

Water Line

Water for Today and Tomorrow

Summer 2008

Sand Hollow Reservoir
Photo: Doug Wilson

Manager's Message

By Ron Thompson, General Manager

Cost estimates for Lake Powell Pipeline based on updated design and current market outlook

As the Washington County Water Conservancy District looks at capital costs of water projects, we recognize these costs are largely driven by the price of materials. Steel has increased from \$704 per ton in June 2007 to \$1,184 per ton in June 2008. Crude oil and natural gas, the basis for plastic/resin pipe products, has increased from about \$50 to \$140 per barrel.

MWH, engineers for the preliminary engineering and environmental work for the project, recently released a cost estimate for the pipeline in current dollars. The rise in costs for materials is reflected in this estimate. The costs have gone from \$370M in 2005 dollars to \$695M in 2008 dollars. This increase also reflects design changes that have added construction materials, alignment changes, additional booster pumping stations and hydropower plants. While some of these capital components cost more, they are intended to optimize energy recovery, thereby reducing operational costs over the lifetime of the project.

Cost to existing and new users

Let's look at what this current cost snapshot really means in actual costs to ratepayers. The cost of Lake Powell Pipeline water amortized over time is about \$1.42/1000 gallons. If we were to charge for water under traditional contracts, the costs would be passed on to all users. Since the pipeline is being financed with impact fees, these costs will be passed on to new users.

Washington County portion of Lake Powell Pipeline costs	
ESTIMATED COSTS 2008	
TOTAL COST	\$695,000,000
Cost/1000 Gallons	\$1.42
Cost/Gallon	\$0.00014

Our current population numbers about 140,000. The Governor's office predicts a population of 559,670 by 2040. Continued conservation, development of locally available water resources and construction of the Lake Powell Pipeline will be required to serve population growth. Regardless of whether people move here quicker or slower than current predictions, it is clear that over time, new growth will take place and will pay the impact fees needed to fund the pipeline. The District expects a financing plan from the state of Utah that will allow impact fees to cover payments.

Due to normal ups and downs in the market, we don't know if the next cost snapshot will increase or decrease. Whatever the circumstances, the District will do its best to bid the pipeline when costs are low.

So what will new users pay for the capital costs of the project? The current estimate puts that figure at about \$9,900 per acre foot (af) of water. Compare that figure to the costs of purchasing a water

right on Kolob, at about \$30,000 per af, or New Harmony, at about \$45,000 per af. After the initial cost of purchasing the water rights, the cost of development may actually exceed \$110,000 per af. Other large water projects in the West are paying between \$19,000 and \$40,000 per af. In comparison, Lake Powell water is very reasonable at less than \$10,000 per af.

Local water users are relying on the District to take the steps necessary to avoid running out of water. If our taps run dry, Washington County would experience loss of jobs and tax base. But the biggest cost to our community would be the loss of our residents. Families would be forced to move elsewhere for economic opportunities. At \$10,000 per af, the Lake Powell Pipeline Project will be the least costly way to ensure water needs are met.

Reliance on one source of water spells disaster

As water managers, we must work with a complete toolbox. We cannot afford to rely on just one type of water resource. Renewable resources must be available from multiple sources: conservation, wells, springs, reservoirs that collect and store surface water and, where possible, recharge water into underground storage.

All of these components are needed to keep water flowing out of our taps. The District has plans to add another recharge project in the county. There are also plans to maximize the use of poor quality wa-

ter on landscape, which will in turn offset demands on culinary systems.

Let us not forget that we have a duty to protect our natural environment. Water must be left in the river for fish/riparian habitat. These efforts impose additional costs, both in capital and in water.

Costs create challenges

These cost increases affect all water projects and create significant challenges for the District. The Crystal Creek pipeline project and the Ash Creek pipeline and reservoir project will both cost more than planned just a couple of years ago. We are looking carefully at the relative costs of each of these projects to ensure that water is being developed in the most cost-efficient manner possible.

It is the role of the District to provide water for today and tomorrow in an efficient and economical manner. This is our mission, and we strive each day with every project to fulfill it.



Invasive mussel could cost Washington County a fortune

By Michelle Gregory and Ann Jensen

Background

Destruction of an ecosystem and stress on the local economy are two of the major impacts experienced by a community when an invasive species takes up residence in an area. Once a non-native species such as the Quagga mussel is established, eradication from a body of water is virtually impossible.

Quagga and Zebra mussels are invasive species indigenous to western Europe and eastern Asia. In the mid 1980s, the first mussels were transported to the Great Lakes in the ballast water of a cargo ship. By the late 1990s, mussels were found in 23 states and in two Canadian provinces.

