

Bear Lake Water Company System Upgrade

PURPOSE

The Bear Lake Water Company is preparing to initiate a significant upgrade of its entire water system. The Purpose of the following document is to make its users aware of the need, the plan, the anticipated cost, and the funding approach that will be used to pay for the system changes that must be accomplished. Water users served by the Bear Lake Water Company are invited to review this information and then submit questions and/or make their feelings known by email to blwc@cut.net, or by letter to the *Bear Lake Water Company, PO Box 12, Garden City, UT 84028*. Responses to questions will be posted on our web site as “Frequently Asked Questions” (FAQ) under the link [Water System Upgrade](#). You may access this link on our web site at www.blwaterco.com.

SUMMARY

The Bear Lake Water Company system is in jeopardy. It is more than forty years old and consists of piping and components that have exceeded their useful life. The system loses a significant quantity of water through leakage and, in many places, lines were not buried deep enough by the original developer to avoid freezing. A recent engineering study by Sunrise Engineering, which included hydraulic modeling of our system as required by the State of Utah, pointed out many deficiencies that must be corrected to meet the latest water system codes and to make certain that we can keep up with growth in our area. Deficiencies noted include such things as the need to increase storage and pumping capacity, line size, and looping to meet code requirements for customer service and fire flow.

Altogether the total of the needed upgrades is estimated by Sunrise Engineering at \$13,736,000 to be spent over the next several years. Although it had been hoped that grants would be available to reduce at least part of the cost, it appears that grants are generally reserved for municipalities. Even for a Municipality, State and Federal agencies apply a lower priority to communities like ours that are predominately second-homes. Low cost government loans may be available, but after considerable study it was realized by the Water Company Board of directors that the cost would likely be lower to property owners if the needed upgrades were accomplished in criticality order on a “pay-as-you-go” basis rather than to commit the company to a dangerous level of debt through the use of large government loans. Moreover, it appears that the cost/property owner would be less than carrying the debt load with a 20-year loan, and would also eliminate the risk of a loan default in the event of an interrupted cash flow.

It is the opinion of the Board that the condition of the system requires that the full system upgrade be completed within a twenty year period, meaning that the current special assessment would need to be increased from \$80/year/property to \$348/year/property, which is the equivalent of \$87/quarter or \$29/month.

BACKGROUND

History of Ownership

Development of the Sweetwater area with its culinary water system and limited sewer system began in the late 1960’s and early 1970’s. Sometime in the early 1980’s the Sweetwater Developer went bankrupt and the water/sewer company was taken over and operated by the First Security Bank to provide service for the cabins then in existence. In mid-1988 the three Homeowners’ Associations (HOA’s) in this area (Golf Course, Hillside, and Trailer Park) purchased the water/sewer company from the First Security Bank and began operating the systems as the Bear Lake Water Company to make certain that the water company would remain viable and able to provide water to the property owners in those three associations. The

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sewer portion of the company was then sold to the Sewer District who subsequently relocated the sewer lagoons to the Round Valley area, leaving the Bear Lake Water Company responsible only for the culinary water system.

As part of that purchase, the Water Company was organized as a private, non-profit Corporation with the three HOA's as joint owners. The water company Board of Directors is made up of the Board president and one additional member from each of the three HOA Boards that own the water company, plus one additional Board Member appointed from among the remaining Board members serving on the three HOA Boards.

Golf Course and Hillside Water System Installation

According to long time Sweetwater property owners, the original developers of the Sweetwater area assumed that the development would be populated mostly with second-home cabins used primarily for summer recreation with little need for a functioning water system during the harsh winter months. If true, such an assumption explains the haphazard manner in which water lines were installed. Lines were run along roads with only random effort to place lines deep enough (six feet or more) to protect them from freezing during the winter. Lines were generally buried four to six feet deep in areas where the digging was easy, but when the installation crew came to an outcropping of rock or a place where digging was otherwise difficult, water lines were placed only as deep as easy digging allowed. In working with the system it appears that there was no attempt to use a hydraulic hammer or explosives to place the lines deeper. The completed system, as a result, has many lines that are shallow and subject to freezing unless there is a constant flow of water during the winter sufficient to keep water lines at a temperature above freezing, and/or sufficient snow depth to insulate the ground and keep the frost from reaching the depth of water lines. The resulting system contains water lines at various depths, some as shallow as eighteen inches.

