

Deepwater Horizon/Mississippi Canyon 252 Oil Spill

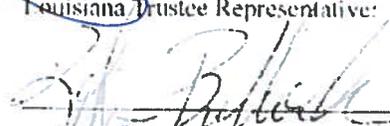
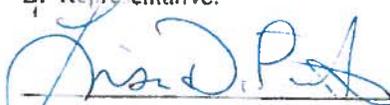
All materials associated with the collection of data under this Work Plan must be retained unless and until approval is given, by the appropriate authority(ies), for their disposal in accordance with the retention requirements set forth in paragraph 14 of Pretrial Order # 1 ("Preservation of Evidence", issued August 10, 2010) and any other applicable Court Orders governing tangible items that have been or may be issued in MDL No. 2179 IN RE: Oil Spill by the Oil Rig "DEEPWATER HORIZON" (E.D. LA 2010) (the "Litigation"). If the materials are reasonably calculated to lead to admissible evidence in the Litigation, the Party seeking disposal must notify the Plaintiffs Steering Committee and the U.S. Department of Justice of its intention to dispose of such material. Approval to dispose of materials associated with this Work Plan must be given in writing and by a person authorized to direct such action on behalf of the state or federal agency whose employees or contractors are in possession or control of such materials or by BP whose employees or contractors are in possession or control of such materials.

Prior to any materials being disposed of under this Work Plan, the Party seeking disposal must notify the other signatories to this Work Plan of its intention to dispose of certain materials, and allow the non-disposing Parties the right to object to such disposal. The Trustee signatories to this Work Plan are responsible for notifying non-signatory Trustees of any request for disposal of materials associated with this Work Plan. The non-disposing Parties shall have seven (7) work days to object to the disposal, and such objection shall be in writing.

This Work Plan will be implemented consistent with any applicable federal, state and local statutes and regulations. All applicable state and federal permits must be obtained prior to conducting work.

Approval of this Work Plan is for the purposes of obtaining data for the Natural Resource Damage Assessment (NRDA). Parties each reserve its right to produce its own independent interpretation and analysis of any data collected pursuant to this Work Plan.

APPROVED:

	<i>FOR KOLAND GUYDREY</i>	<u>12/3/11</u>
Louisiana Trustee Representative:		Date
		<u>1/18/2011</u>
BP Representative:		Date
		<u>11/21/2011</u>
NOAA Trustee Representative		Date

(on behalf of all other Trustees)

Mississippi Canyon 252 Oil Spill
First Work Plan for the Collection of Data Related to
Beach Usage Along the Coast of the Gulf of Mexico

November 14, 2011

Objective/Purpose

Since the *Deepwater Horizon* / Mississippi Canyon 252 Oil Spill, the Trustees and BP (the “Parties”) have separately undertaken in efforts to measure the Oil Spill’s impacts on human uses of natural resources, including recreation and tourism in the Gulf of Mexico. These separate efforts have included regular overflights of the Gulf Coast to assist in measuring impacts to recreation and tourism. Those efforts include taking aerial images of the shoreline, conducting ground counts along specific segments of the shoreline to collect data regarding the number and type of users along the coast, and conducting intercept surveys of people on the beach.

In order to share data and avoid unnecessary duplication of efforts, the Parties hereby enter into this Work Plan, which addresses aerial images of the Gulf shoreline and the process to convert those aerial images into usable data to estimate shoreline usage. The Parties may enter into additional agreements addressing other aspects of work related to impacts on human uses of natural resources.

Aerial Imagery

To date, the Parties have separately conducted overflights to acquire aerial imagery of the Gulf Coast shoreline. Under this Work Plan, the Trustees will continue conducting overflights and taking aerial images using the Trustees’ existing protocol, attached as Exhibit A, through December 31, 2011. Upon execution of this Work Plan, the Trustees will amend their existing protocol to add BP’s flight paths for the Florida Keys. In addition, BP will continue overflights and acquiring aerial imagery over the coasts of Western Louisiana and Texas under a modified version of BP’s existing protocol, attached as Exhibit B, through December 31, 2011. The Parties may extend this time period by mutual agreement, in writing, between the signatories of this Work Plan. Any agreement to extend will be attached to and incorporated as an amendment to this Work Plan.

Within forty-five (45) days of execution of this Work Plan, the Parties will exchange all aerial images and corresponding waypoints files (“digital images”) acquired under their respective overflight protocols prior to the date of execution of this Work Plan. Thereafter, the Parties shall

share digital images acquired under this Work Plan as the digital images become available, but no later than fifteen (15) days after the digital images are received by the respective parties. The digital images may be provided on an external hard drive or compact discs, or may be posted to a designated FTP site. Regardless of the method of transfer, the digital images will be provided in native form, with all metadata intact, and with appropriate chain of custody documentation.

Processing of Aerial Images

a. Aerial Images Taken Before Execution of Work Plan

The Trustees have developed and implemented protocols for processing aerial images acquired during overflights along the Gulf Coast in order to count the number of beach users at a sample of specified segments of Gulf shoreline. "Processing" entails marking the aerial images with the predetermined segments, digitally marking the aerial images to identify people along the beach and surrounding area, and converting the markings into usable data. To date, the Trustees have processed a significant number of aerial images. BP has also developed and implemented protocols for processing aerial images taken during overflights in order to count the number of users along the coast at specified locations. BP has processed some of those aerial images. BP's protocols for processing these images are attached as Exhibit C. The Trustees will continue to process their aerial images taken prior to the date of execution of this Work Plan using their existing protocols attached as Exhibit D.

Within sixty (60) days of execution of this Work Plan, the Parties shall share with each other their electronic files depicting the processed photos with all markings intact, along with the data for all images that have been processed prior to the date of execution of this Work Plan.

b. Aerial Images Taken Pursuant to Work Plan

Upon execution of this Work Plan, the Parties shall share the electronic files and data for processed images no less often than once every thirty (30) days until all of the aerial images taken through December 31, 2011 by each Party have been processed. The Trustees will continue to process the aerial images for their flight paths (excluding the Florida Keys). BP will not be required to also process those aerial images as long as BP and the Trustees are working cooperatively on aerial imagery. BP will continue to process the aerial images for the Texas coast, the Florida Keys and any other coastal areas not included in the Trustees' flight paths. The Trustees will not be required to also process those aerial images as long as the Parties are working cooperatively on aerial imagery. The processed aerial images and data may be provided on an external hard drive or compact discs, or may be posted to a designated FTP site. Regardless of the method of transfer, the aerial images and data will be provided in native form, with all metadata intact, and with appropriate chain of custody documentation.

BP will process 4500 aerial images monthly from Texas, the Florida Keys and other coastal areas not included in the Trustees' current flight plans. BP will coordinate with the Trustees about the temporal distribution of aerial images that will be processed from these areas.

Existing Protocols

The Parties have reviewed the protocols attached to this Work Plan (“existing protocols”) and believe that they represent a valid method of collecting and processing data related to human use along the Gulf of Mexico shoreline. Neither the Trustees nor BP shall challenge the validity of any existing protocol or modified protocol (see “Modification of Existing Protocols”, below) attached to this Work Plan in this Litigation or any judicial or administrative proceeding, under either state or federal law, against each other seeking damages for injury to, destruction of, loss of, or loss of use of natural resources arising from the Deepwater Horizon/Mississippi Canyon 252 Oil Spill.

Modification of Existing Protocols

The Parties recognize that the existing protocols attached to this Work Plan may need to be modified to address unanticipated problems or to improve the acquisition and/or processing of aerial imagery (“modified protocol”). Any Party may seek to modify a protocol after the effective date of this Work Plan by providing the other Parties with proposed changes to the protocol(s). Parties will have ten (10) days from receipt of the proposed modification to review and to accept or to propose additional revisions. Failure to respond within the ten (10) day review period will constitute acceptance of the modification. If the Parties agree to a modification or if the Party(ies) fails to respond within the ten (10) day review period, the modified protocol will be attached to and incorporated as an amendment to this Work Plan.

Treatment of Data

The Parties recognize the desirability of a common data set in which the Parties agree to the accuracy and reliability of that data set. The Parties will consider ways to reach such consensus for the data covered by this Work Plan. Each Party reserves its right to produce its own independent interpretation and analysis and to develop separate and independent findings and conclusions of any data collected or generated pursuant to this Work Plan. Each Party reserves its right to disagree with another Party’s interpretation of and/or conclusions to be drawn from any data collected or generated as the result of any activity performed under this Work Plan.

Costs and Budgeting

BP agrees that the Trustees’ expenses incurred in collecting, producing and processing aerial images are reasonable natural resource damage assessment costs. BP agrees to reimburse the Trustees for these reasonable expenses incurred in collecting, producing, and processing the already existing aerial imagery and data described above. Any Trustee seeking reimbursement of its costs will provide an accounting of the accumulated costs and payment information within sixty (60) days of the execution of this Work Plan to:

Lisa Hawke
BP America Inc.
501 Westlake Park Blvd.
WL1, Mailstop 22A
Houston, TX 77079

BP agrees to review the accounting within forty-five (45) days of receipt and to raise any issues related to the accounting during this time period. At the end of this time period, BP will reimburse all undisputed amounts to the Trustee. If any amount is disputed, BP and the Trustee will continue to work to resolve those issues.

BP also agrees to fund all ongoing activities described above from the date of execution of this Work Plan through Trustees' completion of the processing of the aerial images taken through December 31, 2011 and the transfer of resulting data, unless the Parties mutually agree to a later date and execute an amended Work Plan which includes an updated budget. Exhibit E contains a budget estimating the funding necessary to continue implementation of the Trustees' data collection and processing of aerial imagery described above, such as costs for personnel (including rates and hours), equipment, travel, administration, and similar costs for each element described above. BP will provide funding for the budget estimates to each Trustee within fifteen (15) days of the execution of this Work Plan. The Parties acknowledge that such budgets are only an estimate and that actual costs may prove to be higher or lower. The Trustees will notify BP as soon as possible once they become aware of any increased costs.

Exhibit A. Trustees' protocols for overflights and aerial imagery

Protocols for Conducting Gulf Coast Overflights

Overview

Overflights are being conducted for the purpose of taking high-definition photographs that record recreational use levels in coastal areas potentially impacted by the Deepwater Horizon oil spill. This memorandum describes the relevant protocols, including the coverage area where overflights are conducted; the sampling plan that determines the times and starting points for overflights; the protocols for taking high-definition photographs of shoreline areas; and the approach to storage and transmission of data files containing the photographs. The types of activities visible on aerial photographs and the geographic coverage of overflights is not intended to encompass the full extent of potential impacts.

Coverage area

There are three regions where overflights have been or are currently being conducted. The “north coast” overflight path includes the coastline from Lakeshore, Mississippi (west of Pass Christian) to Apalachicola, Florida. The “peninsula” overflight path includes the coastline from Hernando Beach, Florida to Marco Island, Florida. The “Florida Keys” overflight path included the islands from Plantation Key to Key West. The overflight paths include the majority of sandy beach shoreline along these coastal areas where significant recreational use occurs. The north coast overflight path includes beach areas on the mainland and on both the inland sides and ocean sides of most barrier islands. The north gulf overflight path does not include the shoreline along inland bays. The Florida peninsula overflight path includes sandy beach areas along the mainland shoreline and does not include shoreline along inland bays. The Florida Keys overflight path included shoreline areas along the Gulf side and Atlantic Ocean side of the Keys. The Florida Keys overflight was discontinued during the week of July 25, 2010. The coverage area for all three overflight regions are shown in Figure 1, Figure 2, Figure 3, and Figure 4, respectively.



Figure 1 Flight Path - North Gulf - West Region



Figure 2 Flight Path - North Gulf - East Region



Figure 3 Flight Path - Florida Peninsula

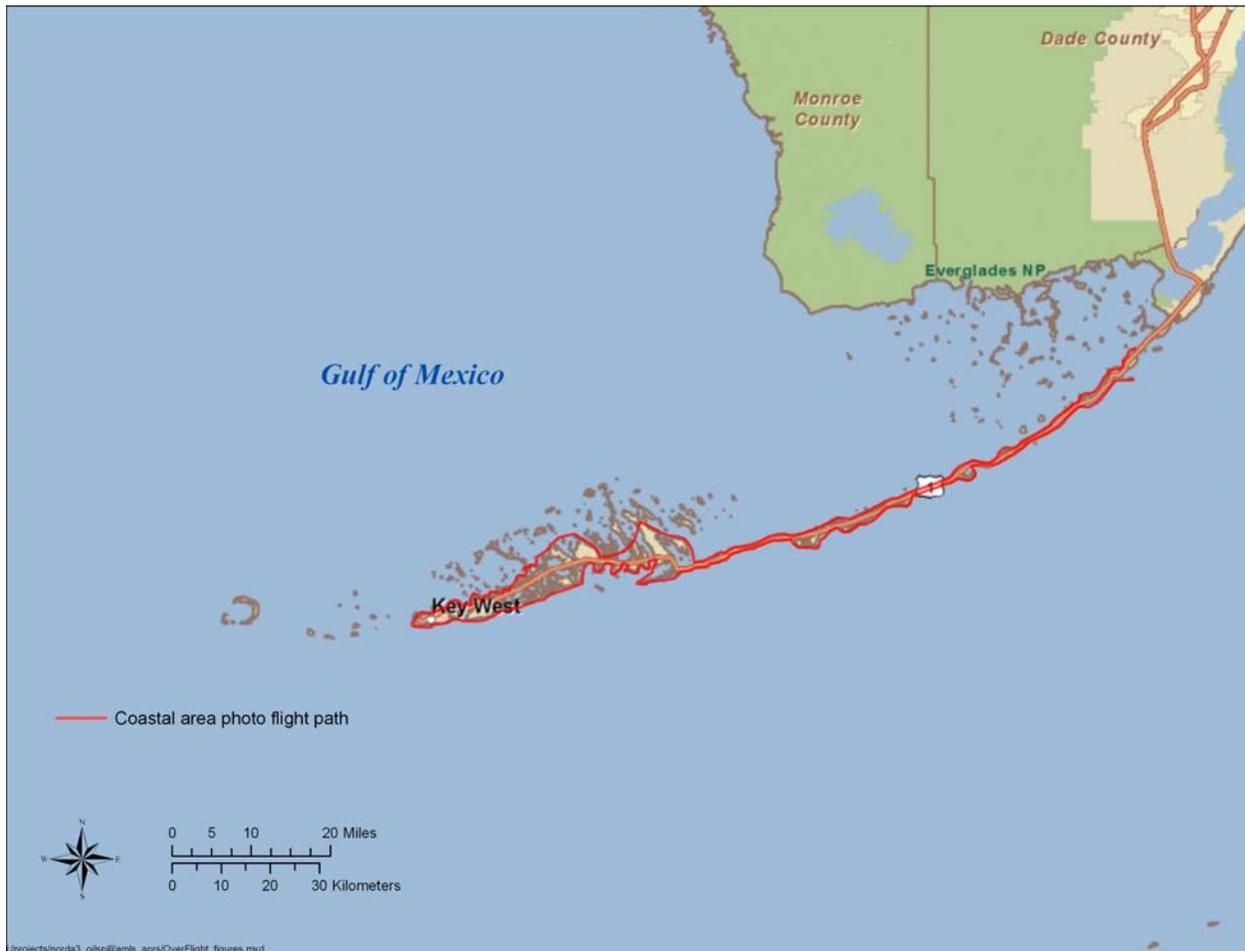


Figure 4 Flight Path - Florida Keys

Sampling plan

Overflights are conducted according to a sampling plan that allows sampling of areas in the flight path at a random selection of times throughout the week. Specifically, the sampling plan includes a random selection of days during the week when overflights are conducted, a random selection of starting times determining when the overflights begin on a given day, and a random selection of starting points determining the location where overflights begin on a given day.

Overflights on the north coast are conducted four times a week, including two weekday overflights and two weekend-day overflights. The two weekdays and two weekend days when

overflights are conducted in any given week are selected randomly. For the purposes of the sampling plan, Monday through Thursday are designated as weekdays and Friday through Sunday are designated as weekend days. On any given day when an overflight is conducted, the flight begins at a randomly selected time between 10 am and 2 pm during the summer months and between 10 am and 11 am during winter months. Summer months are defined as those months coinciding with daylight savings time, while winter months coincide with standard time. Because the north coast overflight takes about five to six hours to complete, the range of starting times ensure that overflights provide temporal coverage between 10 am and 8 pm during summer months and between 10 am and 5 pm during winter months. A limited number of flights will also be conducted using starting times between 6 am and 10 am to estimate the amount of shoreline use that is not captured during the 10 am to 5 pm or 8 pm period. There are two starting points for the north coast overflights, one on the west end of the flight path in Lakeshore Mississippi, and the other on the east end of the flight path in Apalachicola, Florida. The starting point for each flight is randomly selected. When the flight begins at the west starting point, the overflight follows a specified path from Lakeshore Mississippi to Apalachicola Florida covering the shoreline areas shown in Figure 1. When the east starting point is selected, the flight path covers the same areas proceeding from Apalachicola, Florida to Lakeshore, Mississippi.

Overflights on the Florida peninsula were conducted twice a week between June 16, 2010 and August 2, 2010, once on a weekday and once on a weekend day. Starting the week of August 2, peninsula overflights have been conducted four times a week, including two weekday overflights and two weekend-day overflights. There are two starting points for the peninsula flights, one in the north at Hernando Beach and one in the south at San Marco Island. The overflights on the Florida Peninsula take approximately two and a half hours to complete. Random start times are selected between 10 am and 5 pm during summer months and between 10 am and 3:15 pm during winter months. This ensures temporal coverage from approximately 10 am to 8 pm during summer months and 10 am to 5 pm during winter months. As in the North Coast overflight plan, Monday through Thursday are designated as weekdays and Friday through Sunday are designated as weekend days, and the days of the week, starting times, and starting points for the overflights are randomly selected. When the flight begins at the north starting point, the flight covers the shoreline areas shown in Figure 2 proceeding from Hernando Beach to San Marco Island. When the south starting point is selected, the flight covers the same areas proceeding from San Marco Island to Hernando Beach.

Overflights in the Florida Keys were conducted twice a week between June 16 and July 24th, once on a weekday and once on a weekend day. Overflights were discontinued in the Florida Keys starting the week of July 25, 2010. The first starting point for the Florida Keys overflights was just north of Tavernier, Florida on Plantation Key. The second starting point was Key West. When flights started in Tavernier they continued out to Key West on the Gulf side of the Keys and then returned to Tavernier on the Atlantic Ocean side of the Keys. When flights started in Key West, they proceeded to Tavernier on the Atlantic Ocean side of the Keys and then returned

to Key West on the Gulf side of the Keys. All other elements of the sampling plan for the Florida Keys were identical to the sampling plan for the Florida Peninsula, including the designation of weekdays and weekend days, the range of starting times, the length of the flight, and the randomization across days of the week, starting times, and starting points.

