

Tribal Infrastructure Task Force Meeting Summary
February 14, 2013 2:00 PM – 3:30 PM (Eastern)

A. Introductions

Dana Baer	Indian Health Service (IHS) Sanitation Facilities Construction (SFC) Program
Jonathan Binder	U.S. Environmental Protection Agency (EPA), Office of Enforcement and Compliance Assurance (OECA)
Kevin Black	U.S. Department of the Interior (DOI), Bureau of Reclamation
Andy Byrne	EPA American Indian Environmental Office (AIEO)
Tedd Buelow	U.S. Department of Agriculture (USDA) Rural Development (RD)
Jennifer Bullough	U.S. Department of Housing and Urban Development (HUD), Office of National American Program (ONAP)
Marta Burg	EPA, Region 9 Tribal Caucus
Dave Clark	Rural Community Assistance Partnership (RCAP)
Vicki Cook	DOI, Bureau of Reclamation
Lori Davis	USDA RD
Tasha Deardorff	USDA RD (AK Office)
Ron Ferguson	IHS
Sheila Frace	EPA, Office of Water (OW), Office of Wastewater Management (OWM)
Adrienne Harris	EPA Office of Ground Water and Drinking Water (OGWDW)
David Harvey	EPA OGWDW
Mitch Haws	DOI, Bureau of Reclamation
Kellie Kubena	EPA OWM
Jacqueline M. Ponti-Lazaruk	USDA RD
Jon Melhus	USDA RD
Hal Neilson	USDA RD
Ken Norton	National Tribal Water Council
Nate Rawding	Horsley Witten Group, Inc.
Charles Reddoor	EPA Office of Resource Conservation and Recovery (ORCR), Office of Solid Waste (OSW)
Matt Richardson	EPA OWM
Michelle Schutz	EPA OGWDW
Ben Shuman	USDA RD
Kelly Titensor	DOI, Bureau of Reclamation
Maureen Tooke	EPA OWM
Dennis Wagner	EPA Region 10
Charissa Williar	IHS
Michaelle Wilson	EPA ORCR, OSW
Felicia Wright	EPA OW, Immediate Office of Water Supply and Water Resources Division

B. Welcome & Agenda Review (Sheila Frace, EPA)

Sheila welcomed everyone to the call, and provided a summary of the November ITF meeting. The current meeting will provide information on a water desalination project in the Navajo Nation. In addition, information from the Common Preliminary Engineering Report (CPEP) workgroup, EPA's SepticSmart campaign for homeowners, USDA's tribal consultation processes, and the Tribal Utility O&M costs workgroup will be provided. There will be time for questions, discussion about commonalities, and any ideas for the next ITF meeting. Tasha Deardorff from USDA will present information on the Rural Alaska Village Grant program.

C. Using the Sun to Desalinate Water in Navajo (Mitch Haws, Bureau of Reclamation)

Sheila introduced Mitch Haws from the Bureau of Reclamation. Mitch is a water resource planner with over 30 years experience at the Bureau of Reclamation. Mitch introduced Kevin Black as part of the team working on the solar desalination project.

Kevin Black: Kevin was the Navajo Nation's coordinator for water resource planning and development for about 15 years. In addition, he has been working on Navajo Nation for over 30 years, which has given him an appreciation for Navajo Nation water issues.

The Bureau of Reclamation area offices, including the Phoenix office, have been actively engaged with the Navajo Nation for many years. The Bureau has worked on a wide variety of issues to address the chronic imbalance between supply and demand for water. A substantial portion of the population in the Navajo Nation does not have access to reliable and safe drinking water. This is partly driven by economics and many other factors.

In the course of the investigation, the Bureau discovered a substantial resource of brackish water on the Navajo Nation, which spurred the question of how to treat brackish water for drinking water given the infeasibility of conventional solutions. The Bureau began to investigate different possible options, and combined the efforts of the Bureau's Science and Technology and the Renewable Energy programs. The goal of the project was to find a solution to produce a quality, reliable, water resource from an impaired source for a group of about 300 people currently hauling water.

Mitch Haws: Mitch encouraged the meeting participants to follow the presentation provided in advance of the call.

The project is a solar photovoltaic desalination system using a distillation technology. Initially, the project was proposed to the Science and Technology Office in Denver, but was rejected. A few years ago, the project was reconsidered and funded.

The research questions are:

- Are there opportunities to use renewable technologies in advanced water treatment to improve a marginal quality water resource?
- Is it possible to develop the technology using "off the shelf" technologies available from local vendors?

