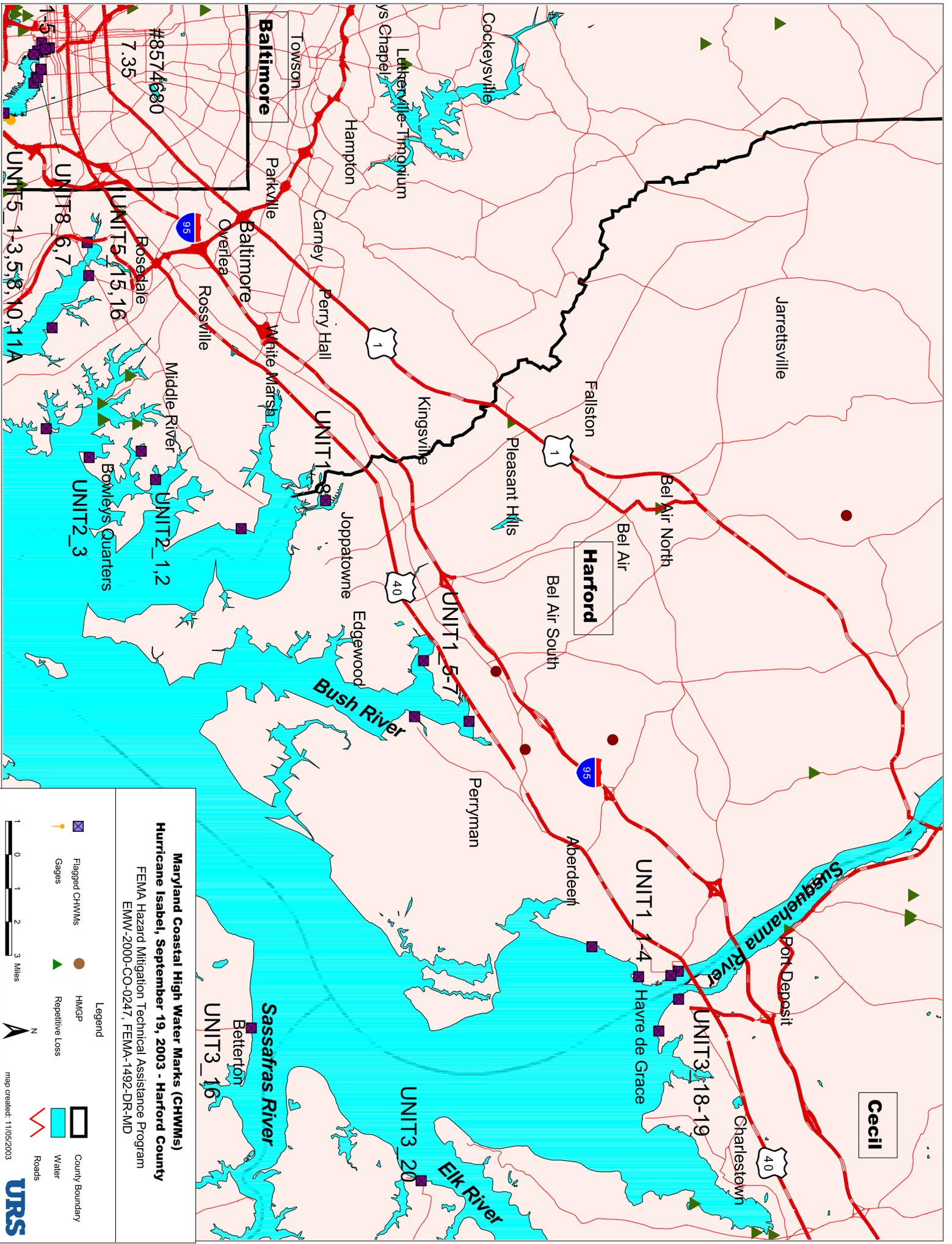


Appendices

Appendix G: Survey Sheets from Harford County



Maryland Coastal High Water Marks (CHWMs)
Hurricane Isabel, September 19, 2003 - Harford County
 FEMA Hazard Mitigation Technical Assistance Program
 EMW-2000-CO-0247, FEMA-1492-DR-MD

