

**F00559**

<p>NOAA FORM 76-35A</p> <p>U.S. DEPARTMENT OF COMMERCE          NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION          NATIONAL OCEAN SURVEY</p> <p><b>DESCRIPTIVE REPORT</b></p>	
<i>Type of Survey:</i>	<b>Field Examination</b>
<i>Registry Number:</i>	<b>F00559</b>
<p><b>LOCALITY</b></p> <p><i>State:</i> <b>Rhode Island</b></p> <p><i>General Locality:</i> <b>Providence</b></p> <p><i>Sub-locality:</i> <b>Providence River and Narragansett Bay</b></p>	
<p><b>2008</b></p> <p>CHIEF OF PARTY  <b>LT(jg) Matthew Jaskoski, NOAA</b></p>	
DATE	LIBRARY & ARCHIVES

NOAA FORM 77-28 (11-72)	U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	REGISTRY NUMBER:  <p style="text-align: center; font-size: 1.2em;"><b>F00559</b></p>
<p style="font-size: 1.2em; margin: 0;"><b>HYDROGRAPHIC TITLE SHEET</b></p>		

INSTRUCTIONS: The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

State: **Rhode Island**

General Locality: **Providence**

Sub-Locality: **Providence River and Narragansett Bay**

Scale: **1:5,000**      Date of Survey: **07/16/08 to 08/14/08**

Instructions Dated: **N/A**      Project Number: **OPR-B301-NRT5-08**

Change No.1 Dated: **N/A**

Change No.2 Dated: **N/A**

Vessel: **NOAA NRT-5, S3002**

Chief of Party: **LT(jg) Matthew Jaskoski, NOAA**

Surveyed by: **NOAA Navigation Response Team 5 Personnel**

Soundings by: **Odom Echotrac CV/200 verticalbeam echosounder  
Kongsberg Simrad EM3000 multibeam echosounder**

Graphic record checked by: **N/A**

Protracted by: **N/A**      Automated Plot: **N/A**

Verification by: **Atlantic Hydrographic Branch Personnel**

Soundings in: **Meters at MLLW**

Remarks:

**1) All Times are UTC.**

**2) This is a Basic Navigable Area Hydrographic Survey.**

**3) Projection is UTM Zone 19.**

***Red, bold, italic comments were made during office verification.***

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**DESCRIPTIVE REPORT**

to accompany  
HYDROGRAPHIC SURVEY F00559

Scale of Survey: 1:5,000  
Year of Survey: 2008  
NOAA Navigation Response Team 5  
LT(jg) Matthew Jaskoski, OIC

**A. AREA SURVEYED**

This hydrographic survey was conducted in accordance with Hydrographic Survey Letter Instructions for project OPR-B301-NRT5-08\*, F00559, Providence, RI. The original instructions are dated July 2, 2008.

This Descriptive Report pertains to areas within the Providence River. The assigned registry number for this field examination is F00559, as prescribed in the Project Instructions\*.

The purpose of the CY 2008 operations is to update National Ocean Service (NOS) nautical charts in the area. The intent as outlined in the letter instructions is not to supersede the bathymetry, but to be used for the CEF investigations and ENC validation that fall outside of the hydrography sheets.

For complete survey limits, see figure A-1 on the following page.

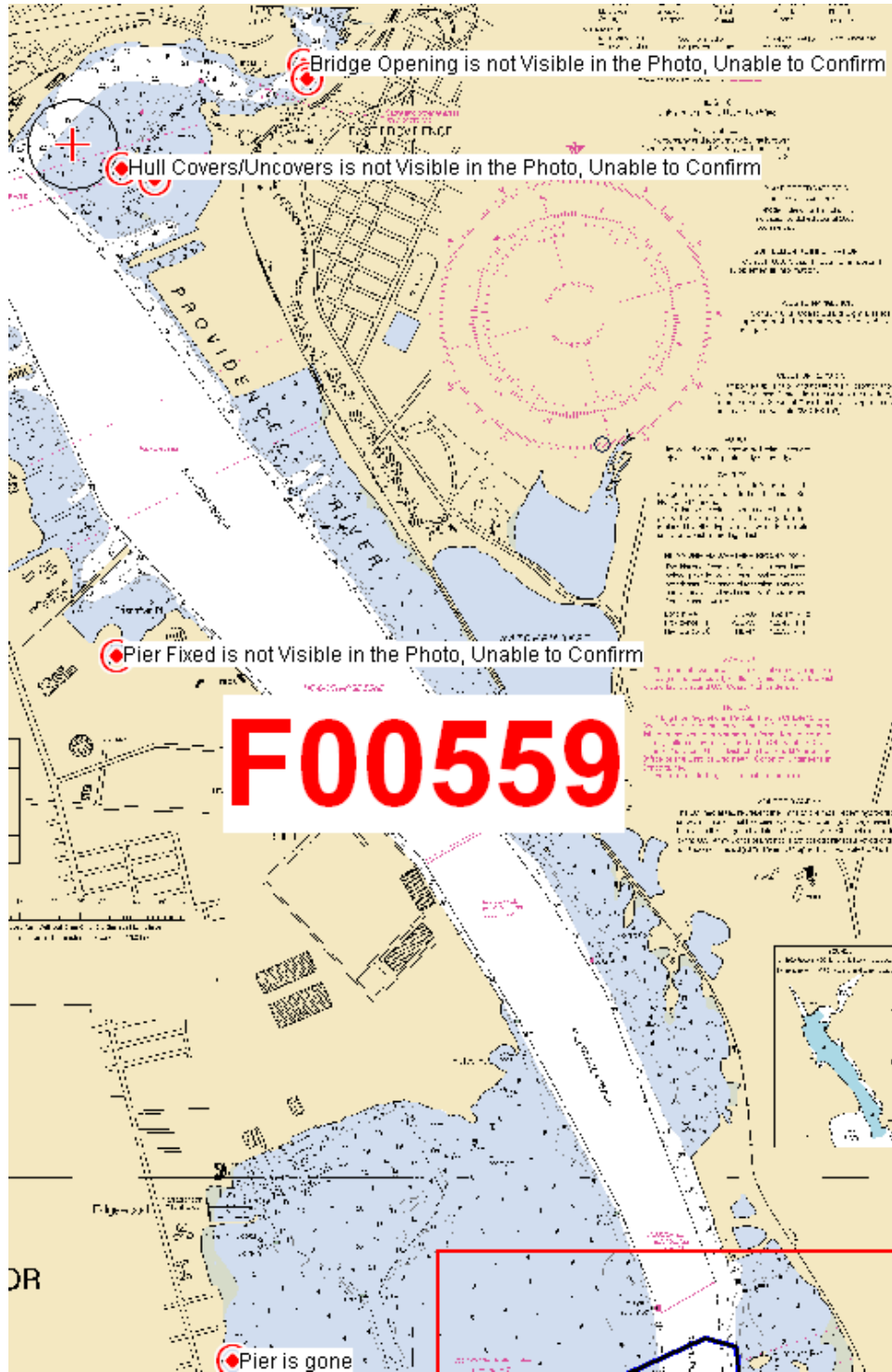
Linear nautical miles of single beam only sounding lines - mainscheme only	0.9
Linear nautical miles of multibeam only sounding lines - mainscheme only	0.0
Linear nautical miles of side scan sonar only lines - mainscheme only	0.9
Linear nautical miles of any combination of the above techniques	0.9
Linear nautical miles of crosslines from single beam and multibeam combined	3.4
Linear nautical miles of developments other than mainscheme lines	5.3
Linear nautical miles of shoreline/nearshore investigation	0.0
Number of bottom samples collected	0
Number of items investigated that required additional time/effort in the field beyond the above survey operations	0.0
Total square nautical miles	0.033

Dates of acquisition: July 16, 2008 to August 14, 2008

***Note: Crossline line scheme cannot be determined from the data submitted.***

***\*Filed with original field records.***

Figure A-1: Outline of survey area



## **B. DATA ACQUISITION AND PROCESSING**

### **B.1 EQUIPMENT**

Data were acquired by NOAA NRT-5, S3002. NOAA Survey Vessel S3002 is an approximately 9m aluminum SeaArk outboard driven vessel with an average multibeam transducer draft of 1.3 meters.

NOAA S3002 acquired both bathymetry and imagery data. Side scan sonar data were acquired with a towed Klein 3000 sonar system (SSS). Bathymetry data were acquired with an Odom Echotrac C/V 200 single beam echosounder (VBES) and a Kongsberg Simrad EM 3000 multibeam echosounder (MBES). Positioning and attitude were determined with a TSS POS/MV 320, version 4 GPS aided inertial navigation system (POS).

There were no unusual vessel configurations or problems encountered during data acquisition. Refer to the 2008 Data Acquisition and Processing Report (DAPR)\* for detailed equipment and vessel configuration information.

*\* filed with original field records*

### **B.2 QUALITY CONTROL**

#### **B.2.1 Side Scan Sonar Quality Control**

Daily confidence checks were made by observing the outer ranges of the side scan sonar images. A good check consisted of distinguishing linear contacts across the entire range of the side scan trace. Navigation data were reviewed, fliers were rejected with interpolation. No unusual problems were encountered.

In accordance with the project instructions, 200% SSS bottom coverage was collected for this survey at 75m range scale. A SSS image mosaic was created at 1m resolution for submission (Table B-2).

#### **B.2.2 Multibeam Echosounder Quality Control**

Multibeam echosounder data were acquired at 100% coverage for SSS contact development, and areas deemed navigationally significant by the hydrographer. There were no faults with the MBES system which adversely effected data integrity. Navigation data were reviewed; any fliers were rejected with interpolation. For detailed discussion of MBES system calibrations, data acquisition, and data processing refer to this project's DAPR\*.

*\* filed with original field records*

#### **B.2.3 Total Propagated Error**

Total Propagated Error (TPE) parameters as applied for sound speed and tide data for F00553 are shown in table B-1. The estimated tidal error contribution to the total survey error budget in the vicinity of Narragansett Bay is included in the TCARI gird. Sound speed TPE values were used

in accordance with HSTP guidelines regarding frequency of surface and water column sound speed measurements.

Table B-1. Total Propagated Error parameters.

<b>Total Propagated Error Values</b>			
Tide Values		Sound Speed Values	
Measured	Zoning	Measured	Surface
0.00	0.00	4.0	0.2

**B.2.4 Fieldsheets and Navigation Surfaces**

Caris HIPS uncertainty weighted BASE surfaces were created for this project. For MBES data surfaces were created and submitted at 0.50m resolution. An uncertainty weighted BASE surface was created for VBES data at 2.00m resolution. The MBES BASE surface finalized weighted grid is included in the PSS. Table B-2 lists all surfaces submitted with this survey.

Table B-2: F00553 bathymetry surfaces, and Side Scan mosaic resolutions.

<b>F00553 Bathymetry surfaces and SSS mosaic</b>			
Fieldsheet	Surface/Mosaic Name	Grid Type	Resolution
F00559	F00559_MBES_BASE_50cm	Uncertainty Weighted	0.50m
F00559	F00559_MBES_BASE_50cm_Final	Uncertainty Weighted	0.50m
F00559	F00559_VBES_BASE_2m	Uncertainty Weighted	2.00m
F00559	F00559_VBES_BASE_2m_Final	Uncertainty Weighted	2.00m
F00559	F00559_1m	SSS Mosaic	1.00m

**B.2.5 Single Beam Quality Control**

Navigation data were reviewed, fliers were rejected with interpolation. There were no unusual events associated with the collection of the VBES data for this project. Refer to the DAPR\* for detailed discussion of VBES system calibrations, data acquisition, and data processing.

*\* filed with original field records*

**B.2.6 Crosslines**

For the survey 3.35 LNM of MBES crosslines were acquired; this was approximately 62% of the total MBES LNM. Based on a Caris generated QC report beams 1-2 were filtered from the data set and not included in surface generation (Figure B-1).



