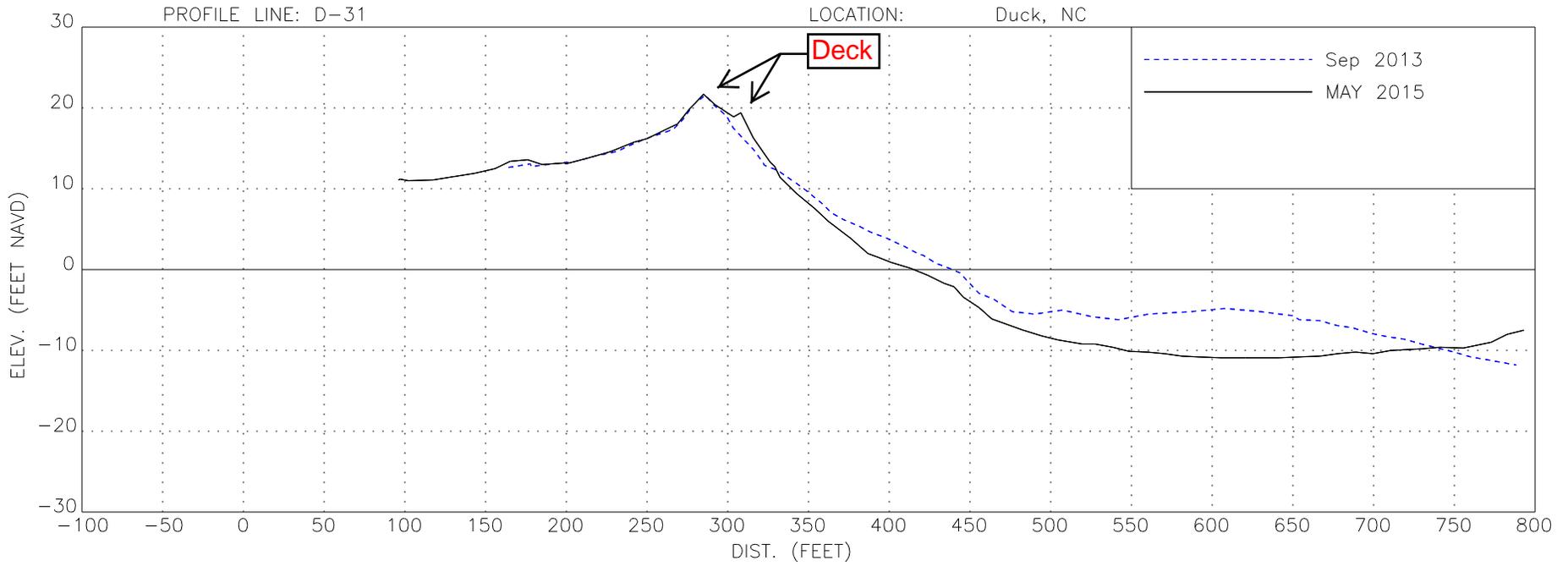




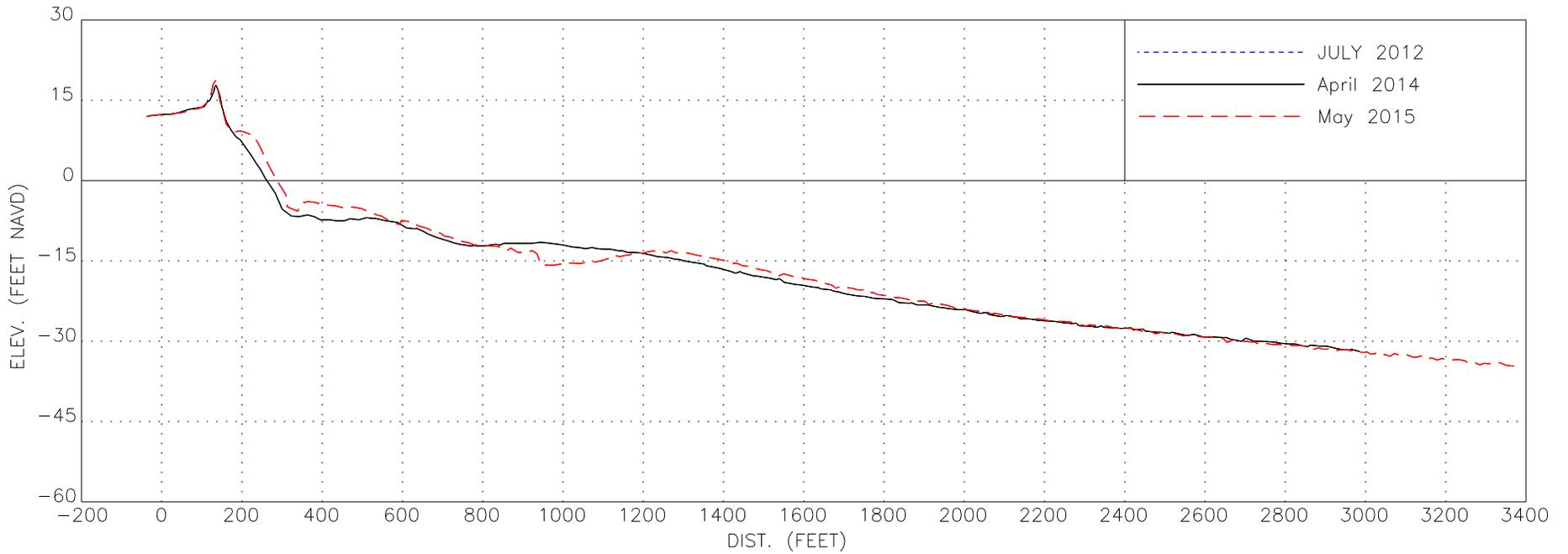
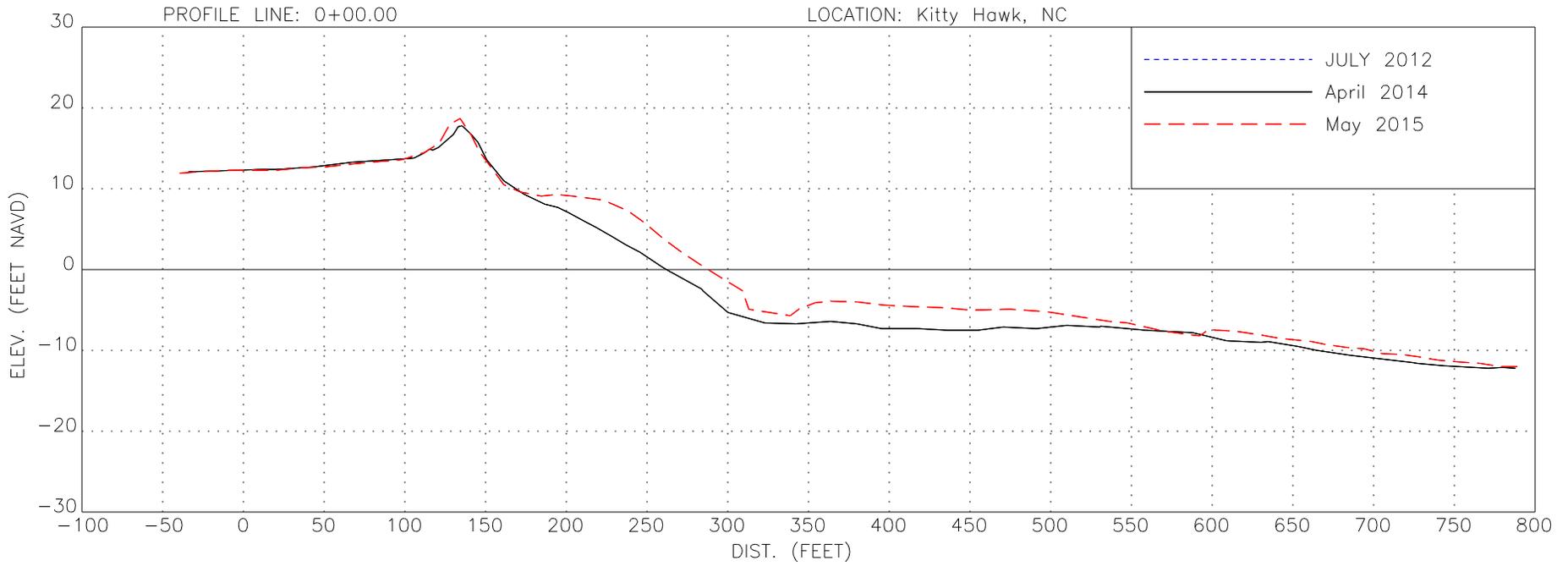


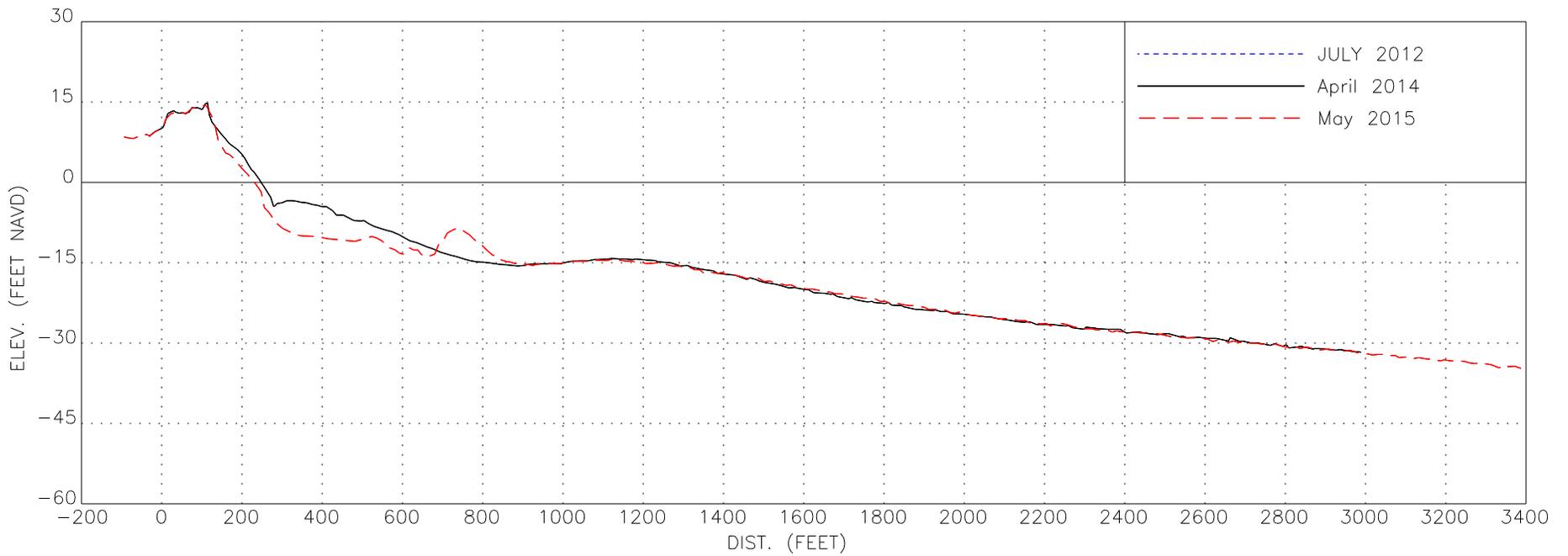
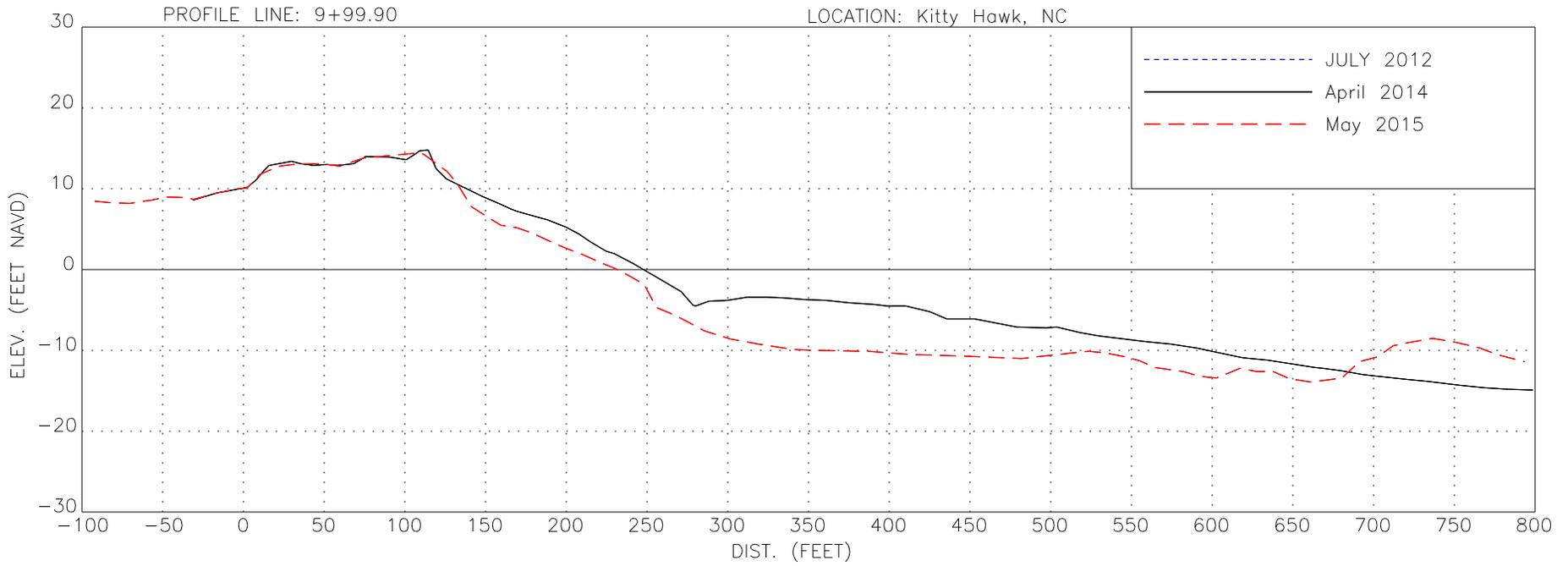


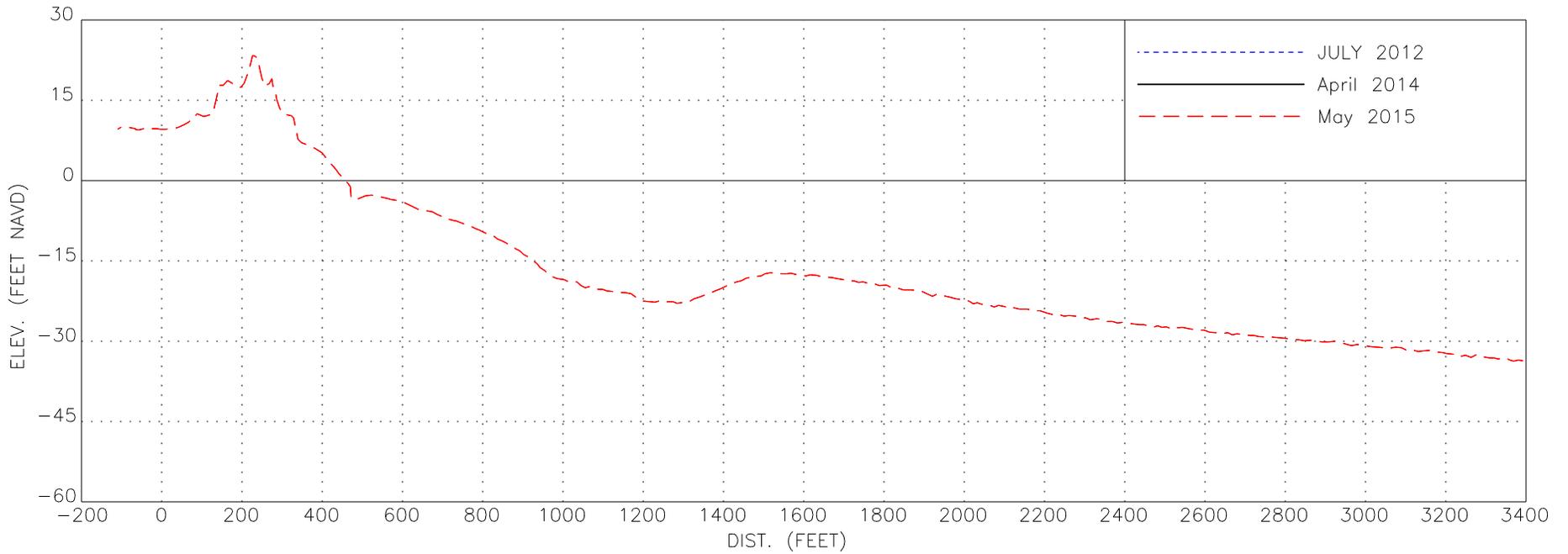
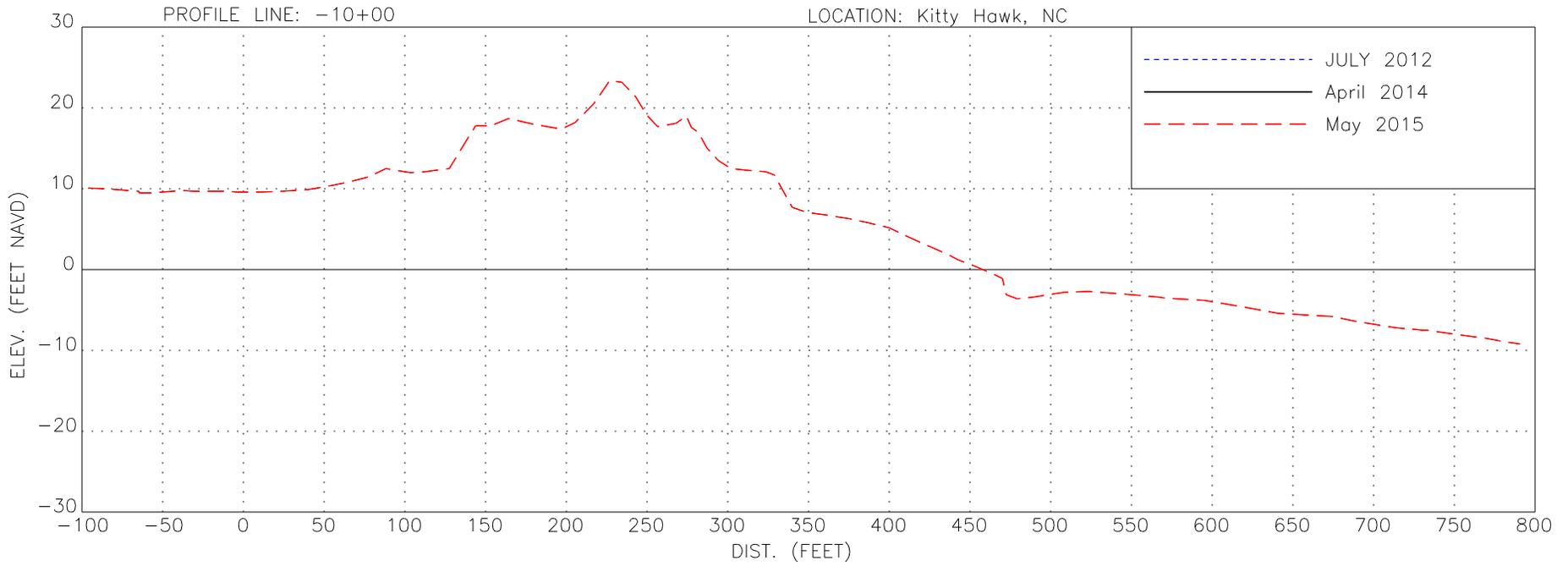


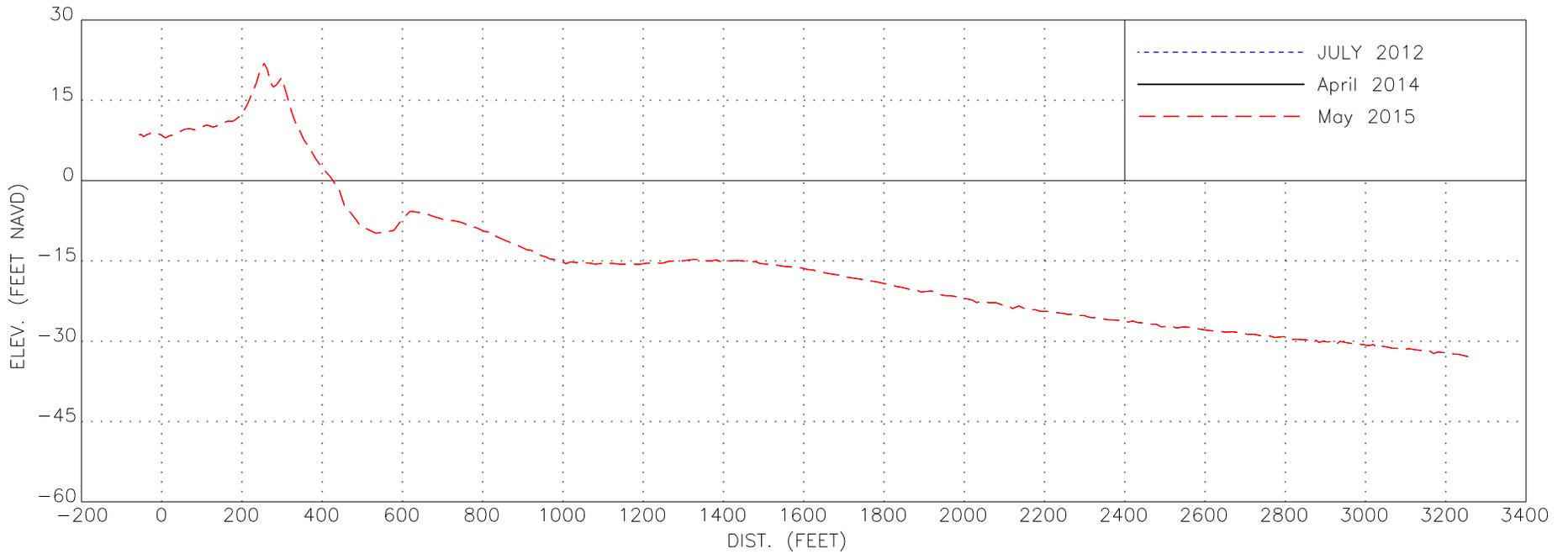
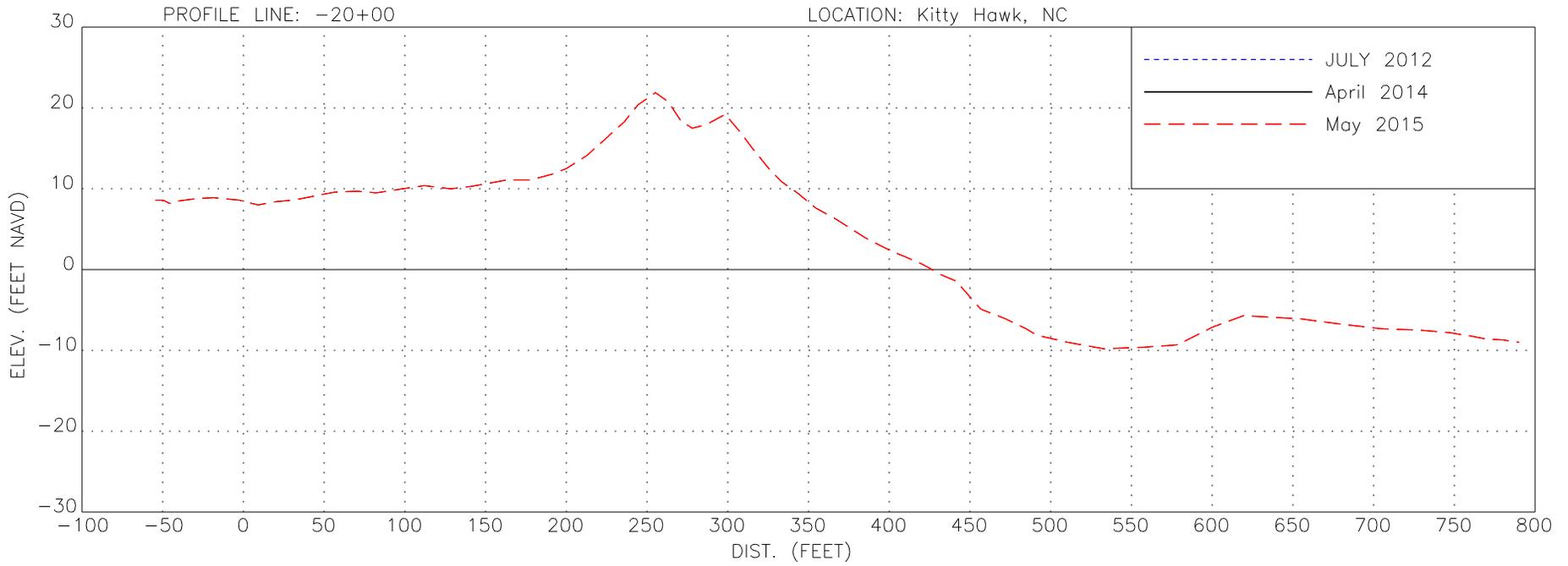


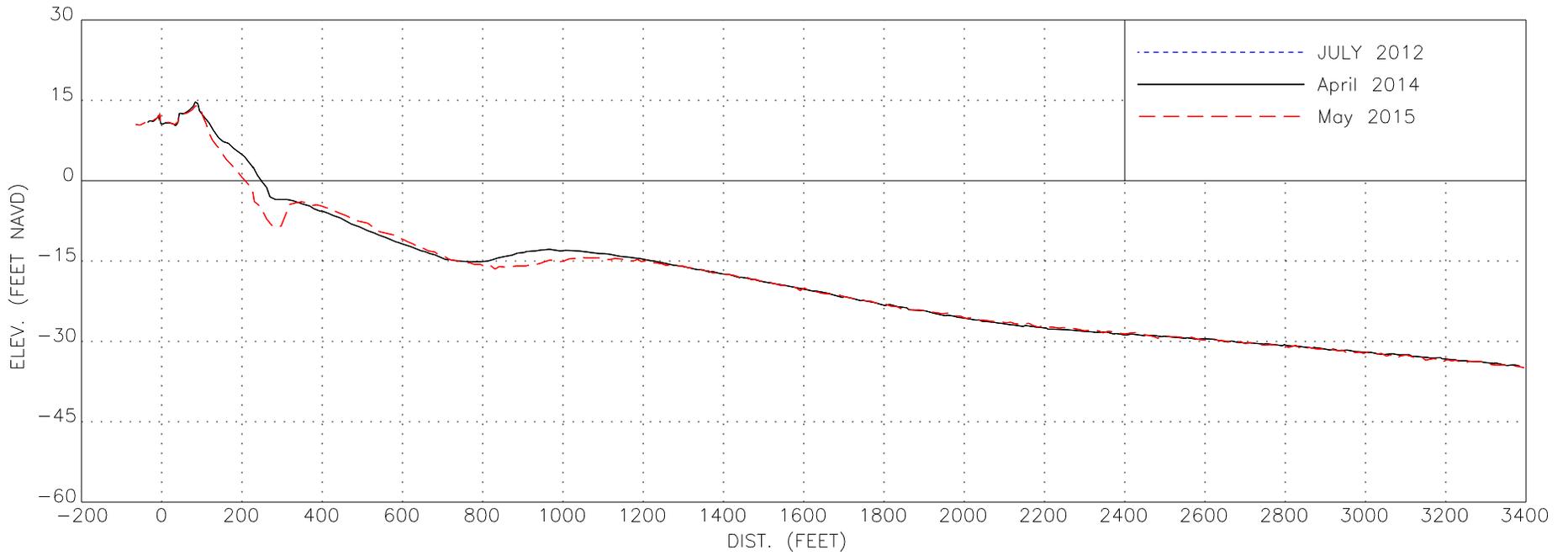
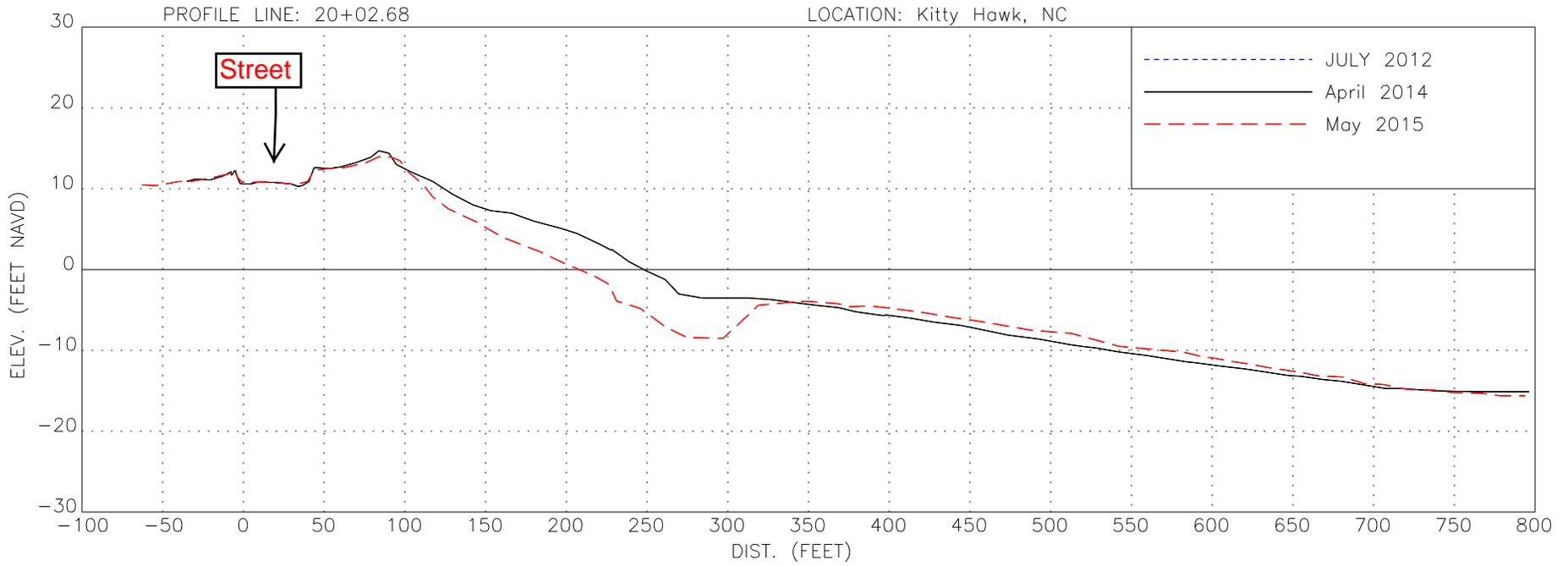
APPENDIX 3B: Kitty Hawk/ Kill Devil Hills Beach Profiles Plots

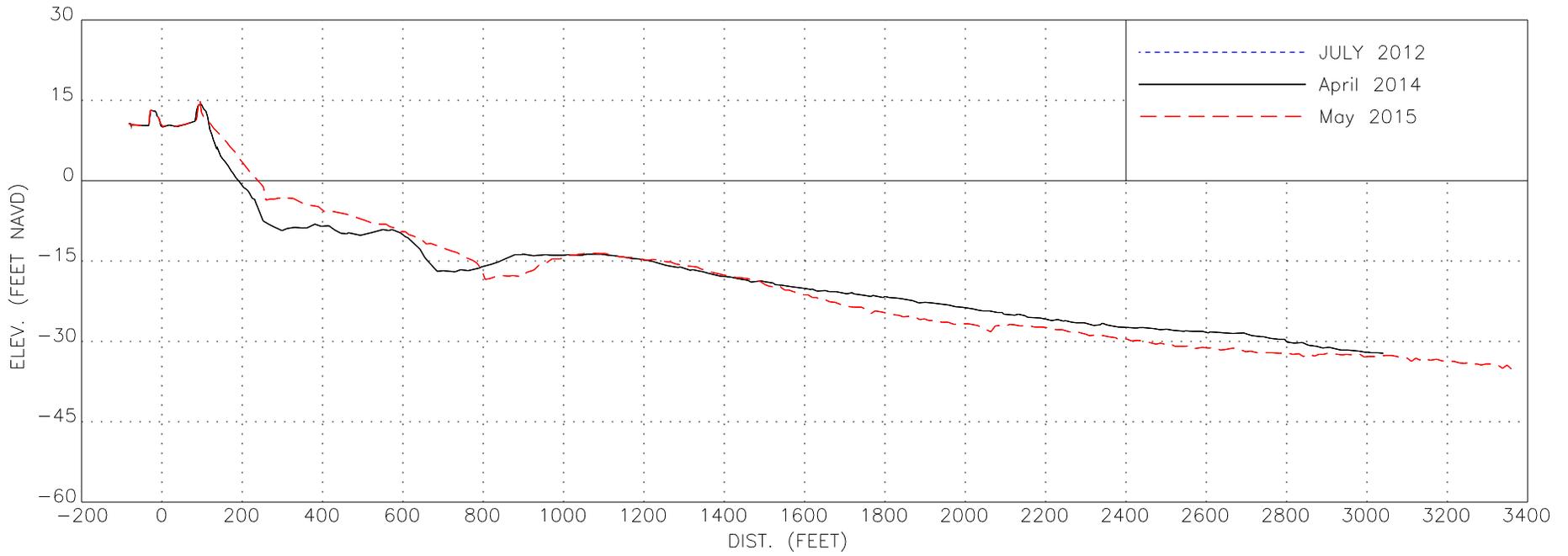
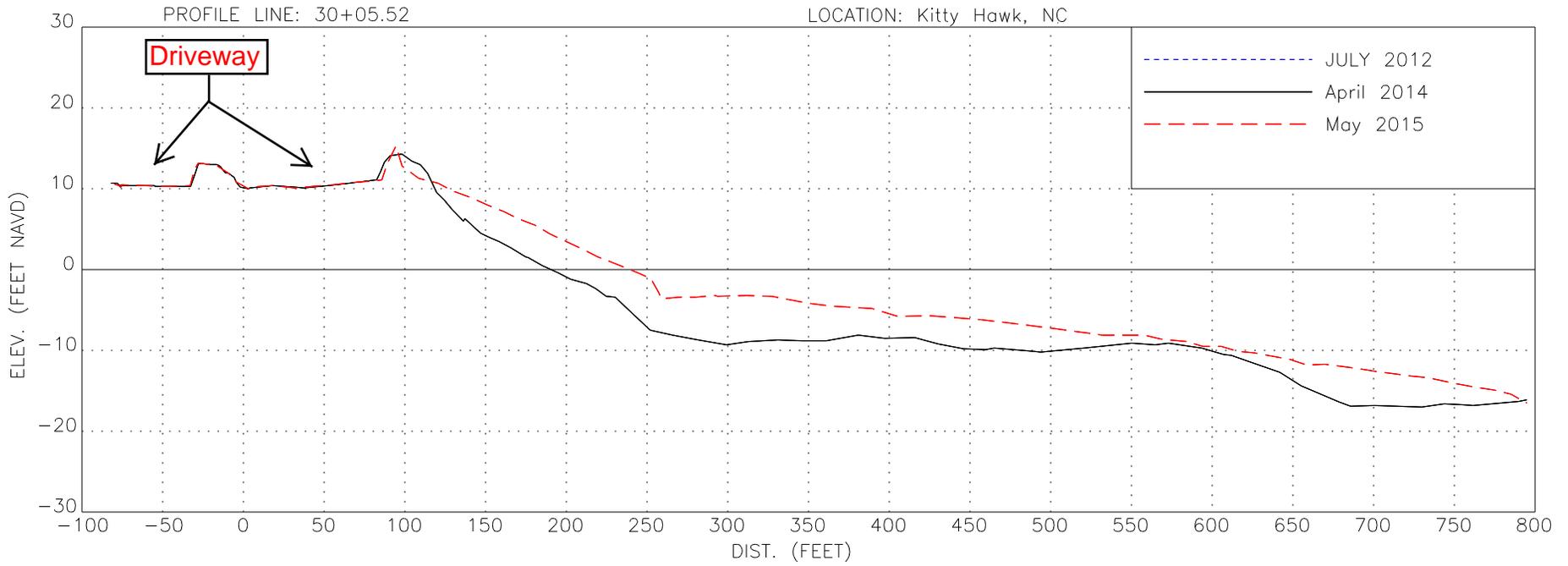


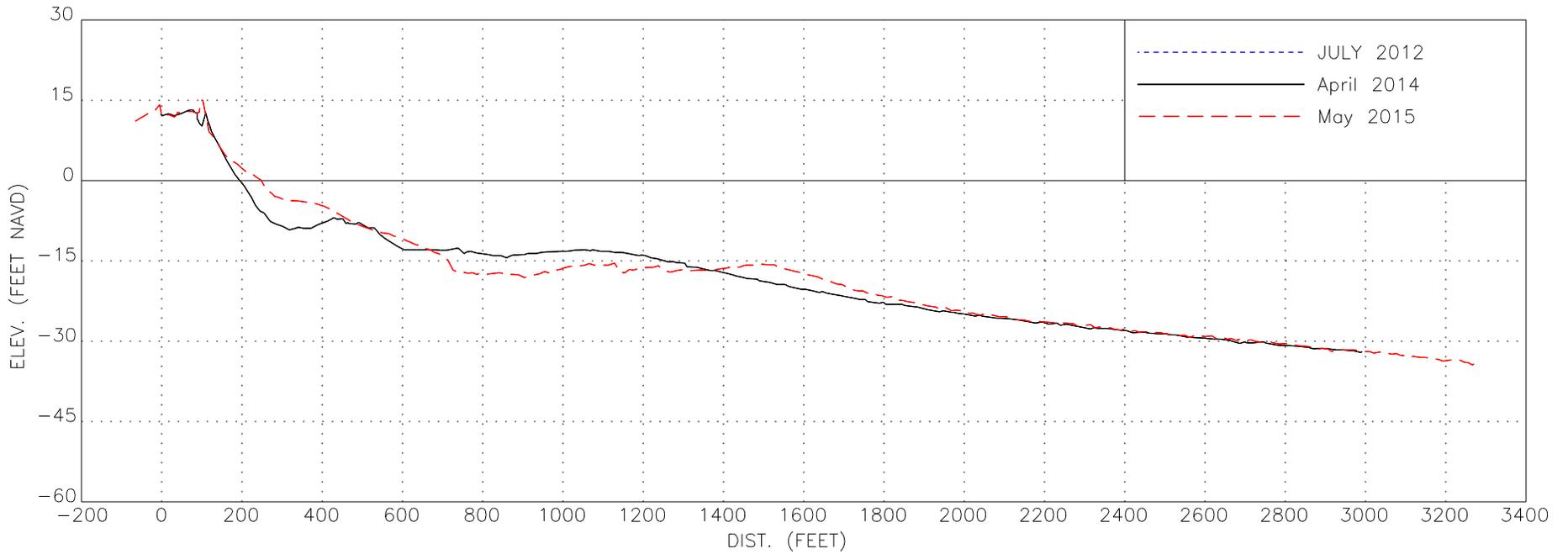
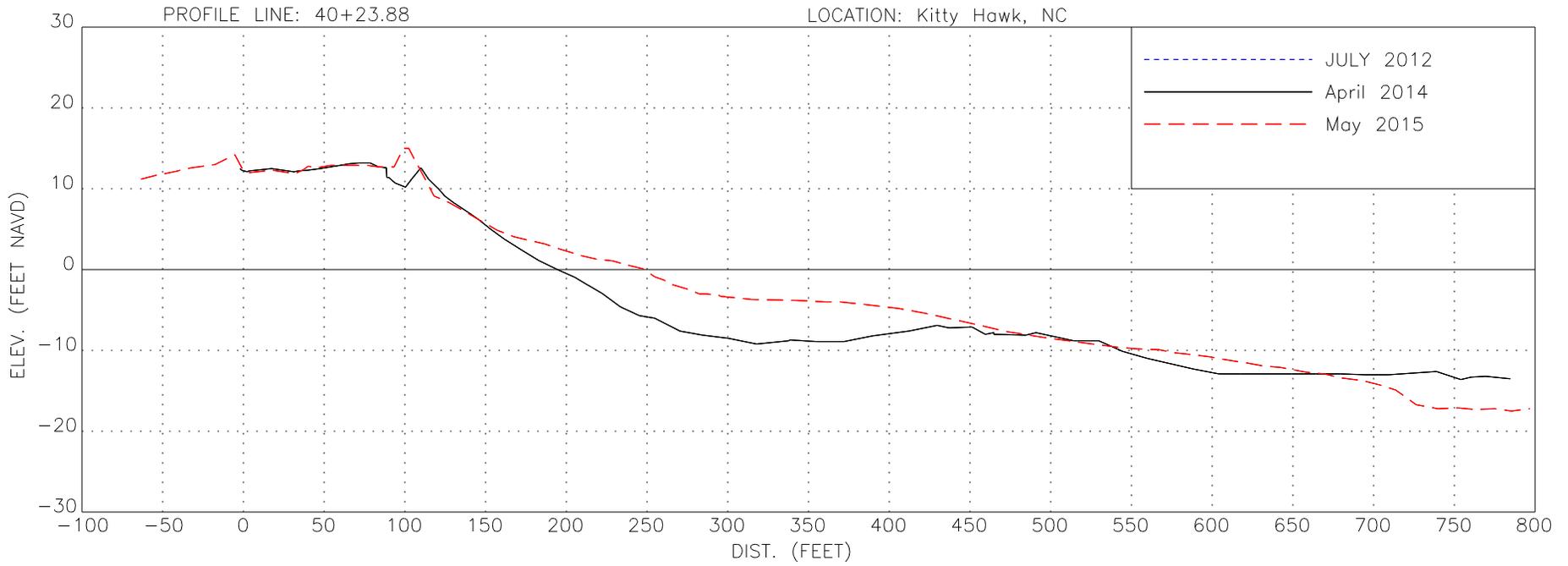


