

rm08_09_50gv2.tif

Metadata:

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

Identification_Information:

Citation:

Citation_Information:

Originator:

U.S. Geological Survey - St. Petersburg Coastal and Marine Science Center

Originator: Nancy T. DeWitt

Originator: James G. Flocks

Originator: Elizabeth A. Pendleton

Originator: Mark E. Hansen

Originator: B.J. Reynolds

Originator: Kyle W. Kelso

Originator: Dana S. Wiese

Originator: Charles R. Worley

Publication_Date: 2011

Publication_Time: 2011

Title: rm08_09_50gv2.tif

Geospatial_Data_Presentation_Form: remote-sensing image

Series_Information:

Series_Name: USGS Data Series Publication

Issue_Identification: DS675

Publication_Information:

Publication_Place: St. Petersburg, FL

Publisher: St. Petersburg Coastal and Marine Science Center

Online_Linkage: <<http://pubs.usgs.gov/ds/675>>

Description:

Abstract:

During the summers of 2008 and 2009 the USGS conducted bathymetric surveys from West Ship Island, Miss., to Dauphin Island, Ala., as part of the Northern Gulf of Mexico (NGOM) Ecosystem Change and Hazard Susceptibility project. The survey area extended from the shoreline out to approximately 2 kilometers and included the adjacent passes. The bathymetry was primarily used to create a topo-bathymetric map and provide a base-level assessment of the seafloor following the 2005 hurricane season. Additionally, these data will be used in conjunction with other geophysical data (chirp and side scan sonar) toward constructing a comprehensive geological framework of the Mississippi Barrier Island Complex. The culmination of the geophysical surveys will provide the data necessary for scientists to define, interpret, and provide baseline bathymetry and seafloor habitat for this area and to aid scientists

in predicting future geomorphological changes of the islands with respect to climate change, storm impact, and sea-level rise. Furthermore, these data provide information for feasibility of barrier island restoration, particularly in Camille Cut, and efforts for the preservation of historical Fort Massachusetts.

Purpose:

This report serves as an archive of the processed single-beam and swath bathymetry data. Data products herein include gridded and interpolated surfaces, surface images, and x,y,z data products. Additional files include trackline maps, GIS files, Field Activity Collection System (FACS) logs, and formal FGDC metadata. Scanned images of the handwritten FACS logs are also provided as PDF files. Refer to the Acronyms page for expansion of acronyms and abbreviations used in this report.

Supplemental_Information:

For navigational purposes, bathymetric surveys have traditionally been referenced to a water level datum using tide gages and tide models. Bathymetric measurements referenced to a Global Positioning System (GPS) is a more accurate way of representing water depth and has been implemented in the acquisition and processing procedures for these datasets. Previous single-beam bathymetric studies performed at the USGS Center for Coastal and Marine Science have successfully referenced bathymetric measurements to GPS (DeWitt and others, 2007; Hansen 2008 and 2009). These surveys were conducted as a test to develop acquisition technology utilizing both single beam and swath bathymetry survey methods together and referencing both types of measurements to GPS rather than water level. Therefore, this survey is considered a seafloor-elevation survey and is explained in greater detail within this report. To accommodate coverage of this area in a limited timeframe, this seafloor-elevation survey was conducted using three techniques; single-beam bathymetry, interferometric swath bathymetry, and a walking kinematic survey of the island shorelines. All three techniques utilized GPS measurements. Implementation of these techniques was executed concurrently yet independently aboard two research vessels: the RV Survey Cat, a 26-foot (ft) shallow draft Glacier Bay Coastal Runner, and the 50-ft RV G.K. Gilbert. A portable push buggy with a rigid antenna-mount served as the platform for the kinematic shoreline survey. Data from each survey technique was post-processed and edited independently with proper inclusion of the differentially processed external navigation files. The x,y,z components from each method were then combined and the two survey years (2008 and 2009) were merged into one dataset. Chirp seismic data were also collected during these surveys and are archived separately.