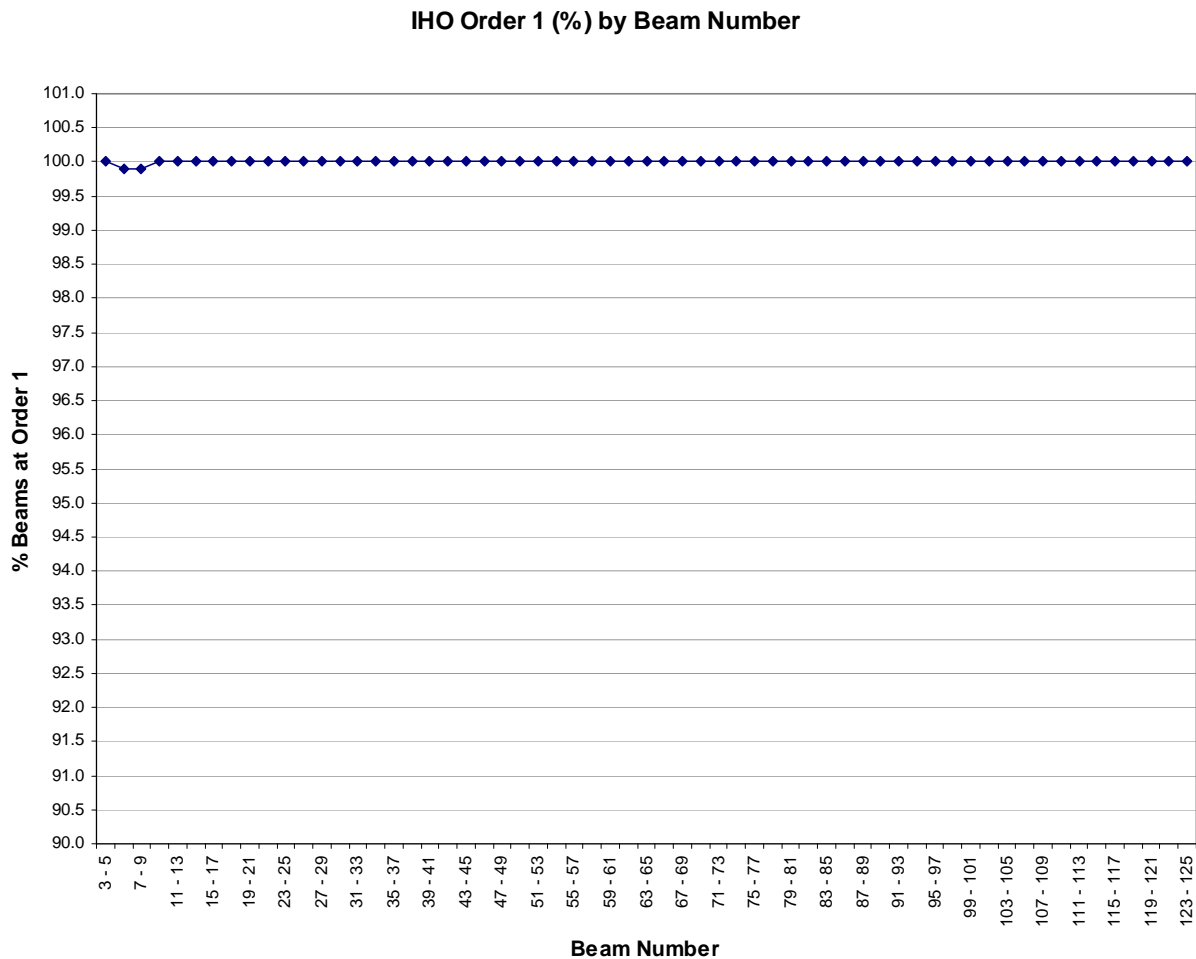
### B.2.7 Junctions

There were no contemporary surveys that junction with F00559. Survey F00559 generally agreed with charted data to within 1-2 feet. *Concur.*

### B.3 CORRECTIONS TO ECHO SOUNDING

Sound velocity profiles were applied to EM3000 data during post-processing. Beam-steering surface sound speed values were also applied to the data at the time of acquisition. There were no noticeable sound velocity artifacts in the data. All other methods or instruments used were as described in the project DAPR\*. Raw and Processed sound speed data are included in the data submission package. *\* filed with original field records*

FIGURE B-1: Caris QC Report, IHO Order Oneness v. Beam Number.



## **C. VERTICAL AND HORIZONTAL CONTROL**

### **C.1 VERTICAL CONTROL**

The tidal datum for this project is Mean Lower Low Water (MLLW). The operating National Water Level Observation Network (NWLON) stations at Providence, RI (845-4000) and Newport, RI (845-2660) will serve as datum control for the survey area including determination at each subordinate station. The operating stations at Providence, RI (845-4000), Conimicut Light, RI (845-2944), Quonset Point, RI (845-4049) and Newport, RI (845-2660) provided residuals for this project. A Request for Approved Tides was sent to N/OPS1 on November 13, 2008 (Appendix III\*). Verified tides from the N/OPS1 CO-OPS website were downloaded and applied to all sounding data. *See Evaluation Report*

*\*appended to this report*

### **C.2 HORIZONTAL CONTROL**

The horizontal datum used for this survey is the North American Datum of 1983 (NAD 83), projected using UTM zone 19.

Sounding positional control was determined using the Global Positioning System (GPS) corrected by U.S. Coast Guard differential GPS (DGPS) beacon stations. The DGPS beacon used for this survey was Acushnet, MA. No horizontal control stations were established for this survey.

Horizontal dilution of precision (HDOP) was monitored during acquisition, and did not exceed 4.00. Adequate satellite coverage was maintained throughout the survey period.

## D. RESULTS AND RECOMMENDATIONS

### D.1 CHART COMPARISON *See Evaluation Report*

According to the Project instructions, the charts affected by this survey are:

<i>Chart Number</i>	<i>Edition</i>	<i>Edition Date</i>	<i>Scale</i>
13221	57 <sup>th</sup>	02/01/2008	1:40000
13224	38 <sup>th</sup>	11/01/2006	1:20000
13225	33 <sup>rd</sup>	12/09/2005 <b>2000</b>	1:10000

<i>ENC Cell Name</i>
US5RI24M

#### D.1.1 General Agreement with Charted soundings

Sounding data generally agreed with charted depths to within 1-2 feet, navigationally significant features that exhibit differences from charted depths are addressed in Appendices II\*.

*\*appended to this report*

#### D.1.2 AWOIS Items and Significant Contacts

There was one (1) AWOIS item (AWOIS # 9942) within the survey limits of F00559, a charted submerged wreck position approximate. The navigable area within the AWOIS search radius was investigated with 200% SSS and 100% MBES. No significant item matching that of AWOIS 9942 was noted in the SSS trace or the bathymetry data, and the wreck was recommended for removal from the chart. For full description and hydrographer recommendations of all assigned AWOIS items see Appendix II\* of this report. *\*appended to this report*

#### D.1.3 Dangers to Navigation

There were no DToNs submitted for survey F00559. *Concur.*

#### D.1.4 Charted Features

Hydrographer recommended changes to charted items are listed in Appendix II\* of this report as well as in the PSS. All charted items not specifically addressed in Appendix II\* are recommended to be retained as charted by the hydrographer. *\*appended to this report See Evaluation Report.*

#### D.1.5 Charting Recommendations

Hydrographer recommendations for discreet items are included in Appendix II\* of this report as well as in the PSS. Survey H11929 is complete and adequate to supersede charted soundings in their common areas. *Concur. \*appended to this report*

## **D.2 ADDITIONAL RESULTS**

### **D.2.1 Aids to Navigation**

No AToNs were noted to be incorrectly positioned or charted. See Appendix V\*, section V.3 of this report. *Concur. \*appended to this report*

### **D.2.2 Bridges and Overhead Cables**

There were no bridges or overhead cables within the survey limits of F00559. *Concur.*

### **D.2.3 Submarine Cables and Pipelines**

There is one charted submarine cable area within the survey limits of F00559. No such items were noted in the SSS imagery or the bathymetric data. *Concur.*

**E. APPROVAL SHEET****OPR-B301  
Providence  
Rhode Island****Providence River and Narragansett Bay  
Survey Registry No. F00559**

Field operations for this survey were conducted under my daily supervision with frequent checks of progress and adequacy. All field sheets, bathymetry models, this Descriptive Report, and all accompanying records and data are approved.

Submitted in association with this descriptive report has been a series of reports and data:

2008 Data Acquisition and Processing Report (submitted with this report)  
2008 HSRR Memo (submitted with this report)

This survey is adequate to supersede all prior surveys in common areas, and for application to the relevant NOS nautical charts.

Respectfully,

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Bert Ho, PST/NOAA  
NRT-5

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LT(jg) Matthew Jaskoski, NOAA  
OIC NRT-5

## **APPENDIX I**

### **DANGERS TO NAVIGATION REPORT**

There were no DToNs submitted for survey F00559.

## **APPENDIX II**

### **SURVEY FEATURES REPORT**



# F00559 Features Report

**Registry Number:** F00559  
**State:** Rhode Island  
**Locality:** Providence  
**Sub-locality:** Providence River and Narragansett Bay  
**Project Number:** OPR-B301-NRT5-08  
**Survey Dates:** 7-16-2008 - 8-14-2008

## Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
13225	33rd	12/09/2000	1:10,000 (13225_1)	USCG LNM: 10/23/2007 (03/11/2008) CHS NTM: None (01/25/2008) NGA NTM: None (03/15/2008)
13224	38th	11/01/2006	1:20,000 (13224_1)	USCG LNM: 12/02/2008 (12/02/2008) NGA NTM: 11/02/2002 (12/20/2008)
13221	57th	02/01/2008	1:40,000 (13221_1)	USCG LNM: 05/27/2008 (05/27/2008) CHS NTM: None (05/30/2008) NGA NTM: 11/15/2003 (06/07/2008)
13221	57th	02/01/2008	1:40,000 (13221_2)	[L]NTM: ?
13006	34th	05/01/2007	1:675,000 (13006_1)	[L]NTM: ?
5161	13th	10/01/2003	1:1,058,400 (5161_1)	[L]NTM: ?
13003	49th	04/01/2007	1:1,200,000 (13003_1)	[L]NTM: ?

\* Correction(s) - source: last correction applied (last correction reviewed--"cleared date")

## Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Ruined Jetti	Obstruction	[None]	41° 49' 00.2" N	071° 23' 15.2" W	---
1.2	Disproved Pier	Obstruction	[None]	41° 47' 57.5" N	071° 23' 42.3" W	---
1.3	Pier Structure	Stationary structure, floating or fixed	[None]	41° 46' 39.9" N	071° 23' 25.4" W	---
2.1	Uncharted Ruined floating pier	Stationary structure, floating or fixed	[None]	41° 48' 55.3" N	071° 23' 51.6" W	---
2.2	Uncharted Wreck	Wreck	[None]	41° 48' 53.5" N	071° 23' 40.0" W	---
3.1	UNKNOWN	AWOIS	[no data]	[no data]	[no data]	---

# **1 - Charted Features**

## 1.1) Ruined Jetty

### Survey Summary

**Survey Position:** 41° 49' 00.2" N, 071° 23' 15.2" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh) [None] ; TVU (TPEv) [None]  
**Timestamp:** 2008-305.13:06:35 (10/31/2008)  
**GP Dataset:** ChartGPs - Digitized  
**GP No.:** 2  
**Charts Affected:** 13225\_1, 13224\_1, 13221\_1, 13006\_1, 5161\_1, 13003\_1

#### Remarks:

The charted object could not be seen in the orthoimagery data. The boom south of the RR bridge was not noted to be present during visual scan.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	2	0.00	000.0	Primary

### Hydrographer Recommendations

The hydrographer recommends the object south of the RR bridge be removed from the chart.

### S-57 Data

**Geo object 1:** Obstruction (OBSTRN)

### Office Notes

Do not concur. Office processing determined by use of best available orthoimagery, downloaded from [seamless.usgs.gov](http://seamless.usgs.gov) website, that some of the jetty was visible. No SSS data were acquired. Modify the condition of the jetty to ruined.

## 1.2) Disproved Pier

### Survey Summary

**Survey Position:** 41° 47' 57.5" N, 071° 23' 42.3" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh) [None] ; TVU (TPEv) [None]  
**Timestamp:** 2008-305.13:21:22 (10/31/2008)  
**GP Dataset:** ChartGPs - Digitized  
**GP No.:** 4  
**Charts Affected:** 13225\_1, 13224\_1, 13221\_1, 13006\_1, 5161\_1, 13003\_1

#### Remarks:

MCD request confirmation of a fixed pier not visible in the orthoimagery data. Visual scan showed no presence of a pier structure; an oil boom is located near the position.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	4	0.00	000.0	Primary

### Hydrographer Recommendations

The hydrographer recommends the boom be added to the chart.

### S-57 Data

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** CATOBS - 10:boom  
 SORDAT - 20080814  
 WATLEV - 7:floating

### Office Notes

Concur with clarification. Delete the charted pier, and do not chart the oil boom. See Evaluation Report.