Legend

- Flagged CHWMs
- Gages
- HMGF
- Repetitive Loss
- County Boundary
- Water
- Roads

1 0 1 2 3 Miles

map created: 11/05/2003

URRS



PROJECT FEMA-1492-DR-MD High Water Mark Survey Project
COMM. NO. 240040
TYPE High Water Mark Survey **PREL.** 10/05/2003 **FINAL** 11/20/2003 **SHEET** G-1
CONTENTS Individual Historical High Water Mark Survey Report

Historical Mark: UNIT1_1 **Mark Type:** Coastal
Flood Event: Hurricane Isabel **Date of Flood:** 09/19/2003
Flooding Source: Chesapeake Bay **Quality of Mark:** Good
Flood Elevation: **8.12 FT** **Location:** inside, transferred outside
Flooding Type: Wave runoff
Mark Address: 723 Water Street "Havre De Grace Yacht Sales"
Description of Mark: 2" above window sill

Type of Line: Mud line
Description of Physical Structure: wood building
Closest City: Havre De Grace **County:** Harford **State:** Maryland

Flaggers: Dudley **Company/Agency:** URS
Flagging Date: 9/25/2003

Surveyors: Pavlis, Ireton **Company/Agency:** URS
Survey Date: 10/2/2003 **Survey Type:** N/A

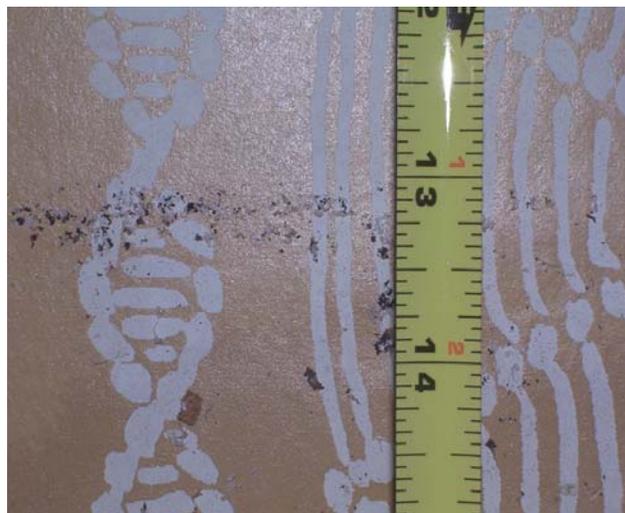
Projection: Maryland **Vertical Datum:** NAVD 88 **Horizontal Datum:** NAD 83
Latitude: 39.5550 **Easting:** 1,568,948
Longitude: -76.0924 **Northing:** 687,191

Approx. First Floor Elevation (Based on Measurement from Mark): 7.95 FT

Approx. Distance to Shoreline: 60 FT

Comments:

Site name: HAVR 1-01



DSCN0006.jpg

Survey Certification: Coastal High Water Mark location survey is certified to 0.25 feet vertically and 10 feet horizontally with a 95% accuracy level.



PROJECT FEMA-1492-DR-MD High Water Mark Survey Project
COMM. NO. 240040
TYPE High Water Mark Survey **PREL.** 10/05/2003 **FINAL** 11/20/2003 **SHEET** G-2
CONTENTS Individual Historical High Water Mark Survey Report

Historical Mark: UNIT1_2 **Mark Type:** Coastal
Flood Event: Hurricane Isabel **Date of Flood:** 09/19/2003
Flooding Source: Chesapeake Bay **Quality of Mark:** Fair
Flood Elevation: **8.12 FT** **Location:** fence
Flooding Type: Wave runoff
Mark Address: Warren St, waterfront green house
Description of Mark: 21.5" above curb

Type of Line: Debris line
Description of Physical Structure: metal fence post
Closest City: Havre De Grace **County:** Harford **State:** Maryland

