

A photograph of two people standing in a dense forest of tall, thin evergreen trees. The person on the left is a man wearing a blue cap, glasses, and a high-visibility yellow safety vest over a dark jacket. The person on the right is seen from the back, wearing a blue hoodie and a high-visibility yellow safety vest with the NID logo on the back. They are standing on a gravel path. The text is overlaid in the lower center of the image.

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a dream, for those employees who turned that
dream to a reality, and for the future leaders who
will continue the dream into a legacy.*

CHAPTER 17

Looking Forward to the Next 100 Years



Leading into its 100th year celebration, demand for treated drinking water has driven NID's customer growth. In 2021, as the District marked its centennial anniversary, three of every four customers use piped, treated water.

When the doors of the District opened in 1921, the foothills communities were yearning for a reliable water supply for irrigation of farms and fields. Within a matter of years, the backbone of NID – the high Sierra Nevada snowmelt – was secured, and high-quality water was flowing to farms, fields and residences. Today, NID produces more than 3 billion gallons – about 9,000 acre-feet – of treated water a year for drinking and use around homes and businesses. Generally, treated water is available in the more populated areas. In recent years, the District has been successful in working with local property owners to form local water quality improvement districts in remote areas where it is difficult to extend treated water main lines. NID's treated water service areas are located in and around Grass Valley and Nevada City, Banner Mountain, the Glenbrook Basin, Loma Rica, Alta Sierra, Lake of the Pines, Penn Valley, Lake Wildwood, Smartsville and North Auburn.

NID employees trek across English Meadow to study the meadow in preparation for a restoration project.



Environmental stewardship is a top priority for NID. District experts and other consultants routinely assess the health of the forests and take action to ensure the watersheds function properly.

To treat water for drinking and household use, NID operates a network of six modern plants to supply portions of Nevada, Placer, and Yuba counties.

In addition to treated water, an average of 145,000 acre-feet of untreated raw water is delivered for irrigation each year. Of the estimated 97,000 irrigable acres in the District, NID customers irrigate more than 30,000 of those acres. Ninety percent of NID's raw water is used for local agriculture with a total of approximately 5,400 raw water customers.

Through the decades, the District has continued to expand and improve its water delivery systems while adding water treatment plants, hydroelectric generation powerhouses and recreation facilities. It has established itself as a competent, efficient special district, looking to the future with confidence.

The District isn't resting on its laurels, however. NID continues to advance its services to ensure another 100 years of reliable water delivery. A growing concern is climate change, a phenomenon that early NID leaders never could fathom. A University of California, Los Angeles (UCLA) study in 2018 found that in the Sierra Nevada foothills climate change will raise temperatures between 5 and 7 degrees by the end of the century if carbon emissions are not significantly reduced. Higher in the mountains, NID's primary water source, the effects of climate change already are being felt.

The Sierra snowpack acts as a natural reservoir that holds water in a frozen form until it gradually melts over spring and summer.

The water flows into reservoirs and conveyance systems, and then downstream for irrigation and household use. Studies indicate climate change is expected to shrink the Sierra snowpack as temperatures heat up and more precipitation falls as rain rather than snow. This will limit the availability of water, lessen the dependability of water system infrastructure and diminish the quality and health of the local watersheds.

NID works to improve watersheds and forest health

NID is keenly aware of the importance of increasing watershed resiliency to the effects of climate change and ensuring the water system infrastructure will continue to provide a dependable, sustainable water supply and conserve the resources provided by these important headwater watersheds.

The District has ongoing projects to promote forest health and address the impacts of a warming climate. For example, its forest thinning projects reduce fire threats and increase the amount of water available within a watershed. Dense forests use more water than thinned forests, and it is estimated forest management can quickly recapture 5-10 percent of a watershed's normal water yield. Additionally, selectively thinned forests are able to grow faster, allowing trees to capture more carbon, which helps to reduce global warming and other effects of climate change.



Fuel reduction around Scotts Flat Reservoir has been a priority.

NID also manages its forested property to promote mixed-age and multispecies communities. This makes the trees more resilient to pests and disease while decreasing catastrophic wildfire threats.

For example around Peninsula campground's 70 campsites in forested land and on Rollins Reservoir lakefront property, more than 80 acres were treated to reduce the number of dying and hazard trees, as well as overgrown vegetation. The pre-treatment plots had more than 2,700 trees per acre. After the work, the count was 140 trees per acre.