## 1.3) Pier Structure

### Survey Summary

**Survey Position:** 41° 46' 39.9" N, 071° 23' 25.4" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh) [None] ; TVU (TPEv) [None]  
**Timestamp:** 2008-305.13:29:30 (10/31/2008)  
**GP Dataset:** ChartGPs - Digitized  
**GP No.:** 5  
**Charts Affected:** 13225\_1, 13224\_1, 13221\_1, 13221\_2, 13006\_1, 5161\_1, 13003\_1

#### Remarks:

The pier was not visible in the orthoimagery data. Visual scan confirmed the presence of the pier.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	5	0.00	000.0	Primary

### Hydrographer Recommendations

The hydrographer recommends the item be retained as charted.

### S-57 Data

**Geo object 1:** Shoreline Construction (SLCONS)  
**Attributes:** CATSLC - 4:pier (jetty)  
 SORDAT - 20080814  
 WATLEV - 2:always dry

### Office Notes

Concur with clarification. Two piers are observed in orthoimagery. See Evaluation Report.

## **2 - New Features**

## 2.1) Uncharted Ruined floating pier

### Survey Summary

**Survey Position:** 41° 48' 55.3" N, 071° 23' 51.6" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh) [None] ; TVU (TPEv) [None]  
**Timestamp:** 2008-304.04:41:17 (10/30/2008)  
**Survey Line:** f00559 / nrt5\_s3002\_klein3000\_sss / 2008-198 / sonar\_data080716143600  
**Contact/Point:** 0002/1  
**Charts Affected:** 13225\_1, 13224\_1, 13221\_1, 13006\_1, 5161\_1, 13003\_1

#### Remarks:

The area was covered with 100% Klein 3000 SSS. The object is an uncharted pier.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
f00559/nrt5_s3002_klein3000_sss/2008-198/sonar_data080716143600	0002	0.00	000.0	Primary
f00559/nrt5_s3002_klein3000_sss/2008-198/sonar_data080716144200	0001	8.44	330.0	Secondary

### Hydrographer Recommendations

The hydrographer recommends the pier be added to the chart as per shoreline imagery data.

### S-57 Data

**Geo object 1:** Shoreline Construction (SLCONS)  
**Attributes:** CATSLC - 4:pier (jetty)  
 NATCON - 6,7:wooden,metal  
 SORDAT - 20081030  
 STATUS - 1:permanent  
 WATLEV - 2:always dry

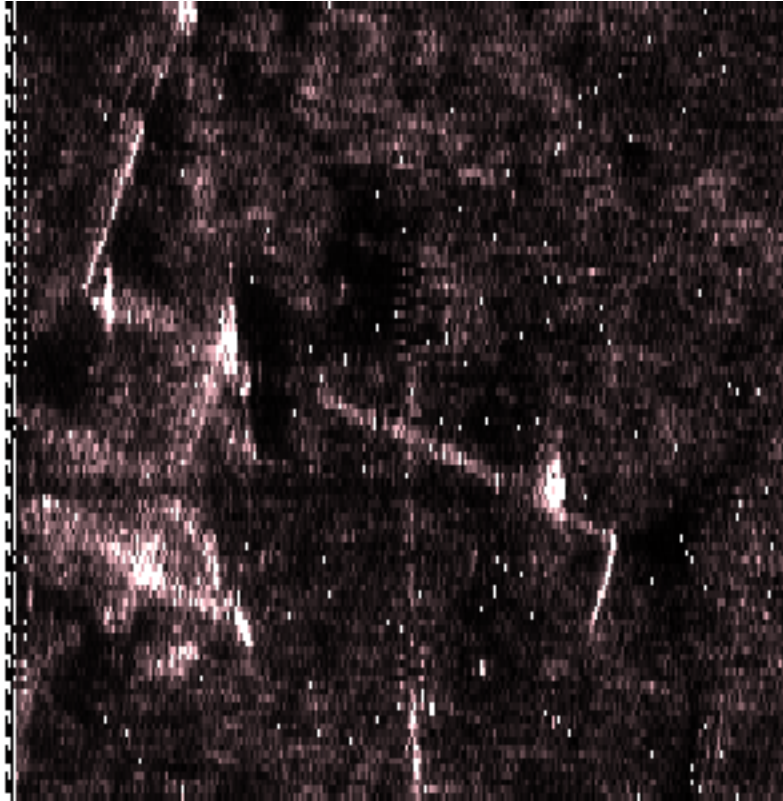
### Office Notes

Concur with clarification. The hydrographer reported the floating pier to be partially ruined. Chart ruined floating pier. See Evaluation Report.





## Feature Images



*Figure 2.1.1*

## 2.2) Uncharted Wreck

### Survey Summary

**Survey Position:** 41° 48' 53.5" N, 071° 23' 40.0" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh) [None] ; TVU (TPEv) [None]  
**Timestamp:** 2008-304.04:48:56 (10/30/2008)  
**Survey Line:** f00559 / nrt5\_s3002\_klein3000\_sss / 2008-198 / sonar\_data080716145200  
**Contact/Point:** 0002/1  
**Charts Affected:** 13225\_1, 13224\_1, 13221\_1, 13006\_1, 5161\_1, 13003\_1

#### Remarks:

The area was covered with 100% Klein 3000 SSS. The contacts is a wreck located in close proximity to a charted wreckage area. The wreck is submerged at high tide.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
f00559/nrt5_s3002_klein3000_sss/2008-198/sonar_data080716145200	0002	0.00	000.0	Primary

### Hydrographer Recommendations

The hydrographer recommends the object be charted as a dangerous wreck.

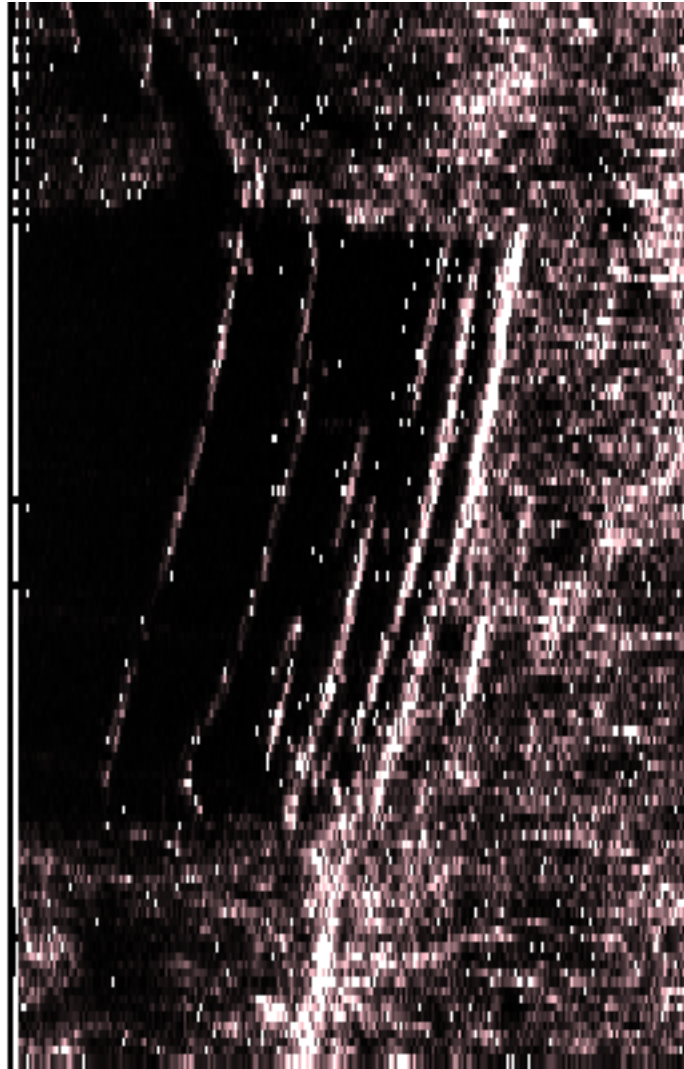
### S-57 Data

**Geo object 1:** Wreck (WRECKS)  
**Attributes:** CATWRK - 2:dangerous wreck  
 CONVIS - 2:not visual conspicuous  
 QUASOU - 2:depth unknown  
 SORDAT - 20080814  
 TECSOU - 2:found by side scan sonar  
 WATLEV - 1:partly submerged at high water

## Office Notes

Concur with clarification. Chart a visible wreck.

## Feature Images



*Figure 2.2.1*

## **3 - AWOIS Features**

### 3.1) AWOIS #9942 - UNKNOWN

#### No Primary Survey Feature for this AWOIS Item

**Search Position:** 41° 48' 52.8" N, 071° 23' 49.8" W  
**Historical Depth:** [None]  
**Search Radius:** 150  
**Search Technique:** S2,ES,DI,SD  
**Technique Notes:** [None]

#### History Notes:

AWOIS ITEM 9942 HISTORY SOURCE UNKNOWN--APPLIED TO THE CHART THROUGH AID PROOF #22 DATED MARCH 2, 1976. THE AID PROOF IS NOT AVAILABLE. THE CHART HISTORY DOES NOT IDENTIFY THE ITEMS CHANGED ON THIS CHART THROUGH THE AID PROOF. (ENTERED 7/97 BY MBH) H10772/97--OPR-B310-AHP-97; ITEM INVESTIGATED BY 200% SIDE SCAN SONAR WITH NEGATIVE RESULTS. THE ASSIGNED INVESTIGATION SEARCH AREA WAS NOT COMPLETED AS REQUIRED, THUS THE ITEM WAS NOT CONSIDERED RESOLVED AND WAS RECOMMENDED TO BE RETAINED ON THE CHART AS CHARTED. (UPDATED 7/98 BY MBH)

#### Survey Summary

**Charts Affected:** 13225\_1, 13224\_1, 13221\_1, 13006\_1, 5161\_1, 13003\_1

#### Remarks:

The area was covered with 200% SSS and 100% MBES final TCARI grid applied. The object is a small contact of insignificant height located within the search radius of AWOIS 9942. No significant object noted in the bathy data.

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
AWOIS Items	AWOIS # 9942	0.00	000.0	Primary
f00559/nrt5_s3002_klein3000_sss/2008-198/sonar_data080716143600	0001	66.61	037.6	Secondary
f00559/nrt5_s3002_klein3000_sss/2008-198/sonar_data080716143900	0001	68.17	037.4	Secondary

#### Hydrographer Recommendations

The hydrographer recommends the wreck be removed from the chart, and AWOIS 9942 be removed from the database.

## **S-57 Data**

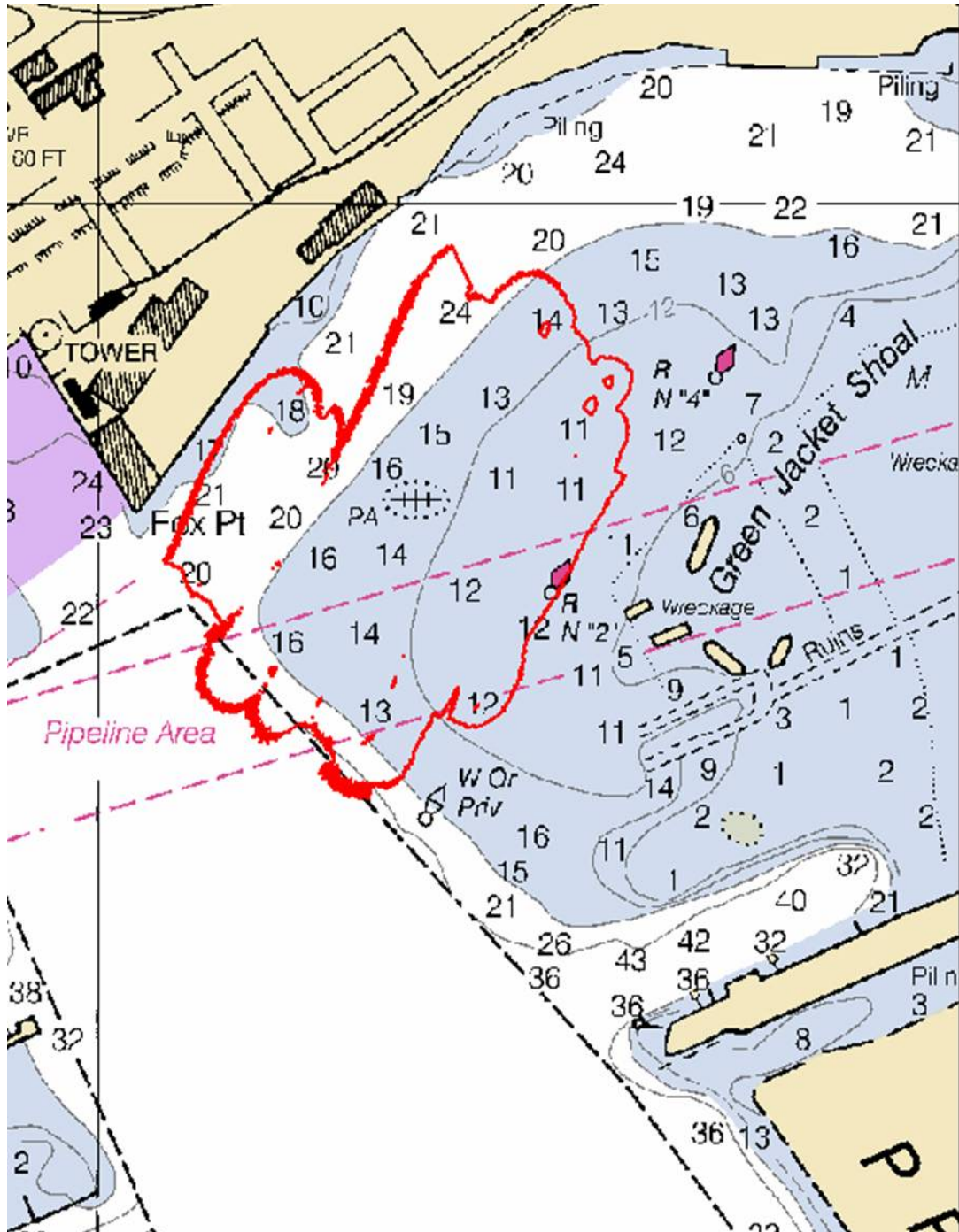
**Geo object 1:** Cartographic symbol (\$CSYMB)

## **Office Notes**

Concur.

