



NAVAJO-GALLUP WATER SUPPLY PROJECT NEWSLETTER

Volume 4, August, 2024

COMMUNITY MEETINGS

Project Construction Committee (PCC)

Location: El Morro Theater Center, Gallup, NM, (or available virtually via Teams), tentatively scheduled for Thursday Nov. 7, 2024 9 a.m. - 12 p.m.

GET IN TOUCH

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COMMUNITY

Headed to the Fair?

Reclamation will be hosting a booth at the Navajo Nation Fair in Window Rock Sept 3-7. Stop by and say hello to members of our Four Corners Construction Office team and learn more about the NGWSP!

By Becky Begay Navajo Outreach Coordinator, U.S. Bureau of Reclamation

Yateeh, my name is Becky Begay and I am the Navajo Outreach Coordinator for the Bureau of Reclamation, Four Corners Construction Office in Farmington. I am also part of a subcommittee made up of different Department of Interior offices, formed to help train employees on the importance of Indigenous Knowledge and to provide guidance to those working with Tribal Nations and engaging with Indigenous Knowledge.

In March of this year, I got a chance to visit the Big Island of Hawaii to film and interview Native Hawaiians speaking about the importance of Indigenous Knowledge and why it should be used by the Department of the Interior.

Indigenous Knowledge is oral or written stories that are passed down to us as Navajo people from our ancestors from hundreds of thousands of years ago on how we have lived on this earth without using modern day technology, and how we still use that knowledge today for our

holders, explaining in their words and cultural practice, the connection to the land as well as their communities. We are hoping to have the training be available by the end of 2024. While in Hawaii, I monitored the film crew and represented the Department of Interior



Becky Begay at the Waipi'o Lookout.

life ways as Navajo people. We are interviewing Indigenous Knowledge holders from different tribes throughout the U.S. The training will use the voices and perspectives of Indigenous Knowledge

(DOI). I was there to observe and to ensure the film crew asked all the interview questions which were compiled by the subcommittee. I had a chance to have conversations with the Hawaiian Indigenous

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BUREAU OF RECLAMATION

If you would like to learn more, visit our website at: <https://www.usbr.gov/uc/progact/navajo-gallup/>



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Knowledge holders about the Navajo culture. We spoke about our traditions, ceremonies, and sacred places. Our cultures have many similarities, including the belief that beings once walked the earth among us in certain areas. Like Navajos, the Hawaiians continue to use those areas for ceremonies or to tell stories of the beings as learning lessons. We also shared stories and found similarities in the way we conduct certain ceremonies. I did not know what to expect for the Big Island trip, but I was excited to finally make it to Hawaii and be involved in this important project to capture the voices of Native Hawaiians. I got to learn about the land, culture, and people of Hawaii. As a Navajo person, you always give gifts or cook to say thank you. Since I was not in my homeland, I gave thanks by giving gifts of sand paints, books on Navajo weaving/traditional Navajo hogans, medicine pouches, Navajo Nation seal stickers, and turquoise earrings. I will always remember and cherish the stories I heard.

My experience with Indigenous Knowledge

One story that comes to mind regarding Indigenous Knowledge is when I was a graduate student at the University of Kansas. While in a class on Climate Change one day, my professor spoke about how different we would have lived if we were taught about the importance of climate change from our grandparents. I thought

to myself, I was raised that way. I raised my hand to explain how I was raised by my grandmothers and how they would tell my sister and I stories of our sacred mountain to the north, Dibéntsáá (Hesperus Peak), which no longer

good stories for you to write in a book but, we are talking about science in this class!" As a Navajo person we have lived within our environment. We have prayers and ceremonies to help us live our lives on this earth. We are not separated from our environment; we are a part of each other. I thought to myself, how can you not understand your surroundings are changing? My grandmothers knew and understood this because they have herded sheep throughout their lives. They were outside from sun-up to sun-down and heard stories passed on from their grandparents. They lived outside all summer in the shade house-not in a hogan

or a house-and performed ceremonies consisting of mother earth, father sky, plants, wind, water, animals, and our entire universe.

