

# Water Line

Spring 2005

## Manager's Message

### District Heads Toward Development of Pooling Agreement and Capital Facilities Plan

*Pooling water resources puts development costs on new growth*

The cities of St. George, Washington, Santa Clara and Ivins ("Cities") have entered into a letter of commitment outlining a desire to explore the possibility of pooling water resources for efficiency of scale in production. In addition to the efficiency quotient, there would be the potential to enter into pricing plans that can support greater conservation than those currently in place. Accordingly, the District is in the process of gathering data.

Any considerations of regionalizing water delivery from the Quail Creek/Sand Hollow System, the Regional Pipeline or the St. George Water Treatment Plant must address:

- the need for equitable distribution of payment for the water between existing users; and
- future developments which will benefit from the water made available by the projects.

Discussions are ongoing concerning various options for paying for the water.

The District has traditionally relied upon "take-or-pay" contracts with the Cities to secure its financing for water projects. The Cities commit to take the water in blocks ranging from 500 to several thousand acre feet. These contracts do give the District security of revenue. On the other hand, it is difficult for the Cities to aggressively pursue conservation policies since they must pay for the water whether they use it or not. A shift from "take-or-pay" contracts to, perhaps, impact fees would create a certain element of risk. If growth and development were to

slow, revenues from impact fees could be insufficient to pay off bonds. On the other hand, the proposed change would put more of the cost of development on new growth and allow for more coordinated efforts on water conservation and development.

The District has approximately 26,000 acre feet available for allocation from the Quail Creek/Sand Hollow System.

*Capital facilities plan will allow for the orderly growth of the local economy*

Any Washington County resident who is even minimally conscious of their surroundings is bound to be aware of the profuse building taking place in southern Utah. Acreage once yielding alfalfa now is ripe with stakes marking new construction sites. In a matter of a few weeks numerous foundations are poured, walls are erected and a neighborhood emerges. This neighborhood is just one more source of demand on our water supply.

Water supply is scarce in Washington County. The completion of the projects needed to ensure that future water demands are met are very costly. It is predicted that approximately 800 million dollars in capital costs will be needed to support growth through 2038. It is also predicted that a population of 455,000 will exist in our County at that time. In order to meet water demands for this rate of growth, 174,000 acre feet of water would have to be available. At present, the District has an estimated 46,000 acre feet available with another 26,000 acre feet available from the Cities. Projects will have to be completed if Washington County is to sustain a growing economy. There is no way around this fact.

If the District is to fulfil its role as a developer and purchaser of water, it must attempt to find feasible funding alternatives, including impact fees. Pursuant to Utah Code Section 11-36-201, a Capital Facilities Plan ("CFP") must be drawn up by an entity serving more than 5,000 people before any impact fees can be assessed. The CFP would serve as a tool to identify the demands that will be placed on the District's existing public facilities and it will identify the projects to be constructed in order to meet these demands.

It is a fact that drought will continue to be a factor in Washington County. It is also a fact that this is a desirable place to live and we will continue to experience an influx of new residents. It is, therefore, critical that the projects developed by the District (1) diversify our water resources, (2) provide water for future generations and (3) allow for the orderly growth of the local economy. The CFP will meet these objectives with projects such as:

- Crystal Creek Pipeline;
- Ash Creek Project;
- Additional Recharge Projects;
- Water Conservation; and
- Lake Powell Pipeline Project

In a study done by the Utah Foundation, Utahns were asked what they considered to be the most important issues facing our state today. They listed the following as the top four:

- Creation of jobs and economic development;
- Children's health and other health issues;
- Public education; and
- Development and management of water resources that would provide adequate water during times of plenty and in times of drought to sustain the economy.