### APPENDIX III

#### PROGRESS SKETCH





**APPENDIX IV**

**TIDES AND WATER LEVELS**



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NOAA NRT-5 (N/CS53x5)  
3 Chapel Ave, Port Liberte, c/o USACE  
Jersey City, NJ 07305

November 13, 2008

MEMORANDUM FOR: Chief, Requirements and Development Division, N/OPS1

FROM: LTjg Matthew Jaskoski, NOAA NRT-5 (N/CS53x5)

SUBJECT: Request for Approved Tides/Water Levels

Please provide the following data:

1. Tide Note
2. Final TCARI grid
3. Final zoning in MapInfo and .MIX format
4. Six Minute Water Level data (Co-ops web site)

Transmit data to the following:

NOAA/NOS/Atlantic Hydrographic Branch  
N/CS33, Building #2  
439 West York Street  
Norfolk, VA 23510  
ATTN: Chief AHB

These data are required for the processing of the following hydrographic survey:

Project No.: OPR-B301-NRT5-08  
Registry No.: F00559  
State: Rhode Island  
Locality: Providence Harbor  
Sublocality: Providence River

Attachments containing:

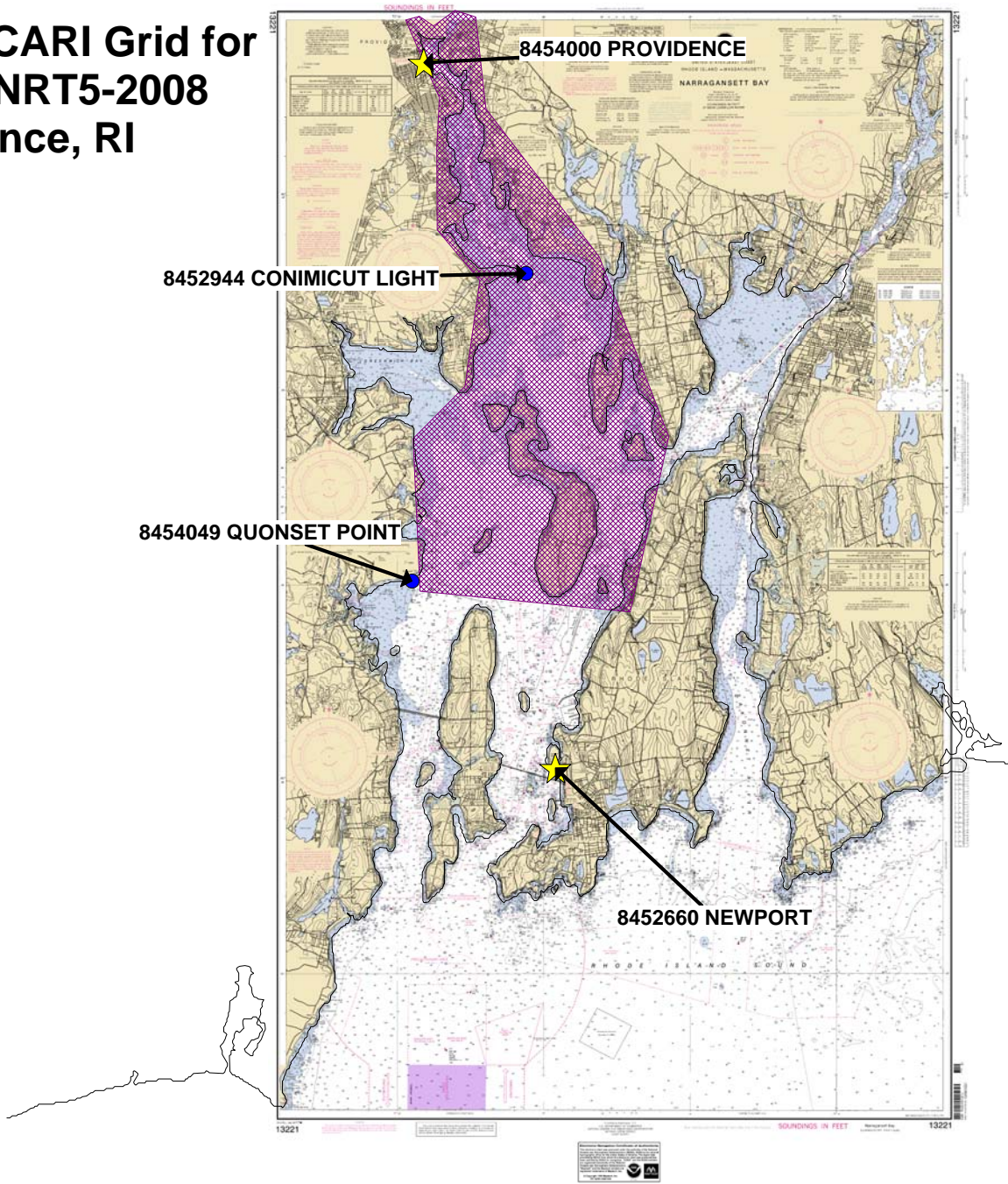
- 1) an Abstract of Times of Hydrography,
- 2) digital MID MIF files of the track lines from Pydro

cc: N/CS33



Year_DOY	Min Time	Max Time
2008_198	14:35:59	14:54:39
2008_227	13:00:12	14:16:34

# Preliminary TCARI Grid for OPR-B301-NRT5-2008 providence, RI

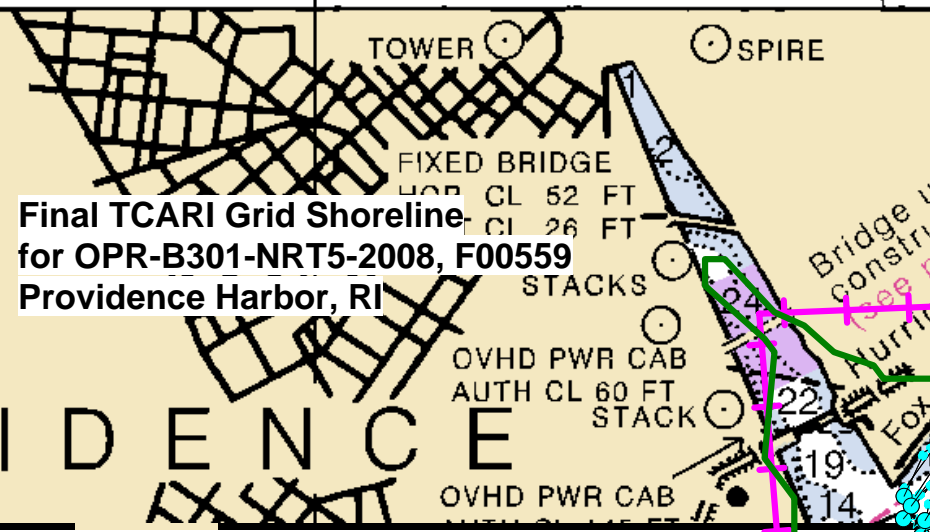




**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
National Ocean Service  
Silver Spring, Maryland 20910

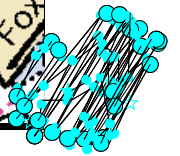
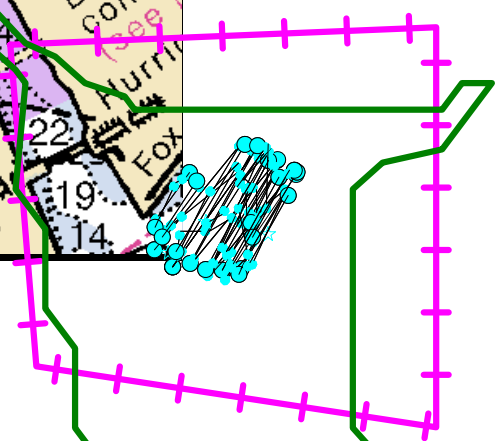


71° 25'



**Final TCARI Grid Shoreline  
for OPR-B301-NRT5-2008, F00559  
Providence Harbor, RI**

Providence, RI 8454000



**APPENDIX V**  
**SUPPLEMENTAL SURVEY RECORDS AND CORRESPONDENCES**

**V.1. COAST PILOT REPORT, NOAA FORM 77-6**

No corrections or additions required.

**V.2. BOTTOM SAMPLE, NOAA FORM 75-44**

No bottom samples were taken.

**V.3. AIDS TO NAVIGATION, NOAA FORM 76-40**

No AToNs were noted to be significantly off station.

**ATLANTIC HYDROGRAPHIC BRANCH  
EVALUATION REPORT to ACCOMPANY  
SURVEY F00559 (2008)**

This Evaluation Report has been written to supplement and/or clarify the original Descriptive Report. Sections in this report refer to the corresponding sections of the Descriptive Report.

**B. DATA ACQUISITION AND PROCESSING**

**B.1 DATA PROCESSING**

The following software was used to process data at the Atlantic Hydrographic Branch:

HSTP PYDRO version 8.7 r2586  
CARIS HIPS/SIPS version 6.1 SP2 HF 1-4  
CARIS Bathym Manager version 2.1 SP1 HF 1-8  
DKART INSPECTOR, version 5.0 Build 707  
CARIS HOM version 3.3  
CARIS S57 Composer version 1.0

**B.2. QUALITY CONTROL**

**B.2.1. H-Cell**

The AHB source depth grid for the survey's nautical chart update product entailed the field's original 0.5m grid used to create a product surface grid with a resolution of 2m. The survey scale selected soundings were extracted from the 2m product surface at one millimeter to map scale of 10000. The chart scale selected soundings are a subset of the survey scale selected soundings selected automatically at 65m distance on the ground and then edited manually with reference to the surface, to ensure that the selected soundings portrayed the bathymetry.

Depth curves were created manually. The depth curves are forwarded to MCD for reference only. The curves were utilized during chart scale sounding selection and quality assurances efforts at AHB. The depth curves are incorporated into the SS H-Cell product as per 2009 H-Cell Specifications.

The pre-compilation products or components (Stand Alone HOB files (SAHOB)) are detailed in the Pre-Compile Process Log attached at the end of this document. The SAHOB files included depth contours (DEPCNT), sounding selections (SOUNDG), features (OBSTRN, WRECKS, SLCONS), Meta objects (M\_COVR, M\_QUAL, M\_CSCL), and cartographic Blue Notes(\$CSYMB).



All of the components with the exception of the sounding selection and depth contours were inserted into one feature layer (including the Bluenotes, as dictated by Hydrographic Technical Directive 2008-8), and this layer was exported into S-57 format in order to create the H-Cell deliverable. Similarly, the sounding selection and depth contours were exported into S-57 format separately, and then both S-57 files were processed in CARIS HOM to convert the metric units to feet.

Chart compilation was performed by Atlantic Hydrographic Branch personnel in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring, Maryland.

F00559 CARIS H-Cell final deliverables include the following products:

F00559_CS.000	1:10,000 Scale	F00559 H-Cell with Chart Scale Selected Soundings
F00559_SS.000	1:5000 Scale	F00559 Selected Soundings (Survey Scale)

## **C. VERTICAL AND HORIZONTAL CONTROL**

### **C.1 VERTICAL CONTROL**

The bathymetry data were originally processed with TCARI water-level data referenced to MLLW. The bathymetry data were reprocessed at AHB with the correct TCARI water-level data, referenced to MSL.