Time_Period_of_Content:

Time_Period_Information:

Multiple_Dates/Times:

Single_Date/Time:

Calendar_Date: 20080708

Time_of_Day: unknown

Single_Date/Time:

Calendar_Date: 20080726

Time_of_Day: unknown

Single_Date/Time:

Calendar_Date: 20090605

Time_of_Day: unknown

Single_Date/Time:

Calendar_Date: 2090701

Time_of_Day: unknown

Currentness_Reference: data collection interval

Status:

Progress: Complete

Maintenance_and_Update_Frequency: None planned

Spatial_Domain:

Bounding_Coordinates:

West_Bounding_Coordinate: -89.001791

East_Bounding_Coordinate: -88.316260

North_Bounding_Coordinate: 30.272374

South_Bounding_Coordinate: 30.172158

Keywords:

Theme:

Theme_Keyword_Thesaurus: ISO 19115 Topic Category

Theme_Keyword: oceans

Theme_Keyword: elevation

Theme_Keyword: location

Theme:

Theme_Keyword_Thesaurus: General

Theme_Keyword: trackline

Theme_Keyword: bathymetry

Theme_Keyword: USGS

Theme_Keyword: shapefile

Theme_Keyword: HYPACK

Theme_Keyword: HYPACK Inc.

Theme_Keyword: single-beam bathymetry

Theme_Keyword: single beam

Theme_Keyword: swath bathymetry

Theme_Keyword: interferometric swath bathymetry

Theme_Keyword: swath

Theme_Keyword: Base Station

Theme_Keyword: Benchmark

Theme_Keyword: Fort Massachusetts

Theme_Keyword: WHRN

Theme_Keyword: WPTB

Theme_Keyword: kinematic

Theme_Keyword: shoreline

Theme_Keyword: Continuously Operating Reference Station (CORS)

Theme_Keyword: GeoTIFF

Theme_Keyword:

U.S. Geological Survey (USGS), St. Petersburg Coastal and Marine Science Center

Theme_Keyword: Gulf Islands National Seashore (GUIS)

Theme_Keyword: SEA Ltd.

Theme_Keyword: Systems Engineering and Assessment

Theme_Keyword: SWATHplus interferometric

Theme_Keyword: SWATHplus Interferometric Swath System

Theme_Keyword: SWATHplus -H 468-kHz Interferometric system

Place:

Place_Keyword_Thesaurus: GUIS

Place_Keyword: Mississippi

Place_Keyword: West Ship Island

Place_Keyword: East Ship Island

Place_Keyword: Horn Island

Place_Keyword: Horn Island Pass

Place_Keyword: Camille Cut

Place_Keyword: Dog Keys

Place_Keyword: Dog Keys Pass

Place_Keyword: Petit Bois Island

Place_Keyword: Petit Bois Pass

Place_Keyword: Little Dog Keys Pass

Stratum:

Stratum_Keyword_Thesaurus: General

Stratum_Keyword: Water

Stratum_Keyword: shoreline

Temporal:

Temporal_Keyword_Thesaurus: General

Temporal_Keyword: July 2008

Temporal_Keyword: June 2009

Access_Constraints:

The U.S. Geological Survey requests that it be referenced as the originator of this dataset in any future products or research derived from these data.

Use_Constraints: These data are not to be used for navigation.

Point_of_Contact:

Contact_Information:

Contact_Person_Primary:

Contact_Person: Nancy T. DeWitt

Contact_Organization:

U.S. Geological Survey - St. Petersburg Coastal and Marine Science Center

Contact_Position: Geologist

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State_or_Province: FL

Postal_Code: 33701

Country: USA

Contact_Voice_Telephone: (727) 803-8747 x3058

Contact_Electronic_Mail_Address: ndewitt@usgs.gov

Data_Set_Credit:

Nancy T. DeWitt, James G. Flocks, Elizabeth A. Pendleton, Mark E. Hansen, B.J. Reynolds, Kyle W. Kelso, Dana S. Wiese, and Charles R. Worley.

Native_Data_Set_Environment:

Microsoft Windows XP Version 5.1 (Build 2600) Service Pack 3; ESRI ArcCatalog 9.3.1.3000

Data_Quality_Information:

Attribute_Accuracy:

Attribute_Accuracy_Report:

The accuracy of the data is determined during data collection. These datasets are from four separate research cruises and are therefore internally consistent. Methods are employed to maintain data collection consistency aboard various platforms. During mobilization, each piece of equipment (single beam and swath) is isolated to obtain internal and external offset measurements with respect to the survey platform. All the critical measurements are recorded manually and digitally and entered into their respective programs for calibration. Once calibration is complete and calibration status is considered acceptable, then survey operations commence. Each system has a dedicated computer, and efforts are made to utilize the same equipment and software versions. However, upgrades and changes occur and require additional setup, measurements, and notation. For the single beam bathymetry, offsets between the single beam transducers and the Ashetch antenna reference point (ARP) were measured and accounted for in post-processing. Bar checks were performed as calibration efforts and accounted for any drift in the Marimatech Echosounder. The Differential Geographic Positioning (DGPS) was obtained using post-processing software packages. For the swath bathymetry, offsets between the sonar head and the