Now, the federal government would like to use Indigenous Knowledge to train federal employees and have them learn about the value and importance of Indigenous Knowledge and help manage our natural resources using this knowledge. The Indigenous Knowledge film we worked on will be used to train 70,000 Department of the Interior employees and will not be shown publicly. I am proud to be one of the many DOI employees that will be helping our tribal communities to train colleagues on Indigenous Knowledge because it is our way of life as Native People.



The Pu'ukohola Heiau National Historic Site on the Big Island was among the filming locations for the Indigenous Knowledge project. Adobe Stock Photo by Billy McDonald

has a snow cap during the summer. They would tell us how tall the grass used to grow, while now there is only short grass with tumble weeds; how we used to pick certain root vegetables to eat while herding sheep and now they are all gone; how we wouldn't carry water bottles to drink, because we knew where to find fresh water to drink that would seep from the earth or from the sand stones, and now there is none. We also learned about how the weather is changing, getting hotter later in the year and staying cooler longer in the year, and how the plant growth is changing due to the weather. Several students asked me questions and were curious of the Navajo culture. My professor interrupted my responses to the students and told me "Yeah, yeah, yeah, those are

My name is Crystal Tulley-Cordova. I am of the Bitter Water Clan born for the Tangle People Clan. My maternal grandfather's clan is the Yucca Fruit Strung on a Line, and my paternal grandfather's clan is the Water that Flows Together Clan. I grew up in Tohlakai, New Mexico, and Blue Gap, Arizona. I grew up without running water in the early years of my life. As a small kid, I would wrestle with loading and unloading barrels of water off the truck and siphoning water into smaller containers to use the water for cooking, cleaning, and bathing purposes. Our family hauled water from a livestock well in the Twin Lakes Chapter. The NGWSP will help close the clean water access gap in the Navajo Nation by diversifying the water portfolio. Climate change impacts on hydrology make Navajo water haulers and public water systems vulnerable; the NGWSP when completed will develop a secure and sustainable water future for the Navajo people in their permanent homeland.



I am a Principal Hydrologist with the Navajo Nation Department of Water Resources – Water Management Branch. My goal was always to return home to live within the four sacred mountains and help my Nation. Today, I work to secure, develop, and protect water resources for the Navajo Nation. I have always been intrigued with water science. In the fourth grade, my science fair project was a water filtration project that won me a trip to the National American Indian Science and Engineering Fair in Albuquerque, New Mexico. I received a doctoral degree in geology and an Interdisciplinary Graduate Certificate in sustainability from the University of Utah. I also received a Master of Water Resources in hydrosience and a Bachelor of Science in earth and planetary sciences from the University of New Mexico. I have worked collaboratively with Navajo Nation partners on water-related research since 2013.

Navajo-Gallup Water Supply Project completion deadline extended to 2029

**By Jenny Erickson
Upper Colorado Basin Region
Regional Office**

The completion deadline for the Navajo-Gallup Water Supply Project is being extended to December 31, 2029, through an agreement between the U.S. Department of the Interior, Navajo Nation, and State of New Mexico Interstate Stream Commission, collectively referred to as the settlement parties to the Navajo Nation's Water Right Settlement on the San Juan River Basin in New Mexico. The agreement awaits a final signature from the Department of Interior Secretary before it is officially authorized.

The deadline extension for completing the project is necessary due to delays caused by acquisition of the San Juan Generating Station and its incorporation into the Navajo-Gallup Water Supply Project. The Navajo Nation and the New Mexico Interstate Stream Commission concurred with



The deadline extension for completing the NGWSP is necessary largely because of delays caused by acquisition of the San Juan Generating Station and its incorporation into the NGWSP.

Reclamation's decision to pause design and construction activities on affected features of the project's San Juan Lateral in the fall of 2019 to investigate the feasibility of incorporating the generating station's water conveyance and storage facilities into the Navajo-Gallup Water

Supply Project and agreed that an extension of the completion deadline would be required when that determination was made. "The impact of the delays to the project as a result of the investigation process, acquisition, and incorporation of the San Juan

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NGSWP completion deadline extended to 2029 cont.

