United States Department of the Interior

U. S. GEOLOGICAL SURVEY, Office of Acquisition and Grants
Reston, VA 20192

JUSTIFICATION & APPROVAL FOR OTHER THAN FULL & OPEN COMPETITION (FAR 6.-302-1)

1. Contracting Agency and Activity. The Department of the Interior, United States Geological Survey Office of Acquisition and Grants - Reston plans to contract on a sole source basis. This document sets forth the justification and approval as required by FAR 6.302-1.

2. Nature of Action Being Approved: The U.S. Geological Survey (USGS) Water Mission Area, Hydrologic Instrumentation Facility (HIF) requests an award of a non-competitive indefinite delivery, indefinite quantity (ID/IQ) contract to In-Situ, Inc. for hydrologic instruments and equipment. The HIF supports collection of hydrologic data throughout the USGS by evaluating, procuring, and quality-assuring a wide variety of specialized instruments and equipment. USGS hydrologic data is collected, maintained, and interpreted by USGS State Water Science Centers throughout the United States and its territories. In aggregate, these Water Science Centers operate networks of over 7,500 continuous record stream gages, 10,000 ground water level monitoring stations, and 2,500 water quality stations. Data collected from these monitoring sites are widely used by resource managers, regulators, scientists, engineers, consultants, and the general public to effectively and responsibly use and manage the nation's water resources. All data are collected using standard techniques and methodologies, are subjected to rigorous quality assurance checks, and are maintained in a national database containing records that date back to the late 19th century. These data are publicly available via the internet, and are extremely valuable because they can be directly compared across broad spatial and temporal scales. Because of the high quality of the data, they are almost universally accepted as the best available information by all parties in matters such as legal proceedings, compact disputes among sovereign entities, and scientific investigations by outside parties. The HIF contributes to the overall quality of these data by procuring and supplying instruments and equipment to Water Science Centers across the U.S. HIF ensures that the instruments and equipment meet any applicable USGS specifications, and performs quality assurance testing on the instruments and equipment. WSC's that obtain instruments and equipment from the HIF are assured that the instruments and equipment will provide reliable, high-quality data.

In order to effectively and efficiently accomplish its mission, the HIF requests an IDIQ contract with a period of performance of five years beginning in 2017 and ending in 2022.

3. Description of Supplies or Services: This request is for water quality and pressure sensing instruments that are used to continuously measure a suite of water quality parameters at USGS surface water stations, to make discrete, instantaneous measurements of water quality field parameters at surface and ground water stations, and to continuously measure water levels at USGS streamflow gaging stations and ground water monitoring wells. Repair and maintenance services for the proposed equipment and instruments are also requested. The proposed supplier is **In-Situ Inc**; use of this company's equipment is growing in use across the USGS because of its ability to meet applicable USGS accuracy specifications, interoperability with existing monitoring network infrastructure, and innovative new technology. WSC's deploy this equipment for extended periods of time at remote locations under harsh environmental conditions. In addition, the HIF has evaluated this equipment and verified its suitability for use in USGS hydrologic data collection activities.

4. Estimated Dollar Value. The estimated dollar value is based on a minimum of $50,000 and a maximum of $2,200,000 spread over all years.

5. Statutory Authority. The proposed action may be awarded on a sole source basis under the authority outlined in FAR 6.302-1.

6. Rationale Supporting Use of Citation in No. 5. All equipment and instruments that will be procured with this contract are commercial items. These items are essential components of the USGS national stream gaging network described in section 2. This network, and the data it produces, is a major element of the overall mission of the USGS. The equipment and instruments required for the operation of this network are highly specialized and must meet rigorous requirements for accuracy, operation in demanding field conditions, and interoperability with existing network infrastructure. These instruments and equipment are essential to the effective operation of the network and are also needed to add new stations as programs evolve. In every sense of the term this network is a major system that represents a major investment of resources through time by the agency.

