COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC APPLICATION OF HYDEN-LESLIE COUNTY WATER DISTRICT FOR AN ADJUSTMENT OF RATES PURSUANT TO 807 KAR 5:076	))))	**CASE NO. 2020-00141**
ELECTRONIC HYDEN-LESLIE COUNTY WATER DISTRICT'S UNACCOUNTED-FOR WATER LOSS REDUCTION PLAN, SURCHARGE AND MONITORING	))))	**CASE NO. 2020-00340**

COMPLIANCE WITH ORDER OF NOVEMBER 6, 2020

Pursuant to the Commission's Order of November 6, 2020, Hyden-Leslie County Water District files its Infrastructure Improvement Plan (Exhibit A) and evidence of its adoption of a policy to perform a water audit (Exhibit B) annually.

Dated: March 20, 2021

Respectfully submitted,

Gerald E. Wuetcher
Stoll Keenon Ogden PLLC
300 West Vine Street, Suite 2100
Lexington, Kentucky 40507-1801
Telephone: (859) 231-3017
Fax: (859) 259-3517
gerald.wuetcher@skofirm.com

Counsel for Hyden-Leslie County Water District

CERTIFICATE OF SERVICE

In accordance with 807 KAR 5:001, Section 8, I certify that Hyden-Leslie County Water District's electronic filing of this document is a true and accurate copy of the same document being filed in paper medium; that the electronic filing was transmitted to the Public Service Commission on March 20, 2021; that there are currently no parties that the Public Service Commission has excused from participation by electronic means in this proceeding; and that within 30 days following the termination of the state of emergency declared in Executive Order 2020-215, this Motion in paper medium will be delivered to the Public Service Commission.

Gerald E. Wuetcher

EXHIBIT A

HYDEN-LESLIE COUNTY WATER DISTRICT
INFRASTRUCTURE IMPROVEMENT PLAN

PURPOSE

On November 6, 2020, the Public Service Commission of Kentucky ("Commission") issued an Order in Case No. 2020-00340 directing Hyden-Leslie County Water District ("Hyden-Leslie District") to prepare an infrastructure plan that included an unaccounted-for water loss reduction plan. This document is submitted to response to that directive.

BACKGROUND

Hyden-Leslie District was established on February 15, 1964 by order of the Leslie County Court. Its territory encompasses all of Leslie County, Kentucky, including the city of Hyden, Kentucky. It is the only municipal water system in Leslie County. As of December 31, 2019, it supplied water to 3,683 customers (3,412 residential customers and 271 commercial customers). Hyden-Leslie District operates a 1.5 million gallon per day ("MGD") water treatment plant, which is sufficient to meet its water supply requirements.

Hyden-Leslie District has experienced significant water loss in the last decade. As shown in Attachment 1 to this report, its annual water loss for the period from 2011 to 2018, ranged from 32 percent to 36 percent of total water produced. Simply put, during that period Hyden-Leslie District lost one of every three gallons of water produced. In 2018, it instituted and strictly adhered to new water loss surveillance and control techniques. These techniques resulted in an annual water loss to 22 percent of total water produced in 2020. While this level represents a one-third reduction in water loss, it still is much higher that the industry standard of 15 percent.

WATER INFRASTRUCTURE INVENTORY

A discussion of Hyden-Leslie District's capital assets is set forth below. The inventory identifies all existing assets, their current condition and performance, the need or urgency to replace the asset, and the cost of replacement.

An asset's current condition is based upon the following scale:

1 New or Excellent - None or minor defects
2 Good - Defects that have not begun to deteriorate
3 Fair - Moderate defects that will continue to deteriorate
4 Poor - Severe defects that will collapse/break in near future
5 Inoperable - Defects need immediate attention

An asset's evaluated current performance is based on the following scale:

1 Exceeds/Meets all performance targets
2 Minor performance deficiencies
3 Considerable performance deficiencies
4 Major performance deficiencies
5 Fails to meet performance targets

The priority that the District has assigned to an asset's replacement is:

0 Not a priority
1 Desirable, but not necessary
2 Improved system operations & maintenance (O&M) efficiency
3 Internal safety concern or public nuisance
4 Potential public health, safety, or environmental concern
5 Existing threat to public health, safety, or environment

Booster Pump Stations. Hyden-Leslie District's water distribution system currently has 30 booster pump stations. Each station is equipped with two pumps. Thirteen of these pump stations are graded as being in poor condition. Hyden-Leslie District has designated two of the stations as posing a potential health or safety concerns. To replace all of the pump stations listed in poor condition is estimated to cost $1,075,000. As shown in Table 1 on the following page, pump stations highlighted in yellow or orange are either in poor condition, a potential public health or safety threat, or have internal safety concerns.