## **D. RESULTS AND RECOMMENDATIONS**

Orthoimagery downloaded during office verification was used to supplement hydrographer documentation. The orthoimagery and associated metadata are appended to this Evaluation Report.

### **D.1 CHART COMPARISON**

<u>RNC</u>	<u>Scale</u>	<u>Edition</u>	<u>Updated through LNM</u>	<u>Updated through NTM</u>
13225	1:10,000	33	03/07/09	03/07/09

<u>ENC</u>	<u>Edition</u>	<u>Update</u>	<u>Issue Date</u>
US5RI24M	7	0	03/07/08

### D.1.1 Hydrography

The charted hydrography originates with prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in section “D” and Appendix 1 & 2 of the Descriptive Report. The following exceptions are noted:

- (1) The hydrographer recommended that the pier structure positioned near  $41^{\circ}48'53.002''$  N,  $071^{\circ}23'46.019''$  W be added to the chart. Further discussion with field personnel revealed additional details; the structure is a floating pier structure that is partially submerged. Chart the structure as a ruined floating pier. See Figure 1.

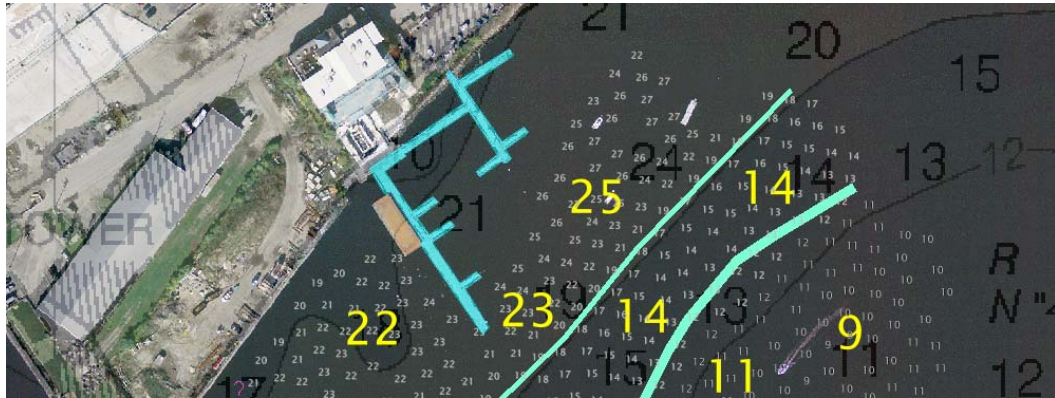


Figure 1: Ruined floating pier.

- (2) The hydrographer recommended charting the oil boom positioned near  $41^{\circ}47'57.828''$  N,  $071^{\circ}23'41.589''$  W (see Fig. 2). The AHB compiler does not concur. Do not chart the oil boom, because booms are non-stationary structures that are temporary in nature. Moreover, the area is already charted as foul.
- (3) The hydrographer reported not seeing the pier structure charted at  $41^{\circ}47'56.772''$  N,  $071^{\circ}23'43.484''$  W (see Fig. 2). Delete the charted pier.

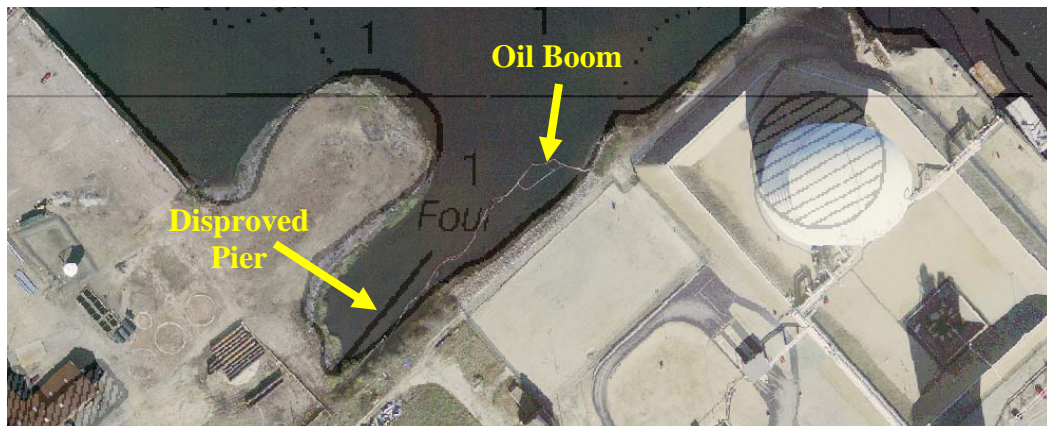
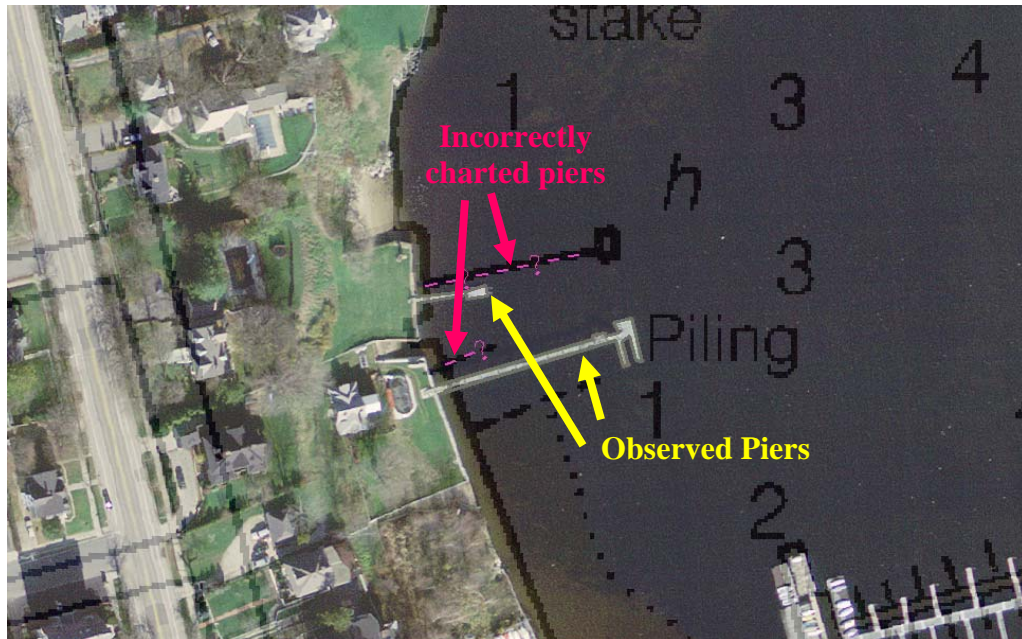


Figure 2: Disproved pier

- (4) Two piers near  $41^{\circ}46'39.337''$  N,  $-071^{\circ}23'26.826''$  W are not charted correctly (see Fig. 3). Delete the charted piers, and add the two observed piers, which are included in the H-Cell as SLCONS features.



### **D.3. MISCELLANEOUS**

H-Cell compilation was done by Atlantic Hydrographic Branch personnel, in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring, Maryland. See Section D.1. of this report for a list of the Raster Charts and Electronic Navigation Charts (ENC) used for compiling the present survey.

### **D.4. ADEQUACY OF SURVEY**

The present survey is adequate to supersede the charted bathymetry within the common area. Any features not specifically addressed either in the H-Cell BASE Cell File or the Blue Notes should be retained as charted. Refer to the Descriptive Report for further recommendations by the hydrographer.

## AHB COMPILATION LOG

General Survey Information	
REGISTRY No.	<b><i>F00559</i></b>
PROJECT No.	<b><i>OPR-B301-NRT5-08</i></b>
FIELD UNIT	<b><i>NRT 5</i></b>
DATE OF SURVEY	<b><i>07/16/08 to 08/14/08</i></b>
LARGEST SCALE CHART	<b><i>13225, edition 33, 20051209, 1:10000</i></b>
ADDITIONAL CHARTS	<b><i>13224, edition 38, 20061101, 1:20000</i></b> <b><i>13221, edition 57, 20080201, 1:40000</i></b>
PRE-COMPILER	<b><i>Katrina Wyllie</i></b>

Source Grids	File Name
	H:\Compilation\F00559_B301-NRT5\AHB_F00559\E-SAR Final Products\GRIDS\ <b><i>F00559_MBES_BASE_50cm_Final.hns</i></b>
	<b><i>F00559_VBES_BASE_2m_Final.hns</i></b>
Surfaces	File Name
	H:\Compilation\F00559_B301-NRT5\AHB_F00559\COMPILE\Working\Product Surface\ <b><i>F00559_MBES_BASE_50cm_Final_new.hns</i></b>
<i>Combined</i>	<b><i>F00559_TinInterp.hns</i></b>
<i>Interpolated TIN</i>	<b><i>F00559_PS_2m_res.hns</i></b>
<i>Product Surface</i>	
Final HOBs	File Name
	H:\Compilation\F00559_B301-NRT5\AHB_F00559\COMPILE\Final_Hobs\ <b><i>F00559_SS_Soundings.hob</i></b>
<i>Survey Scale Soundings</i>	<b><i>F00559_CS_Soundings.hob</i></b>
<i>Chart Scale Soundings</i>	<b><i>F00559_Contours.hob</i></b>
<i>Contour Layer</i>	<b><i>F00559_Features.hob</i></b>
<i>Feature Layer</i>	<b><i>F00559_MetaObjects.hob</i></b>
<i>Meta-Objects Layer</i>	<b><i>F00559_Bluenotes.hob</i></b>
<i>Blue Notes</i>	

### SPECIFICATIONS:

- I. COMBINED SURFACE:
  - a. Number of ESAR Final Grids: ***2***
  - b. Resolution of Combined (m): ***0.5m***
  
- II. SURVEY SCALE SOUNDINGS (SS):
  - a. Radius
  - b. Shoal biased
  - c. Use Single-Defined Radius (mm at Map Scale): ; Radius Value = 1
  - d. Queried Depth of All Soundings
    - i. Minimum: ***9.5013***
    - ii. Maximum: ***35.2461***
  
- III. INTERPOLATED TIN SURFACE:
  - a. Resolution (m): ***0.5m***
  - b. Linear
  - c. Shifted value: ***N/A, hand drawn contours***
  
- IV. CONTOURS:

[Type text]

This Document is for Office Process use only and is intended to supplement, not supersede or replace, information/recommendations in the Descriptive or Evaluation Reports

- a. Use a Depth List: F00559\_NOAA\_depth\_curves\_list.txt
- b. Line Object: DEPCNT
- c. Value Attribute: VALDCO

V. FEATURES:

- a. Total Number of Features: **8**
- b. Number of Insignificant Features:

VI. CHART SURVEY SOUNDINGS (CS):

- a. Number of ENC CS Soundings: **21**
- b. Radius
- c. Shoal biased
- d. Use Single-Defined Radius: m on the ground
  - i. Radius Value (m): **65**
  - ii. Or use a Sounding Space Range Table (if applicable): HXXXXX\_SSR.txt
- e. Filter: Interpolated != 1
- f. Number Survey CS Soundings: **19**

VII. Notes:





# USGS High Resolution Orthoimagery for the Providence, Rhode Island Urban Area

Metadata also available as

## Metadata:

- [Identification Information](#)
  - [Data Quality Information](#)
  - [Spatial Data Organization Information](#)
  - [Spatial Reference Information](#)
  - [Entity and Attribute Information](#)
  - [Distribution Information](#)
  - [Metadata Reference Information](#)
- 

### *Identification Information:*

#### *Citation:*

##### *Citation Information:*

*Originator:* U.S. Geological Survey

*Publication Date:* Unknown

##### *Title:*

USGS High Resolution Orthoimagery for the Providence, Rhode Island Urban Area

*Geospatial Data Presentation Form:* SDE raster digital data

##### *Series Information:*

*Series Name:* Urban Area Orthoimagery

*Issue Identification:* 0.1

##### *Publication Information:*

*Publication Place:* Sioux Falls, SD

*Publisher:* U.S. Geological Survey

##### *Other Citation Details:*

The data obtained through The National Map Seamless Server is considered to be the "best available" data from USGS. Historical data and other data may be obtained by contacting Customer Services, Center for Earth Resources Observation & Science, at 1-800-252-4547.