Higher in the Sierra, four years of restoration work continued in English Meadow (elevation 6,152 feet) where the Middle Yuba River begins its journey and flows through on its way into Jackson Meadows Reservoir. NID's project will reconnect the meadow to the natural watershed of the Middle Yuba to increase functionality. NID and partner research groups believe more water will accumulate as the spongy ground absorbs snowmelt runoff and percolates it through the soil. The water will remain in the meadow longer into the year. This will increase groundwater and reduce sediment into Jackson Meadows Reservoir, saving water storage capacity.

NID is also working with local schools, community residents and visitors to provide education on watershed resilience, healthy forest ecosystems and long-term water resource management. In combination, these projects create more resilient watersheds that can provide the ecosystem services we are all dependent upon: clean air, clean water, productive soils, and a valuable economic support system for rural communities.

Reducing the risk of wildfire

As a water purveyor whose mission is to provide a dependable water supply to the community, NID's pressurized and non-pressurized systems can also be a valuable asset in firefighting. Climate change intensifies wildfires, which are a growing concern in the higher Sierra and foothill elevations as climate change sets in and populations increase. The threat is real; two wildfires that devastated communities stand out. In 2017 the Tubbs Fire in the hills of Santa Rosa burned 34,000 acres and killed 20 people. The next year,

the Camp Fire in Paradise burned 153,336 acres and killed 85 people. In 2020 wildfires burned nearly 4.4 million acres, destroying more than 10,000 structures and causing more than 30 deaths. Gov. Gavin Newsom declared a state of emergency in August, reporting that firefighters were battling 367 wildfires statewide. Calculating the devastation, California passed the record for the worst year in history for the amount of burned land.

NID works hard in many different ways to reduce wildfire risks and keep the District's customers and communities safe. All departments are engaged in work to strengthen fire resiliency and ensure facilities and infrastructure are secure in case of a wildfire. These activities range from thinning trees and vegetation on hundreds of acres, adding more than 2,550 neighborhood fire hydrants, installing backup generator systems in case of power outages and working with local and state agencies to share resources in an emergency.

Examples include:

Raw water is made available from reservoirs

NID taps snowmelt high up in the Sierra and uses gravity via 500 miles of canal to bring water to customers. Along the way, the water fills nine storage reservoirs, 16 water distribution reservoirs and four hydroelectric reservoirs with a storage capacity of more than 350,000 acre-feet (1.14 billion gallons). This water can help first responders, including CALFIRE and local fire districts, fight fires from the ground and air. CALFIRE's helicopters

What is a watershed?

A watershed is the area of land that water flows through into a stream, river, lake or reservoir. Humans and natural ecosystems are dependent on healthy watersheds. Healthy watersheds provide the water that is a key for thriving communities.

Increasing watershed resiliency and upgrading water system infrastructure to mitigate the effects of climate change is important as NID continues to provide a dependable, sustainable and resilient water supply from source headwater watersheds.



Water can be scooped from NID reservoirs for wildfire suppression.

use reservoirs to scoop up water and dump on flames. In 2017, when two wildfires began to spread in the early hours of October 9 in both Rough and Ready and off McCourtney Road by the Nevada County Fairgrounds, firefighters scrambled to evacuate neighborhoods and battle rapidly spreading flames in darkness. By morning, the fires were consuming hundreds of acres. Firefighters on the ground had pumps in NID canals as a water source, while helicopters scooped water from ponds and from Lake Wildwood to beat back the flames.

Water supplies are directed to the airport for tanker fire retardant

NID supplies water from its Loma Rica Water Treatment Plant to the Grass Valley Air Attack Base, located at the Nevada County Airport. The water is used to mix retardant dropped by tankers dispatched to fight wildfires regionally and around the state. On average, each year NID pumps about 950,000 gallons of water free of charge as part of its community firefighting support.

This pipeline transports more than half of the water delivered by NID



Vegetation is kept clear under NID's power line

Keeping vegetation and hazard trees away from a primary power line is of utmost importance, and NID's hydroelectric team has literally been walking the line for years during annual inspections and vegetation management efforts to provide a safe clearing. The District's 9-mile long, 60,000-volt Bowman Transmission Line transmits power from the Bowman Powerhouse to the transmission grid controlled by the California ISO, which provides open access to the bulk of the state's wholesale transmission grid.