The sampling plans for the three regions (north coast, Florida peninsula, and Florida Keys) were developed to ensure a balanced selection of days of the week, starting times, and starting locations. Specifically, any possible combination of type of day (weekday or weekend day) starting time, and starting location occurs once and only once in the sampling plan until all possible combinations have been exhausted. Once each combination has occurred once, each possible combination is included in the sampling again in a random fashion, until all possible combinations have occurred exactly twice, and so on.

Weather conditions may prevent flights from occurring as scheduled in the sampling plan. Prior to a scheduled flight, the pilot conducting the flight monitors weather conditions. If weather conditions are unlikely to permit a flight to begin at the designated start time, the pilot is given discretion to begin the flight up to one hour earlier or one hour later than scheduled. If an adjustment of the starting time by more than one hour is required, the pilot contacts a member of the Stratus Consulting staff to discuss whether a later flight or alternative starting point may be possible, or whether to cancel the flight. Generally, flights that cannot begin at the designated starting point within one hour of the designated starting time will be canceled. If a pilot encounters weather conditions during the course of a flight that do not permit the pilot to adhere to the prescribed route, the pilot is given discretion to bypass the portion of the route that is affected by adverse weather conditions. If changing weather conditions permit, the pilot will return to the area that was bypassed within one hour of the initial rerouting to take pictures of the shoreline that was missed. The time and location of all photographs taken are recorded and are included in the data provided to Stratus Consulting.

Protocols for shoreline photography

Photographs of the shoreline are taken at a resolution of 5616 pixels wide by 3744 pixels high and are captured in JPEG files of 21.1 megapixels. The photographs are taken from an altitude of approximately 600 feet above ground and approximately 750 feet offshore. The flight speed is approximately 120 miles per hour and photographs are taken at a rate of approximately three per second. This ensures that photographs are taken with sufficient frequency that the area of shoreline included in any photograph overlaps with the area of shoreline included in adjacent photographs. Photographs include the full extent of sandy beach up to an adjacent road, buildings, or other boundary, and include areas adjacent to the sandy beach where recreation may occur, such as boardwalks, picnic areas, or other outdoor recreational facilities. The photographs also include any portions of the water along the sandy beach where people are likely to be engaged in activities such as swimming or kayaking, up to approximately 100 yards offshore.

The camera used to take the photographs is connected to a GPS unit that records the location of the aircraft at the instant when each photograph is taken.

Handling and storage of data files

The JPEG images and GPS locations are recorded to a large capacity memory card during the overflight. The unopened files are downloaded from the memory card to a computer hard drive for archiving at the offices of Avant Media Services. The unopened JPEG files are also copied to a portable hard drive for transmission to Stratus Consulting. The portable hard drive is delivered to Stratus Consulting via UPS following chain of custody procedures. Specific chain-of-custody procedures include maintaining the memory card and hard drive in a locked office or in the personal custody of the pilot at all times prior to delivery to Stratus Consulting; describing on a chain of custody form the contents of the hard drive, including the time and location of overflight pictures and the data file that includes associated GPS coordinates; and enclosing the chain-of-custody form with the hard drive in a sealed box for shipment via UPS.

The portable hard drive(s) are delivered to Stratus Consulting via UPS with the enclosed COC form. An employee of Stratus Consulting receives the hard drives and signs the COC form as recipient of the data. Unopened JPEG Files are then copied from the delivered hard drives to Stratus Consulting's project archive drive and the signed COC form are filed. Copies of the unopened JPEG files are then made for use as working files to be opened for review and analysis. Hard drives are returned to Avant Media for reuse.

Verification of data

Before data are used for analysis, they are reviewed for quality assurance and quality control. For each flight, the data received are checked against the sampling plan schedule, which includes start locations and times. If necessary, the data can also be checked against flight summaries provided by Avant Media Services, which include information about partial or complete cancellations due to weather, maintenance, darkness, or other issue. For each flight, the data file that includes GPS coordinates for each picture is checked against the designated flight path. The associated photos are then checked against the GPS file to ensure the complete set of photos has been received.

Exhibit B. BP's modified protocol for overflights and aerial imagery

Exhibit B: BP's modified protocol for overflights and aerial imagery

Methods

The methods for the aerial photography coordinated by the BP will follow those currently being implemented, as summarized below. Avant Media Group will perform the aerial photography using aircraft provided by BP or its contractors. The flights will typically be at approximately 500 feet altitude above ground level and at an airspeed of approximately 120 knots. All flights will adhere to BP safety requirements for the MC-252 incident. The shoreline/ water interface will be centered horizontally in the photo, and the zoom will be adjusted to be as close in as practical while capturing the entire shoreline/ beach, area above the beach (generally to at least the first road if applicable), and the water. A photograph will be taken approximately every three seconds, depending on airspeed, with the goal of achieving an approximate 25% overlap in the photos. The photos will be geotagged in-flight using the same or similar equipment to what has been used to date.

Avant Media Group will download and maintain a backup of the photos and track logs. Avant Media Group will provide Cardno ENTRIX external hard drives containing the geotagged photos and flight track logs. Avant Media Group will follow the currently established chain-of-custody process. Cardno ENTRIX will check that data for the scheduled flights is contained on the hard drives. If there is an omission or error, Cardno ENTRIX will work with Avant Media Group to obtain the correct data.

Schedule

All photographs will be taken by Avant Media Group. Photos will be taken in two zones: Louisiana (from Grand Isle to the Sabine River) and Texas (from the Sabine River to the Mexico border). The geographic extent of photography within these zones will be the same extent that has been photographed under Cardno ENTRIX protocols for the MC-252 incident to date.

Cardno ENTRIX will provide a schedule to BP air operations. Avant Media Group will be notified of the planned flights once the schedule has been approved by BP.

The Louisiana and Texas flights will continue in the currently scheduled frequencies. These flights occur on weekends. One weekend, the Louisiana shoreline will be photographed from Grand Isle to the Sabine River. On the next weekend, a multi-day flight will occur from Grand Isle to the Mexico border. When Louisiana is photographed, the weekend day chosen will line up with the scheduled Saturday or Sunday flight in the Northern Gulf (which will be selected based on Trustee sampling design). If both Saturday and Sunday would be flown in the Northern Gulf, then one day would be chosen at random for the Louisiana flight. The Louisiana and Texas flight-path, which takes three days, will be paired in a

similar fashion, with the second flight-day lining up with the Northern Gulf flight-day. On holiday weekends, the entire Louisiana to Texas flight path will be photographed.

If a Saturday flight is cancelled because of poor weather, Avant Media Group will work with BP air operations to reschedule the flight for Sunday. Similarly, if there is a high probability that the Sunday flight would be cancelled due to weather but the flight would be able to occur on Saturday, then Avant Media Group may work with BP air operations to reschedule the flight. For any non-weather types of changes to the schedule, Avant Media Group would make a request with Cardno ENTRIX, who would reschedule via BP air operations.

The starting times of the flights will be similar to those currently being implemented for these zones. Avant Media Group will, subject to logistics constraints, vary the start times in coordination with BP air operations.

Exhibit C. BP's protocols for aerial imagery processing

BP DEEPWATER HORIZON OIL SPILL
BP MC 252 NATURAL RESOURCE DAMAGE ASSESSMENT

Exhibit C: BP's Human Use Aerial Count Processing Protocol

NOVEMBER 16, 2011

PREPARED BY



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Chapter 1

Overview

1.1 Introduction and Purpose

This Protocol gives direction to count team members, count team leaders, and data managers working on the counts of aerial photographs in the Human Use Study. Part of the data collection for the human use assessment is aerial photography. The objective of the photography is to capture information on people recreating along the shorelines of the Gulf of Mexico. The purpose of the aerial photo processing is to convert these photos into usable data of recreation counts.

1.2 Confidentiality

All employees who bill time or work in a support function on the spill are expected to follow the policies and procedures in the BP MC-252 Project Guidelines. These guidelines are updated periodically to reflect current policies and the most recent version can be found here. These guidelines are available via the e-net. Under Important Links, click on the project link “MC252 Project” then select Policies & Procedures to find the active link to the MC-252 Project Guidelines.

If you have any questions about any information in the Project Guidelines, please contact McLane Evans.

McLane E. Evans, P.M.P.

Senior Project Scientist

Cardno ENTRIX

3905 Crescent Park Drive, Riverview, FL 33578

Phone: 813 664 4500

Direct: 813 367 0987

Mobile: 813 625 2204

1.3 Responsibilities, Coordination, and Communication

The Over flight coordinator (OFC) is, Blake Avant (Avant Media Group). The OFC is responsible for staffing the flights, supplying the proper equipment (e.g. gps, camera), and the transfer of the data collected to Cardno ENTRIX. Avant Media Group has series of checklists that are followed for each photo flight. These checklists include aircraft inspections, safety equipment, weather conditions, and condition of photographic equipment. If any items do not meet the minimum requirements the flight does not depart until all items have been corrected. All aircraft maintenance inspections and repairs are carried out by a Certified FAA Licensed Airframe and Powerplant mechanic. The flight teams are required to call Blake daily to inform him of their whereabouts and assure that everyone is safe.

The HU Aerial Count Team Managers provide training, conduct calibration meetings, and provide general oversight and manage of the Count Teams. The Count Team Members are responsible for processing the aerial photographs described in Section 2.

Chapter 2

Aerial Photo Counts

2.1 List to Count by User

Each counter uses an individual Excel file of segments assigned to them which can be found at S:\List to Count by User. Within this folder are several dated folders which contain lists generated on the date shown in the folder name. Current lists will be in the most recently dated folder, with actual Excel files named as “List to Count_(YEAR)_(DATE ISSUED)_(INITIALS OF COUNTER).” List files contain all information needed to identify the assigned segment for counting, including: Waypoint, Zone, Field Office and Date (the photos were taken).

- The waypoint indicates the segment number and indicates the lower of the two boundaries of the assigned segment.
- The zones denote one of the three helicopter zones that the Gulf was divided into and include: N (North Gulf), WFL (West Coast of Florida), and TXLA (Texas and Louisiana Coasts).
- The helicopter zones are further divided into 20 field divisions based on the field offices within the zones that were tasked with ground count operations and correspond to the KMZ file that is to be loaded for the count.
- Date information indicates the corresponding GPX file that is to be loaded for the count.

All highlighted columns are to be filled in by the counter after a count is completed. Once the segment to be counted is identified, the counter will need to use Google Earth™ as well as the corresponding photos for that segment.

Google Earth™ may be opened by double clicking on the icon located on the desktop. If the icon is not available, Google Earth™ can be run off the designated local drive by going to the following location: \\Google Earth\client and double clicking on the “Google Earth™” icon (the file type is application)

The corresponding photos can be found on the designated local drive. This drive shows the many hard drives (HD) containing the photos.

2.2 Finding Waypoint in Google Earth™

2.2.1 Importing KMZ Files and Photo GPX Files into Google Earth™

1. To import the appropriate KMZ file, identify the Field Office that corresponds to your assigned waypoint and locate the KMZ file on your designated local drive. Once the assigned KMZ file has been identified, it can be imported by dragging the file over to Google Earth™.

Next, you will want to import the appropriate GPX file into Google Earth™.

Beginning in Google Earth™, navigate through the task bar: “Tools, GPS.” Click on “Import from File and make sure all boxes are checked under “Import” and “Output.” Clicking “Import”

on the bottom right corner of this box will bring up another window with the GPX files. Double click on the assigned file to import it to Google Earth™.

- a. After this initial step, all following GPX files can be imported either by locating the GPX file on your designated local drive and dragging the file over to Google Earth™ or navigating through the Google Earth™ task bar. Be sure to include “All Files (*.*)” on the dropdown box in the lower right corner. **Note, once Google Earth has been closed, you must return to step 1 for the first import of a KMZ file.**
- b. At this point in both methods, there will be a prompt for this GPS data import.
- c. Check all three boxes before proceeding: Create KML Tracks, Create KML LineStrings, and Adjust altitudes to ground height.

2.2.2 Flight Path Direction

The imported GPX file in Google Earth™ conveys the route and direction of the flight path, typically parallel to the shoreline, of the helicopter. It also displays a sequence of aerial photographs during that flight path for a given day that will be either ascending or descending in number depending on the direction the helicopter was flying. The photos taken from a counterclockwise, northerly, or eastbound flight path will be descending while a clockwise, southerly, or westbound path will be ascending. Regardless, the photos should always be sequenced in the template in a clockwise fashion, left to right. Therefore, a segment’s first or starting photograph may have a larger file number and taken at a slightly later time than the ending photograph. Similarly, the larger waypoint segment number may also be the starting boundary and the smaller waypoint number may be the ending boundary. To help aid in this visualization of the segment, always orient the compass in Google Earth™ so that the Gulf occupies the bottom half of the 3D Visualizer and the beach occupies the top half.

2.2.3 Dual Flight Paths

In some cases there will be two flight paths along the shoreline, both corresponding to the same date. In the most common case in which both flight paths fully cover the segment with corresponding sets of photos, two separate counts must be completed as long as the time stamp in the first photo for each flight path shows they were taken more than an hour apart from each other. In the case where they are within an hour, the best photo quality flight path should be used and one count completed for the segment. If the two photo sets are taken more than an hour apart, complete two separate segments and mark the coverage code accordingly. Often times in the case of dual flight paths, the helicopter may retrace a certain area again that was not adequately photographed during the first flight or there may be an additional flyby later on in the day.

1. These distinctions can be determined by finding the time that the first JPG image in the segment for each flight path was taken.
2. By right clicking the JPG image and selecting “Properties,” the photo time can be found next to: “Date taken” under the Details tab. It appears as: “Date taken 8/29/2010 9:38 AM,” for example.
3. Note that the time created, modified, and accessed also shows within the properties for a photo under the General tab and can be misleading. The information necessary to determine this appears under the Details tab.

2.2.4 Segments with No Photos

Occasionally, there will be segments assigned to the counter from the List to Count that do not have corresponding JPG images. In these cases, the segments cannot be completed. If applicable, mark the segment with a “1” under “Missing Photos” on the appropriate List to Count and mark “0” in the remaining highlighted columns.

- **Missing Photos:** There are additional situations where a segment will be marked, “Missing Photos” even if there are JPG images shown on the flight path. If the photos do not match up with the segment and a 5-10 minute search for the correct photos does not yield results, count this segment as “No Photos.”
 - The Off Photo Log is often helpful in these situations. This file can be found on the designated local drive at: “:\User Count Files\EXAMPLES.”
 - In the same folder the Word document [in OR this file is titled: “HD4_Clearwater Photo Primer Apr21”, in DE this file is titled: “Primer for July 4 2010 WFL” contains off photo information for the specific dates of July 3rd, 4th, and 5th 2010 in WFL.
 - In the case that a segment is on the opposite side of a landform (e.g. an island), count this segment if the entire segment is covered and there is no space between photos. It is important to shade out the land in the foreground to clearly identify which part of the landform is being counted. In this case, attention should be placed on aligning the top of the photos rather than where the water is below the shoreline due to the need to match photos for the counting process.
 - Similarly, if the segment is located on a landform separate from and visible behind another landform (e.g. a barrier island in front of the mainland), count it if the entire segment is covered and there is no space between photos. The whole landform in the foreground will then be shaded out to identify the correct shoreline being counted.

2.2.5 Missing Waypoints

In the case of missing waypoints and if applicable, mark the segment with a “1” under “Missing Waypoint” on the appropriate List to Count and mark “0” in the remaining highlighted columns.

A segment will be counted as such in several cases:

- If the field office is “East Coast of FL,” count it as “Missing Segment.” This area is not covered by the helicopter flight paths and thus does not have sufficient data to complete the segments.
- If there is a landform (such as a narrow island or a sand spit), which contains one waypoint and the other waypoint is found on the primary shoreline, mark this as “Missing Segment.”
- In some cases, there may only be one waypoint. The next waypoint may be absent or may be in a completely different area. In either case, this segment will be marked as “Missing Segment.”
- If the distance between the two waypoints is significantly less than or greater than .5 miles (about .1 mile of difference), mark this segment as “Missing Segment.” This situation often occurs in the Florida Keys along bridges that connect the small islands.
- If the next waypoint is absent or greater than .5 miles distance, but the assigned waypoint is .5 miles away from a different waypoint, this segment (between the assigned waypoint and following waypoint) must be counted if it is clear that no other segment will cover that portion of

shoreline. (Use the "Notes" sheet in the Human Use Aerial Photo Count Template to track this exception).

- There are cases where the shoreline has changed since the waypoints were assigned. This makes it difficult to accurately mark the boundary lines. Generally, if the waypoints don't clearly mark the segment boundaries, do not guess and mark it as "Missing Segment."

2.3 Matching Segment Photos

2.3.1 Adjusting Google Earth™ Imagery Dates

In certain situations the flight path may appear to be imported into Google Earth™, however, instead of displaying the photo information, only the tracks portion of the .GPX file will be visible. In this instance, the metadata to the .GPX file is likely corrupt.

- In order to determine whether this is the case, right click on the .GPX file in the Places panel to the left of the 3D Viewer, select Properties from the drop down menu, and in the box that opens select the View tab.
- This tab displays the metadata for the .GPX file, and gives the user a format to edit the data as well. In this tab the metadata information for the start and end dates /times of the flight path is displayed next to the lines reading 'Start:' and 'End:' and should be the focus for adjusting the .GPX files so it can be properly displayed.
- By looking at the currently displayed information, it will be apparent whether the start or end date is corrupt, and adjust only the corrupt metadata. In order to display the flight path correctly, the arrows to the right of the displayed start and end time can be used to increase or decrease the date until the flight path is displayed correctly.
- Notes: This metadata will only be changed in the display of the flight path for this specific import; this does not actually edit the .GPX file. The metadata does not need to be accurate to properly display the files, and this does not affect the accuracy of the counting as the date and time for the photos in aerial counting are taken from the photos themselves, and not the displayed waypoints.

2.3.2 Off Photo Log

When using the imported .GPX files in Google Earth™ to determine the photos appropriately assigned to the segments, the photos may not be in the locations as they are displayed in the flight path. When this is the case, consult the Off Photo Log found in the local drive, (:\ User Count Files \EXAMPLES), and then open the Excel™ document Off Photo Log.

- In this Excel™ document, click on the tab of the zone for the flight path in question, and then scroll to the date of the flight path, and the Field Office assigned.
- The Field Offices will often have several segment numbers displayed. Find the one that is closest to the assigned segment, and use the suggested difference to narrow the search for the appropriate photos for the assigned segment.
- If there is limited information for the assigned segment it is appropriate, after finding the correct photos, to add that information to the Off Photo Log to create a stronger help document for the project.

2.3.3 Finding Segment Photos in Photo Files

After importing the Photo GPX Files into Google Earth™, this information is used to determine the appropriate photos for the assigned segment.