- Can this renewable energy and advanced water treatment system be a solution for people without access to traditional water and power systems (i.e., “off the grid”)?

Slide #3: Shows a schematic concept for the proposed water treatment system. The system uses a concentrated solar photovoltaic (PV) system which generates more power per amount of PV material. Also, the heat generated by the concentrated solar PV is helpful for distillation. The next technology studied was a multi-effect distillate system. This type of system works very well on a large scale, and examples can be found in the Middle East and the Caribbean. These systems can produce millions of gallons of water per day.

Slide #4: Dr. Wendell Ela from the University of Arizona has tried to replicate a multi-effect distillation system on a smaller scale to use in areas without traditional water and power systems. This was not possible, so Dr. Ela thought of using a non-pressurized membrane as the distillation process.

A proof of concept was carried out at the University of Arizona, and the system worked to produce 20 gallons of water a day. After a successful proof of concept, the idea was to increase the size of the system to produce 1,000 gallons of water a day for use at the U.S. Bureau of Reclamation’s Brackish Groundwater National Desalination Facility. Kevin Black approached Mitch and suggested applying the technology to the Navajo Nation where a large population hauls water and drought conditions are frequent.

Slide #7: In the southwestern part of the Navajo Nation, about 30% of the population hauls water. They do not have access to traditional water and power systems. The area is economically depressed, and people who are hauling their water pay about 15 times the amount people in the city pay for water based on total costs. Water in this area is often impaired and subject to persistent droughts.

Slide #8: The Bureau decided to make the project a multi-objective management opportunity. The goals of the project are to test the solar energy desalination system’s ability to increase the water volume and quality for the people in the area and also to increase opportunities for the Navajo Nation, including providing options for settlements.

Slide #9: The left-hand side of the slide shows an area where several wells were investigated. Well site 5T-529 was selected to test the technology. The site is on a bluff and has good characteristics for a distribution point. The well has a 24,000 gallon water tank on site and another tank seven miles down gradient.

Slide #10: The Bureau developed a site assessment plan for the well and tested the integrity of the well, the water level, and pumping recovery times.

Slide #11: The windmill on site is able to produce about 3-5 gallons a minute when the wind is blowing. However, there is less wind in the summer months when the water is most needed. The intent was to create a better running well using solar power to provide consistent flow during the summer. Dr. Ela tested the water for any potential contaminants such as arsenic or radionuclides.

With the information collected, Dr. Ela created a mass balance model which tells how much energy (heat) it would take to reduce Total Dissolved Solids (TDS) to certain levels. This was used to size the system.

Slide 14: Shows engineering work based on the mass balance model, including the site plan, research facility, pipes from the tank to the research facility, and evaporation ponds. In July 2012, the work contract was awarded for the construction of the facility.

Slide 15: Shows the test facility.

Slide 16: Shows the concentrated solar PV/ thermal hybrid system installed in September 2012 by a local energy firm. This unit is now working and providing power to pump water.

Slide 17: Shows the membrane distillation stack initially developed at the University of Arizona. The stack for the Navajo Nation test facility site is under construction.

Slide 18: Shows the concrete pad for the membrane distillation stack. There is also a hot water tank on the pad for the concentrated solar PV system.

Slide 19: Shows the solar PV system. The system generates around 5,000 watts of power, which is more than enough to run all the systems on the site and to pump water. Behind the PV system is a hot water system. This is similar to the cooling system used in cars. It takes the heat away from the solar PV system. The solar PV system operates efficiently at temperatures up to 110-120 degrees Fahrenheit. The byproduct of this process is heat. On January 30th, 2012, the pumping system for the wells was started.

Slide 20: Shows a schematic of the system. The left side shows the solar unit. From the bottom there is a grey arrow over to the well head. The system pumps water from about 375 feet below the ground to the tank on the right. The 24,000 gallon tank is the distribution point for on-site water. Water from the tank is then distributed to the heat exchange tank, where it is heated, and then introduced into the membrane distillation system to produce distilled water without the salt. A brine waste stream is sent to the evaporation pond, and the distilled water is sent to the tank.

The distilled water is mixed with the existing water from the large tank in another tank to reduce salinity from 1,400 parts per million (ppm) down to 1,000 ppm, which is suitable for livestock production. The salinity could be further reduced to 750 to 500 ppm, but this would reduce the volume of water produced. The initial goal is to use the system for livestock to allow the system to be tested and optimized.

Slide 21: Shows healthy livestock.

Slide 22: Lists the partners on the project. University of Arizona is currently putting together the membrane distillation system which should be ready in spring 2013. The Navajo Nation has provided labor and assistance. The Native American Affairs Office in Phoenix has also provided assistance.

