

**NOAA, National Geodetic Survey**  
**HEIGHT MODERNIZATION COORDINATION MEETING**  
**DRAFT NOTES**  
**SSMC3, Room 8836**

Date: Thursday, February 9, 2012  
Time: 2:00-3:30 pm East Coast time

**Attendees:**

*Call-ins from:* IL (Amy Eller, Sheena Beaverson), NC (Gary Thompson), NGS online (Vicki Veilleux, Dan Callahan, Perky Falconer), NM (Earl Burkholder), PA (Brad Foltz), TX (Greg Hauger), WI (Dave Moyer); USGS (Jim Kolva)

*Silver Spring:* NGS (Renee Shields, Christine Gallagher, Joe Evjen, Gilbert Mitchell, Ross Mackay, Dave Doyle); CO-OPS (Michael Michalski, Tom Landon)

*Advisors/Coordinators:* Brian Ward (AR), Marti Ikehara (CA), Pam Fromhertz (CO), Dave Newcomer (FL), Dave Zenk (MN), Scott Lokken (NC), Jim Richardson (NE), Dave Rigney (MI), Scott Lokken (NC), Mark Armstrong (OR), Dan Prouty (TX), Dan Martin (VT), John Ellingson (WI), Bill Stone (Southwestern Region)

**1. NGS/CO-OPS Project Activities**

- **NA2011 / Geoid12 (Renee Shields)** – We continue to move forward with NA2011, and Dan Roman is now working closely with the project team in preparation for Geoid12. Advisors are getting regular mail from Dan regarding GPS on bench marks. Both projects remain on their current schedule. We are still waiting on final analysis of some special projects (e.g. Gulf Coast and WI) which are crucial to GEOID12.
- **Geoid12 / OPUS (Joe Evjen)** – OPUS will use Geoid12 as soon as it is available, and the OPUS team is continuing to look for a better way to better display error for OPUS solutions.
- **Washington Monument Height Mod (Dave Doyle)** – NGS is working with NPS. There is significant interest in post-event (i.e. August 2011 earthquake) information, so comprehensive leveling will be completed for the first time in 30 years. NGS will make every effort to collect GPS observations at the top of the monument for the portion of the survey when scaffolding has been constructed.
- **CO-OPS annual inspections (Tom Landon)** – Field crews are completing annual inspections of water level gauges in the Virgin Islands, Puerto Rico, Florida, and some of the Pacific Coast.
- **CO-OPS sentinel sites (Tom Landon)** – CO-OPS is reconnecting with Louisiana Spatial Reference Center to install CORS at three remaining sentinel sites. To learn more

about this definition of sentinel site, visit:

[http://www.noaa.gov/features/monitoring\\_1008/sentinels.html](http://www.noaa.gov/features/monitoring_1008/sentinels.html).

## 2. NGS Outreach/Education

- **Height Mod webpage (Renee Shields)** – Updates continue to be made to the web. New pages currently under construction include FAQ and Projects. Projects will highlight interesting, large, and/or unusual projects (e.g. MS leveling and GPS; WI leveling re-adjustment). Stay tuned for more updates – we are currently also updating contacts and events information and welcome input from states who would like to post links, stories, or information on efforts in which they are active.
- **Geodetic and tidal workshop (Dave Doyle)** – Event was just held at the New York State (NYS) annual surveying conference. NYS is unique because it has both Great Lakes and Ocean coasts. Jeff Oyler was in attendance from CO-OPS and the workshop was very well-received.
- **Geospatial Summit** – Planning efforts continue. There will be a full day on Sunday July 22 and a two hour Special Interest Group (SIG) meeting 12-2 on Tuesday July 24 in San Diego, CA.
- **ESRI attendance (Sheena Beaverson, Renee Shields)** – Sheena is still willing to coordinate a height mod poster group in the map gallery. All that is required to participate is a map be sent to Sheena who will attend and display at the event. IL can submit 2 maps, WI 1-2, NGS 2-4, and we are still looking for more interest.
- **RTN Symposium (Renee Shields)** – NGS is hosting an RTN Symposium in Memphis, TN on July 16-17. Contact Bill Henning for more information. Registration will be free, more details to come.
- **Great Lakes Waterways Conference** - Rich Edwing will attend the meeting Feb. 22-23 in Cleveland, OH. (The 2012 Great Lakes Waterways Conference is held annually in a joint effort between the USCG, The Army Corps of Engineers, the surrounding states that border the Great Lakes, The Passenger Vessel Association, American Waterways Operators, the Lakers, the international shippers, the facilities and ports that receive vessels, and many other industry representatives. Attendees range from high level military officers from mainly the USCG, CCG and the USACE to all the major industry representatives and other key stakeholders.)