1. Scroll through the Places panel for the appropriate Field Office, click the “plus” drop-down symbol and locate and double click the assigned segment. This will allow the 3D Viewer to zoom in from the current expanded view to one centered on the selected segment point.
2. After determining the correct segment, use the flight path to determine the correct photos for the assigned segment. If there is no flight path near the assigned segment on the assigned date, aerial photos for the segment do not exist (i.e. No Photos), and appropriately update the List to Count.
3. After making the determination that the assigned segment and date do have photos, open the designated local drive and find the correct assigned date folder. Then using the “Date”, “Zone”, and “Field Office” information from the List to Count file, find the correct folder, which contains the photos from the flight path appropriate to the assigned segment.
4. Scroll through the photos to the one that is shown in the flight path on Google Earth™ that is closest to the assigned segment and open it. Find natural or man-made landmarks viewable from the Google Earth™ 3D Viewer that corresponds with the beginning of the segment. These may include buildings, roads, piers, rock formations, vegetation, rivers etc. Using this information, import the photo into the Excel™ document “Human Use Aerial Photo Count Template” and draw a red boundary line indicating the beginning of the segment.
5. Continue to add the segment photos to the document until the corresponding ending landmark for the segment is found, and draw another red boundary line to indicate the end of the segment. If certain landmarks exist in either the 3D Viewer or the photo, but not in both, compare the relative dates of the aerial photos and the Google Earth™ imagery. It is common in this region that buildings and piers may be built or destroyed, and thus can make identifying the beginning or end of the assigned segment difficult. In this case there may be other photo dates that can help identify the correct segment (See: Using Photos from Other Segments Dates to Find Segment Landmarks).
6. If the segment does not appear to have identifying landmarks in the Google Earth™ file, find a nearby segment which has visible landmarks and use this information to calibrate the search for the correct photo.
7. Note: If the associated landmarks are not visible and the assigned segment appears to be of a different segment entirely, reference the Off Photo Log to calibrate the search for the appropriate aerial photos.
8. Some assigned segments do not contain any land..These segments cannot be calibrated to find the correct photos, and should be marked in the List to Count as “No Photos”.

2.4 Opening Segment Templates

Once photographs are located for the current segment, import the photographs into Excel using the Human Use Aerial Photo Count Template. These templates are located in each counter’s user count

folder and can be opened by navigating to the folder directly from the designated local drive or from within Excel.

2.4.1 The Three Template Worksheets

After opening the Human Use Aerial Photo Count Template, notice there are three tabs in the bottom left corner of the template. The first tab is “PhotosCodes”, which is where the photographs will be imported and displayed. The second tab is the “DataEntry” sheet; this is where all of the data (e.g. number of photographs, number of overlaps, etc.) from the current photo range is entered. The third tab is the “Notes” sheet, which is used to explain unusual circumstances within a current segment. For example, if the photographs cannot be located for the entire segment or if the location of either endpoint cannot be determined due to poor photo quality, use the “Notes” sheet to explain the circumstance.

2.4.2 Titling Segment File

To begin, click on the options tab that will appear in the top left corner of the template as a “Security Warning” and click on “Enable this content”. Then, fill out as much of the “DataEntry” sheet as possible and save the template, which will automatically rename the file.

- Use the naming convention format: “Zone_Photo Date_Photo Time_Segment ID”. The filename will contain “Incomplete” at the end until the data entry page is completed.
- The only cells that can be left blank are the two cells corresponding to “QA Initials” and “QA Date”, which are filled out only by the person performing QA.

2.4.3 Code Definitions

After the photographs for a segment have been imported and labeled with the appropriate photo number in the Human Use Aerial Photo Count Template, enter codes in the “PhotosCodes” sheet for the different activity types, whose sums will automatically populate the cells in the “DataEntry” tab. The different activity types are as follows:

- **BS – Beach/Shoreline:** Enter the number of people sunbathing, walking, running, flying kites, etc. occurring on the beach or shoreline (not on paved paths, boardwalks, or piers). This is basically any activity along the beach/shoreline that is not fishing. This includes people using rented chairs and/or umbrellas. It also includes atypical uses like playing volleyball or using a metal detector.
 - When a person is on the beach/shoreline and a determination of whether or not they are involved in a more specific activity is not possible, count the person as BS, or beach/shoreline.
 - When a more specific activity for a person can be distinguished, count the use of the more specialized activity instead.
- **SW – Swimming/Water:** Enter the number of people in the water – even with a toe in the water – as swimming. Count them if they are in the water at the time the picture is taken and [if they are not in the water at the time the picture is taken you cannot infer that the waves will crash on the recreator, count them as BS, or beach/shoreline]. Do not count people using equipment such as jet skis or surf boards in this category (they have separate categories). Include people with inner tubes or rafts (if they are in the water).

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- When a person is in the water and a determination cannot be made whether or not they are involved in a more specific activity, classify the person as SW, or swimming/water.
 - When a more specific activity for a person can be distinguished, count the use of the more specialized activity instead.
 - If a determination cannot be made whether the individual is in the water or not, classify the person as BS, for beach/shore.
- **WP – Walkway/Path:** Enter the number of people walking, running, and other activities that are along paths or walkways that are adjacent to the beach or shoreline. This would also include seawalls (where there is not a path per se but a place where people can look out with a view of the Gulf), sandy paths, and concrete sidewalks with vendors. If there is a view of the shoreline or water, and therefore may have a view of oiling or cleanup personnel, the activity should be marked as WP, or Walkway/Path.
 - When a person is on a path and a determination cannot be made whether or not they are involved in a more specialized activity, count the person as WP, or walkway/path.
 - When a more specific activity for a person can be distinguished, count the use of the more specialized activity instead.
 - **SF – Shore Fishing:** Enter the number of people fishing from the beach, shoreline, riprap, or water. If they have fishing equipment, count them as fishing even if they are not actively fishing at the time. Note that you should only count people as fishing if you can tell for certain that they are fishing.
 - **PF – Pier Fishing** Enter the number of people fishing from a structure (pier, boardwalk, jetty, etc.). If a family is fishing and it appears that the kids are not fishing – but rather playing on the pier while their parents fish, count the kids as “Pier non-fishing.”
 - **NF – Boardwalk/Non-Fishing Pier:** Enter the number of people on elevated wooden structures, boardwalks, piers, or jetties that are not fishing. Boardwalks are defined as above the water or sand dunes (not the boardwalk where you get your beach fries). Large Boardwalks with vendors and retail would be considered Walkway/Path Use.
 - **CV – Car/Vehicle:** Enter the number of cars or vehicles (other than response vehicles, work vehicles, any vehicle where someone is not actively recreating) that are on the beach. Do not include cars that are in parking lots. If a determination cannot be made that it is work/response vehicle, then code it as CV.
 - **AM – ATV/Motorcycle:** Enter the number of recreators using ATVs, motorcycles, or golf carts. Do not enter the number of ATVs. If there is no one on an ATV, do not count it. Similar to cars/vehicles, only count them if they are on the beach or path adjacent to the shoreline and are not response personnel or working. If a determination cannot be made that it is work/response vehicle, then code it as AM.
 - **CY – Bicycle:** Enter the number of people cycling on the beach/shoreline or a path adjacent to a beach/shoreline. See definition of walkway/path use.
 - **SR – Surfing:** Enter the number of people surfing or similar (boogie boards). Do not count people with inner tubes or rafts (they would be swimming). Similar to fishing, in that if they have the equipment count them as surfing even if they may not be surfing at the time.

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- If uncertain of the device, classify as swim/water (SW).
 - **KY – Kayaking:** Enter the number of people kayaking or canoeing at the time the photo was taken. The kayak must be in the water at the time and the recreators in the watercraft/boat. Note that a code should be marked for each person, not the number of kayaks/canoes.
 - **JS – Jet Ski:** Enter the number of people that are jet skiing. The jet skis must be in use at the time of the photo. Note that a code should be marked for each person, not the number of jet skis.
 - **RA – Restricted Access:** Where there are segments that are restricted to private access and have no beach (e.g., have houses with backyards facing the Gulf but there is no beach), count people in these segments as “restricted access”. The backyard acts as their shoreline for interaction with the Gulf. This would not include buildings such as high-rise buildings that may be condos.
 - Also, include people that appear to be potentially recreating. If a person is cutting grass or carrying groceries, he/she would not be classified as a recreator. If in doubt, consider them to be recreating. If a person is sitting at a table in his/her yard (not on a deck or patio) that has a Gulf view, classify the person as RA, or Restricted Access.
 - **OO – Other:** *See below
 - **RP – Response Personnel:** Enter the number of people in cleanup crews. This includes teams of cleanup crews or response coordination personnel on beaches. Cleanup crews usually can be classified because they will be wearing brightly-colored hazmat gear. Groups of people taking samples or holding clipboards are potentially part of the response and should be classified as well. If a determination cannot be made whether or not they are cleanup crews, then count them as recreators instead.
 - **WK – Worker:** Enter the number of non-response workers. This includes lifeguards, sanitation crews, beach police/patrol, hotel employees, vendors, etc. If a determination cannot be made whether the person is a non-response worker, consider the person a recreator.
 - ***One-off – “Other” Code:** In rare circumstances, a person recreating will not fall into any of the activity codes listed above and should be counted as “OO” for “Other”. If a determination of the activity cannot be made, the person should be listed as BS instead of OO. An example of an OO coded person is someone parasailing behind a boat.

2.4.4 Category Counts

After completing the activity and object count, the “DataEntry” sheet will be populated with totals for each recreator category. The totals of relevance for data entry purposes are the “People Counted” count, which is the total number of people (excluding RP’s and WK’s) from the “PhotosCodes” sheet, as well as all of the subsequent object and category fields, which need to be counted and filled out manually. The category counts are as follows:

- **“Umbrellas/Objects”:** Enter the total number of umbrellas or other objects that might obscure the view of people. Objects such as umbrellas, tarps, tiki huts, lifeguard shacks/stands, or vehicles (ATVs, cars, trucks, etc.) on the beach should be included. Objects such as buildings, trees, or response tents should not be classified in this category. Do not include response tents.
- **“Empty Trailers”:** If there is a boat ramp, then count the number of “empty trailers” associated with that boat ramp. Empty trailers are trailers that are attached to vehicles that currently do not contain a boat. Do not include empty trailers that are not attached to a vehicle. Do not count

cars in the boat ramp parking lot. Do not include boats that are in the process of being launched or being hauling out of the water.

- There are some instances where the boat ramp parking spills over into an adjacent segment from the segment containing the boat ramp you are assigned to count. In these instances, count all empty boat trailers attached to vehicles that are associated with that assigned boat ramp regardless of the actual segment the boat trailers are in.
- Only count boat ramps associated with the segment. Sometimes you will be able to see a boat ramp on the other side of an island - only count the ones on the same side as the segment.
- **“Boat in Water”:** A count of large boats that are operating (do not include those that are docked or moored). If you can't tell if it is moored, assume that this is operating.
 - Large boats include those boats that would likely have been launched from a boat ramp or marina. Small boats such as kayaks, canoes, jet skis, or rafts are counted in the various activity codes.
 - Note that this is a count of boats, not the people on the boats.
- **“Heavy Equipment”:** Things like bulldozers, front end loaders, backhoes, tractors, dump trucks. Not ATVs. Not trailers. Enter a 1 if such equipment is present and a 0 otherwise. The goal is to identify response related equipment. If you are uncertain, classify as heavy equipment.
- **“Boom or Similar”:** Boom is material that is placed on the surface that is often used to protect shorelines from oil. Sometimes dredging or other operations will also have boom. If you see boom or other similar material that looks like it might be part of the response effort, then indicate so here. If you are uncertain, classify as boom. Enter a 1 if such equipment is present and a 0 otherwise.
- **“Staging Area”:** Indicates that a staging area is present. A staging area is meant to identify when there is heavy equipment and/or response equipment located in the parking lot and it may have an impact on recreators. Enter a 1 if there is a staging area in the segment.

2.5 Segment Start Time

After locating and recording the photo range for the assigned segment, the counter will want to:

1. Right click the first photograph of the segment (the farthest to the left) anywhere within the open photo and then click “Properties” to bring up the properties window.
2. Navigate to the “Details” tab on the top of the properties window and under the “Origin” heading will be the Date Taken field, which displays the time and date the photograph was taken.
3. Record this time as it will be entered into the *Human Use Aerial Photo Count Template* in the empty cell corresponding to “Start Time.”

2.5.1 One-off: Segment Start Time Reversed

In many instances the photosets may need to be arranged in the Aerial Template in reverse chronological order due to the direction of the flight path of the helicopter and regardless of the order of one's waypoints. When the photographs are in descending order the counter's first

photograph (farthest to the left) will have been taken later in time, and even though the *Human Use Aerial Photo Count Template* asks for the “Start Time”, the counter will want to enter the time from that same photograph that is farthest to the left.

2.5.2 One-Off: Segment Start Time – Camera Time is Off by Hours

In some instances the camera time was not properly calibrated and therefore the photoset contains photo times that are inaccurate (e.g. 11 PM or 2 AM on the following day). For these photosets the counter will want to record the inaccurate time and in some cases inaccurate date as well. If the photographs say 11 PM, then enter 11 PM in military time for “Start Time”.

2.6 Photo Count

On the “DataEntry” sheet the counter will enter the number of photographs that were imported into the Human Use Aerial Photo Count Template for the segment. Even if photographs entirely overlap or are of poor quality they should be counted.

2.6.1 Overlap Count

This field should contain the number of overlapping areas in the photoset. These are shapes drawn on pictures that are covered in other photographs in the same photoset. Note that this is counting the number of overlapping areas between the photos, not simply the number of shapes used to create that each area. If the photoset contains a duplicate photograph such that the overlap extends across multiple pictures and can be contained by one shape, then it can be counted as one overlap.

2.6.2 Coverage Code

The coverage code is broken into 4 different categories based on the percentage of the segment that is visible in the photographs. The counter will enter a number between 1 and 4 based on the following criteria:

- | | |
|------------------------|---|
| 1 = Limited coverage: | Less than 50% of segment is captured. |
| 2 = Moderate coverage: | Coverage between 50% and 75% of the segment. |
| 3 = Good coverage: | Coverage more than 75% but less than 100%. |
| 4 = Full coverage: | The entire segment is covered and there is no space between photos. |

2.6.3 Photo Quality Code

The photo quality is broken into 4 different categories based on the difficulty of counting people. The counter will enter a number between 1 and 4 based on the following criteria:

- | | |
|--------------------------|--|
| 1 = Low quality: | It is difficult to count people for most (75% or more) of the segment. |
| 2 = Medium low quality: | It is difficult to count people for some (50% to 74%) of the segment. |
| 3 = Medium high quality: | It is difficult to count people for a portion (25% to 49%) of the segment. |

4 = High quality: It is difficult to count people for a small portion (less than 25%) of the segment.

2.6.4 Debris/Wrack/Potential Oil Code

The counter will enter a number between 1 and 3 in this field based upon the amount of visible debris, wrack, and/or potential oil. The breakdown for the different codes is as follows:

- | | |
|--|--|
| 1 = None visible: | The beach appears free of visible debris, wrack, and potential oil. |
| 2 = Limited debris/wrack/potential oil: | Visible debris/wrack/potential oil is limited to a band near the beach crest. |
| 3 = More extensive debris/wrack/potential oil: | Visible debris/wrack/potential oil is located outside of a band near the beach crest. Includes areas of discoloration that may potentially be oil. |

Note that the counter should indicate a level of debris that reflects the highest level within the entire segment. For example, if the majority of a segment appears pristine except for one photo where there is limited debris, code that with a 2.

2.7 Data Entry Counter Information

In order to specify who completed which segments and when, once a counter has completed his/her segment they will need to fill out the following fields in the “DataEntry” sheet:

- **Data Entry Time:** This is the time that the counter completed his/her segment and should be filled out once the rest of the template is complete. It should be recorded in military time and formatted as hh:mm, e.g. if the counter finishes at 3:30 PM they would enter 15:30.
- **Data Entry Initials:** This is where the initials of the counter who completed the segment are entered. All initials should be used and capitalized, e.g. John James Smith would enter JJS.
- **Data Entry Date:** The date that the segment was completed should be entered in to this field. Using the following format: mm/dd/yyyy.
- **Is QA:** Unless a counter is performing QA on a previously counted and completed segment, a 0 should be entered here. If QA is being performed then a 1 is entered here.

2.8 Importing Photos into Segment Files

Begin importing photos by opening a new Human Use Aerial Photo Count Template file in Excel.

1. Ensure that macros are enabled - yellow bar will appear at the top of the template with an enable button.
2. Once the enable button is clicked a prompt will ask if this is a trusted document, click yes.
3. To import the photos into the template, right click on the outline of the photo box.

-
4. If the cursor is in the correct position the yellow “Insert photo here” background will appear behind the pop-up menu. Within this menu click the “Format Comment” option, then the “Colors and Lines” tab at the top of the window.
 5. There will then be a dropdown menu at the top of that window, choose the ”Fill Effects” option from that menu.
 6. A new window will appear and here you will choose the ”Select Picture” button. The window that opens next will be the directory for the computer.
 7. Choose the designated local drive within “My Computer”, where all the photos are located. Then choose the appropriate hard drive containing the date of your segment.
 8. The sub-division within each hard drive is different, but clearly labeled by region and date.
 9. Once you’ve located the correct region and date, click that folder. Scroll through the folder to locate your first picture in the segment, select it and click “Insert”, it will give you a thumbnail preview to ensure you have selected the correct photo.
 10. If it is the correct photo, click “Ok”.
 11. That window will disappear and you will need to click “Ok” again in the remaining window. The picture should now show up in the template. Repeat this process in the appropriate order for all the photos identified within your segment.

2.8.1 Adjusting Template Zoom

To adjust the zoom of the photos once they are imported into the template, hit control w (Ctrl + W), or the “Change Zoom” button at the top of the template. A window will prompt you to select the desired amount of zoom. Adjusting the zoom can also be achieved with a horizontal sliding bar scale at the very bottom right corner of the Excel page, where (-) indicates zoom out and (+) zoom in. When counting recreators within the photos a 400% zoom should be used.

2.8.2 Adjusting Template Transparency

To adjust the transparency of the photos once they are imported into the template hit control q (Ctrl + Q), or the “Change Transparency” button at the top of the template. A window will prompt you to select the level of transparency of the photos. The default setting is 50% transparency.

2.8.3 Labeling Segment Photos

Click directly on to the picture in the template, highlight the text (PHOTO_NUM) in the upper left corner and replace that text with the correct picture number. Repeat this process for the number of pictures identified in your segment.

2.8.4 Segment Photo Order

Usually the photos in your segment will be ascending in number. But this is dependent on the direction the helicopter was flying along the shore. The photos in your template should have the shoreline unfold from left to right, or clockwise regardless of how they are numbered.

