**RG-T2441**

**Investigation of the effects of intermittent water supply on drinking water quality**

**Recommendation for Single-Sourcing Contracting**

**The Blum Center**

1. **BACKGROUND**
   1. **Intermittent water supply is a common problem in low- and middle-income countries.** Intermittent water supply (IWS), which occurs when water is not available from the tap 24 hours perday, is common in piped drinking water systems in low- and middle-income countries (Lee and Schwab,2005). Approximately 60% of households with connections to piped water supply in Latin America andthe Caribbean have intermittent service (PAHO and WHO, 2001) and it is estimated that over half ofurban water supplies in Asia and over one-third of urban water supplies in Africa operate intermittently(WHO and UNICEF, 2000).
   2. Intermittency occurs when a water utility is unable to maintain positivepressure in the entire water distribution system at one time, due to insufficient water resources,inadequate infrastructure, excessive consumption and water losses, or a combination of those factors(Coelho et al., 2003; Lee and Schwab, 2005; Vairavamoorthy et al., 2008; Yepes et al., 2001). IWS is inconvenient for users, complicates the operation of the WDS, is a risk to water quality, and may damage pipe infrastructure
   3. Despite these elevated risks, only a small portion of research on water quality in distribution systems has focused on intermittent systems and the relationships between all the related factors.

* 1. The proposed TC will lead to a better understanding of these relationships through a combination of analytical and field research works. Field data will be collected from the WDS in Arraiján, a rapidly growing suburban area of approximately 220,000 inhabitants outside of Panama City, Panama. A significant portion of households in the area receive intermittent water service, and IDAAN (Panama’s national water and sanitation utility) is making a series of investments (partially financed by the IDB, PN-L1042 program) over the next two years to improve the system’s performance. Sub-sectors of the distribution system that represent a variety of supply situations will be selected as study zones. The TC will focus mainly on backflow and intrusion.
  2. The University of California at Berkeley, through the Blum Center launched in 2006, is in the best position to design and implement a program that is specifically tailored to this work. In the past, Berkeley´s faculty has been involved not only in Bank training programs on impact evaluation, but they have also collaborated in the execution of impact evaluations of Bank financed projects. Statistical methods similar to those used by UC Berkeley researchers in previous IWS research in India (Kumpel and Nelson, 2013; 2014) will be used for this study.

* 1. Furthermore, there is a Memorandum of Understanding between the Bank and Berkeley’s Blum Center for collaboration in these type of efforts.
  2. **UCB** Berkeley is recognized for breaking down academic boundaries and developing dynamic, multi-disciplinary approaches to solving complex societal challenges. The university’s Blum Center for Developing Economies serves as a hub for bringing together non-profits, private sector, and academics to identify practical solutions to development problems. The Center for Executive Education (Berkeley’s ExecEd) helps organizations become platforms for change, by developing leaders and stimulating new thinking. The Center for Effective Global Action (CEGA) provides governments and multi-laterals with rigorous evidence to inform the design of public policies and programs.
  3. UCB faculty members have won 20 Nobel Prizes, and another 24 Nobel Prizes have been awarded to their alumni. As a group, the Berkeley faculty also includes 29 National Medal of Science honorees, 27 MacArthur Fellows, and 6 Pulitzer Prize winners, as well as 122 members of the National Academy of Sciences, and 216 members of the American Academy of Arts and Sciences. In each of the National Research Council’s surveys of U.S. universities over the last 40 years, UC Berkeley has been recognized as having the greatest number of top-ranked graduate research programs.
  4. **Blum Center:** Propelled by the energy and talent of faculty and students committed to helping the nearly three billion people who live on less than two dollars a day, the Blum Center is focused on finding solutions to the most pressing needs of the poor. Launched in 2006 at the University of California, Berkeley, the Center now spans [UC Berkeley](http://blumcenter.berkeley.edu/) (interdisciplinary), [UC Davis](http://blum.ucdavis.edu/) (agriculture), [UC San Francisco](http://www.ucsf.edu) (health/medicine), and the [Lawrence Berkeley National Laboratory](http://www.lbl.gov). The Center’s mission is to combat poverty by designing, adapting, and disseminating scalable and sustainable technologies and systems and by educating and inspiring the next generation of global leaders.
  5. Blum Center innovation teams are working to deliver safe water and sanitation solutions in eight countries; life-saving mobile services throughout Africa and Asia; and new energy technologies that emphasize efficiency while reducing negative environmental impacts. The Center's Global Poverty & Practice minor is the fastest growing undergraduate minor on campus, giving students the knowledge and real-world experience to become dynamic participants in the fight against poverty.  In addition to choosing from a wide variety of new courses, students participate directly in poverty alleviation efforts in over twenty-five developing countries.
  6. The TC will be executed by INE/WSA, which will directly contract the Blum Center to implement the program. Within the Bank INE/WSA will supervise the execution of the program. The Blum Center will provide faculty, graduate and undergraduate technical expertise. Statistical methods similar to those used by UC Berkeley researchers in previous IWS research in India (Kumpel and Nelson, 2013; 2014) will be used for this study

1. **JUSTIFICATION**
   1. Because of the nature of this project, the project team, under the coordination of the Team Leader, finds that the Blum Center at UCB is the entity that is most suited to provide technical assistance to the project given its comprehensive and experience in the matter.
   2. **Recommendation**: Therefore, given the competencies and expertise of UCB’s Blum Center, and their technical knowledge, the project team suggests contracting that entity for the amount of US$100,000 to provide technical support in implementation of the project, in single-source selection process as per policy GN-2350-9, 3.10 (d).