## 3. Updates from States – e.g. outreach, projects

- **MN (Dave Zenk)** – Planning continues for the Great Lakes Height Mod meeting in March. Registration materials are now available online at <http://www.dot.state.mn.us/row/training.html>. Dave Zenk and Renee Shields are both scheduled presenters.
- **VT (Dan Martin)** – VT is currently writing a report to send in leveling to NGS that will fix problems along Lake Champlain / Route 7 corridor. The work will be submitted as a

horizontal bluebook project that was set up as a footprint survey around the CORS. Six hours of observations were completed on surrounding bench marks and tied directly to CORS. This effort helped calibrate the geoid model at the CORS and get direct ellipsoid heights on these bench marks to get to RTN users. One CORS has a significant published velocity (downward 14.5 mm/yr), so that is now being investigated with Jake and Giovanni. Additional input from Height Mod partners would be appreciated. Pam Fromhertz commented there were some CORS on buildings near Denver Airport showing similar problems.

#### 4. Monthly presentation

*Presentation, to start at approximately 2:30 PM:*

##### **USGS Stream Gages and Vertical Datums**

Jim Kolva, USGS; Renee Shields, National Geodetic Survey

##### *Summary:*

USGS is working with NOAA on an effort to update their stream gage database to standardize the vertical datum used as the reference to NAVD 88. NGS and USGS are interested in partnering with interested parties across the country to work on this effort.

##### *Speaker biographies:*

Jim Kolva has worked in the Streamgaging program of the USGS for 33 years. In 2000, he became the Office of Surface Water data program liaison and currently serves in that capacity. He is responsible for Surface Water Quality Assurance Review coordination, Office of Surface Water training coordination and support of the National Streamflow Information Program.

Renee Shields is currently Project Manager for the Height Modernization Program. While at NGS, Renee has been heavily involved in the geodetic adjustments for the North American Datum of 1983, integration of new GPS projects into the National Spatial Reference System (NSRS), and has extensive experience in GPS and Geoid Height analysis.

**Slides are available here:** <http://www.ngs.noaa.gov/heightmod/MeetingNotes.shtml>

##### *Q/A and other points of discussion:*

- **Shields:** Renee briefly explained the progress / efforts that have been made to this point.
  - The objective is to identify organizations at the local level who are interested in supporting this effort, and provide them with contact information for the local USGS Water Science Center Data Chief. When their surveys take them near the stream gages, these organizations can observe a tie to the bench marks at the gages and provide updated heights to USGS.
  - In Missouri, there was an effort to complete a state-wide Height Mod survey. Unfortunately, funding and people were cut as the project was beginning. Some data was collected, but it has significant holes. Paul Rydland (USGS, MO), is continuing to develop a method to update stream gages in MO and David Ulrey

(USACE) has developed a conversion method to use in the field. Paul is a registered land surveyor and admittedly has more resources at hand than many USGS office will have.

- **Thompson (NC)** – As NC is completing Height Mod projects, they recover bench marks for the stream gages. When the mark is close, then the mark is generally leveled to. In the mountains, most marks have been leveled to, but in the Raleigh area direct GPS on reference bench marks has been the strategy to update the heights. After completing observations, NC submits the elevations to local USGS contact in NC. To date, NC has submitted 30-40 updated elevations. These have not yet all been updated in USGS' database.
- **Rigney (MI)** – MI has leveled through 11 gages, and is meeting with local USGS representative to get the data incorporated.
- **Beaverson (IL)** - Who should be the primary USGS points of contact to find the location of these gages? IL is completing leveling and could incorporate reaching the gages in our plans if we know where they are.
- **Kolva (USGS)** – The best point of contact is the Data Chief at the Water Science Centers. In California the Field Office Chief often serves as the local Data Chief, but in most districts that is not the case. Jim can provide contact information by request. Also, the USACE application U-SMART has active USGS gages as a layer to display in the viewing map application. (see links below)
- **Ikehara (CA)** – You can also find gages online by state and county from the USGS web pages. (see links below) You can pull by county or state. Marti suggested a map or list of which stations are of highest priority.
- **Foltz (PA)** – PennDOT is willing to help. Are there specifications that should be followed to achieve a particular level of accuracy?
- **Kolva (USGS)** – It depends on the cooperating partner (e.g. NWS), but a good rule of thumb is 0.1ft. About 4400 stream gages are NWS forecast sites, and are therefore a priority. When USGS leveled in a gage, the intended accuracy of loop closure was 0.1 ft. Any accuracy will be accepted, just specify what it is when you submit the heights.
- **Doyle** – 0.1' matches FEMA requirements.
- **Ikehara (CA)** – There are options now for establishing heights that didn't exist years ago. NGS is developing a decision tree for determining accuracy requirement and method for achieving that accuracy.
- **Zenk (MN)** – Requested Jim K send the list of contacts to those on the phone. He will do that.