Most of the pump stations lack variable frequency drive ("VFD") systems. As a result, use of these pumps result in sudden pressure spikes when the pump initiates operation that can adversely affect water mains. Repeated pressure spikes over time can weaken water mains and increase the frequency of leaks and breaks. This problem is amplified by the mountainous terrain over which Hyden-Leslie District's system operates and which can result in drastic pressure ranges. One means of ameliorating this problem is the use VFD systems which allow pumping to start and stop at a gradual pace as opposed to the sudden start/stop. Replacing existing pumps with VFD systems would lessen the stress on existing distribution water mains and lengthen the actual service lives of the District's water distribution mains. VFD pumps are also more energy efficient.

Hyden-Leslie District currently has plans to replace seven of the pumping stations as part of its proposed Phase IIIB Water System Improvements Project (WX21131002). These pump stations are highlighted in yellow in Table 1. Their replacement represents a capital expenditure of approximately $700,000. In addition, the District has recently purchased the components needed to rehabilitate the Rockhouse Pump Station and will perform the work using its employees.

Distribution Lines. Hyden-Leslie currently has 1,637,556 linear feet of water mains and lines. It estimates the total cost of replacing these lines is approximately $30.1 million. These lines range in age from 10 to 60 years. Approximately 30,614 linear feet of these water mains, or about two percent of these mains are asbestos concrete mains install in the 1960s. The remaining mains are polyvinylchloride mains.

Table 1 – Booster Pump Stations

Asset Name	Pump Count	Condition Code	Performance Code	Priority Code	Replacement Cost
BIG BRANCH #1	2	4	2	3	$ 75,000.00
BIG BRANCH #2	2	4	2	3	$ 75,000.00
BOWENS CREEK	2	1	1	0	$ 75,000.00
BOWLING BR	2	2	1	0	$ 75,000.00
ESSIE	2	4	2	3	$ 125,000.00
FLACKEY BRANCH	2	3	2	1	$ 75,000.00
GLADY BRANCH	2	2	3	2	$ 75,000.00
HIGH SERVICE (OUTPUT PUMP)	2	1	1	0	$ 25,000.00
HONEYSUCKLE	2	4	2	3	$ 75,000.00
HOSPITAL HILL	2	1	1	0	$ 75,000.00
HURTS CREEK (HURRICANE)	2	4	4	3	$ 125,000.00
HYDEN SPUR	2	1	1	0	$ 125,000.00
LOWER BAD CREEK	2	2	2	0	$ 75,000.00
MUNCY CREEK	2	4	4	4	$ 125,000.00
OWLS NEST	2	4	2	3	$ 75,000.00
POLLS CREEK #1	2	4	3	3	$ 75,000.00
POLLS CREEK #2	2	4	3	3	$ 75,000.00
ROCKHOUSE	2	4	3	3	$ 100,000.00
WILDER BRANCH	2	4	4	4	$ 75,000.00
WOLFE CREEK	2	3	3	3	$ 100,000.00
WOOTON MOUNTAIN	2	4	3	3	$ 75,000.00
Saylor BPS	2	1	1	0	$ 75,000.00
Camp Creek BPS	2	1	1	0	$ 100,000.00
Greasy BPS	2	2	1	0	$ 75,000.00
Hell For Certain	2	1	1	0	$ 75,000.00
Persimmon Fork BPS	2	1	1	0	$ 75,000.00
Bellwood Pump	2	1	1	0	$ 75,000.00
Stone Coal BPS	2	1	1	0	$ 75,000.00
Bowling Branch	2	1	1	0	$ 75,000.00
Grassy BPS	2	1	1	0	$ 75,000.00

Hyden-Leslie District's water mains are relatively new. As shown in Table 2, approximately 42.3 percent of its mains and lines have been in service for 20 years or less. Approximately 90.6 percent of its mains and lines have been in service for 30 years or less.

Table 2 – Age of Distribution Mains

Decade	Mains (Linear Feet)
1960	30,718
1980	122,014
1990	792,294
2000	488,481
2010	204,049

The bulk of Hyden-Leslie District's water mains are three-inch and four-inch mains. As shown in Table 3, approximately 79.7 percent of its water distribution mains are those sizes. Less than 18.1 percent of its mains are larger than four inches. Less than 1.2 percent are eight inches or larger in diameter.