2.8.5 Segment Photo Order Reversed

Reversed photo order can occur in segments in which the flight path was flown in a northerly or eastbound direction. The important thing to remember is that your segment must be entered into the template per usual with the shoreline flowing left to right, or clockwise. That may mean the first photo captures the higher waypoint number in the segment and descends toward the lower number waypoint in the segment.

2.8.6 Non-orderly Segment Photos

Rarely, you will encounter a set of photos for a segment that are out of order. This can be the consequence of a turn in the shore-line, a flight path that doesn't follow the shoreline, or the presence of a pier or bay. Arrange the photos for the segment however they best fit so the shoreline unfolds left to right, or clockwise. The key to remember is that all photos within the range of the segment have to be used, and can be entirely blacked-out with overlap boxes.

2.9 Drawing Segment Boundary Lines

The boundaries of each human use segment are marked in the segment Excel template file on the photoset using a red line and the location of the assigned waypoint in Google Earth™. Segment boundary lines are drawn using landmarks visible in the segment area on Google Earth™ and should always be perpendicular to the shoreline.

1. To draw a segment boundary line, first click on the Insert tab in the segment Excel template, select the Shapes drop down list, and then select Line.
2. Draw a line over the first segment photo where the waypoint is located on Google Earth™, adjusting it to line up with the landmarks and the photo perspective. The primary focus of the segment boundary line should be to match up with the beach area. Due to the perspective and the angle at which the photo was taken, the boundary line may not match up with the buildings or other landmarks in the background.
3. Once the line is drawn, the Format tab will open at the top of the Excel template, change the line from the default Subtle Line- Accent 1 (blue) to Moderate Line- Accent 2 (red).
4. Repeat the line drawing procedure for the last segment photo to denote the ending segment boundary line based on the ending waypoint in Google Earth™.

2.9.1 One-off: Incomplete Segments

Some human use segments do not have photos showing the entire segment area. In this case, to show that the segment boundary area is not visible in the available photos, draw a segment boundary line either to the left of the first photo (for a missing beginning boundary line) and/or to the right of the last photo (for a missing ending boundary line). Occasionally segment boundary lines can be drawn above the first photo below the last photo to show where the segment boundary line should have been based on the photo perspective.

▪ **One-off: Drawing Segment Boundary Lines Across Two or More Photos**

- Due to photo perspective, some human use segment boundaries are visible in multiple photos. In this case, for each photo that shows a segment boundary area, draw a boundary

line unique to each photo perspective so that it corresponds to the landmarks visible in that photo instead of trying to draw one boundary line across multiple photos.

▪ **One-off: Determining Segment Boundary when the Beach Has a Point**

- Sometimes a waypoint will be located at the tip of a point, peninsula, or waterway, which causes it to form an angle with its two adjacent waypoints. In this case, the segment boundary is drawn so as to try to bisect that beach point.

2.10 Drawing Segment Overlaps

Overlaps are drawn to stitch together the multiple photos in a human use segment ensuring that the people and objects depicted in the photos are only counted once. Overlaps are drawn so the person or object that is visible in multiple pictures is unmarked in one photo and blacked-out in all of the other photos in which they may appear.

1. Check the segment pictures for overlap once all of the photos for a segment have been imported into the segment Excel file and the segment boundaries have been drawn.
2. If there is an overlap between two photos, then draw a black box (any shape will suffice) around the overlap area:
3. To draw an overlap, click the Insert tab, select the Shapes drop-down menu and select either the Rectangle or the Freeform shape, and then draw the overlap.
4. Once the overlap is drawn, the Format tab will open; change the color of the overlap from Colored Fill- Blue, Accent 1 to Colored Fill- Black, Dark 1.
5. Note that due to changes in perspective, the overlap area may not be a perfectly straight line, in this case- line up the overlap on the beach, not with the buildings. This ensures that the overlap is correct on the beach where the counts will be performed. Multiple overlaps shapes can be used to complete this effect.
6. Further, overlaps do not need to be boxes and can be drawn as freeform shapes to make sure the overlap provides adequate coverage of the beach area. When a segment has nothing to be counted, the segment overlaps do not need to be perfect.

2.10.1 One-off: Drawing Overlaps with Piers

Some human use segments contain piers (or jetties) that extend perpendicularly from the shoreline and are shown in multiple photos. While most segment overlaps are drawn on the left and right edges of the photos connecting the pictures laterally, a segment that displays a pier in multiple photos will often require a overlaps that are drawn on the tops and bottoms of the photos to connect the bottom of one photo with the top of the next photo.

- To draw a pier overlap, draw one overlap box at the bottom of one pier photo and an overlap box at the top of the other pier photo showing where the pictures of the pier overlap- the pier overlap boxes will not actually physically overlap with each other.

2.11 Determining Segment Size- Where Does the Beach End?

How far from the shoreline the beach extends back is important to getting an accurate count of people using the beach. The most common horizontal boundaries of the beach are sand dunes, beach grass, or some other natural border. Other common boundaries are private property, houses, and roads. There are instances where the beach will bubble out deeper than it does in the whole segment. Situations where the beach has extended back farther from the shore should be considered an extension of the beach and subsequently counted in the same way as any beach that is nearer the water.

2.11.1 Determining Public Versus Private Property:

Most of the area that is being counted is public property and/ or is accessible to the public. There are instances where certain portions of private property adjacent to or near the shoreline should not be counted. Private property is often enclosed by fencing or walls. There may be landscaping such as grass or other ground textural differences from the typical sandy shore. There is also private property that may be related to hotels and resorts. In these cases there may be stairs/paths that lead up to patios/decks. On these patios/decks there are often swimming pools, seating areas, and bars. These outside spaces associated with private property are also private and any people there should not be counted. A sign of these areas may be a gate or other barrier on the stairs/path leading from the shore to the private space. Note that any beaches should always be counted, regardless of whether they may appear to be private property.

2.11.2 Counting Piers:

If a segment has a pier associated with the shore, all people and objects on the pier should be counted. Counting people on piers offers specific challenges such as correct placing of overlap boxes and difficulty in identifying recreational activities.

- People on piers should either be Boardwalk/Non-fishing Pier (NF) or Pier Fishing (PF). Care should be taken counting people on the edges of the pier. Often PF are fishing off the side but NF are standing in the same area and standing in the same general posture.
- To determine if a person is a PF, look for the indicative fishing pole. Other signs of a PF are buckets and coolers.
- Often at the end of the pier is where there will be the most PFs. It is not uncommon for there to be other people with a PF, such as children or others who are associated with the PF but are not engaging in fishing. These people should be counted as NF.

2.11.3 Large Piers and Segment Size:

As a rule, segments are supposed to be .5 miles in length. However, large piers may sometimes make the segment larger than this standard segment size. Utilize all photos that capture this stretch of the shoreline, including those covering the pier. The protocol for these types of segments should be the same: all people along the shore and on the pier should be counted and coded.

▪ **Beaches with Sandpits:**

- Sometimes there are areas of the beach that have sandpits or other depressions. These areas are usually farther back from the shore, but are still considered part of the shore. Any people that are in these areas should be counted in the same manner as those on any other beach.

- **Blacking-out Non Segment Areas:**

- Photos may cover areas of the shore that are not part of the segment. This may be a result of bays, sandspits, or other situations where more than one section of beach is photographed. In these situations blacking-out non segment areas is helpful in making it explicit where the counting is taking place. The idea is to remove sections of the photograph that associated with other segments than the one assigned. In the same way that overlap boxes exclude sections of a photograph, other sections of the photo can be blacked out and help make clear which people should be counted and which should not.

2.12 Counting Umbrellas/Objects

Umbrellas/Objects are a primary obstruction in recognizing and counting Human Use recreators with aerial photography . Because these objects (most commonly umbrellas) have the potential to skew the accuracy of the people counted in each segment by obscuring the view of the recreators, we account for this effect by tallying their total number in the segment. This value will be applied later as a correction factor to improve the accuracy of the count. Note that we are still counting recreators under umbrellas, as well as those who may be partially obstructed so long as they are clearly discernable.

The Umbrellas/Objects that we are counting are almost always on the beach and can include, but are not limited to:

- Umbrellas/parasols
- Tents/tarps (not related to the response effort)
- Lifeguard shacks/stands
- Worker huts
- Thatched-roof huts/gazebos (on the beach or along walkways adjacent to the beach)
- “Small” covered picnicking areas (along walkways adjacent to the beach; usually open-aired; often found in State Parks; not the walled building-sized structures)
- ATVs/golf carts (not related to the response effort)
- Cars/Vehicles/RVs (not related to the response effort)
- Heavy Equipment (not related to the response effort)
- Beached sailboats (with sail drawn)

Note that we are not counting piers, houses/buildings, overhanging decks, playground equipment, trees, anything related to the response effort, or the like. Along with the Human Use recreators, also take the Umbrellas/Objects into consideration as you draw your boundary lines and create overlap boxes so as not to count them twice.

2.12.1 Counting People

- **One-off: Countable or Non-Countable People?**

- When counting people, the basic rule of thumb is that the recreators must be discernable. The Umbrellas/Objects tally accounts for much of what is too obfuscated to be accurately determined. Therefore if in doubt, leave it out. Inference is acceptable but should be kept to

a minimum— if two legs are sticking out from underneath an umbrella, it’s a safe assumption that they belong to a recreator and should subsequently be counted as a Beach/Shoreline (BS). But use inference modestly – you should not have to talk yourself into counting a recreator. The recreator codes’ descriptions can reasonably classify nearly every situation you may encounter.

2.12.2 Counting People on Segment Boundary Lines

Any person or Umbrellas/Objects that falls on a boundary line should be counted in the left most segment count.

2.12.3 Counting Restricted Access People

Restricted Access recreators (RA) are those individuals who are recreating on property that appears to have limited/restricted access to the general public. This category does not include: individuals at a hotel or condo who are above the “dune line” (pools, decks, or similar areas of these properties); individuals on oceanfront patios/balconies/back decks (i.e. attached to a home); or anyone else above the “dune line”. Note that the people described above should not be counted at all.

There are two primary categories that should be classified RA recreators.

- The primary example can be found in those people whose homes are located directly adjacent with the shoreline, i.e. their backyards are in themselves the Gulf Coast. Look to the Florida Keys where houses have been built on manmade platforms, barely large enough to surround the entire home, such that water borders each home on these “peninsulas” on three sides. One could not simply take to that stretch of shoreline without trespassing on the owner’s private property. Count the individuals as RA if they are discernibly recreating, as opposed to doing household chores like cutting the grass or painting the house. When in doubt, count them as RA. A similar situation in which RA would be counted is when the shoreline cannot be walked end to end without scaling a fence. Certain lengths of the Gulf Coast can be privately owned either commercially or residentially where people may denote their property boundaries with fence lines or rock barriers. Those features are generally good indicators when you are about to encounter a private stretch of shoreline, and consequentially each recreator beyond that property boundary should be counted as a RA.
- The second example of property conditions that lead to RA recreating is much less common than the above two. In some places in Texas, a certain type of house is built directly in tidal zone on stilts, interacting with the Gulf in a similar fashion. The only people we count as RA are the individuals ascending/descending the staircase up to the house. The people on the shoreline are BS while those on the back deck are not counted.

2.12.4 Counting Shore Fishers Using Fishing Poles

A Shore Fisher (SF) does not have to be actively fishing, pole in hand, to be considered a SF. If the appropriate equipment is visible on the shoreline (e.g. fishing poles, tackle box, 5-gallon buckets, etc.), mark the recreators most likely engaged in the activity as SF. It is common for one SF to set multiple poles. If you cannot discern with a reasonable certainty that a person is actually fishing, then count them as BS or PNF as appropriate.

- **One-off: Stand Up Paddle Surfing**

- Stand Up Paddleboarders should be counted as Surfers (SR). These are individuals who are standing on an elongated surfboard and appear to be surfing but with the steering/locomotive aid of a paddle. While Stand Up Paddleboarders often catch waves like regular SR, they are usually seen recreating past the break or in less choppy waters like inlets and bays.

- **One-off: Giant Water Tricycles**

- The Giant Water Tricycles are large, rentable water vehicles with colored, paddle-like wheels (red, blue, green) and a white tricycle body. Peddling these tricycles rotates the colored wheels, which in turn propel the watercraft through the ocean. Because the recreators are demonstrating a similar paddling technique, we therefore consider all recreators in/on the Giant Water Tricycle to be Kayakers (KY). While their presence is generally limited to high volume, resort regions of the Gulf, the tricycles themselves are a relatively rare form of water recreation.

- **One-off: Cyclists on Beach- Adjacent Roads**

- Recreators can often be seen riding their bicycles on the beach. Whether they are walking alongside their bicycle or are actively riding their beach cruisers, we still consider them Cyclists (CY). However, only those Cyclists who are riding along the adjacent roads nearest to the shoreline should be counted. Cyclists on the other, far side of the road should not be counted.

- **Counting Vehicles**

- Cars/Vehicles (CV) are well accounted for in the aerial counts. So long as they are on the beach/shoreline as opposed to paved areas, and regardless of whether they are in motion or parked, cars should be counted as CV.

2.12.5 **RP Vehicles**

- **One-off: Vehicles as Objects**

- Because Car/Vehicles can be so large of an obstruction, they also should be counted among the tally for Umbrellas/Objects as they often obscure recreators (un)loading their vehicle.

- **One-off: Golf Carts as ATVs**

- Include golf carts in the ATV category (AM). As long as they are unrelated to the response effort, they should be counted as Umbrellas/Objects as well.

2.12.6 **Counting Response Personnel and Equipment**

Response Personnel are employed to assist with the survey and shoreline cleanup associated with the spill. While their appearance and tasks may vary from region, they generally exhibit many of the following criteria:

- Wearing pants
- Wearing yellow boots
- Wearing florescent green/yellow vests
- Walking/working in pairs
- Carrying or among black or white trash bags

-
- Carrying or using shovels and/or rakes
 - Operating or among ATVs/Heavy Equipment
 - Working under large green, blue, brown, or white tents (distinguished by black or white trash bags)

If there is any in doubt, count the individuals as BS.

“Heavy Equipment” such as bulldozers, front end loaders, backhoes, dump trucks and bobcats should be considered as such if their operation appears to be related to the response. Such equipment can be distinguished by the presence of Response Personnel, who are fairly easily characterized by the above criteria, as well as where, spatially, the equipment is in use.

Similar heavy equipment is often used in the construction of beachfront commercial and residential properties and operates on the plots of land off the beach – this machinery is obviously not considered response-related and can be misleading and thus not counted.

“Heavy Equipment” generally, although not always, operates on the beach itself, manipulating, moving, and sifting the sand. It can also be present in the parking lot of a “Staging Area”, and should be counted as well. If it is unclear, classify as it “Heavy Equipment”.

- **One-off: Campsites**

- Campsites are usually found tucked away past the sandy shoreline. People and objects in campsites should be counted if they are within the “dune line” boundary as previously described, and should be excluded if they are beyond that line. If there is an apparent path leading from the beach to a campsite that is included, refer to the recreators walking among these paths as WP.

- **One-off: People on Boats**

- People on boats are not counted individually; instead the boat is counted in the “Boats in Water” category. Oftentimes recreators may be swimming around their moored boats – those individuals should be considered as SW.

2.13 Determining Photo Quality

Photo quality is graded on a scale of 1-4.

- A photo quality of 4 indicates and high photo quality, where it is difficult to count people for less than 25% of the segment.
- A grade of 3 is a medium high photo quality, where it is difficult to count people between 25% and 49% of the photos.
- A grade of 2 is a medium low photo quality; here it is difficult to count people in 50% to 74% of the photos.
- A photo quality of 1 is the lowest photo quality, where it is difficult to count people for more than 74% of the photo.

Partial Count –Photo Quality

If the photo quality is a grade 1 or 2, the segment cannot be completed. In this situation, a Partial Count must be conducted.

- a. Leave all appropriate cells in the “Count” column of the Data Entry sheet (“Umbrellas/Objects, Empty Trailers, Boat in Water, Heavy Equipment, Boom or Similar, and Staging Area”) blank. All cells in the “Value” column of the Data Entry sheet must still be completed with the appropriate information.
- b. Mark the segment with a “1” under “Partial Count” on the appropriate List to Count and mark “0” in the remaining highlighted columns.

2.13.1 Determining Debris/Wrack/Potential Oil Code

Coding Debris/Wrack/Potential Oil (DWO) is done on a scale of 1-3.

- A DWO code of 1 indicates that none is visible and that the beach is pristine.
- A DWO code of 2 indicates that there is limited DWO on the shore, limited to a band near the beach crest.
- A DWO code of 3 indicates that there is extensive DWO past a band near the beach crest, and discoloration that could be oil.

These codes should be determined not on an average of all the photos in the segment but the photo that has the highest level of DWO.

2.13.2 Saving Segment File

When a segment file is completed it should be closed, the user will then be asked to save. Yes should be selected and the file will be saved in the appropriate folder. If a segment needs to be saved before it is completed, the zone, segment ID, and photo date fields must be entered before the file can be saved. You must also enable the content by clicking on the “Security Warning” options tab located in the top left corner of your file.

2.14 Counting the Number of Segment Overlaps

The number of overlaps in a human use segment’s photos is recorded in the DataEntry worksheet in the segment Excel file. The number of overlaps are less than or equal to $n-1$ where (n) is the number of photos. Therefore, if multiple boxes (or shapes) are needed to be drawn to account for the difference in angles between the photographs- each individual box is not counted as an overlap.

- For example: if two photos overlap, this would be counted as Overlap Count = 1.
- Additionally, if multiple boxes are drawn stretching across several photos (even blacking-out entire photos) this would still count as one overlap.

2.15 Determining Segment Coverage

The percentage of the human use segment that was covered by survey photos is recorded in the DataEntry worksheet in the segment’s Excel file. The Coverage Code uses a range of 1 to 4 where:

- 1 equals “Limited Coverage” (less than 50% of the segment is captured)

-
- 2 equals “Moderate Coverage” (coverage is between 50% and 75% of the segment)
 - 3 equals “Good Coverage” (coverage is more than 75% but less than 100%),
 - 4 equals “Full Coverage” (the entire segment is covered and there is no space between photos).
1. To determine the coverage for a segment, first import all of the segment photos, draw the segment boundary lines, and segment overlaps, and then look for gaps in coverage amongst the photos (often changing the zoom level on the file template to make the photos smaller helps by making it possible to see all of the segment’s photos at once time).
 2. If there are any gaps between the photos then the segment has less than full coverage and the amount of segment coverage needs to be assessed. Additionally, if the segment is missing photos for either the beginning or ending boundary areas, or if the segment has countable areas (beach/water) that are obscured by buildings, trees, etc. - it has less than full coverage.
 3. Coverage level can be determined using the segment as displayed on Google Earth™ and good judgment to estimate how much of the segment is visible in the photos.

Using the Ruler tool in Google Earth™ is also helpful for estimating how much of the segment is present in the photos- the percentage of coverage is the distance marked by the Ruler (in miles) divided by 0.5 miles (segment total length) multiplied by 100.