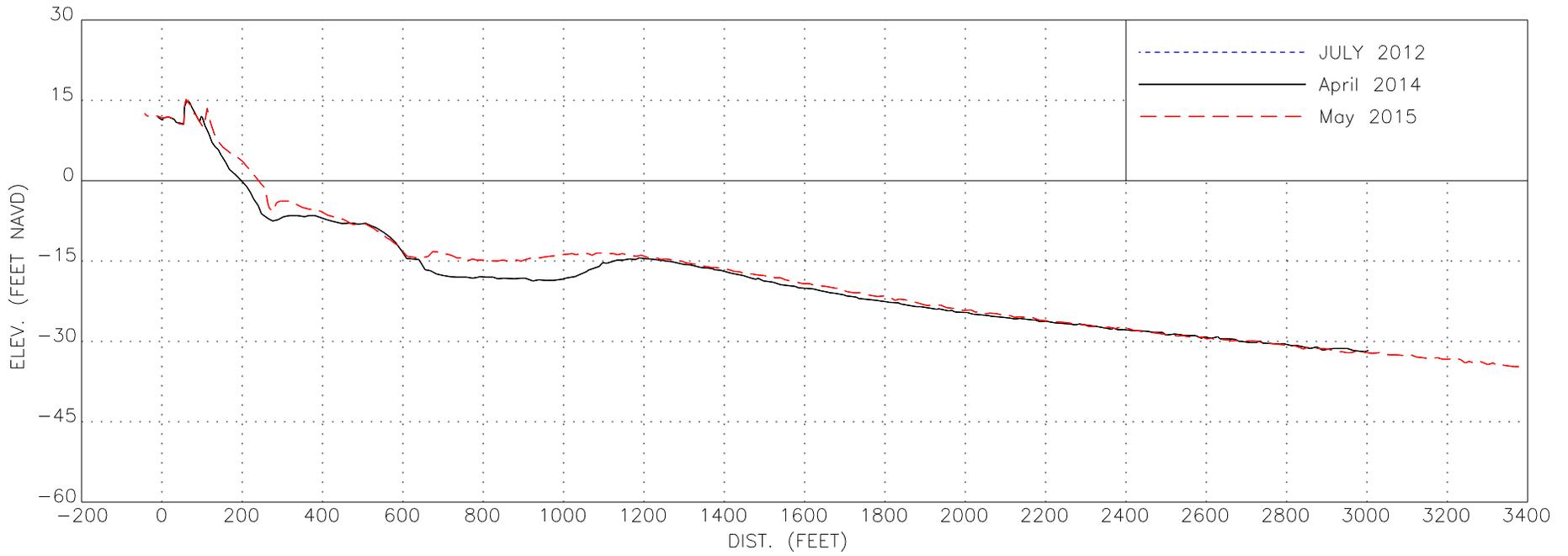
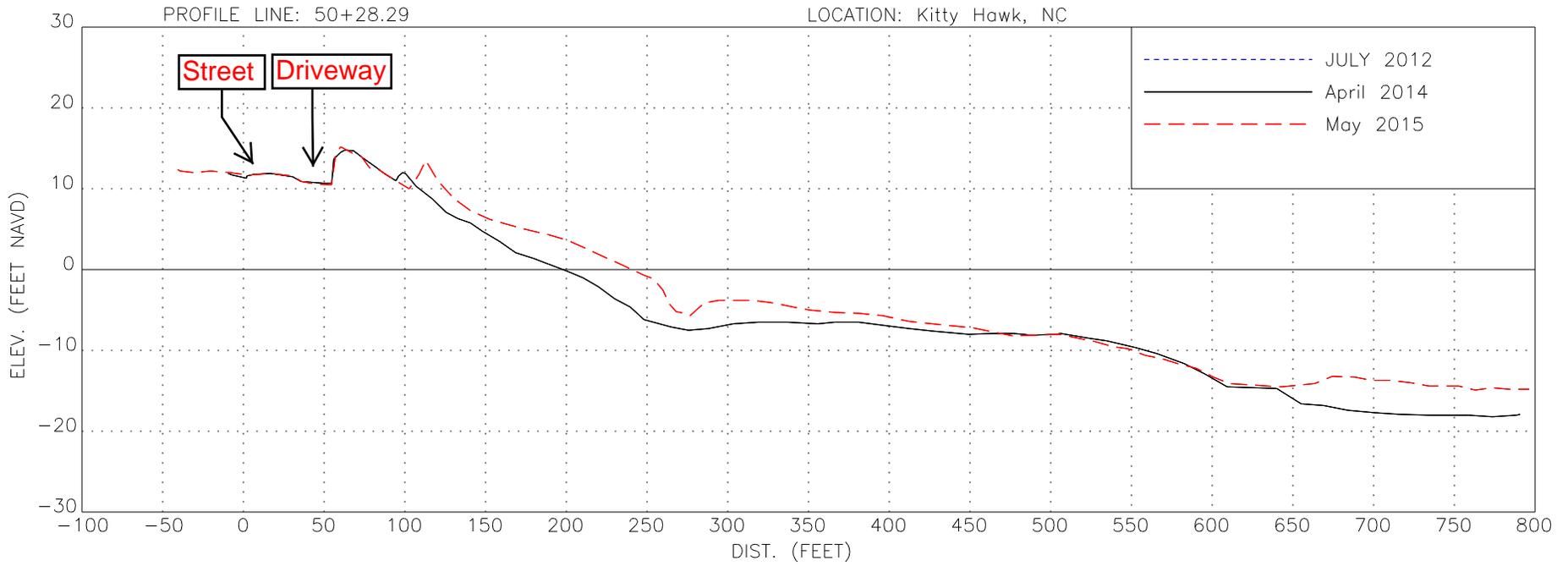


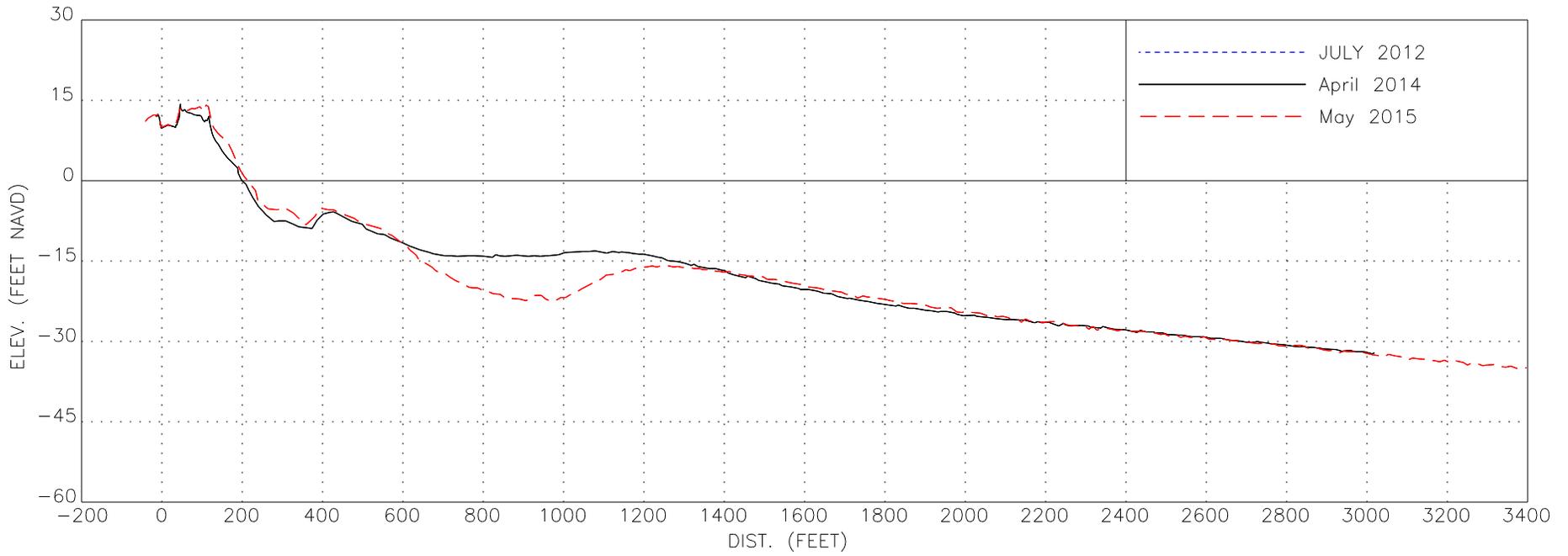
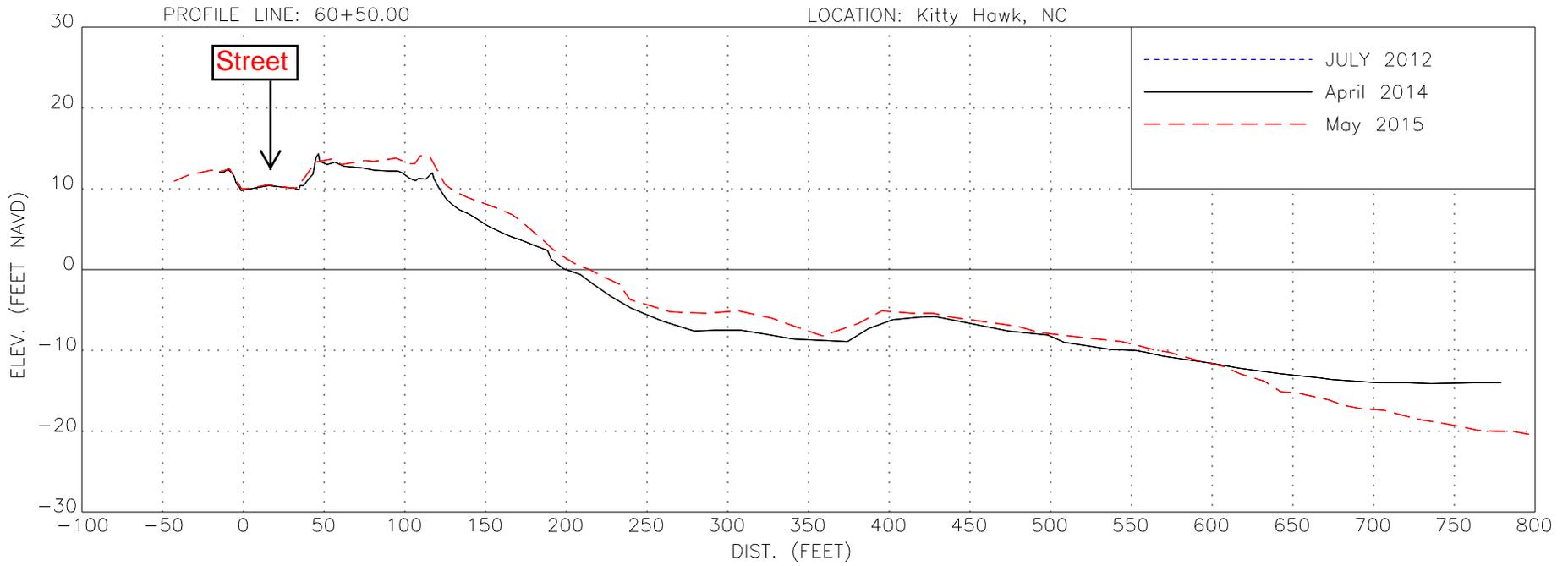


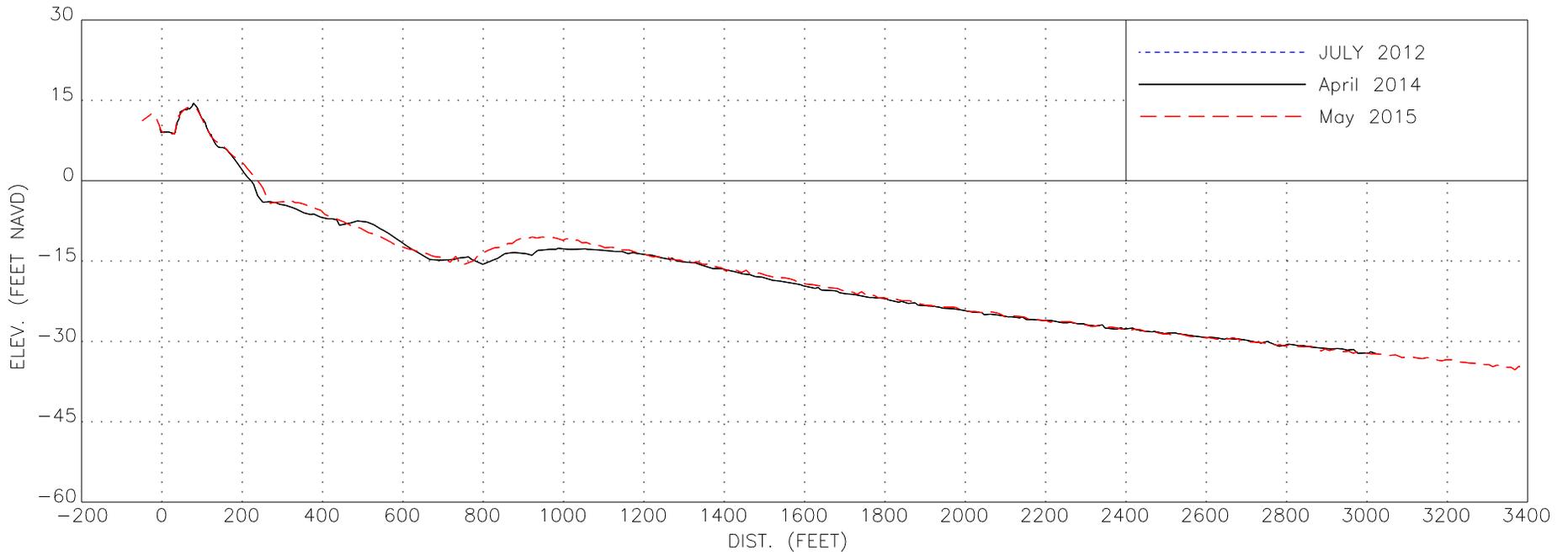
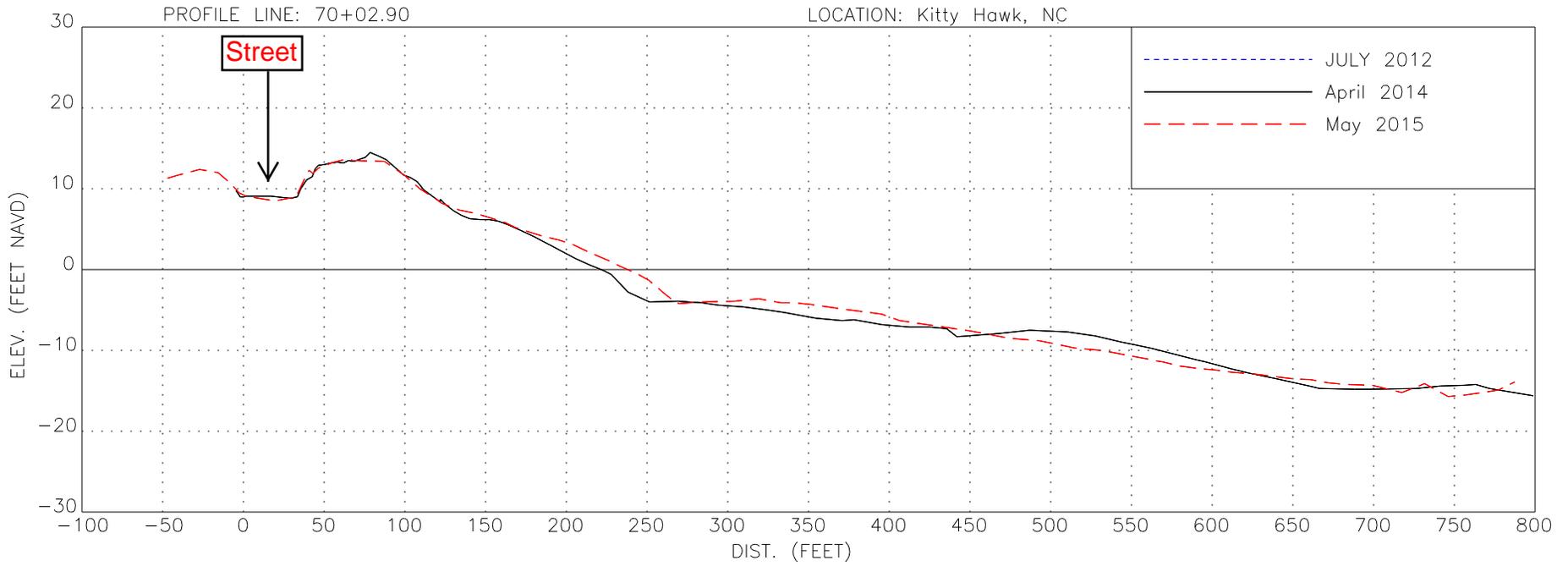


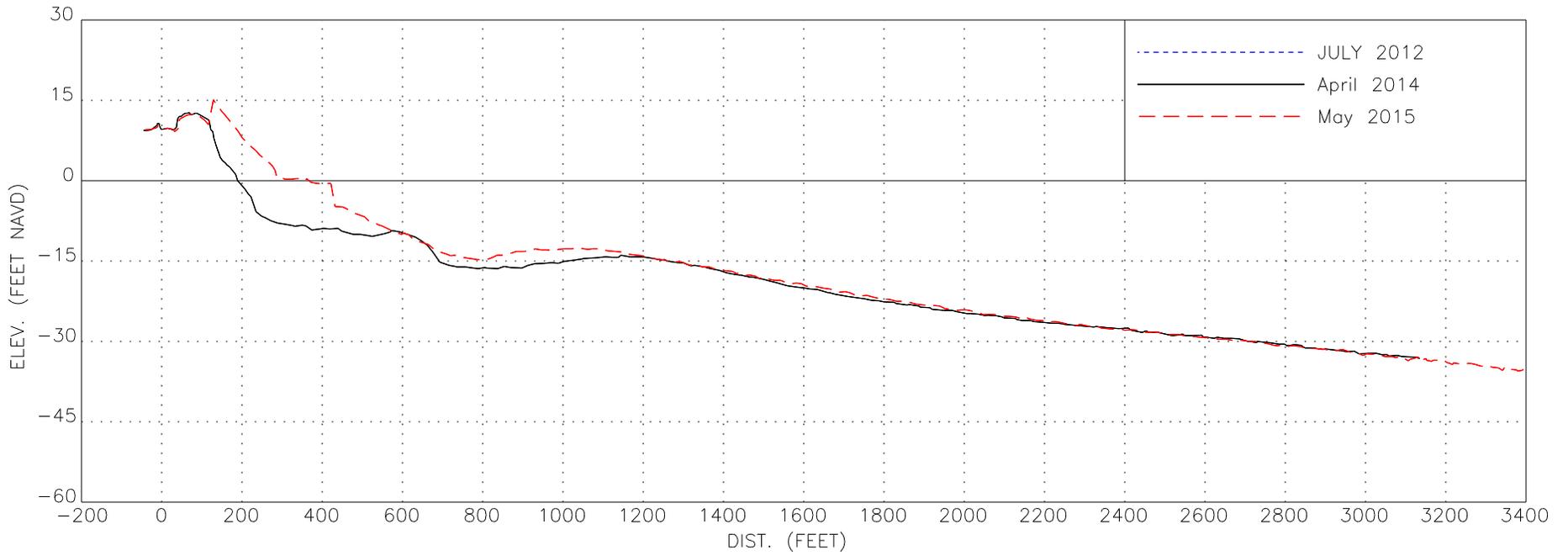
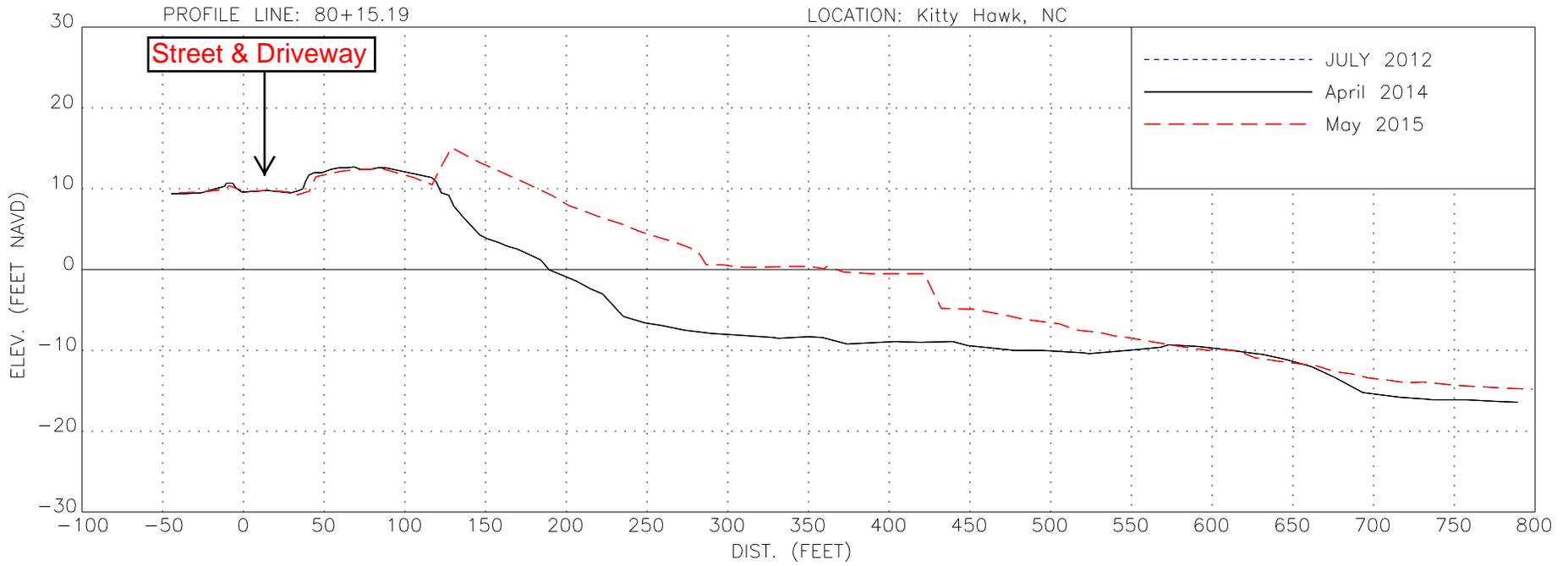


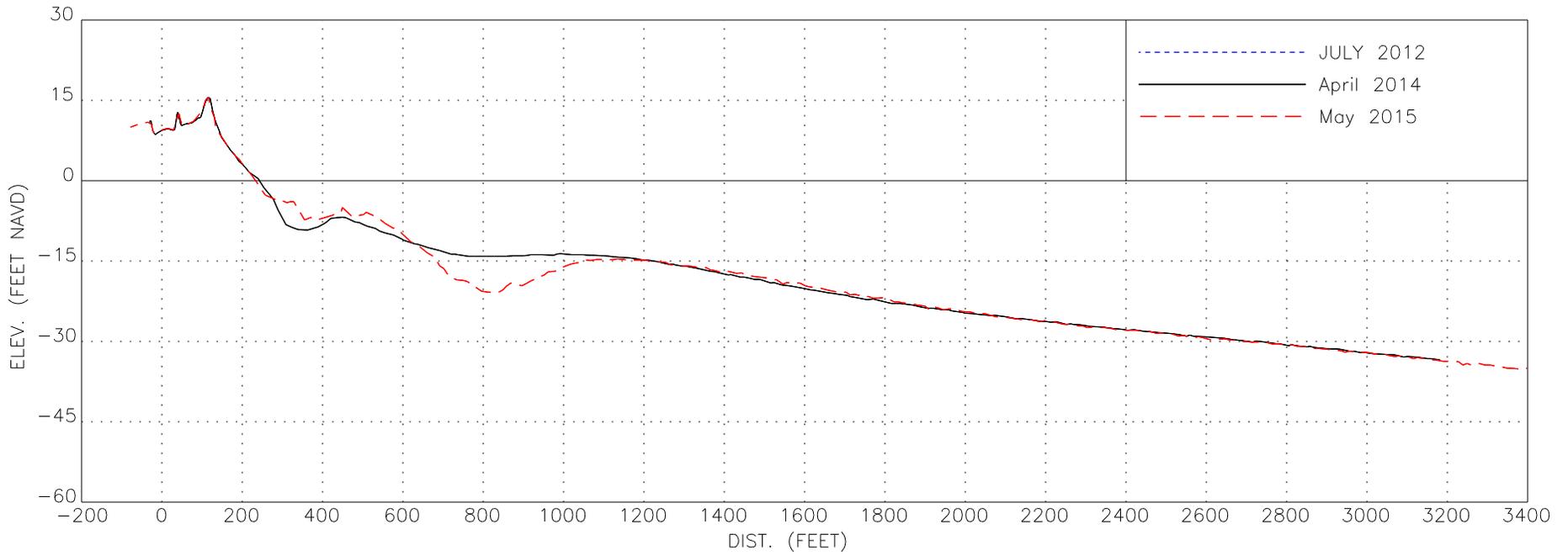
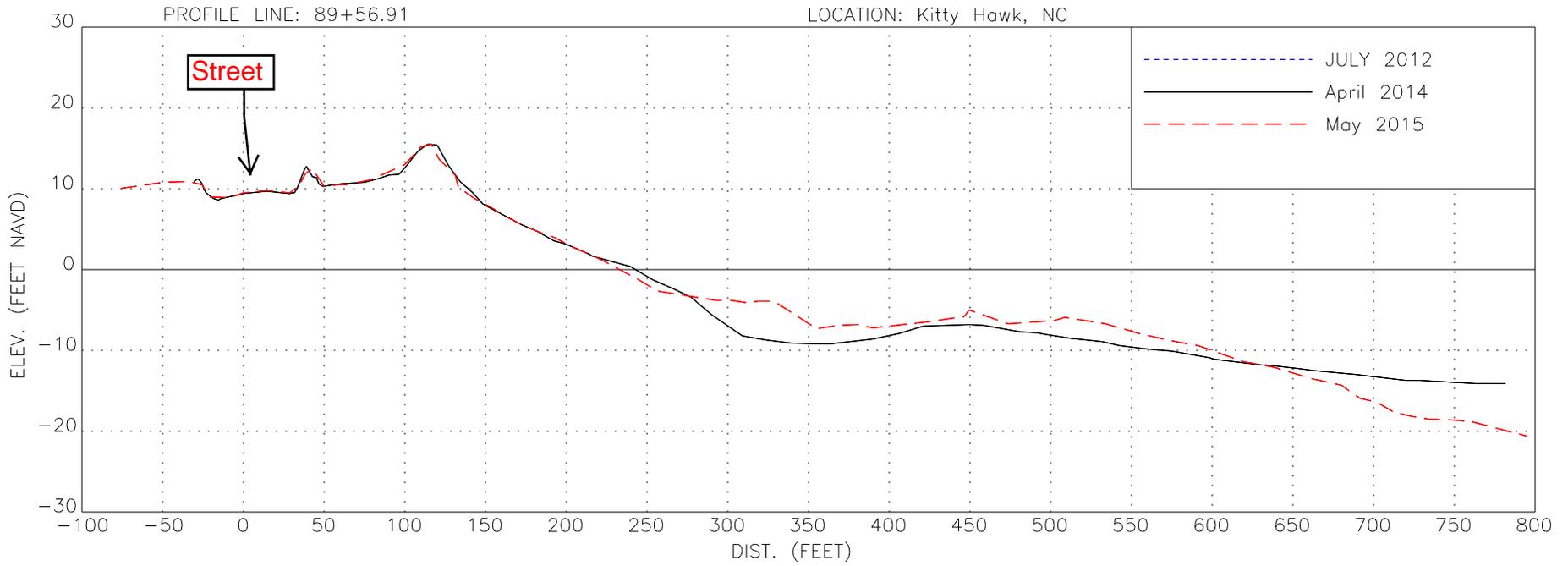


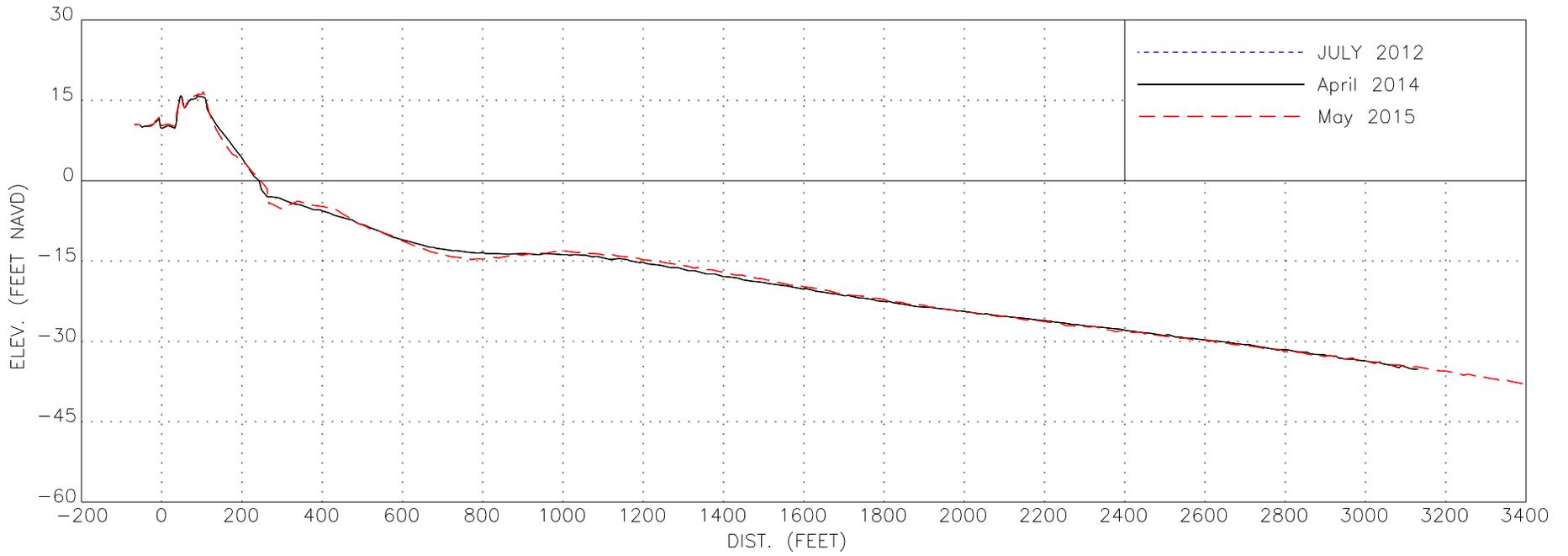


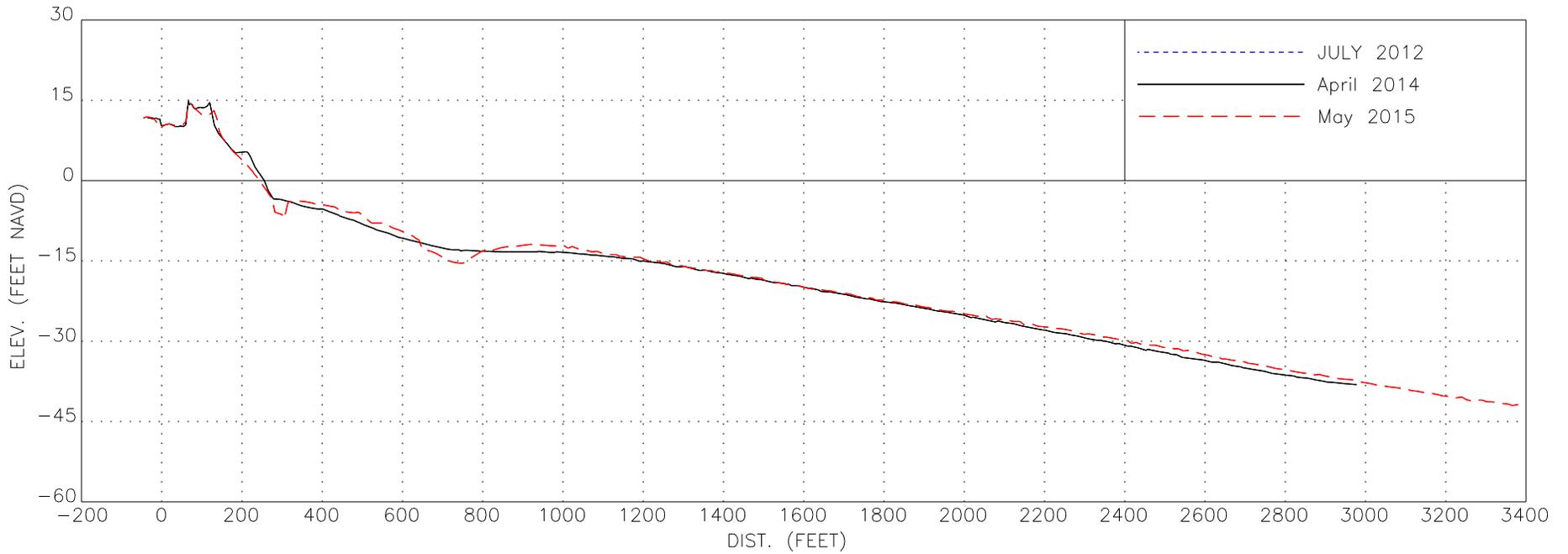
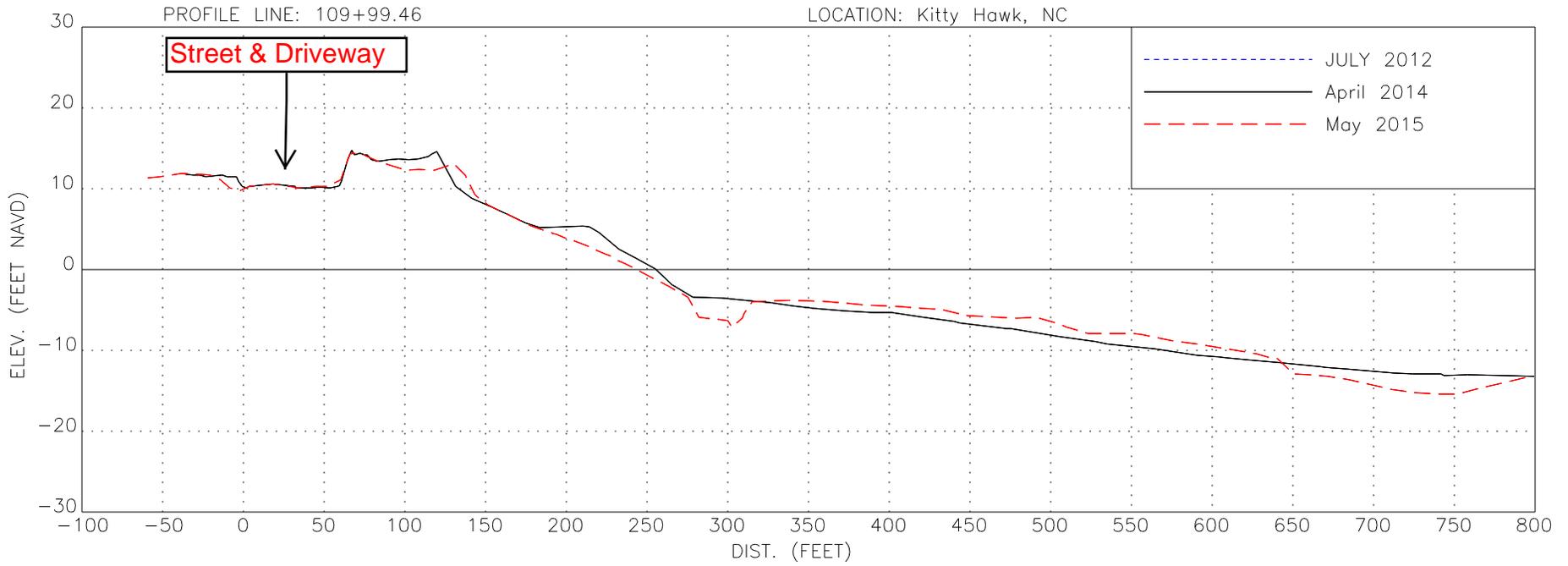