Frozen and broken lines are a big problem throughout the water system and are a significant driver of repair and maintenance costs, power costs, and loss of water each year. Shallow lines also make it impossible to plow many of our roads, leaving many properties inaccessible during the winter except by snowmobile or snowshoes. That also means that cabins in those areas are inaccessible by emergency personnel during the winter months. Correcting that problem will require new lines buried deeply enough to be below the frost line.

Trailer Park Water System

In the case of the Sweetwater Trailer Park water system, developers assumed that it would be mostly used for transient purposes where campers would come in and park for a few days or weeks and then pull out to return to their permanent location or move to another trailer park. Based on that assumption, lines were run randomly through the area without worrying where travel trailers or campers might or might not be parked. In time, however, lot owners began adding foundations and installing trailers as permanent residences. Because of that, many lines now run under fixed trailers, making lines inaccessible for repair when a line breaks or begins to leak.

Lines running under fixed trailer locations is a serious problem that must be corrected as quickly as possible, and the Water Company has been installing new main-lines in the street to move water lines out from under trailer locations. This work is currently being done in phases as funding becomes available, but needs to be done more quickly to remove the possibility of a serious line break causing significant damage to a structure.

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System Operation

Until the last few years the Water Company was operated by a single operator who worked part time for the Water Company and part time for the sewer district. Tank levels were maintained manually by the operator who would drive around the area checking tank levels to determine when pumps needed to be turned on to refill the tank to the full mark. Because there were few cabins using water, pumping could usually be delayed until night time when power was the least expensive. The process of filling a tank was to check the water level in the tank, make an estimate of how long the pumps would need to run to bring the water level to or near the full mark, start the pump, and set a shutdown timer. If the estimate was incorrect and too much time was set on the timer then the tank would overflow and water would run out into the surrounding area. If too little time was set on the timer then the tank would not be full the next morning and the pump would need to be run an additional time the next morning to bring the water level to near full.

The obvious drawback to this system of operation was that if a fire broke out in the evening when tank levels were low, then there would be an inadequate quantity of water for use to fight the fire. A second issue was that as more and more cabins were built and tank levels dropped more quickly it became more and more difficult to monitor tank levels and correctly estimate when and for how long pumps should run. That problem has since been partially corrected by installing a SCADA control system which automatically monitors tank levels and turns pumps on and off.

As more and more cabins are built, however, it is becoming exceedingly difficult to keep up with the demand for water and also make certain that the tanks are full to provide adequate water to fight fires, especially during the summer when demand is highest. Correcting that problem requires additional tank capacity, upsized lines, and increased pumping capacity throughout the system.

The Impact of Age

The water system is now more than forty years old and was built under codes that are no longer adequate and with materials that are considerably beyond their useful life. Much of the system is made of piping that has or is becoming brittle and susceptible to breaks from the expansion of ice in frozen lines and/or when the earth shifts due to expansion and contraction of the surrounding ground as the seasons change between summer and winter. The overall water system is currently losing approximately 30% of the water pumped because of scattered leakage throughout the company's large system of pipes, joints, and fittings.

The passing of time, the escalation of codes, the continued deterioration of lines and components, and the continued construction of cabins, makes it impossible to continue meeting the demands of our area without upgrading our current system. Old lines must be replaced with piping made from modern materials that have a known long-life, and must be installed with construction techniques that eliminate the leaks that are common with our old system. Lines must be buried deep enough to avoid freezing and must be upsized with more looping to provide increased flows and multiple paths to feed water through the system to provide adequate fire flow capability. Storage capacity and pumping flow rates must be increased to keep up with the increasing water demands of a growing area and to make certain that the system has sufficient capacity and flow to deal with the increase of fire potential that comes with an increasing number of cabins.

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UPGRADE PLAN

The state of Utah requires that any significant system upgrade be preceded by a computer analysis (aka modeling) of the entire water system to make certain that the modified system will be able to provide appropriate pressures, flow rates, and volume of water to users and fire hydrants even under the high demands associated with fighting a house fire. That analysis was completed and documented as the *Bear Lake Water Company Culinary Water Master Plan* by Sunrise Engineering in 2011 and is the basis for what is being presented here as the Upgrade Plan. Included with that plan are engineering estimates of expected costs for the work that needs to be done

Engineering Cost Estimates.