It is very likely that an award to another source would result in substantial duplication of cost that would not be made up from any savings associated with competition. As an example, taking one of the instruments from the list of needed equipment (Level Troll pressure sensor system) the following duplication of costs has been estimated in consultation with a Water Science Center Data Chief. USGS WSC Data Chiefs are responsible for all aspects of hydrologic data collection and are the most informed and reliable source of information on time and costs associated with those activities. The reader should note that the hourly cost estimates include salary, benefits, and associated indirect costs (overhead):

One-time HIF evaluation costs to ensure equipment procured via competition meets applicable USGS specifications:

- 6 weeks project scientist time to design, oversee, analyze, and report evaluation (240 hours x $75/hour =$18,000)
- 4 weeks technician time to conduct laboratory and field work to complete evaluation (160 hours x $50/hour = $8,000)
- 2 weeks HIF staff time to introduce new stock item(s) into USGS One Stop ordering system and stock them in HIF warehouse (80 hours x $45/hour = $3,600)
- Total estimated one-time HIF cost: $18,000 + $8,000 + $3,600 = $29,600

Recurring field costs associated with interfacing equipment procured via competition into existing infrastructure:

- 2 additional hours field technician time to successfully interface unfamiliar equipment into existing station (2 hours x $50/hour x 200 installations (nationwide) per year = $20,000/year)
- 3 hours additional technician training time to learn and practice new calibration procedures requires (3 hours x $50/hour x 200 installations (nationwide) per year = $30,000/year)

- 8 hours additional technician time to travel to station and troubleshoot problems associated with unfamiliar equipment (8 hours x $50/hour x 200 installations (nationwide) per year = $80,000/year)
- 4 hours additional technician and supervisory time to correct erroneous data or estimate lost data resulting from unfamiliar equipment during records working and review process (4 hours x $60/hour x 200 installations (nationwide) per year = $48,000/year)
- Total estimated annual field cost: $20,000 + $30,000 + $80,000 + 48,000 = $178,000/year

Total estimated additional costs are $207,600. It should be noted that these costs are for a single piece of equipment. When applied to the list of instruments and equipment associated with this request (basically 2 major equipment types) the additional costs could approach $400,000. In addition, the additional costs incurred at the field technician level are recurring costs and would (albeit at lower levels as technicians became more familiar with new equipment) continue to be incurred in future years.

Data from the stream gaging network are used for multiple purposes, including decision-making during flooding that can affect life and property. Consequently, the USGS may be face legal liability should a key station's data not be available or of compromised quality owing to unfamiliar or poorly performing network components. It is imperative that appropriate equipment be readily available to meet national network needs, and essential that it be available to meet urgent needs when flooding occurs. It is precisely during these times of high visibility and time-critical information flow that instrument and equipment problems associated with interoperability and technician training issues could be most damaging to the agency's reputation. It is a common practice for Water Science Centers to rely on technicians from surrounding states to assist with the increased work load of maintaining network stations during flooding. These technicians could be significantly hampered in their efforts if they were to encounter equipment that they had not worked with in the past. It is not straightforward to estimate overall time or dollar costs associated with these issues. However, under conditions where new information is requested and scrutinized by customer agencies as often as every five minutes in order to protect life and property, any time delays associated with network components have the potential to damage the agency's reputation, or worse, leave it legally liable for flood related damages.

The required equipment integrates into other systems in the USGS which includes SDI-12 (a communications protocol for environmental sensors and data acquisition systems) which provides continuity of data collection activities. New equipment must be built/calibrated the same as existing equipment to ensure an apples-to-apples comparison of previously collected data. If other equipment is introduced which is built/calibrated to different specifications, new data will be skewed prohibiting accurate comparisons to the long term data record.

The following table provides specific information about the unique characteristics of the instruments and equipment being procured.

Equipment Category	Part Numbers	Unique Characteristics
Multiparameter Water Quality Sondes,	AQUA TROLL 100, AQUA TROLL 200,	Instruments can collect up 200,000 readings with a typical deployed battery life of 5 years. Operational temperature range is from -5 to 50 degrees C. Conductivity sensor

sensors, and peripheral equipment	AQUA TROLL 400 and 600	employs EPA method 120.1; temperature sensor employs EPA method 170.1. Maximum depth of water is 1120 ft. AQUA TROLL 600 includes LCD with self-diagnostics and built-in SD card slot. Communications output includes Modbus/RS485 and SDI-12
Vented Pressure Stage Sensors, and peripheral equipment	LEVEL TROLL 500, LEVEL TROLL 700, LEVEL TROLL 700H, BARO TROLL	Typical sensor battery life of 10 years allows for extended deployment in difficult and hazardous locations. Probe diameter of 0.72 in allows for easy deployment in small diameter monitoring wells and other small clearance settings. Maximum stage range 0 to 1153 ft. Communications output includes Modbus/RS485, SDI-12, and 4-20 mA. Operating temperature range from -20 to 80 degrees Celsius. 700H meets USGS OSW requirements for stage measurement accuracy.