Table 3 – Distribution Main Size

Diameter	Mains (Linear Feet)
Less than 2″	36,477
3″	476,054
4″	828,996
6″	277,159
8″	11,172
10″	2,460
12″	5,238

Hyden-Leslie District has assessed the condition and performance of the its distributions and found that 30,614 linear feet of distribution main is in poor condition with severe defects and suffering from major performance deficiencies. This group consists of its asbestos cement mains, which were constructed in the 1960s. The estimated cost to replace this main is $682,117. In addition, it has determined that 458,574 feet of distribution main, while in fair condition, have considerable performance deficiencies. The estimated cost of replacing these mains is $8,588,040. Table 4, which appears on the following page, shows the complete assessment of Hyden-Leslie's distribution lines and mains. The mains highlighted in yellow are the mains that are in poor condition and have major performance deficiencies or have considerable performance deficiencies.

Table 4 – Distribution Mains

Size (Inches)	Material	Decade Constructed	Length (LF)	Condition Code	Performance Code	Priority Code	Replacement Cost
Up to 2	PVC	1980	22,889	3	3	3	$ 325,127.84
3	PVC	1980	40,910	3	3	3	$ 581,107.95
3	PVC	1990	48,764	3	3	3	$ 692,670.45
3	PVC	2000	44,309	3	3	3	$ 629,389.20
3	PVC	2010	16,313	3	3	3	$ 231,718.75
4	AC	1960	1,283	4	4	3	$ 24,299.24
4	PVC	1980	16,989	3	3	3	$ 321,761.36
4	PVC	1990	63,320	3	3	3	$ 1,199,242.42
4	PVC	2000	43,240	3	3	3	$ 818,939.39
4	PVC	2010	9,157	3	3	3	$ 173,428.03
6	PVC	1980	24,461	3	3	3	$ 579,095.64
6	PVC	1990	41,286	3	3	3	$ 977,414.77
6	PVC	2000	79,509	3	3	3	$ 1,882,315.34
6	PVC	2010	7,427	3	3	3	$ 175,828.60
Up to 2	AC	1960	194	4	4	3	$ 2,755.68
Up to 2	PVC	1990	13,394	2	2	2	$ 190,255.68
3	AC	1960	3,775	4	4	3	$ 53,622.16
3	PVC	1980	10,795	2	2	3	$ 153,338.07
3	PVC	1990	68,410	2	2	2	$ 971,732.95
3	PVC	2000	38,934	2	2	2	$ 553,039.77
3	PVC	2010	7,759	2	2	2	$ 110,213.07
4	AC	1960	10,958	4	4	3	$ 207,537.88
4	PVC	1990	157,970	2	2	2	$ 2,991,856.06
4	PVC	2000	10,281	2	2	1	$ 194,715.91
4	PVC	2010	51,362	2	2	2	$ 972,765.15
6	AC	1960	3,232	4	4	3	$ 76,515.15
6	PVC	1960	104	2	2	2	$ 2,462.12
6	PVC	1980	5,970	2	2	2	$ 141,335.23
6	PVC	1990	40,529	2	2	2	$ 959,493.37
6	PVC	2000	77	2	2	2	$ 1,822.92
6	PVC	2010	286	2	2	2	$ 6,770.83
8	AC	1960	11,172	4	4	3	$ 317,386.36
10	PVC	2010	2,460	2	2	2	$ 69,886.36
12	PVC	2010	5,238	2	2	2	$ 158,727.27
3	PVC	1990	29,157	2	2	2	$ 414,161.93
3	PVC	2000	132,415	2	2	2	$ 1,880,894.89
4	PVC	1990	266,496	2	2	2	$ 5,047,272.73
4	PVC	2000	87,249	2	2	2	$ 1,652,443.18
6	PVC	1990	21,232	2	2	2	$ 502,651.52
6	PVC	2000	35,535	2	2	2	$ 841,264.20
3	PVC	1990	15,102	2	2	2	$ 214,517.05
3	PVC	2000	4,856	2	2	2	$ 68,977.27
3	PVC	2010	14,555	2	2	2	$ 206,747.16
4	PVC	1990	9,123	2	2	2	$ 172,784.09
4	PVC	2000	12,076	2	2	2	$ 228,712.12
4	PVC	2010	89,492	2	2	2	$ 1,694,924.24
6	PVC	1990	17,511	2	2	2	$ 414,559.66