DGPS antennas were measured and entered into the F190 internal setup program. DGPS is normally provided through the OmniSTAR High Performance wide-area GPS service unless otherwise noted. DGPS is always implemented for navigational accuracy either during acquisition or as a post-processing step.

Logical_Consistency_Report:

These datasets were completed on four research cruises over the course of 21 days for 2008 and 20 days for 2009. Refer to the FACS logs for respective vessel platforms and survey information. This dataset was created to show the combination bathymetry and topography from the cruises. The grid is 50-m spacing.

Completeness_Report:

This is a complete processed bathymetry and shoreline topography surface in GeoTIFF format. It is a combination of single beam and swath bathymetry and shoreline topography from USGS cruises 08CCT01, 08CCT02, 09CCT03, and 09CCT04. These data provide a continuous and complete surface; however, there may in some cases be data missing and inconsistent with reported tracklines. This is directly due to the exclusion of poor data and (or) instrument failures.

Positional_Accuracy:

Horizontal_Positional_Accuracy:

Horizontal_Positional_Accuracy_Report:

GPS base stations were erected within approximately 15 to 20 km of the survey area. Efforts were made to utilize pre-existing National Geodetic Survey (NGS) benchmarks on the islands. If pre-existing benchmarks were unavailable a USGS benchmark was installed.

All static base station sessions were run through On-Line Positioning User Service (OPUS) maintained by the National Oceanic and Atmospheric Administration (NOAA) and the National Geodetic Survey (NGS). The base location results from OPUS were put in a spreadsheet for error analysis and averaging, and any outliers were removed. For the 2008-2009 base station occupations, results were considered sufficient and produced +/-3.3 cm or less accuracy in the vertical component. These base station positions, once finalized, were used for processing and can be found in the FACS logs.

GPS was recorded using Ashtech Z-Xtreme GPS receivers that record the 12-channel full-carrier-phase positioning signals (L1/L2) from the satellites via the Thales choke-ring antenna. This GPS instrument combination is duplicated on the survey vessel (rover). The base receiver and the rover receiver record their positions concurrently at 1-second (s) recording intervals throughout the survey period. The differential navigation for the single-beam bathymetry and the swath bathymetry were both collected in the same manner.

Quantitative_Horizontal_Positional_Accuracy_Assessment:

Horizontal_Positional_Accuracy_Value: 0.00001

Horizontal_Positional_Accuracy_Explanation: decimal seconds

Quantitative_Horizontal_Positional_Accuracy_Assessment:

Horizontal_Positional_Accuracy_Value: 0.00000 - 0.00091

Horizontal_Positional_Accuracy_Explanation: decimal seconds

Vertical_Positional_Accuracy:

Vertical_Positional_Accuracy_Report:

Ship motion was measured using a the CodaOctopus Octopus F190 Precision Attitude and Positioning System. The interferometric sonar is an angle-measuring system; depth accuracy decreases with increasing horizontal range. The swath width of the interferometric sonar varied as a function of depth but generally achieved 5 times the water depth. Vertical accuracy is directly affected by the accuracy of both the navigation system and the sonar system.

Quantitative_Vertical_Positional_Accuracy_Assessment:

Vertical_Positional_Accuracy_Value: -3.3 - + 3.3

Vertical_Positional_Accuracy_Explanation: centimeters

Lineage:

Process_Step:

Process_Description:

Acquisition: The single-beam data for 2008 were collected using SANDS, which has two components, data acquisition and data processing. The 2008 and 2009 swath bathymetry was collected using the Systems Engineering and Assessment Ltd. (SEA) SWATHplus-H 468 kHz Interferometric System providing both data acquisition and data processing components. The walking kinematic survey of the shoreline was completed using a portable push buggy.