In 2007, Quagga mussels were found in Lake Mead, Lake Mohave and Lake Havasu. In January 2008, Zebra mussels were found in Colorado and California. For all practical purposes, they are all around us.

What costs are associated with infestation?

Once these mussels are found in a body of water, constant monitoring, treatment and maintenance of pipes and water systems are required. Additional chemical treatment costs are incurred to ensure the invasive mussel does not enter the treatment plant, pipelines and irrigation systems.

Southern Nevada Water Authority has spent approximately \$1M in capital costs to put infrastructure and systems in place at its treatment plant. It spends another \$1,000 daily for operational costs, monitoring and chlorine.

Are native aquatic species in jeopardy?

When these mussels are firmly entrenched in a water system, they eat the good algae that provide nutrients for other aquatic species.

These mussels are a death sentence to native species.

What do Quagga mussels look like?

Quagga mussels have pale rounded shells and grow to about five centimeters (size of an adult thumbnail). They have bristle threads that act like super glue to stick to everything. They have been known to attach to almost anything, be it wood, steel, rubber or glass.



Zebra mussel

Quagga mussel

What does this mean for Washington County reservoirs?

Water Delivery: When delivery systems become clogged with mussels, flows are reduced. Full municipal and irrigation water deliveries cannot be made during peak season if pipes are clogged.

Recreation: Mussels are pulled into cooling systems of marine engines where they attach and grow. This will overheat and ruin an engine.

What is the District doing to protect our reservoirs?

The District has a Quagga Monitoring Plan in place. This plan calls for:

- dive teams to conduct monthly visual inspections using Halcyon High Intensity Discharge lighting;
- examination of artificial substrate samplers on sample lines positioned at key locations on reservoirs to determine

Left:
Michelle Gregory
(WCWCD)
Right:
Troy Guard
(St. George)



presence or absence of the mussel; and

- veliger sampling (sampling for larvae) to increase early detection of infested areas.

If mussels are discovered, the Monitoring Plan will be modified to determine distribution of the infestation, and a thorough inspection will be conducted.

A Quagga Management Plan has been developed and will be enacted once infestation is confirmed.

What can you do to protect our reservoirs?

- when leaving a body of water, remove all visible mud, plants and fish from your boat so that you will not transport a mussel into another body of water;
- eliminate all water from motors, boat hulls, scuba tanks, boots, waders, bait buckets, swimming floats, *etc.* before leaving a body of water;
- clean and dry anything that came in contact with the water such as boats, trailers, equipment, dogs and clothing; and
- never put plants, fish, bait or animals into a body of water unless they came out of that same body of water.

For more tips on how to keep mussels out of Utah, see the Utah Division of Wildlife's Web page at

<http://wildlife.utah.gov/news/07-03/quagga.php>.

FACTS ABOUT QUAGGA MUSSELS

- Female Quaggas produce one million eggs annually.
- 700,000 Quaggas per square meter reside in parts of the Great Lakes.
- A Quagga's life span is four to five years.
- Over the past 20 years, \$7B has been spent in the eastern U.S. and Canada just in managing effects to water delivery systems.
- The Quagga has no natural/native predator in our area.

STAFF LEAKS

Michelle Gregory, Water Treatment Plant Biologist

By Ann Jensen

Michelle Gregory is new to the state of Utah. She was raised in San Bernardino County in Southern California, where her mom and dad still reside. Michelle is the second of four children. They talk and visit with each other as much as possible.

At age 18, Michelle left her family to study at San Diego State University. She received her bachelor's degree in biology with an emphasis in marine ecology in 2005. Michelle holds three certificates in advanced writing (technical, scientific and grant writing). She is also a certified scuba diver.

Throughout college, Michelle worked as a scientific diver and was involved in tidepool monitoring, seagrass restoration studies and oceanic mussel studies. She carried out a one-month internship in Maui for the University of Maryland studying the effects of boat traffic on humpback whales.

Before coming to Utah, Michelle worked for the National Oceanic and Atmospheric Administration (NOAA) as a scientific observer on commercial fishing vessels in Dutch Harbor, Alaska. She moved to St. George on April Fools' Day 2006. At that time she took a job working as a laboratory technician for the city of St. George before joining the Quail Creek Water Treatment Plant staff in August 2007.

Being a biologist and a diver, Michelle's typical day at the plant includes collecting water and algae samples for laboratory analysis. She scuba dives regularly to monitor algae and look for Quagga mussels at Sand Hollow, Quail Creek and Gunlock reservoirs. If there is time in her schedule, she trains in the daily operation of the water treatment plant.



Enrique and Michelle

Michelle is currently participating in an ozone pilot study that is close to completion.