Storage Tanks. Hyden-Leslie District's distribution system has 14 storage tanks with a total storage capacity of 2.3 million gallons. The largest of these tanks is the Dollar Store Tank, which was constructed in 2012 and has a storage capacity of one million gallons. Of the remaining storage tanks, none have a storage capacity exceeding 209,000 gallons. Table 5 shows the complete assessment of Hyden-Leslie's District's storage tanks. It identifies the Dollar Store Tank and the Hyden Spur Tank as having moderate defects and considerable performance deficiencies. Hyden-Leslie District has applied to KIA and Rural Development for funding to perform repairs to these water storage tanks as part of its Phase IIIA Water System Improvements Project (WX21131011). Its application remains under consideration.

Table 5 – Water Storage Facilities

Asset Name	Capacity (gallons)	Date Constructed	Condition Code	Performance Code	Priority Code	Replacement Cost
BIG BRANCH NO. 1	100,000	6/1/1996	2	1	0	$ 250,000.00
BIG BRANCH NO. 2	100,000	6/1/1996	2	1	0	$ 250,000.00
DOLLAR STORE TANK	1,000,000	1/1/2012	3	3	0	$ 450,000.00
ESSIE ST RT 406	100,000	6/1/1991	3	2	2	$ 250,000.00
HOSPITAL HILL PRESSURE TANK	1,740		1	1	0	$ 100,000.00
HURTS CREEK	209,000	6/1/2002	2	2	1	$ 350,000.00
HYDEN SPUR	209,000	6/1/1993	3	3	0	$ 350,000.00
MUNCY CREEK	209,000	6/1/1994	2	2	1	$ 350,000.00
OWLS NEST PRESSURE TANKS	1,740		3	2	2	$ 10,000.00
ROCKHOUSE	150,000	2/1/2012	1	1	0	$ 30,000.00
WOLFE CREEK TANK	50,000	1/1/2003	2	1	0	$ 200,000.00
LEECO TANK	50,000	1/1/2012	2	1	0	$ 200,000.00
HELL FOR CERTAIN TANK	60,000	1/1/2012	2	1	0	$ 200,000.00
GRASSY TANK	60,000	1/1/2012	2	1	0	$ 200,000.00

WATER LOSS CONTROL PLAN

In the short term, an effective water loss control plan must emphasis the rapid detection and repair of water main breaks and leaks. Unless the location of the water main break or leak is located, additional manpower and other resources are of limited value. Accordingly, Hyden-Leslie District will first focus on the development of a zone metering system, dividing the District's distribution system into twelve zones whose water consumption can be monitored for unusual high consumption, which is indicative of a water main break. A master meter will be installed for each zone. The meters would be read daily. Monthly totals will be compared to readings from customer meters in the zone to monitor losses in the zone. These meters will eventually be connected to the District's SCADA system to allow for the centralized monitoring and the dispatch of field crews from the District's central office. If additional funding becomes available, the District would begin dividing existing zones into subzones to further increase the District's ability to locate leaks. Hyden-Leslie District estimates that the initial cost of establishing a zone metering system will be approximately $120,000. This estimate is based upon an assumed cost of $10,000 to purchase and install each zone meter.

The District suspects that a portion of its water losses is composed of apparent losses, not real losses of water. Stated another way, the District is actually delivering water to its end users, but this delivery is not being accurately recorded or measured. Most of the District meters are mechanical meters that have been in service ten years or longer. It is generally recognized that this type of meter become less accurate with time in service. Moreover, this meter type has been found to be less sensitive to low flows and generally fails to properly measure usage due to low flows. The District intends to replace its existing residential and commercial meters with ultrasonic meters. These meters are more sensitive to low flow usage, will more accurately measure water usage, and reduce apparent water losses.

In addition to the more accurate measure of water usage, the new meters should produce significant labor savings. Currently, Hyden-Leslie District manually reads its water meters. Six employees each devote 40 hours per month to meter reading activities. The replacement meters will be radio read meters enabling two employees to read the District's meters in a total of 32 hours (2 employees x 2 days @ 8 hours per day). Approximately 2,496 manhours will be released from meter reading activities to focus instead upon water loss control activities.

Hyden-Leslie estimates that cost for total meter replacement is approximately $666,000 based upon an assumed price of $180 per meter and the purchase of 3,700 meters.