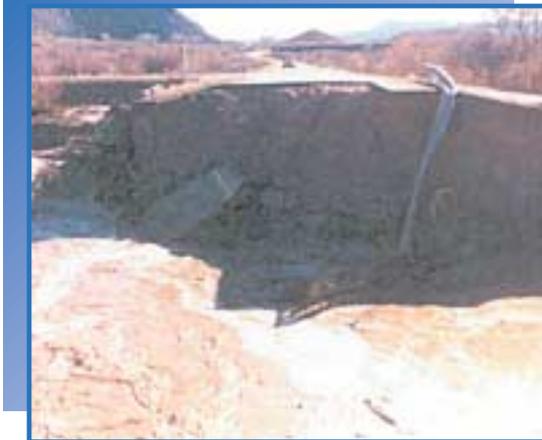
**Ron Thompson, General Manager**

The District realizes that, in order to meet the needs referred to in these four areas, a vital plan must be in place that will allow us to adapt to growth, meet the needs of the economy and provide for future generations. It is the fiduciary responsibility and an obligation of the Board of Trustees of the District to provide a long-term plan that will be futuristic in its focus, that will be adaptive and allow needs to be met, and will put the resources where they are needed to protect the economy and provide for future generations. The District and its Board are committed to working toward sustaining the quality of life in Washington County and we encourage each and every one of you to work with us toward this goal.

**BOARD OF TRUSTEES**  
*of the Washington County*  
*Water Conservancy District*  
**Morgan S. Jensen – Chair**  
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**Edward Bowler**  
**Howard Bracken**  
**Dale Gubler**  
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# Flood of 1966 A 100-Year Flood Event

By Ann Jensen

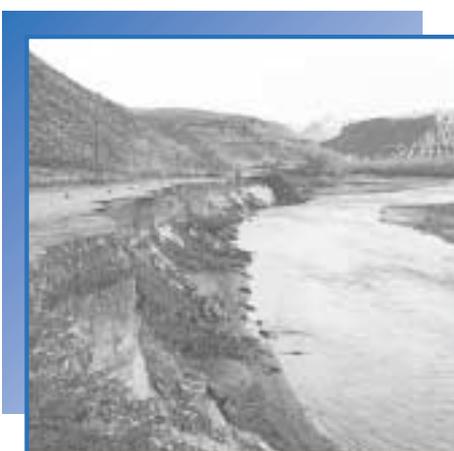


Bridge on River Road was washed out. The car is headed to Bloomington Hills; the road veering off to the left runs under Stone Cliff toward the Springs subdivision.\* (1966)

It is a well-known fact that destructive flooding has frequently occurred in Washington County. Historical records indicate that a major flood event happened as early as 1858 and since then 29 major floods have occurred on the Virgin River.

The largest flood recorded in Washington County to date took place December 3-7 of 1966. It was considered a 100-year flood. A 100-year flood has an average frequency of occurring once in 100 years; however, it may occur in any year and it may occur more than once in any one year.

A gage at Virgin, Utah, documented the peak flow of the 1966 flood at 22,800 cubic feet per



Damage along roadway close to the Virgin River in Rockville

second (cfs). The amount of the rainfall (12 inches), the length of the storm (four continuous days), the intensity of the rainfall and the simultaneous snowmelt resulted in severe flooding. The average annual rainfall total for southwestern Utah is approximately eight inches. The earth was not able to absorb 12 inches of rainfall over a four-day period.



Photo taken a mile west of the River Road Bridge with Foremaster Ridge on the left and Stone Cliff on the Right (1966)

Therefore, streambanks were breached resulting in loss of crops. Damages were sustained to fences, roads, bridges, diversion structures, and forest lands all along the Virgin River's banks from Springdale in the north to the gorge south of St. George. Damages stemmed from sedimentation amounts, floodwater, channel erosion, sedimentation inundating reservoirs and stock ponds and destruction of revegetation projects. Soil productivity was significantly decreased.

The Santa Clara River destroyed fields south of St. George and the Veyo Resort was threatened. The channel of the Santa Clara River changed considerably above Winsor Dam resulting in a secondary channel. The U. S. Geological Survey (USGS) gaging station in this area had to be moved several hundred feet downstream where the secondary channel once again joined the original channel.

Extensive damage occurred along the Virgin River between Springdale and Virgin. More than 90 acres of land was swept away. Forty-three acres of land were severely eroded in Washington Fields and 260 acres were flooded. The estimated cost of the overall damage in 1966 was \$1.4 million.