At the request of Bear Lake Water Company the engineering estimates produced during the analysis by Sunrise Engineering are broken into four options as defined below:

Option 1 (\$6,263,000) ~ Includes all changes recommended by the computer analysis to meet flow, pressure, and capacity requirements, including 12.95 miles of upsized piping to replace the 2", 4", and 6" diameter lines prevalent in the old system:

- 7.74 miles of 8" diameter lines
- 4.19 miles of 10" diameter lines
- 1.02 miles of 12" diameter lines

Water lines will use HDPE piping with fused joints to prevent leakage and is sufficiently flexible to avoid breakage under freezing conditions. All lines will be buried below anticipated frost levels.

Option 1 also includes higher flow pumping stations, increased storage capacity, looping, nine new PRV valves with associated vaults, higher flow fire-hydrants, deeper service lines to each property where needed, and a significant quantity of new valves and fittings associated with the new piping.

Option 2 (\$7,473,000) ~ includes replacement of all the old lines in the Trailer Park, Golf Course, and Hillside HOA's not replaced in **Option 1** and doing so with HDPE pipe. Also includes replacement of all associated valves, components, and undersized/old fire hydrants.

Option 3 (\$13,736,000) ~ this option assumes completion of the entire job, **Options 1 & 2** combined.

Option 4 (\$2,426,000) ~ this option is for the initial and most critical portion of the **Option 3**, full system upgrade, and is based on the assumption that the job will be done a phase at a time and in a sequence where the most critical sections are done earliest in the process.

Option 4 includes the following:

- 1- A 350,000 gallon tank (Tank 3A) added at Tank Station 3 and connected to Tank 3, making a total of 450,000 gallons storage at that station and elevation.
- 2- A new upsized line run between Tank 2 and Tank3 and buried at least six feet deep to avoid freezing and eliminate the need to have a continuous flow of water through that line to prevent freezing.
- 3- A new upsized fill line run between Tank 3A and Tank 4

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- 4- A new increased capacity pump station added at Station 3A to transfer water to Tank 4 more rapidly.
- 5- The old line that runs along Sweetwater Parkway between South Aspen Loop and Sunrise Circle to be replaced with an upsized line to complete that portion of the Sweetwater Parkway Line.
- 6- All new lines installed using HDPE pipe.

The section of line between Tank 2 and Tank 3 is considered to be an extremely critical part of the water system because of the high risk of it freezing during the winter and cutting off water to much of the hill and some of the Golf Course area. Because the line is as shallow as 18" in some places, the only way that the line is currently kept from freezing during the winter is to maintain a constant flow of water through the line at all times to keep the line temperature above freezing. If a line break or a prolonged power outage were to occur during the winter and cut off water flow for even a short time, the line would freeze and be shut down at least until spring waiting for the line to thaw. Beyond that it would probably be necessary to replace the entire line because of multiple breaks. If all of that were to occur it is likely that the hillside and part of the golf course area would be without water for several months or longer.

FUNDING SOURCES

The obvious hope would be for the Water Company to be eligible for a government grant of some sort to help defray the cost of the project. Government grants, however, are generally reserved for municipalities, especially those areas where most homes are owned by full time residents. Private water companies are generally limited to low interest government loans, rather than grants, and water companies serving areas of second homes generally stand lower in priority than those serving areas of full time residents.

Although we will continue to search for possible sources of grants, the above generally leaves only two choices, a low cost government loan or self-financing. Either choice will mean an increase in the annual special assessment as shown below, but the use of a government loan carries the risk that once committed we lose the option of delaying a phase if funding becomes a problem, and with a loan there is always the possibility of default if there is an interruption in cash flow coming from the payment of assessments by property owners.

POSSIBLE FUNDING APPROACHS

It is obvious that Option 3, the entire system upgrade, is the only choice that makes sense if we are to properly address the age and deficiencies of the existing water system in a timely manner and in a way that will continue meeting the growing culinary water needs as more and more cabins are built in our area. At the same time it is the feeling of the Board that it would be financially unwise to commit to a large debt burden through the use of government loans since the end result regarding our fee structure would likely be similar, and committing to a large loan would place us at risk of default in the event that assessment payments were to be interrupted for any reason.