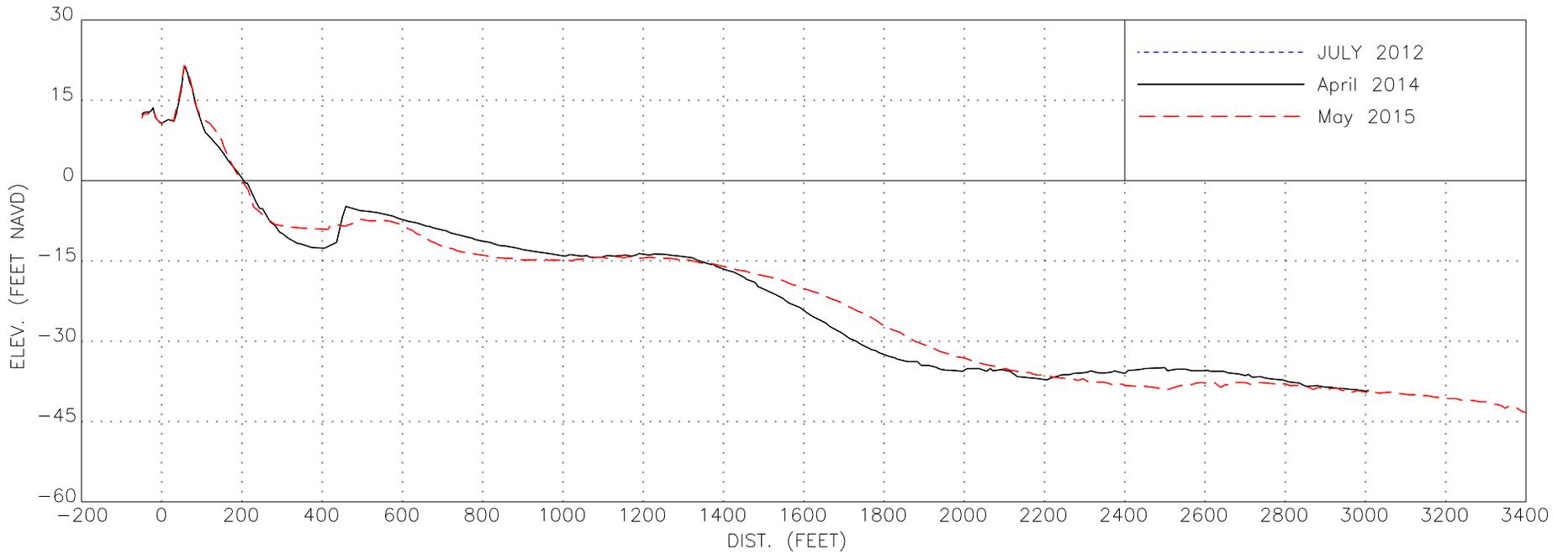
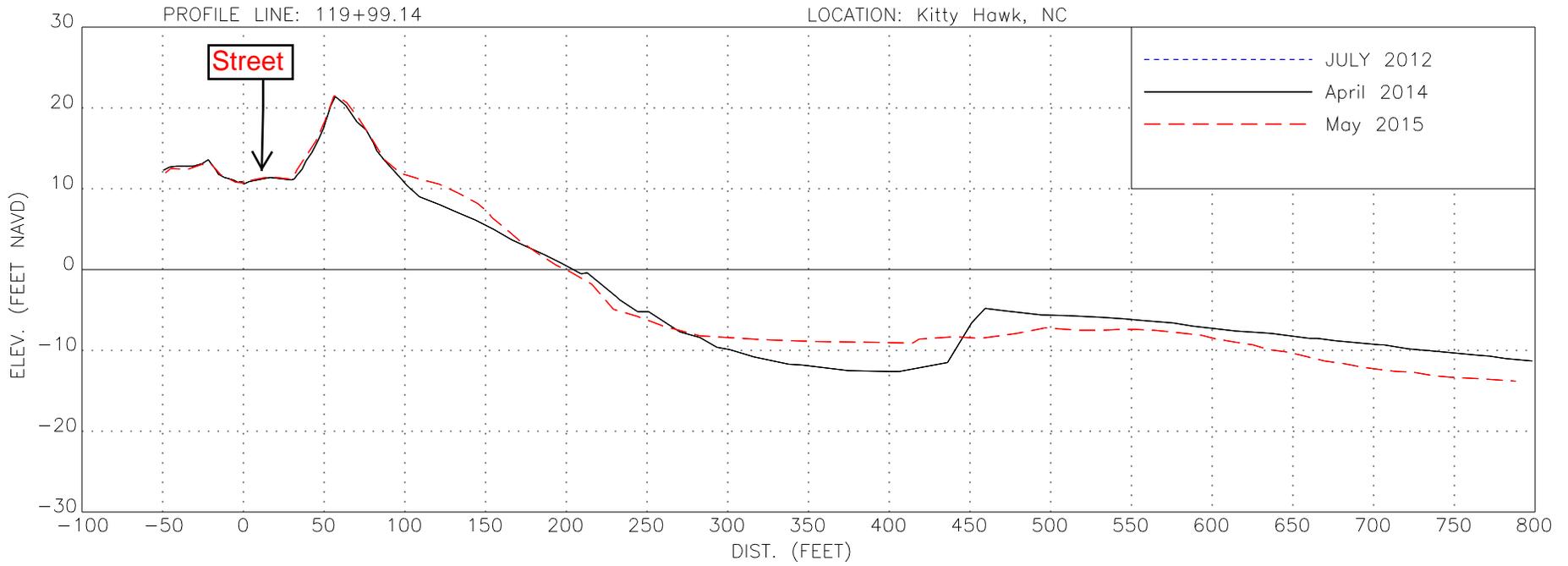


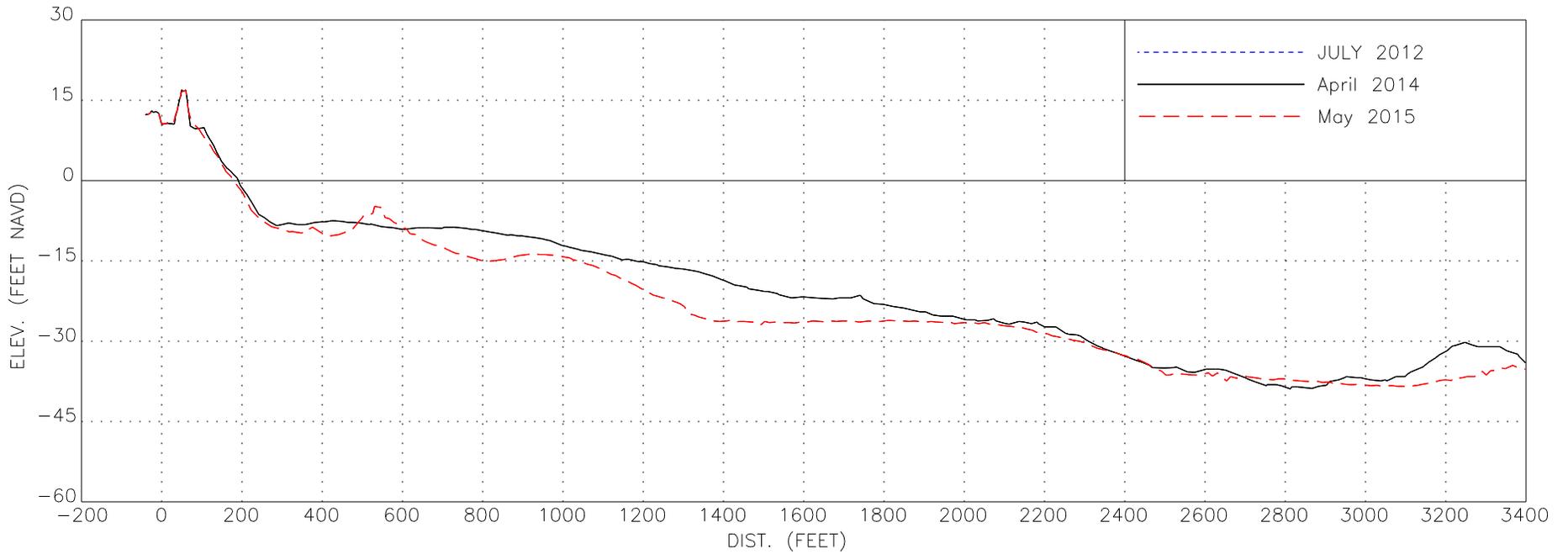
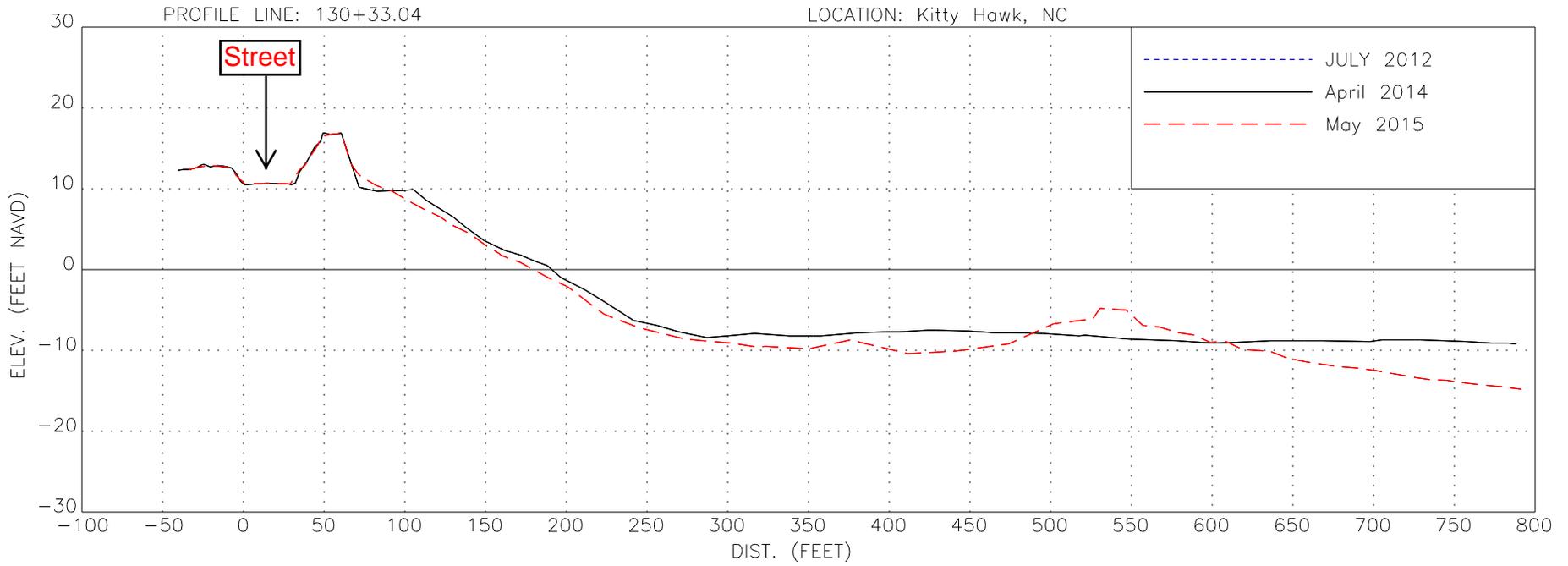


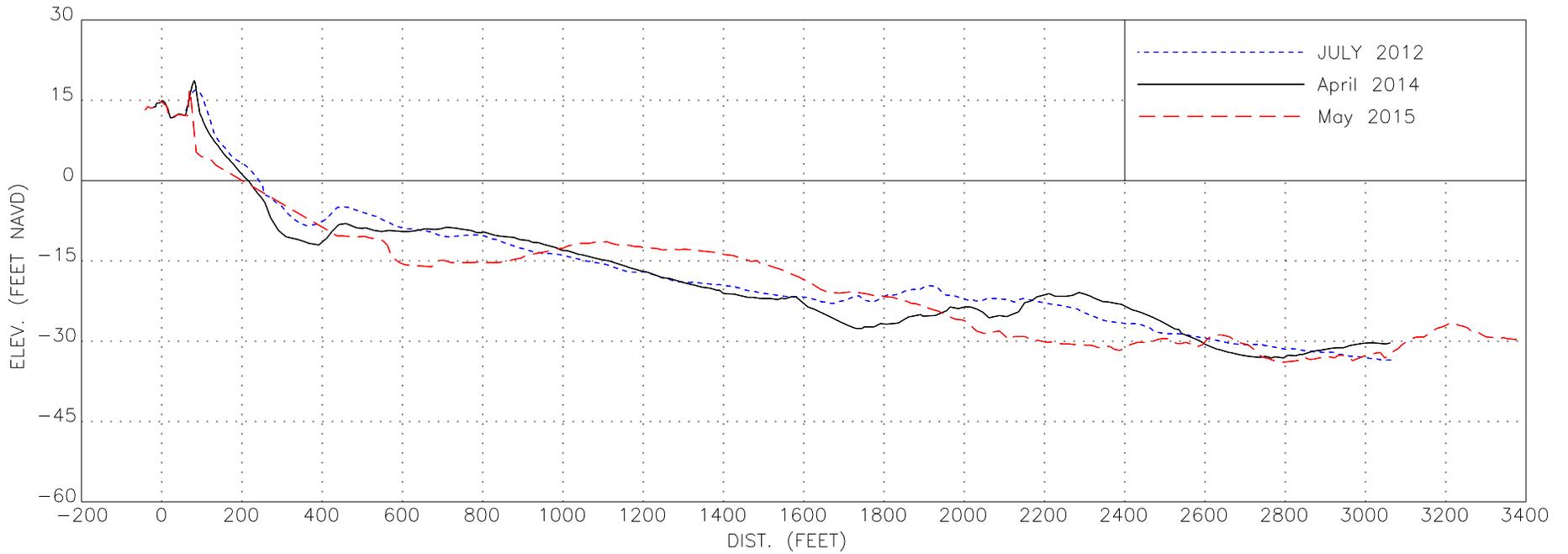
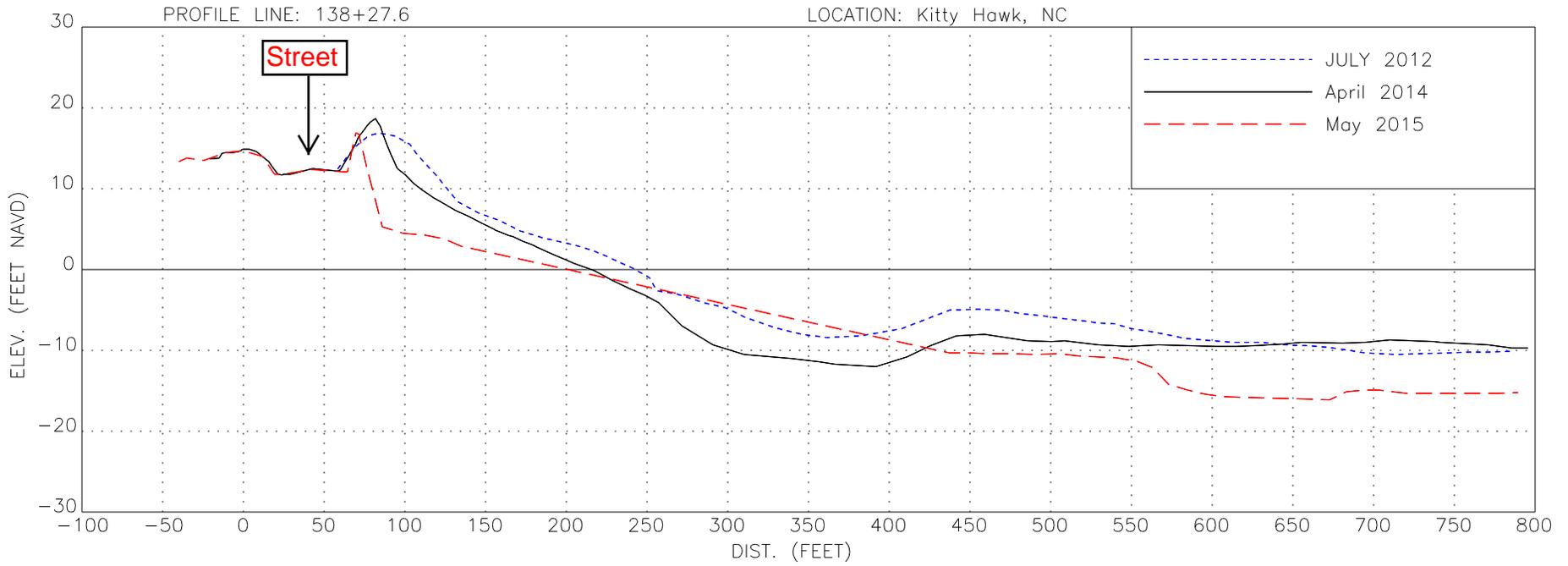


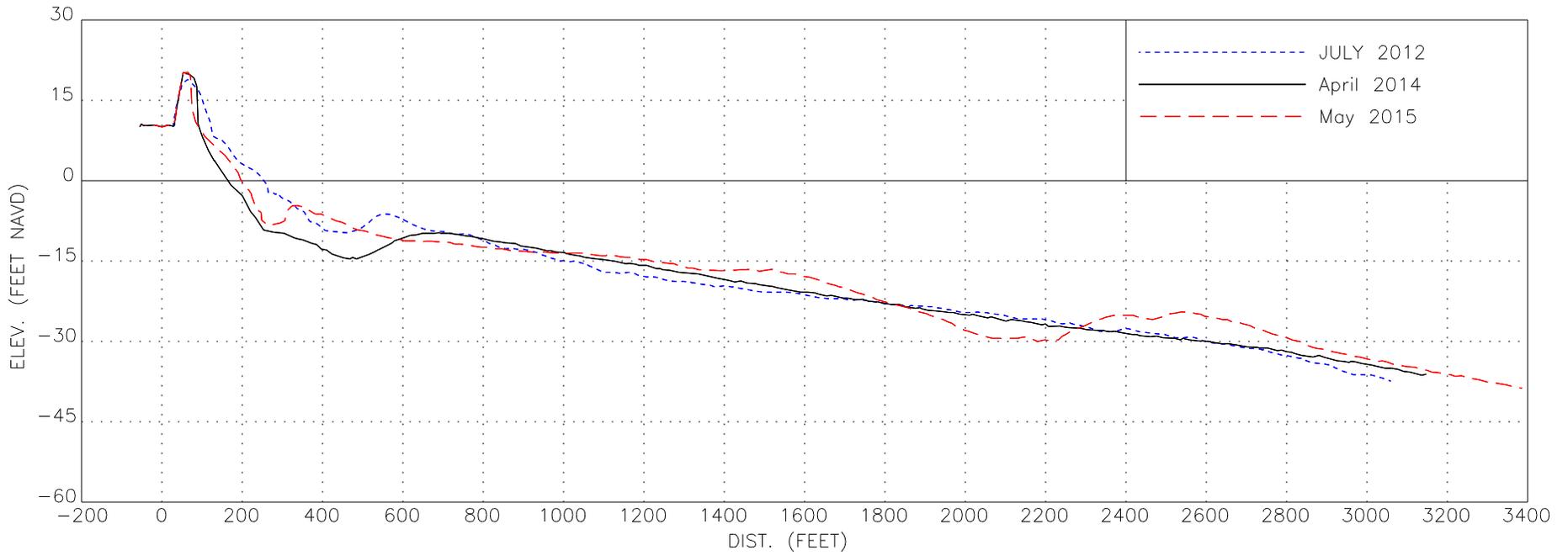
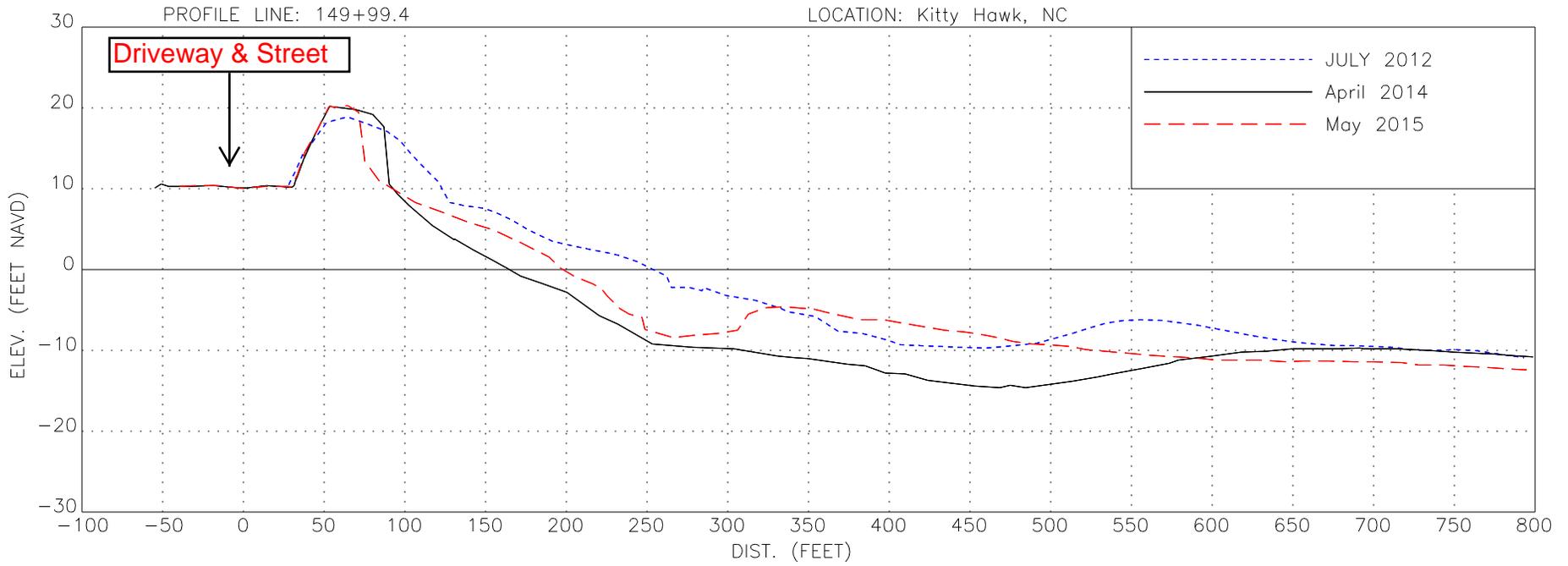


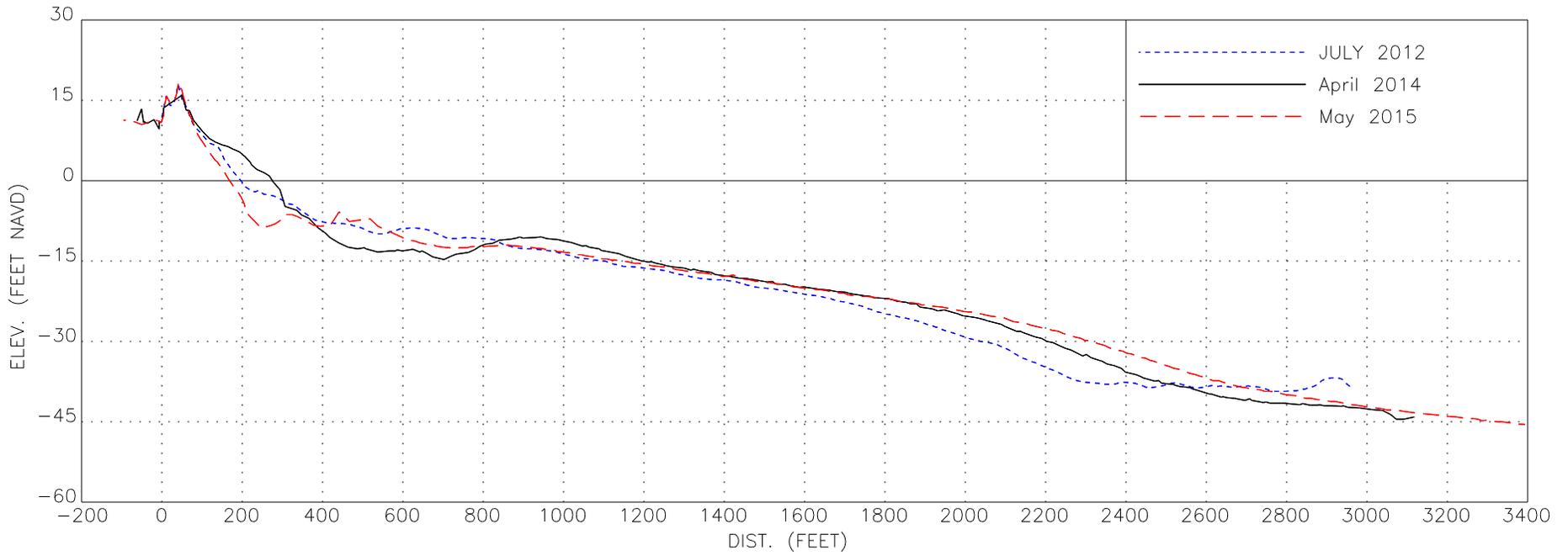
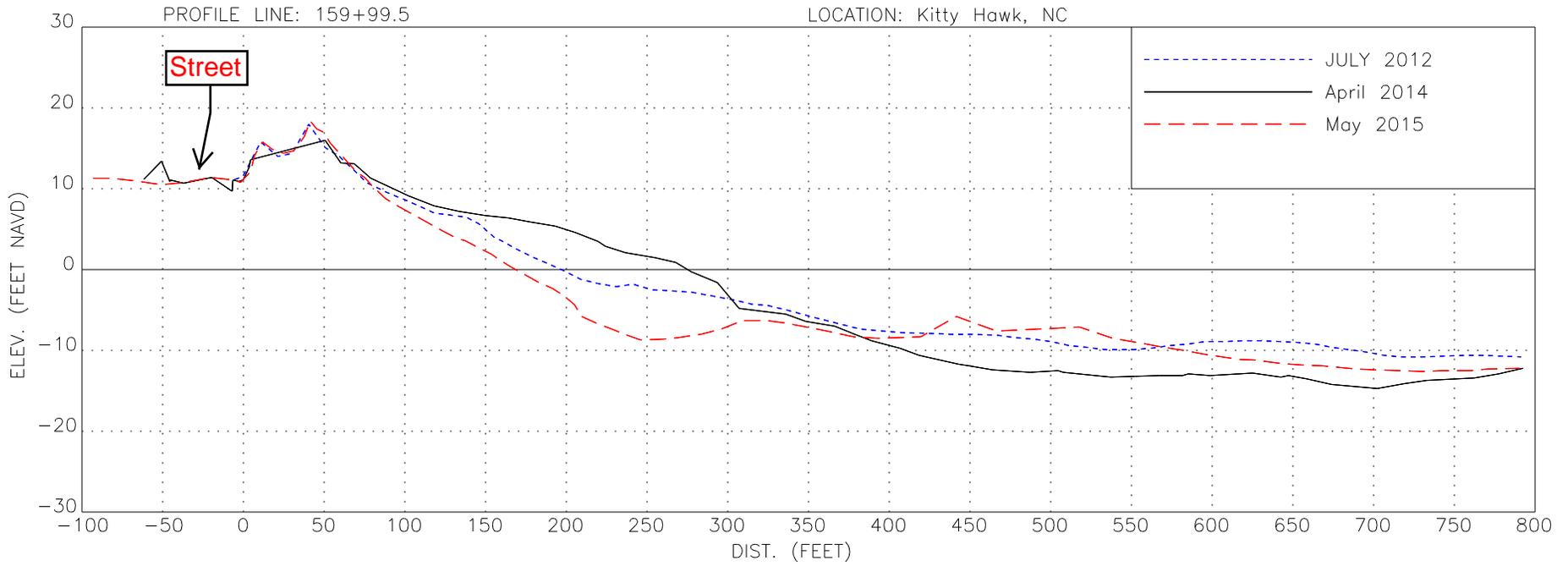


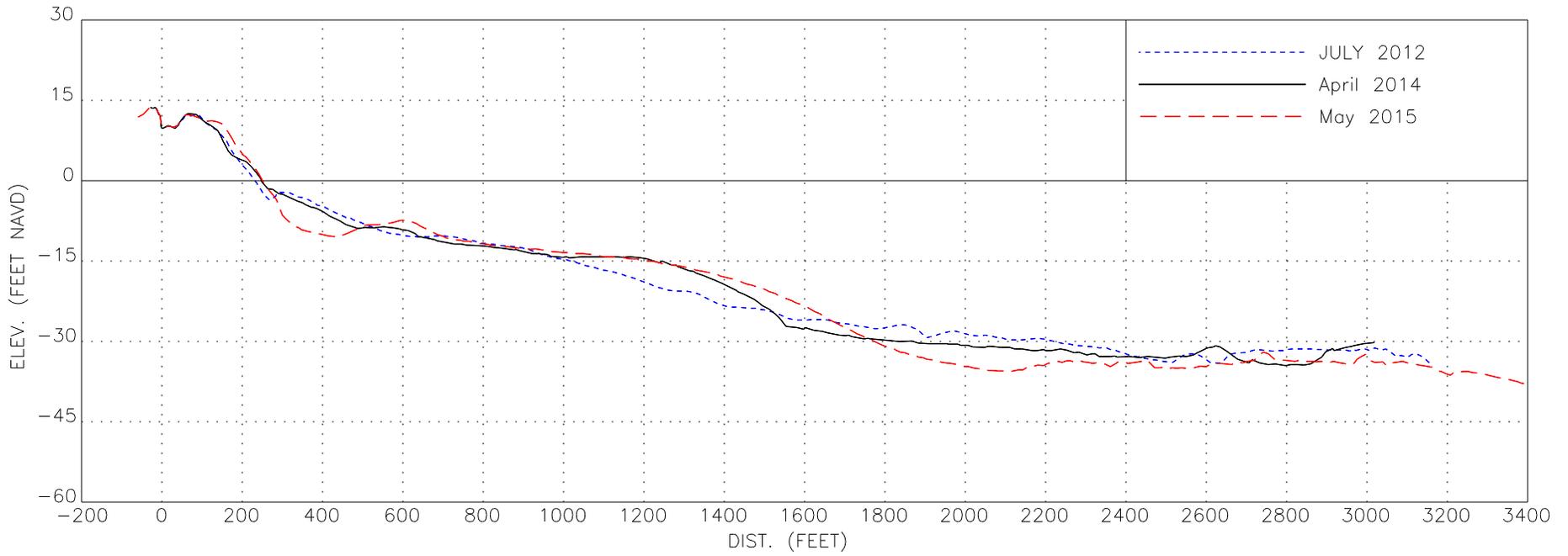
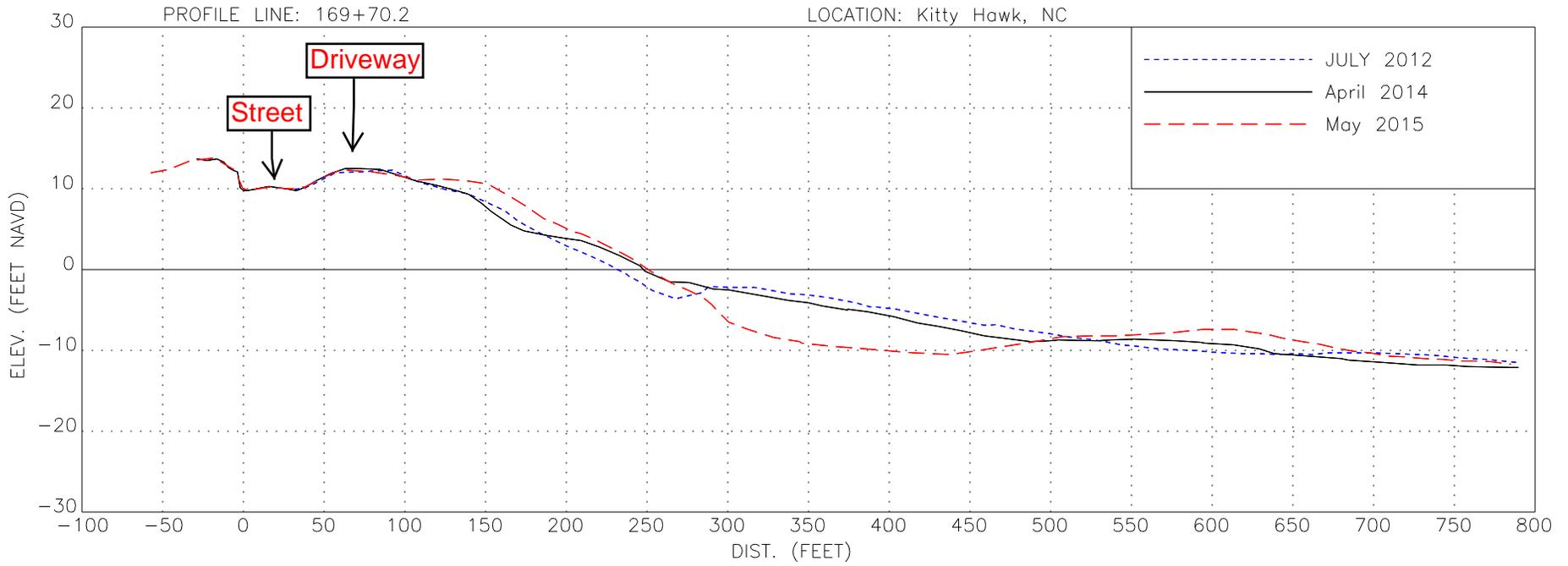


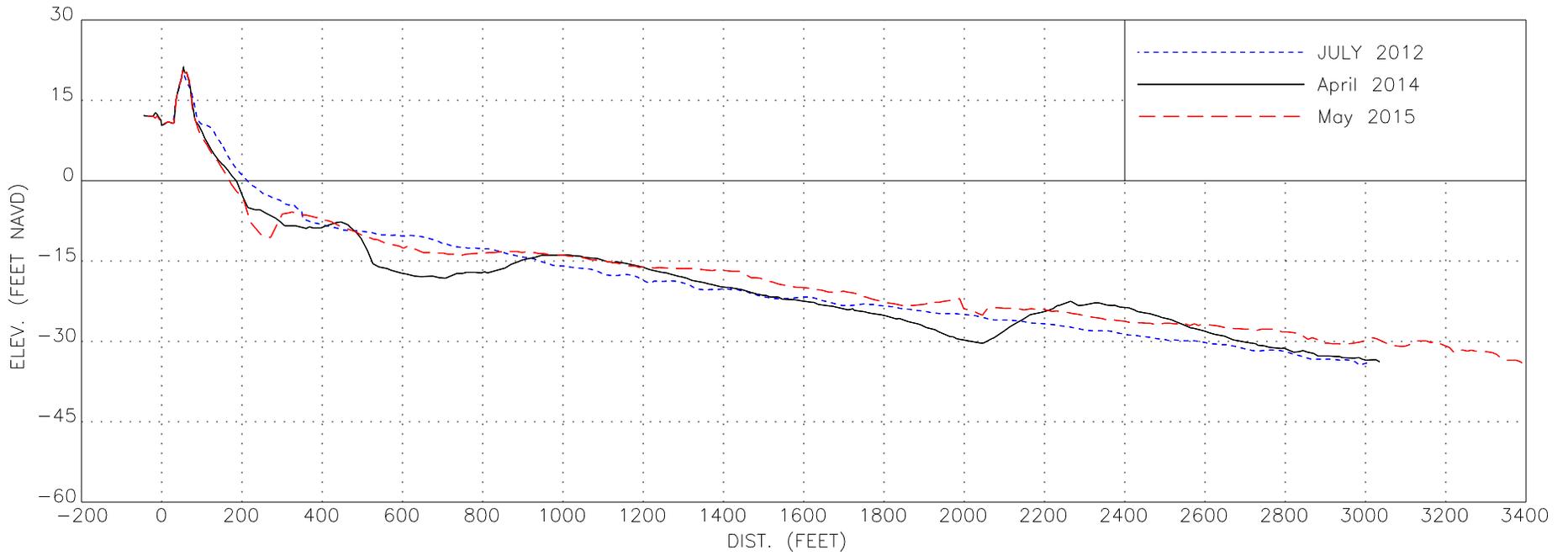
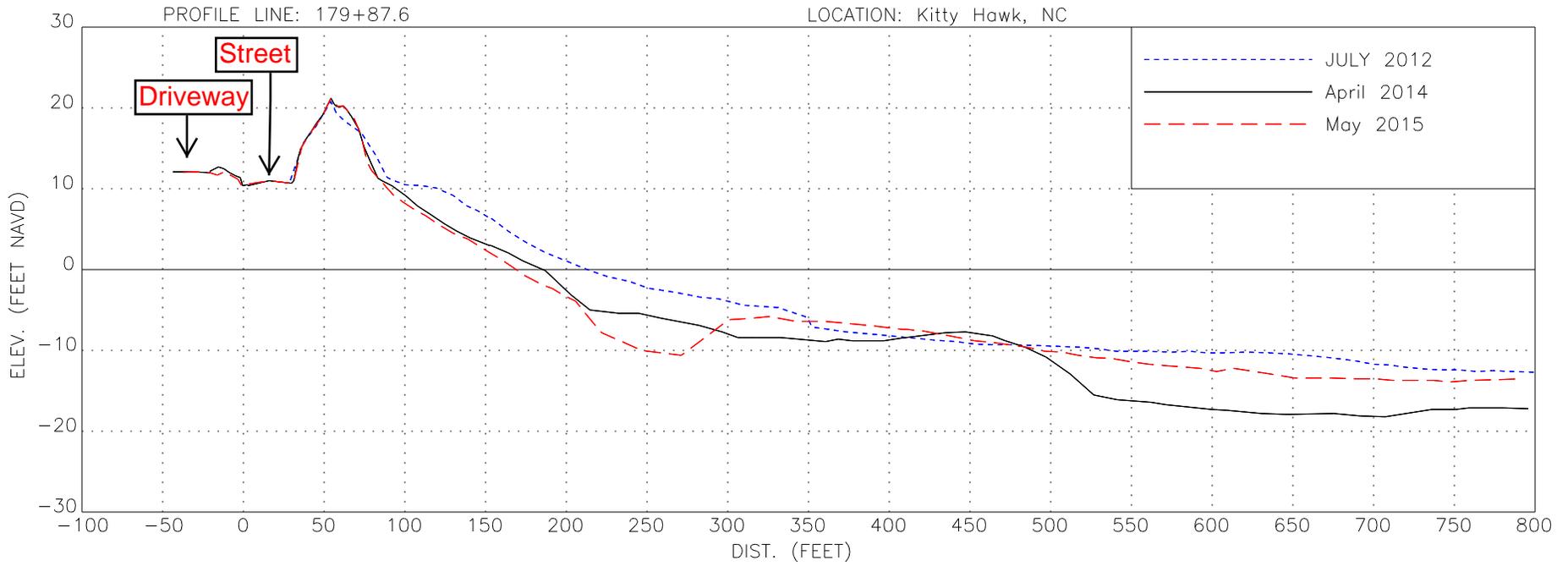


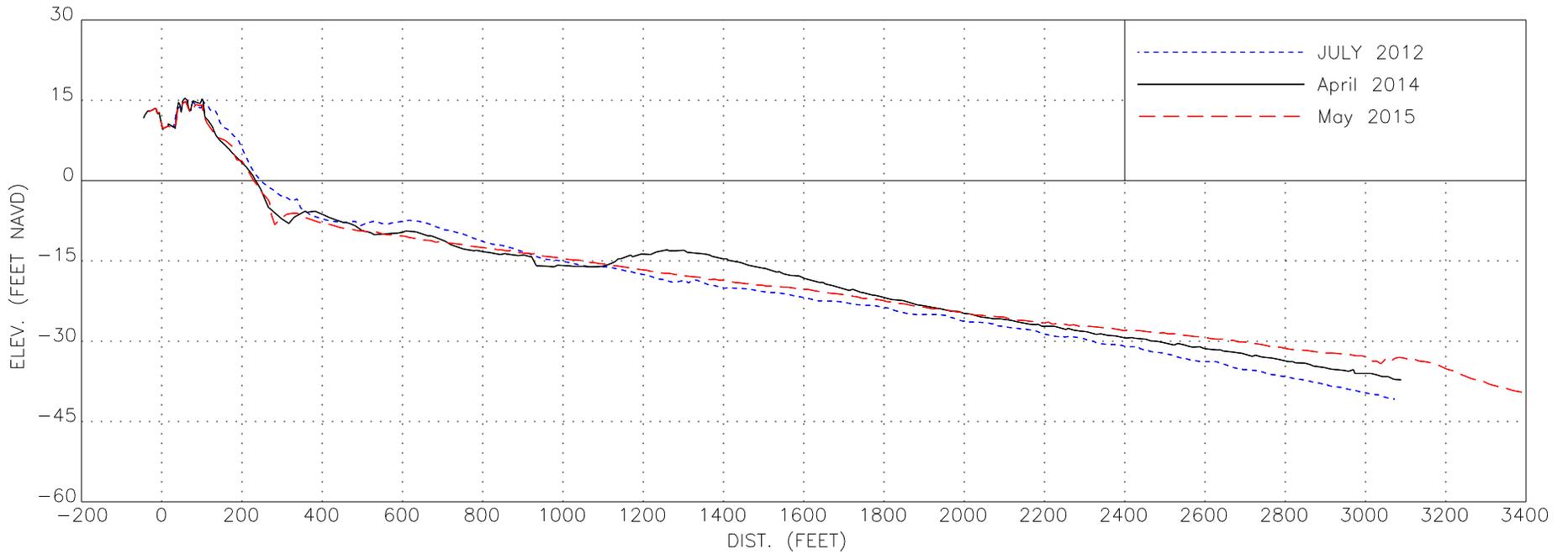
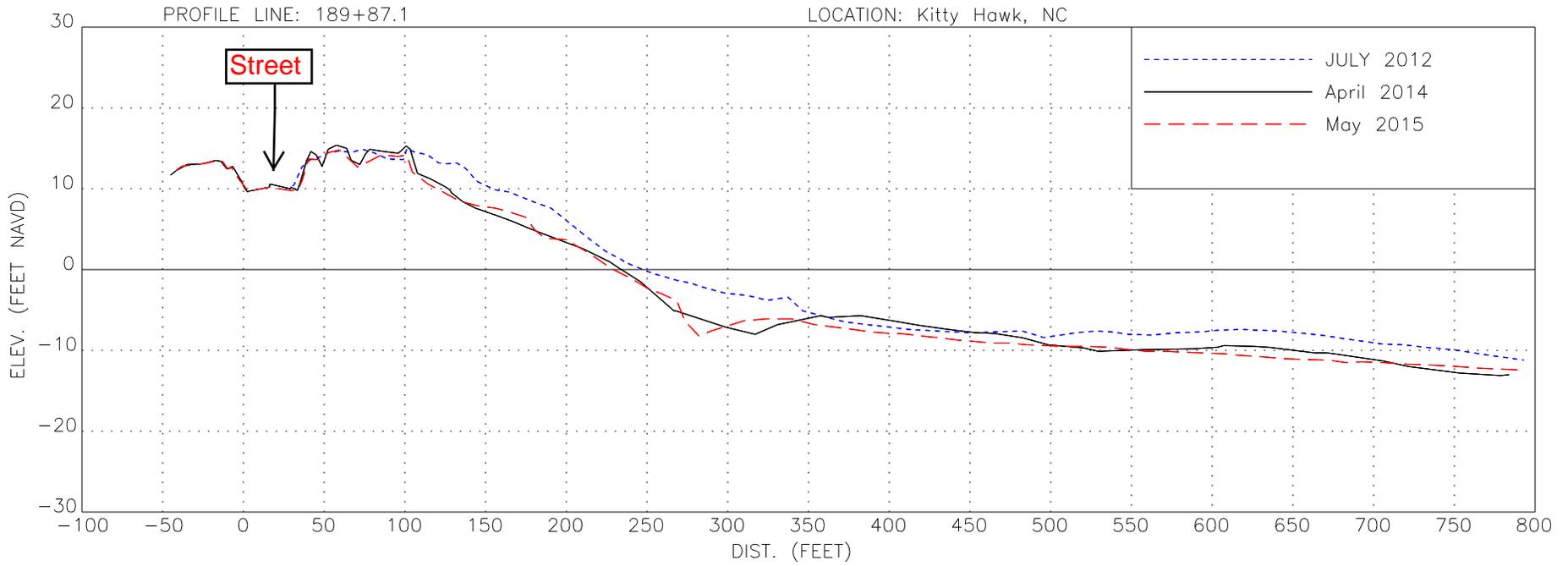