Fire hydrants protect neighborhoods

NID has installed more than 2,550 water hydrants in neighborhoods throughout its boundaries. The District routinely includes new hydrants as pipelines are upgraded or newly installed and will add hydrants upon fire districts' requests. Interestingly, the pressurized water to a hydrant is supplied by NID's treated water system; it's not the raw water flowing in irrigation ditches.

Focus on efficient water delivery – Combie/Ophir I Canal

Keeping infrastructure intact and functioning is important to efficient water delivery. In spring 2020, NID completed the first phase of a major upgrade to the Combie Canal, which transports more than half of the District's water deliveries from below the Combie Reservoir to customers in southern Nevada and western Placer counties. The District replaced the 50-year-old flume that ran along steep terrain above the Bear River with 96-inch reinforced concrete pressure pipe.

On a Tuesday morning on March 24, 2020, water from Combie Reservoir was gradually introduced to the new 0.84-mile-long pipeline, first entering the massive pipe as a brisk trickle and then a rushing stream.

This infrastructure is the primary water conveyance from Combie Reservoir to southern Nevada and Placer County customers, and serves 3,693 raw water agricultural customers. The system also serves two treatment plants that provide water to 5,022 homes in Lake of the Pines and North Auburn communities. The cost for the project totaled \$19.6 million.

Hydroelectric generation powers into the future

Since 1966, as NID's high mountain water has flowed to customers' use, it also has generated clean, renewable hydroelectric power through seven power plants that produce enough electricity to supply more than 60,000 homes. NID has a generation capacity of 82.2 megawatts, and produces an average 375 million kilowatt-hours of energy each year, which it sells to PG&E and the Northern California Power Agency through power purchase agreements.

NID's hydropower operations are a huge win for customers. They provide millions in revenues from power sales to subsidize water rates for the customer, and also cover many of the costs of upper division water storage, conveyance, delivery, maintenance and operations from the headwaters of the Middle and South Yuba rivers, Bear River, Canyon Creek and Deer Creek watersheds through the District's mid-elevation storage reservoirs of Scotts Flat, Rollins and Combie.

Recreation provides outdoor fun and fuels the local economy

Each year, about 200,000 people visit NID recreation areas in search of a relaxing experience for boating, camping, hiking, fishing and swimming. Besides providing some of the most beautiful terrain in the state, NID's reservoirs help support the local economy. For example, a 2019 study showed boating, camping and fishing at Rollins Reservoir provided millions of dollars in spending at nearby businesses and as many as 50 jobs for the region. About 108,000 people – both daytime and overnight visitors – who visited Rollins during summer 2019 spent \$4.87 million at convenience and grocery stores, gas stations, restaurants and other nearby businesses in nearby Colfax and Grass Valley, and the Chicago Park community. The Rollins Reservoir recreation area includes Orchard Springs, Long Ravine, Peninsula Resort and the Greenhorn campgrounds. People come from throughout the region to hike and bike on local trails. NID partners with local nonprofits including the Bicyclists of Nevada County (BONC), Youth Bicyclists of Nevada County (YBONC) and the Bear Yuba Land Trust to provide multiuse trails for recreation. The trails NID provides at Scotts Flat Lake and Rollins Lake are



The first woman to head the District, Jennifer Hanson was named NID's General Manager in June of 2021.

some of the most popular in the region. In the coming years, efforts will continue to complete additional trail systems throughout the area.

Through the 100 years that NID has provided services in the Sierra foothills, thousands of dedicated employees have left their marks on water history in the region. What started out as a dream to secure irrigation water from upper Sierra Nevada sources for farms and fields has evolved into a multifaceted District that encompasses 287,000 acres, a geographic area that makes the District one of the largest in California. One molecule of water can tumble through 500 miles of canal and 400 miles of pipe, from English Mountain at the 8,373-foot elevation to 150 feet above sea level, south of Lincoln in Placer County. It's an elaborate, complex system that results in more than 3 billion gallons of drinking water each year, as well as irrigation water for 30,000 acres within the District.

As an independent special district operated by and for the people who own land within its boundaries, NID takes pride in its accomplishments, and looks forward to another 100 years of service to live up to its mission to "provide a dependable, quality water supply; continue to be good stewards of the watersheds, while conserving the available resources in our care."

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Thank you!