Flaggers: Dudley **Company/Agency:** URS
Flagging Date: 9/25/2003

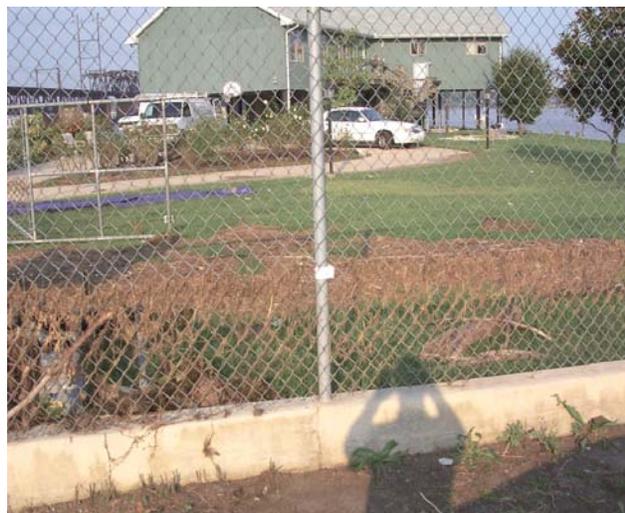
Surveyors: Pavlis, Ireton **Company/Agency:** URS
Survey Date: 10/2/2003 **Survey Type:** N/A

Projection: Maryland **Vertical Datum:** NAVD 88 **Horizontal Datum:** NAD 83
Latitude: 39.5518 **Easting:** 1,568,948
Longitude: -76.0902 **Northing:** 687,191

Approx. First Floor Elevation (Based on Measurement from Mark): 7.95 FT

Approx. Distance to Shoreline: 60 FT

Comments:
site name: HAVR 1-02



DSCN0011.jpg

Survey Certification: Coastal High Water Mark location survey is certified to 0.25 feet vertically and 10 feet horizontally with a 95% accuracy level.



PROJECT FEMA-1492-DR-MD High Water Mark Survey Project
COMM. NO. 240040
TYPE High Water Mark Survey **PREL.** 10/05/2003 **FINAL** 11/20/2003 **SHEET** G-3
CONTENTS Individual Historical High Water Mark Survey Report

Historical Mark: UNIT1_3 **Mark Type:** Coastal
Flood Event: Hurricane Isabel **Date of Flood:** 09/19/2003
Flooding Source: Chesapeake Bay **Quality of Mark:** Poor
Flood Elevation: **9 FT** **Location:** Dock piling
Flooding Type: Wave runoff
Mark Address: Yacht Basin Boat Dock, Off of Commerce St. on south end of town
Description of Mark: 49 1/4" from dock walkway

Type of Line: Personal account

Description of Physical Structure: boat dock pilings

Closest City: Havre De Grace **County:** Harford **State:** Maryland

Flaggers: Dudley **Company/Agency:** URS

Flagging Date: 9/25/2003

Surveyors: Pavlis, Ireton **Company/Agency:** URS

Survey Date: 10/2/2003 **Survey Type:** N/A

Projection: Maryland **Vertical Datum:** NAVD 88 **Horizontal Datum:** NAD 83

Latitude: 39.5379 **Easting:** 1,571,841

Longitude: -76.0896 **Northing:** 679,934

Approx. First Floor Elevation (Based on Measurement from Mark): 4.9 FT

Approx. Distance to Shoreline: 10 FT

Comments:

site name: HAVR 1-03, US Geodetic Survey Benchmark on left side of gate just before entering dock, about 10' from HWM



DSCN0012.jpg

Survey Certification: Coastal High Water Mark location survey is certified to 0.25 feet vertically and 10 feet horizontally with a 95% accuracy level.