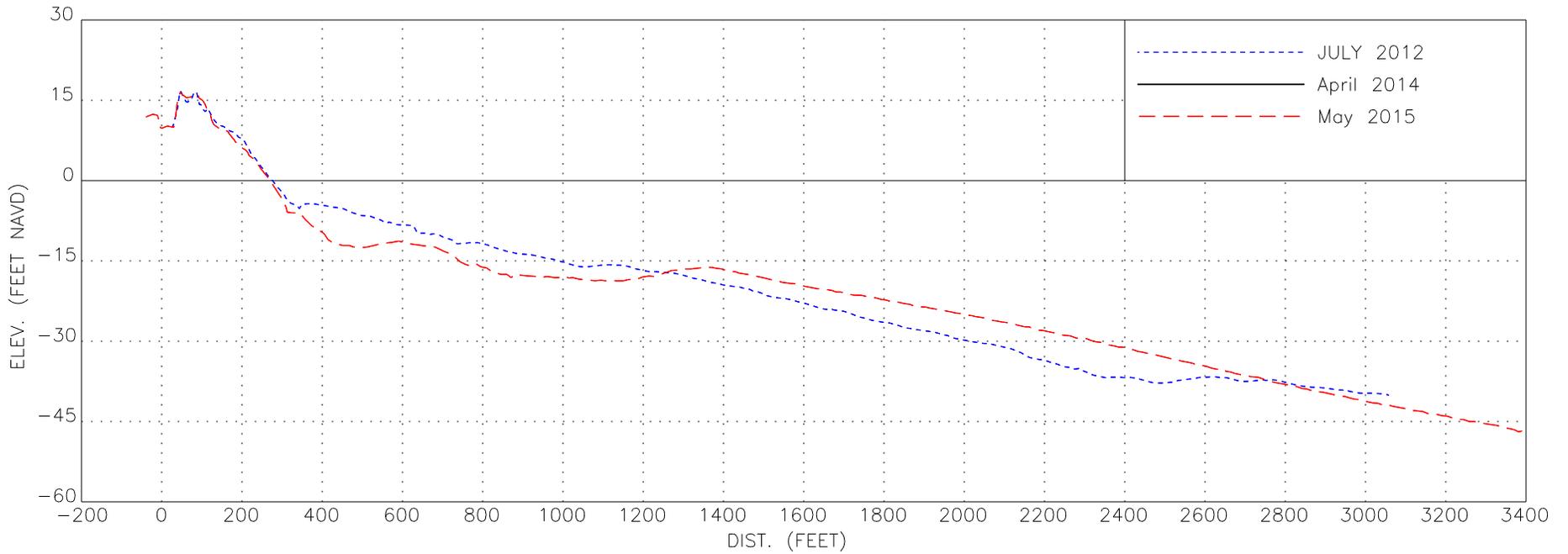
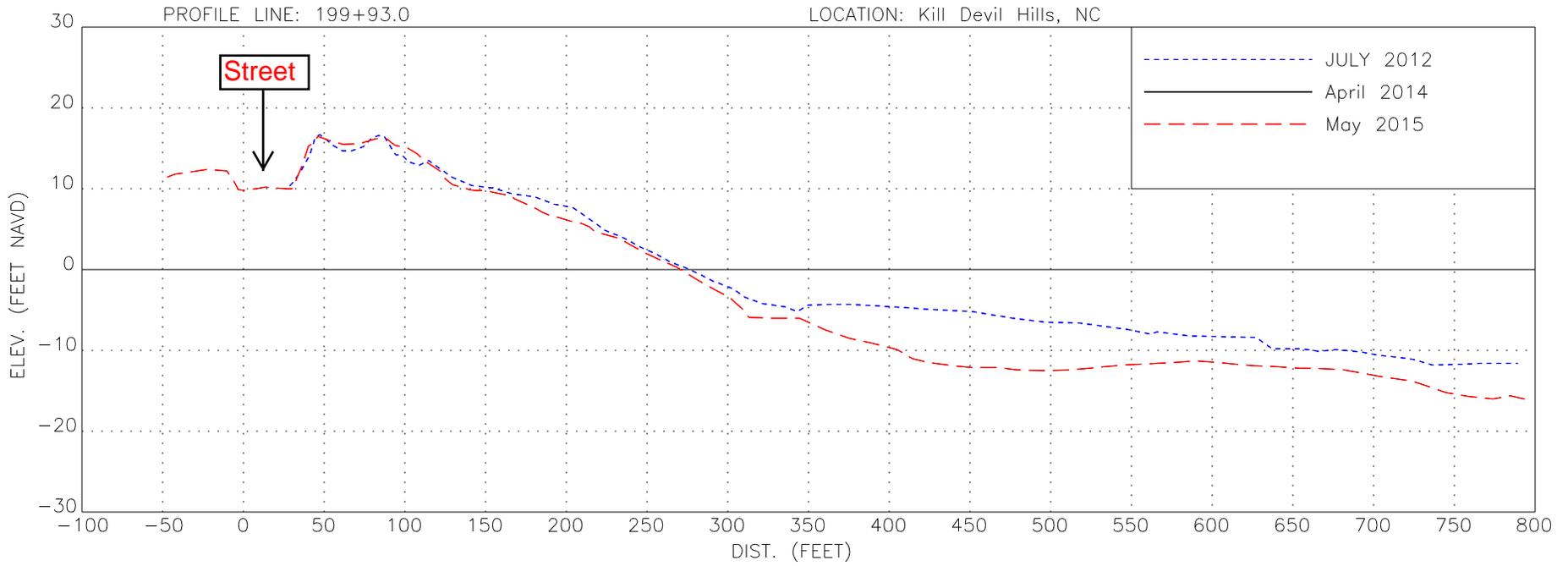


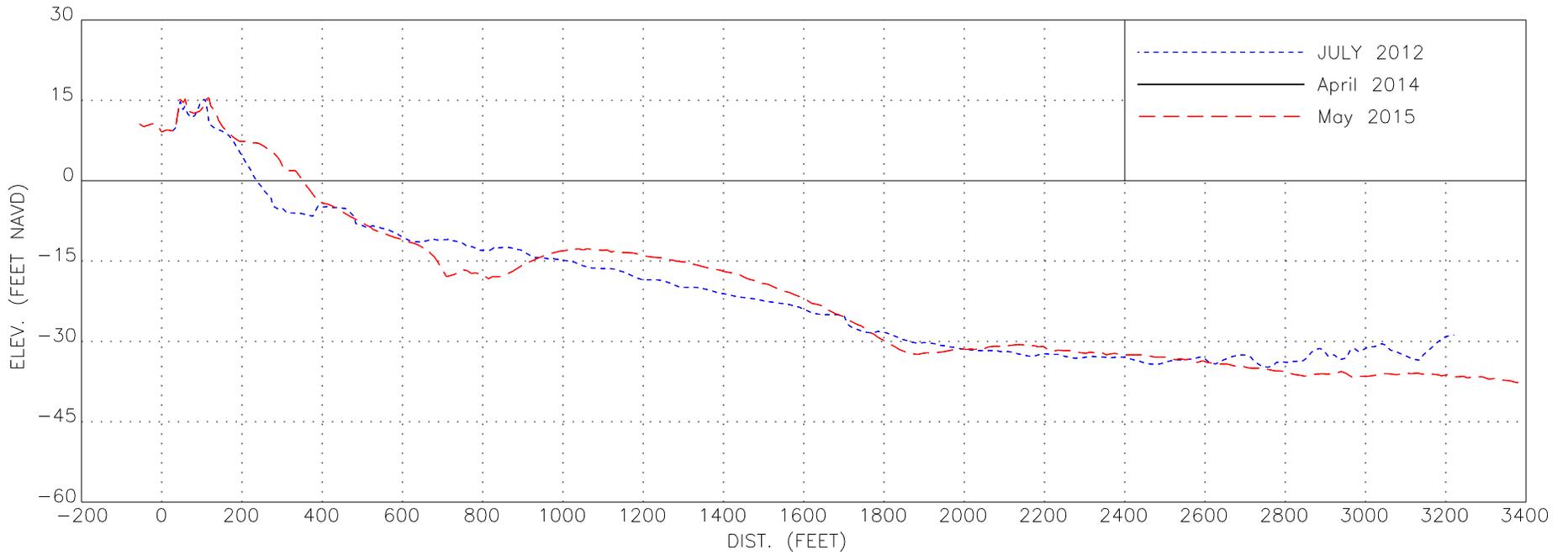
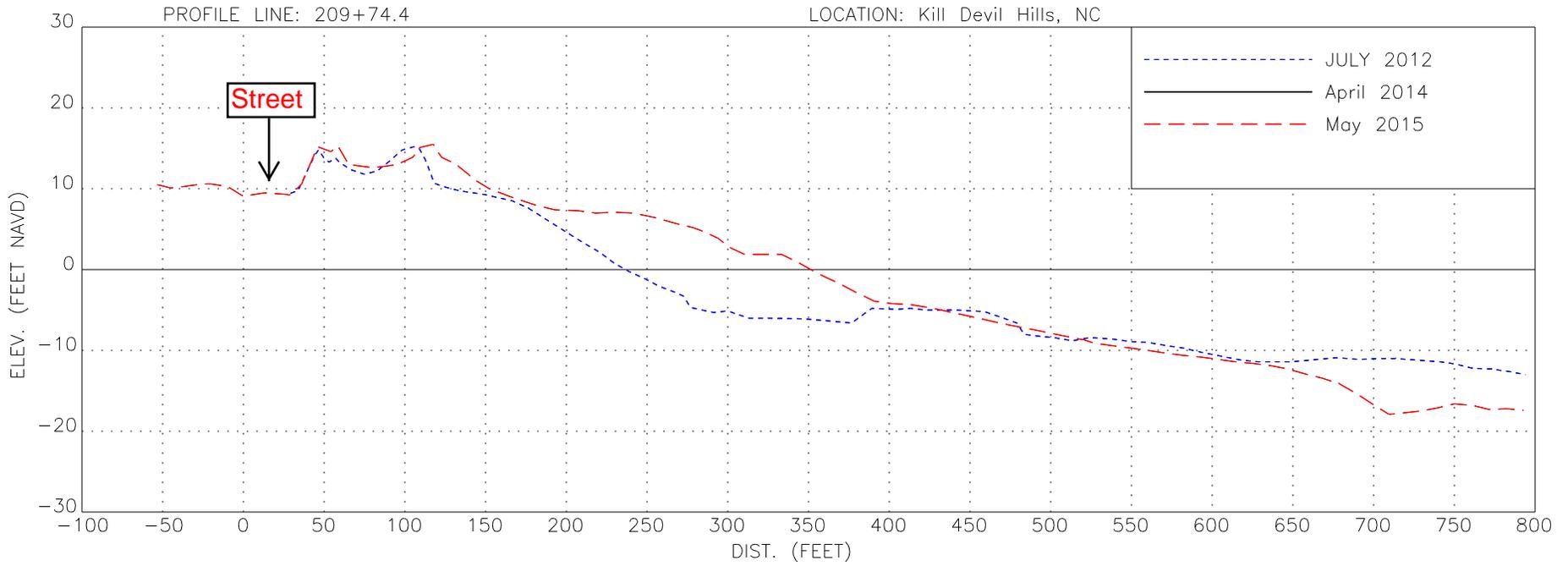


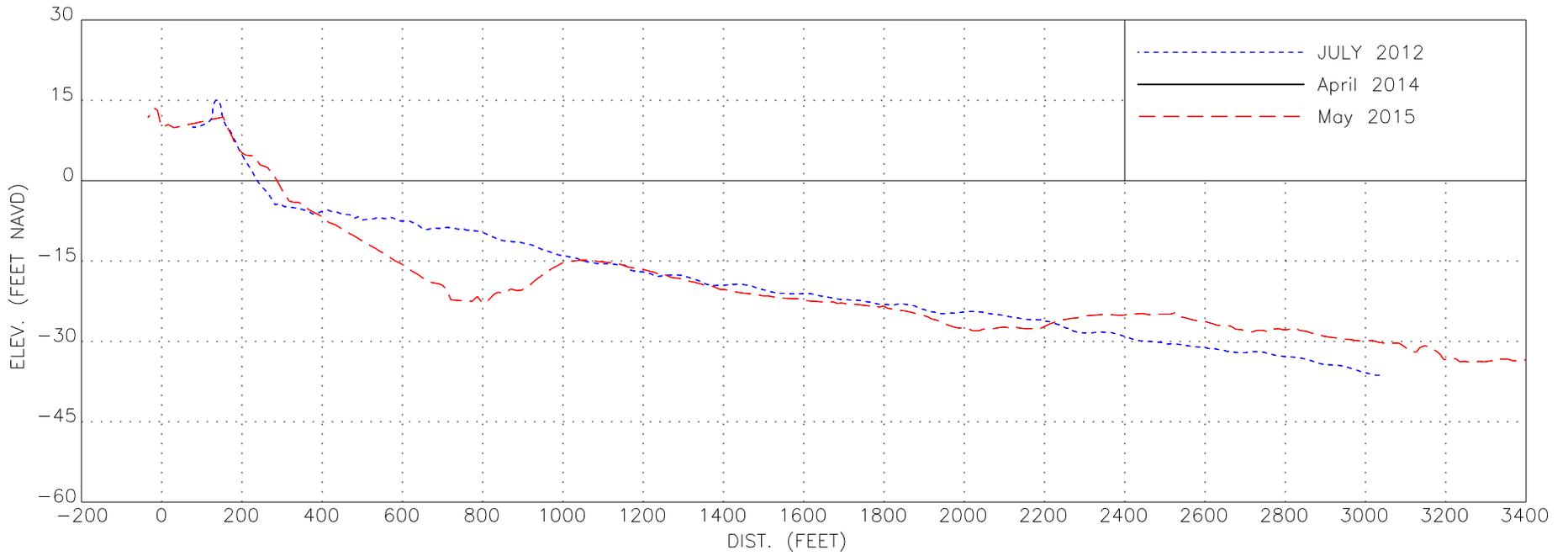
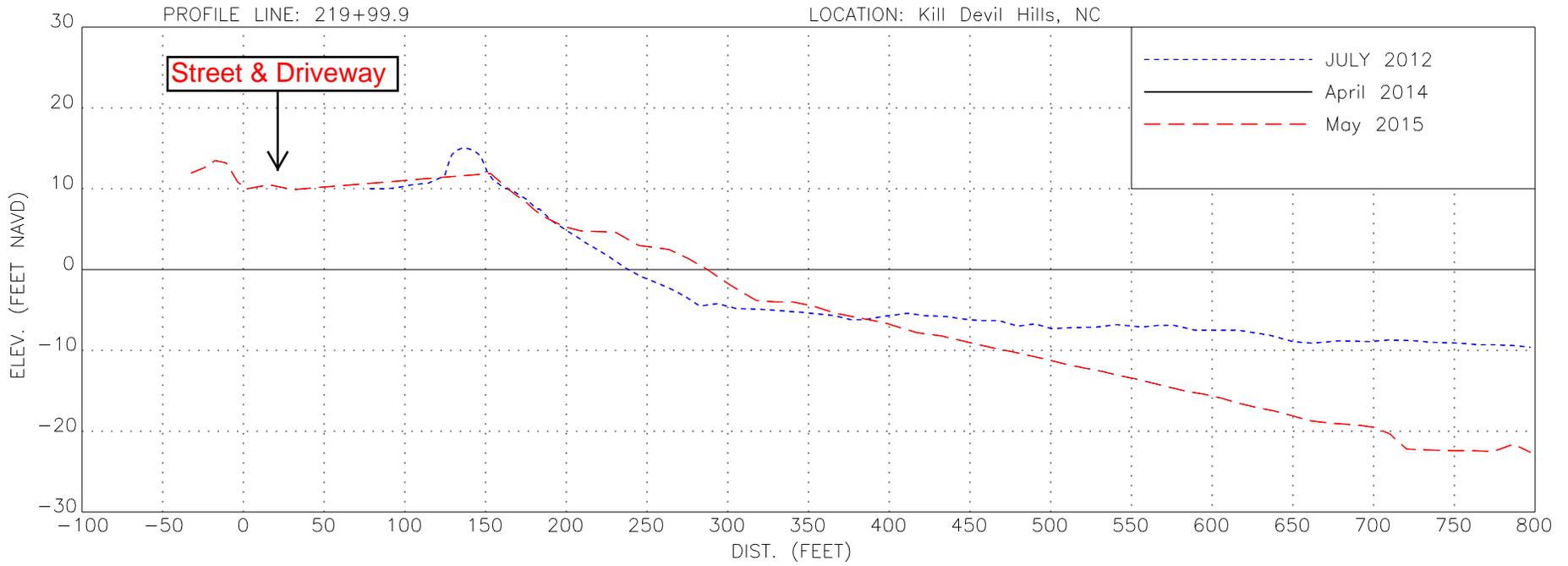


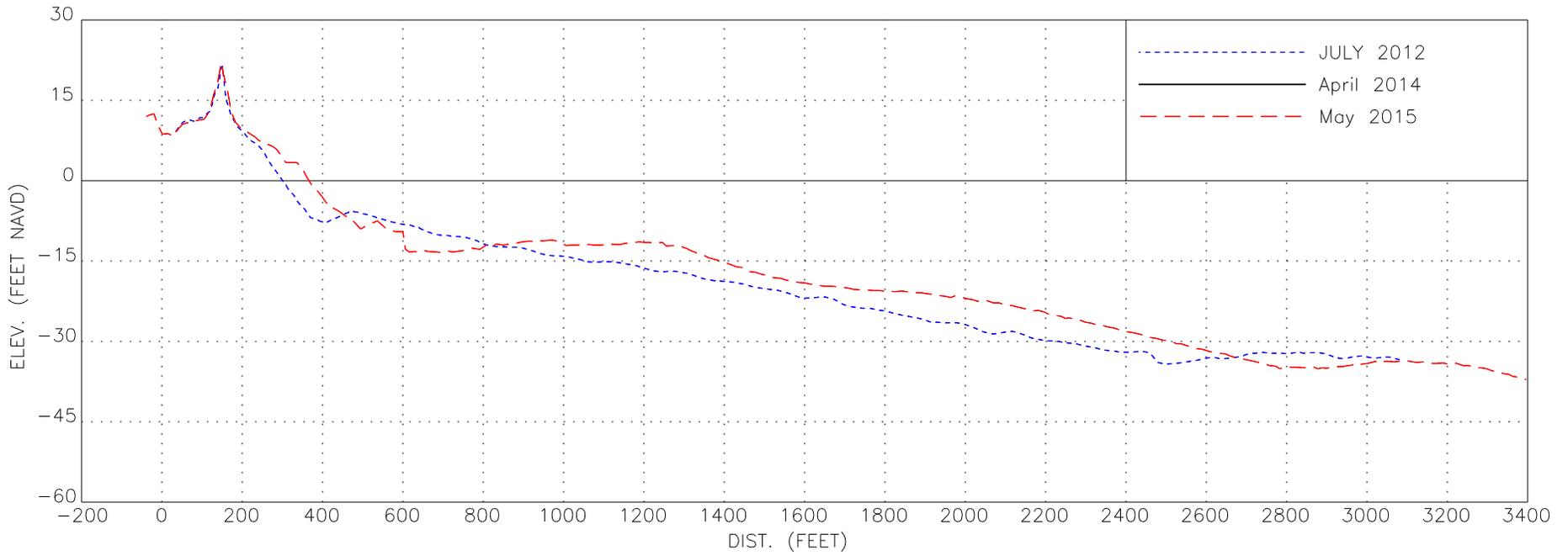
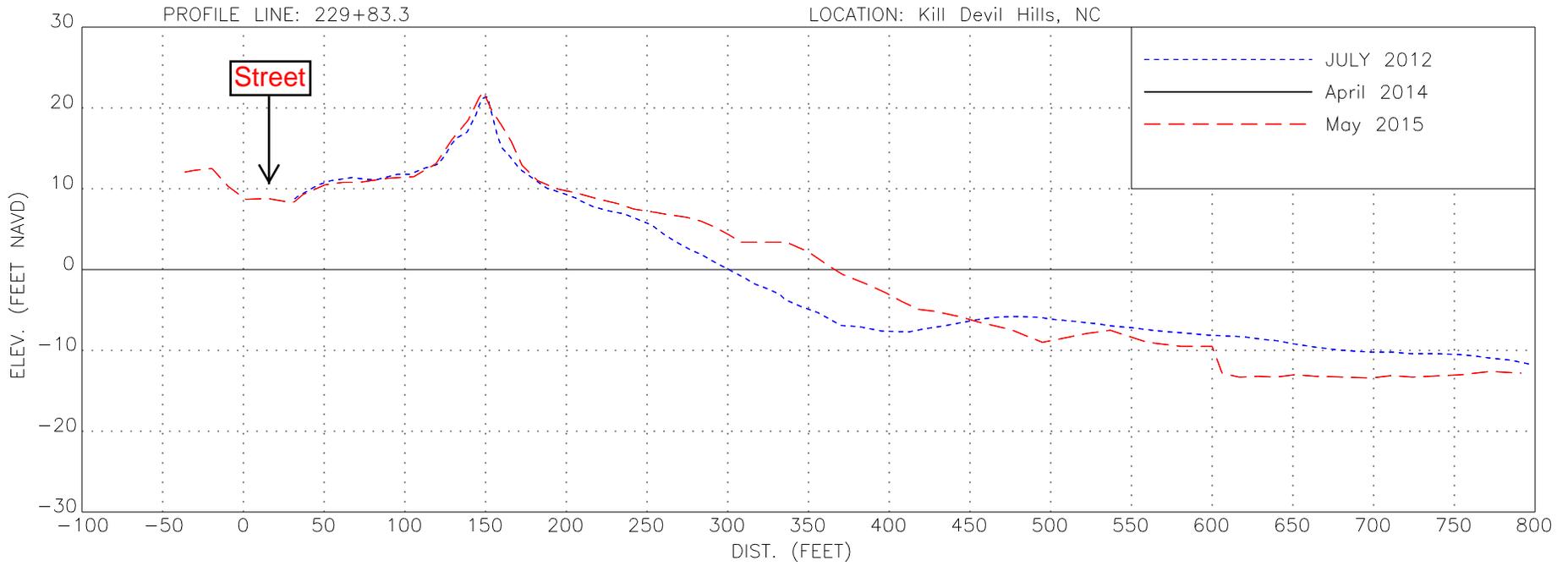


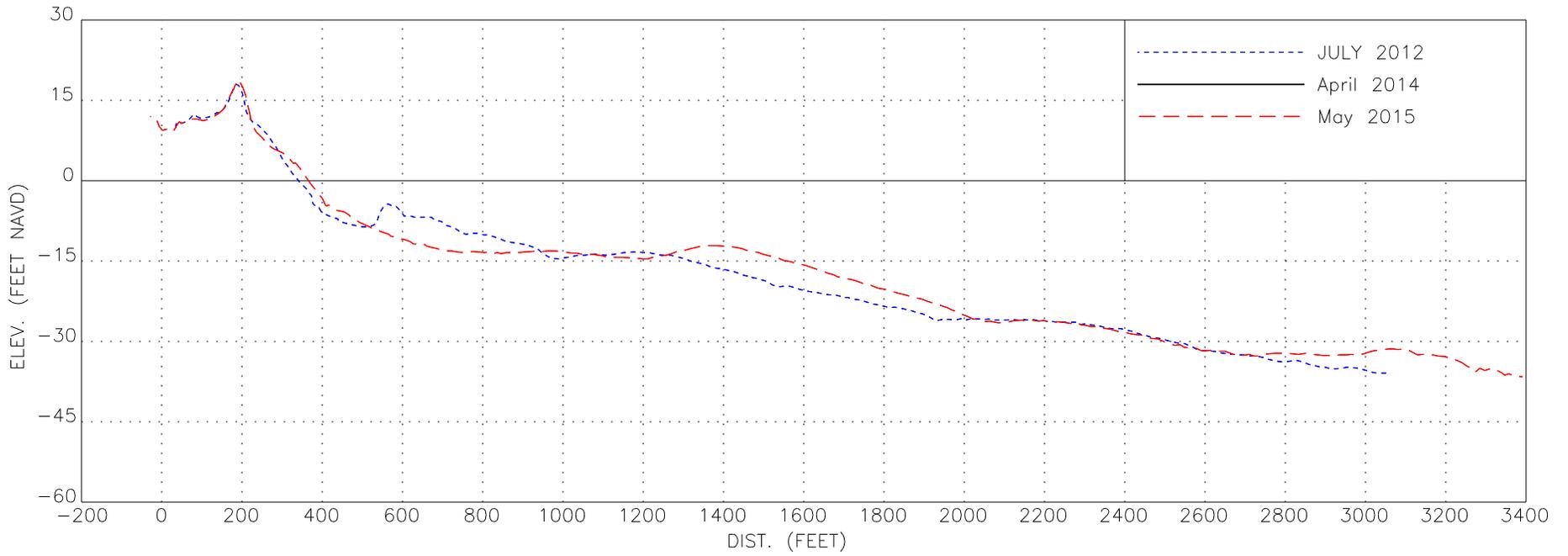
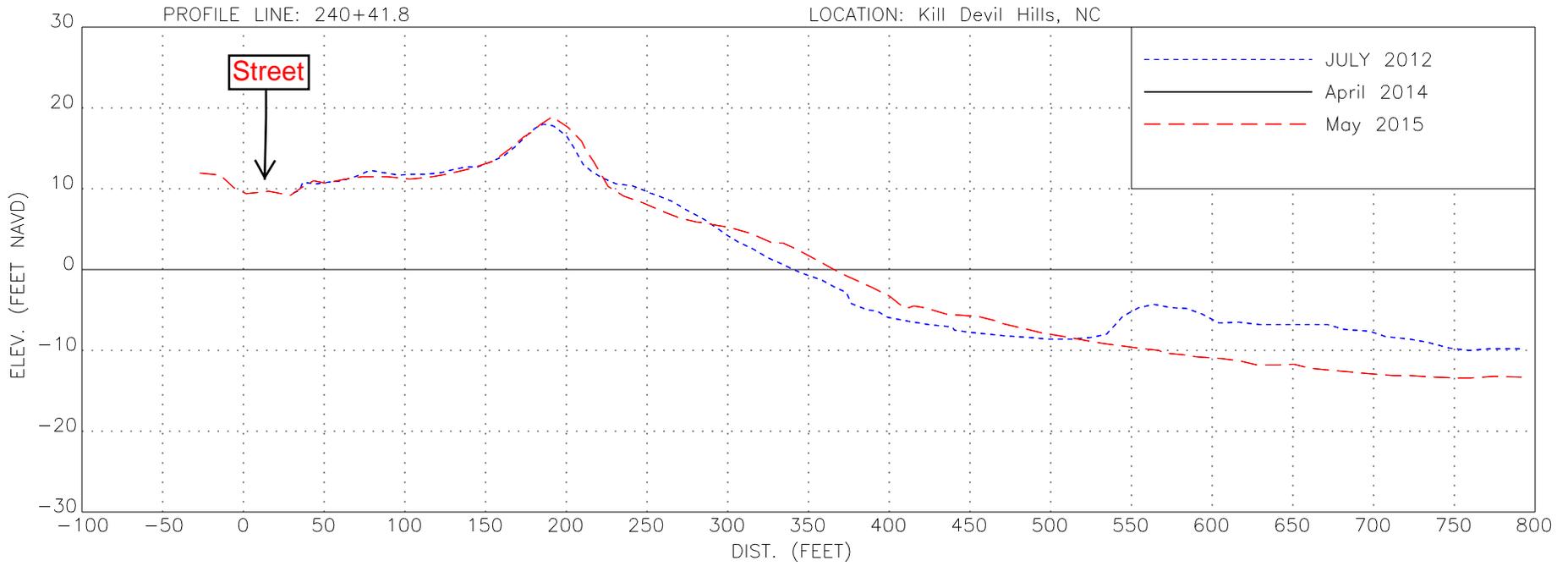


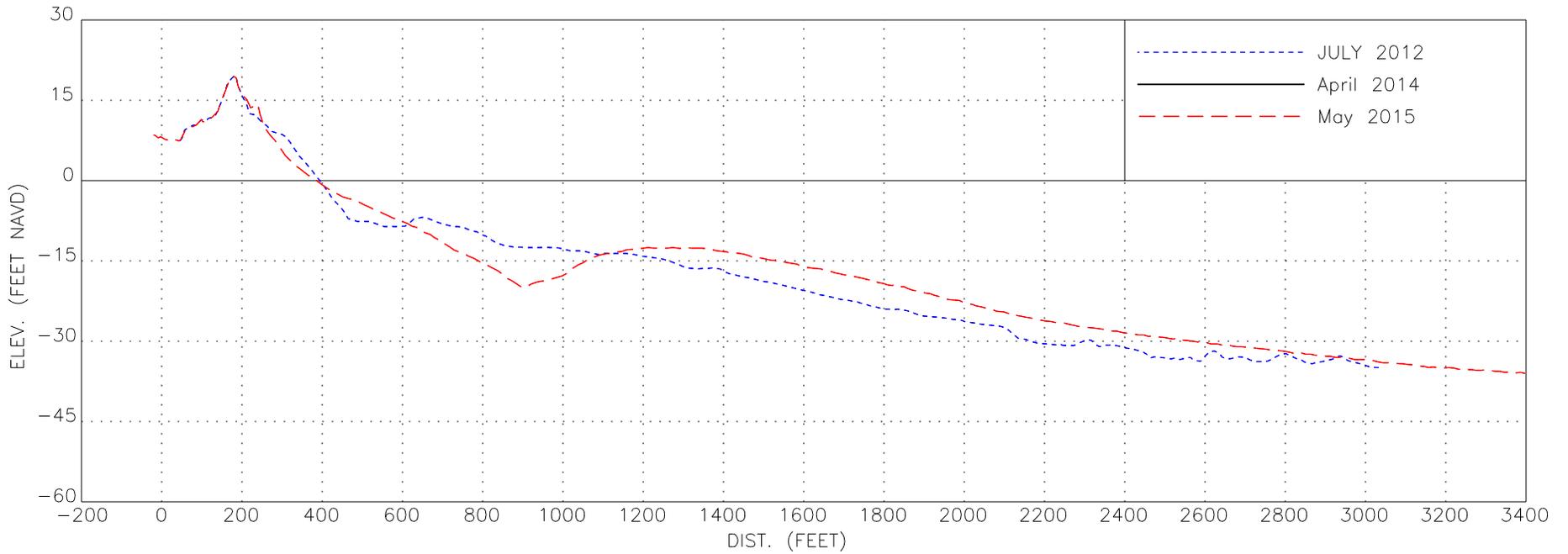
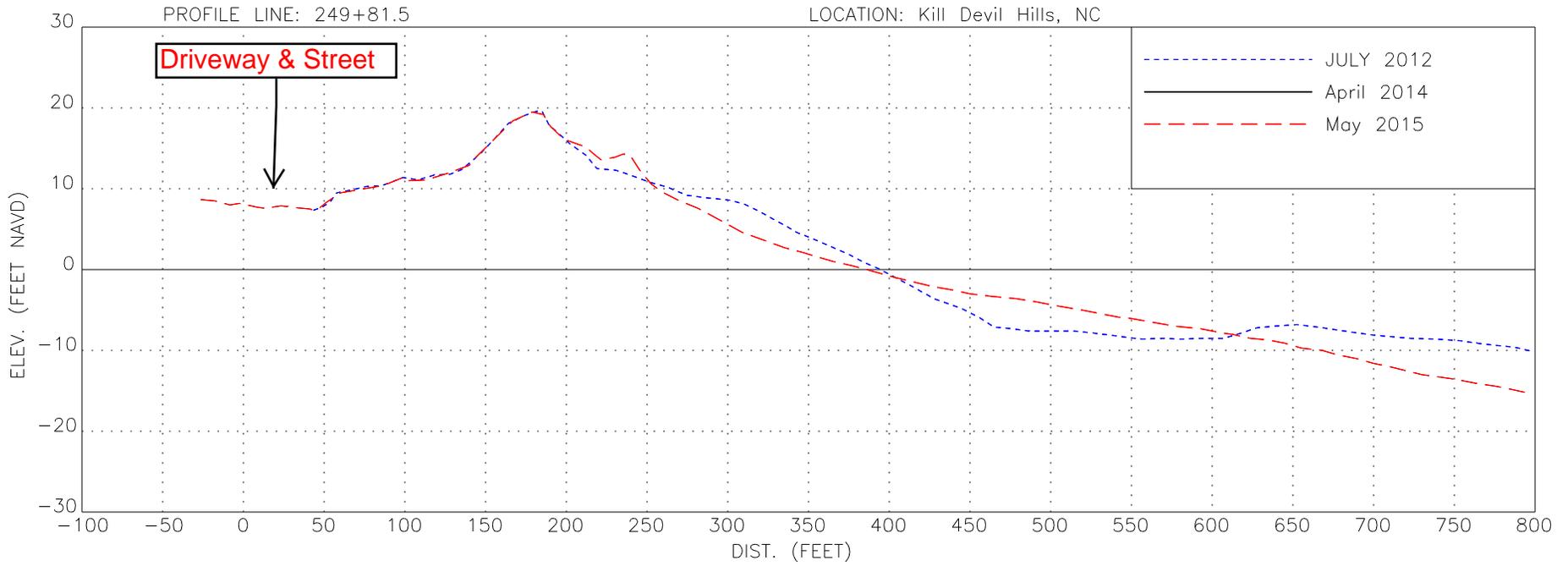


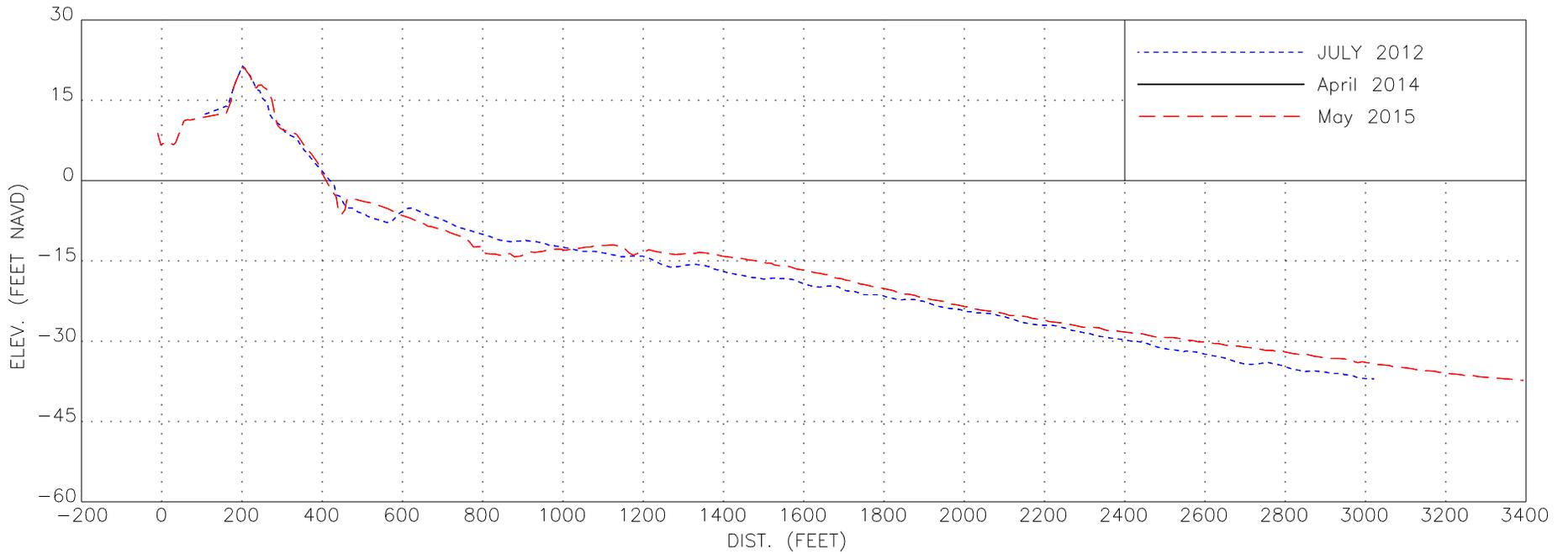
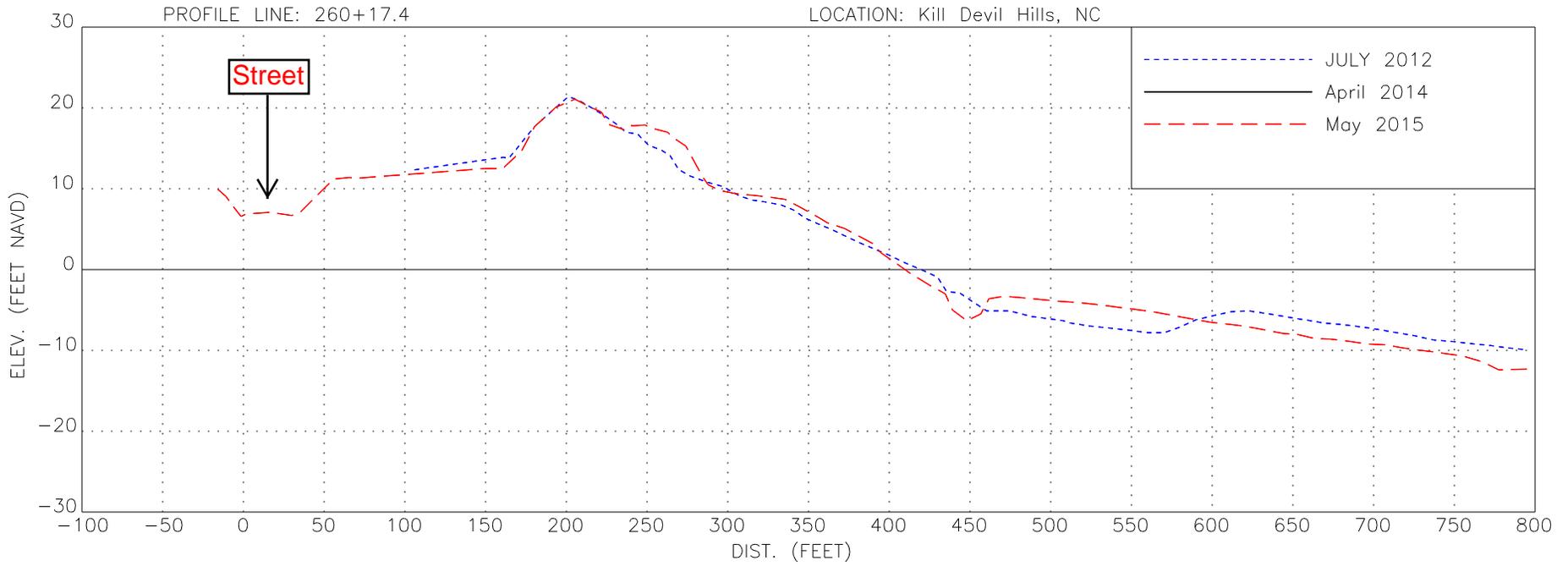