The tremendous amount of crop land demolished in the flood of 1966 is now home land. The photo (above right) illustrates lands inundated with flood waters in

the Indian Hills area of Santa Clara in 2005.

The flood of January 2005 was measured at 10,000 cfs at the gage in Virgin, Utah. It was well short of 100-year flood status. The damages sustained were very similar in that roads, bridges, fences, pipelines and diversion structures were compromised.

Sedimentation lay over pasture lands and completely buried the Webb Hill Fish Barrier just south of the I-15 Bridge. The price tag for the 2005 flood is estimated to be somewhere in the range of \$200 million dollars. One of the most significant differences between these two flood events is the fact that where farm land once lay vulnerable, now lies the foundations of people's homes.

At the time of the 1966 flood, the *Washington County News* presented three very small news items on the fact that the "river was raging" and that Zion continued to be open despite the flooding. Two short articles featured one month later indicated that some funding was available for



flood relief. Today, articles concerning the 2005 flood could still be found in *The Spectrum* three months after the flood of 2005.

In 1902, Charles L. Walker, an early pioneer, committed these words to paper:

The old Virgin River hath  
often perplexed us  
By tearing out ditches and dams  
by the score;  
Like an insatiate gourmand,  
it many times vexed us  
By greedily crying  
"I want more and more."

**The rivers in southwest Utah  
are not done with us yet!!**

*The  
tremendous  
amount of  
crop land  
demolished  
in the flood  
of 1966 is  
now home  
land.*

#### Sources:

*Floods of December 1966 In Southwestern Utah*, Geological Survey Water-Supply Paper 1870-A  
*Flood Plain Information Virgin River and Fort Pierce Wash Vicinity of St. George Washington County, Utah*, Corps of Engineers, April 1973  
*Washington County News*

#### Photos:

1966 Flood submitted by LaVar Foremaster  
Rockville road – USGS  
County Road 212 – Corps of Engineers  
Indian Hills in Santa Clara – Ron Thompson

\*The photos displayed from the 1966 flood are taken either before or after peak flood stage and, therefore, do not fully depict the enormity of the flood.

*Flood damage to County Road 212 on 1450 South under Stone Cliff.*

# Recent Flood Aggravated by Presence of Tamarisk Along River Banks

By Corey Cram

With the arrival of pink tamarisk blossoms in the Spring, birth is given to up to a million seeds per plant on one of the most troublesome plants in our area. Tamarisk is a large shrub or small tree found throughout many of the streams and floodplains of the Virgin River. Tamarisk (also known as Salt Cedar) was introduced to North America from Asia in the early 1800's for use as a wind break, erosion

*The invasion of tamarisk has altered the river and caused it to be narrow and deep with less flood capacity.*

control and as an ornamental plant. The plant is less desirable than native vegetation because it consumes much more water (up to 300 gallons per day). It concentrates salts in the soil, provides poor habitat and forage for wildlife and cattle, and is a fire hazard.

Historically, stream or riparian areas in the Virgin River were wide and flat and vegetated with willows and a cottonwood tree canopy. Today, most of these areas are dominated by tamarisk with little other vegetation present. The invasion of tamarisk has altered the river and caused it to be narrow and deep with less flood capacity. While the tamarisk provides some stream bank stability, it is strongly believed that the invasive tree and the conditions it produces, worsened recent flooding. During the summer of 2002, a fire in the tamarisk threatened many homes in Washington City.

Tamarisk is difficult to kill. Cutting the trees down or burning them addresses the branches, but new sprouts soon follow. Killing the tree requires complete removal of an extensive root system. Another solution is the use of herbicides, often associated with physical removal of the tree. Many local efforts have had success by cutting the tree and treating the stump with an herbicide.

Many parties are interested in addressing the tamarisk problem. St. George City purchased a skidsteer with cutting blades attached. The City is actively removing trees along Fort Pierce Wash and in other areas. The District hopes to purchase a similar machine for tamarisk removal through a federal grant. The Utah Division of Forestry, Fire and State Lands is concerned about the wildfire potential of tamarisk in urban areas along the Virgin River. The State is currently holding public meetings, collecting data and writing a plan that will include recommendations for land owners on how to remove tamarisk and appropriately manage riparian lands.