One-off: Entire Segment in One Photo

- Occasionally, a human use segment will be displayed in just one photo. In this case, as long as the entire segment was visible- it would be considered to have full coverage (Coverage Code= 4).

2.15.1 Partial Count – Coverage Code

If the coverage code is less than 4, the segment cannot be completed. In this situation, a Partial Count must be conducted.

- a. Leave all appropriate cells in the “Count” column of the Data Entry sheet (“Umbrellas/Objects, Empty Trailers, Boat in Water, Heavy Equipment, Boom or Similar, and Staging Area”) blank. All cells in the “Value” column of the Data Entry sheet must still be completed with the appropriate information.
- b. Mark the segment with a “1” under “Partial Count” on the appropriate List to Count and mark “0” in the remaining highlighted columns.

2.16 Data Entry into List to Count by User

When a segment is completed there are data fields in each counter’s the List to Count that need to be filled. If the segment was completed, had no photos, or was missing it should be noted by a 1 in the appropriate column. The data for the date, day of the week, and time of day should be entered as well. The number of objects, number of people, number of photos and photo quality fields should be filled to complete the section. There is also a notes field where the user can make notes of anything such as why the segment was missing.

2.16.1 Data Entry into List to Count by User with Two Segment files

There are instances when one segment will have two segment files associated with it when there is a double flight path covering the segment. When this is the case the user should enter information for each segment in the field. The data will need to be introduced with an apostrophe (‘) and then separated with a slash (/) in order to have two sets of data in one field. The apostrophe counteracts Excel’s propensity to divide the two values entered into one cell and separated with a slash (/).

Exhibit D. Trustees' protocols for aerial imagery processing

MS Canyon 252 Aerial Photo Counts Overview

Overview

The Stratus Consulting Automated Aerial Photo Count program is designed to provide a streamlined, accurate photo counting process that minimizes error and maximizes the efficiency of aerial photo employees, while reducing data storage needs. The program is used to conduct counts of recreation users along shoreline areas. These shoreline areas have been divided into segments, and there are 1 or more aerial photos per shoreline segment. Counts of recreation users are conducted for 1/5 of the segments for each overflight. The segments selected for counting remain the same over a given two-week period, and a different 1/5 fraction of segments is selected for the next two-week period. Over ten weeks, all segments have been counted.

The count program relies on three applications: a scheduling application developed by Stratus Consulting [(Normalized Automated Aerial Technician Extension (NAATE)]; the GNU Image Manipulation Program (GIMP)¹; and Adobe Photoshop CS5 Extended (Photoshop).

For an overview of each task in the counting process, please see the Segmenting, Redline, Redline QC, and Picture Mark protocols.

Definitions

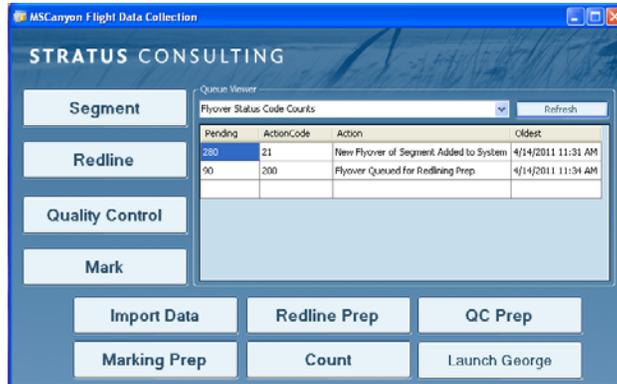
Overflight: A single flight, covering the entirety of either the North Gulf or Peninsula region.

Segment: A designated beach recreation area. Each region is broken up into multiple segments.

Flyover: The intersection of an overflight with a segment. A flyover is the list of photographs that have been assigned to a particular segment.

1. Details of the role that GIMP plays in the process are available in the Redlining, Redline Quality Control (QC), and Photo Marking protocols, as well as in the GIMP software tutorial.

NAATE



The NAATE tracks all data as it moves through the various processes in the system. NAATE is a Visual Basic.NET program that was written specifically for this project. It is used to schedule and assign all tasks performed by aerial photo employees and runs alongside Photoshop. The main NAATE screen shows a data queue, which lets process managers know where every overflight, flyover, and photograph is currently located in the system.

Segmenting

NAATE assigns overflights to individual employees from the entire list of flight dates. Once an overflight has been opened by an employee, all other employees are locked out of that flight until the original employee has closed the screen and saved his or her work, which occurs at the end of each step. If an employee exits the segmenting application before completing an overflight, that overflight is assigned to the next employee who opens the application. This ensures that all overflights are processed to completion.

Redlining

NAATE assigns individual segments to redliners based on the order in which they open the redlining application form. It selects segments from the entire list of flyovers as assigned in the segmenting step and then assigns segments to employees based on the overflight date (oldest to newest). In the event that a redliner closes the form before completing a flyover, that flyover is marked so that only the employee who began the redlining process for that flyover can finish it.

Redline QC

Once a flyover has been redlined, it is sent to QC employees. A detailed list of the required QC checks is available in the Redline QC Protocol. These flyovers are assigned to QC staff based on the order in which they open the QC application form. The application selects from the entire list of flyovers as completed in the redlining step and assigns them to employees based on the overflight date (oldest to newest). In the event that a QC employee closes the form before completing a flyover, that flyover is marked so that only the employee who began the QC process for that flyover can finish it.

Photo Marking

After QC staff have approved a flyover, it is ready to be processed by photo-marking staff. NAATE assigns individual segments to employees based on the order in which they open the photo-marking application form. NAATE selects from the entire list of flyovers that have made it through the redline QC step and assigns them to employees based on the overflight date (oldest to newest). In the event that a photo-marking employee closes the form before completing a flyover, that flyover is marked so that only the employee who began the marking process for that flyover can finish it. Once the photo has been marked, it is ready for a second marker to repeat the task. NAATE ensures that the employee who made the first set of marks on the photos in a flyover is barred from being selected as the second marker.

Photoshop

After each step in the process described above is completed, Photoshop runs a script to prepare flyovers for the subsequent step. This is accomplished by running an independent script (“George”) that automatically runs the individual processing scripts,² (described below) at various predefined time intervals.

Ready for Redline

Once a segmenter has assigned photos to a particular segment, thus creating a flyover, Photoshop receives the flyover and processes it for redlining. Each photograph has a “Redline” layer placed on top of the background; the redliners make all boundary lines and overlap polygons on this layer (using GIMP).

2. Every step for which the George script is responsible can also be run by process management staff.

Ready for Redline QC

Initially, Photoshop makes a copy of the redline layer, which is then saved in a specified folder. The flyover is then made available for QC. If edits are made to the redline layer during the QC step, this layer is set as the Redline layer. If no edits were made, the original boundary lines are kept.

Ready for Marking

The approved redlined flyovers are then prepared for the marking step. Again, a copy of the edited redline layer is archived (if necessary), and a new layer, called “Count,” is created in each photograph. This is the layer in which photo markers place their color-coded dots during the initial count.

Ready for Counting

After an employee has marked every photograph in a flyover, Photoshop counts the dots based on color. The version of Photoshop being used, CS5 Extended, comes pre-built with a recording tool that can count every instance of a selected color on a photograph.

First, Photoshop disables the background and redline layers in order to prevent error. Then, it runs through the pre-assigned list of 23 location/activity colors by searching for the unique RGB (red/green/blue) values and records the number of dots present in each category.

The count for each photograph is then recorded into the database. Next, the George script checks if the photograph requires any additional counts. If so, it archives the first count layer, removes it from the .psd file, and creates a new count layer for the next marker to use.

Once a photo has been processed, an archived .psd file is created by stripping out the background layer (this is done to minimize storage space) and a redline layer and all count layers are compiled into one file. A backup copy of each layer is maintained in the corresponding folder. At any point, any .psd file can be easily recompiled so that data can be double-checked.

MS Canyon 252

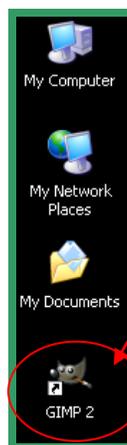
GNU Image Manipulation Program

Software Tutorial

Overview

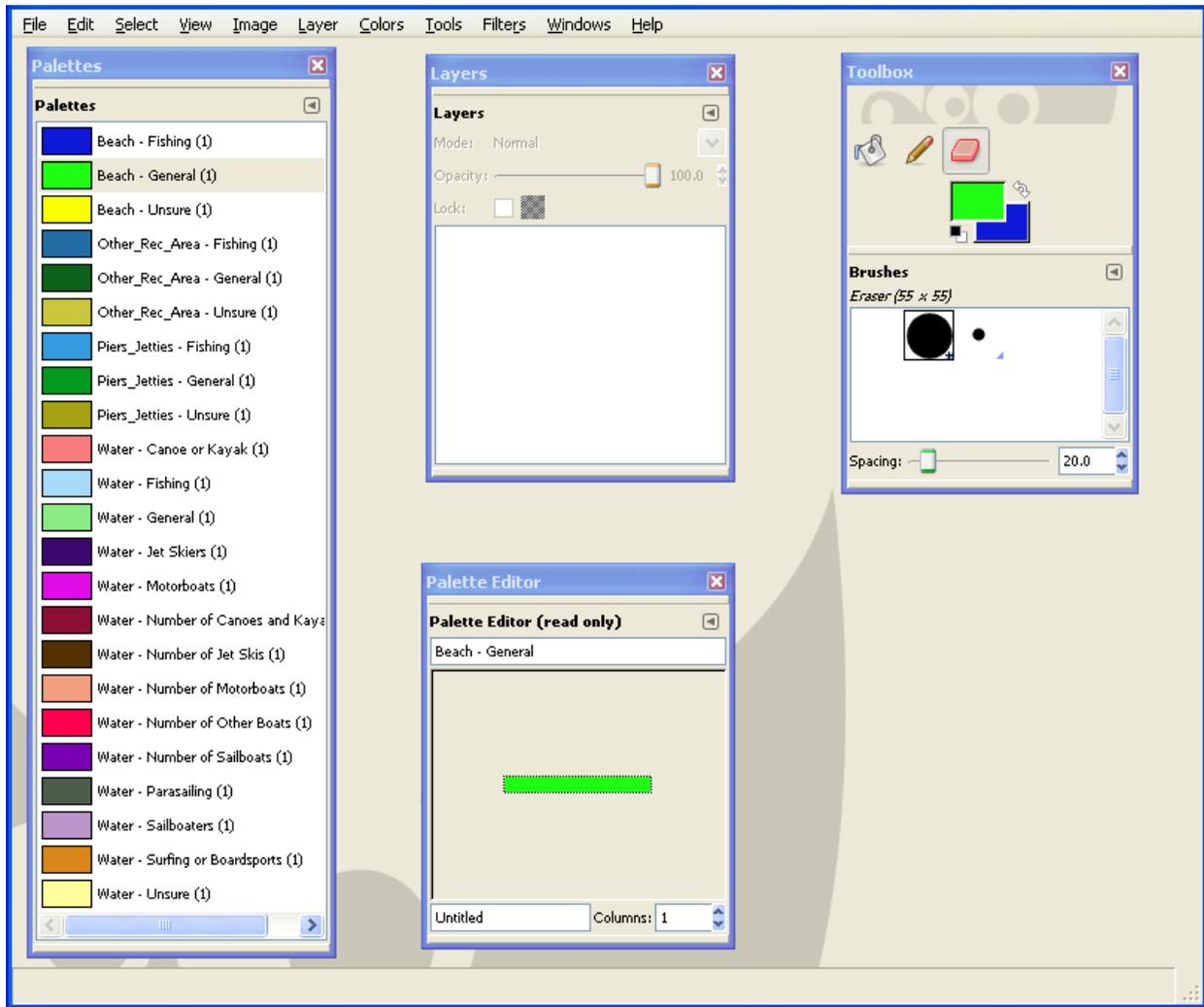
GIMP is an image processing program used to automate components of the overflight photo process. For the current project, GIMP is used to establish boundary lines and areas of photo overlap and to mark, in defined colors, different recreation types. Specific instructions regarding protocol and techniques to accomplish these tasks are included in a separate document located in the relevant directory.

This guide introduces the software and its unique functions that you are likely to use. This includes the location of tools in the menus and specific functions or instructions that you may need to ensure that you are using the tools correctly. To open the software, locate the GIMP 2 icon located on your desktop.



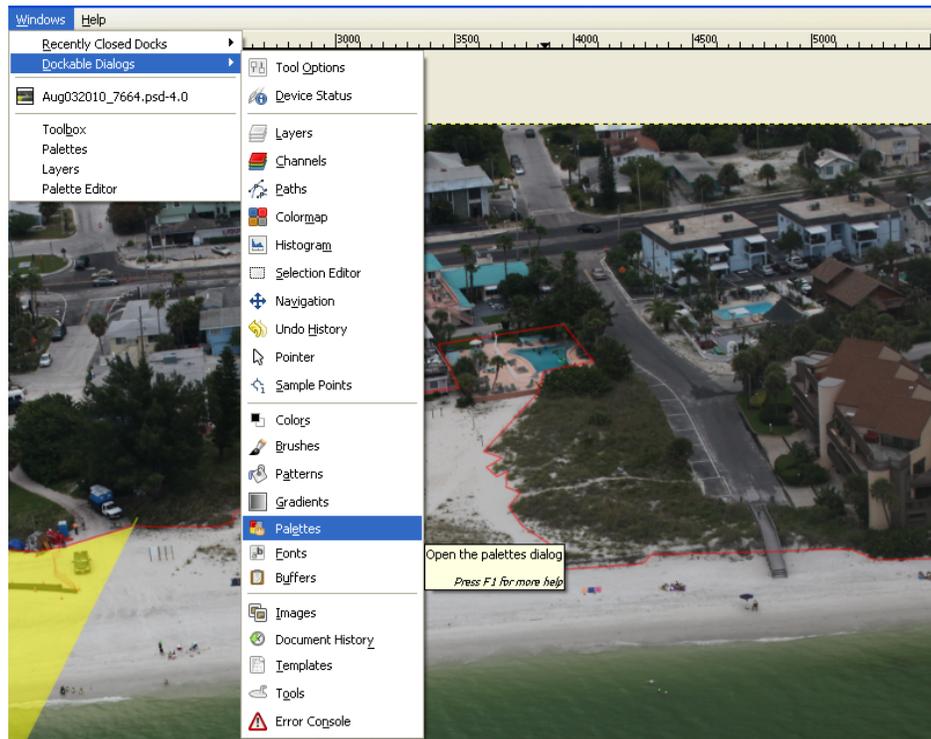
Windows

GIMP opens in five separate windows: The Main window, the Palettes window, the Toolbox, the Layers window, and the Palette Editor window. These are the only windows that you will need to use. These windows can be closed and reopened.



Clicking the “x” in the Main window or in the Toolbox will close GIMP. Clicking the “x” in any other window will close only that window.

If you accidentally close a window or need to reopen a window for any reason, you can locate these tools in the “Windows > Dockable Dialogues” drop-down menu at the top of the Main window.

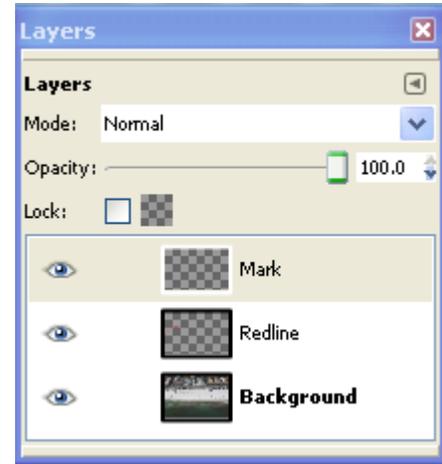


Layers

The layers feature makes it possible to create drawings over an image without altering it. Editing a selected layer does not affect any other layer within the photo. Layers are used in GIMP to differentiate the Aerial Photo Count tasks being performed. Care should be taken to ensure that you are only editing in the layer that corresponds to the task to which you are assigned. The default layers that you will encounter can be seen in the Layers window, which is illustrated here.

Background Layer

The background layer is the layer that contains the photo that will be used as a reference for the task. DO NOT edit in this layer.



Redline Layer: Task 2

The redline layer allows you to draw red lines, overlap polygons, and segment boundary polygons.

Redline QC Layer: Task 3

The Redline QC layer will appear as the redlines layer. However, it allows you to edit redlines and overlap polygons. When you are done, you will mark the file “edited” and the layer will be archived.

Count Layer: Task 4

All recreation counts are marked on the count layer.

Opacity

The opacity slider is used to make a layer transparent. Slide this to 50% for the “Lines” layer and 100% for the “Count” layer.

Viewing/Hiding Layers

Toggle the eye symbol to make a layer visible or invisible. The chain icon indicates that a layer is locked. Ensure that all layers are visible when you save a document. The “Mode” selection should be set to “normal” at all times.

Color Palette

The Color Palette window is loaded in your copy of GIMP with predefined colors for recreational locations. These colors are designated with a specific RGB color value that will be counted automatically at a later date. It is extremely important that you accustom yourself to using the exact designated color from the palette.

Setting the Correct Count Color

There are two steps to ensure that the right color is selected for the activity or line that you are going to mark. First **single click** on the recreation type you will be counting in the Palettes window (see sample screen shown here). The second step is to locate the Palette Editor window.



Palette Editor

Double-clicking on a palette color will open the Palette Editor window. Inside there will be a single rectangular box that will update with the color of the recreation location that has been selected in the Palettes window.

Selecting the Color

After clicking the recreation type in the Palettes window, the Palette Editor window will automatically update with the name of the palette and the color in a single rectangle. *This box must be clicked prior to editing to ensure that the color is being used.* At the bottom of the window, there is a column box that changes the number of colors in the palette. This should always be set to “Columns: 1.” If it is not set this way, an incorrect color type could be applied.



Toolbox

The Toolbox is used to select the Pencil, which is used to draw lines and dots; the Paintbucket, which is used to fill overlap polygons; and the Eraser tool, which is used to correct mistakes. The Toolbox also shows the color of the Painting tool that is currently selected. After selecting a color in the Palettes window, check to ensure that the color in the Toolbox matches the color in the Palette Editor window.



Pencil

The Pencil is defaulted to make a single dot when clicked; it will not click and drag. The size of the dot is chosen from the preselected options located in the Brushes window to allow for QC at later steps. When using the Pencil, you must select the small-sized dot from the Brushes window.

Eraser Tool

The Eraser tool can be used to correct small mistakes. When using the eraser, select the large-sized dot in the Brushes window. When the Eraser tool is used, you *must* take care that the entirety of the color you are erasing is gone. The preferred method of correcting a mistake is to use the Undo function, although this is not always possible.

Paintbucket

Once the Pencil tool has been used to create a multi-sided, closed polygon, the Paintbucket can be used to fill the polygon. This is used to create an overlap polygon.