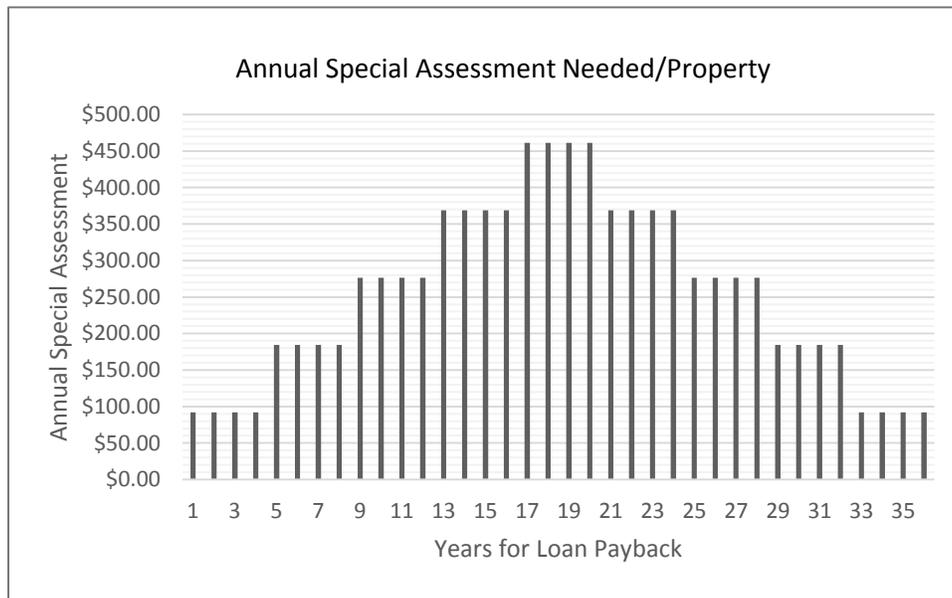
The following compares the funding costs of three different funding options base on doing the job over 20-years:

Large Upfront Government Loan ~ assume that we could find a government source that would loan us the whole \$13,736,000 at 3% interest over twenty years so that we could do the entire

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job as one big project. The annual payment on the loan would be \$914,154, or \$18,283,086 paid back over the twenty year life of the loan. That would equate to a special assessment of \$461/year/property for the 1,983 properties in the Water Company Service area. That equates to \$9,220 that will be paid/property over the 20-year life of the loan.

Five Government Loans Spaced over the Construction Period ~ assume that we could find a government source that would let us borrow one fifth of the total amount (\$2,747,200) on the first, fifth, ninth, thirteenth and seventeenth years. Assume also that each loan would be for twenty years at 3%. That approach would, of course, result in overlapping loan payments along with extending the loan period to thirty six years. It would, however, still allow the total job to be completed in twenty years. The annual payment on each loan would be \$182,830.92. The total payback of the four loans would be essentially the same as the payback for the large upfront loan above, namely \$18,283,085. Because of the overlapping nature of the five-loan payback, however, the amount that will need to be collected through an increase in the special assessment will vary over the payback period of thirty-six years as shown by the following plot.



The total special assessment paid/property over the life of the five-loan approach would be the same as for the single up front loan.

Pay as You Go ~ assume that we did jobs in criticality order based on the availability of funding, but increased the annual special assessment so as to be able to complete the entire job within the same twenty year period. That would mean that the special assessment would need to be increased to an annual special assessment of \$348/property (\$87/property if paid quarterly). That would provide \$686,000/year for upgrades and would mean that the total special assessment payment over the 20-year life of the project would be reduced to \$6920/property compared to the amount paid with a 20-year loan.

BOARD DECISION

The Board is faced with the need to upgrade a system which is not only beyond its useful life, but has significant deficiencies that must be corrected. Although it might be possible to obtain a low interest government loan (or loans) to do the work, the Board is not willing to burden the Water Company with such a large indebtedness. Going with the Pay-as-You-Go approach will

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save the Water Company and its customers approximately \$4.55 million in interest charges over the life of the project compared to the cost of a government loan. That savings equates to \$2,300/property for property owners. For all those reasons the Bear Lake Water Company Board has concluded, after due consideration, that the Pay as You Go option described above is the approach that will be used beginning with the assessment year 2014. It is also the decision of the Board that the Special Assessment will be the same for all properties since the benefit is shared by all properties.

The Board is painfully aware that the planned Special Assessment increase from \$80/year to \$348/year for each property will be difficult for all property owners, particularly those on fixed incomes and those who own multiple properties. The Water Company, however, is a non-profit organization that has no other source of funds than its customers. Keeping the Special Assessment at its current level of only \$80/year would mean that the project would take an unacceptable time of more than eighty-six years.

As indicated in the PURPOSE section of this memo, we invite you to make your feelings known by clicking on the Contact Us button in the top banner of our web site at www.blwaterco.com and sending us an email. You can also send a letter via the U.S. Postal Service to Bear Lake Water Company, PO Box 12, Garden City, UT 84028. All responses to questions and concerns from property owners will be included in the Frequently Asked Questions section of our Web Site.