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Generating Station Reservoir and Water Conveyance System are substantially offset by the significant short-term and long-term cost savings to the project, as well as the increased operational flexibility and reduction in operational risk these facilities will provide," said Reclamation's Four Corners Construction Office Construction Engineer/ Manager Bart Deming. "While the benefits of this acquisition outweigh the delays, the collaborative decision has required the City of Gallup to locate additional groundwater supplies to bridge the gap between now and when the San Juan Lateral becomes operational in 2028. Reclamation, the Navajo Nation, and the State of New Mexico are assisting the City of



The scaffolding and shoring being installed at Black Hat Tank. They will be used to install the wall and dome panels that are cast on site with concrete. Photos by Paul Bergstrom.

deadlines of these three vital projects so we can ensure safe, reliable, and affordable drinking

deadlines for the Fruitland-Cambridge and Hogback-Cudei Irrigation Projects were extended to December 31, 2024, by the signatory parties through a similar letter agreement.

Reclamation completed acquisition of the San Juan Generating Station facilities in May 2023 with all project participants' concurrence. Reclamation is now in the process of incorporating the generating station into the design of the Navajo-Gallup Water Supply Project.

The proposed Navajo-Gallup Water Supply Project Amendments Act of 2023 (S. 1898 and H.R. 3977) would also extend the project's completion deadline to December 31, 2029, if enacted by Congress. However, since this process may not be enacted in time to allow for continued settlement implementation necessary beyond 2024, as is necessary for the United States to fulfill its obligations, the letter agreement between the settlement parties was needed.



NGWSP- Reach 12.1 SJ Louis subcontractor DN Tanks installs the roof dome panes to Black Hat Tank. Photo by Vicki Cassidy on 6/28/2024.

Gallup with providing funding to drill additional groundwater wells to meet demands. We appreciate the collaboration of the settlement parties, as well as the city of Gallup and the Jicarilla Apache Nation, to extend the completion

water for the future of this project and Navajo and Gallup communities."

There is precedent for extending the deadlines in the Settlement Act. In 2019, the completion

Pipe installation methods

By Hilda Castillo and Paul Bergstrom
Reclamation Four Corners
Construction Office

Common pipeline installation consists of open trenches and installation of pipe at a depth determined to protect the pipeline from elements such as freezing, but when determining an appropriate installation method, there are many factors to consider that may require different engineering techniques.

Determining type of soil, crossing features, presence of groundwater, proximity to cultural sites or environmentally sensitive areas, surface obstacles, and other factors can help engineers decide on alternative installation approaches. Many different methods of pipe installation are employed within the Navajo-Gallup Water Supply Project and in this article we will discuss some common pipe installation methods being used on this project.

Open Cut/Trenching

Open cut or trenching is the traditional and most common method of pipe installation. With



NGWSP - Block 4A/B – Once the 42-inch steel pipe gets delivered to the job site, the contractor will string the pipe along the construction ROW. Photo by Hilda Castillo Smith.

this method, the pipe is installed into a trench excavated from the existing ground surface. After the trench is dug, pipe is laid down, joined, inspected for integrity and determined to be installed

Soil-cutting: Soil-cuttings are the dirt or rock material that are excavated and removed by the auger cutting head as the bore is advanced through the earth.

securely in place and according to engineered specifications, the trench is backfilled, and the surface is restored.



NGWSP - Block 4A/B – Installation of the 42-inch steel pipe. After the pipe is in the ground, contractor will backfill 2/3 of the pipe with a material that is a mixture of soils with cement (Its call Controlled Low Strength Material (CLSM)). The sandbags are used to prevent the pipe from floating during CLSM placement. Photo by Hilda Castillo Smith

Auger Boring

Auger boring utilizes a casing system fitted with a cutting head and rotating auger that is jacked into the earth from the launching shaft. As the auger proceeds, it transmits torque to the cutting head. The soil cuttings from the cutting head are transmitted back to the launch pit via the augers. Once the casing and auger are in

Auger: An auger is a spiral-shaped tool that is used to drill holes into the ground and other surfaces or materials.

the earth, the next set of casing and auger blades are attached to the previous casing and auger and the process is continued to the reception shaft.