Removal of tamarisk and the reestablishment of native vegetation would improve the function of the river and decrease flooding severity and fire potential. Local representatives from the Army Corps of Engineers and the Utah Division of Water Rights have both suggested that hand work, without the use of heavy equip-

*Tamarisk behind Pine View Estates Subdivision in Washington Fields*



ment, to remove tamarisk would generally not require a permit.

Conducting tamarisk removal outside the summer months, the nesting season for an endangered migratory bird that can be found in the area, will help to further minimize regulatory concerns and involvement.

To obtain permits for more involved stream activities, parties should contact the regulatory authorities (Grady McNure, Corps of Engineers, 435-986-3979 and/or Chuck Williamson, Utah Division of Water Rights, 801-538-7404). Land owners are encouraged to take an active approach to address tamarisk.

## PIPE DREAMS

by Ann Jensen



**Crystal Creek Pipeline** - work is in progress to obtain easements for the upper part of the pipeline in Iron and Washington Counties. It is hoped that construction on the northern section of this pipeline can commence in the Fall of 2005. The time line for completion of the entire project would be approximately three years. The project will consist of the construction of a diversion on Crystal Creek thus conveying water through a 30-inch pipeline approximately 12 miles long to the Kolob Reservoir. The estimated water yield from this project is 2,000-3,000 acre-feet per year.

## STAFF LEAKS Lloyd Jessop

by Ann Jensen

### *Left High but Not Dry in the Desert*

The date is December 31, 1988. It is a Saturday and New Year's Eve. The Quail Creek dike is leaking profusely. Just past midnight, the dike is breached sending 66,000 cfs of water downstream.

In order to increase the amount of water to be turned out of the reservoir, Lloyd had gone to the operating building at Quail Creek Reservoir around 10:00 p.m. to open a 36" valve. When the dike broke, Lloyd was stranded on the east side of the breach. He could not get back across the river until approximately 4:00 a.m. At that time, people on four-wheelers crossed from Stratton's gravel pit to find him and bring him out.

Despite this unnerving experience, Lloyd has devoted 20 years of his life working in the Operations and Maintenance Department of the Water District.

Lloyd graduated from Hurricane High School in 1961. He continued his education at the College of Southern Utah studying business administration. After serving two years as a United States Army Sergeant,



Lloyd worked as assistant manager for Standard Oil in Hurricane. The years between 1968 and 1985 found him in Minnesota, Kentucky and Nebraska working as a District Manager of Field Services and as a Director of Operations for various food chains.

When returning to southern Utah in 1985, Lloyd fully intended to utilize his experience to pursue a career in management for food chains. Winferd Spendlove, a member of the District's Board at that time, told Lloyd about a job opening at the Water District. Lloyd applied for the part time, temporary position. He was hired to grout the original Quail Creek dike and also filled the roles of inspector and recorder. He became a full-time employee of the District in 1990. Lloyd's job description today is quite diverse. His primary focus is on dams and dam safety. He is responsible for the Ash Creek, Gunlock, Kolob, Quail Creek and Sand Hollow reservoirs.

Lloyd and his wife, Linda, have been married for 38 years. They have nine children and 16 grandchildren. When he is away from the job, he relishes the time he has with family. A 500-acre ranch in the Kolob area occupies a lot of his time. He loves to ride herd on his 60 head of cattle astride his horse, Sammy.

Walter Chrysler is quoted as saying "I feel sorry for the person who can't get genuinely excited about his work. Not only will he never be satisfied, but he will never achieve anything worthwhile." When asked what he enjoys most about his job, Lloyd responds "the variety." When asked what he feels he has achieved, he responds "my full potential." When asked what the District has done for him, he responds "given me the opportunity to have a small part in managing water for current and future generations of southern Utah."