Additionally, the District proposes to replace its existing pumps with pumps that have VFD systems and flow meters. VFD systems allow pumping to start and stop at a gradual pace as opposed to the sudden start/stop with older pumping equipment. Sudden start/stop cycles cause substantial pressure spikes which can cause reoccurring failures in a water distribution system fragile system such as ours. The replacement pumps will avoid these sudden start/stops, lessen the stress on existing distribution water mains, and extend the useful service life of those mains. These pumps are more efficient in their energy usages and, therefore, should reduce the District's overall energy costs. The use of flow meters on these pumps will assist the District in identifying usage that exceeds normal operating levels as well as tracking daily and monthly flow totals. The total replacement cost for these pumps is $2,475,000.

The District must replace several of its existing water distribution mains that are nearing the end of their useful service life. Frequent breaks in these older and more fragile water mains represent a major source of water loss. The estimated cost to replacement the oldest water mains, which are asbestos concrete lines, is $683,000.

The Commission has authorized Hyden-Leslie District to assess and collect from each of its customers a monthly surcharge of $1.53 for a period of four years or until $263,124 is collected. Surcharge proceeds will allow Hyden-Leslie District to establish zone metering program and to begin a gradual replacement of customer meters. Full implementation of the meter replacement program will require Hyden-Leslie to access additional funding sources, such as Rural Development or Kentucky Infrastructure Authority ("KIA"), or the extension of the surcharge beyond the original four years. Hyden-Leslie District is exploring borrowing the funds for full meter replacement and using a surcharge to fund the debt service on such loan.

Hyden-Leslie District has not yet determined the appropriate method to fund the remaining portions of its water loss control plan. Funding for the replacement of some pumping stations is

included in the District's proposed Phase IIIB Water System Improvements Project (WX21131002), which would include funding from a Community Development Block Grant, KIA loan, and a Rural Development loan. These pumping stations are highlighted in yellow in Table 1. Funding for some water main replacements are also funded in this package. Efforts to obtain additional funding will be required.

CONCLUSION

Hyden-Leslie District faces a number of challenges in its efforts to control its water loss. Additional funds will be required to reduce water loss to acceptable standards. The proceeds from the recently authorized surcharge will assist in those efforts and will lay the foundation for a more aggressive program. These efforts must be coupled with additional investment in the District's infrastructure to replace aging and outdated facilities. The investment in these facilities will likely not only assist in the reduction of water loss but will enable the District to operate more efficiently and ultimately reduce the cost of water, or at least the need for large rate adjustments, such as the adjustment the District recently experienced.

ATTACHMENT 1

Hyden Leslie County Water District Water Loss History

	January	February	March	April	May	June	July	August	September	October	November	December	Annual Average
2011	29%	27%	34%	31%	26%	24%	35%	30%	39%	34%	38%	37%	32%
2012	33%	37%	45%	34%	34%	35%	22%	39%	25%	42%	38%	43%	36%
2013	44%	35%	44%	31%	35%	29%	33%	36%	34%	38%	36%	36%	36%
2014	41%	33%	43%	31%	35%	27%	34%	40%	40%	48%	44%	42%	38%
2015	38%	42%	25%	31%	33%	28%	34%	36%	36%	39%	32%	40%	35%
2016	41%	27%	37%	37%	35%	24%	33%	38%	39%	33%	33%	42%	35%
2017	37%	38%	42%	33%	24%	35%	29%	30%	38%	35%	37%	51%	36%
2018	33%	41%	43%	30%	29%	23%	25%	39%	25%	36%	31%	37%	33%
2019	35%	23%	39%	19%	22%	20%	16%	22%	19%	20%	30%	23%	24%
2020	27%	22%	19%	24%	18%	17%	23%	17%	19%	30%	20%	26%	22%
2021	26%	21%											23%