Foreground Color

The two boxes of color in the Toolbox contain possible tool colors. The box in the foreground (top left) signals which color is currently selected through the Palettes and Palette Editor windows.

Background Color

GIMP also has the option of using a background color to switch quickly between colors. This is the rectangular box below the foreground color, which can be brought to the foreground by clicking on the arrow symbol. This is most helpful for redliners who use only two colors. However, the colors used in these boxes must always be selected through the Palettes and Palette Editor windows to ensure the proper colors are used.

Brushes

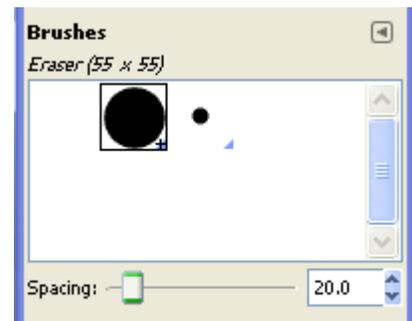
The Brushes window provides two preselected size options to be used with tools from the Toolbox. Simply click on a brush and a box will appear around your selection.

Larger Brush

The larger brush should be used with the Eraser tool to correct mistakes.

Smaller Brush

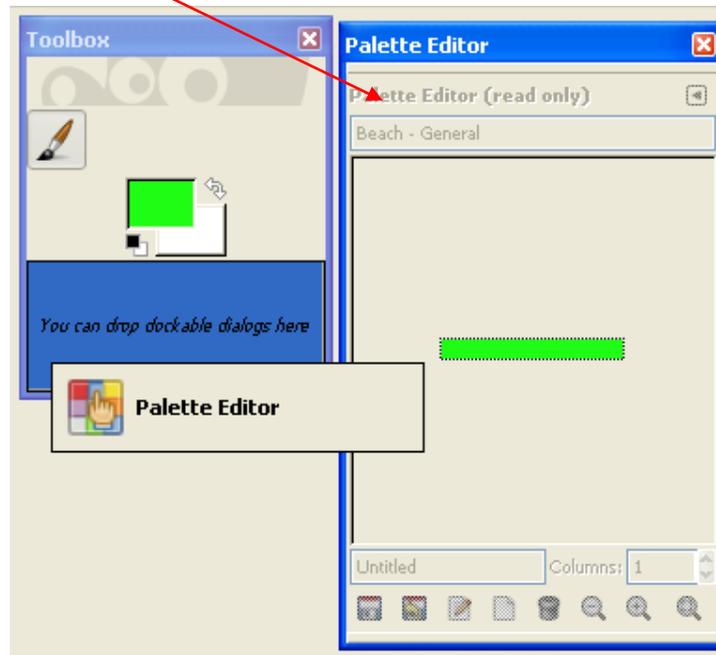
The smaller brush should be used with the Pencil tool to make lines.



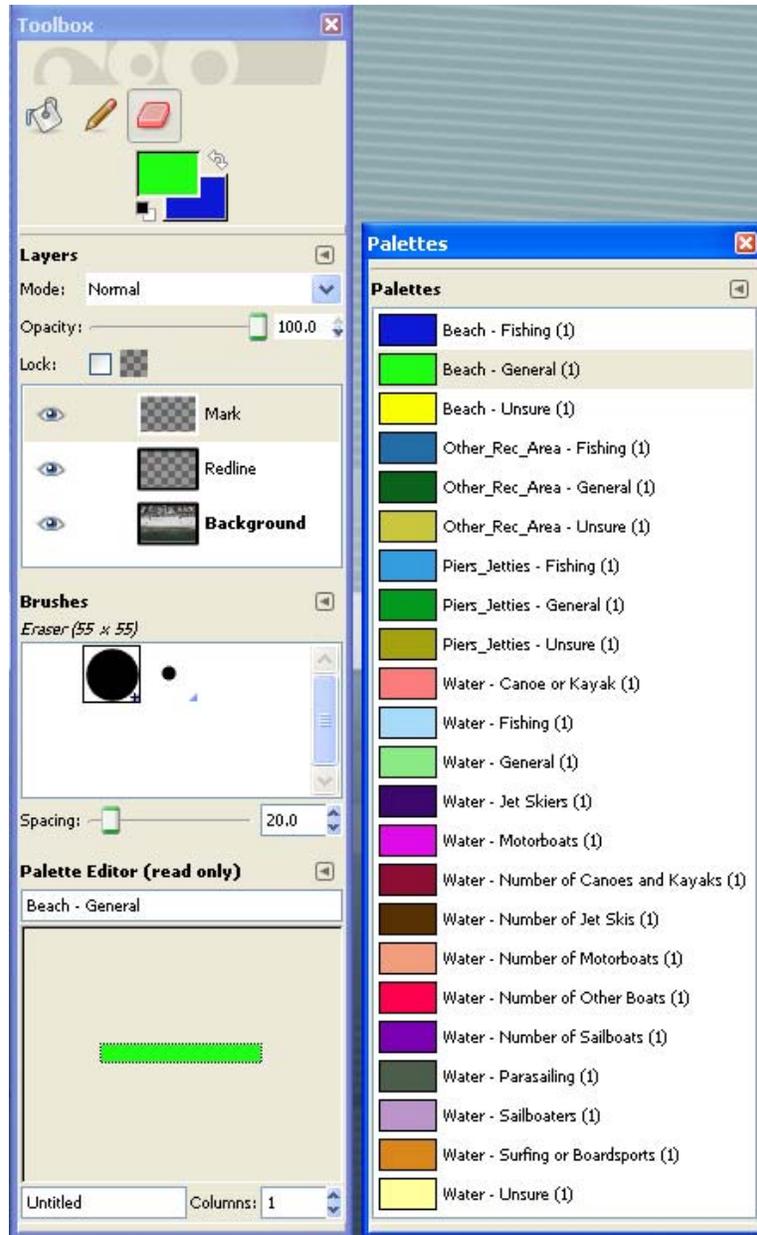
Docking Dialogue Boxes

All dialogue boxes described above can be combined into one simplified window. This should be the default appearance of your Toolbox window. Should your windows become undocked and you need to recreate this appearance, follow these steps:

Click on the title of the window (in this case Palette Editor) and drag it into the Toolbox.



After repeating the drag-and-drop process with all windows, you should end up with a screen that looks like this:



It is recommended that you leave the Palettes window separate for ease of color selection during the drawing tasks, especially during marking.

Zooming and Scrolling

You can zoom by holding “ctrl” and scrolling the mouse wheel up to zoom in or down to zoom out. The mouse wheel will also allow you to pan across the photo if you “hold-click” the scroll (center) button and move the mouse.

Specific zoom levels can be selected using the View > Zoom command in the Main window. Fit Image in Window will zoom to the full extent of the photo in your Main window.

NOTE: Holding “ctrl” also enables the Color Picker tool, which will change your paintbrush color. Ensure that you do not left or right click when “ctrl” is depressed. **If you click, you must reselect the recreation color.**

Drawing

Lines

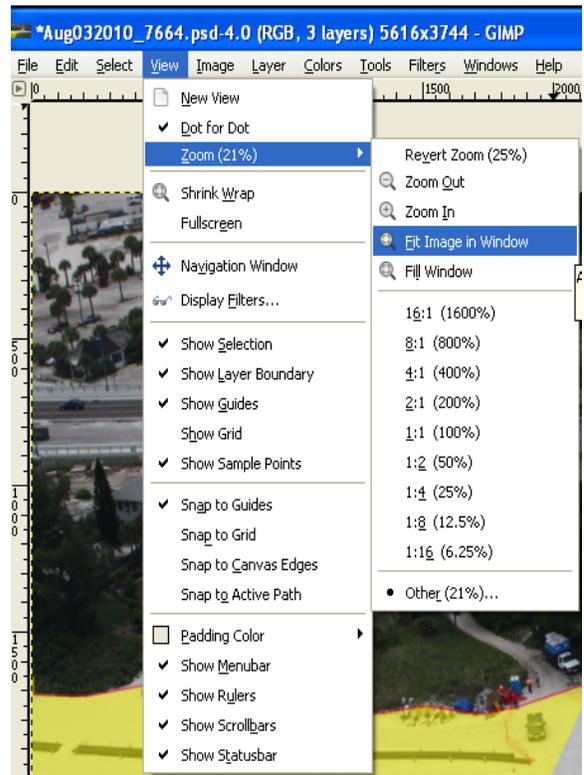
Draw lines by single clicking the first point and then pressing and holding “shift” and clicking once for each new point of the line. After clicking the last desired point, release the shift key. If you are using the Paintbucket tool, ensure that the lines of the polygon that you are drawing are closed (all vertices touching) or cross the edges of the photo. This ensures that the Paintbucket tool will fill only the polygon you have drawn with color.

Dots

Single click to create a dot on top of a recreator. Make sure that every dot you create is not touching any other dot.

Erasing

The Eraser tool can be used to correct mistakes; however, you should use Undo if the mistake is recent. When deleting a line or dot, you must erase the marks completely from the layer so that they are not counted in a later step.



Undo

GIMP allows you to undo repeatedly to correct mistakes. Use this function to ensure that an entire erroneous dot or line is cleared. Remember that when undoing a line, you must undo the initial dot that you created to begin the line, as well as all subsequent vertices.

Paintbucket

Use the Paintbucket after drawing a closed overlap polygon. Click once inside the polygon to fill it with uniform color. Use this tool during either of the redlining steps to create yellow overlap polygons.

Saving

Your work is important. Be sure to save frequently and upon completion of your work. GIMP will ask if you want to save changes upon closing of the program or a photo. Make sure that you save the photo when you are done placing red lines, overlap polygons, or dots.

Shortcuts

For easier maneuvering through GIMP, use the shortcuts listed below. Simply type the letter or sequence and the desired tool will be selected or action taken.

Command	Key
Select Layer	L
Eraser	E
Pencil	P
Paintbucket	B
Swap Colors	A
Redo	CTRL Y
Undo	CTRL Z
Fullscreen	F11

MS Canyon 252 Overflight Segment Assignment Protocols

General

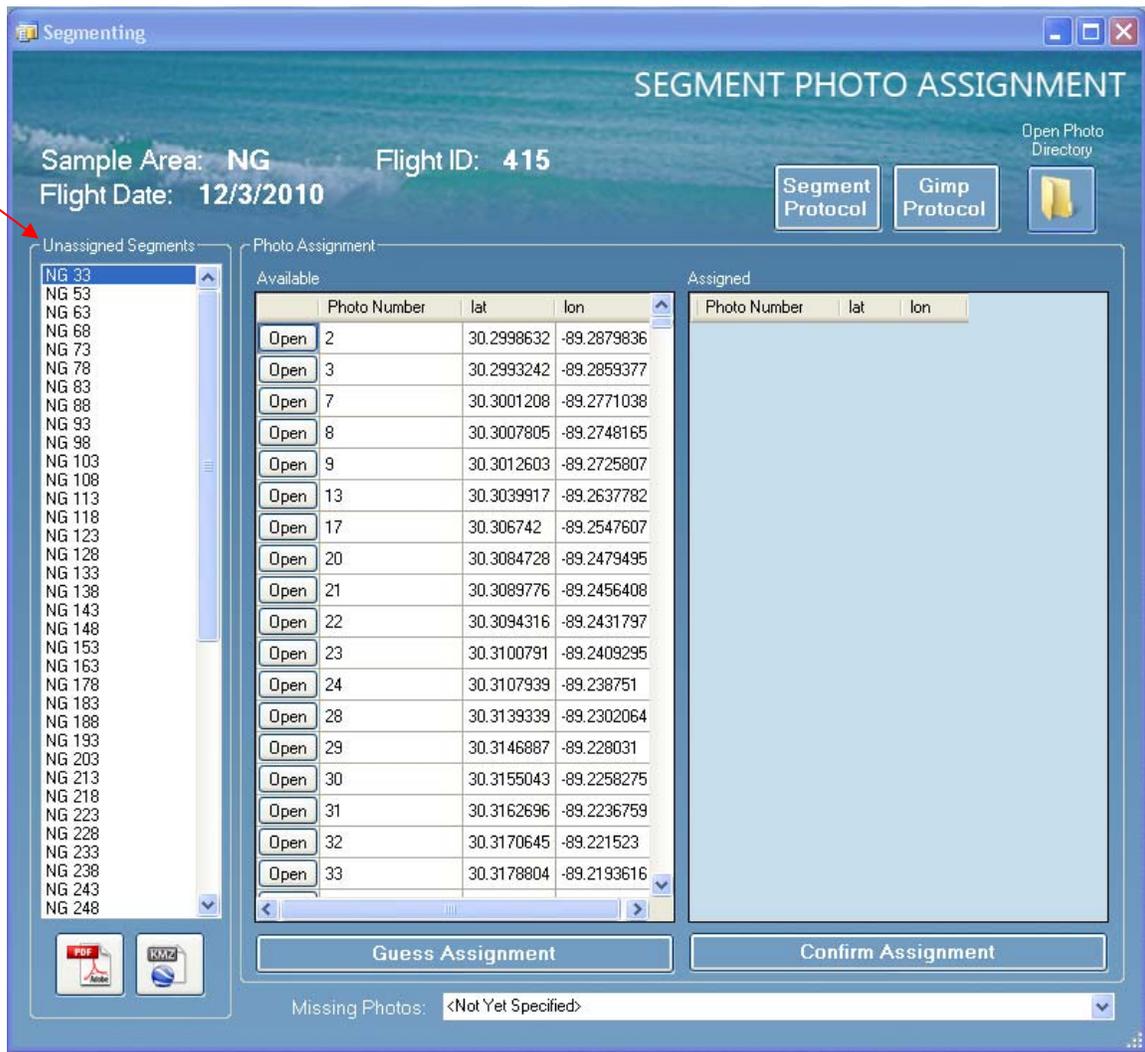
- ▶ Take all notes in your field notebook
- ▶ Send all emails pertaining to this project through your MS Canyon 252 email account
- ▶ Use your MS Canyon 252 email account for emails pertaining to this project only.

Stratus Consulting Points of Contact

- ▶ Administrative/scheduling: Kevin Lazar
- ▶ Data process manager: Justin Stein

Task 1: Segment Assignment (Segmenting)

Your goal in segment assignment is to assign overflight photos from a particular flight date to their corresponding shoreline segments, based on the coordinates of these shoreline segments. Photos must be sequential in time, thus we will add all photos available between the first and last photo. To do this, you will compare those coordinates to the coordinates of multiple image files by using the “Segmenting” application. Please follow the steps below.



1. Open the Application on your desktop and click “Segment.” The segment form will open and you will see an automatically assigned Flight ID, representing an overflight from a specific date.

Flight ID: 415

2. To the left is a column titled “Unassigned Segments.” This is the list of the segments that must have photographs assigned to them.

- To begin the assignment process, first open the reference PDF by clicking the “PDF” button at the bottom left of your screen. This will open a reference document showing photographs of the entirety of the segment to which you have chosen to assign photos.



- Next, open the Google Earth file showing your segment group by pressing the “KMZ” button, located next to the “PDF” button. This opens a Google Earth map showing the location of every shoreline segment in the North or South Gulf region. It also opens a list of GPS waypoints, which show up as dots on your Google Earth map. Each of these dots represents the location, by GPS coordinates, of a photograph, and has a corresponding file name. It is possible for a GPS coordinate to be dropped by the GPS unit during flight; double check all missing photos in the photo directory.
- Under the “Photo Assignment” box, you will see a subset titled “Available.” This is a list of all of the photographs that correspond to the Flight ID of your assignment. The box on the right, titled “Assigned,” will show the photos that you have identified as belonging to a particular segment.

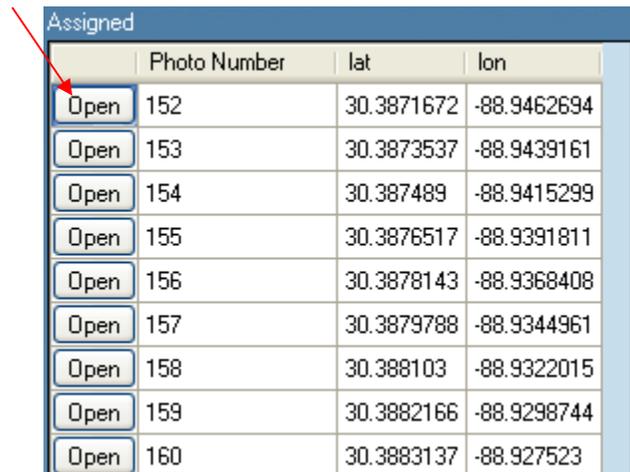
Photo Assignment

Available				Assigned			
	Photo Number	lat	lon		Photo Number	lat	lon
Open	2	30.2998632	-89.2879836	Open	152	30.3871672	-88.9462694
Open	3	30.2993242	-89.2859377	Open	153	30.3873537	-88.9439161
Open	7	30.3001208	-89.2771038	Open	154	30.387489	-88.9415299
Open	8	30.3007805	-89.2748165	Open	155	30.3876517	-88.9391811
Open	9	30.3012603	-89.2725807	Open	156	30.3878143	-88.9368408
Open	13	30.3039917	-89.2637782	Open	157	30.3879788	-88.9344961
Open	17	30.306742	-89.2547607	Open	158	30.388103	-88.9322015
Open	20	30.3084728	-89.2479495	Open	159	30.3882166	-88.9298744
Open	21	30.3089776	-89.2456408	Open	160	30.3883137	-88.927523
Open	22	30.3094316	-89.2431797				
Open	23	30.3100791	-89.2409295				
Open	24	30.3107939	-89.238751				
Open	28	30.3139339	-89.2302064				
Open	29	30.3146887	-89.228031				
Open	30	30.3155043	-89.2258275				
Open	31	30.3162696	-89.2236759				
Open	32	30.3170645	-89.221523				
Open	33	30.3178804	-89.2193616				

6. To begin assigning photos, first select a segment from the “Unassigned Segments” column. Then, press the “Guess Assignment” button. This will load the “Assigned” box with the computer’s best guess of photographs that fall within the segment you have chosen, based on the latitude and longitude of each photograph.



7. Next, check that each photo that the computer has assigned to the segment has been properly chosen. To the left of each Photo Number is a button titled “Open.” Pressing this button will open the image in Windows Picture and Fax Viewer, which allows you to scroll back and forth quickly between photographs. By comparing the assigned images to the Reference Segment PDF, you will be able to tell which photographs should be assigned to the segment.



Assigned			
	Photo Number	lat	lon
<input type="button" value="Open"/>	152	30.3871672	-88.9462694
<input type="button" value="Open"/>	153	30.3873537	-88.9439161
<input type="button" value="Open"/>	154	30.387489	-88.9415299
<input type="button" value="Open"/>	155	30.3876517	-88.9391811
<input type="button" value="Open"/>	156	30.3878143	-88.9368408
<input type="button" value="Open"/>	157	30.3879788	-88.9344961
<input type="button" value="Open"/>	158	30.388103	-88.9322015
<input type="button" value="Open"/>	159	30.3882166	-88.9298744
<input type="button" value="Open"/>	160	30.3883137	-88.927523

You should first locate the pictures showing the beginning and ending boundary of your segment. Every photograph that falls between these two points should be included in your photograph assignment for that segment, including redundant or blurry photos, as well as photos of the interior of the plane, etc. Unnecessary or redundant photographs will be removed at a later step.