*Online Linkage:* <<http://seamless.usgs.gov>>

### *Description:*

#### *Abstract:*

An orthoimage is remotely sensed image data in which displacement of features in the image caused by terrain relief and sensor orientation have been mathematically removed. Orthoimagery combines the image characteristics of a photograph with the geometric qualities of a map. The projected coordinate system is UTM with a NAD83 datum. There is no image overlap between adjacent files.

#### *Purpose:*

These data have been created as a result of the need for having geospatial data immediately available and easily accessible in order to provide geographic reference for Federal, State, and local emergency responders, as well as for homeland security efforts.

Orthoimages also serve a variety of purposes, from interim maps to field references for earth science investigations and analysis. The digital orthoimage is useful as a layer of a geographic information system. These data can be used to provide reference information for Web browsers and for map applications at a scale of 1:100,000 or smaller. Larger scale orthoimagery such as digital orthophoto quadrangles will be more accurate, but often at the expense of timely updates.

*Supplemental\_Information:*

No metadata were received with this data. General orthoimagery metadata were created and spatial information imported for display through the Seamless Data Distribution System at <<http://seamless.usgs.gov>> Spatial-specific information not available

*Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* unknown

*Currentness\_Reference:* ground condition

*Status:*

*Progress:* Complete

*Maintenance\_and\_Update\_Frequency:* Irregular

*Spatial\_Domain:*

*Bounding\_Coordinates:*

*West\_Bounding\_Coordinate:*-71.39366348

*East\_Bounding\_Coordinate:*-71.37486896

*North\_Bounding\_Coordinate:*41.78400812

*South\_Bounding\_Coordinate:*41.77166379

*Keywords:*

*Theme:*

*Theme\_Keyword\_Thesaurus:* None

*Theme\_Keyword:* digital spatial data

*Theme\_Keyword:* 0.3 meter orthoimage

*Theme\_Keyword:* rectified image

*Theme\_Keyword:* orthophoto

*Theme\_Keyword:* natural color orthophoto

*Theme\_Keyword:* orthoimage

*Theme\_Keyword:* image map

*Theme:*

*Theme\_Keyword\_Thesaurus:* ISO 19115 Category

*Theme\_Keyword:* imageryBaseMapsEarthCover

*Theme\_Keyword:* 010

*Theme\_Keyword:* geoscientificInformation

*Theme\_Keyword:* 008

*Theme\_Keyword:* location

*Theme\_Keyword:* 013

*Place:*

*Place\_Keyword\_Thesaurus:*

U.S. Department of Commerce, 1995, Countries, dependencies, areas of special sovereignty, and their principal administrative divisions, Federal Information Processing Standard 10-4,); Washington, D.C., National Institute of Standards and Technology

*Place\_Keyword:* United States

*Place\_Keyword:* U.S.

*Place\_Keyword:* US

*Place:*



*Place\_Keyword\_Thesaurus:*

U.S. Department of Commerce, 1987, Codes for the identification of the States, the District of Columbia and the outlying areas of the United States, and associated areas (Federal Information Processing Standard 5-2): Washington, D.C., National Institute of Standards and Technology

*Place\_Keyword:* RI*Place:*

*Place\_Keyword\_Thesaurus:* Geographic Names Information System

*Place\_Keyword:* Providence

*Access\_Constraints:*

Any downloading and use of these data signifies a user's agreement to comprehension and compliance of the USGS Standard Disclaimer. Insure all portions of metadata are read and clearly understood before using these data in order to protect both user and USGS interests.

*Use\_Constraints:*

There is no guarantee of warranty concerning the accuracy of the data. Users should be aware that temporal changes may have occurred since this data set was collected and that some parts of this data may no longer represent actual surface conditions. Users should not use this data for critical applications without a full awareness of it's limitations. Acknowledgement of the originating agencies would be appreciated in products derived from these data. Any user who modifies the data is obligated to describe the types of modifications they perform. User specifically agrees not to misrepresent the data, nor to imply that changes made were approved or endorsed by the U.S. Geological Survey. Please refer to <http://www.usgs.gov/privacy.html> for the USGS disclaimer.

*Point\_of\_Contact:**Contact\_Information:**Contact\_Organization\_Primary:*

*Contact\_Organization:* U.S. Geological Survey

*Contact\_Position:* Customer Services Representative

*Contact\_Address:*

*Address\_Type:* mailing and physical address

*Address:* USGS Center for Earth Resources Observation & Science

*Address:* 47914 252nd Street

*City:* Sioux Falls

*State\_or\_Province:* SD

*Postal\_Code:* 57198-0001

*Country:* USA

*Contact\_Voice\_Telephone:* 605/594-6151

*Contact\_Voice\_Telephone:* 1-800-252-4547

*Contact\_TDD/TTY\_Telephone:* 605/594-6933

*Contact\_Facsimile\_Telephone:* 605/594-6589

*Contact\_Electronic\_Mail\_Address:* custserv@usgs.gov

*Hours\_of\_Service:* 0800 - 1600 CT, M - F (-6h CST/-5h CDT GMT)

*Data\_Set\_Credit:* U.S. Geological Survey

*Security\_Information:*

*Security\_Classification\_System:* None

*Security\_Classification:* Unclassified

*Security\_Handling\_Description:* N/A

*Native\_Data\_Set\_Environment:*

Microsoft Windows XP Version 5.1 (Build 2600) Service Pack 2; ESRI ArcCatalog 9.1.0.780

---

*Data\_Quality\_Information:*

*Attribute\_Accuracy:**Attribute\_Accuracy\_Report:*

Radiometry is verified by visual inspection of the digital orthophoto. Slight systematic radiometric differences may exist between adjacent orthoimage files; these are due primarily to differences in source image capture dates and sun angles along flight lines. These differences can be observed in an image's general lightness or darkness when it is compared to adjacent orthoimage file coverages. Tonal balancing may be performed over a group of images during the mosaicking process which may serve to lighten or darken adjacent images for better color tone matching.

*Logical\_Consistency\_Report:*

Logical consistency is implicit in the raster image data structure. Source imagery is cloud free.

*Completeness\_Report:* N/A*Positional\_Accuracy:**Horizontal\_Positional\_Accuracy:**Horizontal\_Positional\_Accuracy\_Report:*

The relative accuracy is assembled by comparing rectified images generated from adjacent strips of imagery. The absolute accuracy is assessed by measuring the ground control points in the rectified image against the actual surveyed co-ordinate position. The testing is for overall accuracy.

*Vertical\_Positional\_Accuracy:**Vertical\_Positional\_Accuracy\_Report:* NA*Lineage:**Source\_Information:**Source\_Citation:**Citation\_Information:*

*Originator:* U.S. Geological Survey

*Publication\_Date:* 2007

*Title:* imagery

*Geospatial\_Data\_Presentation\_Form:* raster digital data

*Series\_Information:*

*Series\_Name:* Urban Area Orthoimagery

*Issue\_Identification:* 0.1

*Publication\_Information:*

*Publication\_Place:* Sioux Falls, SD

*Publisher:* U.S. Geological Survey

*Type\_of\_Source\_Media:* raster digital data

*Source\_Time\_Period\_of\_Content:**Time\_Period\_Information:**Single\_Date/Time:*

*Calendar\_Date:* 200504

*Source\_Currentness\_Reference:* ground condition

*Source\_Citation\_Abbreviation:* imagery

*Source\_Contribution:* Source imagery for tile production

*Process\_Step:**Process\_Description:*

Original processing procedures are not available for this project as no metadata were received with the data. General orthoimagery metadata were created for display through The National Map Seamless Server at <<http://seamless.usgs.gov>> Project level metadata are available in several formats: HTML, TEXT, XML, FAQ and SGML.

*Process\_Date:* 2007

*Process\_Contact:**Contact\_Information:**Contact\_Organization\_Primary:**Contact\_Organization:* U.S. Geological Survey*Contact\_Position:* Customer Service Representative*Contact\_Address:**Address\_Type:* mailing and physical address*Address:* USGS Center for Earth Resources Observation & Science*Address:* 47914 252nd Street*City:* Sioux Falls*State\_or\_Province:* SD*Postal\_Code:* 57198-0001*Country:* USA*Contact\_Voice\_Telephone:* 605-594-6151*Contact\_Voice\_Telephone:* 1-800-252-4547*Contact\_TDD/TTY\_Telephone:* 605-594-6933*Contact\_Facsimile\_Telephone:* 605-594-6589*Contact\_Electronic\_Mail\_Address:* custserv@usgs.gov*Hours\_of\_Service:* 0800 - 1600 CT, M - F (-6h CST/-5h CDT GMT)*Contact\_Instructions:*

The USGS point of contact is for questions relating only to the data display and download from this web site.

---

*Spatial\_Data\_Organization\_Information:**Direct\_Spatial\_Reference\_Method:* Raster*Raster\_Object\_Information:**Raster\_Object\_Type:* Pixel*Row\_Count:* 330000*Column\_Count:* 100000*Vertical\_Count:* 1*Spatial\_Reference\_Information:**Horizontal\_Coordinate\_System\_Definition:**Planar:**Grid\_Coordinate\_System:**Grid\_Coordinate\_System\_Name:* Universal Transverse Mercator*Universal\_Transverse\_Mercator:**UTM\_Zone\_Number:* 19*Transverse\_Mercator:**Scale\_Factor\_at\_Central\_Meridian:* 0.999600*Longitude\_of\_Central\_Meridian:* -69.000000*Latitude\_of\_Projection\_Origin:* 0.000000*False\_Easting:* 500000.000000*False\_Northing:* 0.000000*Planar\_Coordinate\_Information:**Planar\_Coordinate\_Encoding\_Method:* row and column*Coordinate\_Representation:**Abscissa\_Resolution:* 0.300000*Ordinate\_Resolution:* 0.300000

*Planar\_Distance\_Units:* meters

*Geodetic\_Model:*

*Horizontal\_Datum\_Name:* North American Datum of 1983

*Ellipsoid\_Name:* Geodetic Reference System 80

*Semi-major\_Axis:* 6378137.000000

*Denominator\_of\_Flattening\_Ratio:* 298.257222

*Vertical\_Coordinate\_System\_Definition:*

*Altitude\_System\_Definition:*

*Altitude\_Datum\_Name:* North American Vertical Datum of 1988

*Altitude\_Resolution:* 1.000000

*Altitude\_Distance\_Units:* meters

*Altitude\_Encoding\_Method:*

Explicit elevation coordinate included with horizontal coordinates

*Entity\_and\_Attribute\_Information:*

*Overview\_Description:*

*Entity\_and\_Attribute\_Overview:*

Natural color orthoimagery is organized in three color bands or channels which represent the red, green, and blue (RGB) portions of the spectrum. Each image pixel is assigned a triplet of numeric values, one for each color band. Numeric values range from 0 to 255. Areas where data is incomplete due to lack of full image coverage are represented with the numeric value of 0.

*Entity\_and\_Attribute\_Detail\_Citation:*

U.S. Department of the Interior, U.S. Geological Survey, 1996, Standards for Digital Orthophotos: Reston, VA

*Distribution\_Information:*

*Distributor:*

*Contact\_Information:*

*Contact\_Organization\_Primary:*

*Contact\_Organization:* U.S. Geological Survey

*Contact\_Position:* Customer Services Representative

*Contact\_Address:*

*Address\_Type:* mailing and physical address

*Address:* USGS Center for Earth Resources Observation & Science

*Address:* 47914 252nd Street

*City:* Sioux Falls

*State\_or\_Province:* SD

*Postal\_Code:* 57198-0001

*Country:* USA

*Contact\_Voice\_Telephone:* 605/594-6151

*Contact\_Voice\_Telephone:* 1-800-252-4547

*Contact\_TDD/TTY\_Telephone:* 605/594-6933

*Contact\_Facsimile\_Telephone:* 605/594-6589

*Contact\_Electronic\_Mail\_Address:* custserv@usgs.gov

*Hours\_of\_Service:* 0800 - 1600 CT, M - F (-6h CST/-5h CDT GMT)

*Contact\_Instructions:*

The USGS point of contact is for questions relating only to the data display and download from this web site. For questions regarding data content and quality, refer

to the original processor.

*Resource\_Description:* Downloadable Data

*Distribution\_Liability:*

Although these data have been processed successfully on a computer system at the USGS, no warranty expressed or implied is made by the USGS regarding the use of the data on any other system, nor does the act of distribution constitute any such warranty. Data may have been compiled from various outside sources. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. The USGS shall not be liable for any activity involving these data, installation, fitness of the data for a particular purpose, its use, or analyses results.