Cutting-head: A Cutting-head refers to a tool or attachment that is mounted on a machine or equipment, such as a drill rig, excavator or trencher, for cutting through various materials like concrete, rock, asphalt, soil and metal. The cutting-head typically consists of a rotating blade or cutter that spins at high speed and applies pressure to the surface being cut.



Code Talkers Sublateral (Reaches 12.1/12.2) – Photo shows the auger boring machine setup at the launching shaft or entry pit. This auger boring was for a 48-inch casing pipe. Photo by Hilda Castillo Smith

The advantage of auger boring is that the casing installation and excavation are carried out simultaneously. It only requires two pits, one for launching and one for excavation. This method is used in NGWSP to cross roadways, small washes, or

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when required by other utility owners (e.g., power, gas, water, telecommunications, etc.).

Horizontal Directional Drilling

Horizontal directional drilling is a modern, trenchless technology that allows for the installation of pipelines underneath obstacles with minimal environmental disruption. The process begins by drilling a small, horizontal pilot hole along a designed trajectory, using a jetting or a mechanical



NGWSP - Block 4c - 8 – Crossing of a large wash using Horizontal Directional Drilling. The picture shows eight (8) cranes lifting the 48-inch steel pipe before it gets pulled from the other side of the wash. Photo by Hilda Castillo Smith.

cutting head. Upon reaching the exit point, the drill head is removed, and a reamer is attached. This reamer is pulled back through the hole to enlarge the borehole to accommodate the pipeline. Finally, the pipe, often pre-assembled and pulled from the exit point, is installed in the expanded borehole.

Reamer: A reamer is a type of rotary cutting tool. Precision reamers are designed to enlarge the size of a previously formed hole by a small amount but with a high degree of accuracy to leave smooth sides.

Horizontal directional drilling is particularly advantageous for crossing rivers, estuaries, roadways, and environmentally sensitive areas. It is a safe and efficient way to install pipes without having to dig up the ground.

Drill head: A drill head is the cutting tool at the end of a drill string used to remove material and create pilot boreholes. Most drill heads are equipped with a nozzle capable of jetting high-pressure water to facilitate the drilling process. The drill head can be manipulated via a steering tool on the drill string to adjust the direction of the drill path.

During the construction of NGWSP using HDD has been a great resource when crossing large washes, geo-formations, crossing rivers, or avoidance of environmental sites. As of today, nine HDD have been installed (Block 4C-8, Cutter Lateral, and Code Talkers) and five more are under design (Block 2&3).

Tunnel

This method of trenchless pipe installation can save time and money and also minimizes disruption to the surrounding area. It's faster and less disruptive compared to other methods. A tunnel boring machine is designed to bore circular tunnels through dense, hard rock; relatively soft sand; or any substrate of any hardness in-between. They come in various sizes with diameters as small as 40 inches and as large as 60 feet.

The tunnel boring machine has a cutting head that is attached to a conveyor belt. The cutting head is used to bore a hole through the ground, and the conveyor belt is

used to move the excavated material out of the way. Choosing the right method of pipe installation is the key to successfully building a pipeline, and our teams of engineers have done a great deal of environmental research in the



An example of a microtunnel boring machine (MTBM) entry portal. This equipment is currently being used on Reclamation's Deer Creek Intake Project, in Utah. The MTBM excavates the tunnel while simultaneously installing the pipeline. Guided by a laser and using a slurry to carry away excavated material and keep the tunnel face stable, the machine moves about 20 feet or one pipe section per day. Reclamation photo

areas of the NGWSP to prepare for these installation options.

This method is new for our project. The contractor for Block 4A/B will be working in two (2) tunnels this year to avoid a high voltage transmission powerlines



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