Michelle has been instrumental in creating a buoy monitoring device utilizing artificial Dreissena substrate samplers which she refers to as "Quagga apartments." The samplers monitor for the presence of the Quagga mussel. This particular monitoring design is unique in that the entire buoy/anchor does not have to be pulled out of the water at each

monitoring. Only the "apartments" are pulled up, making the process more time-efficient and less cumbersome. The "apartments" are checked monthly for the presence of mussels. Hank Childers, superintendent of the water treatment plant and Enrique, Michelle's boyfriend, helped her in the creation of this unique sampler. They are considering applying for a

patent for the device.

Michelle and her boyfriend, Enrique are planning to wed in 2009. They met on a fishing vessel in Alaska when Michelle was working for NOAA. It was love at first sight!

Enrique jokes with Michelle that she is the "biggest and best fish he ever caught." They hope to start a family in a few years and "raise some little thinkers of their own."

Michelle loves to swim. She tries to swim a mile or two at Quail Creek

Reservoir after work. She likes to search the Internet for energy-efficient ideas, enjoys reading Michael Crichton and Dean Koontz novels and *Science Magazine*. Watching her vegetable garden grow brings her pleasure, but pulling all the weeds brings her pain.

Traveling is also one of her passions. She has been to a majority of

the 50 states, Ecuador, the Galapagos Islands, Fiji, the Bahamas, the Panama Canal, Vancouver, Canada and up and down the coast of Baja California and Mexico. She hopes one day to see Australia's Great Barrier Reefs and South Africa's Victoria Falls.

Michelle loves research projects and is passionate about discovering answers. She enjoys biology, chemistry and ecology. Her hopes and dreams include getting a master's and/or PhD in biology or ecology, which would allow her to conduct research projects that will facilitate the advancement of cost-effective and high-quality water treatment methodologies at the treatment plant.

Michelle feels extremely fortunate to be a District employee as her "thoughts and ideas have always been welcomed and heard." She loves working with a staff that values teamwork and a strong work ethic. She hopes to continue working for the District "for a very long time."

Hank Childers, water treatment plant superintendent, values Michelle's exceptional work ethic, intelligence and outgoing personality. He said "she never backs down from a challenge and is always coming up with new approaches to simplify a process or get work done faster. She has proved very valuable in her efforts with the Lake Management for Taste and Odor team, the Surface Water Source Protection Plan, the Quagga Mussel response team and as a part of the plant operations. She is a team player and a friend to everyone. She can wax a floor or operate the GC/MS water testing unit. It's great to have someone like Michelle as part of the Quail Creek Water Treatment Plant family."

"I love working with a staff that values teamwork and a strong work ethic."

-Michelle Gregory

CONSERVATION CORNER

By Julie Breckenridge — Water Conservation Coordinator

FREE Landscaping Workshops September – November 2008

These workshops are held at the Tonaquint Nature Center
(1851 Dixie Drive)
To reserve your seat, please call 673-3617.

**Saturday, September 20:
10-11 a.m.**

Getting your grass into gear!

Is your lawn looking worn out?
Fall is the best time to rejuvenate
your lawn.

This workshop will teach you
about fertilizers and maintenance
techniques that will result in a
healthy lawn.

**Saturday, November 15:
10-11 a.m.**

I do what? Where? Care of Native Plants

What do you do with the red yuca
shoots after they bloom? How
do you care for ornamental grasses?

This workshop teaches how to
care for desert plants through each
season.

**Saturday, October 18:
10-11 a.m.**

FALL FESTIVAL at the GARDEN

Garden tours, various crafts booths and garden ideas.
FUN FOR ALL!!

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The Board will not meet in September.
Meetings will resume in October. The public is invited.

Tuesday, October 21 (7:00 p.m.)
Tuesday, November 18 (7:00 p.m.)
Tuesday, December 2 (6:00 p.m.)

FREE WATER CHECKS offered May 15 through September 30

A **Water Check** is performed by an intern from the Washington County Water Conservancy District.

The **Water Check** includes a series of tests on an irrigation system. These tests determine:

- how much water the irrigation system puts out,
- the infiltration rate of water into the soil, and
- uniformity of the water application.

The intern will also check:

- soil type,
- root depth, and
- sprinkler pressure.

The entire process takes about one hour. When the **Water Check** is concluded, the homeowner is left with a customized irrigation schedule and a list of recommendations to improve their irrigation system.

Save water and money!

Call 673-3617 to request an appointment
This Water Check program provided by:



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Editor:
Ann Jensen

Contributors:
Ron Thompson
Julie Breckenridge
Michelle Gregory

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Doug Wilson

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