Process_Date: 2008 and 2009

Process_Contact:

Contact_Information:

Contact_Person_Primary:

Contact_Person: Nancy T. DeWitt and others

Contact_Organization:

U.S. Geological Survey St. Petersburg Coastal and Marine
Science Center

Contact_Position: Geologist

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Address_Type: mailing and physical address

Address: 600 4th Street South

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State_or_Province: FL

Postal_Code: 33701

Country: USA

Contact_Voice_Telephone: (727) 803-8747 x3058

Contact_Electronic_Mail_Address: ndewitt@usgs.gov

Process_Step:

Process_Description:

Differentially Corrected Navigation Process: Each base station GPS file was processed to the respective roving survey platform GPS file using GrafNav version 8.10, a product of Waypoint Product Group. During this process, steps were taken to ensure that the trajectory produced from the base to the rover was clean and produced fixed positions. From these processes a single differentially corrected, precise position at 1-s intervals for each roving GPS session was created.

Process_Date: 2008 and 2009

Process_Contact:

Contact_Information:

Contact_Person_Primary:

Contact_Person: Nancy T. DeWitt

Contact_Organization:

U.S. Geological Survey St. Petersburg Coastal and Marine
Science Center

Contact_Position: Geologist

Contact_Address:

Address_Type: mailing and physical address

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Country: USA

Contact_Voice_Telephone: (727) 803-8747 x3058

Contact_Electronic_Mail_Address: ndewitt@usgs.gov

Process_Step:

Process_Description:

Single-Beam Processing: The external navigation files are combined with the

raw trackline data in SANDS version 3.92. The raw data are geometrically corrected, and a Geoid model applied. The exported x,y,z data are referenced to NAD83, UTM ZONE 16N, and NAVD88.

Process_Date: 2008

Process_Contact:

Contact_Information:

Contact_Person_Primary:

Contact_Person: Nancy T. DeWitt

Contact_Organization:

U.S. Geological Survey St. Petersburg Coastal and Marine
Science Center

Contact_Position: Geologist

Contact_Address:

Address_Type: mailing and physical address

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Postal_Code: 33701

Country: USA

Contact_Voice_Telephone: (727) 803-8747 x3058

Contact_Electronic_Mail_Address: ndewitt@usgs.gov

Process_Step:

Process_Description:

Swath Post-Processing 2008: The raw swath files, (SXR) were run through SWATHplus version 3.06.04.03. The external differential navigation file was substituted for the F190 navigation string, however, the motion (heave, roll, pitch) from the F190 was applied and depths were geometrically corrected. The processed swath files (SXP) were referenced to NAD83, UTM ZONE 16N NAVD88. The SXP files were imported into CARIS HIPS and SIPS version 7.0 with the respective vessel files and merged. Each line was viewed and cleaned in Swath Editor. The filters applied included depth, beam to beam slopes, across-track distance, and missing neighbors. The files were remerged after any changes occurred during the editing process, a 5-m BASE surface was created, and the x,y,z data were exported in ASCII format for further grid interpretation. The x,y,z values were in NAD83, UTM ZONE 16N NAVD88.

Process_Date: 2008

Process_Contact:

Contact_Information:

Contact_Person_Primary:

Contact_Person: Nancy T. DeWitt

Contact_Organization:

U.S. Geological Survey St. Petersburg Coastal and Marine
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Contact_Position: Geologist

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Country: USA

Contact_Voice_Telephone: (727) 803-8747 x3058

Contact_Electronic_Mail_Address: ndewitt@usgs.gov

Process_Step:

Process_Description:

Swath Post-Processing 2009: The SXRs were run through SWATHplus version

3.06.0 without inserting the differential external navigation file. The processed SXP data were imported into CARIS HIPS and SIPS version 6.1. The external navigation files were first smoothed in Matlab version R2007b. The external navigation files were then imported into CARIS with the heave correction (waterline height) offset in the respective vessel file and the navigation data applied as a tide file in CARIS during the merge process. Each line was viewed and cleaned in Swath Editor. The filters applied included depth, beam to beam slopes, across-track distance, and missing neighbors. The files were remerged after any changes occurred during the editing process, a 5-m BASE surface was created, and the x,y,z data were exported in ASCII format for further grid interpretation. The x,y,z values were referenced to NAD83, UTM ZONE 16N NAVD88.

