Washington County Service Authority Board of Commissioners
October 23, 2013 Recessed Meeting (Town of Chilhowie Joint Meeting) held November 14, 2013

The October 23rd Recessed Meeting and Town of Chilhowie Joint Meeting was called to order at the Chilhowie Town Hall by the Chilhowie Mayor, Gary Heninger at 7:02 pm.

Mr. Boswell gave the Invocation. The Pledge of Allegiance was recited.

ROLL CALL

Town of Chilhowie Council Present:
Mr. Gary Heninger, Mayor
Mr. Bill Boswell, City Manager
Ms. Marlene Henderson, Clerk/Treasurer
Mr. Billy Clear
Ms. Kelly Spenser-Hill
Mr. Brent Foster
Mr. Lewis Short
Ms. Cathy Smith

Mr. Taylor called the Washington County Service3 Authority Recessed Meeting to order at 7:04 pm.

Washington County Service Authority Board of Commissioners Present:
Mr. Ken Taylor, Vice Chairman
Mr. Jim McCall
Mr. Dwain Miller
Mr. Mark Nelson
Mr. Frank Stephon, IV

Commissioners Absent:
Mr. Joe Chase, Chairman
Mr. Devere Hutchinson

WCSA Staff Present:
Robbie Cornett, General Manager
Kimberly Harold, Controller
April Helbert, Engineering Manager
Dave Cheek, Operations Manager
Carol Ann Shaffer, Administrative Assistant

Consultants Present:
Bobby Lane, PE; The Lane Group, Inc.

3. Approval of the Agenda

There were no additions or corrections to the Agenda. Mr. McCall motioned to approve the Agenda. Mr. Nelson seconded and the Board approved voting 5-0-0-2.

4. Mill Creek Drinking Water Plant Study Presentation *Bobby Lane*

Mill Creek Water Plant Facts-Review

- The Water Treatment Plant is jointly owned by WCSA and the Town of Chilhowie,
- Treatment Plant Constructed in 1998,
- Project Cost $ 3,031,000.,
- Debt Service Term 30 Years- 2029,
- Water Plant Capacity 2.5 MGD (1.4 MGD Town); (1.1 MGD WCSA),
- VDH requires treatment of Spring Sources that are Surface Water Influenced,
- New Study authorized by Town and Authority to meet future needs of the water customers.

Goals for the New Plant

- Planning Period- 40 years. Mr. Lane said it was very important that the plant improvements last as long as the debt on the plant, thus the plan period of 40 years.
- Decrease Operations and Maintenance Costs,
- Increase Reliability. Mr. Lane said this was the only water source for Chilhowie and the plant must be reliable and efficient.
- Update to meet New Regulations,

- Make Correct Decisions to provide safe drinking water to WCSA and the Towns Customers over next 40 years.

Purpose

- Increase useful life above 15 years. Mr. Lane would like to increase the life expectancy to 40 years. The existing facility has been online for 14 years and components are ending the end of their useful life.
- Review Existing Facilities for Improvements,
- Feasibility of Capacity Expansion,
- Feasibility of Additional Raw Water Sources,
- Effectiveness of Vendor Support. Mr. Lane explained the treatment plant at Mill creek was a Koch membrane plant and was the only one in this area; making it hard for Koch to provide the support needed for the plant. Vendor support is very important for the plant to run efficiently, said Mr. Lane
- Evaluate Alternatives,
- Select Alternative for Implementation.

Water Demand Projections

Table 2.4
Chilhowie Estimated Water Demand

Year	Average Day Demand (MGD)
2010	1,100,000
2020	1,100,000
2030	1,150,000
2040	1,150,000
2050	1,200,000

Water Demand Projections

Table 4.3
WCSA Maximum Day Production Projections

Year	Water Production (MGD)
2010	10.4
2020	12.1
2030	13.9
2040	15.1
2050	15.6

Existing Plant Conditions

Mr. Lane discussed the current membrane cartridge explaining that raw water enters through the fibers which filter out impurities. Mr. Lane in 1998 when the plant was built, membrane filtration was a new technology; considered experimental by the VDH because it was so new. Mr. Lane said the membrane at Mill Creed was manufactured by Koch Industries and is the only membrane filtration system in the area.

Mr. Lane then discussed the bathroom facilities, saying it needs to be updated.

The laboratory is small and also needs to be updated, he added.

Some of the equipment is getting old and is leaking. Some of the pumps are also in need of repair.