8. It is possible that, in some cases, photographs of the beginning or ending boundary of your segment will not have been captured during the overflight process. You should proceed with the photo assignment task to the best of your ability regardless. Select the necessary data from the “Missing Photos” dropdown box. If no photos are missing, select the default “No photos are missing” choice.

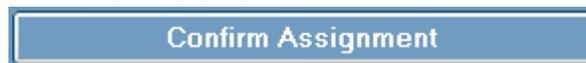


9. The computer is coded to add extra “buffer” images to its segment assignment guess. It is therefore likely that you will have to remove images from the “Assigned” box. To do so, simply double click on the photo name, which will move the photograph from the “Assigned” box to the “Available” box. Likewise, if you need to add photos to a segment, simply double click on the photo name to move it into the “Assigned” box.

NOTE: If at any point it is necessary to search through the photo directory to identify the proper photographs that correspond to a given segment, click the “Open Photo Directory” button. This will allow you to navigate the corresponding image folder and identify photographs that should be assigned to the segment that you are preparing.



10. When you have finished assigning all the photographs for a particular shoreline segment, press the “Confirm Assignment” button. The computer will ask you if you have double-checked your work. Clicking “Yes” will finalize the photo assignment for that segment, remove it from the “Unassigned Segments” list, and send it to the next step in the process.



NOTE: Before pressing the “Confirm Assignment” button, please double-check all of your work. All of your photo assignments will undergo QC at a later step. Please remember that by working carefully, you reduce the workload for others at future steps.

11. Repeat steps 6 through 9 for every unassigned segment in the “Unassigned Segments” column.
12. The “Segment Protocol” and “Gimp Protocol” buttons at the top of the form will open both protocol documents as a resource for questions and step-by-step instruction.



MS Canyon 252 Overflight Boundary Creation Protocols

General

- ▶ Take all notes in your field notebook
- ▶ Send all emails pertaining to this project through your MS Canyon 252 email account
- ▶ Use your MS Canyon 252 email account for emails pertaining to this project only
- ▶ You are responsible for providing the Aerial Photo Counts Technician with advanced notice if you are short on work.

Stratus Consulting Points of Contact

- ▶ Administrative/scheduling: Kevin Lazar
- ▶ Data process manager: Justin Stein

Task 2: Setting up the Counts (Redlining)

This task uses GIMP software. For a detailed summary of how to operate GIMP successfully, please see the “GIMP Software Training Protocol.”

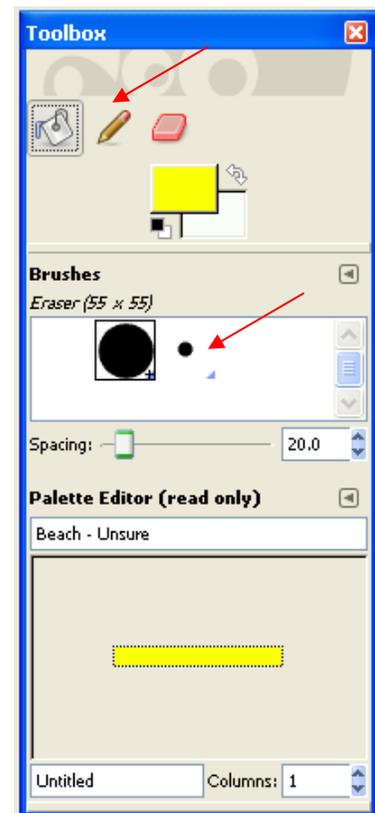
1. The purpose of this task is to create consistently delineated boundaries in which recreators can be counted. You will inspect the photographs corresponding to your group of segments, assigned in the Segmenting step, and create redlined inland boundary images in GIMP for each segment.

Open the Application on your desktop and click Redline. A new window, the Redline form, will open. You will see a Flyover ID and a corresponding series of photographs. Open the first two photos from the segment you have been assigned to redline in GIMP. Note that GIMP will open each photo in a separate window.

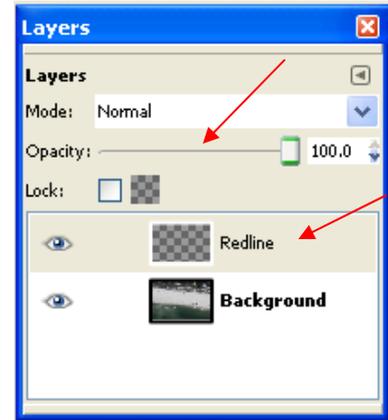
Opening more than three photos at once will cause computer slowdown. By comparing photographs side by side, you will be able to draw interior boundary lines, or redlines, as well as yellow overlap polygons.



2. Click the button “Open Reference Document,” marked with a PDF icon. This document is the guide that you will follow as closely as possible as you create your redlined photographs.
3. Look at the reference segment to see where the beginning and ending boundary red lines have been drawn. Draw these same beginning and ending red boundary lines on the first and last pictures in the segment sequence. This is done using the pencil tool in GIMP with the small brush option. To draw a straight line, click once to set a starting point, hold the “shift” key, and click again to draw a line connecting the two points.
4. Make sure that while you are redlining, every mark you make is made in the corresponding Redline layer in GIMP, which is the default layer. You can check this by looking at the Layers tab in GIMP. You should never need to select a layer other than the Redline layer. The shortcut, the L key, can be used to ensure you are working in the Redline layer.



NOTE: The Opacity slider in the Layers tab is used to make the redlines and overlap polygons more or less see-through. In certain cases, such as determining whether or not an overlap polygon has covered a recreator, you may wish to change the Opacity setting. To do so, simply slide the bar up or down depending on your desired opacity level.



5. While following the Reference Segment PDF document, draw interior boundaries on each photograph in the shoreline segment based on the reference segment document. It is critical that you copy the interior boundary lines that you see in the reference segment EXACTLY. Note that there should be no gaps in the red interior boundary line that you draw.

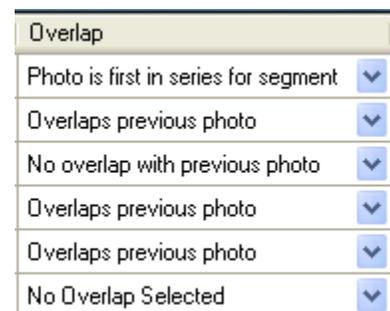
Next, draw an overlap polygon (if applicable). This will mark the area that should not be counted because it will already have been counted in a previous picture.

To find overlap, compare two sequential photographs side by side and note whether there is any area that is covered in both photographs. That area should be marked as “overlap” so that it is not counted in both photos. Likewise, any recreators that appear in more than one photo should be covered by this yellow polygon to ensure that they are not double-counted.

To mark an area as covered by overlap, draw a yellow overlap polygon. Select the yellow overlap color from the Palettes menu. By holding the “shift” key and clicking to draw lines, draw a multi-sided polygon that intersects the interior boundary line at two points. Make sure that the polygon follows the photo overlap line exactly, covers any applicable recreators, and extends to the bottom of the photo. Then, select the Paintbucket option and click once inside the polygon you have just created. This will fill the overlap area with yellow color, marking it as outside the area to be counted in a later step. Finally, select Overlaps Previous Photo in the Overlap dropdown box.

If there is no overlap between photographs, select the dropdown in the Overlap column titled “Does not overlap with previous photograph.” Please double-check before making this selection.

If you are redlining the first photograph in the segment, there will be no overlap. In this case, select the option titled “Photo is first in series for segment” in your Overlap dropdown box.



If you are redlining the first photograph in the segment, there will be no overlap. In this case, select the option titled “Photo is first in series for segment” in your Overlap dropdown box. However, if areas of the beginning a segment are not pictured select “Photos are missing from the beginning only,” if areas at the end, select “Photos are missing from the end only” and if missing areas at both the beginning and end select “Photos are missing from both the beginning and the end.”

Last, inspect the picture you are drawing boundary lines on and decide if there is sufficient coverage of inland and water areas that could be used for shoreline-based recreation. If the photograph boundary line is along the top edge of the picture you are redlining, select the option labeled “Inland Area Missing” in your Coverage column. Each picture should include an area far enough out from the shoreline so that all likely swimmers are included. In other words, there should be a significant area of water at the bottom edge of each picture in which no swimmers are found. If this is not the case, check the box labeled “Water Area Missing” in the Photo Coverage section. If there is no area missing, select the “No Missing Area” choice in the Coverage dropdown box.

Coverage	
No missing area	▼
Inland area missing (beach users possibly excluded)	▼
Water area missing (swimmers possibly excluded)	▼
Inland and water areas missing	▼
No missing area	▼
No Coverage Selected	▼

Note: For segments that *only* include a pier, there is no reason to select “Inland Area Missing” or “Water Area Missing.” Since the pier represents a segment, a photo missing from the segment would be a case of “No Overlap.”

If the overlap does not extend through the height of the beach or water, select “No Overlap.”

If you have already selected the “No Overlap” option, the Coverage selection will not be dependent on the extent of the overlap.

Please take care in assigning photo data because all of your selections must undergo QC at a later step.

- When you are finished redlining a photo, save and close it. Then choose “Redlining Complete” in the Redline Status column. Repeat the redlining process for every photograph in the segment.

Redline Status	
Redlining Complete	▼
No Redlining: Photo does not appear to be of part of segment	▼
Not Yet Redlined	▼

7. If a photograph has been incorrectly assigned to your segment, meaning that it shows shoreline area that falls outside of the segment you are redlining, select the dropdown box titled “Incorrect Photo Assignment for Segment” in the Redline Status dropdown column. This step will be double-checked by the QC team. This button can also be checked if the photograph is a complete duplicate of another photograph and contains nothing but overlap or if it shows only an image of the sky or interior of the aircraft.
8. When you have finished drawing boundary lines on every photograph that corresponds to the segment, select “Confirm” in the main Redline form. All of your boundary lines will be reviewed by a QC team member who will either approve it for marking or send it back to you for further revisions.



NOTE: Before pressing the “OK” button, please double-check all of your work. All of your boundary lines and overlap polygons, as well as assigned photo data, will undergo QC at a later step. Please remember that by working carefully, you reduce the workload for others at future steps.

9. The “Redline Protocol” and “Gimp Protocol” buttons at the top of the form will open both protocol documents as a resource for questions and step-by-step instruction.



MS Canyon 252 Overflight Boundary Line Quality Control Protocols

General

- ▶ Take all notes in your field notebook
- ▶ Send all emails pertaining to this project through your MS Canyon 252 email account
- ▶ Use your MS Canyon 252 email account for emails pertaining to this project only.

Stratus Consulting Points of Contact

- ▶ Administrative/Scheduling: Kevin Lazar
- ▶ Data process manager: Justin Stein

Task 3: Redline Quality Control

This task uses GIMP software. For a detailed summary of how to operate GIMP successfully, please see the “GIMP Software Training Protocol.”

General Responsibilities

- ▶ Answer staff questions related to aerial photo counts. Follow up with a point of contact listed above if necessary.
- ▶ Approve redlined segments and make required edits to redlined shoreline segments as needed (see Approvals Protocol below). Replace and update reference segments as needed (based on photo coverage and quality).
- ▶ Give immediate feedback to redliners based on their performance.
- ▶ Complete tasks for process managers on an as-needed basis.
- ▶ This process requires knowledge of the [Segmenting](#) and [Redlining](#) Protocols; review these protocols before starting this task and later as needed.

Approvals Protocol

Please refer to the protocol for “Task 2: Redlining” for details on how to create boundary lines and overlap polygons and the “GIMP Software Training Protocol” for details on operating GIMP software.

1. You will be assigned a group of shoreline segments from a particular set of overflight photographs. You will inspect the photographs corresponding to your group of segments and edit “redlined” photographs that have been completed by a team in the previous step.

- Open the Application on your desktop and press QC. The Redliner QC Assignment form will open and you will see a list of photographs, all corresponding to a Flyover ID, flight date, and segment number. All of these photographs should have red boundary lines drawn. The top half of the form will show you the history of the previous steps that the flyover has already been through. This will give you background on the segment, should you need it.

Quality Control

SEGMENT AND REDLINE QUALITY CONTROL

Flyover ID: 22861
Flight Date: 8/31/2010
Segment: SG 286

QC Protocol Gimp Protocol

Flyover and Photo History

Timestamp	Name	Action	Comment
6/13/2011 4:36 PM	jstein	New Flyover of Segment Added to System	
6/14/2011 1:13 PM	therbertmsc	Segmenter Updated Flyover Missing Photos Setting	No photos are missing
6/14/2011 1:13 PM	therbertmsc	Photo Assigned to Flyover	
6/14/2011 1:13 PM	therbertmsc	Photo Assigned to Flyover	
6/14/2011 1:13 PM	therbertmsc	Photo Assigned to Flyover	
6/14/2011 1:13 PM	therbertmsc	Photo Assigned to Flyover	
6/14/2011 1:13 PM	therbertmsc	Flyover Has Been Assigned Photos	

Flyover Photos

	Photo Name	Coverage	Overlap	Redline Status	Confirm Removal	Redline Edited?	Comment
Open	Aug_31_2010_0011	No missing area	Overlaps previous photo	Redlining Complete	<input type="checkbox"/>	<input type="checkbox"/>	
Open	Aug_31_2010_0010	No missing area	Overlaps previous photo	Redlining Complete	<input type="checkbox"/>	<input type="checkbox"/>	
Open	Aug_31_2010_0009	No missing area	Overlaps previous photo	Redlining Complete	<input type="checkbox"/>	<input type="checkbox"/>	
Open	Aug_31_2010_0012	No missing area	Photo is first in series for segment	Redlining Complete	<input type="checkbox"/>	<input type="checkbox"/>	

Missing Photos: No photos are missing

Add Photo(s) to Flyover

Reset Segment (remove all photos and add new)

Return to Redliner

Confirm QC

Open the first two photos from the segment you have been assigned to QC in GIMP by pressing the “Open” button.

Note that GIMP will open each photo in a separate window; opening more than two photos at once will cause computer slowdown.



- Click the button with the PDF icon. This will open the reference segment, the template that you will compare against the previously redlined photographs as accurately as

possible. Clicking the KMZ icon will open the Google Earth file showing the segments in their corresponding group and geographical location. If you need to double-check the segment photo assignment, open the photo directory using the “Open Directory” button (the folder icon) to scan through each photo.



4. Quickly scan the photos in the segment you are working on to determine if you are going to edit the segment or return it to the redliner.

The segment should only be returned to the redliner if numerous, time-consuming edits are needed to ensure that the segment is properly prepared for the counting step (e.g., if the redliner forgot to add inland boundaries to a segment), press the “Return to Redliner” button on your assignment form. Doing so will prompt you to consider this decision carefully. Make sure to note issues in the comment boxes so the redliner will know what to correct.



If you choose to edit the segment, proceed to step 7.

5. If there are missing or unnecessary photos, there is an option to either add or delete photos. If you need to do both, always delete the photos first before adding any photos. To delete a photo, the redlining status must be set to “No Redlining: Photo does not appear to be part of segment” by either the redliner or a previous Quality Controller. Then check the box marked Confirm Removal to delete the photo. If the redlining status is not correct, select No Redlining from the dropdown menu and the photo will go to another Quality Controller to confirm the removal after the flyover is confirmed. You will notice that the “Add Photo(s) to Flyover” button has been disabled. Only after another Quality Controller confirms your removal can another photo be added (if necessary).

Redline Status	Confirm Removal
No Redlining: Photo does not appear to be of part of segment ▼	<input type="checkbox"/>

If you need to add a photo, click on the “Add Photo(s) to Flyover” button and the Segment Photo Assignment form will open. You can then move photos from the Available column to the Assigned column by double-clicking on the photo names. Then

select the appropriate Missing Photo” dropdown and click the “Confirm Assignment” button.

Add Photo(s) to Flyover

SEGMENT PHOTO ASSIGNMENT

Sample Area: NG Flight ID: 365 Flight Date: 3/25/2011

Open Photo Directory

Unassigned Segments

NG 73

Photo Assignment

Available				Assigned			
	Photo Number	lat	lon		Photo Number	lat	lon
Open	1	30.2171237	-88.4105327	Open	1014	30.2248686	-87.8764978
Open	2	30.2163816	-88.4129133	Open	1022	30.2250428	-87.8614066
Open	3	30.2160069	-88.4141021				
Open	4	30.2152563	-88.4164476				
Open	5	30.2145409	-88.4187891				
Open	6	30.213911	-88.4211601				
Open	7	30.2133092	-88.4235772				
Open	8	30.2127448	-88.4260968				
Open	9	30.2122374	-88.4285864				
Open	10	30.2117428	-88.4310864				
Open	11	30.2111473	-88.4335944				
Open	12	30.2104292	-88.4358367				
Open	13	30.209653	-88.4381027				
Open	14	30.2087881	-88.4403123				
Open	15	30.2079208	-88.4425844				
Open	16	30.2071477	-88.4448624				
Open	17	30.2064863	-88.4472557				
Open	18	30.2060891	-88.4496212				

Guess Assignment Confirm Assignment

Missing Photos: <Not Yet Specified>

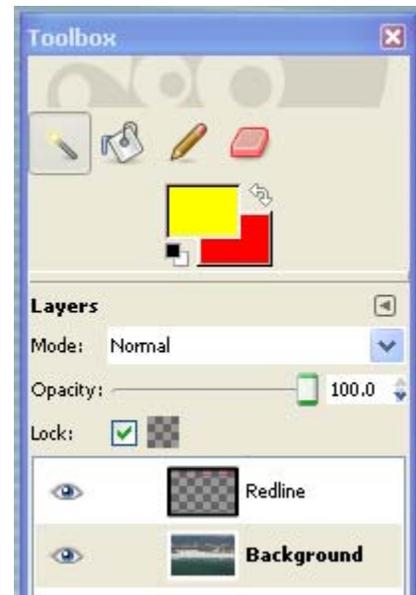
If you choose to edit the segment, proceed to step 7.

6. There may be a few cases when the photos included in the segment are incorrect, non-sequential (i.e., different flybys) or need to be returned for segmenting. In these instances, you can choose to reset the segment. This will reset the segment, remove the photos, and open the Segmenting form. After you add the new photos and press the “Confirm” button, the segment will be sent back to the redlining step.

Reset Segment (remove all photos and add new)

If you choose to edit the segment, proceed to step 7.