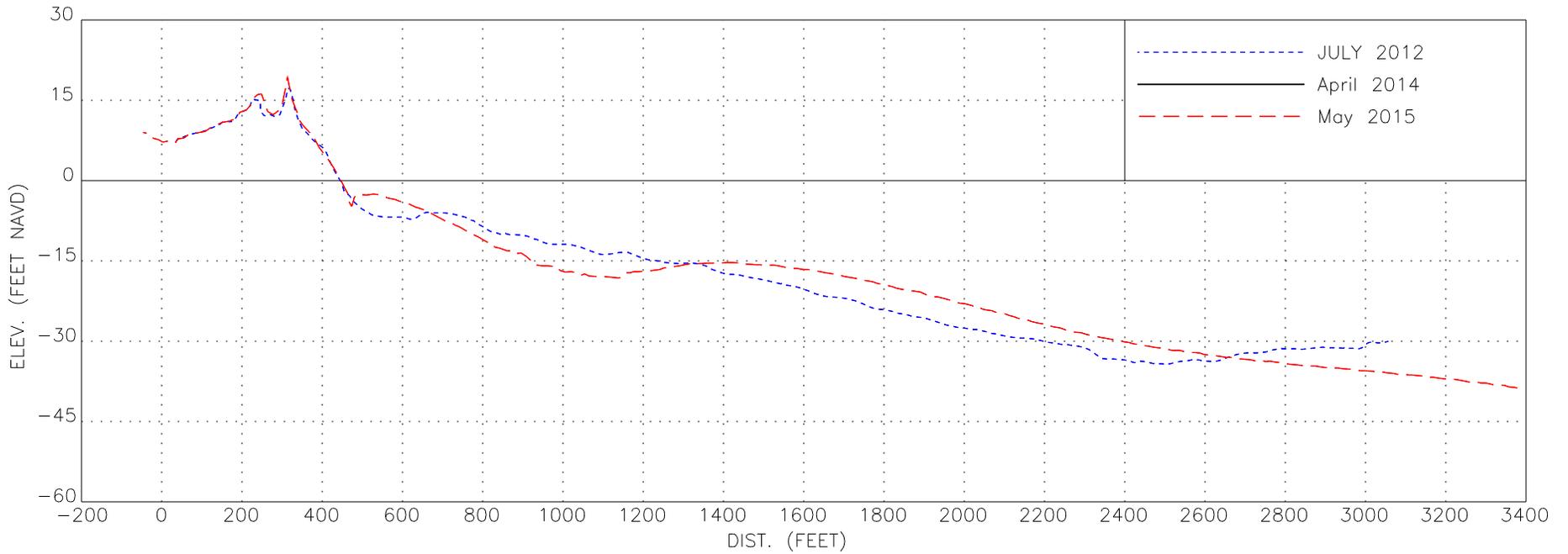
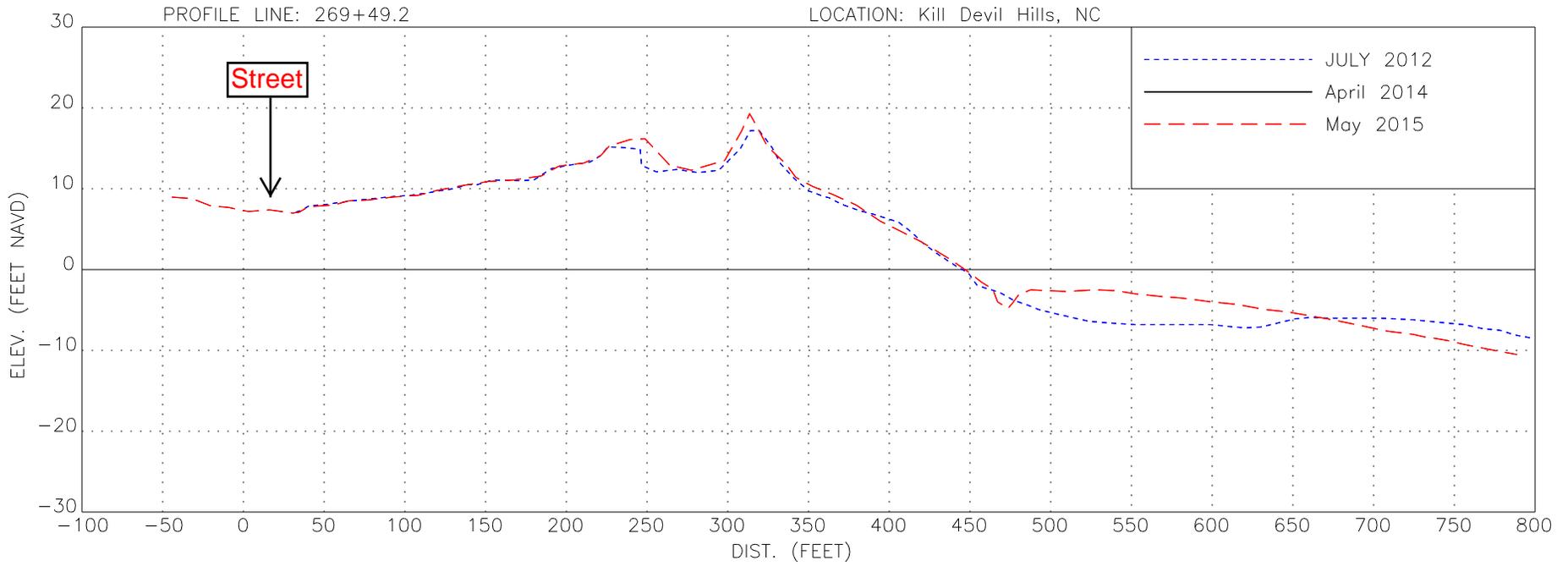


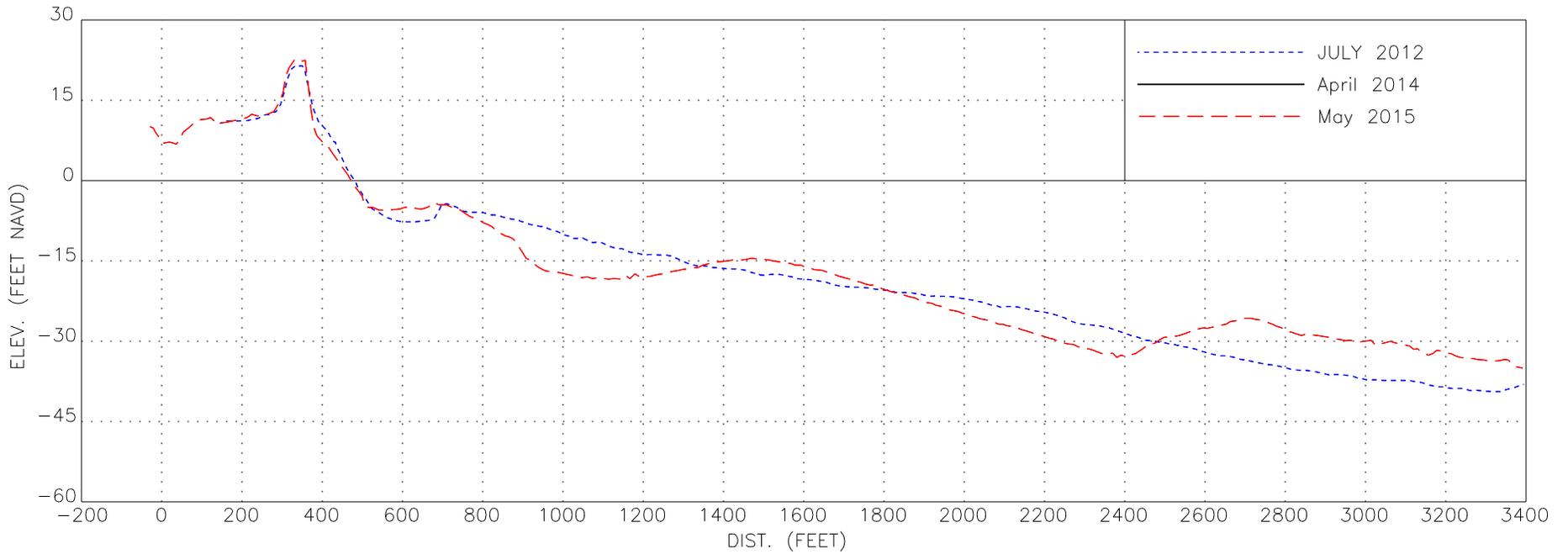
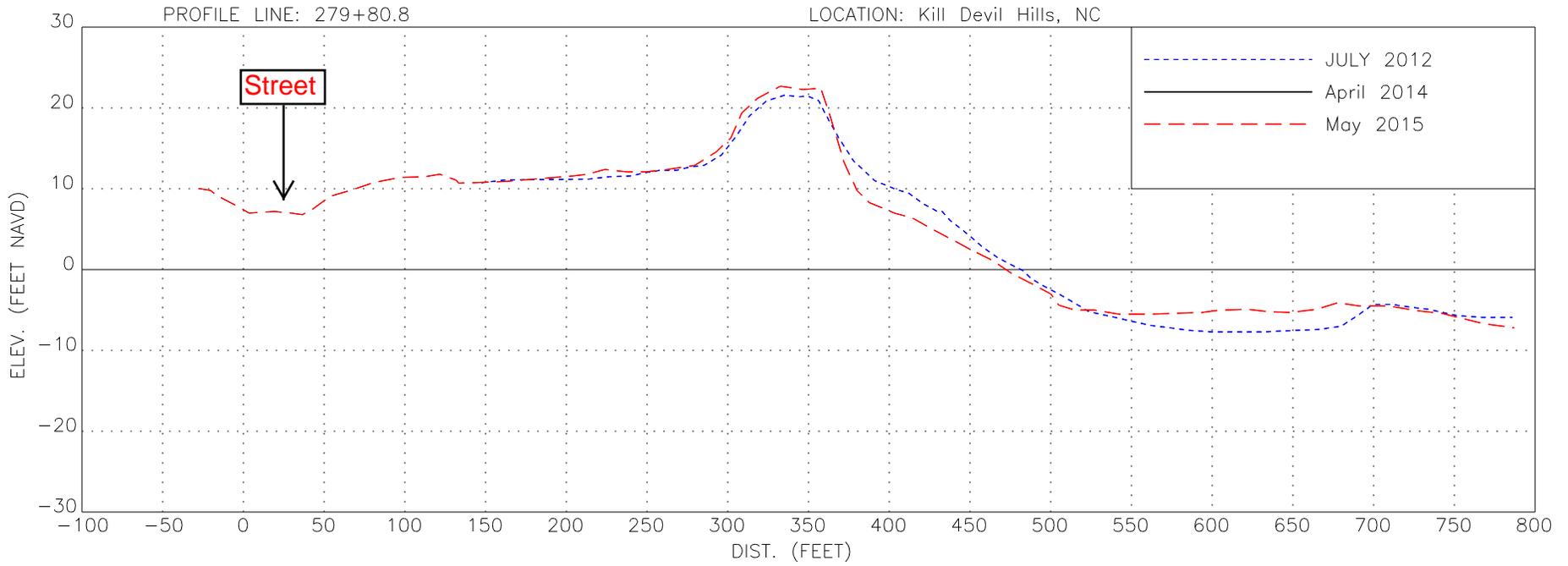


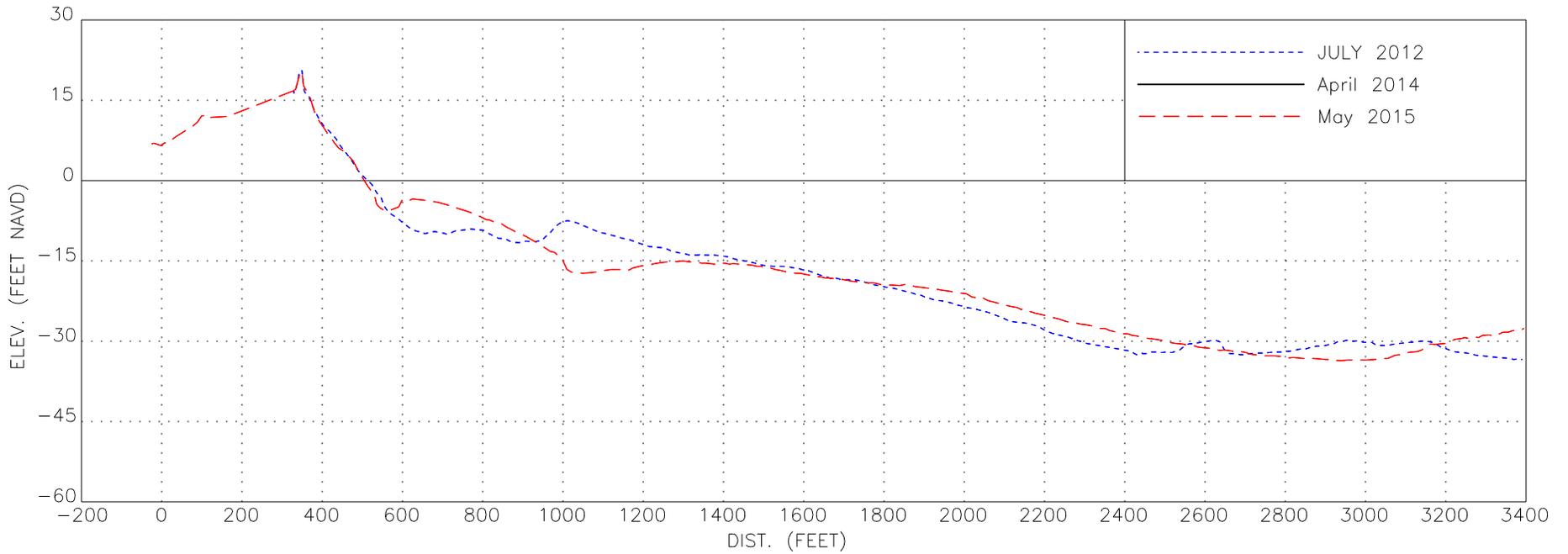
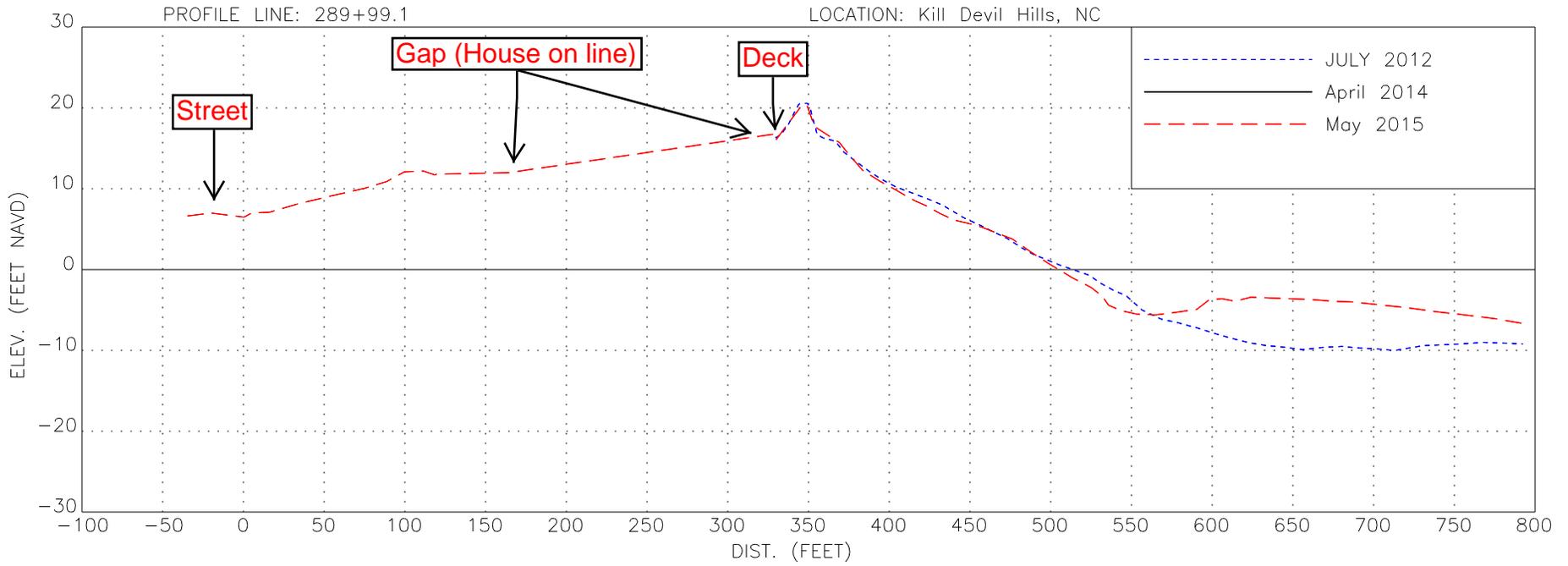


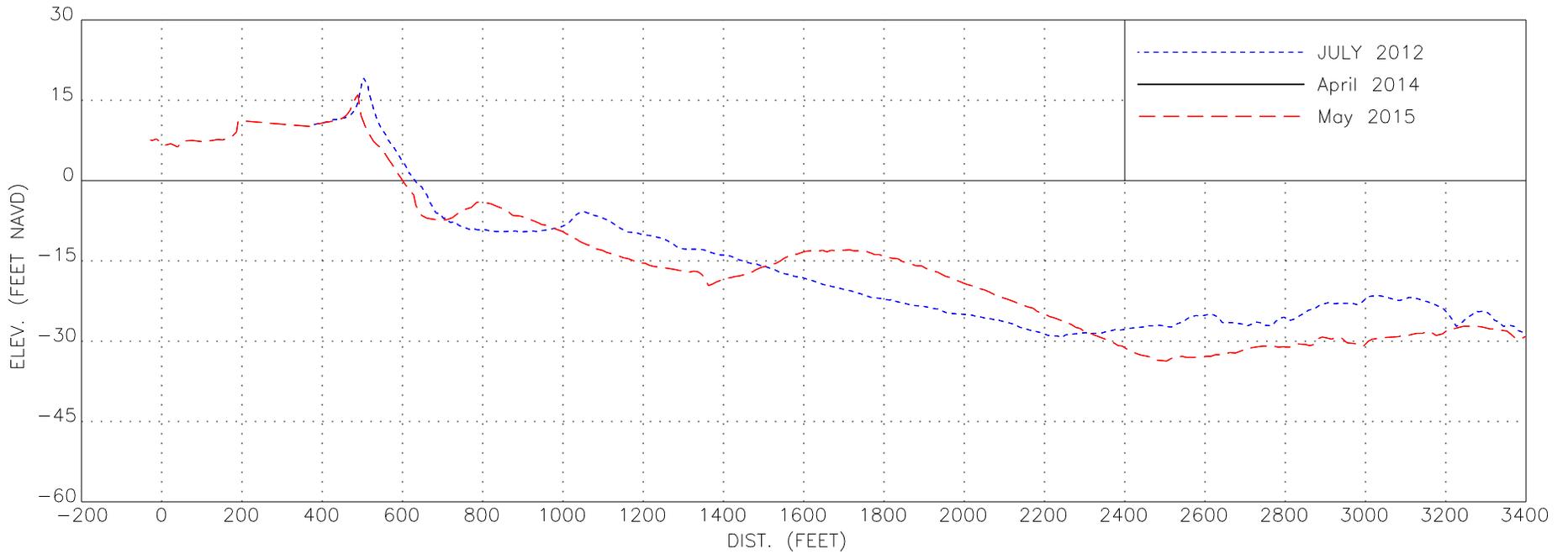
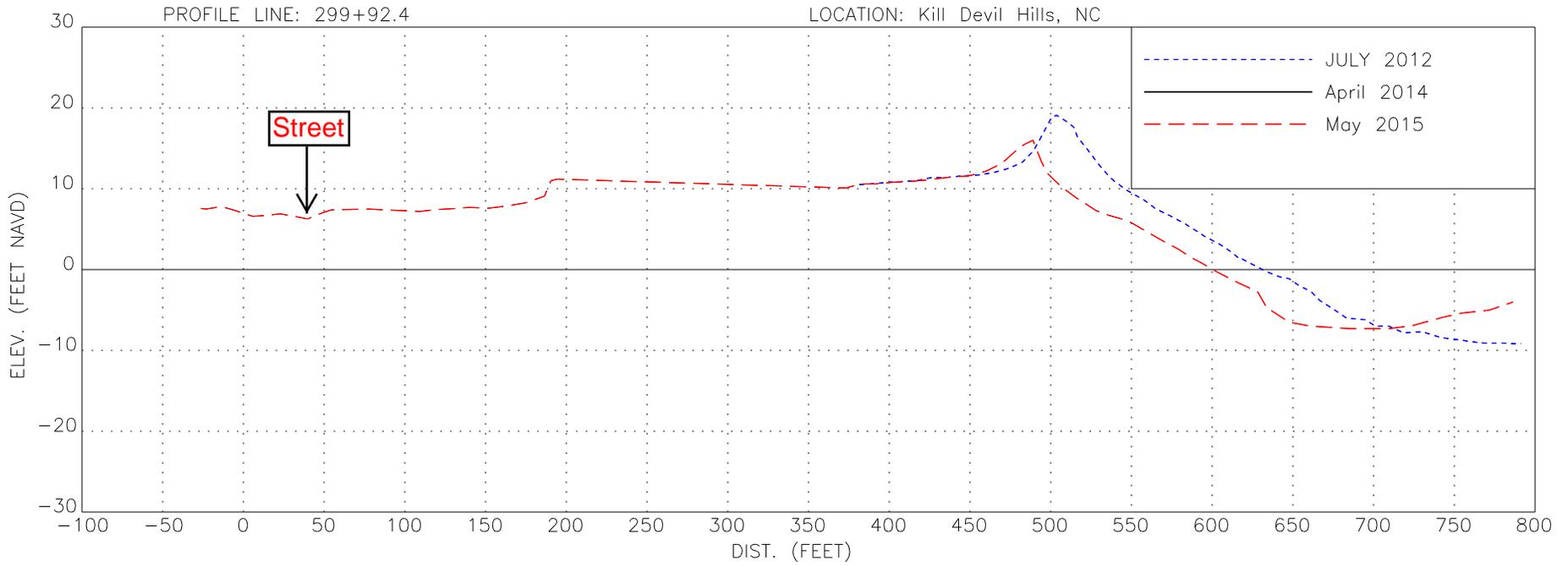


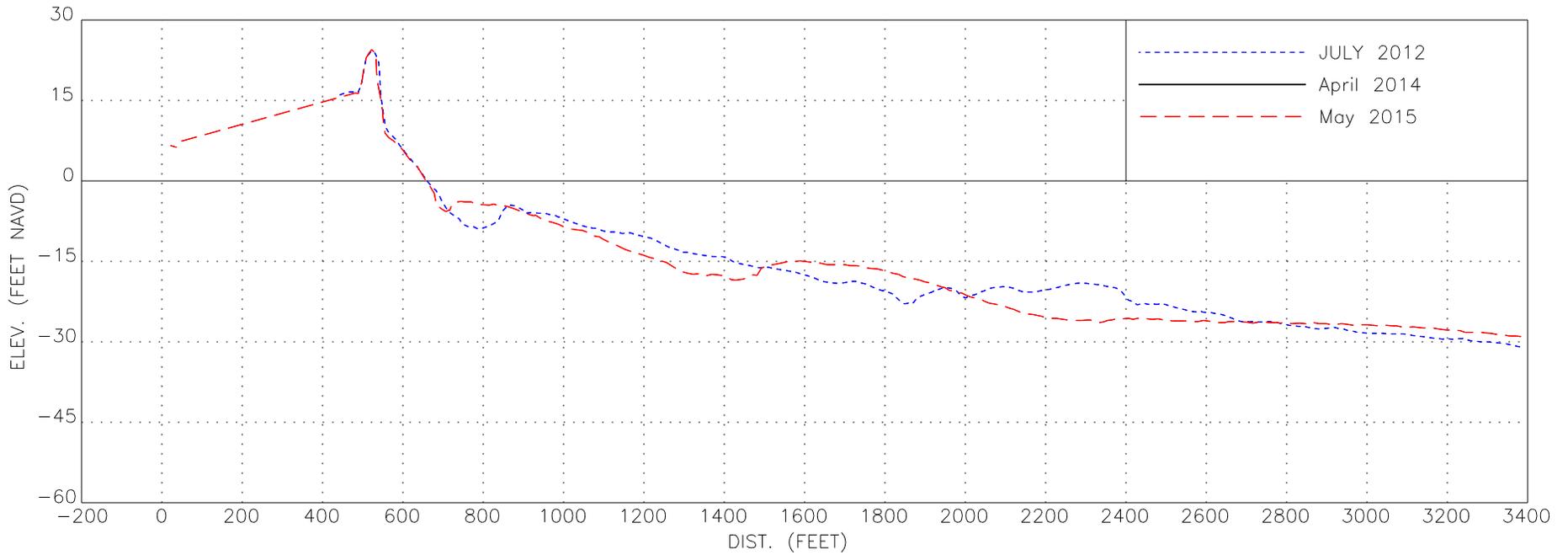
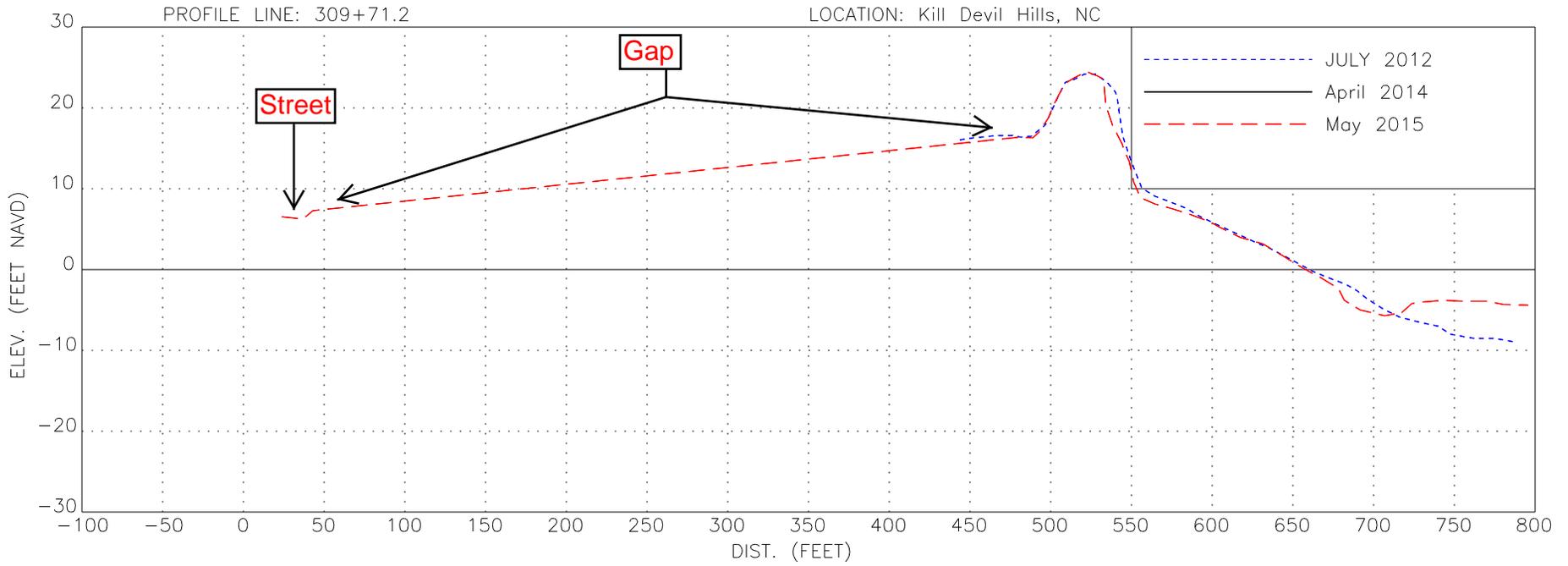


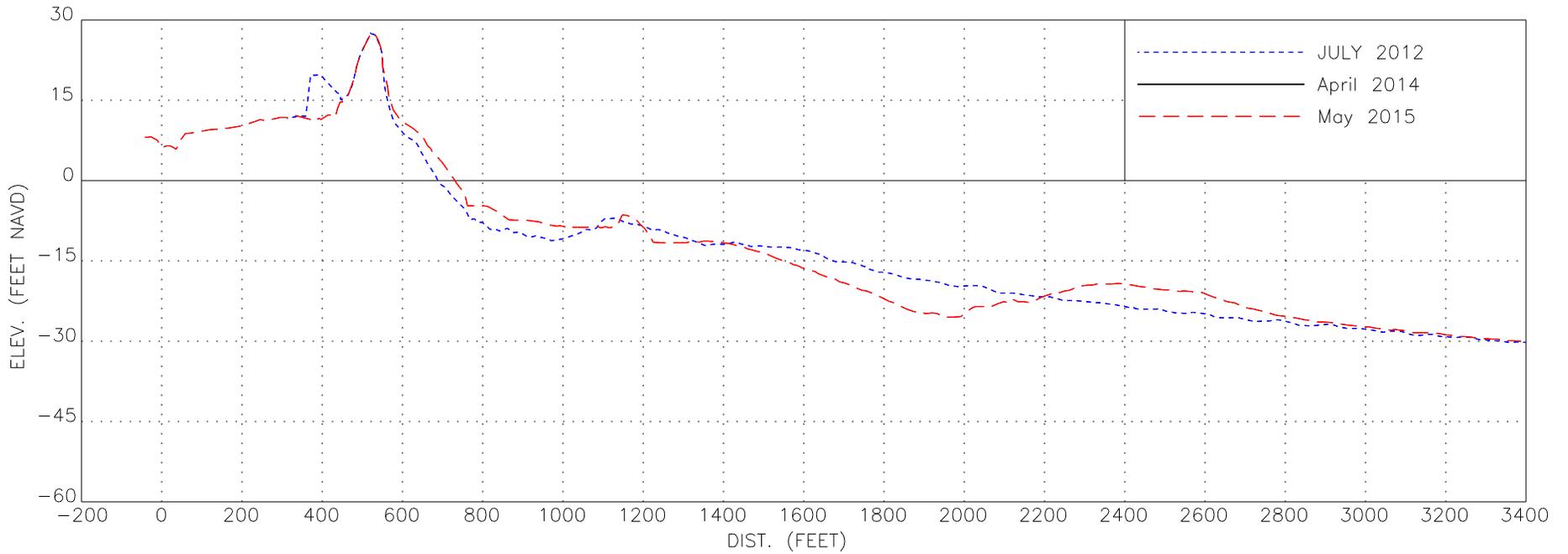
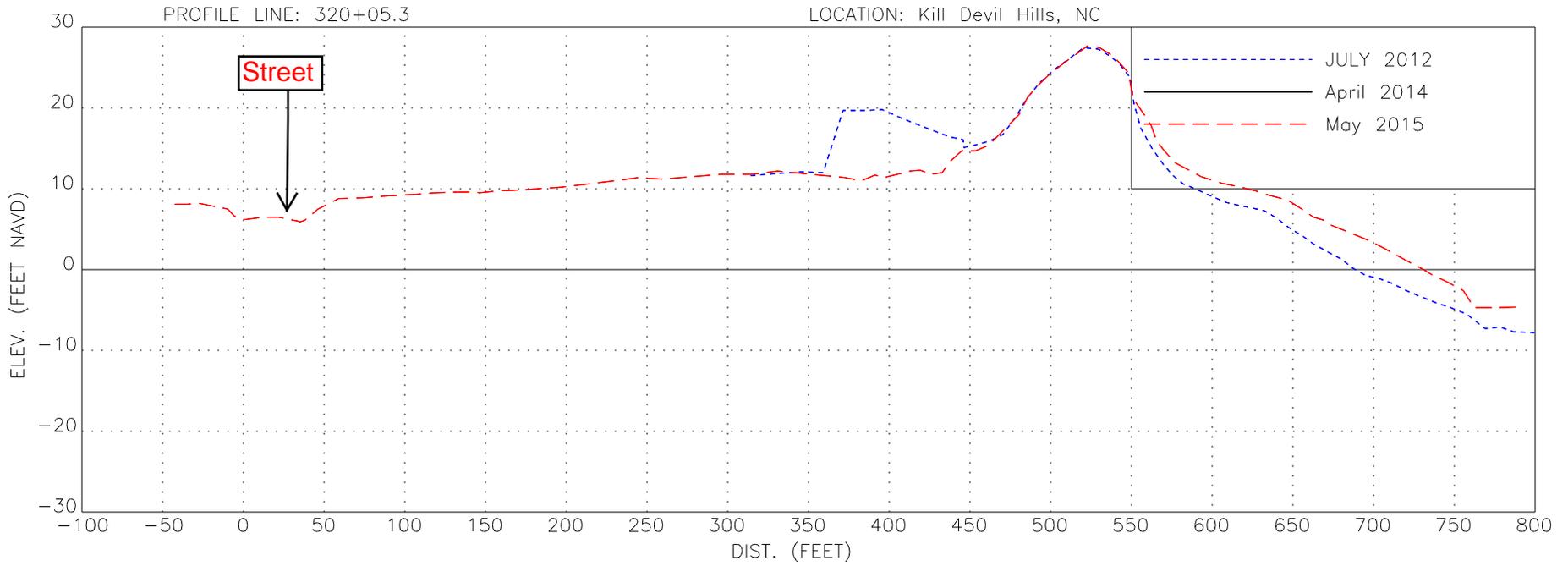


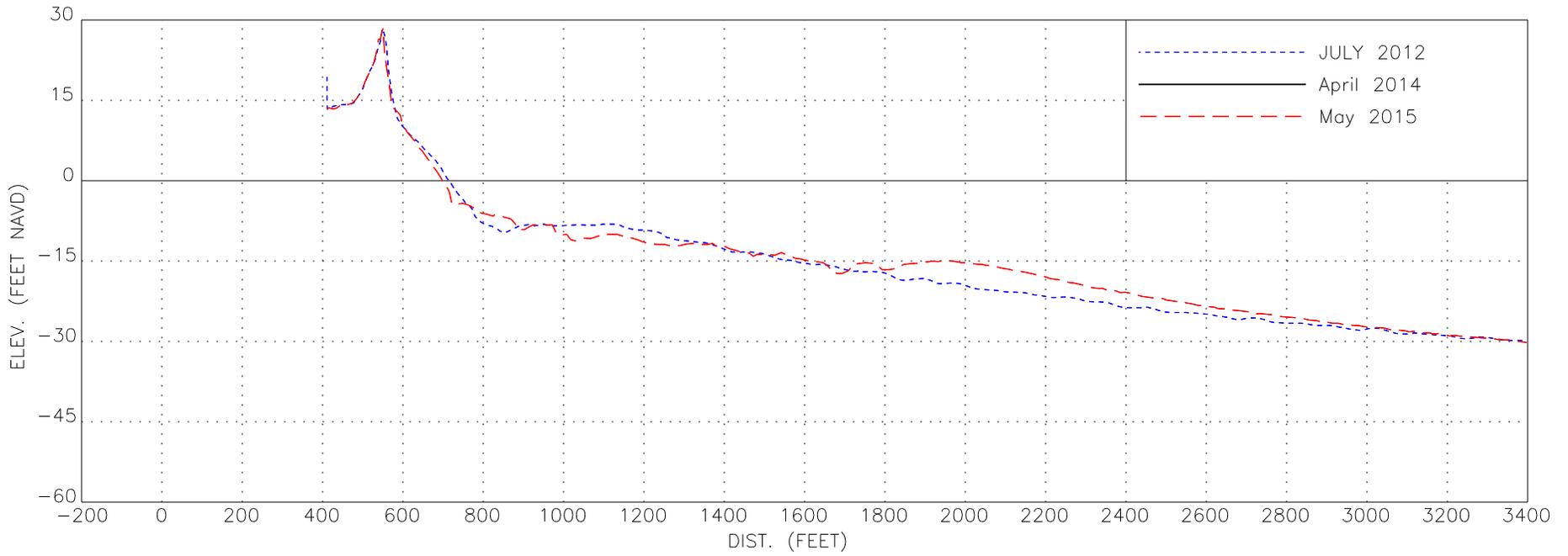
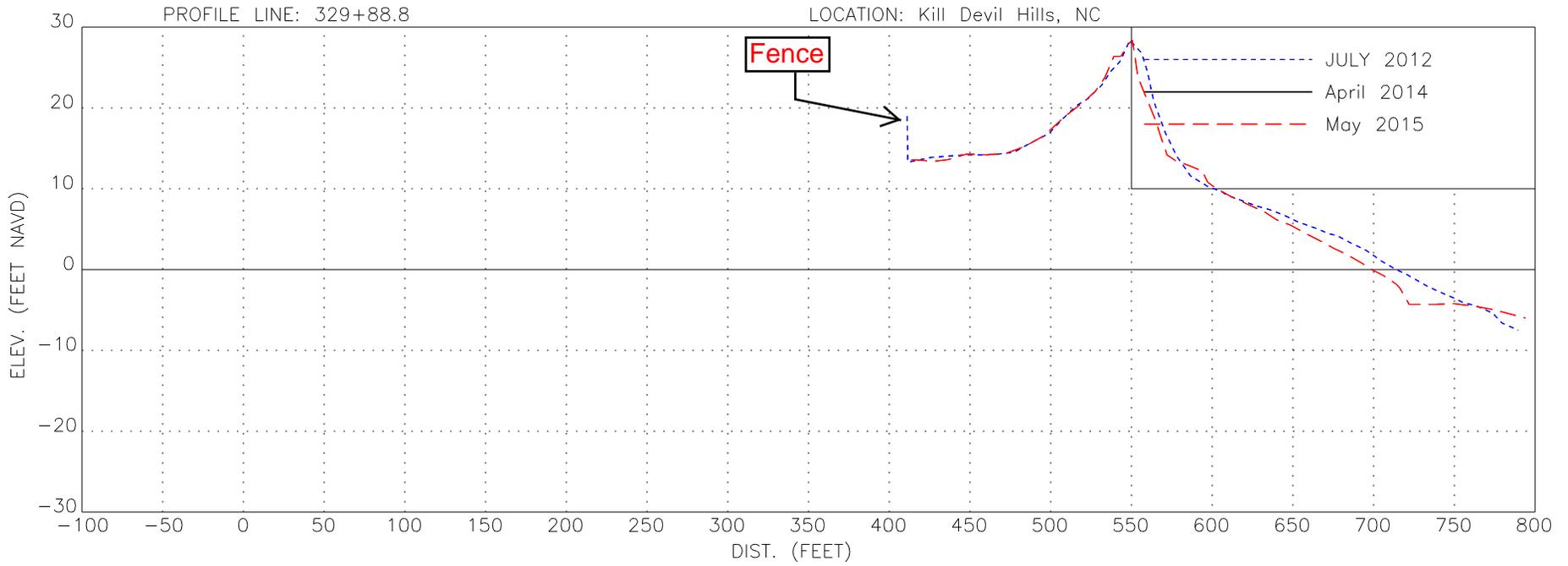