PROJECT FEMA-1492-DR-MD High Water Mark Survey Project
COMM. NO. 240040
TYPE High Water Mark Survey **PREL.** 10/05/2003 **FINAL** 11/20/2003 **SHEET** G-4
CONTENTS Individual Historical High Water Mark Survey Report

Historical Mark: UNIT1_4 **Mark Type:** Coastal
Flood Event: Hurricane Isabel **Date of Flood:** 09/19/2003
Flooding Source: Chesapeake Bay **Quality of Mark:** Poor
Flood Elevation: **6.57 FT** **Location:** ground
Flooding Type: Surge
Mark Address: Swan Harbor Farm, off Oakington Road
Description of Mark: no vertical reference, ground debris line

Type of Line: Debris line

Description of Physical Structure: N/A

Closest City: Harford unincorporated **County:** Harford **State:** Maryland

Flaggers: Dudley **Company/Agency:** URS

Flagging Date: 9/26/2003

Surveyors: Pavlis, Ireton **Company/Agency:** URS

Survey Date: 10/4/2003 **Survey Type:** N/A

Projection: Maryland **Vertical Datum:** NAVD 88 **Horizontal Datum:** NAD 83

Latitude: 39.5179 **Easting:** 1,566,272

Longitude: -76.1065 **Northing:** 672,593

Approx. First Floor Elevation (Based on Measurement from Mark): N/A

Approx. Distance to Shoreline: 10 FT

Comments:

site name: HACO 1-04, office can direct you to site, stake has nail through it with red ribbon and tape on top



DSCN0013.jpg

Survey Certification: Coastal High Water Mark location survey is certified to 0.25 feet vertically and 10 feet horizontally with a 95% accuracy level.



PROJECT FEMA-1492-DR-MD High Water Mark Survey Project
COMM. NO. 240040
TYPE High Water Mark Survey **PREL.** 10/05/2003 **FINAL** 11/20/2003 **SHEET** G-5
CONTENTS Individual Historical High Water Mark Survey Report

Historical Mark: UNIT1_5 **Mark Type:** Coastal
Flood Event: Hurricane Isabel **Date of Flood:** 09/19/2003
Flooding Source: Bush River **Quality of Mark:** Good
Flood Elevation: **6.95 FT** **Location:** outside wall, transferred from inside
Flooding Type: Surge
Mark Address: 2148 Perryman Road
Description of Mark: 45" above concrete slab

Type of Line: Mud line

Description of Physical Structure: wood garage

Closest City: Harford unincorporated **County:** Harford **State:** Maryland

Flaggers: Dudley **Company/Agency:** URS

Flagging Date: 9/26/2003

Surveyors: Pavlis, Ireton **Company/Agency:** URS

Survey Date: 10/4/2003 **Survey Type:** N/A

Projection: Maryland **Vertical Datum:** NAVD 88 **Horizontal Datum:** NAD 83

Latitude: 39.4423 **Easting:** 1,529,808

Longitude: -76.2355 **Northing:** 646,760

Approx. First Floor Elevation (Based on Measurement from Mark): 3.2 FT

Approx. Distance to Shoreline: 100 FT

Comments:

site name: HACO 1-05, witness also stated that water was at 4' mark on gage in water by old crane, approximately 6.5' above current level



DSCN0014.jpg

Survey Certification: Coastal High Water Mark location survey is certified to 0.25 feet vertically and 10 feet horizontally with a 95% accuracy level.



PROJECT FEMA-1492-DR-MD High Water Mark Survey Project
COMM. NO. 240040
TYPE High Water Mark Survey **PREL.** 10/05/2003 **FINAL** 11/20/2003 **SHEET** G-6
CONTENTS Individual Historical High Water Mark Survey Report

Historical Mark: UNIT1_6 **Mark Type:** Coastal
Flood Event: Hurricane Isabel **Date of Flood:** 09/19/2003
Flooding Source: Bush River **Quality of Mark:** Poor
Flood Elevation: **7.02 FT** **Location:** ground
Flooding Type: Surge
Mark Address: end of Bata Boulevard in Water's Edge Apartment/Condo complex
Description of Mark: no vertical reference, ground debris line