*Standard\_Order\_Process:*

*Digital\_Form:*

*Digital\_Transfer\_Information:*

*Format\_Name:* Arc/Info Export Format and/or ArcView Shapefile

*Format\_Version\_Number:* ArcGIS 9.1

*Format\_Specification:* ASCII

*Transfer\_Size:* 0.001

*Digital\_Transfer\_Option:*

*Online\_Option:*

*Computer\_Contact\_Information:*

*Network\_Address:*

*Network\_Resource\_Name:* <<http://seamless.usgs.gov>>

*Access\_Instructions:*

The URL <<http://seamless.usgs.gov>> provides a map interface that allows for data downloads within a customer defined area of interest. Zoom tools are available that can be used to investigate areas of interest on the map interface. The download tool allows the customer to capture layers from the map, utilizing the Seamless Data Distribution System process for downloading. A request summary page is then generated with the download layers listed. By clicking the "download" button on the summary page, a zipped file will be generated that can be saved on the customer's computer. The file can then be unzipped and imported into various user software applications.

*Online\_Computer\_and\_Operating\_System:* Not available for dissemination

*Fees:* None

*Turnaround:* Variable

*Technical\_Prerequisites:*

ESRI ArcGIS Suite and/or Arc/Info or other compatible software, and supporting operating systems.

*Available\_Time\_Period:*

*Time\_Period\_Information:*

*Range\_of\_Dates/Times:*

*Beginning\_Date:* 2007

*Ending\_Date:* unknown

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*Metadata\_Reference\_Information:*

*Metadata\_Date:* 20071211

*Metadata\_Contact:*

*Contact\_Information:*

*Contact\_Organization\_Primary:*

*Contact\_Organization:* U.S. Geological Survey  
*Contact\_Position:* Customer Services Representative  
*Contact\_Address:*  
*Address\_Type:* mailing and physical address  
*Address:* USGS Center for Earth Resources Observation & Science  
*Address:* 47914 252nd Street  
*City:* Sioux Falls  
*State\_or\_Province:* SD  
*Postal\_Code:* 57198-0001  
*Country:* USA

*Contact\_Voice\_Telephone:* 605/594-6151  
*Contact\_Voice\_Telephone:* 1-800-252-4547  
*Contact\_TDD/TTY\_Telephone:* 605/594-6933  
*Contact\_Facsimile\_Telephone:* 605/594-6589  
*Contact\_Electronic\_Mail\_Address:* custserv@usgs.gov  
*Hours\_of\_Service:* 0800 - 1600 CT, M - F (-6h CST/-5h CDT GMT)  
*Contact\_Instructions:*

The above is the contact information for the USGS Center for Earth Resources Observation and Science in Sioux Falls, SD. This is the digital data storage and distribution center for the USGS. Metadata information can also be obtained through online services using The National Map Viewer, at <http://nationalmap.usgs.gov>

*Metadata\_Standard\_Name:* FGDC Content Standards for Digital Geospatial Metadata

*Metadata\_Standard\_Version:* FGDC-STD-001-1998

*Metadata\_Time\_Convention:* local time

*Metadata\_Access\_Constraints:* None

*Metadata\_Use\_Constraints:* None

*Metadata\_Security\_Information:*

*Metadata\_Security\_Classification\_System:* None

*Metadata\_Security\_Classification:* Unclassified

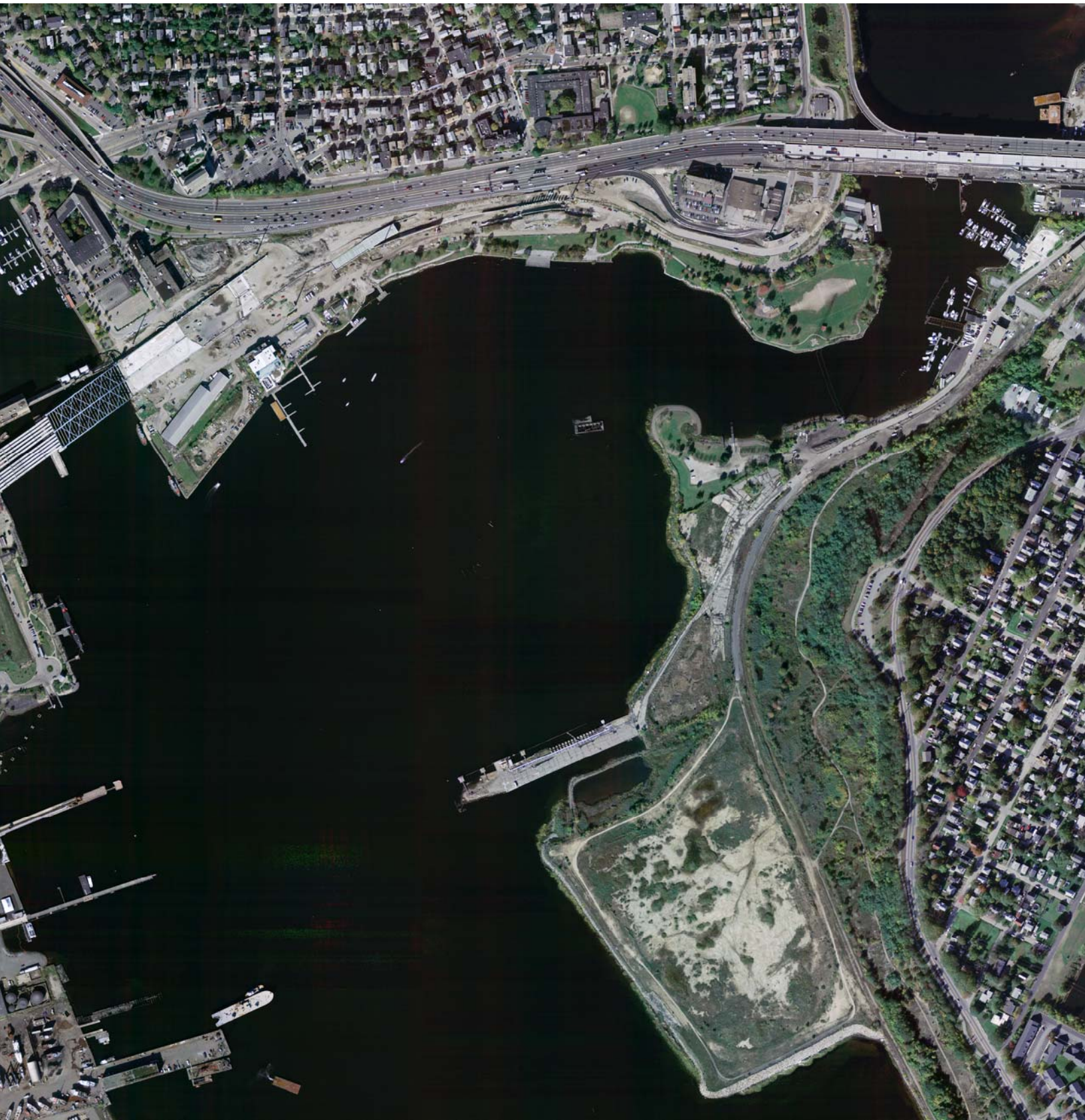
*Metadata\_Security\_Handling\_Description:* None

*Metadata\_Extensions:*

*Online\_Linkage:* <http://www.esri.com/metadata/esriprof80.html>

*Profile\_Name:* ESRI Metadata Profile





# USGS High Resolution Orthoimagery for the Providence, Rhode Island Urban Area

Metadata also available as

## Metadata:

- [Identification Information](#)
  - [Data Quality Information](#)
  - [Spatial Data Organization Information](#)
  - [Spatial Reference Information](#)
  - [Entity and Attribute Information](#)
  - [Distribution Information](#)
  - [Metadata Reference Information](#)
- 

### *Identification Information:*

#### *Citation:*

##### *Citation Information:*

*Originator:* U.S. Geological Survey

*Publication Date:* Unknown

##### *Title:*

USGS High Resolution Orthoimagery for the Providence, Rhode Island Urban Area

*Geospatial Data Presentation Form:* SDE raster digital data

##### *Series Information:*

*Series Name:* Urban Area Orthoimagery

*Issue Identification:* 0.1

##### *Publication Information:*

*Publication Place:* Sioux Falls, SD

*Publisher:* U.S. Geological Survey

##### *Other Citation Details:*

The data obtained through The National Map Seamless Server is considered to be the "best available" data from USGS. Historical data and other data may be obtained by contacting Customer Services, Center for Earth Resources Observation & Science, at 1-800-252-4547.

*Online Linkage:* <<http://seamless.usgs.gov>>

### *Description:*

#### *Abstract:*

An orthoimage is remotely sensed image data in which displacement of features in the image caused by terrain relief and sensor orientation have been mathematically removed. Orthoimagery combines the image characteristics of a photograph with the geometric qualities of a map. The projected coordinate system is UTM with a NAD83 datum. There is no image overlap between adjacent files.

#### *Purpose:*

These data have been created as a result of the need for having geospatial data immediately available and easily accessible in order to provide geographic reference for Federal, State, and local emergency responders, as well as for homeland security efforts.



Orthoimages also serve a variety of purposes, from interim maps to field references for earth science investigations and analysis. The digital orthoimage is useful as a layer of a geographic information system. These data can be used to provide reference information for Web browsers and for map applications at a scale of 1:100,000 or smaller. Larger scale orthoimagery such as digital orthophoto quadrangles will be more accurate, but often at the expense of timely updates.

*Supplemental\_Information:*

No metadata were received with this data. General orthoimagery metadata were created and spatial information imported for display through the Seamless Data Distribution System at <<http://seamless.usgs.gov>> Spatial-specific information not available

*Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* unknown

*Currentness\_Reference:* ground condition

*Status:*

*Progress:* Complete

*Maintenance\_and\_Update\_Frequency:* Irregular

*Spatial\_Domain:*

*Bounding\_Coordinates:*

*West\_Bounding\_Coordinate:*-71.40244239

*East\_Bounding\_Coordinate:*-71.38489522

*North\_Bounding\_Coordinate:*41.82066755

*South\_Bounding\_Coordinate:*41.80714028

*Keywords:*

*Theme:*

*Theme\_Keyword\_Thesaurus:* None

*Theme\_Keyword:* digital spatial data

*Theme\_Keyword:* 0.3 meter orthoimage

*Theme\_Keyword:* rectified image

*Theme\_Keyword:* orthophoto

*Theme\_Keyword:* natural color orthophoto

*Theme\_Keyword:* orthoimage

*Theme\_Keyword:* image map

*Theme:*

*Theme\_Keyword\_Thesaurus:* ISO 19115 Category

*Theme\_Keyword:* imageryBaseMapsEarthCover

*Theme\_Keyword:* 010

*Theme\_Keyword:* geoscientificInformation

*Theme\_Keyword:* 008

*Theme\_Keyword:* location

*Theme\_Keyword:* 013

*Place:*

*Place\_Keyword\_Thesaurus:*

U.S. Department of Commerce, 1995, Countries, dependencies, areas of special sovereignty, and their principal administrative divisions, Federal Information Processing Standard 10-4,); Washington, D.C., National Institute of Standards and Technology

*Place\_Keyword:* United States

*Place\_Keyword:* U.S.

*Place\_Keyword:* US

*Place:*

*Place\_Keyword\_Thesaurus:*

U.S. Department of Commerce, 1987, Codes for the identification of the States, the District of Columbia and the outlying areas of the United States, and associated areas (Federal Information Processing Standard 5-2): Washington, D.C., National Institute of Standards and Technology

*Place\_Keyword:* RI

*Place:*

*Place\_Keyword\_Thesaurus:* Geographic Names Information System

*Place\_Keyword:* Providence

*Access\_Constraints:*

Any downloading and use of these data signifies a user's agreement to comprehension and compliance of the USGS Standard Disclaimer. Insure all portions of metadata are read and clearly understood before using these data in order to protect both user and USGS interests.

*Use\_Constraints:*

There is no guarantee of warranty concerning the accuracy of the data. Users should be aware that temporal changes may have occurred since this data set was collected and that some parts of this data may no longer represent actual surface conditions. Users should not use this data for critical applications without a full awareness of it's limitations. Acknowledgement of the originating agencies would be appreciated in products derived from these data. Any user who modifies the data is obligated to describe the types of modifications they perform. User specifically agrees not to misrepresent the data, nor to imply that changes made were approved or endorsed by the U.S. Geological Survey. Please refer to <http://www.usgs.gov/privacy.html> for the USGS disclaimer.