Slide 23: *Seeking Water from the Sun* is a documentary produced by Navajo students at the University of Arizona. It provides information on the problems faced by water haulers along with the test solar PV desalination facility being developed for the Navajo Nation. It has been aired nationally, and is recommended.

Slide 24: The Bureau of Reclamation also produced a report on the solar desalination research project.

Slide 25: This project was featured in the International Desalination Association's *Desalination & Water Reuse* publication in December 2012.

Questions:

What is the number of users for this system?

The system is initially serving livestock, but is designed to serve 300 people.

Could a similar system, using wind energy instead of solar, be used to serve communities in Alaska?

If the wind is sufficient, it should be possible. However, the hybrid solar PV thermal system needs to produce hot water at 165-180 degrees Fahrenheit for the membrane distillation process. It is not clear that a wind turbine could produce the necessary heat.

What is the cost?

The cost for the Navajo Nation facility is about \$400,000 in site development, and another \$150,000 for the membrane installation. The Bureau is compiling data on the O&M costs as part of its study. Installation and construction are not too expensive, but maintaining the system and replacement parts could be a challenge. The system was designed to be as simple as possible, so people could fix parts with basic tools. However, the solar PV system can be difficult to repair.

Kevin Back: Presented information on the project at a conference held by a consortium of universities in British Columbia. There were many presentations on water issues in Alaskan Villages. There are opportunities to use concentrated solar PV and wind energy together, and research is occurring in places around the world. Mitch can provide contact information for ongoing research into solar and wind energy systems.

The project will also collect cost information for capital, operation, replacement, and maintenance (sustainability), to see if it can fit within the economic framework of the water users. The water users are currently paying a very large amount compared to those with piped water systems. The cost for piped water is about \$3 per 1,000 gallons with a \$10 to \$12 monthly rate fee. Those hauling water are paying around \$60 per 1,000 gallons. During peak demand, when the public water system is inaccessible, the costs are even higher. The cost information collected as part of the research project will be published.

Is the project expected to take the facility off the grid ("net-zero")?

The project is not connected to the grid.

How much more would it cost to make the system suitable for human consumption?

The costs depend on whether the costs are distributed across all ratepayers, or just users of the

system. The management utility currently distributes operation, maintenance, and repair costs into the whole rate pool. If the project can meet the requirements as regulated by the Navajo Nation and the Environmental Protection Agency, then the project can be operated and maintained by the utility. Costs are lower if the project is managed by the utility. If the project operates as a standalone system among 300 water users, the costs will be higher. The costs for treatment to achieve the required levels of water quality under the Safe Drinking Water Act, and to manage the byproduct (brine), are not thought to be significantly greater because the system is only treating for biological contaminants.

Is there any waste generated and how is it managed?

A brine stream is produced at a very small volume. This is discharged into an evaporative pond. Research is being done on reaching a zero liquid discharge (ZLD). In the oil field industry, a number of researchers are interested in this project as it relates to returning the waste product back to the aquifer.

Contact information for Mitch Haws is provided below. Mitch is interested in learning about any resources available to the keep the project moving forward.

Mitch Haws - Water Agreements Planner
 Program Development Division - Phoenix Area Office
 623-773-6274 mhaws@usbr.gov

D. Select Program Report Out:

1. Common PER Implementation (Ben Shuman, USDA and Dana Baer, IHS)

Ben Shuman: The workgroup is excited with the success of the first part of the Common Preliminary Engineering Report (CPER) Interagency Template project. The effort has received widespread interest and is still under development.

USDA will issue a “bulletin”, an internal document, to establish the CPER as the official policy. Each federal agency involved in the project will also have its own internal processes for making the CPER official. Ben will be meeting with the federal partners on February 19, 2013 to discuss approaches for implementing the CPER, and next steps. The template is currently ready for use with projects by any of the federal partners.

During the second phase, the workgroup will focus on improving the process for development and review of preliminary engineering reports, and to streamline the application process with the funding partners. An electronic process will save time, improve efficiency, and save money by improving the review of preliminary engineering reports. The electronic form will help guide engineering firms on the information required in reports.

The next steps include forming a new group from the federal partners and state partners to identify the requirements, develop the electronic process, and pilot the template with the partners. The pilot is aimed at demonstrating how effective the CPER will be for improving efficiency. The workgroup is also interested in finding Tribal partners to pilot the project. This should help Tribes save money and time working with various federal partners.

