

October 6, 2016

CSRC Executive Committee, Staff, and Members:

The Northern California GPS Users Group (NCGPSUG) is an organization of public and private, mapping and land surveying professionals that have been meeting quarterly since 2001. Our purpose is to provide an open forum for exchange of ideas, issues and concerns about the use of GPS technology.

The purpose this **letter is to introduce our organization** and share with the California Spatial Reference Center (CSRC) **about how Northern California users are accessing the California Spatial Reference Network (CSRN.)** The threat of reduced funding to support the current CSRN infrastructure has spurred us to offer our support and good will to the CSRC on behalf of a part of its Northern California base.

NCGPSUG is very interested in the continued operation of the CSRC, the CRTN and as many PBO stations as possible. **We will commit to getting the word out** about the dire funding need, working with partner agencies to join the CRTN, and spreading the word out about the CRTN, PBO station funding, and other geodetic issues to potential users in Northern California.

The California Real-Time Network (CRTN) is the primary way that users are accessing the CSRN. There are a handful of firms that specialized in geodetic control, but **the average user is seeking a way to reliably relate their projects to the CSRN** and derive NAVD88 elevations. Surveyors are averaging results to generate “azimuth pairs,” using the results in adjustments with RTK local bases, leveling, or traverses, or using the RTK stream to collect data open areas (i.e. wetland or vineyard areas.) Users appreciate authenticity of the absolute coordinates that CRTN provides.

Although the CRTN has some advantages many firms are choosing private networks for the following reasons: the availability of GLONASS, multiple-base network solutions, support, and network reliability. The CRTN is challenging with tree cover or urban canyons. For some users the technical terms have a steep learning curve. Users that have had a bad experience with a station going down will often not return to the network.

Many of the users are centered around the Bay Area, which has particular challenges mainly due to GPS velocities and a menagerie of fault lines. The ability for public agencies to monitor these changes required a robust infrastructure. We are fortunate to have the Bay Area Regional Deformation (BARD) Network of 32 Continuous GPS stations. Users would like **the relationship with BARD to remain strong**, so that we can continue to take advantage of their valuable data. They are interested in GPS Modernization with the addition of the L5 signals.

The website provides good support when we need it. The recent improvements to the website are noticeable, particularly the basis of bearings statement, better organization, and better speed. As the CSRC looks for areas to improve the website and funds become available, users would like to see better site metadata, a mobile friendly platform, and an improved SOPAC CRTN Status Map that operates more like the NGS data explorer.

We certainly appreciate the cell phone modem upgrades that UNAVCO has been making and the efforts of the executive committee, members, and staff. We value the work that all parties have put into accessing our geodetic reference frame.

As the CSRC looks at remediation to the expected reduction of PBO funding, the NCGPSUG would like to stay involved with the process **and help find funding, partners, and education**. We conducted a brief survey to compile a list of stations that are important to the respondents' practices, presented below. We must find a way to preserve, maintain, and improve this valuable infrastructure. Please consider us willing partners in the support of the California Spatial Reference Center and its partners.

Sincerely,

Northern California GPS Users Group

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