*Point\_of\_Contact:**Contact\_Information:**Contact\_Organization\_Primary:*

*Contact\_Organization:* U.S. Geological Survey

*Contact\_Position:* Customer Services Representative

*Contact\_Address:*

*Address\_Type:* mailing and physical address

*Address:* USGS Center for Earth Resources Observation & Science

*Address:* 47914 252nd Street

*City:* Sioux Falls

*State\_or\_Province:* SD

*Postal\_Code:* 57198-0001

*Country:* USA

*Contact\_Voice\_Telephone:* 605/594-6151

*Contact\_Voice\_Telephone:* 1-800-252-4547

*Contact\_TDD/TTY\_Telephone:* 605/594-6933

*Contact\_Facsimile\_Telephone:* 605/594-6589

*Contact\_Electronic\_Mail\_Address:* custserv@usgs.gov

*Hours\_of\_Service:* 0800 - 1600 CT, M - F (-6h CST/-5h CDT GMT)

*Data\_Set\_Credit:* U.S. Geological Survey

*Security\_Information:*

*Security\_Classification\_System:* None

*Security\_Classification:* Unclassified

*Security\_Handling\_Description:* N/A

*Native\_Data\_Set\_Environment:*

Microsoft Windows XP Version 5.1 (Build 2600) Service Pack 2; ESRI ArcCatalog 9.1.0.780

*Data\_Quality\_Information:*

*Attribute\_Accuracy:**Attribute\_Accuracy\_Report:*

Radiometry is verified by visual inspection of the digital orthophoto. Slight systematic radiometric differences may exist between adjacent orthoimage files; these are due primarily to differences in source image capture dates and sun angles along flight lines. These differences can be observed in an image's general lightness or darkness when it is compared to adjacent orthoimage file coverages. Tonal balancing may be performed over a group of images during the mosaicking process which may serve to lighten or darken adjacent images for better color tone matching.

*Logical\_Consistency\_Report:*

Logical consistency is implicit in the raster image data structure. Source imagery is cloud free.

*Completeness\_Report:* N/A*Positional\_Accuracy:**Horizontal\_Positional\_Accuracy:**Horizontal\_Positional\_Accuracy\_Report:*

The relative accuracy is assembled by comparing rectified images generated from adjacent strips of imagery. The absolute accuracy is assessed by measuring the ground control points in the rectified image against the actual surveyed co-ordinate position. The testing is for overall accuracy.

*Vertical\_Positional\_Accuracy:**Vertical\_Positional\_Accuracy\_Report:* NA*Lineage:**Source\_Information:**Source\_Citation:**Citation\_Information:*

*Originator:* U.S. Geological Survey

*Publication\_Date:* 2007

*Title:* imagery

*Geospatial\_Data\_Presentation\_Form:* raster digital data

*Series\_Information:*

*Series\_Name:* Urban Area Orthoimagery

*Issue\_Identification:* 0.1

*Publication\_Information:*

*Publication\_Place:* Sioux Falls, SD

*Publisher:* U.S. Geological Survey

*Type\_of\_Source\_Media:* raster digital data

*Source\_Time\_Period\_of\_Content:**Time\_Period\_Information:**Single\_Date/Time:*

*Calendar\_Date:* 200504

*Source\_Currentness\_Reference:* ground condition

*Source\_Citation\_Abbreviation:* imagery

*Source\_Contribution:* Source imagery for tile production

*Process\_Step:**Process\_Description:*

Original processing procedures are not available for this project as no metadata were received with the data. General orthoimagery metadata were created for display through The National Map Seamless Server at <<http://seamless.usgs.gov>> Project level metadata are available in several formats: HTML, TEXT, XML, FAQ and SGML.

*Process\_Date:* 2007

*Process\_Contact:**Contact\_Information:**Contact\_Organization\_Primary:**Contact\_Organization:* U.S. Geological Survey*Contact\_Position:* Customer Service Representative*Contact\_Address:**Address\_Type:* mailing and physical address*Address:* USGS Center for Earth Resources Observation & Science*Address:* 47914 252nd Street*City:* Sioux Falls*State\_or\_Province:* SD*Postal\_Code:* 57198-0001*Country:* USA*Contact\_Voice\_Telephone:* 605-594-6151*Contact\_Voice\_Telephone:* 1-800-252-4547*Contact\_TDD/TTY\_Telephone:* 605-594-6933*Contact\_Facsimile\_Telephone:* 605-594-6589*Contact\_Electronic\_Mail\_Address:* custserv@usgs.gov*Hours\_of\_Service:* 0800 - 1600 CT, M - F (-6h CST/-5h CDT GMT)*Contact\_Instructions:*

The USGS point of contact is for questions relating only to the data display and download from this web site.

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*Spatial\_Data\_Organization\_Information:**Direct\_Spatial\_Reference\_Method:* Raster*Raster\_Object\_Information:**Raster\_Object\_Type:* Pixel*Row\_Count:* 330000*Column\_Count:* 100000*Vertical\_Count:* 1*Spatial\_Reference\_Information:**Horizontal\_Coordinate\_System\_Definition:**Planar:**Grid\_Coordinate\_System:**Grid\_Coordinate\_System\_Name:* Universal Transverse Mercator*Universal\_Transverse\_Mercator:**UTM\_Zone\_Number:* 19*Transverse\_Mercator:**Scale\_Factor\_at\_Central\_Meridian:* 0.999600*Longitude\_of\_Central\_Meridian:* -69.000000*Latitude\_of\_Projection\_Origin:* 0.000000*False\_Easting:* 500000.000000*False\_Northing:* 0.000000*Planar\_Coordinate\_Information:**Planar\_Coordinate\_Encoding\_Method:* row and column*Coordinate\_Representation:**Abscissa\_Resolution:* 0.300000*Ordinate\_Resolution:* 0.300000

*Planar\_Distance\_Units:* meters

*Geodetic\_Model:*

*Horizontal\_Datum\_Name:* North American Datum of 1983

*Ellipsoid\_Name:* Geodetic Reference System 80

*Semi-major\_Axis:* 6378137.000000

*Denominator\_of\_Flattening\_Ratio:* 298.257222

*Vertical\_Coordinate\_System\_Definition:*

*Altitude\_System\_Definition:*

*Altitude\_Datum\_Name:* North American Vertical Datum of 1988

*Altitude\_Resolution:* 1.000000

*Altitude\_Distance\_Units:* meters

*Altitude\_Encoding\_Method:*

Explicit elevation coordinate included with horizontal coordinates

*Entity\_and\_Attribute\_Information:*

*Overview\_Description:*

*Entity\_and\_Attribute\_Overview:*

Natural color orthoimagery is organized in three color bands or channels which represent the red, green, and blue (RGB) portions of the spectrum. Each image pixel is assigned a triplet of numeric values, one for each color band. Numeric values range from 0 to 255. Areas where data is incomplete due to lack of full image coverage are represented with the numeric value of 0.

*Entity\_and\_Attribute\_Detail\_Citation:*

U.S. Department of the Interior, U.S. Geological Survey, 1996, Standards for Digital Orthophotos: Reston, VA

*Distribution\_Information:*

*Distributor:*

*Contact\_Information:*

*Contact\_Organization\_Primary:*

*Contact\_Organization:* U.S. Geological Survey

*Contact\_Position:* Customer Services Representative

*Contact\_Address:*

*Address\_Type:* mailing and physical address

*Address:* USGS Center for Earth Resources Observation & Science

*Address:* 47914 252nd Street

*City:* Sioux Falls

*State\_or\_Province:* SD

*Postal\_Code:* 57198-0001

*Country:* USA

*Contact\_Voice\_Telephone:* 605/594-6151

*Contact\_Voice\_Telephone:* 1-800-252-4547

*Contact\_TDD/TTY\_Telephone:* 605/594-6933

*Contact\_Facsimile\_Telephone:* 605/594-6589

*Contact\_Electronic\_Mail\_Address:* custserv@usgs.gov

*Hours\_of\_Service:* 0800 - 1600 CT, M - F (-6h CST/-5h CDT GMT)

*Contact\_Instructions:*

The USGS point of contact is for questions relating only to the data display and download from this web site. For questions regarding data content and quality, refer

to the original processor.

*Resource\_Description:* Downloadable Data

*Distribution\_Liability:*

Although these data have been processed successfully on a computer system at the USGS, no warranty expressed or implied is made by the USGS regarding the use of the data on any other system, nor does the act of distribution constitute any such warranty. Data may have been compiled from various outside sources. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. The USGS shall not be liable for any activity involving these data, installation, fitness of the data for a particular purpose, its use, or analyses results.

*Standard\_Order\_Process:*

*Digital\_Form:*

*Digital\_Transfer\_Information:*

*Format\_Name:* Arc/Info Export Format and/or ArcView Shapefile

*Format\_Version\_Number:* ArcGIS 9.1

*Format\_Specification:* ASCII

*Transfer\_Size:* 0.001

*Digital\_Transfer\_Option:*

*Online\_Option:*

*Computer\_Contact\_Information:*

*Network\_Address:*

*Network\_Resource\_Name:* <<http://seamless.usgs.gov>>

*Access\_Instructions:*

The URL <<http://seamless.usgs.gov>> provides a map interface that allows for data downloads within a customer defined area of interest. Zoom tools are available that can be used to investigate areas of interest on the map interface. The download tool allows the customer to capture layers from the map, utilizing the Seamless Data Distribution System process for downloading. A request summary page is then generated with the download layers listed. By clicking the "download" button on the summary page, a zipped file will be generated that can be saved on the customer's computer. The file can then be unzipped and imported into various user software applications.

*Online\_Computer\_and\_Operating\_System:* Not available for dissemination

*Fees:* None

*Turnaround:* Variable

*Technical\_Prerequisites:*

ESRI ArcGIS Suite and/or Arc/Info or other compatible software, and supporting operating systems.

*Available\_Time\_Period:*

*Time\_Period\_Information:*

*Range\_of\_Dates/Times:*

*Beginning\_Date:* 2007

*Ending\_Date:* unknown

---

*Metadata\_Reference\_Information:*

*Metadata\_Date:* 20071211

*Metadata\_Contact:*

*Contact\_Information:*

*Contact\_Organization\_Primary:*

*Contact\_Organization:* U.S. Geological Survey  
*Contact\_Position:* Customer Services Representative  
*Contact\_Address:*  
*Address\_Type:* mailing and physical address  
*Address:* USGS Center for Earth Resources Observation & Science  
*Address:* 47914 252nd Street  
*City:* Sioux Falls  
*State\_or\_Province:* SD  
*Postal\_Code:* 57198-0001  
*Country:* USA

*Contact\_Voice\_Telephone:* 605/594-6151  
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*Contact\_TDD/TTY\_Telephone:* 605/594-6933  
*Contact\_Facsimile\_Telephone:* 605/594-6589  
*Contact\_Electronic\_Mail\_Address:* custserv@usgs.gov  
*Hours\_of\_Service:* 0800 - 1600 CT, M - F (-6h CST/-5h CDT GMT)  
*Contact\_Instructions:*

The above is the contact information for the USGS Center for Earth Resources Observation and Science in Sioux Falls, SD. This is the digital data storage and distribution center for the USGS. Metadata information can also be obtained through online services using The National Map Viewer, at <http://nationalmap.usgs.gov>

*Metadata\_Standard\_Name:* FGDC Content Standards for Digital Geospatial Metadata

*Metadata\_Standard\_Version:* FGDC-STD-001-1998

*Metadata\_Time\_Convention:* local time

*Metadata\_Access\_Constraints:* None

*Metadata\_Use\_Constraints:* None

*Metadata\_Security\_Information:*

*Metadata\_Security\_Classification\_System:* None

*Metadata\_Security\_Classification:* Unclassified

*Metadata\_Security\_Handling\_Description:* None

*Metadata\_Extensions:*

*Online\_Linkage:* <http://www.esri.com/metadata/esriprof80.html>

*Profile\_Name:* ESRI Metadata Profile

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Generated by [mp](#) version 2.8.6 on Tue Dec 11 12:04:51 2007

**APPROVAL SHEET**  
**F00559**

**Initial Approvals:**

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, representation of critical depths, cartographic symbolization, and verification or disproval of charted data. All revisions and additions made to the H-Cell files during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with National Ocean Service and Office of Coast Survey requirements except where noted in the Descriptive Report and the Evaluation Report.

All final products have undergone a comprehensive review per the Hydrographic Surveys Division Office Processing Manual and are verified to be accurate and complete except where noted.

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**Katrina Wyllie**  
Hydrographic Contractor  
Atlantic Hydrographic Branch

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**Nicholas A. Forfinski**  
Physical Scientist  
Atlantic Hydrographic Branch

I have reviewed the H-Cell files, accompanying data, and reports. This survey and accompanying Marine Chart Division deliverables meet National Ocean Service requirements and standards for products in support of nautical charting except where noted.

Approved: \_\_\_\_\_  
**CDR Shepard M. Smith, NOAA**  
Chief, Atlantic Hydrographic Branch