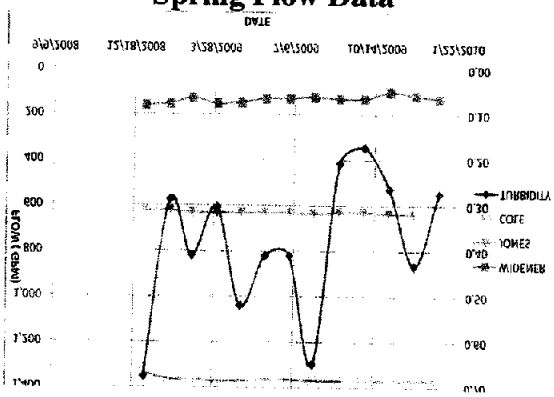
Mr. Lane then discussed the three different springs which provide water o the Mill Creek plan; the Jones, Cole and Widener Springs. Mr. Lane said it was very difficult for the Koch membrane to treat water from the Widener Spring.

As a result, cartridges have to be replaced about once every five years at a cost of $135,000 per skid and there are 3 skids of cartridges at Mill Creek, added Mr. Lane.

Membrane Technology

- Technology Uses Synthetic Hollow Fiber Membranes of Varying Size. Mr. Lane discussed the three degrees of filtration, micro-filtration, ultra filtration (the level of Koch filters) and reserve osmosis. The Koch Filtration System was considered the best filtration system at the time the Mill Creek plant was built, said Mr. Lane.
- Membrane Pore Size Determines Particle Size Removal,
- Typically Operated Without Coagulant Addition,
- Requires Pressure Differential to Operate,
- Cleaning is Required.

Spring Flow Data



Mr. Lane reviewed the graph above saying the Cole Spring flows more than 1,200 gallons per minute. Mr. Lane said for a point of reference, 700 gallons per minute is 1 million gallons per day. This shows that Cole Spring is a very good source of water he added. Mr. Lane said the graph shows that the trabitity of the spring water is about .6; drinking water after treatment after treatment is required to be .5. The springs are almost drinking water quality before the water is treated, stated Mr. Lane.

Jones Spring provides about 600 gallons per minute and the Widener Spring provides about 200 gallons per minute, he concluded.

Alternatives Raw Water Source

- Develop Additional Springs. With regulation changes, we cannot capture more than 10% to 20% of a spring because of potential downstream and environmental impact, said Mr. Lane. Because of this, it is hard develop additional springs and be cost effective.
- Develop Drilled Wells. After evaluating well quality in this area; TLG does not recommend this option.
- Purchase Additional Water Rights. TLG would like to study this option further.
- Purchase Additional Water Sources;
- No Action;
- Mr. Lane said the Steering Committee recommends developing additional springs and purchasing additional water rights.

Water Treatment Plant Needs

- Membrane Vendor Technical & Logistics Support. Mr. Lane said they have been unable to find a Koch representative who would support the Mill Creek Plant. Mr. Lane said it is hard for Koch to justify the money it would take to support the only plant in this area. Mr. Lane discussed plants in the area built by Memcore and Pall saying these companies do provide vendor support to their clients in the area.
- Correct the Widener Spring Issue,
- Replace Skid Valves and Piping, Mr. Lane said most valves were leaking

and the piping was leaking at the joints. This is an ongoing problem for the operators and will only get worse if it is not addressed, he stated.

- Replace Other Obsolete Equipment,
- Extend Membrane Life Expectancy.

Memcore and Pall guarantee their cartridges for 10 years; the current Koch cartridges are lasting about 5 years, said Mr. Lane, Mr. Lane discussed two facilities in Lee County under operation for 12 years and have yet to replace a cartridge.

- Neutralization Tank Mixing System,
- Pneumatic System Improvements as the air compressor is very loud, said Mr. Lane.
- Mitigate Noise Problem,
- Additional Building Space for laboratory,
- Repair Leaks in Contact Tank,
- Water Plant Security. When the new plant is build, the goal is to reduce operator attendance at the plant so security will be very important, said Mr. Lane.
- Additional Building Space for Bathroom,
- Correct Cause of Finished Water Pump, Impellor Damage,
- Improve Efficiency of Flow Splitting,
- Septic System Improvements.

Water Treatment Plant Electrical /Control Needs

- NEW Supervisory Control and Data Acquisition (SCADA) System,
- New Variable Frequency Drives (VFD's).

