

OREGON GNSS USERS GROUP MEETING MINUTES

Date: January 21, 2022

Location: Salem Convention Center—Salem, Oregon

Board Members Present: Randy Oberg, Chair (outgoing)
Ken Hoffine, Chair (incoming)
John Minor, Treasurer (outgoing)
Eric Zimmerman, Treasurer (incoming)
Chris Munson, Secretary

Called to Order: 1:00 pm
Adjourned: 3:50 pm
Contact Hours: 2.5 hours

Business Meeting (1:00-1:10)

- Introduction by Randy Oberg, Chair. Reviewed agenda change due to scheduled presenter Ken Austin being out sick.
- Elections: Mark Armstrong, previously elected Chair-Elect and due to become 2022 Chair has stepped aside. Randy Oberg nominated Ken Hoffine for Chair, Samantha Tanner for Chair-Elect, Eric Zimmerman for Treasurer, and Chris Munson for Secretary. The nominees were elected by acclamation of the members present.

Ground Penetrating Radar (GPR) Technology by Chris Pucci from the Oregon Department of Transportation (1:10-2:00)

- Chris Pucci gave a short personal introduction to himself: He is a PLS, works at the Oregon Department of Transportation, and also is an instructor at Chemeketa Community College.
- GPR has been around for around 40 years, but was complex and hard to do. Modern GPR is much easier to use, can output in 3D and CAD.
- ODOT is currently using GPR for utility locates, buried structures, asphalt/concrete thickness, and rebar location.
- Can attach a GPS to GPR to give location of underground objects identified.
- Chris showed ODOT project examples and what the output looks like:
 - Found 1000' of paved over trolley tracks in North Portland in about 35 minutes of field time.
 - Tested pavement transition thickness on Highway 101 in Coos Bay.
- Over 30 GPR projects completed for ODOT to date, with about a 70% success rate. A 50% success rate is considered good. GPR doesn't work everywhere.
- Questions from the audience:
 - Where doesn't it work? In very wet conditions, very clayey soils. Hard to identify underground objects when subject material is similar to surrounding material. Works very well in ice.

- How deep can GPR work? On west side of Oregon, about 6-8 feet deep. On east side of Oregon, around 10-15 feet deep.
- Can it tell what kind of material is being located? No, but it can tell differences in layers, e.g., asphalt over base course over pit run rock over dirt.
- How long does it take to become comfortable interpreting the GPR readout? About 6 months. Takes practice and experience.
- Can you find survey monuments with GPR? Doesn't work well for this due to relatively small size of markers, vertical orientation. Size of object needs to be larger as depth increases in order to detect.
- Can GPR find culverts? Can easily find metal culverts in deep soil. Concrete can be hard to see in sandy soils, although the air gap within the pipe is detectable. Larger pipes are easier to see.
- Can you find septic drainfields? Yes. Pipe doesn't stand out on the GPR readout (too small) but the effluent within the pipe does.
- Does GPR work in a cemetery? Yes.

GNSS Correction services and RTX Technology by Jim Lahm & Bob Green from Frontier Precision

- After September 17, 2021 OGUG meeting, Chase Simpson of Oregon State University and Bob Green of Frontier Precision connected.
- Tested Trimble R12i (top of the line) and Trimble Catalyst DA2 (cheapest they sell) along with Trimble RTX on Chase's campus control network.
 - R12i used with Trimble Access software.
 - Catalyst DA2 used with Terraflex app and iPhone 13 Pro Max.
 - Both receivers are capable of 1 cm horizontal, 2 cm vertical, receiving ORGN correctors, RTX (satellite correctors), and Trimble VRS Now (active only in the Willamette Valley in Oregon).
- Jim went over the results of the test course. Errors were found in the Catalyst DA2 with RTX observations. These errors were sourced to the fact that RTX does not broadcast its correctors with NGS HDTP corrections. Trimble Access software automatically applies the HDTP corrections internally, while Terraflex does not. To fix this issue, a site calibration would need to be done for correct, consistent results when using software other than Trimble Access with RTX.
- A white paper describing the test course results is in the works.

Break (2:40-3:00)

GPS on BMs in Oregon Updates and Charge to OGUG by Dan Determan, NGS NW Regional Advisor (3:00-3:15)

- GPS on Benchmarks program extended to December 31, 2022. Was previously schedule to end at the end of 2021.
- Dan showed the dashboard on Oregon's progress on the NGS webpage, and links on how to share observations.
- More observed marks equals greater accuracy in NGS transformation tools.
- Randy Oberg mentioned the FindAControl app to locate benchmark locations.
- There is an NGS webinar dated 1/13/2022, overviewing the State of Wisconsin and how they completed their GPS on Benchmarks in a year.

**Online Geodetic Control Database by Chris Pucci from the Oregon Department of Transportation
(3:15-3:50)**

- Chris is trying to establish an online map & database of geodetic control in Oregon, similar to WashDOT and Oregon State Parks (OSP is internal only to the organization).
- Development is being contracted to OSU. OSU is to build the database, front end, upload mechanism.
- The control point database is a priority of the Oregon Geographic Information Council.
- Chris wants to start with ODOT control information, then add other state agencies, then bring on local governments and private firms/individuals. He wants as much metadata as possible in order to provide quality info on each control mark.
- A forum ensued on how to implement:
 - Ken Hoffine suggested adding local county information already available, specifically Lane and Douglas Counties.
 - Chris Brown mentioned DOGAMI databases.
 - Chris Munson brought up that the US Army Corps of Engineers presented at a previous OGUG meeting regarding their online control point database (USMART).
 - Bonneville Power Administration was also mentioned, but Chris Pucci indicated that they are hesitant to share their information.
- Timeline is to be determined. Chris is estimating 9-12 months for the first online tools, and 2 years to complete the entire system.

Adjourned at 3:50 pm

Minutes APPROVED by board majority (Tanner 2/2/2022, Zimmerman 2/3/2022, Munson 2/8/2022)

Respectfully submitted,



Chris Munson, Secretary
Oregon GNSS Users Group