Type of Line: Debris line

Description of Physical Structure: N/A

Closest City: Harford unincorporated **County:** Harford **State:** Maryland

Flaggers: Dudley **Company/Agency:** URS

Flagging Date: 9/26/2003

Surveyors: Pavlis, Ireton **Company/Agency:** URS

Survey Date: 10/3/2003 **Survey Type:** N/A

Projection: Maryland **Vertical Datum:** NAVD 88 **Horizontal Datum:** NAD 83

Latitude: 39.4658 **Easting:** 1,529,746

Longitude: -76.2326 **Northing:** 654,045

Approx. First Floor Elevation (Based on Measurement from Mark): N/A

Approx. Distance to Shoreline: 10 FT

Comments:

site name: HACO 1-06



DSCN0015.jpg

Survey Certification: Coastal High Water Mark location survey is certified to 0.25 feet vertically and 10 feet horizontally with a 95% accuracy level.



PROJECT FEMA-1492-DR-MD High Water Mark Survey Project
COMM. NO. 240040
TYPE High Water Mark Survey **PREL.** 10/05/2003 **FINAL** 11/20/2003 **SHEET** G-7
CONTENTS Individual Historical High Water Mark Survey Report

Historical Mark: UNIT1_7 **Mark Type:** Coastal
Flood Event: Hurricane Isabel **Date of Flood:** 09/19/2003
Flooding Source: Otter Point Creek **Quality of Mark:** Good
Flood Elevation: **7.04 FT** **Location:** inside wall, transferred out
Flooding Type: Surge
Mark Address: 600 Otter Point Road
Description of Mark: 31" above brick window sill

Type of Line: Mud line

Description of Physical Structure: brick building

Closest City: Harford unincorporated **County:** Harford **State:** Maryland

Flaggers: Dudley **Company/Agency:** URS

Flagging Date: 9/26/2003

Surveyors: Pavlis, Ireton **Company/Agency:** URS

Survey Date: 10/4/2003 **Survey Type:** N/A

Projection: Maryland **Vertical Datum:** NAVD 88 **Horizontal Datum:** NAD 83

Latitude: 39.4464 **Easting:** 1,521,335

Longitude: -76.2667 **Northing:** 646,690

Approx. First Floor Elevation (Based on Measurement from Mark): 4.46 FT

Approx. Distance to Shoreline: 80 FT

Comments:

site name: HACO 1-07



DSCN0017.jpg

Survey Certification: Coastal High Water Mark location survey is certified to 0.25 feet vertically and 10 feet horizontally with a 95% accuracy level.



PROJECT FEMA-1492-DR-MD High Water Mark Survey Project
COMM. NO. 240040
TYPE High Water Mark Survey **PREL.** 10/05/2003 **FINAL** 11/20/2003 **SHEET** G-8
CONTENTS Individual Historical High Water Mark Survey Report

Historical Mark: UNIT1_8 **Mark Type:** Coastal
Flood Event: Hurricane Isabel **Date of Flood:** 09/19/2003
Flooding Source: Gunpowder River **Quality of Mark:** Fair
Flood Elevation: **6.41 FT** **Location:** ground
Flooding Type: Surge
Mark Address: 504 Anchor Drive
Description of Mark: no vertical distance, ground debris line approx 18" downslope of gazebo concrete slab

Type of Line: Debris line

Description of Physical Structure: N/A

Closest City: Harford unincorporated **County:** Harford **State:** Maryland

Flaggers: Dudley **Company/Agency:** URS

Flagging Date: 9/26/2003

Surveyors: Pavlis, Ireton **Company/Agency:** URS

Survey Date: 10/4/2003 **Survey Type:** N/A

Projection: Maryland **Vertical Datum:** NAVD 88 **Horizontal Datum:** NAD 83

Latitude: 39.4047 **Easting:** 1,496,020

Longitude: -76.3562 **Northing:** 631,927

Approx. First Floor Elevation (Based on Measurement from Mark): N/A

Approx. Distance to Shoreline: 60 FT

Comments:

site name HACO 1-08 private property, talked to owner/witness



DSCN0018.jpg

Survey Certification: Coastal High Water Mark location survey is certified to 0.25 feet vertically and 10 feet horizontally with a 95% accuracy level.