Dana Baer: The IHS has moved ahead with implementation of the CPER. The IHS framework for engineering reports is a Project Management Guideline describing the project management process. Prior to funding, the Guidelines require a comprehensive engineering report. When the guidelines were initially developed, the requirements were based on the old Bulletin #1780 Series USDA had as the basis for engineering reports.

Most of the information in the new CPER was included in the IHS engineering report. This has been modified, and a new IHS Guideline was released on February 1, 2013. With the release of the February 1st guidelines, IHS has adapted its engineering report to the requirements of the CPER. The biggest difference has to do with life cycle costing and the rigor of the analysis. Most of the information in the CPER was previously in the IHS engineering report.

2. Update on the Rural Alaska Village Grant Program (Tasha Deardorff, USDA, RD and Jacqueline Ponti-Lazaruk, USDA RD)

Jacki Ponti-Lazaruk: The goal of the effort is to update and streamline the Rural Alaska Village Grant program. This effort involves multiple federal agencies and state partners in developing a process to obligate funds in a timely manner, gather information, and ensure accountability. The agencies are currently working under an Memorandum of Understanding (MOU) and would like to codify the MOU with regulations.

Tasha Deardorff: The transition to the new MOU was successful. The new method puts planning and design projects under different funding from construction projects. This has been successful in getting better cost estimates and moving projects along in a timely manner. Currently, 32% of projects from 2009 to 2011 are in the closeout stage, with another 34% of the projects over 65% complete. For projects in closeout, a large number are under budget.

For planning projects, roughly 56% of the projects are in closeout and 12 of the projects are officially under budget with funds to be de-obligated. Another 23% of projects are over 65% complete. These results are a significant improvement compared to the process used prior to the new MOU. The success of the partnership is the result of partners in Alaska, including the Alaska Native Tribal Health Consortium (ANTHC), the State of Alaska, IHS, and EPA.

Jacki Ponti-Lazaruk: The information in the handout provides details on individual progress. Looking at the pie charts, the goal is to move projects forward within a reasonable amount of time. Projects funded in 2009 and 2010 are further along than projects in 2011 and 2012. This shows that great results can be achieved when all are working together.

3. EPA's New SepticSmart Homeowner Outreach Campaign (Maureen Tooke, EPA)

EPA's new SepticSmart Homeowner Outreach Campaign was launched in November 2012. SepticSmart is an online national outreach program on the proper care and maintenance of homeowner septic systems. Many homeowners are unaware of what it means to be responsible stewards of their septic systems. SepticSmart is an MOU partnership, with 16 partners, ranging from state agencies, academics, industries, and federal partners including the Center for Disease Control.

SepticSmart is promoted to homeowners through partnerships such as the National Environmental Health Association and county health departments. SepticSmart also provides materials and outreach strategies to support the education efforts of its partners.

SepticSmart materials are available online for download, including printable products such as door hangers, postcards, and an updated homeowner's guide. All materials are available in both English and Spanish. SepticSmart also includes case studies on successful outreach programs.

Slide 4: Shows the new SepticSmart website. The easiest way to find the site is to type "EPA SepticSmart" into an internet web search.

Slide 5: Shows images of the doorhanger and the postcard. The doorhangers are aimed towards service providers, and can be modified with company logos or other graphics.

Outreach efforts for SepticSmart include coordinating with EPA's Nonpoint Source program, the Decentralized MOU partnership, new and social media efforts, and messages targeted around holidays. SepticSmart is also working with EPA regional coordinators to provide website content and social media messages. The response to the SepticSmart materials has been very positive.

HUD has linked to SepticSmart on their Code Talk website. USDA's onsite system funding program may be able to provide the SepticSmart Homeowners Guide in information provided to homeowners. This information is valuable in protecting the investment in onsite systems.

Ideas on how to use the SepticSmart program for Tribes should be emailed to Maureen. Maureen's contact information can be found on the last slide of the SepticSmart presentation.

Questions:

Dana Baer: IHS has a resource library available to design staff. Dana will include a link to SepticSmart in this resource library.

Jennifer Bullough: HUD has added a link to SepticSmart on the Code Talk website. The easiest way to get information out to housing authorities is to use HUD's mailing list or develop joint program guidance for housing authorities. Kellie Kubena will follow up with Jennifer.

4. How USDA Consults with Tribes (Ted Beulow, USDA)

USDA has moved to a quarterly consultation process using teleconference and webinar. USDA announced the process back in August and at that time also released dates for consultations through October 2013. This let people know when USDA is consulting and how to join the consultation. However, topics are not predetermined.