Process_Date: 2009

Process_Contact:

Contact_Information:

Contact_Person_Primary:

Contact_Person: Elizabeth A. Pendleton

Contact_Organization: USGS Woods Hole Coastal and Marine Science Center

Contact_Position: Geologist

Contact_Address:

Address_Type: mailing and physical address

Address: 384 Woods Hole Road

City: Woods Hole

State_or_Province: MA

Postal_Code: 02543-1598

Country: USA

Contact_Voice_Telephone: (508) 457-2259

Contact_Electronic_Mail_Address: ependleton@usgs.gov

Spatial_Data_Organization_Information:

Direct_Spatial_Reference_Method: Raster

Raster_Object_Information:

Raster_Object_Type: Pixel

Row_Count: 203

Column_Count: 1317

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: 16

Transverse_Mercator:

Scale_Factor_at_Central_Meridian: 0.999600

Longitude_of_Central_Meridian: -87.000000

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: 50.000000

Ordinate_Resolution: 50.000000

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: 298.25722356300003

Vertical_Coordinate_System_Definition:

Depth_System_Definition:

Depth_Datum_Name: North American Vertical Datum of 1988

Depth_Resolution: 3.3

Depth_Distance_Units: centimeters

Depth_Encoding_Method: Explicit depth coordinate included with horizontal coordinates

Entity_and_Attribute_Information:

Detailed_Description:

Entity_Type:

Entity_Type_Label: rm08_09_50gv2.tif

Entity_Type_Definition: ESRI ArcGIS 9.3

Entity_Type_Definition_Source: ESRI ArcMap 9.3 TIFF

Detailed_Description:

Entity_Type:

Entity_Type_Label: rm08_09_50gv2_raster2point.shp

Entity_Type_Definition: ESRI ArcGIS 9.3

Entity_Type_Definition_Source: ESRI ArcMap 9.3 shapefile

Attribute:

Attribute_Label: FID

Attribute_Definition: Internal feature number

Attribute_Definition_Source: ESRI ArcGIS 9.3

Attribute_Domain_Values:

Unrepresentable_Domain:

Sequential unique whole numbers that are automatically generated

Attribute:

Attribute_Label: SHAPE

Attribute_Definition: Point Geometry

Attribute_Definition_Source: ESRI ArcGIS 9.3

Attribute_Domain_Values:

Unrepresentable_Domain:

Sequential unique whole numbers that are automatically generated

Attribute:

Attribute_Label: POINT_ID

Attribute_Definition: Number

Attribute_Definition_Source: ESRI ArcGIS 9.3

Attribute_Domain_Values:

Range_Domain:

Range_Domain_Minimum: 1

Range_Domain_Maximum: 106412

Attribute:

Attribute_Label: GRID_CODE

Attribute_Definition: Depth in meters

Attribute_Definition_Source: ESRI ArcGIS 9.3

Attribute_Domain_Values:

Range_Domain:

Range_Domain_Minimum: -19.589

Range_Domain_Maximum: +1.5866

Attribute:

Attribute_Label: X

Attribute_Definition: NAD83 UTM 16N

Attribute_Definition_Source: North American Datum of 1983

Attribute_Domain_Values:

Range_Domain:

Range_Domain_Minimum: 307500.000874

Range_Domain_Maximum: 373250.000278

Attribute:

Attribute_Label: Y

Attribute_Definition: NAD83 UTM 16N

Attribute_Definition_Source: North American Datum of 1983

Attribute_Domain_Values:

Range_Domain:

Range_Domain_Minimum: 3339576.76001

Range_Domain_Maximum: 3349676.76002

Detailed_Description:

Entity_Type:

Entity_Type_Label: rm08_09_50gv2_raster2ascii.txt

Entity_Type_Definition: ESRI ArcGIS 9.3

Entity_Type_Definition_Source: ESRI ArcMap 9.3 ASCII file

Detailed_Description:

Entity_Type:

Entity_Type_Label: rm08_09_50gv2_xyz.txt

Entity_Type_Definition: ESRI ArcGIS 9.3

Entity_Type_Definition_Source: ESRI ArcMap 9.3 ASCII file

Attribute:

Attribute_Label: x

Attribute_Definition: NAD83 UTM 16N

Attribute_Definition_Source: North American Datum of 1983

Attribute_Domain_Values:

Range_Domain:

Range_Domain_Minimum: 307500.000874

Range_Domain_Maximum: 373250.000278

Attribute:

Attribute_Label: y

Attribute_Definition: NAD83 UTM 16N

Attribute_Definition_Source: North American Datum of 1983

Attribute_Domain_Values:

Range_Domain:

Range_Domain_Minimum: 3339576.76001

Range_Domain_Maximum: 3349676.76002

Attribute:

Attribute_Label: z

Attribute_Definition: depth in meters

Attribute_Definition_Source: ESRI ArcGIS 9.3

Attribute_Domain_Values:

Range_Domain:

Range_Domain_Minimum: -19.5891

Range_Domain_Maximum: +1.586

Overview_Description:

Entity_and_Attribute_Overview:

This file is the completed processed 50-m resolution multibeam bathymetry grid as a TIFF file.