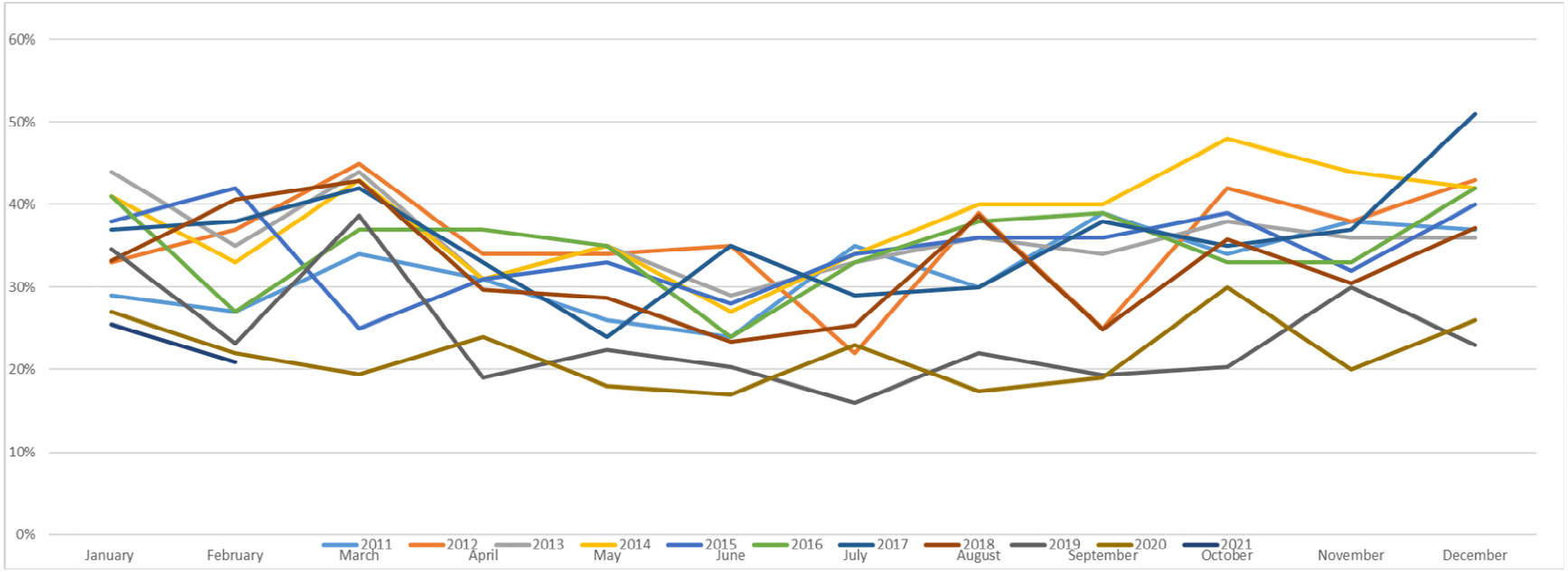

EXHIBIT B

HYDEN LESLIE
Water District

P.O. Box 906
Hyden, Kentucky 41749
606-672-2791

The Meeting of the Hyden-Leslie County Water District Board of Commissioners was held on February, 2021 at 4 pm. The meeting was held at the business office of the Hyden-Leslie County Water District which is located at 356 Wendover Road, Hyden, Kentucky.

1. Call to Order: The meeting was called to order at 4:02 pm. All commissioners were present. Water District Manager L.J. Turner and Mike Maggard with SME were also present.

2. Recognize Audience: None

3. Public Comment: None

4. Approval of Previous Meeting Minutes: Minutes were reviewed. William Horton made the motion to approve the previous meeting minutes. The motion was seconded by Ronnie Gay. Motion carried unanimously.

5. Phase III System Improvements: Mr. Maggard stated that we had received an email from CDBG stating that all CDBG projects are on hold until they receive their grant agreement with HUD and don't currently have a timeframe.

   Mr. Maggard presented invoice #14014-25 for Phase III. William Horton made the motion to approve the invoice. Motion was seconded by Ronnie Gay. Motion carried unanimously.

6. Other Projects / System Issues:
   Maggard Branch DOT- project is approximately 75% completed.
   Hurts Creek Tank- Mr. Maggard stated that he was researching the original transaction between the property owner and the District.

7. Operations Report: The PSC Water Loss report showing 25.5% was presented along with other operational reports. A motion was made by William Horton to accept the Water Loss and Operations report. Motion was seconded by William Wooton. Motion carried unanimously.

8. Claims List: The claims list was reviewed. Ronnie Gay made the motion to approve the claims list. The motion was seconded by Dwight Lewis. Motion carried unanimously.

9. Financial Report: The financial reports were reviewed. A motion was made by William Horton to approve the financial reports. The motion was seconded by William Wooton. Motion carried unanimously.

10. Water Audit Policy: Ronnie Gay made the motion to adopt a policy to perform an Annual Water Loss Audit. The motion was seconded by Dwight Lewis. Motion carried unanimously.

11. Other New Business: None

12. Executive Session: None.

13. Adjournment: A motion was made at 04:37 pm to adjourn by Commissioner William Wooton. The motion was seconded by William Horton. Motion carried unanimously.