

Creating a Bench Mark Diagram in PDF Format

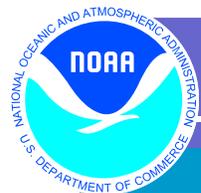
Procedure Number: SOP # 3.2.3.3 C18

Created: May 11, 2012

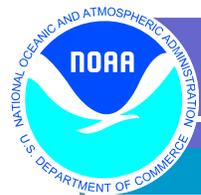
Created By: Loren Evory

Approved By: Chung-Chu Teng (Chief, ED)

1. **Title**
Creating a Bench Mark Diagram in PDF format
2. **Purpose**
Provide a method and necessary tools for field technicians to quickly and easily create BM sketches of uniform quality and format.
3. **Background/History**
There are many ways to produce a Bench Mark Diagram. Some edit JPG files using Microsoft Paint, some others use Microsoft PowerPoint, and others use a fillable PDF. This SOP provides the tools and instructions for producing a standard Bench Mark Diagram so that all field technicians can produce diagrams in PDF format quickly and easily.
4. **Scope/Applicability** Field parties (CO-OPS and IDIQ contractors) submitting or updating a Bench Mark Diagram as part of a station package.
5. **Main Processes**
 - 1) Create a Bench Mark Diagram image using the Windesc software and Google Earth.
 - 2) Capture image using Snagit.
 - 3) Add North arrow and label body of water using Snagit
 - 4) Open the most recent Bench Mark Diagram form attached to this document. Click on the paper clip icon to the left and double click Benchmark Diagram Template v2.2.pdf
 - 5) Insert previously created Google Earth image and fill in all the boxes.
6. **Detailed Sub-Processes/Checklists**
 - 1) **Create a BM Diagram image using Windesc and Google Earth:**
 - a) Open the .DES file corresponding to the station using Windesc. Go to WebTools > Aerial View > All Marks.
 - b) Verify that the bench mark and primary sensor locations are on the image based on actual knowledge of their locations. If the plotted locations are inaccurate, verify the actual location positions in the DES file and correct as necessary so they are plotted in the actual locations.
 - c) Arrange the image as necessary so that all of the bench marks are clearly visible. Adjust bench mark locations if they do not appear consistent with reality (ie bench marks appear to be in the water or someplace they aren't located in real life.)



- d) Change the symbol colors if the bench marks can't be easily seen against the background. Combination of symbol color blue and label color yellow are generally visible in the case of high contrast/low contrast Google Earth images. It is also recommended to share the style chosen to apply to all symbols and labels so that the Bench Mark Diagram could maintain uniform color scheme.
- 2) **Capture image and save the image as a JPG using Snagit.**
 - a) Open Snagit.
 - b) Under "Basic Capture Profiles" select "Region".
 - c) Click the big red capture button (Snagit should disappear).
 - d) Click on your Google Earth image and it will then pop up in the Snagit Editor.
- 3) **Add North arrow and label body of water using Snagit:**
 - a) With your Google Earth image open in the Snagit editor, select the Arrow tool under the "Draw" tab. After drawing an arrow, right click on the arrow to access the settings and change the thickness of the arrow so that it can be easily seen in the image.
 - b) Adjust your North Arrow until you are satisfied with its size, position and orientation. Adjust the color so that it stands out (red is usually a good choice).
 - c) Select the text tool under the draw tab and use it to add an "N" at the base of your arrow. Increase the font size of your "N" to at least 72pt so that it can be easily seen.
 - d) Use the Text tool to label the body of water and anything else that may need identifying.
 - e) Make sure it is saved as a JPG and close.
- 4) **Open the most recent BM Diagram form found by:** Click the paper clip icon to the left and double click Benchmark Diagram Template v2.2.pdf
- 5) **Insert previously created Google Earth image and fill in all the boxes.**
 - a) To insert your previously created image, left click in the middle of the form. Browse to your image and click ok. Your image will be stretched to fill the area. If it looks distorted, crop the original using Snagit or Microsoft Paint and repeat step a).
 - b) To find the NOAA chart number that a station is on, click on the link provided to take you to the NOAA online chart viewer. Zoom in on the map to where the station is located. Once you are suitably zoomed in, left click on the exact location of the station. The chart number will be highlighted to the right. To double check you can click "view online" to view the chart itself. If you don't know the coordinates of the station the coordinates for the position where you clicked will be listed under "Selected Point"
 - c) To find the USGS quad, click on the link provided to take you to the USGS map locator. Search for your station by either typing a nearby address or the city in which the station is located. The quad names are highlighted in yellow on the map.
 - d) Fill in the remaining boxes.
 - e) The "North Arrow" and "Label Body of Water" check boxes are an additional reminder to check that your BM diagram contains these items before submitting.



7. Quality Assurance/Control

OET will review all station package submissions for correctness and completeness. Field parties are responsible for creating the Bench Mark Diagram and displaying the locations of all the bench marks in the local leveling network of a water level station.

8. Management/Responsibility

OET is responsible for updating and maintaining this SOP.