7. While comparing the two documents side by side, use the following checklist. Consider each element very carefully before saving your edits:
 - ▶ Check that both beginning and ending boundaries are accurate, in location as well as angle.
 - ▶ Determine if the segment document shows the correct side of the shoreline in cases where segments are found on both sides of a peninsula, barrier island, or isthmus. For example, in the North Gulf region, there are stretches of land with segments on the north and south shores.
 - ▶ Check that the following inland boundary lines are drawn accurately:
 - Correct vegetation line
 - Correct house line
 - Correct pools and patios included
 - Overlap appears to be correct.
8. If edits are required, use the Eraser tool to make sure that you completely remove the markings you wish to change. You can also use the Fuzzy Select feature to click on an overlap and delete the entire polygon, just make sure to go to **Select>None** before attempting further edits. Then redraw the lines or overlap polygons using the Pencil or Paintbucket tools, making sure that the lines you draw completely match the interior boundary lines as shown in the reference document and that every overlap polygon is correct with regards to the previous photo.
9. Ensure that while you are editing, every mark you make is made in the corresponding Redline layer in GIMP. You can check this by looking at the Layers tab in GIMP. The shortcut “L” can be used to ensure you are working in the Redline layer. Upon completion of any edit, you should check the box on the form that corresponds to the photo in order to confirm that you have made edits. In the Comment column, provide a quick explanation of the nature of the edit (e.g., Edited Overlap, Redlined Pool). It will be saved upon confirmation.



10. Accompanying every photograph will be a set of data about that photograph. That data includes information such as “No Overlap,” “Beginning Pictures Missing,” “Ending Pictures Missing,” “Inland Area Missing,” “Water Area Missing,” and “Incorrect Photo Assignment for Segment.” It is your responsibility to double-check all of this information and make sure that it is correct. If necessary, change this information in your Redline QC data entry form using the dropdown boxes.

	Photo Name	Coverage	Overlap	Redline Status	Confirm Removal	Redline Edited?	Comment
Open	Mar_22_2011_2007	No missing area	Photo is first in series for segment	Redlining Complete	<input type="checkbox"/>	<input type="checkbox"/>	
Open	Mar_22_2011_2006	No missing area	Overlaps previous photo	Redlining Complete	<input type="checkbox"/>	<input type="checkbox"/>	

If a redliner has marked a photo as being incorrectly assigned to a segment, you will be asked to confirm the removal of the photo. If the photo does belong in the segment, simply change the redlining status.

11. Once you have finished editing a photo, save and close it. Then mark the redline status as “Redline Complete” in your data entry form.
12. Repeat these steps for all photos in your assigned segment. When you have finished editing a segment, click the “Confirm QC” button on your data entry screen. Doing so will prompt you for confirmation. After finishing a segment, move through the rest of the segments in your queue.



NOTE: Before pressing the “Confirm QC” button, please double-check all of your work. Please remember that by working carefully, you reduce the workload for others at future steps.

13. The “QC Protocol” and “Gimp Protocol” buttons at the top of the form will open both protocol documents as a resource for questions and step-by-step instruction.



MS Canyon 252 Overflight Picture Count Protocols

General

- ▶ Take all notes in your field notebook
- ▶ Send all emails pertaining to this project through your MS Canyon 252 email account
- ▶ Use your MS Canyon 252 email account for emails pertaining to this project only.

Stratus Consulting Points of Contact

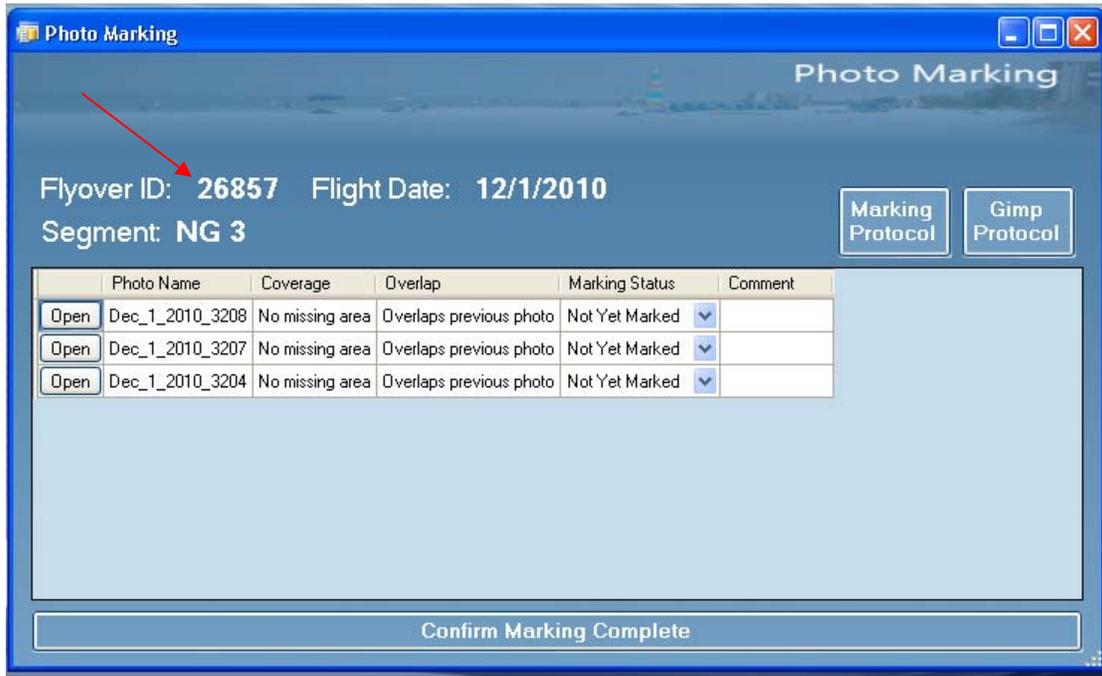
- ▶ Administrative/scheduling: Kevin Lazar
- ▶ Data process manager: Justin Stein

Task 4: Photo Marking

This task uses GIMP software. For a detailed summary of how to operate GIMP successfully, please see the “GIMP Software Training Protocol.”

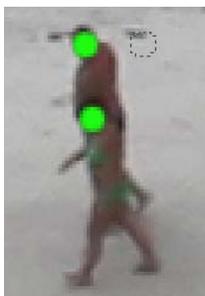
The purpose of this task is to count potential recreators within the delineated boundaries in each picture. Open the Application on your desktop and click Mark. A new window, the Marking form, will open and you will see a list of photos that are ready to be counted. These photographs correspond to the Flyover ID that is listed at the top of the form.

Select a photo and open it in GIMP by pressing the “Open” button. Note that GIMP allows you to open multiple photos at once. However, when performing Task 4, there is no reason to open more than two photographs at a time. Opening more will result in computer slowdown.



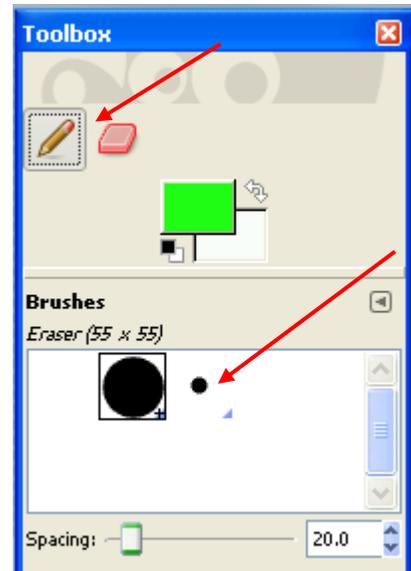
- Zoom in on a given area of a picture. Each person within the red boundary lines potentially recreating should be marked with an appropriately colored dot, including people in the water but excluding people in the areas that are shaded yellow.

Note that you should not mark potential recreators who fall outside the red boundary lines or under the yellow areas. However, a person who is crossed or touched by a red boundary line is considered within the countable area.



To make the dot, select the Pencil function in the Toolbox window and choose the small brush in the Brushes window. Next, mark a dot on a recreator's head or body by clicking once. Be sure that none of the dots you have made touch each other, especially in crowded areas. Make sure you have selected the appropriate color from the Palettes menu.

The Palettes menu has a list of 23 color/activity combinations to choose from. It is extremely important that the correct color is chosen for each recreator, as the computer will base its counts on your selection. In addition, it is important that dots never overlap. It is okay to offset dots to a person's arm or leg if needed.



Note: In some cases, the segments you are counting may not contain areas of sandy beach. They may instead be comprised of rip-rap (anti-erosion rocks or other materials), rocky shoreline, or marsh. In cases such as these, the shoreline feature that is present should be treated as a beach area and subjected to the same counting protocols.

The people that should be counted include every potential recreator within the delineated boundaries. Examples of people who are not potential recreators include lifeguards, oil-spill cleanup crews, beach maintenance crews, police officers, and anyone who can be clearly identified as engaging in a non-leisure activity.

Note that a person who is involved in a particular activity must be actively participating in that activity beyond reasonable doubt. For example, a sunbather lying on the beach next to a fishing pole would not be classified as an angler but as a general recreator. However, a person carrying a tackle box and fishing rod would be marked as an angler. Additionally, some activities can only take place in one location.

The number of motorboats, sailboats, jet skis, canoes/kayaks, and “Other” types of boats are also marked on each photograph in addition to marking any people aboard these watercraft. Unmanned, unmoored boats are included in the counts (i.e., the boat is in the water but the occupants are outside the boat).

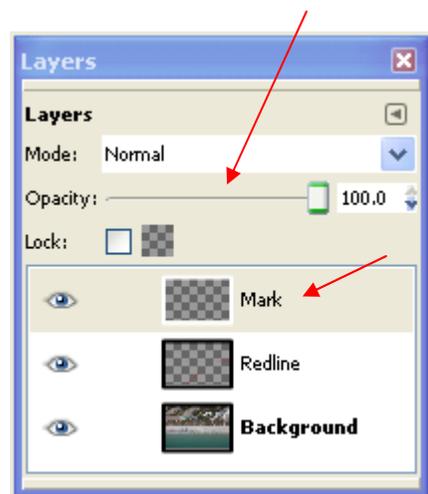
If there are shapes in the picture that look like people recreating but you are not completely sure, mark these with an “Unsure” dot. There is an “Unsure” selection that corresponds to each recreation area.



2. To select a color, click on it in the Palettes menu. Then click that color again in the palette editor menu. You must select the color through the palette editor menu or the color will not change. Make sure that you have selected the proper color whenever you change the color of your marking dot.
3. Make sure that while you are marking, every dot you make is made in the corresponding Count layer in GIMP, which is the default layer. You can check this by looking at the Layers window in GIMP. The shortcut “L” can be used to ensure you are working in the Mark layer.
4. The Opacity slider in the Layers tab is used to make the redlines and overlap polygons more or less see-through. In certain cases, such as determining whether or not an overlap polygon has covered a recreator, you may wish to change to Opacity setting. To do so, click on the Redline layer and simply slide the bar up or down depending on your desired opacity level. All GIMP users performing the photo counts task should set their Opacity slider to 50% in the Redline layer whenever a photograph is open, so that overlap may be double-checked and recreators are more visible.

Before you save your work, *ensure that the Opacity slider for your Count layer is set to 100%.*

5. To erase a dot or an errant mark, use the Undo function (preferred) or the Eraser tool. Ensure that when you erase a dot, you erase it completely.
6. After you finish marking the photo with dots, save and close it. Enter the corresponding photo data in the User Interface for every photo that you count. After saving and closing a photograph, return to the data entry application, and choose an option from the “Marking Status” dropdown menu. There are four options:



- a. “Not Yet Marked” is the default selection before a photo is examined
- b. “Marked” should be selected once a photo has been marked
- c. “Marked, But No People Present” should be selected for a photo that has been examined but contains no recreators
- d. “Marked, Some People Cross Redline Boundaries Between Photographs” should be selected when there is an error with the overlap. An aerial photo counts technician must approve this option
7. After marking all of the photos in a segment, press the button “Confirm Marking Complete” at the bottom of your data entry screen.

Marking Status	Comment
Not Yet Marked	
Marked	
Marked, But No People Are Present	
Marked, Some People Crossed Redline Boundaries Between Photographs	

Confirm Marking Complete

NOTE: Before pressing the “Confirm Marking Complete” button, please double-check all of your work. All of your marks will be recorded and counted by a computer script, so please ensure that you have used the correct color-activity combination for every mark you make and that all boats have been marked with a dot. Please remember that by working carefully, you reduce the workload for others at future steps.

8. The “Marking Protocol” and “Gimp Protocol” buttons at the top of the form will open both protocol documents as a resource for questions and step-by-step instruction.



MS Canyon 252

Aerial Photo Counts Quality Assurance and Reconciliation Process

Overview

In order to maintain and ensure the high quality and integrity of aerial photo count data, there are several QC and data reconciliation steps built into the Aerial Photo Counts Process.

For an overview of the various steps involved in the Aerial Photo Counts Process, please see the MS Canyon 252 Aerial Photo Counts Process Overview.

Quality Control Processes

1. Each step in the Photo Counts Process is individually tracked through the assignment of programmatic process numbers. These numbers indicate the exact step at which any piece of data is located. This information is viewable in a process queue at all times by process management staff.
2. All interior boundary lines and overlap polygons are double-checked by specialized staff before they are approved for the marking step.
3. Every step in the process is reversible. Should an error occur, the overflight, flyover, or segment can be corrected and re-introduced to any previous step in the process.
4. A backup copy of every layer that is created is archived in a separate, corresponding file directory.
5. Every photo goes through a double-blind entry system involving at least two photo markers. The two counts are subjected to one of the following two reconciliation rules:
 - a. If the average of the two counts is less than or equal to 20, the two counts cannot differ by more than 2.
 - b. If the average of the two counts is greater than 20, the difference of the two counts cannot exceed 10% of the average.

In the event that the two counts do not satisfy one of the reconciliation rules above, the photo is queued for a third entry. Additional counts continue until any pair of counts satisfies one of the reconciliation rules above. At this point, the photo is marked as “complete.” The average of the two final counts for any photo is recorded in the database.

6. Random .psd checks: Random file samples will be drawn from the archives and compared to the database in order to ensure that the files and database are correct and that all layers are available for viewing.
7. Random 10% checks: At specific times during the data entry process, a random 10% of the segments are pulled for comparison against the recorded counts for verification.
8. Any .psd file can be easily recompiled at any time in order to double-check it against the database.
9. Administrative functions will be completed programmatically. This means that the database is never altered directly and that all steps are viewable and reversible.
10. Any automated function can be initiated manually by process management staff, in addition to being run through the George script.

Exhibit E. Trustees' Estimated budget

Memorandum

To: Katherine Pease, NOAA Office of General Council; Norman Meade and Anthony Dvarskas, NOAA Office of Response and Restoration

From: David Chapman, Eric Horsch, and Justin Stein, Stratus Consulting Inc.

Date: 10/21/2011

Subject: Budget Estimate for Aerial Photography and Processing

Overview

Overflights are being conducted to take high-definition photographs that record recreational use levels in coastal areas potentially impacted by the Deepwater Horizon oil spill. This memorandum describes the costs associated with the collection of overflight photographs and transmission of raw data and processed files for the period of the effective date of the work plan through December 31, 2011, and the processing of photographs and transfer of resulting data until work plan photographs are completely processed.

Task 1: Data Collection

Avant Media Group conducts the overflights and transmits the resulting aerial photographs and waypoints to Stratus Consulting. Overflights are conducted to collect data for the Trustees via two routes: the “North Coast” and the “Peninsula” routes. These overflights are scheduled four times a week for each route: two on weekdays (Mondays through Thursdays) and two on weekend days (Fridays through Sundays). Starting in November, the Trustees will expand their contract with Avant Media Group to conduct overflights in the Florida Keys. The data collected from the Florida Keys overflights will be delivered to Stratus Consulting and then sent to and processed by BP’s consultant, Cardno Entrix.

The cost per overflight is [REDACTED] for the North Coast route, [REDACTED] for the Peninsula route, and [REDACTED] for the Florida Keys route. A reduced rate of [REDACTED] is used for the partial completion of a North Coast flight. There is no reduced rate for the partial completion of a Peninsula route or Florida Keys flight. A rate of [REDACTED] is used for each flight cancellation due to weather for all routes. Cost estimates are based on a 100% overflight completion rate. Aerial photographs and waypoints are sent to Stratus Consulting on external hard drives biweekly. Shipping costs total [REDACTED] per month. Task 1 in Table 1 shows the costs associated with data collection by the Avant Media Group for the period from the period of initiation of the work plan through December 31, 2011.

Task 2: Photograph Processing – Non-Keys Photographs

Raw photographs and waypoints are backed up onsite at Stratus Consulting and prepped for processing. Approximately [REDACTED] data processors, managed by Stratus Consulting staff, process

sampled photographs according to the developed protocols. Task 2 in Table 1 shows the costs associated with data processing from the initiation of the work plan until work plan photographs are processed. At this time, it is anticipated that processing work plan photographs will be completely processed at the end of March 2012.

Task 3: Data Transmission

All raw photographs, waypoints, and processed photographs will be delivered according to the finalized 2011 Human Use Aerial Photography Work Plan. Labor will be necessary to reformat and compile the processed photograph files for transmission. All data and files generated through August 31, 2011 can be transmitted on 12 2-TB hard drives, at a cost of [REDACTED] each. Our cost estimate assumes that the drives will be returned to Stratus Consulting to be reused for future data transmissions. Shipping costs are estimated at [REDACTED] per month. Task 3 in Table 1 shows the costs associated with data transmission.

Table 1. Proposed budget

		Task 1: Avant Media Data Collection		Task 2: Photograph Processing		Task 3: Data Transmission		Total	
		Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Stratus Consulting labor	GSA labor category	Hourly rate							
Horsch, E.	Associate (Level 1)								
Hodgson, T.	Associate (Level 2)								
Chapman, D.	Sr. Manager/Principal								
Underwood, C.	Research Associate (Level 1)								
Stein, J.	Research Associate (Level 2)								
Lazar, K.	Research Associate (Level 2)								
Jennings, J.	Support Associate								
Tallman, D.	Contracts Administrator								
Subtotal Stratus Consulting labor									
Other direct costs		Contract markup							
Office Space									
Data Storage/Hardware/Expenses									
Subtotal other direct costs									
Total markup on other direct costs									
Subtotal other direct costs plus markup									
Subcontractors									
Apple One									
Labor									
QC	Research Associate (Level 1)								
Redline	Research Associate (Level 1)								
Counter	Research Associate (Level 1)								
Application Analyst	Research Associate (Level 1)								
QC Team Lead	Research Associate (Level 1)								
Subtotal Apple One labor									
Subtotal Apple One costs									
Avant Media Services									
Other direct costs									
Supply/Copies/Mail/FedEx									
Data acquisition									
Subtotal Avant Media Services other direct costs									
Subtotal Avant Media Services costs									
Total markup on subcontractor ODCs									
Subtotal subcontractor costs plus markup									
Total									
			\$239,920		\$1,386,172		\$13,630		\$1,639,722