The first meeting in October 2012 focused on draft updates to USDA's Civil Rights regulations, including language for Indian preference in employment when contracting with Tribes on projects for American Indians and Alaskan Natives. In January 2012, the consultation focused on changes to the Distance Learning and Telemedicine, and Community Connect Broadband grant programs.

The consultations are always held on a Wednesday at 3:00 pm Eastern time. The next consultation event is scheduled for April 17, 2013.

As part of the consultation process, USDA holds a pre-consultation meeting with Tribes about one month before the event to provide materials and subject matter to Tribal leaders and staff. This allows Tribes to prepare for the consultation meeting. Tribes can also comment during the pre-consultation meeting. USDA still remains open to individual requests and input from Tribes for consultation meeting topics. The ongoing restrictions on travel and budget limit how USDA can consult with Tribes; however, USDA works with every Tribe to meet their consultation requests.

There is an internal consultation committee at USDA across different program areas with input from field offices to determine topics for consultations. In the future, the ITF will be welcome to use the USDA consultation platform for their consultation needs.

Questions:

Has the USDA consultation process been able to accommodate the majority of consultation actions, in terms of timing? And has there been good participation?

The reason USDA moved to the quarterly consultation process was due to timing. USDA can also hold consultations between quarters if needed. USDA's regulatory program staff are included in the internal consultation committee and provide information on regulatory changes to consult with Tribes. Consultation calls average about 50 participants. Half are USDA Rural Development staff, including field staff, and the other half are Tribal participants.

Jennifer Bullough: A joint agency consultation approach may help increase participation rates. Jennifer will discuss the idea internally at HUD.

Felicia Wright: EPA will add the date of USDA's Tribal consultation schedule into EPA's calendar to help avoid conflicting meetings.

5. Tribal Utility O&M Cost Workgroup (David Harvey, EPA and Jon Melhus, USDA)

A four page fact sheet from the O&M Cost workgroup was distributed with today's materials for the call.

The goal of the project is to develop a methodology to help Tribes, EPA, and other federal agencies understand the O&M costs necessary for critical infrastructure, and ensure projects are appropriately supported. Several partners in the workgroup include the Minnesota Rural Water Association and the Ohio EPA.

The workgroup has established an interview guide to collect the budget and asset information from Tribes. Also, the workgroup created a document to train individuals conducting interviews. Ultimately, the information from interviews will be used to determine whether the budget and assets are sustainable.

The workgroup is proposing a pilot test of the interview document with nine Tribes. The workgroup has discussed this approach with IHS area staff who will suggest nine Tribes for the

pilot. The workgroup anticipates beginning interviews in March, and completing the effort in May. The pilot effort will result in a final report to the ITF. The report will detail the results of the pilot test, and suggest a statistical method to collect water and wastewater costs on Tribal lands on a regional or national level. The report will also provide an estimate of the costs to conduct a larger scale investigation. The report can be used by the ITF to discuss ways to get answers to the costs for providing O&M services to the facilities federal programs are providing funding for.

Questions:

Sheila Frace noted the ITF should plan for more significant discussion of the O&M workgroup results after the report is complete.

Will the workgroup collect information from more than nine Tribes?

Yes, assuming resources and funding are available, after the pilot with nine Tribes, the effort will be expanded to collect information from additional Tribes. The pilot will also help the workgroup and the ITF to revise and improve interview questions. To collect information from a larger number of Tribes, the workgroup will go through the Information Collection Review (ICR) process with the Office of Management and Budget (OMB).

E. Discussion, Commonalities with Previous Talks, and Preparation for next call (All)

Discussion on this topic did not take place due to time limitations.

F. Thank You & Next ITF Call (Sheila Frace, EPA)

The next ITF meeting will take place on May 9, 2013 from 2:00-3:30 pm (Eastern). Please send topic ideas, feedback, or potential conflicts for the next ITF meeting to Matt Richardson.

Action Items

- Anyone interested in contact information for research on solar and wind energy systems should contact Mitch Haws. (See Slide #27 from the presentation for contact info).
- Mitch Haws is interested in any resources available for the Navajo Nation Solar PV project.
- The CPER workgroup is interested in finding Tribal partners to pilot the template.
- Ideas about how to utilize the SepticSmart program for Tribes should be emailed to Maureen Tooke.
- Kellie Kubena will follow up with Jennifer Bullough regarding SepticSmart outreach strategies for housing authorities.
- Dana Baer will add a link to SepticSmart in the IHS resource library available to design staff.
- Jennifer Bullough will discuss the idea for joint agency consultation with USDA internally at HUD.
- Felicia Wright will add the dates for USDA's Tribal consultation schedule into EPA's calendar to help avoid conflicting meetings.