7. Other Information. The HIF carries out its mission work by providing instruments and equipment to USGS technicians and scientists across the country. HIF procures these instruments and equipment in quantities sufficient to meet this national need. WSC's can then purchase or rent these items from HIF taking advantage of discounts associated with buying in quantity and receiving added value from the quality-assurance testing performed by HIF.

It is imperative that HIF be able to procure needed items in a timely and efficient fashion. The WSC's that HIF supports operate in an increasingly time-sensitive environment. A large portion of the hydrologic data collected by USGS is now made available to all interested parties in near real-time on a variety of USGS web pages. This capability has created a new set of demands and expectations for timely delivery of high quality data. WSC's rely on HIF to provide a ready supply of instruments and equipment to maintain this real-time stream of hydrologic data. Instrument failure, whether from routine life-cycle events, vandalism, or destruction by flooding or other acts of nature, must be corrected by WSC technicians quickly. In order to successfully meet this need, HIF must be able to procure, stock in its warehouse, and then supply to WSC's specific makes and models of equipment and instruments that will be required by its cooperators and partners.

Indefinite Delivery/Indefinite Quantity contracts provide the HIF a highly effective way of anticipating and meeting future equipment needs. HIF staff use the results of instrument evaluations, quality assurance testing data, requests from USGS field scientists, understanding of existing network infrastructure compatibility requirements, knowledge of USGS program goals and priorities, and historical performance data from the rental program to ascertain existing and future needs for specific instruments and equipment.

8. The Efforts to Identify Additional Sources Including the Market Research Conducted.

An important component of the HIF's overall mission is to actively seek out new vendors and products that meet USGS hydrologic data collection needs as well as identifying new and emerging technologies

that may improve or expand agency efforts. Consequently, market research is conducted by HIF staff on a continuous basis. HIF employees maintain numerous contacts with vendor representatives (both sales and technical staff), and are often some of the first to learn of new products and planned innovations from those vendors. HIF staff also provides information to vendors that help them ensure that new products will meet USGS accuracy and performance specifications. HIF staff attends industry trade shows and USGS national meetings annually where they can observe vendor demonstrations and discuss product capabilities. HIF welcomes vendors to visit our facility and provide presentations about, and demonstrations of, their products. Vendor visits to HIF are a frequent and regular occurrence. HIF staff also maintains a network of contacts with WSC technicians, professionals and managers. These personnel will often try a new device or manufacturer, and if they believe the equipment holds promise for USGS-wide usage, will contact HIF with a request to perform a rigorous equipment evaluation. The HIF conducts an annual process to seek input on new equipment evaluations. The process targets the Water Mission Area Discipline Offices (Surface Water, Ground Water, and Water Quality), National Program Managers, WSC staff, and it also offers vendors a mechanism to nominate their products for evaluation by HIF. Details of this process are on the public HIF website at: http://water.usgs.gov/hif/programs/instrumenteval/index.html.

9. Future Plans to Permit Competition.

HIF will continue to competitively procure all equipment and instruments that are amenable to this form of acquisition. To promote competition, HIF continually tests new devices as they become available on the market. HIF routinely attends vendor conferences, trade shows, meetings, and conferences where vendors are present. HIF also attends local Business and Procurement Expositions in order to make vendors aware of USGS needs and business opportunities. HIF encourages vendors to develop and submit products that meet USGS requirements. In addition, HIF promotes visits from vendors to demonstrate and provide information about their products.

10. Recommendation and Certification from Program Office

Based on the above, I recommend this acquisition be conducted on a sole source basis and certify the above statements are accurate.

Frank S. Henry, Assoc. Chief, HIF — Date: 10-12-16

11. Approval by the Contracting Officer in accordance with FAR 6.302-1 – only one responsible source:

MATTHEW WATHEN

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Matthew Wathen, Contracting Officer — Date

Concurrence by the Chief of the Contracting Office > $25,000

Stacey C Diamond

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JENNIFER KELLEY

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Jennifer Kelley, Bureau Competition Advocate

Date