APPENDIX 4

GROUND DIGITAL PHOTOGRAPHY

APPENDIX 4A: Town of Duck Ground Digital Photography



**Ground Digital Photography
Monument**

PI-17



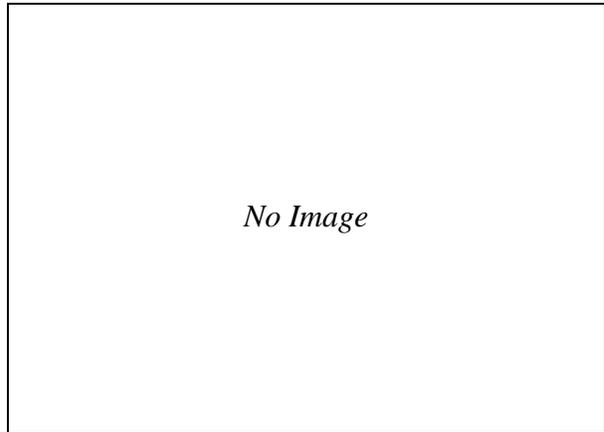
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

PI-18



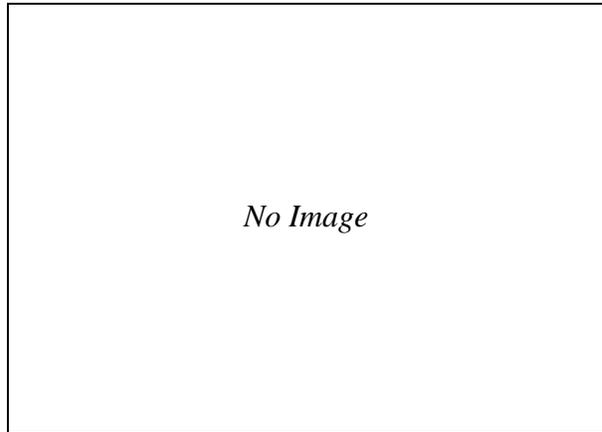
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-01



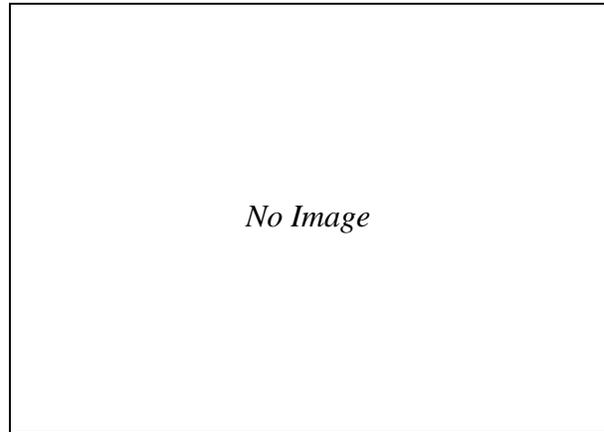
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-02



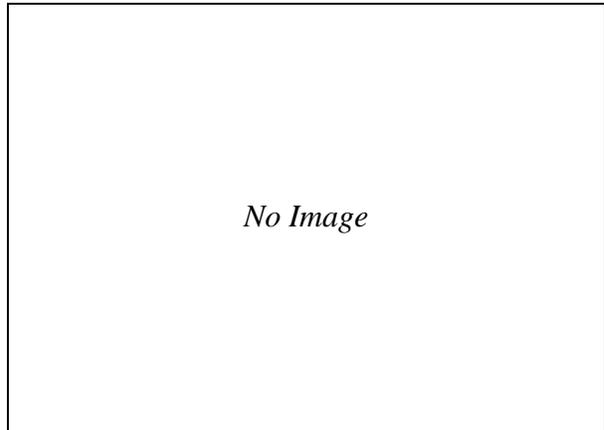
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-03



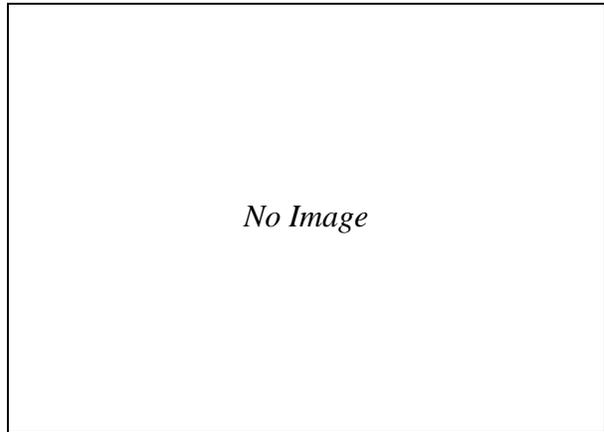
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-04



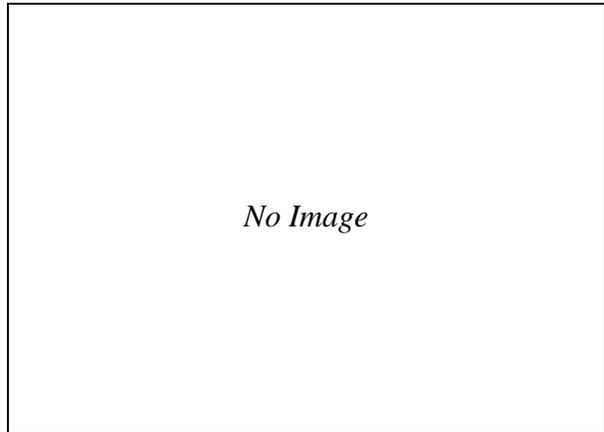
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-05



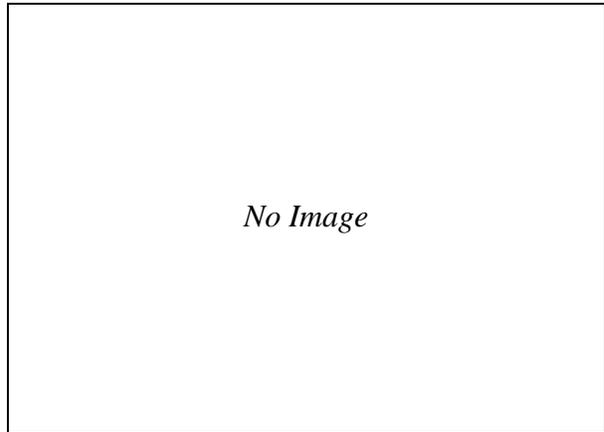
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-06



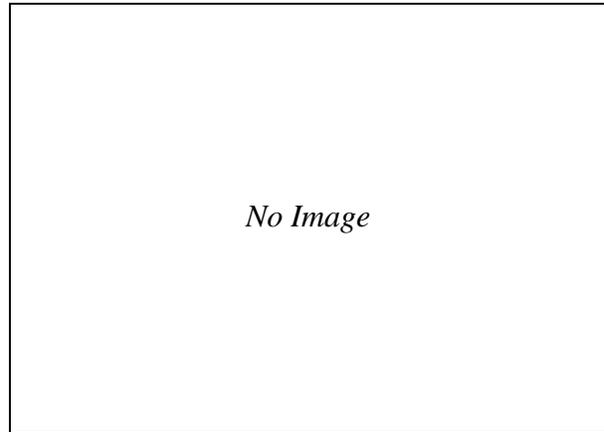
North View



South View



Landward View

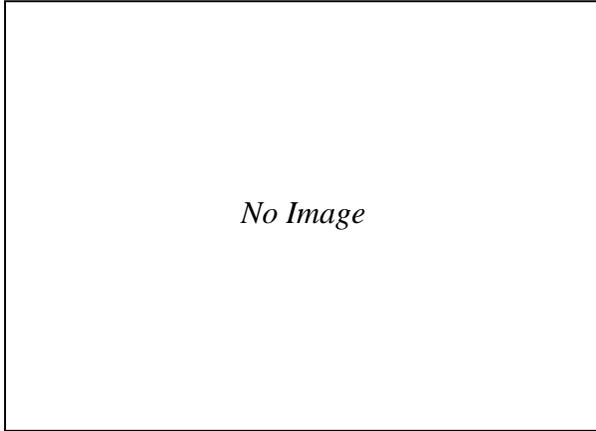


Monument – Reference Point

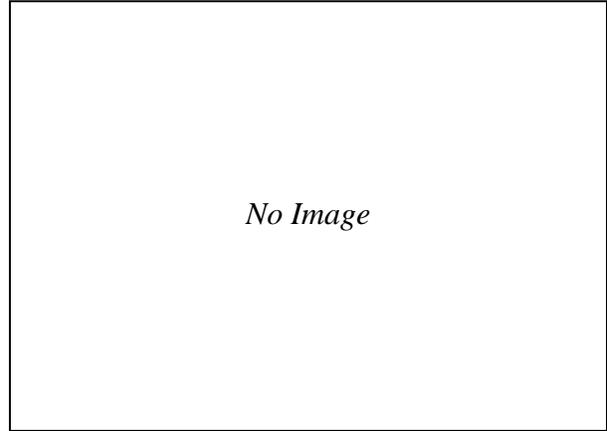


**Ground Digital Photography
Monument**

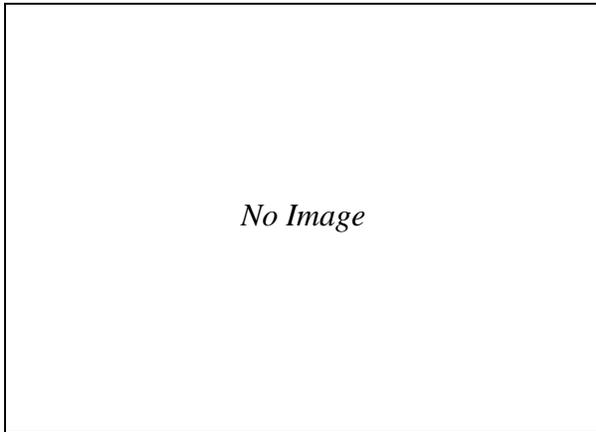
D-07



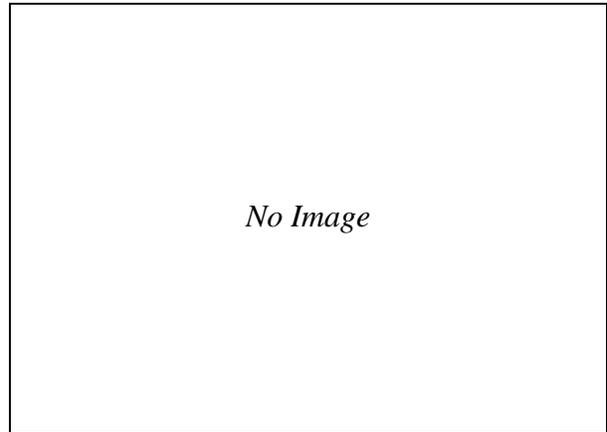
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-08



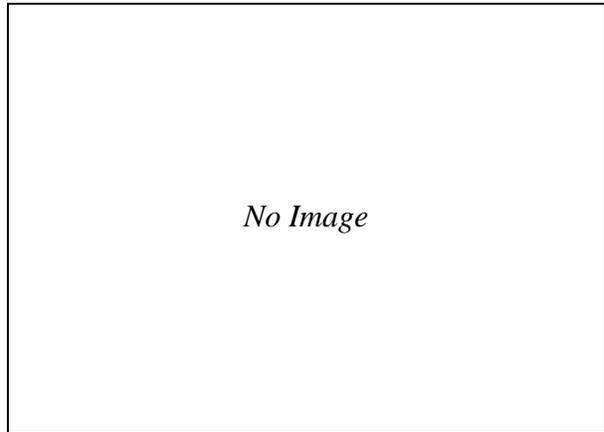
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-09



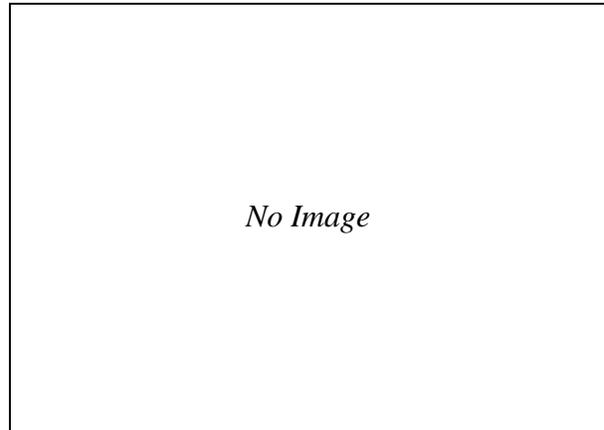
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-10



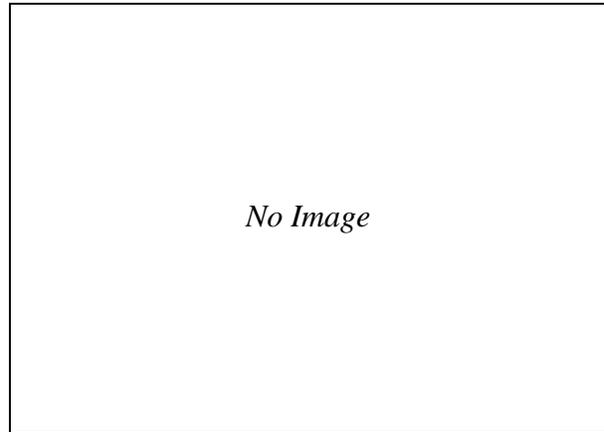
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-11



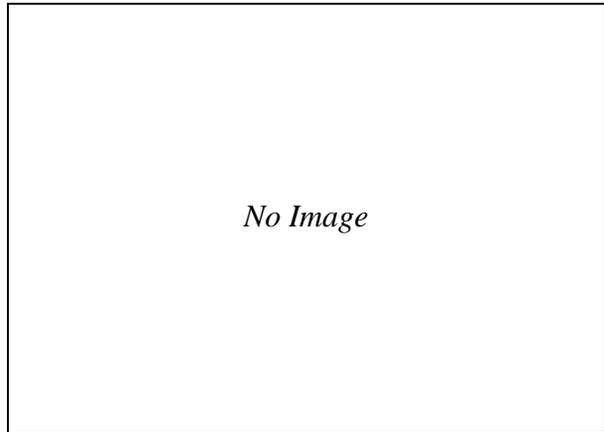
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-12



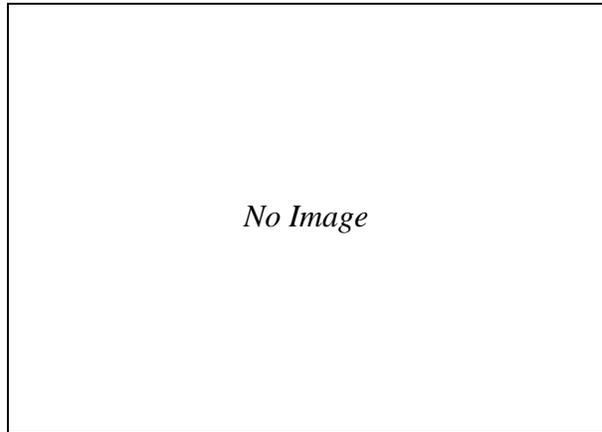
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-13



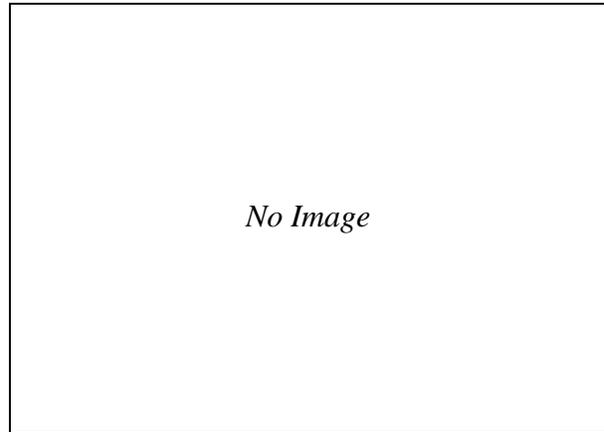
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-14



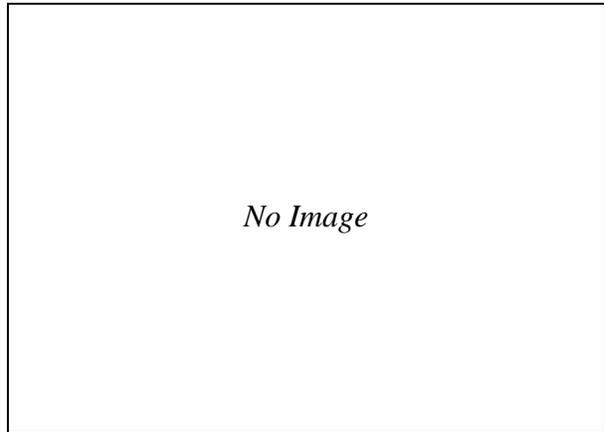
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-15



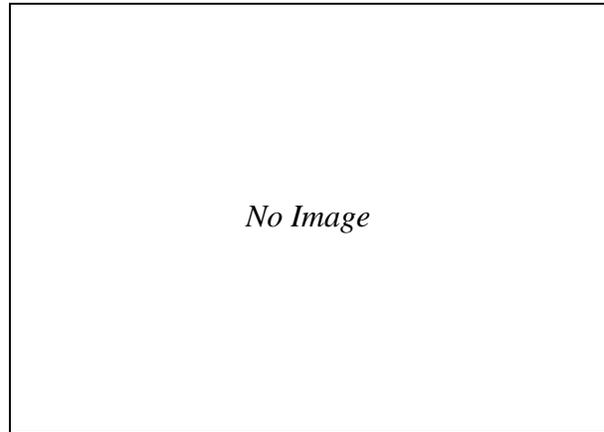
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-16



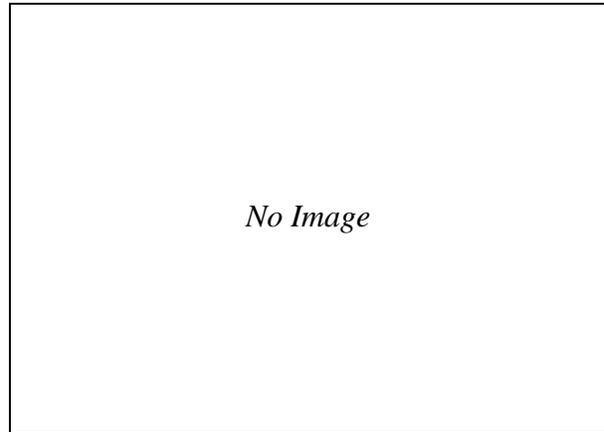
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-17



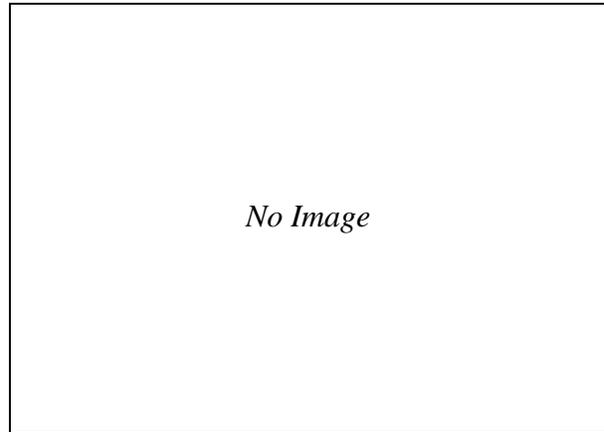
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-18



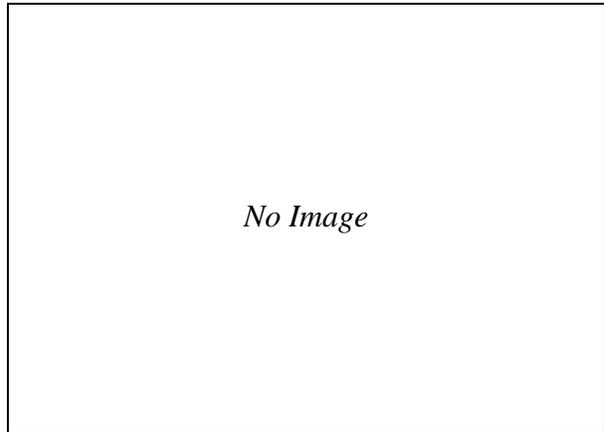
North View



South View



Landward View



Monument – Reference Point

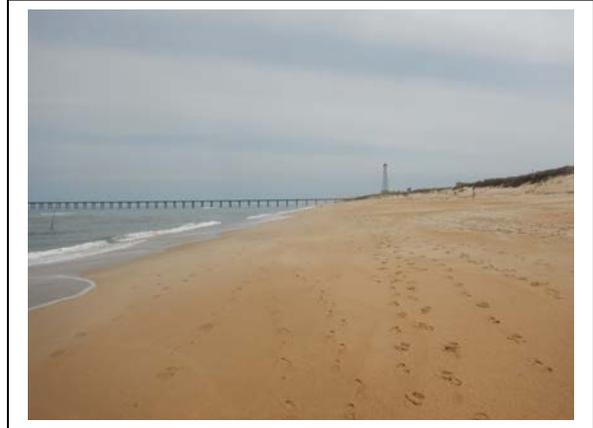


**Ground Digital Photography
Monument**

D-19



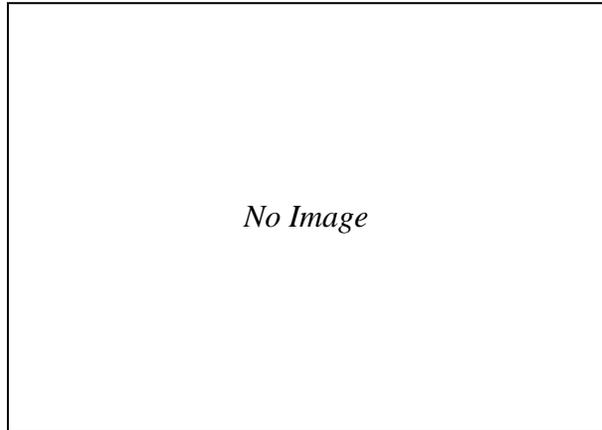
North View



South View



Landward View



Monument – Reference Point

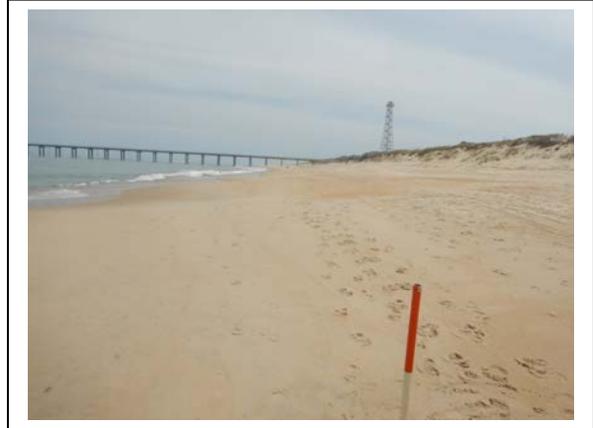


**Ground Digital Photography
Monument**

D-20



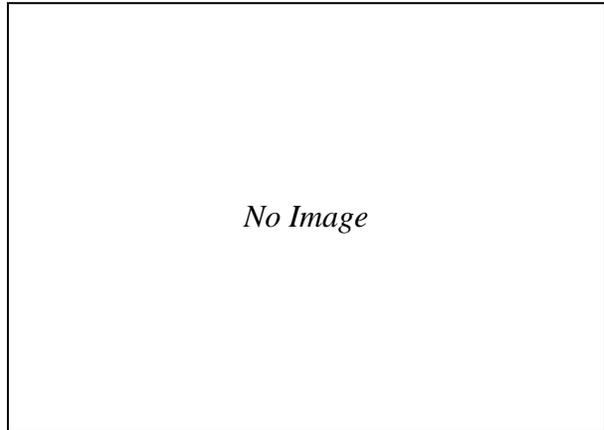
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-21



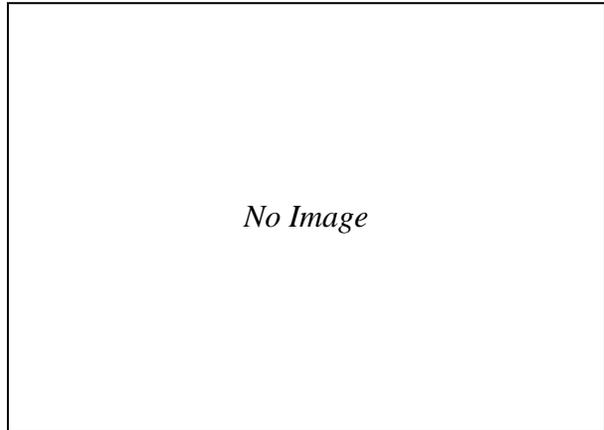
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-22



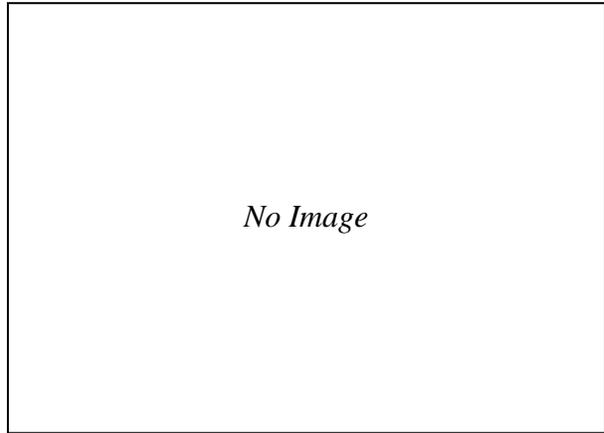
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-23



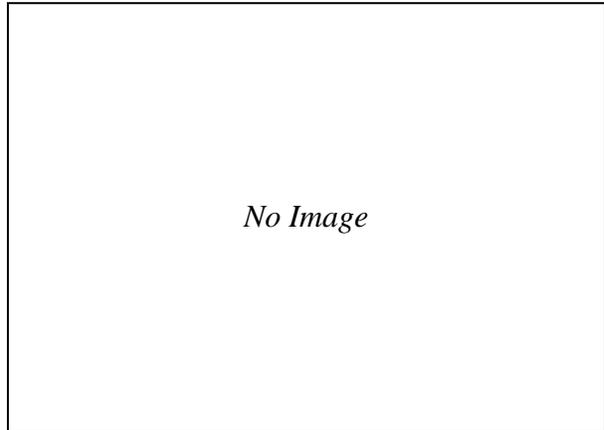
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-24



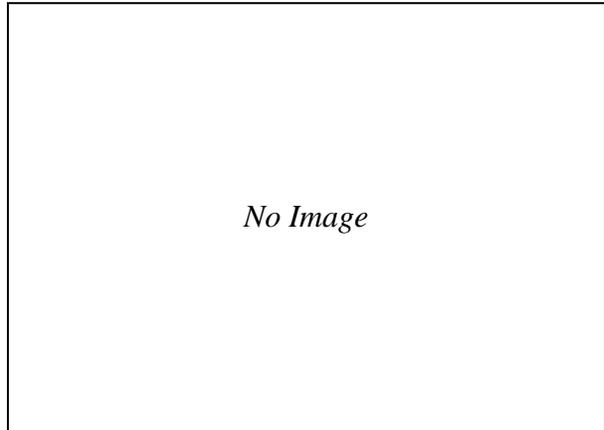
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

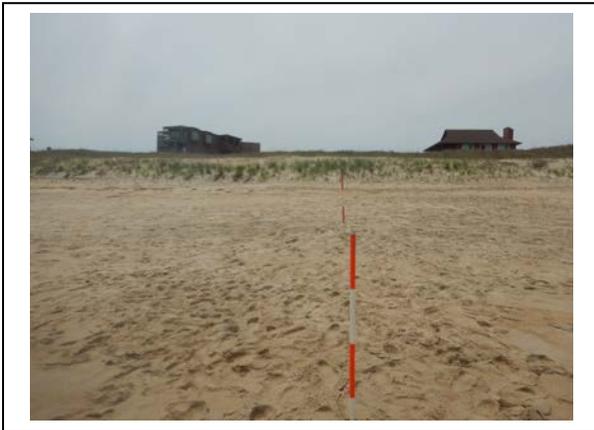
D-25



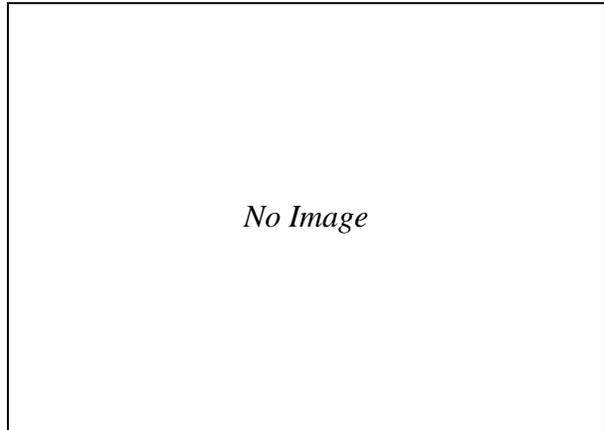
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

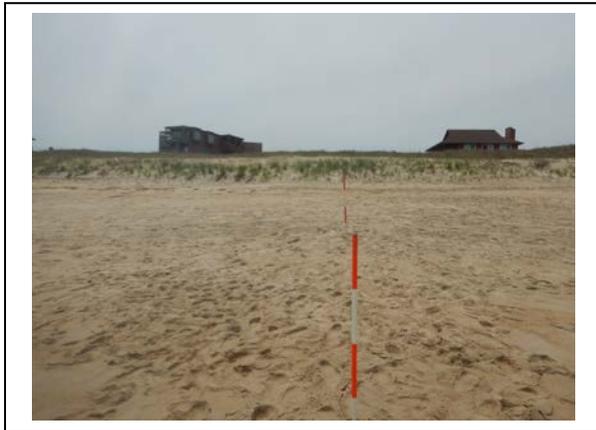
D-26



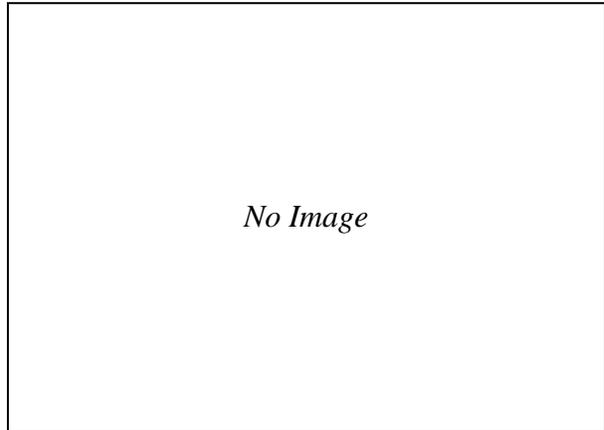
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-27



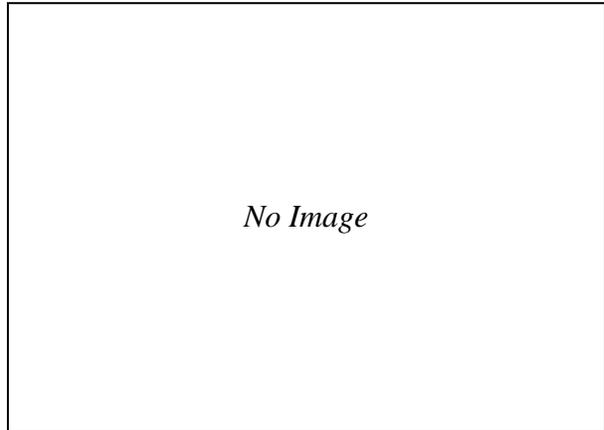
North View



South View



Landward View

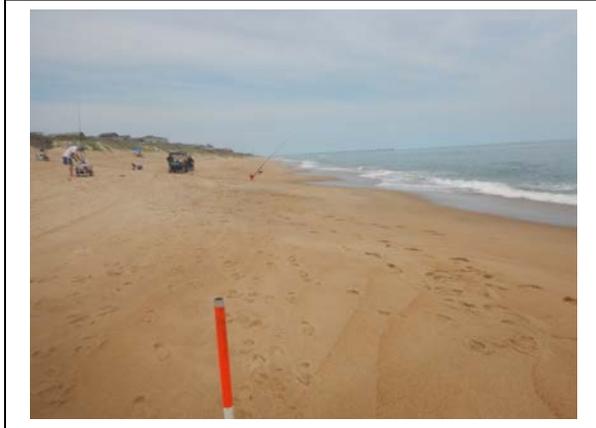


Monument – Reference Point



**Ground Digital Photography
Monument**

D-28



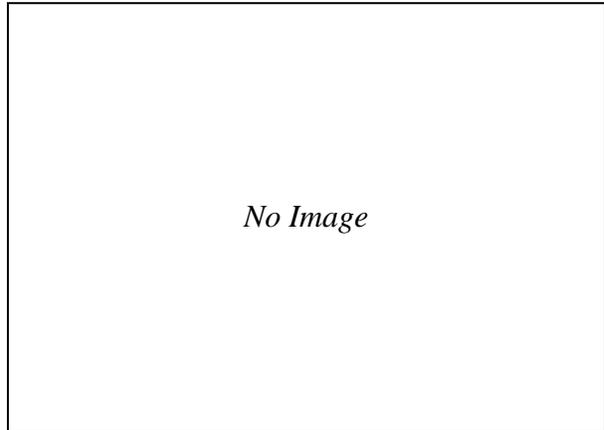
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-29



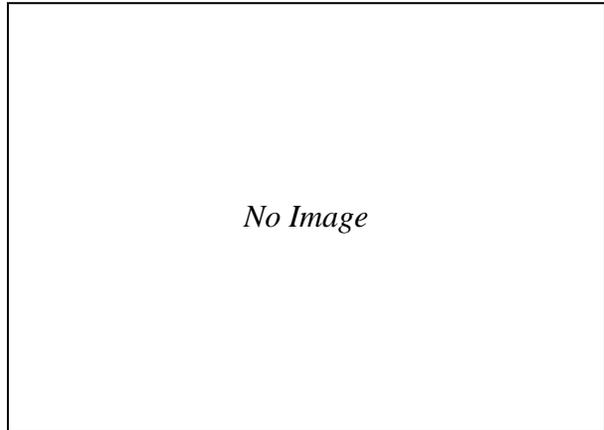
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-30



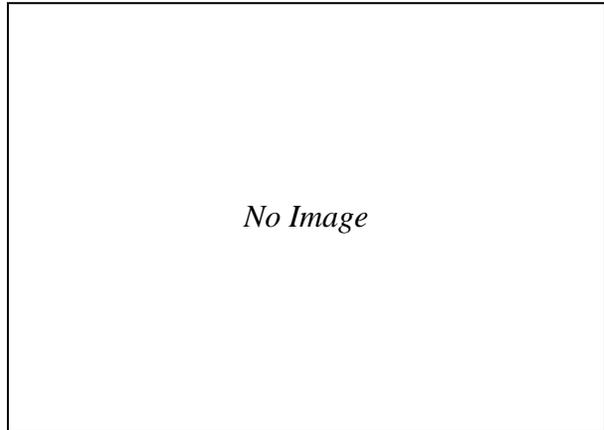
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-31



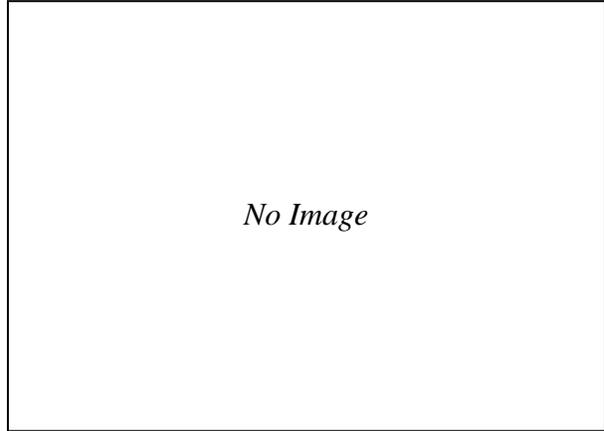
North View



South View



Landward View

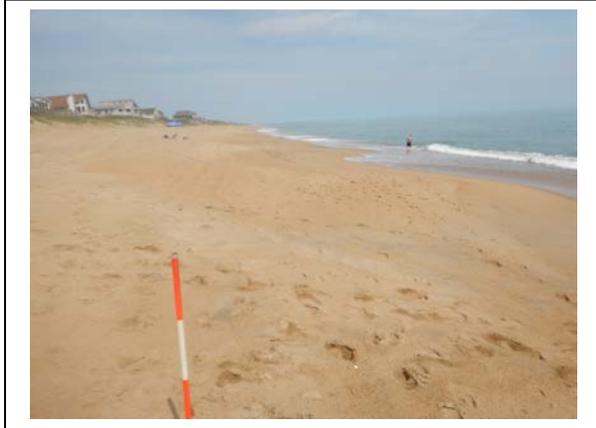


Monument – Reference Point

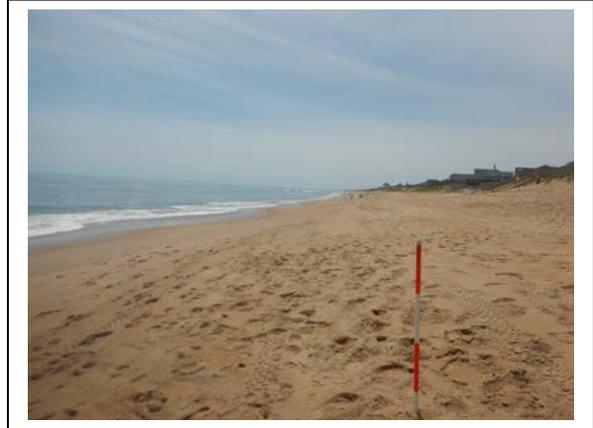


**Ground Digital Photography
Monument**

D-32



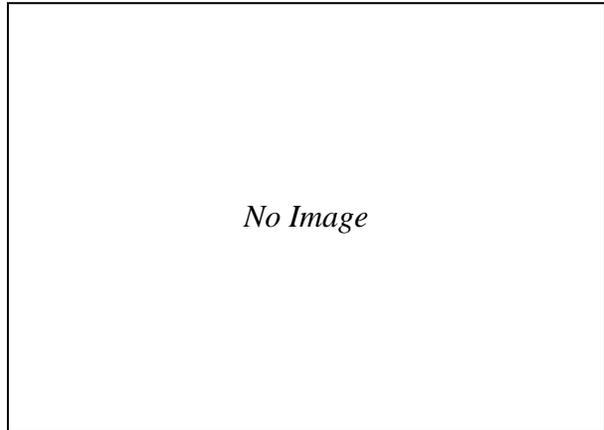
North View



South View



Landward View

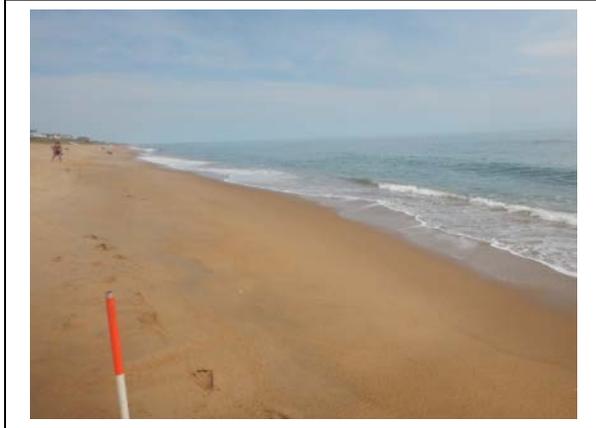


Monument – Reference Point



**Ground Digital Photography
Monument**

D-33



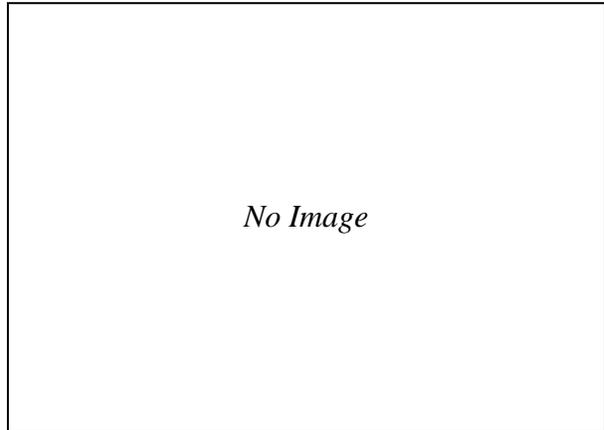
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