*Lloyd and Sammy at Kolob*



Gazania

## Free Garden Workshops

by Julie Breckenridge

### Saturday, June 11: Irrigation Systems 101

This workshop will teach the basics in design for new or renovated irrigation systems. Learn the “lingo” so as to better understand the professionals. Instruction will be given on:

- how to recognize irrigation problem areas, such as slopes, narrow areas and soil types;
- how to read a set of irrigation plans;
- how to identify common errors made in designs; and
- what you can do to protect your landscape investment.

This workshop is for the do-it-yourselfer or the consumer who is looking for a basic understanding when hiring a contractor. Taught by John Sorenson, Turf Irrigation & Supply.

### Saturday, July 9: Don't Get Drenched! Irrigation Systems By Design

This workshop will build on the information taught in Irrigation Systems 101 and will help you evaluate your irrigation plan with

respect to efficient use of water.

- Is there good coverage and adequate pressure?
- Does the application rate match the type of soil?
- What irrigation method is best for a certain type of plant material?

Learn about the new technologies available and what will work best for your situation.

### Saturday, August (Date to be determined, call the District 673-3617)

#### Will Garden for Food (Fall Vegetable Gardening)

One of the benefits of living in southern Utah is the long growing season. Learn how to make this climate work for you and your vegetables.

Each of these workshops will be held at the Tonaquint Nature Center at 1851 Dixie Drive at 10:00 a.m. Space is limited, so please call 673-3617 to reserve your spot. These workshops are free to the public.

## How Well Do You Conserve?

By Julie Breckenridge

I don't know where my irrigation clock is.  Yes  No

I don't know how to operate my irrigation clock; in fact, I am afraid of it.  Yes  No

My irrigation clock was set when my landscape was installed and I haven't changed it since.  Yes  No

Overall, most Utahns consider themselves water smart. However, if you answered “yes” to any of the above questions you should heed these **10 Ways to Leave a Soaker!**

**1. Turn off the clock, Doc.** Because of our wet fall and winter, irrigation clocks should have been turned off in November.

**2. Stop at sunrise, Guys.** When irrigation is necessary, avoid watering between the hours of 8:00 a.m. through 8:00 p.m. Observing this watering restriction can save over 25% of the water you apply to your landscape. When water is applied in the heat of the day, water will be lost through evaporation.

**3. Mow it at three, Bee.** Mow at a height of 2-1/2 to 3 inches and do so with a sharp blade. The rate of moisture loss will decrease when grass is mown at this height.

**4. Mulch in the bed, Red.** Mulching flower beds decreases water usage by 40%.

**5. Check out the spray, Ray.** Water only things that grow. Not only will water be conserved, but maintenance costs on sidewalks, roads and fences will decrease.

**6. Aerate the lawn, Shawn.** Aeration will increase infiltration of water and reduce compaction of the soil. It should be done at least once a year during the fall. However, aerating twice a year (once in the fall and once in the spring) is preferable.

**7. Minimal fert, Gert.** One goal of a water efficient landscape is the use of a minimal amount of fertilizer to produce a healthy and attractive landscape. Generally, turf may require 1-2 pounds of nitrogen per 1000 sq. ft. per year for cool season grass to maintain health. For further information see [www.dixiegardner.org](http://www.dixiegardner.org).

**8. Watch for the leak, Sleak.** Perform regular check-ups on your irrigation system. After each mowing, check your system for broken heads.

**9. Cycle the time, Slime.** Apply water no faster than it will seep into the soil. As soon as you see run-off, turn off your system. Wait an hour before repeating this pattern until the complete irrigation time has been met.

**10. Let the turf dry, Sly.** Encourage a deep root system by watering infrequently and deep. These deep roots help the plants to endure the environmental stresses, *i.e.*, the hot summers. Roots should be at least 6" deep. Letting the soil dry on top before your next irrigation will encourage the roots to grow down seeking water.



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May 2005

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## Local Reservoir Capacities and Levels

	CAPACITY	APRIL 2004	APRIL 2005
QUAIL CREEK	40,000 af	27,913 af	38,939 af
SAND HOLLOW	50,000 af	15,065 af	29,562 af
GUNLOCK	10,884 af	6,721 af	10,884 af
KOLOB	5,585 af	3,012 af	5,549 af