Expansion of 3.1 MGD

- Treating up to 3.1 MGD at the Mill Creek WTP would represent the upper distribution operation limits where 1.8 MGD is sent to WCSA and 1.3 MGD is used by the town.
- Flows above 3.1 MGD require extensive pipe replacement to avoid exceeding the distribution system pressures.

Water Treatment Plant Common Improvements

- Will total almost $1,000,000.00.

Mill Creek Water Treatment Plant Options

Option A:

- Separate New Widener WTP .5 MGD Microfiltration Plant due to the issues the Mill Creek Plant has in treating water from the Widener Spring. This plant will be either a Memcore or Pall Microfiltration Plant.
  - Construction Costs - $1,134,500
  - Present Worth- $2,032,400
- Keep Koch Membranes at Mill Creek and Make Common Improvements.
  - Construction Cost – $992,000
  - Present Worth - $5,398.00.

TLG sent samples from Widener Springs to Memcore and Pall to be pilot testing. Both were able to treat the water using a microfiltration system with no issue.

Option A Totals:

- Construction Costs - $2,126,500
- Present Worth - $7,430,400. The present worth of Option A is so high because the Maintenance and Operation Costs associated with the Koch membranes are high

Option B:

- Add .5 MGD Microfiltration with Membranes at Mill Creek WTP
  - o Construction Costs - $840,000
  - o Present Worth - $1,527,800
- Keep Koch Membranes at Mill Creek and Make Common Improvements
  - o Construction Costs - $992,000
  - o Present Worth - $5,398,000

Option B Totals:

- o Construction Costs- $1,832,000
- o Present Worth - $6,925,800.

This amount is high because the cost to maintain and operate the plant is still high and will cost more to operate and maintain long term.

Option C:

- New Microfiltration Plant at Mill Creek 2.5 MGD to 4.0 MGD
  - o Construction Costs - $2,665,000
  - o Present Worth - $5,870,400.

This amount represents the decreased cost to maintain and operate the facility. This plant will cost much less to operate and maintain in the future.

Mr. Lane recommends Option C.

Water Treatment Plant Recommendations

- Construct New Building to House Lab, Bathroom and 1 New Membrane Skid or Microfiltration Skid.
- Equip New Skid w/Membranes for 2.0 MGD,
- Remove Existing Koch Skids and Replace with New Membrane Skid in Existing Building,
- Provide New Pneumatic System,
- Replace Internal Piping,
- Add New Security System,
- Replace Pump VFDs.

Selected Alternative

- Total Project Cost $3,686,900.00 (includes contingency funds).
- Annual Estimated O&M $206,900
- Yearly Debt Repayment $243,242 20 years at 3.75% interest.
- Total Annual Budget $450,142
- Existing O&M $296,400
- Existing CIP Set-Aside $217,200
- Total Existing Budget $513,600
- **Difference $63,458**

Funding Options

- Rural Development
- Virginia DHCD
- Tobacco Commission
- Virginia Department of Health
- Appalachian Regional Commission
- Note: Advantages may be realized depending upon the structure of our application.

According to Mr. Lane, there may be more funding options available for this project since funding will be for a county service authority and for the Town.

This presentation was for informational purposes only and no decision has to be made tonight, said Mr. Lane. He then offered to answer questions.

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Mr. Clear asked where the new treatment plant would be built. Mr. Lane said the new plant would be constructed where the Mill Creek plant was currently located. The old building would be updated and the new structure would be built beside it.

Mr. Bonham reminded Mr. Lane of the issue in 1998 with the deer tick virus saying the Koch membrane was the only filtration system that would remove the deer tick virus and was the best. Mr. Bonham asked if there was any concern

the new filtration system would not remove that or other viruses.
Mr. Lane said the deer tick virus was no longer an issue but the new microfiltration system would be able to take care of those issues.

The Washington County Service Authority Board of Commissioners had no questions for Mr. Lane.

Mr. Taylor thanked the Town of Chilhowie for hosting the meeting.
Mr. Taylor continued saying, in the future, water will be the most important thing; more important than gas or anything else.
He thanked TLG and the Town of Chilhowie again.
Mr. Taylor then asked for a motion to adjourn.

5. Adjourn
At 8:42 pm, Mr. Stephon motioned to Adjourn the Washington County Service Authority October 23, 2013 Recessed Meeting. His motion was seconded by Mr. Miller and approved by a 5-0-0-2 Board vote.

Mr. Ken Taylor, Vice Chairman

Carol Ann Shaffer, Assistant Secretary