D-34



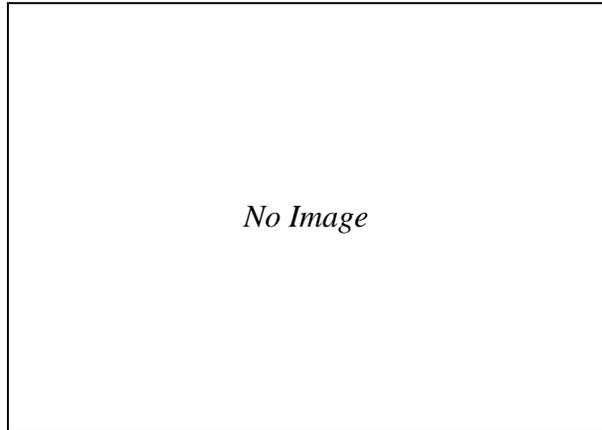
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

SS-01



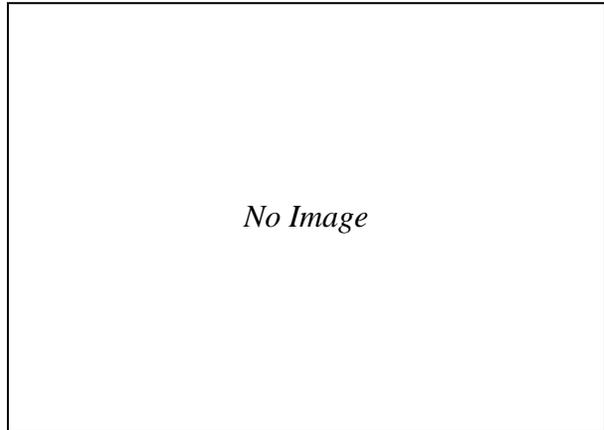
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

SS-02



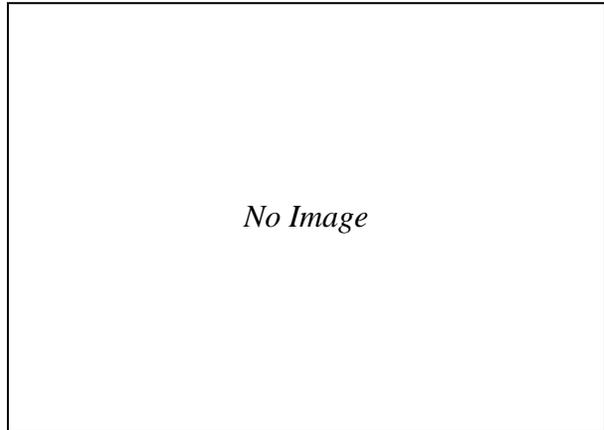
North View



South View



Landward View



Monument – Reference Point

APPENDIX 4B: Kitty Hawk/Kill Devil Hills Ground Digital Photography



**Ground Digital Photography
Monument**

-10



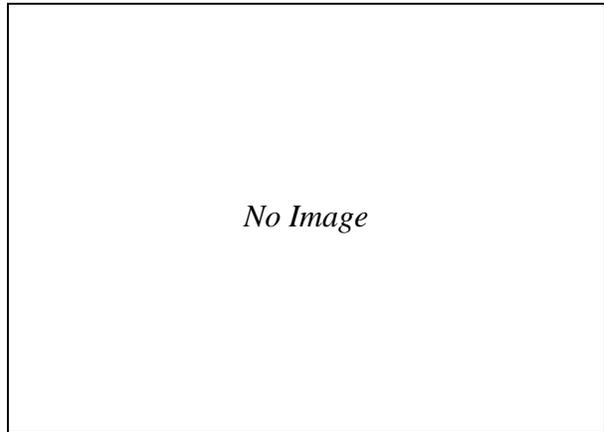
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

-20



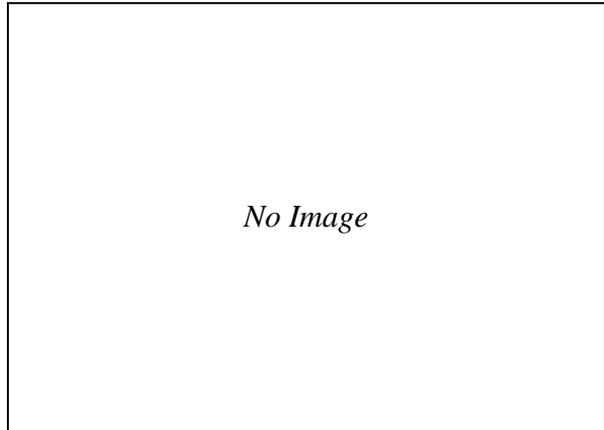
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

0+00.00



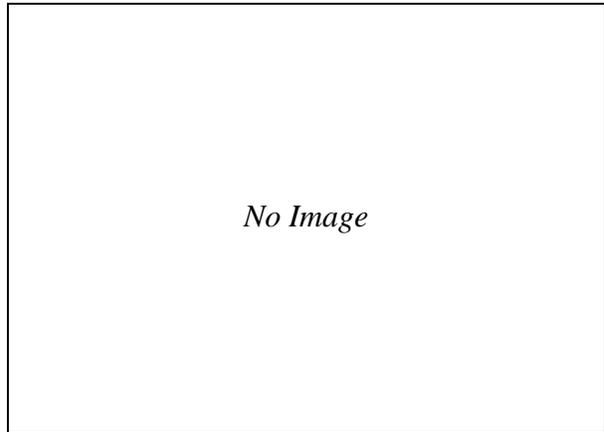
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

9+99.90



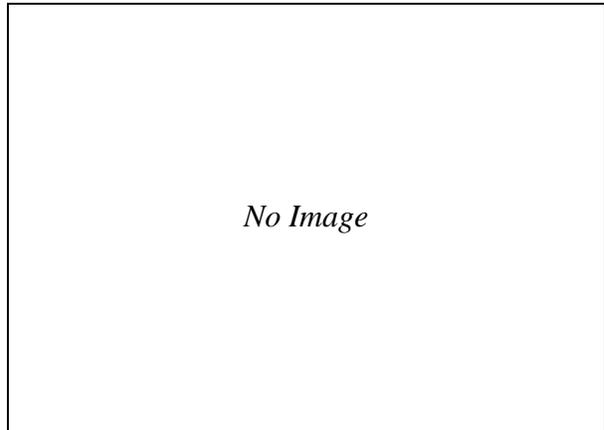
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

20+02.68



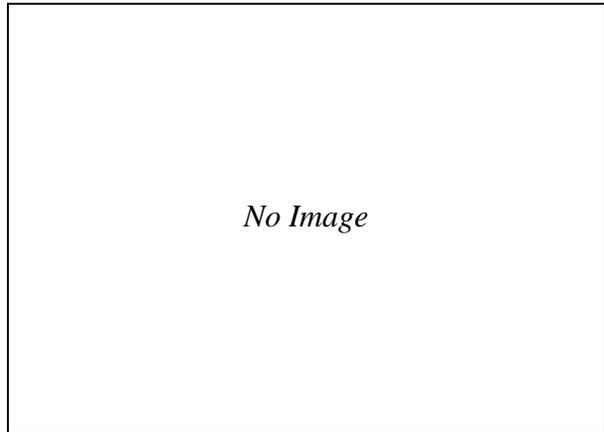
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

30+05.52



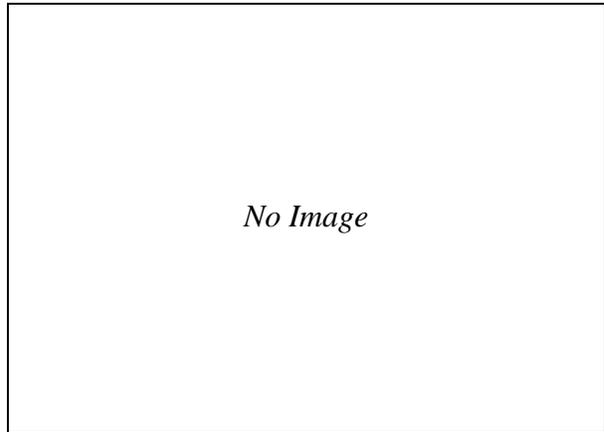
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

40+23.88



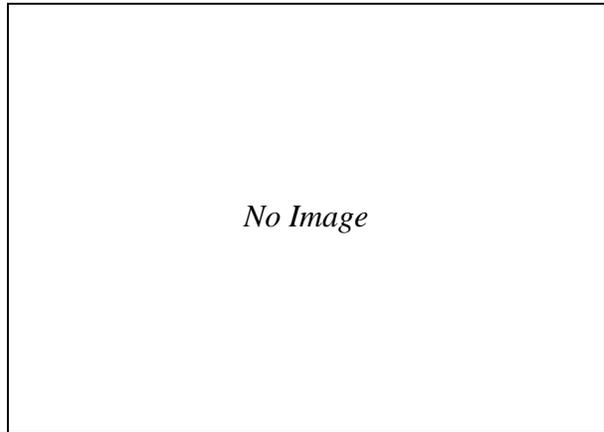
North View



South View



Landward View



Monument – Reference Point

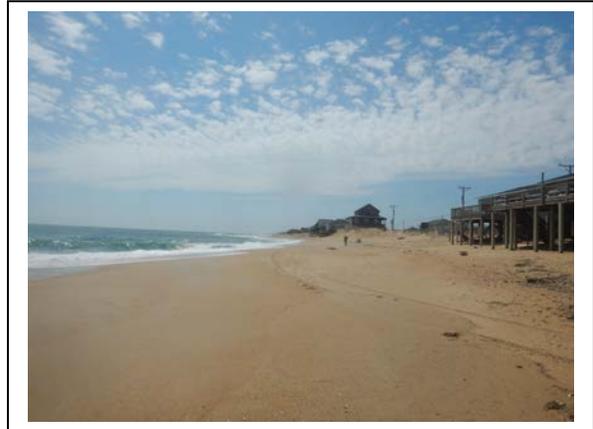


**Ground Digital Photography
Monument**

50+28.29



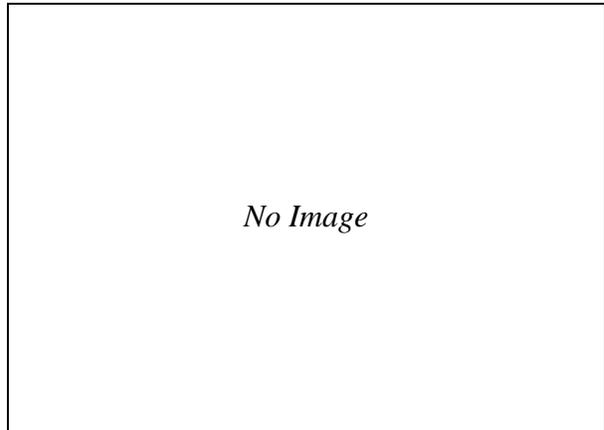
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

60+50.00



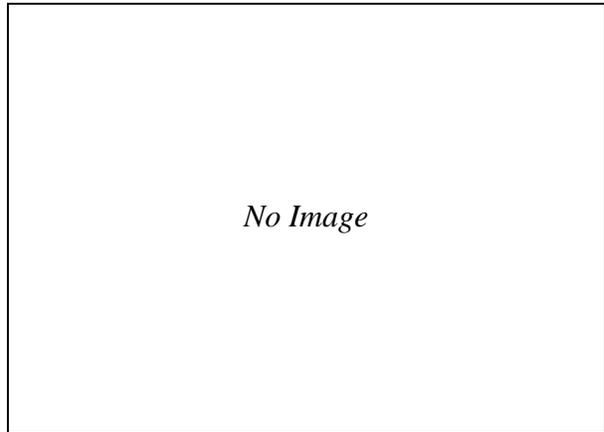
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

70+02.90



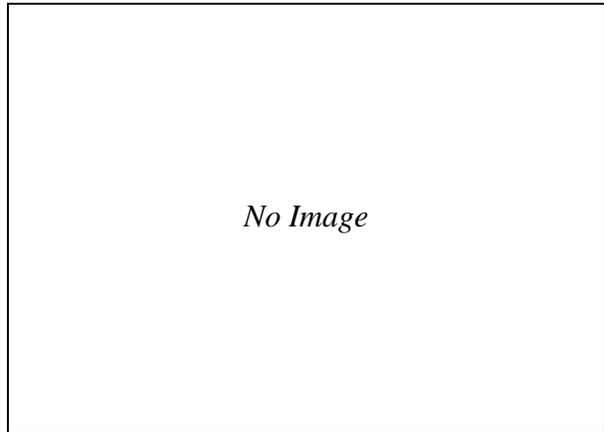
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

80+15.19



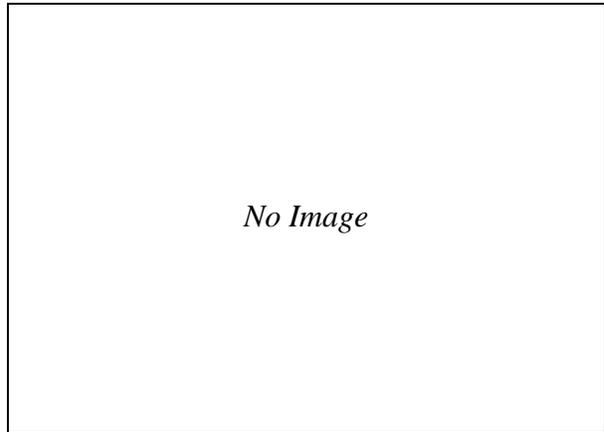
North View



South View



Landward View



Monument – Reference Point

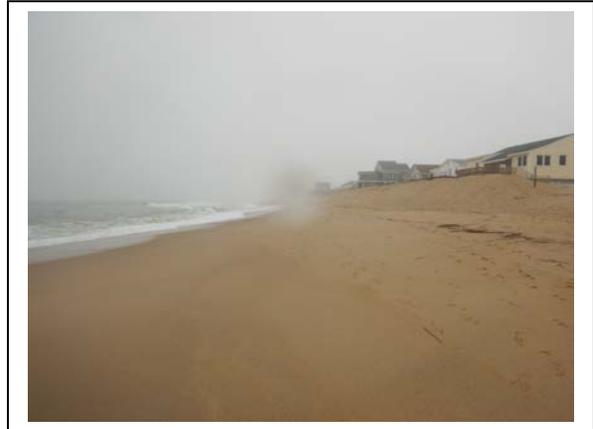


**Ground Digital Photography
Monument**

89+56.91



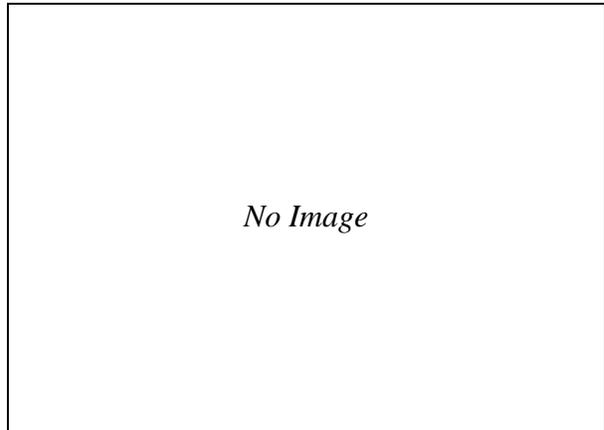
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

99+99.71



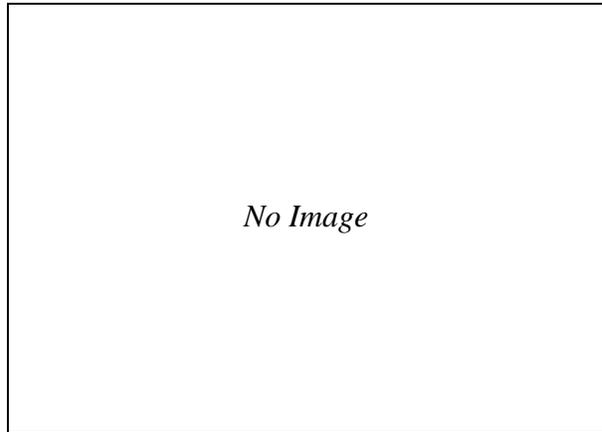
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

109+99.46



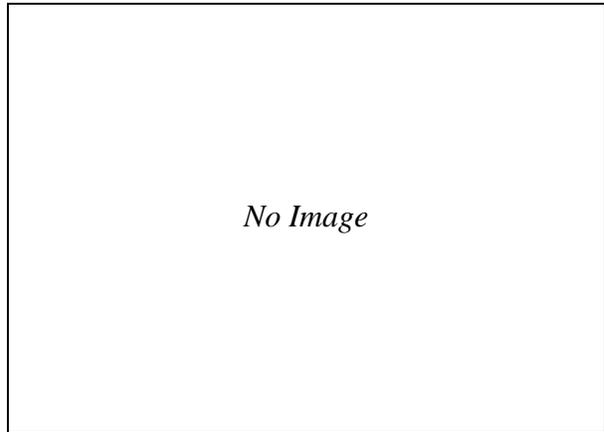
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

119+99.14



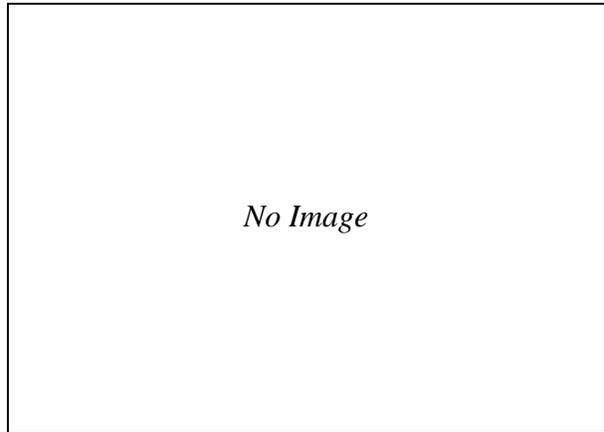
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

130+33.04



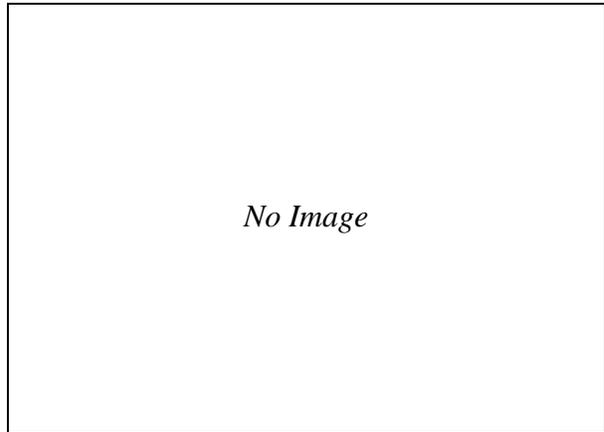
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

138+27.64 OFFSET



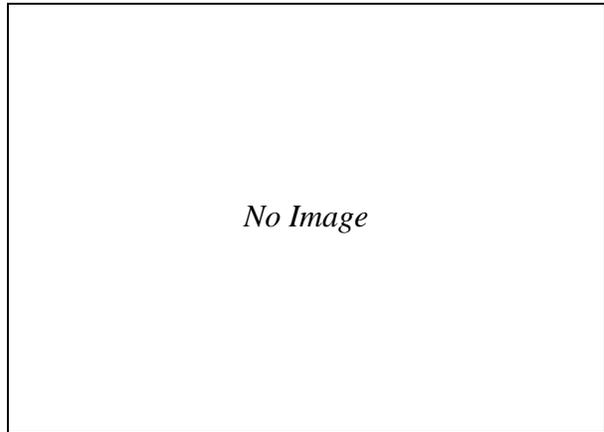
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

149+99.46



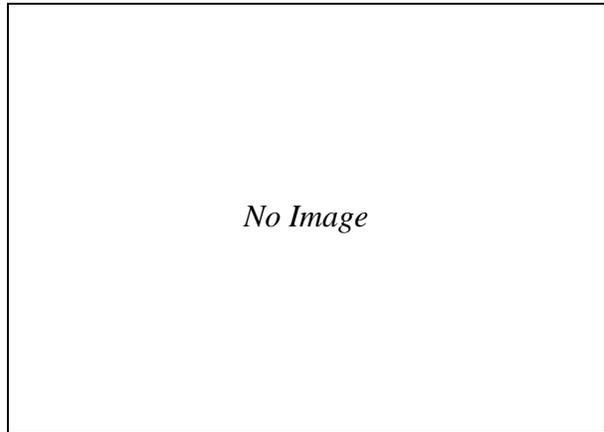
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

159+99.55



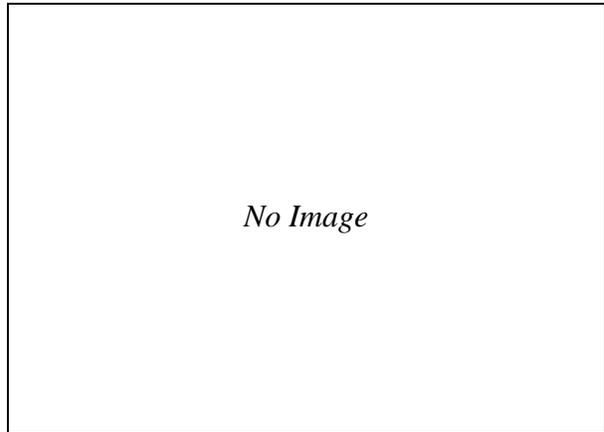
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

169+70.21



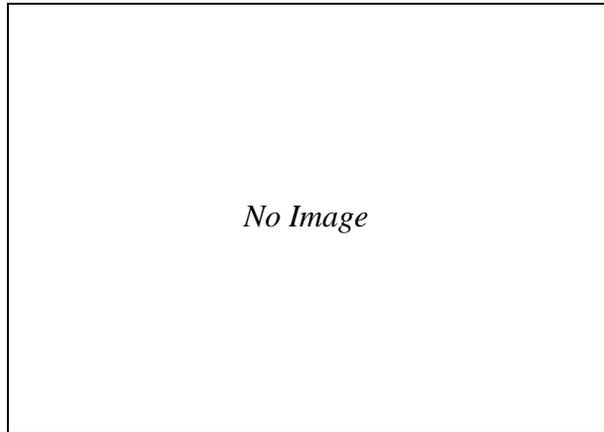
North View



South View



Landward View



Monument – Reference Point

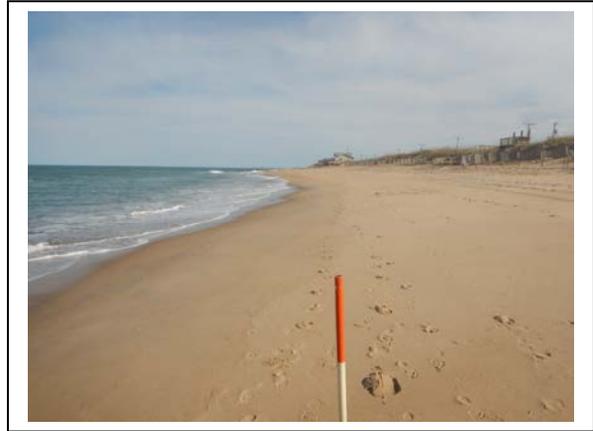


**Ground Digital Photography
Monument**

179+87.62



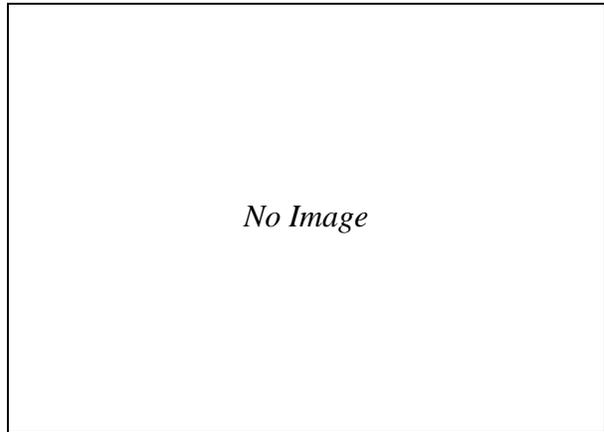
North View



South View



Landward View

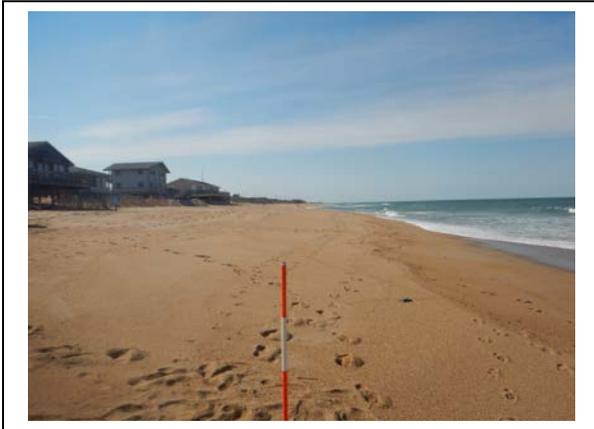


Monument – Reference Point

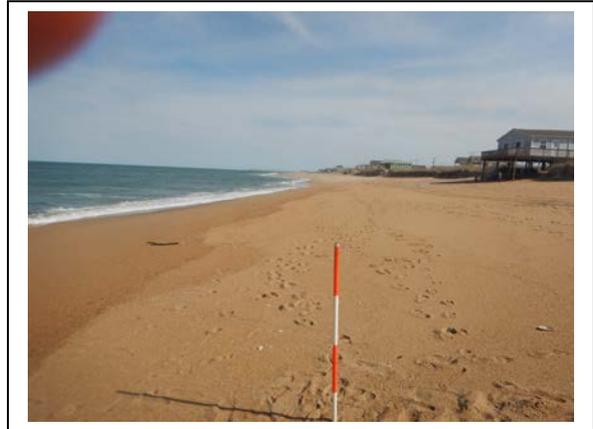


**Ground Digital Photography
Monument**

189+87.10



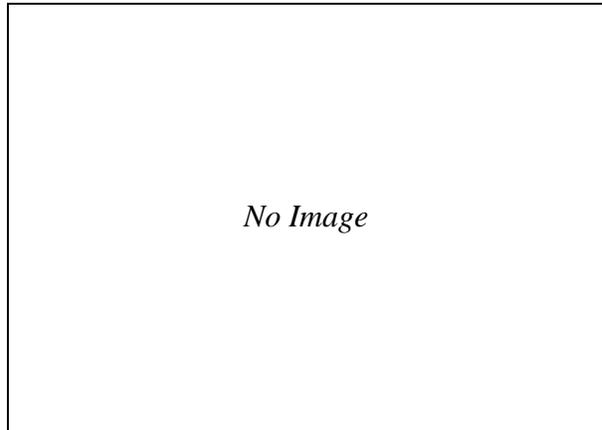
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

199+93.01



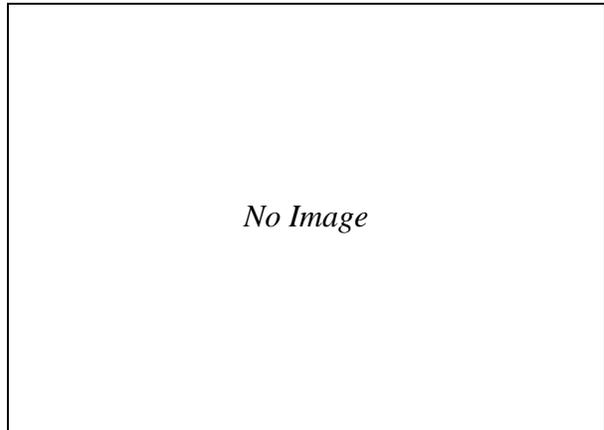
North View



South View



Landward View

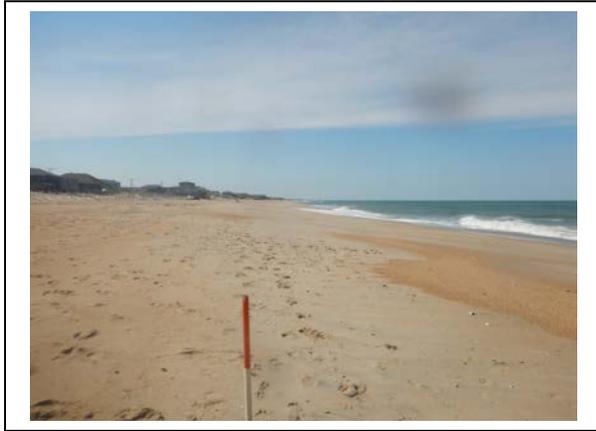


Monument – Reference Point



**Ground Digital Photography
Monument**

209+74.44



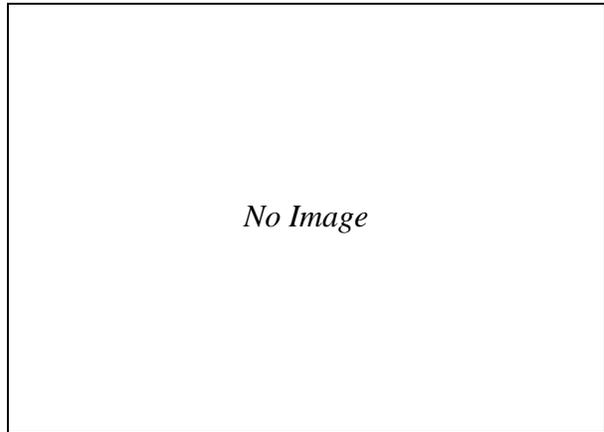
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

219+99.94



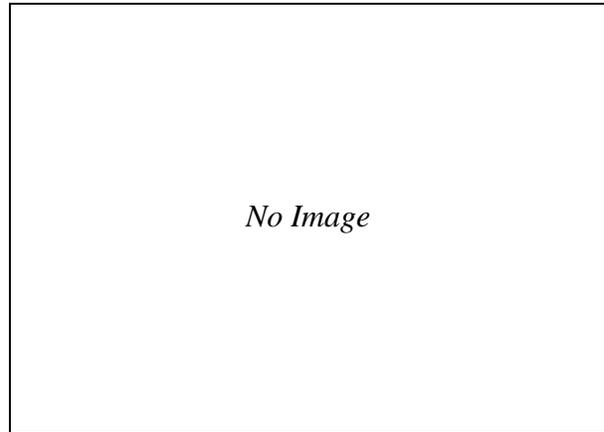
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

229+83.39



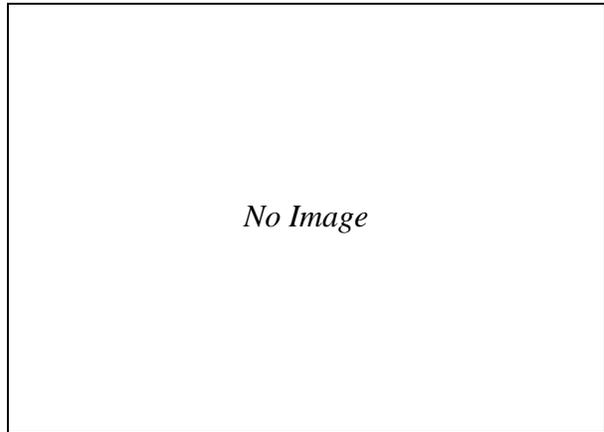
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

240+41.84



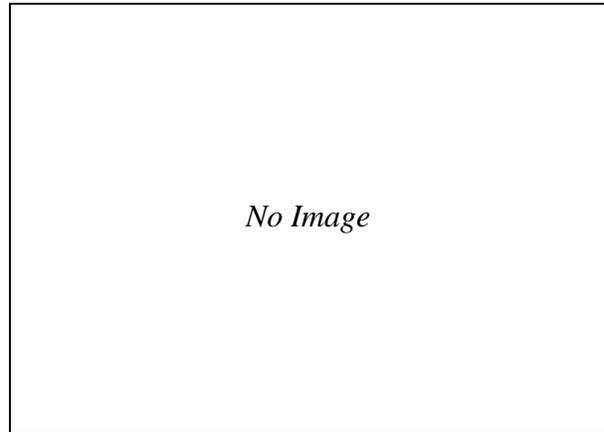
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

249+81.53



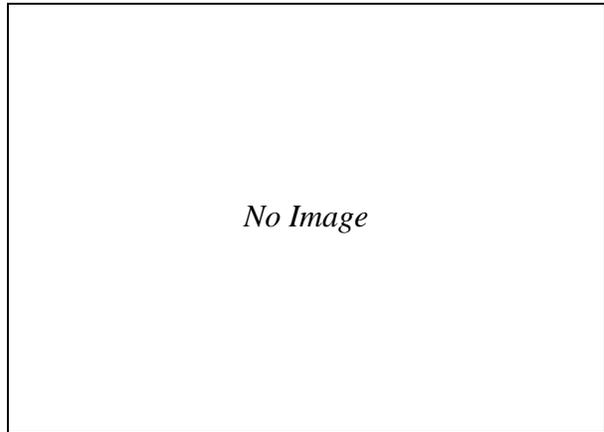
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

260+17.44



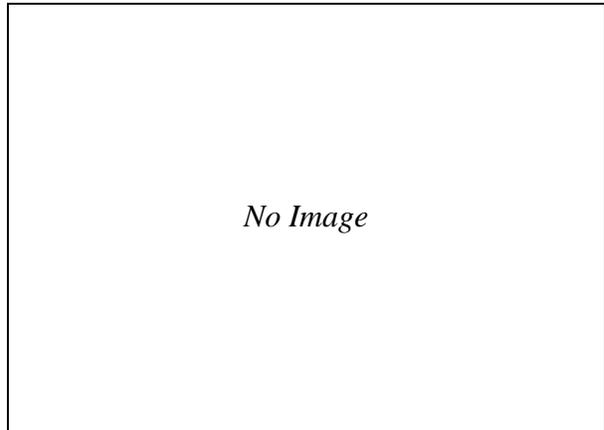
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

269+49.25



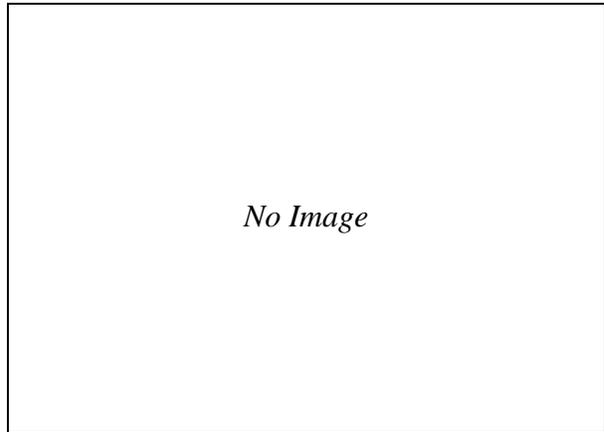
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

279+80.81



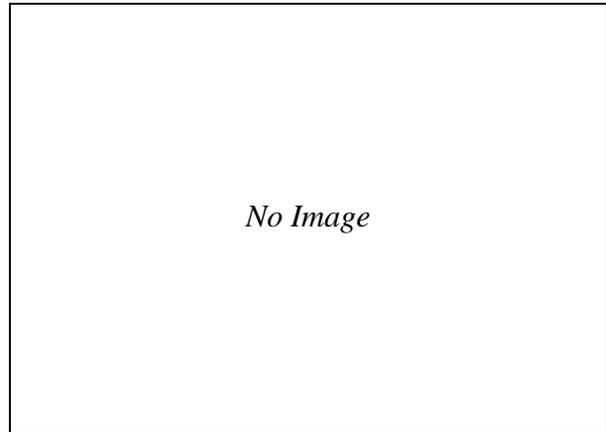
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

289+99.14



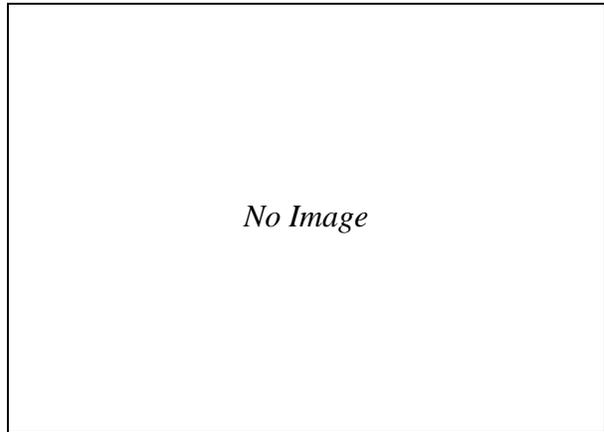
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

299+92.48



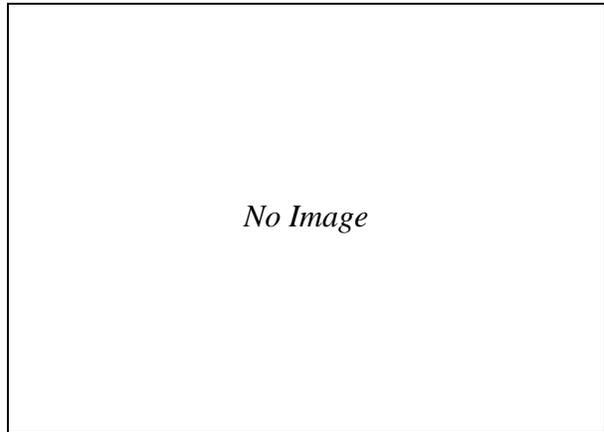
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

309+71.20



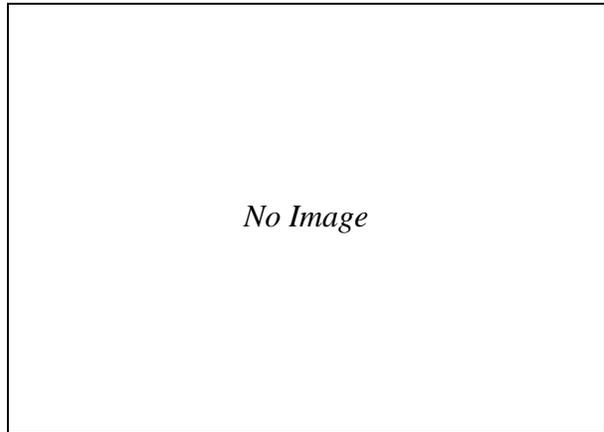
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

320+05.37



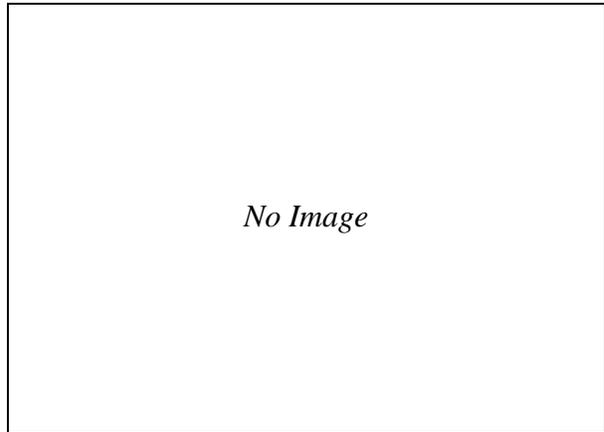
North View



South View



Landward View



Monument – Reference Point



**Ground Digital Photography
Monument**

329+88.80



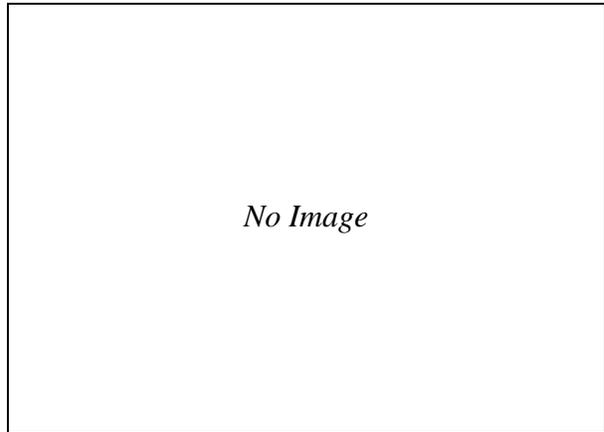
North View



South View



Landward View



Monument – Reference Point

APPENDIX 5

FIELD BOOK PAGES

(Available in digital format only)

04/22/15 NTS Phase I Monitoring TM

0730 MOB e OFFICE

1000 Arrive W&D Riv Marina

Drop Purker & Fueled

1200 Set Base e MAJOR Z

1330 SOD CHK 01 ← PARKING LOT PK → SOD CHK 02

1340 SOD CHK 03 VIEW 2 SOD CHK 04

H: 0.097

H: 0.096

V: -0.020

V: -0.020

1500 Leave Marina to Set TIDE GUNNIE TM, S3, BC, CG

16:30 TG SET

PHOTS: T06: X: 2500581.896 Y: 291125.291 Z: 41.419

SND: X: 2500581.993 Y: 291126.194 Z: -14.307

* CHANGE SND

1810 EOD CHK 01 VIEW 2 EOD CHK 02

H: 0.302

H: 0.280

V: -0.050

V: -0.052

1820 EOD CHK 03 PARKING LOT PK EOD CHK 4

H:

H:

V:

V:

1830 Broke DOWN Base

-CHANGE SWD SHOT FROM 16.32 TO 16.04

0630 MEET @ HOUSE AND MOB

0730 SET BASE @ MAYOR 2

0860 PROBLEMS WITH RADIO TX

CH: 461.02500 ANT HI: 1.5M

0930 SET REPEATER NEAR ASHEZ

1000 SOD CHK @ VFWZ

H: 0.224 H: 0.242

V: 0.053 V: 0.044

1015 SODCHK @ ASHEZ

H: 0.187 H: 0.236

V: 0.125 V: 0.112

1000 SOD CHK @ VFWZ

H: 0.302 H: 0.305

V: 0.012 V: 0.019

1930 BREAK DOWN BASE

BAUD RATE 38400
* NO STATIC, NO

D RATE 38400 INSTEAD OF 9600
D STATIC; NO MEMORY LEFT IN BASE

57

CG 5B

WTNC MONITORING

4/28/15

1040+00 TOPO 1-66

AZ: 150/370

STREET, PATH, GRASS, VI, BOV, SWD, WSND, MON:

WL, W

1050+00 TOPO 1-65

AZ: 150/370

STREET, PATH, GRASS, PECK, VI, BOV,

MON -

SND, WSND, WL, W

1060+00 TOPO 1-74

AZ: 150/330

GRASS, CONC, ST, CONC, VI, BOV, SWD, WSND

MON: ~

WL, W

1070+00 TOPO 1-59

AZ: 150/330

PLOT, ST, VI, BOV, SND, WSND, WL, W

MON: -

1080+00 TOPO 1-62

AZ: 150/330

PLOT, ST, VI, BOV, SWD, WSND, WL, W

MON: -

1090+00 TOPO 1-62

AZ: 150/330

ST, VI, BOV, SND, WSND, WL, W

MON: -

1100+00 TOPO 1-56

AZ: 150/330

VI, BOV, SND, WSND, WL, W

1110+00 TOPO 1-63

AZ: 150/330

VI, SND, WSND, WL, W

1120+00 TOPO 1-60

AZ: 150/330

GRASS, VI, BOV, SND, WSND, WL, W

1130+00 TOPO 1-59

AZ: 145/325

VZ, VI, BOV, SND, WSND, WL, W

1130RR+00 TOPO 1-57

VZ, VI, BOV, SND, WSND, WL, W

1140+00 TOPO 1-

HNT WAS @ 8.

