UPGRADE PLAN, WITH ENGINEERING ESTIMATE OF PROBABLE COSTS
(Bear Lake Water Company Full System Upgrade)

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 Estimate of Probable Costs

It should be noted that while the engineering estimates shown below are thought to be conservative, there is always the possibility that future adjustments may become necessary to account for the impact of changes in government regulations, inflation, or the need to deal with unforeseen problems that crop up in the system prior to completion of the full upgrade. It should also be noted that final costs will depend on firm bids from competing contractors following the completion of engineering designs and plans.

The estimate done by Sunrise Engineering as part of the 2011 study indicated above was broken into two major segments:

Segment 1 ($6,263,000) ~ This task 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

The new water lines will be constructed of HDPE (High Density Polyethylene) piping with fused joints to prevent leakage. All lines will be buried six feet or deeper to place them below anticipated frost levels, but HDPE piping also does not break even if it does freeze. HDPE piping is the recommended material for this type of installation because of its life expectancy of 100 years or longer. It is also flexible enough to follow the curvature of trenches without the use of bend fittings prevalent in other types of pipe, and eliminates the requirement to pour multiple thrust blocks needed with other types of piping to prevent separation of fitting joints at turns.

This task also includes higher flow pumping stations, increased storage capacity, looping for improved flow to fire hydrants and cabins, nine new PRV valves with associated vaults, higher flow fire-hydrants, additional fire-hydrants where needed to maintain proximity of hydrants to property lines, deeper service lines to each property where needed, and the installation of all new valves, fittings, and hardware associated with the waterlines.

Segment 2 ($7,473,000) ~ includes replacement of all the remaining old lines in the Trailer Park, Golf Course, and Hillside HOA's not covered in Segment 1. The Segment 2

construction will also be done with HDPE pipe. This task also includes replacement of all associated valves, components, undersized/old fire hydrants, and the addition of fire-hydrants where needed to maintain proximity of hydrants to property lines.

Expected Impact on Special Assessments

The total for the two Segments described above comes to $13.8 million. To complete the entire project within 20-years on a pay-as-you-go basis will require the current special assessment to be increased from $80/year/property to $348/year/property.

Planned Order of Projects

The Board's current plan is to do the design and construction in manageable chunks as special assessment funds become available beginning with the phases identified in the following:

Phase 1 ($2,967,000) ~ this phase is considered the most critical in the system and is currently planned to be done first for that reason.

- An additional 350,000 gallon tank near and connected to the current Tank 3 to provide additional water to meet firefighting requirements. That will bring the storage capacity at this level on the hill to 450,000 gallons
- A new and larger line from Tank 2 to Tank 3 buried below the anticipated frost line.
- A new and larger line along with a higher capacity pumping station from Tank 3 to Tank 4 to provide water more quickly to Tank 4 for firefighting needs.
- A new Sweetwater Parkway line between south Aspen Loop and Sunrise Circle and between north Aspen Loop and the new line on north Sweetwater Parkway near Serviceberry Circle. That will place the entire Sweetwater Parkway line from approximately Serviceberry Circle on the north to Snowberry on the south below the anticipated frost line.
- Phase III of the Trailer Park System Upgrade.

Phase II ($2,297,000) ~ this phase is considered the 2nd most critical in the system because it is currently preventing people from getting to their cabins in the winter time because of shallow water lines.

- A new and larger line along Aspen Loop from the north to the south end.
- A new and larger line along Panorama Drive from its intersection with Aspen Loop on the north to its intersection with Sweetwater Parkway on the south. Included will be all side roads connecting with Panorama Drive plus Mules Ear which connects to Sweetwater Parkway.
- A new and larger line from Tank 4 along Panorama Circle to Aspen Loop.
- Phase IV of the Trailer Park water system.

Phase III ($2,683,000) ~ this phase is considered the 3rd most critical in the system because it is part of the package needed to address the final fire flow requirements

- Portion of the upgrade needed to meet fire flow requirements but not completed as part of Phase 1 and Phase 2
- Final Phase (Phase V) of the Trailer Park Upgrade.

It should be noted that these three phases are subject to change if new information or issues arise, but currently these are likely the tasks that will be completed first, followed by phases to replace the remaining old lines in the remainder of the system.

Schedule

Assuming on time payment of the special assessment by all property owners there will be $688,101 available each year for upgrade of the water system. That means that Phase 1 of the major system upgrade will be paid for within four and one half years, Phase 2 will take another three and one half years, and Phase III will take another four years, although design work can begin prior to receipt of all funds for each project.