***Useful web resources that came up in discussion:***

- USACE's U-SMART <https://rsgis.crrel.usace.army.mil/apex/f?p=493> (View Mark Huber's presentation from the October 2011 Height Mod monthly meeting to learn more).
- USGS "Science in your state" <http://www.usgs.gov/state/> (then navigate to stream gage info)
- USGS "Water data for the Nation" <http://waterdata.usgs.gov/nwis> (then navigate to stream gage info)

**5. Other Business**

- Previous months' meeting notes and a list of future meeting presentations can be found at: <http://www.ngs.noaa.gov/heightmod/MeetingNotes.shtml>
- Next meeting: Thursday, March 8, 2012; 2:00-3:30 East Coast Time
- Next speaker: Dru Smith will present information on the Geoid Slope Validation Survey of 2011 (GSVS11). See below for more information.

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**March 8, 2012**

Geoid Slope Validation Survey of 2011 (GSVS11)

Dru Smith, National Geodetic Survey

NGS completed an extensive survey of a 300 km north-south line from Austin to Corpus Christi, Texas to validate an important component of the latest gravity surface model. Preliminary results show significant benefit is being realized from the GRAV-D survey project.

### **Recent Past Events**

**January 9-11, 2012, Saratoga Spring, NY** – New York State Association of Professional Land Surveyors

**January 12-14, 2012, Chamberlain, SD** - SDSPLS Annual Convention

**January 25-27, 2012, Wisconsin Dells, WI** - Wisconsin Society of Land Surveyors (WSLS) Annual Institute

**February 2-3, 2012, Corvallis, OR** – Oregon State University Basic GNSS Geomatics Workshop

**February 2-3, 2012, Honolulu, Hawaii** – Hawaii Land Surveyors Association Annual Conference

**February 6-7, 2012, South Beach, OR** – NOAA Hydrographers Workshop – Basic GNSS< OPUS-Projects

### **Upcoming Events**

**February 9-10, 2012, St. George, UT** – Utah Council of Land Surveyors 2012 Convention

**February 9-10, 2012, Lewis Center, OH** – Professional land Surveyors of Ohio Annual Conference

**February 13-14, 2012, Anchorage, AK** – Alaska Surveying and Mapping Conference

**February 15-17, 2012, Great Falls, MT** – Montana Registered Land Surveyors Conference

**February 15-17, 2012, Stevens Point, WI** – Wisconsin Land Information Association Annual Conference

**February 16-18, 2012, Springfield, IL** - Illinois Professional Land Surveyors Association Conference

**February 17, 2012, Bloomington, MN** - MSPS 60th Annual Meeting 2012

**February 21-24, 2012, Ypsilanti, MI** – Michigan Society of Professional Surveyors 71<sup>st</sup> Annual Meeting

**February 22-24, 2012, Washington, D.C.** – Esri Federal GIS Conference

**February 26-29, 2012, Annapolis, MD** – National States Geographic Information Council

**March 5-9, 2012, Honolulu, HI** – Hawaii Pacific GIS Conference 2012

**March 20-22, 2012, Breezy Point, MN - 2012 MNDOT Surveys Technical Workshop**

**April 18-19, 2012, Champaign, IL - Illinois GIS Association Spring Conference**

**May 6-10, 2012, Rome, Italy – International Federation of Surveyors (FIG) Working Week**

**July 15-18, 2012, Indianapolis, IN - 11th International Conference on Precision Agriculture (ICPA)**

**July 21-24, 2012, San Diego, CA – Survey Summit**

**July 22 & 24, San Diego, CA – 2012 Geospatial Summit**

**July 23-27, San Diego, CA – ESRI User Conference**

**July 29-Aug1, 2012, Philadelphia, PA – Transportation Research Board Geospatial Data Acquisition Technologies in Design and Construction (AFB80) Committee Summer Conference**

**October 16-17, 2012, Naperville, IL - Illinois GIS Association Fall Conference**