* RR - REBUN DUE

INT WAS @ 8.04, CHANGE TO 12.04 DTG's:

1040+00: 475 ✓

1050+00: 485 ✓

1060+00: 480 ✓

1070+00: 385

1080+00: 400

1090+00: 410

1100+00: 375

1110+00: 450

1120+00: 420

1130+00: 350

1140+00: 330

1145+00: 250

1150+00: 150

1155+00: 325

16+00-145: 50

RR = REBUN DUE TO WRONG AZIMUTH

CG, SB

NTNC MONITORING

4/23/15

1150+00 TOPO 1-44

AZ: 135/3/5

BLDG, VZ, EDU, JND, SWDBAG, SNO, WJND,

1160+00 TOPO 1-68

BLDG, JND, SWDBAG, W

1155+00 TOPO 1-59

AZ 135/3/5

SNO, SWDBAG, W

* DID NOT REA
PHOTO NOT LABEL

* PHONE CG DI

DID NOT REACH DTG; GOT TO JSD
PHOTO NOT LABELED / JANBAG PIC NOT LABELED

PHONE CG DIED NEED TO TAKE PHOTOS FROM

0630 MOB @ MOUSE

0700 SET BASE @ MAYOR 2 STAIR @ 365

ANTENNA HI: 1.5M CH: 461,02500

0745 SOP CHK @ VIEW 2

H: 0.037 H: 0.031

V: -0.022 V: -0.014

0815 500 CHK @ ASHE 2

H: 0.230 H: 0.259

V: 0.073 V: 0.068

0845 MOB TO GO TO ONSLOW PROFILES

1930 EOD CHK @ VIEW 2

H: 0.201 H: 0.177

V: 0.018 V: 0.015

1935 EOD CHK @ ASHE 2

H: 0.208 H: 0.203

V: 0.087 V: 0.082

CG, SB

4/24/15
AZ: 145/325
MON

90+00 TOPO 1-71

VZ, PATH, VI, EOV, SND, WSND, WL, W

80+00 TOPO 1-54

AZ: 145/325

VZ, VI, EOV, SND, WSND, WL, W

CHANGE LAST 3 SNOTS

70+00 TOPO 1-86

AZ: 145/325

W, WL, SND, VI, EOV, SND, WSND, WL, W

pic. 16

60+00 TOPO 1-77

AZ: 145/325

VI, VZ, VI, EOV, SND, WSND, WL, W

50+00 TOPO 1-70

AZ: 145/325

VI, EOV, SND, WSND, WL, W

40+00 TOPO 1-99

AZ: 145/325

VI, EOV, SND, WSND, WL, W

30+00 TOPO 1-104

AZ: 145/325

VI, EOV, SND, WSND, WL, W

20+00 TOPO 1-86

AZ: 145/325

VI, EOV, SND, WSND, WL, W

10+00_145 TOPO 1-75

AZ: 145/325

VI, EOV, SND, WSND, WL, W

10+00_192 TOPO 1-69

AZ: 192/12

VI, EOV, SND, WSND, WL, W

0+00 TOPO 1-139

AZ:

DTG's

UNGE LAST 3 SHOTS FROM 8.04 → 12.04

~~90+00: 475~~

~~80+00: 600~~

~~70+00: 500~~

pic labeled as 1060

~~60+00: 550~~

pic labeled as 1050

~~50+00: 480~~

~~40+00: 610~~

pic labeled as 1030

830 30+00: 1450

630 20+00: 775

10+00.145: 80

10+00.192: 50

5+22: 450

0+00: 1100

CG 5B

NORTH TOPSAIL MONITORING

4/25/15

0600 MOB @ HOUSE

0715 SET BASE @ MAYOR 2

ANT HI: 1.5m CH: 461.02500

0730 SOD CHK @ VIEW 2

H: 0.131 H: 0.102

V: 0.017 V: 0.011

0805 SOD CHK @ ASH 2

H: 0.263 H: 0.297

V: 0.270 V: 0.304

1930 EOD CHK @ VIEW 2

H: 0.340 H: 0.344

V: 0.002 V: -0.005

1945 EOD CHK @ ASH 2

H: 0.310 H: 0.259

V: 0.071 V: 0.160

* HAVE TO RUN

X: 2508077.67 Y

X: 2509798.40 Y

* HAVE TO RUN 88+96, COORDINATES: DTG: 425

X: 2508077.67 Y: 293132.51 (TRY FIRST; MAY BE OFFSHORE)

X: 2509798.40 Y: 290675.05

Negative Distances

1170+00: -130

1165+00: -120

1163+00: +100

0630 MOB @ HOUSE

0730 SET UP GAGE @ MAYOR 2

0800 PROBLEMS GETTING RADIO TX (SWAPPED EQUIPMENT)

0830 SOD CHK @ VIEW 2

H: 0.327 H: 0.346

V: 0.031 V: 0.032

0906 SOD CHK @ ASHE 2

H: 0.292 H: 0.271

V: 0.026 V: 0.029

0930 PLUNK SHOTS ON BOAT

1530 NORTH TOPSAIL MINE PROFILES

1706 EOD CHK @ VIEW 2

H: 0.309 H: 0.278

V: 0.038 V: 0.037

1715 SOD CHK @ ASHE 2

H: 0.322 H: 0.322

V: 0.109 V: 0.107

FILLED IN WITH
SHOT NORTH TOAS

FILLED IN WITH RTK ON SHOALS
SHOT NORTH TOWARD BEACH MINE PROFILES

0630 MOB @ HOUSE

0730 SET UP BASE @ MAYOR 2

0750 300 CHK @ VIEW 2

H: 0.195

H: 0.212

V: 0.005

V: -0.003

0810 500 CHK @ ASHEZ

H: 0.311

H: 0.359

V: 0.073

V: 0.058

2005 EOD CHK @ ASHEZ

H: 0.080

H: 0.107

V: 0.059

V: 0.052

2015 EOD CHK @ MAYOR 2

H: 0.322

H: 0.326

V: -0.016

V: 0.003

*TIDES SHOTS LAG

*TIDE SHOTS LAG

*TG SHOTS

CHANGE

TOG →

SND →

TIDE SHOTS LABELED 13:15 ACTUALLY 15:15

TIDE SHOTS LABELED 17:05 ACTUALLY 16:30

* TIG SHOTS (Controller-C)
CHANGE ANT HEIGHTS.
TOG → 8.32' to 16.32'
SND → 8.04' to 16.04'

0700 MOB @ HOUSE

0730 SET BASE @ MAYOR 2

0800 RECON FOR LINES

0830 SOD CHK @ VIEW 2

H: 0.094

H: 0.081

V: 0.033

V: 0.024

0845 SOD CHK @ ASHE 2

H: 0.130

H: 0.163

V: 0.062

V: 0.079

★ Shot named

VIEW 2, change to

ASHE 2★

1163+00 Topo 100-163

Az: 90/270

SND, WSND, WL, W

1165+00 - 143

Az: 90/270

SND, WSND, WL, W

1200 EOD CHK @ VIEW 2

H: 0.107

H: 0.157

V: 0.015

V: 0.014

1220 EOD CHK @ ASHE 2

H: 0.195

H: 0.215

V: 0.020

V: 0.050

DTG 3: 1163+00=610

1165+00=465

BA
CG

S/S/15

ORX 05/15

- 0630 MOB @ Hotel
- 0645 Safety Meeting
- 0800 leave dock
- 0900 SUP 4893
- 0905 Bar check S, 10, 15, 20, 25, 30
- 0915 waiting on land crew to start base
- 1720 SUP 4893
- 1725 Bar check S, 10, 15, 20, 25, 30

~~ERIE PARKER~~

LINE	SOL	EOL	SOL	EOL	AZ	DTG	Comment
321+88.90	966	996	938	945	242.1	765	
320+85.37	997	1106	948	954	242	928	
309+71.20	1107	1238	958	10:05	242	859	
294+92.48	1241	1346	10:15	10:20	242.2	847	
289+99.14	1347	1463	10:24	10:30	242.2	762	
279+80.81	1464	1588	10:33	10:40	242.20	752	
269+49.25	1589	1718	10:44	10:52	242.20	680	
260+17.44	1727	1848	10:57	11:04	241.90	586	
249+81.53	1854	1979	11:10	11:17	241.90	552	
240+41.51	1981	2116	11:22	11:29	240.52	511	
229+83.29	2117	2255	11:33	11:41	240.52	544	
219+99.94	2256	2406	11:47	11:55	240.53	411	
209+74.44	2407	2556	11:59	12:07	240.53	454	
199+93.01	2557	2725	12:11	12:22	239.58	350	
189+87.10	2726	2867	12:27	12:33	239.58	347	(KDH)
179+87.12	2868	3016	12:38	12:47	239.58	355	
169+70.21	3017	3149	12:54	13:01	239.58	551	
159+99.55	3151	3286	13:05	13:13	239.58	429	
149+99.46	3289	3423	13:19	13:26	239.58	400	
138+27.61	3424	3549	13:31	13:38	239.58	452	
130+33.04	3553	3655	13:43	13:49	239.60	-	PWR FAIL
130+33.04	3658	3690	13:53	13:55	239.60	476	
119+99.14	3693	3814	14:00	14:07	239.60	430	
109+99.76	3815	3936	14:11	14:18	239.60	501	
99+99.71	3938	4072	14:24	14:31	241.50	476	
99+56.91	4076	4204	14:37	14:44	242.2	552	
80+15.19	4206	4227	14:41	14:50	242.20	-	BTM TRK
80+15.19	4228	4348	14:52	15:00	242.20	529	
20+02.90	4351	4475	15:05	15:13	242.2	528	

LINE	SOL	EOL	SOL	EOL	AS	DTG	COMMENT
60+50.00	4478	4603	15:23	15:30	242.20	503	
50+28.29	4606	4729	15:36	15:42	242.2	447	
40+23.88	4780	4845	15:48	15:53	242.2	478	
30+20.55	4846	4962	15:57	16:03	242.2	503	
20+09.68	4963	5090	16:08	16:16	242.2		
9+99.9	5091	5216	16:36	16:43	242.2	493	
0+00.00	5219	5330	16:47	16:53	242.2	603	
-10+00	5331	5335	16:57	16:57	242.57	-	PWR
-10+00_1	5341	5456	16:59	17:05	242.57	667	
-20+00	5457	5562	17:09	17:14	242.57	663	

BA
CG

5/6/15

OBX 0515

0600 MOB @ Hotel

0715 leave stock

0815 SUP 4884

0820 Bar check 5, 10, 15, 20, 25, 30

1545 SUP 4886

1550 Bar check 5, 10, 15, 20, 25, 30

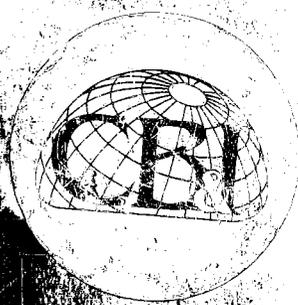
*DO NOT RUN D21-D23

LINE	SOL	FOL	SOL	EOL	A2	OTG	COMMENT
SS-02	5563	5690	5:34	8:41	250	490	
SS01	5691	5826	8:44	8:52	250	491	
D-34	5827	5962	8:55	9:03	250	447	
D-33	5963	6093	9:06	9:13	250	651	
D-32	6094	6234	9:18	9:25	250	487	
D-31	6235	6367	9:29	9:35	250	465	
D-30	6368	6495	9:39	9:45	250	611	
D-29	6496	6626	9:49	9:55	250	460	
D-28	6627	6742	10:01	10:07	250	601	
D-27	6745	6876	10:10	10:17	250	481	
D-26	6877	7002	10:20	10:27	250	489	
D-25	7003	7133	10:30	10:37	250	477	
D-24	7135	7245	10:40	10:46	250	687	
D-20	7246	7397	10:53	11:00	250	472	Buoys on LINE
D-19	7393	7539	11:04	-	250	450	
D-18	7540	7680	-	11:22	250	468	
D-17	7685	7816	11:36	11:42	250	703	
D-16	7817	7964	11:49	11:56	250	450	
D-15	7965	8100	12:00	12:07	250	675	
D-14	8101	8232	12:11	12:19	250	504	
D-13	8233	8362	12:23	12:29	250	729	
D-12	8369	8497	12:35	12:42	250	562	
D-11	8498	8637	12:47	12:55	250	496	
D-10	8633	8772	13:00	13:08	250	486	
D-9	8773	8965	13:12	13:19	250	762	
D-8	8906	9048	13:24	13:31	250	774	
D-7	9049	9192	13:35	13:43	250	879	
D-6	9196	9331	13:48	13:55	250	752	
D-5	9335	9481	14:03	14:11	25	703	

NORTH
CAROLINA
481



SINCE 1955
FLIT
Geosystems



84-18

OUTER
BANKS
481

KH. KDHOSIS

OSOSIS

JW

0630 Meet for safety

0930 Base set @ Wilbur IRC

1000 SOD CHK Kitty Pics 1423 - 1424

H 0.171 H 0.067

V 0.023 V 0.024

1010 SOD CHK ARCH Pics 1425 - 1426

H 0.057 H 0.049

V -0.003 V -0.007

1920 EOD CHK ARCH

H 0.051 H 0.041

V -0.034 V -0.032

1930 EODCHK Kitty

H 0.050 H 0.072

V -0.001 V 0.008

329+88	Topo 100 - 126 pics 1427 - 1429	
320+05.37	Topo 100 - 127 pics 1430 - 1432	Az 6
329+71.2	Topo 100 - 132 pics 1433 - 1435	Az
299+92.48	Topo 100 - 121 pics 1436 - 1438	Az
289+99.14	Topo 100 - 136 pics 1439 - 1441	Az
279+80.81	Topo 100 - 134 pics 1442 - 1444	Az 6
269+49.25	Topo 100 - 136 pics 1445 - 1447	Az
266+11.44	Topo 100 - 131 pics 1448 - 1450	Az
249+81.53	Topo 100 - 127 pics 1451 - 1453	Az
240+11.84	Topo 100 - 129 pics 1454 - 1456	Az
229+83.39	Topo 100 - 130 pics 1457 - 1459	Az

Az 6

Az

Az

Az

Az 6

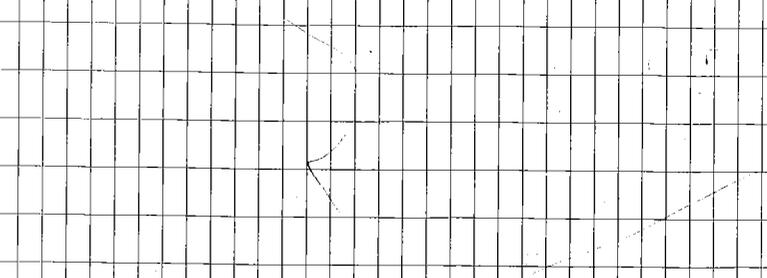
Az

Az

Az

Az

Az



shot: big

Rock Count Here

Switch pole height to
12.04 at 520.0 distance

219 + 99.94

Topo 100-126
pics 1460-1462

209 + 74.44

Topo 100-130
pics 1463-1465

Az 60.5

179.493.01

Topo 100-123
pics 1466-1468

Az

184 + 7.10

Topo 100-127
pics 1469-1471

Az

179 + 57.62

Topo 100-125
pics 1472-1474

Az S

174 + 20.21

Topo 100-135
pics 1475-1477

Az

109 + 99.55

Topo 100-133
pics 1478-1480

Az

149 + 77.46

Topo 100-138
pics 1481-1483

Az

GFJW 05/06/15

0600 Meet
0800 set base @ 865 1370 K TIDAL

0820 SOD CLK C255
H 0.025 H 0.034
V 0.045 V 0.060
pic -
pic: 1484

0840 SOD CLK 865 1370 C TIDAL
H 0.058 H 0.051
V 0.003 V -0.009
pic

1605 SOD CLK 865 1370 C TIDAL
H 0.060 H 0.069
V -0.017 V -0.011

1620 SOD CLK C255
H 0.062 H 0.042
V 0.057 V 0.053

SS-02

Topo 100 - 125
pics 1486 - 1488

SS-01

Topo 100 - 124
pics 1489 - 1491

D-34

Topo 100 - 120
pics - 1492 - 1494

D-33

Topo 100 - 128
pics - 1495 - 1497

D-32

Topo 100 - 120
pics 1498 - 1500

D-31

Topo 100 - 120
pics - 1501 - 1503

D-30

Topo 100 - 129
pics - 1504 - 1506

D-29

Topo 100 - 126
pics - 1507 - 1509

D-28

Topo 100 - 130
pics - 1510 - 1512

D-27

Topo 100 - 118
pics 1513 - 1515

D-26

Topo 100 - 122
pics - 1516 - 1518

Distance
to

500 - 540
12.04

change

D-25

Topo 100 - 124
pics - 1519 - 1521

D-24

Topo 100 - 135
pics - 1522 - 1524

A 276

~~D-23~~

~~Topo 100 -
pics -~~

~~D-22~~

~~Topo 100 -
pics -~~

~~D-21~~

~~Topo 100 -
pics -~~

D-20

Topo 100 - 122
pics - 1525 - 1527

D-19

Topo 100 - 123
pics - 1528 - 1530

D-18

Topo 100 - 124
pics - 1531 - 1533

D-17

Topo 100 - 130
pics - 1534 - 1536

C6, J4, G2, BA OBX MONITORING

5/7/15

0800 START BASE @ KTEDAL

ANT: IEM CH: 461.02500

0830 SDD CHK @ C255

H: 0.122 H.O: 0.058

V: -0.004 V: -0.034

0900 SDD CHK @

* WRONG CONTROLLER/ROVER COMBO: DO NOT USE
DFF POINTS C255 FLD 10 & FLD 11

* MISS label C155. Suppose to be C255

D-15 Topo 100-169
SND, WSND, WL, W

NO PICS

D-15 f USE SHORTS OF: 10 FU
Change ANT Height to 12.04' All steps

D-13 Topo 100-145
SND, WSND, WL, W

NO PICS

D-10 Topo 100-130
SND, WSND, WL, W

NO PICS

R-16 Topo 100-120
SND, WSND, WL, W

NO PICS

D-14 Topo 100-122
SND, WSND, WL, W

NO PICS

D-12 Topo 100-123
SND, WSND, WL, W

NO PICS

D-11 Topo 100-122
SND, WSND, WL, W

NO PICS

D-09 Topo 100-141
SND, WSND, WL, W

NO PICS

D-08 Topo 100-132
SND, WSND, WL, W

NO PICS

D-07 Topo 100-126
SND, WSND, WL, W

NO PICS

D-06 Topo 100-141

NO PICS

D-05 TOPO 100-124
SND, WSND, WL, W

NO P

D-04 TOPO 100-136
SND, WSND, WL, W

NO PICS

D-03 TOPO 100-136
SND, WSND, WL, W

NO PICS

D-02 TOPO 100-145
SND, WSND, WL, W

NO PICS

D-01 TOPO 100-124
SND, WSND, WL, W

NO PICS

PI-17 TOPO 100-133
SND, WSND, WL, W

NO PICS

PI-18 TOPO 100-124
SND, WSND, WL, W

NO PICS

BA CG GF OBS 0515

0630 MOB @ Hotel/Safety Meeting

0700 Recon surf conditions

0830 Set Base @ WILKINS
Ant: 2.0m Channel: 461.0250

0900 SOD CHK @ KITTY
H: 0.061 H: 0.050
V: 0.059 V: 0.044

0910 SOD CHK @ ARCHA
H: 0.060 H: 0.058
V: 0.000 V: 0.006

1830 EOD CHK @ ARCHA
H: 0.073 H: 0.065
V: -0.049 V: -0.034

1835 EOD CHK @ KITTY
H: 0.103 H: 0.087
V: -0.013 V: -0.025

DTG	LINE	TOTAL
	329 + 05.37	980
	309 + 71.20	910
	299 + 92.48	900
	289 + 99.14	815
	279 + 80.81	802
	269 + 49.25	730
	260 + 17.44	636
	249 + 87.53	600
	240 + 41.84	560
	229 + 83.39	594
	209 + 74.44	504
	199 + 93.01	400
	189 + 87.10	397
	179 + 87.62	405
	169 + 70.21	601
	149 + 99.46	450
	138 + 27.64	502 → offset
	130 + 33.04	526
	119 + 49.14	460
	109 + 99.46	551 → hit @ low
	99 + 99.71	525
	89 + 56.91	602
	80 + 15.19	580
	70 + 62.90	580
	60 + 50.00	505
	50 + 28.29	500
	40 + 25.84	530
	30 + 05.32	555
	20 + 02.68	585
	09 + 99.90	545
	00 + 00.00	650
	-10 + 00.00	725
	-20 + 00.00	720

138+27.64 → In construction/Debris zone
swim data

★ All ANT HEIGHTS
12.04' CHANGE
When Needed

C6

(OBX UPLAND)

5/7-5/8

329+88.80 TOPO 1-32

SND, EOU, VI, VZ, VI, FENCE

AZ: 6.97

NO MON

ALL PICS TAKEN DOING NEARSHORE

320+05.37 TOPO 1-73

WSND, SND, EOU, VI, STREET, VI

AZ: 6.97

309+71.20 TOPO 1-30

STREET, GRASS, FENCE, VI, EOU, SND, WSND

AZ: 6.97

299+42.48 TOPO 1-47

WSND, SND, EOU, VI, VZ, VI

AZ: 6.97

299+99.14 TOPO 1-37

STREET, GRASS, VI, DWAY, BLDG, JELLY, VI, EOU, SND, WSND

AZ: 6.97

HOUSE (GAR)

279+80.81 TOPO 1-42

WSND, SND, EOU, VI, GRASS, CONC, GRASS, STREET, GRASS

AZ: 6.97

269+49.45 TOPO 1-42

GRASS, STREET, GRASS, VI, EOU, SND, WSND, WL

AZ: 6.97

260+17.44 TOPO 1-41

WL, WSND, SND, EOU, VI, SND, CONC, SND, GRASS, STREET

AZ: 6.97

249+81.53 TOPO 1-57

GRASS, STREET, VI, EOU, SND, WSND, WL

AZ: 6.97

240+41.84 TOPO 1-38

WSND, SND, EOU, VI, STREET, GRASS

AZ: 6.97

CHANGE ALL SOFT SHOTS TO 8.04

229+83.39 TOPO 1-36

WSND, SND, EOU, VI, STREET, GRASS

AZ: 6.97

219+99.94 TOPO: 1-32

AZ: 0

WSND, SND, DWAY, STREET, GRASS

209+74.44 TOPO (LABELED INCORRECTLY) →

AZ: 60.53

TOPOS LABELED 209+74...44 - 209+74...83

VI, STREET, VI, EOU, SND, WSND

199+93.01 TOPO: 1-37

AZ: 0

WSND, SND, EOU, VI, STREET, VI

189+87.10 TOPO: 1-32

AZ: 0

VI, STREET, VI, EOU, SND, WSND

179+87.62 TOPO 1-29

AZ: 0

WSND, SND, EOU, VI, STREET, VI

169+70.21 TOPO 1-26

AZ: 0

VI, STREET, VI, EOU, SND, WSND

159+99.55 TOPO 1-30

AZ: 0

WSND, SND, EOU, VI, SND, STREET, PHOT

149+99.46 (LABELED 159+99.55 TOPO 31-55)

AZ: 0

DWAY, STREET, VI, EOU, SND, WSND

139+27.64 TOPO 1-21

AZ: 0

VI, STREET, SND, WSND

130+33.04 TOPO 1-26

AZ: 0

WSND, EOU, VI, STREET, VI

119+99.14 TOPO 1-29

AZ: 0

VI, STREET, VI, EOU, SND, WSND

109+99.46 TOPO 1-38

AZ: 0

WSND, SND, EOU, VI, DWAY, STREET, VI

CG OBX 0515
0630 MOB @ Hotel / Safety Meeting
0800 Set Base @ WILKINS / STATIC
Ant Height: 2.0m Channel: 461.028

0810 SOD CHK @ KITTY
H: 0.030 H: 0.033
V: 0.056 V: 0.028

0815 SOD CHK @ ARCH
H: 0.068 H: 0.075
V: -0.016 V: -0.011

14:30 EOD CHK @ KITTY
H: 0.057 H: 0.012
V: 0.020 V: 0.043

16:45 EOD CHK @ ARCH
H: 0.061 H: 0.043
V: 0.002 V: 0.000

1700 END STATIC @ WILKINS / END SURVEY

DA GF CG

OBX 0515

5/9/10

0630 MOB @ HOTEL/SAFETY MTG

0800 SET BASE @ WILKINS/STATEC

2.0M

461.02500

0810 SOD CHK @ KITTY

H: 0.030

H: 0.033

V: 0.086

V: 0.028

0815 SOD CHK @ ARCH

H: -0.015

H: -0.026

V: 0.000

V: -0.006

1800 EOD CHK @ KITTY

H: 0.103

H: 0.057

V: 0.013

V: -0.025

1815 EOD CHK @ ARCH

H: 0.073

H: 0.065

V: -0.049

V: -0.634

CG, GF, BT	OBK 0515	5/9/15
138 OFFSET	TOPO 1-19	AZ: 59.6
DWAY, STREET, VI, EOU, SND, WSND		
99+99.75	TOPO 1-37	AZ: 61.5
VI, STREET, VI, EOU, SND, WSND		
89+56.91	TOPO 1-30	AZ: 62.2
WSND, SND, EOU, VI, STREET, VI		
50+15.19	TOPO 1-26	AZ: 62.2
GRASS, DWAY, STREET, VI, SND, WSND		
70+02.90	TOPO 1-26	AZ: 62.2
WSND, SND, EOU, VI, STREET, VI		
60+50.00	TOPO 1-30	AZ: 62.2
VI, STREET, VI, EOU, SND, WSND		
50+28.29	TOPO 1-30	AZ: 62.2
WSND, SND, EOU, VI, DWAY, STREET, SND		
40+23.88	TOPO 1-29	AZ: 62.2
WSND, SND, GRASS, SND, STREET, VI		
30+05.52	TOPO 1-30	AZ: 62.2
VI, DWAY, VI, STREET, DWAY, SND, STREET, VI		
20+02.68	TOPO 1-30	AZ: 62.2
WSND, SND, EOU, VI, SND, STREET, VI		
9+99.90	TOPO 1-28	AZ: 62.6
WSND, SND, EOU, VZ, STREET, GRASS		

* 138 missing, Road was washed out (6/26/15 -TM)

CG, GF, BA OBX 0515 5/8/15-

-10 TOPO 1-52 AZ: 62.0

WSND, SND, EOV, VI, VZ, DWAY, VZ, DWAY, STREET, GRASS
SWALK, GRASS

-20 TOPO 1-45 AZ: 62.6

WSND, SND, EOV, VI, STREET, GRASS, SWALK

0+00.00 TOPO 1-27 AZ: 62.0

WSND, SND, EOV, VI, SND, SWALK, VI

(NS)

130+33.04 TOPO 100-127 AZ: 59.6

SND, WSND, WL, W

119+99.14 TOPO 100-127 AZ: 59.6

SND, WSND, WL, W

109+99.46 TOPO 100-116 AZ: 59.6

WSND, WSND, WL, W

99+99.71 TOPO 100-132 AZ: 59.6

SND, WSND, WL, W

89+56.57 TOPO 100-139 AZ: 62.2

SND, WSND, WL, W

80+15.19 TOPO 100-140 AZ: 62.0

SND, WSND, WL, W

138 OFFSET TOPO 100-129 AZ: 59.6

SND, WSND, WL, W

109+99.46 TOPO 200-242 AZ: 59.6

SND, WSND, WL, W

CG, GF, BA

OBX 0575

5/4

70+02.90 TOPO 100-138

AZ: 62.0

SND, WSND, WL, W

60+50.00 TOPO 100-133

AZ: 62.2

SND, WSND, WL, W

50+28.29 TOPO 100-133

AZ: 62.2

SND, WSND, WL, W

40+23.88 TOPO 100-134

AZ: 62.2

SND, WSND, WL, W

30+05.52 TOPO 100-131

AZ: 62.2

SND, WSND, WL, W

20+02.68 TOPO 100-133

AZ: 62.2

SND, WSND, WL, W

9+99.96 TOPO 100-123

AZ: 62.2

SND, WSND, WL, W

0+00.00 TOPO 100-129

AZ: 62.2

SND, WSND, WL, W

-10 TOPO 100-129

AZ: 62.0

SND, WSND, WL, W

-20 TOPO 100-125

AZ: 62.0

SND, WSND, WL, W

BA CG

Rock 0515

0700 MOB @ Hotel/Safety Meeting

0730 Fuel Mule/05 Surveyor

0800 Water/ICE FOR FIELD CREW

0930 SET BASE @ JENN IRC

ANT: 1.5m Channel: 161.02800

STATIC @ 30 sec

0945 SOD CHK @ CTIDAL

H: 0.046 H: 0.034

V: -0.004 V: -0.003

1015 SOD CHK @ CAFFEY

H: 0.081 H: 0.083

V: 0.024 V: 0.015

1615 EOD CHK @ CTIDAL

H: 0.181 H: 0.194

V: -0.034 V: -0.038

*STORMS APPROACHING, SKIP 2nd CHK

1630 END STATIC/SURVEY

P1-18 Topo 1 - 32

WSND, SND, EOU, VI, VZ

AZ: 70/250

PICS: 1617-1618

Shot offline due to dense veg.

P-17 Topo 1 - 27

WSND, SND, EOU, VI, VZ

AZ: 70/250

PICS: 1614-1616

- Large Gap due to house/dense veg, took hard shot on street.

D-01 TOPO 1 - 26

WSND, SND, EOU, VI, VZ

AZ: 70/250

PICS: 1620-1621

DENSE VEG/THORNS

D02 TOPO 1 - 48

WSND, SND, EOU, VI, VZ

AZ: 70/250

PICS: 1617-1618

D-03 Topo 1 - 35

WSND, SND, STAIRS, DECK, VI, VZ

AZ: 70/250

PICS: 1625-1626

NO RTK @ ZII DISTANCE

D-04 TOPO 1 - 43

WSND, SND, EOU, VI, VZ, FENCE

AZ: 70/250

P: 1623-1625

D-05 TOPO 1 - 21

WSND, SND, EOU, VI, VZ

AZ: 70/250

P: 1629-1630

ALL EOU SHOTS AFTER FIRST EOU SHOT ARE VI

D-06 TOPO 1 - 42

WSND, SND, EOU, VI, VZ

AZ: 70/250

P: 1626-1627

D-07 TOPO 1 - 22

WSND, SND, EOU, VI, VZ

AZ: 70/250

PICS: 1632-1633

D-08 TOPO 1 - 40

WSND, SND, EOU, VI, VZ, PATH

AZ: 70/250

PICS: 1637-1638

D-09 TOPO 1 - 39

WSND, SND, EOU, VI, SWALK, VI, VZ, VI

AZ: 70/250

PICS: 1641-1642

D-10 TOPO 1-43
WSND, SND, EOU, VI, VZ, PATH, ROAD

AZ: 70/250
PICS: 1653-1654

ALL SHOTS AFTER PATH EXCLUDING RD CHANGE ANT HEIGHT FROM 8.32 TO 8.04

D-11 TOPO 1-19
WSND, SND, EOU, VI, BLDG

AZ: 70/250
PICS: 1647-1649

D-12 TOPO 1-36
WSND, SND, EOU, VI, PATH, GRASS

AZ: 70/250
PICS: 1641

D-13 TOPO 1-24
WSND, SND, EOU, VI, BLDG, DWAY

AZ: 70/250
PICS: 1653

GAP DUE TO HOUSE ON LINE

D-14 TOPO 1-33
WSND, SND, EOU, VI, DWAY

AZ: 70/250
PICS: 1651

GAP DUE TO HOUSE ON LINE

D-15 TOPO 1-17
WSND, SND, EOU, VI, FENCE, DECK

AZ: 70/250
PICS: 1652

DID NOT SHOOT TOP OF FENCE

D-16 TOPO 1-67
WSND, SND, BOARDWALK/STAIRS, BOARDWALK, EOU, VI

AZ: 70/250
PICS: 1656-1657

VI WEST OF SECOND BOARDWALK CHANGE ANT FROM 8.32 TO 8.04

D-17 TOPO 1-27
WSND, SND, EOU, VZ, GRASS, DWAY, GRASS, FENCE

AZ: 70/250
PICS: 1665-1666

D-18 TOPO 1-41
WSND, SND, EOU, VI, BWALK, STAIRS, DWAY 1662-

AZ: 70/250
PICS: 1662

GAP DUE TO HOUSE ON LINE

D-19 TOPO 1-23
WSND, SND, EOU, VZ

AZ: 70/250
PICS: 1671

AMMUNITION OUD AREA; STOPPED EARLY (1674 SIGN OF NO TRESPASSING)

D-20 TOPO 1-41
WSND, SND, EOU, VI, PATH, VZ

AZ: 70/250
PICS: 1672

D-21 Topo 1-28
WSND, SND, EOV, VZ, FENCE

AZ: 70/250
PICS: 1670-1672

D-22 Topo 1-39
WSND, SND, EOV, V1, V2

AZ: 70/250
PICS: 1675-1677

D-23 Topo 1-31
WSND, SND, EOV, V1, V2

AZ: 70/250
PICS: 1678-1680

D-24 Topo 1-43
WSND, SND, EOV, V1, V2

AZ: 70/250
PICS: 1681-1683

D-25 Topo 1-22
WSND, SND, EOV, V1, V2

AZ: 70/250
PICS: 1684-1686

D-26 Topo 1-28
WSND, SND, EOV, V1, V2

AZ: 70/250
PICS: 1687-1689

D-27 Topo 1-23
WSND, SND, EOV, V1, FENCE

AZ: 70/250
PICS: 1690-1692

D-28 Topo 1-36
WSND, SND, EOV, V1, V2, WALL, DECK

AZ: 70/250
PICS: 1693-1695

D-29 Topo 1-22
WSND, SND, EOV, V1, V2, FENCE

AZ: 70/250
PICS: 1700-1702

D-30 Topo 1-30
WSND, SND, EOV, V1, V2,

AZ: 70/250
PICS: 1703-1705

D-31 Topo 1-46
WSND, SND, EOV, V1, V2, DECK,
SWALL, GLASS,

AZ: 70/250
PICS: 1706-1708

OS/VZ/IS



250 * WALL @ 250 higher than 6'
NO FALL PROTECTION, DID NOT SHOOT

D-32 Topol-36
WSND, SND, EOV, VI, VZ

AZ: 70/250 180
Pics: 1711-1713

D-33 Topol-24
WSND, SND, EOV, VI, VZ

AZ: 70/250 225
Pics: 1722-1725

D-34 Topol-28
WSND, SND, EOV, VI, SWALK

AZ: 70/250 220
Pics: 1720-1721

SS-01 Topol-49
WSND, SND, EOV, VI, VZ, SWALK,
ROAD

AZ: 70/250 10
Pics: 1717-1718

SS-02 Topol-30
WSND, SND, EOV, VI, VZ

AZ: 70/250 150
Pics: 1714-1716

0600 MOB @ Hotel/Safety Meeting
 0645 Start Base @ WILKINS
 ANT: 2.0m Channel: 461.02500
 0700 SOB CHK @ KITTY
 H: 0.066 H: 0.052
 V: 0.013 V: 0.012
 0710 SOB CHK @ ARCH
 H: 0.032 H: 0.051
 V: 0.054 V: 0.043
 1115 EOD CHK @ KITTY
 H: 0.064 H: 0.048
 V: -0.040 V: -0.038
 1120 EOD CHK @ ARCH
 H: 0.074 H: 0.080 *M's labeled*
 V: 0.033 V: 0.027 *SE CORNERS*
 1125 END SURVEY @ WILKINS
 1215 Start Base @ JENN IRC
 ANT: 1.5m Channel: 461.02500
 1220 SOB CHK @ CZSS
 H: 0.115 H: 0.105
 V: 0.006 V: -0.005
 1225 SOB CHK @ TIDAL
 H: 0.070 H: 0.059
 V: 0.015 V: 0.013
 15:20 EOD CHK @ CZSS (DID NOT CHECK W/I TOLERANCE)
 15:25 EOD CHK @ TIDAL
 H: 0.130 *SWER LABELED CZSS FLD* H: 0.092
 V: -0.033 V: -0.009
 1535 EOD CHK @ KTIDAL
 H: 0.069 H: 0.073
 V: -0.034 V: 0.014
 1545 END SURVEY

ROCK SURVEY (KITTY HAWK)

NE Corner: N 866739.284, E 2974175.522, Elev: 0.69
 NW Corner: N 866699.465, E 2974106.071 Elev: 8.6
 SE Corner: N 866189.099, E 2974473.883, Elev: 0.77
 SW Corner: N 8661515.414, E 2974406.401, Elev: 9.02