Entity_and_Attribute_Detail_Citation: <<http://ngom.usgs.gov/gomsc/mscip/index.html>>

Overview_Description:

Entity_and_Attribute_Overview:

This is file rm08_09_50gv2.tif converted to a point shapefile named rm08_09_50gv2_raster2point.shp. The shapefile was created using ArcMap version 9.3.1 raster to point conversion tool and then populated with X,Y fields using XTools Pro version 6.0.

Entity_and_Attribute_Detail_Citation: <<http://ngom.usgs.gov/gomsc/mscip/index.html>>

Overview_Description:

Entity_and_Attribute_Overview:

This is file rm08_09_50gv2.tif converted to a ASCII shapefile named rm08_09_50gv2_raster2ascii.txt. The text file was created using ArcMap version 9.3.1 raster to ascii conversion tool. This text file is in an array format with header information at the top of the file.

Entity_and_Attribute_Detail_Citation: <<http://ngom.usgs.gov/gomsc/mscip/index.html>>

Overview_Description:

Entity_and_Attribute_Overview:

This is the file rm08_09_50gv2_raster2point.shp exported to text format in ArcMap version 9.3.1 the table restructure option of XTools Pro version 6.0.

Entity_and_Attribute_Detail_Citation: <<http://ngom.usgs.gov/gomsc/mscip/index.html>>

Distribution_Information:

Distributor:

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Resource_Description:

Downloadable Data File Name = rm08_09_50gv2.tif

Distribution_Liability:

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Standard_Order_Process:

Digital_Form:

Digital_Transfer_Information:

Format_Name: TIFF

File-Decompression_Technique: no compression applied

Transfer_Size: 1.85

Digital_Transfer_Option:

Online_Option:

Computer_Contact_Information:

Network_Address:

Network_Resource_Name: <<http://pubs.usgs.gov/ds/675>>

Offline_Option:

Offline_Media: CD-ROM

Recording_Format: CDR/DVD

Fees: none

Custom_Order_Process: none

Technical_Prerequisites: This GeoTIFF was created for use with ESRI ArcGIS software.

Available_Time_Period:

Time_Period_Information:

Single_Date/Time:

Calendar_Date: 2011

Time_of_Day: unknown

Distribution_Information:

Resource_Description:

Downloadable Data File Name = rm08_09_50gv2_raster2points.shp

Standard_Order_Process:

Digital_Form:

Digital_Transfer_Information:

Format_Name: SHP

File-Decompression_Technique: no compression applied

Transfer_Size: 10.2

Digital_Transfer_Option:

Online_Option:

Computer_Contact_Information:

Network_Address:

Network_Resource_Name: <<http://pubs.usgs.gov/ds/675>>

Offline_Option:

Offline_Media: CD-ROM

Recording_Format: CDR/DVD

Fees: none

Custom_Order_Process: none

Technical_Prerequisites: This shapefile was created for use with ESRI ArcGIS software.

Distribution_Liability:

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Distributor:

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Available_Time_Period:

Time_Period_Information:

Single_Date/Time:

Calendar_Date: 2011

Time_of_Day: unknown

Distribution_Information:

Resource_Description:

Downloadable Data File Name = rm08_09_50gv2_raster2ascii.txt

Standard_Order_Process:

Digital_Form:

Digital_Transfer_Information:

Format_Name: TXT

File-Decompression_Technique: no compression applied

Transfer_Size: 1.92

Digital_Transfer_Option:

Online_Option:

Computer_Contact_Information:

Network_Address:

Network_Resource_Name: <<http://pubs.usgs.gov/ds/675>>

Offline_Option:

Offline_Media: CD-ROM

Recording_Format: CDR/DVD

Fees: none

Custom_Order_Process: none

Available_Time_Period:

Time_Period_Information:

Single_Date/Time:

Calendar_Date: 2011

Time_of_Day: unknown

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