

**Minutes Of
Engineering And Maintenance Committee Meeting
Of The Water Works Board
Of The City Of Birmingham
September 25, 2018**

An Engineering and Maintenance Committee Meeting of The Water Works Board of the City of Birmingham was held Tuesday, September 25, 2018, at 11:30 a.m., in the principal office of the Board, 3600 First Avenue North, Birmingham, Alabama, 35222, to discuss engineering and maintenance issues.

The following Committee members were present: Brett A. King, Brenda J. Dickerson, Sherry W. Lewis and Ronald A. Mims. Other Board Members present who do not serve on the Committee were: Tommy Joe Alexander and Deborah Clark.

The meeting was also attended by: Mac Underwood, General Manager; T. M. “Sonny” Jones, Assistant General Manager of Engineering and Maintenance; Darryl R. Jones, Assistant General Manager of Operations and Technical Services; Michael Johnson, Assistant General Manager of Finance and Administration; Grace Amison, Executive Assistant to the Board of Directors; Tammy Wilson, Executive Assistant to T. M. “Sonny” Jones and Darryl R. Jones; Rick Jackson, Public Relations Specialist; Scott Starkey, Security Manager; Chris Hill, Senior Security Console Operator; Ben Sorrell, Chief Engineer; Geoff Goodwin, Non-Revenue Water Manager; Doug Stockham, System Development Manager; Drusilla Hudson, EnviroLab Manager; Stephen Franks, Principal Engineer; Mark Parnell, Parnell Thompson, LLC; Kelvin Howard, Kelvin Howard, LLC; Brian Ruggs and Patrick Flannelly, ARCADIS; Tommy Palladino, Dorian Kendrick and Jesse Lewis, Agency 54; City of Birmingham Police Officer.

Chair of the Committee, Director Brett King called the meeting to order at 11:36 a.m. Information Technology Manager, George Anderson opened the meeting with prayer.

Next, was a request for the Committee to hear a presentation on Lake Purdy Dam. Brian Ruggs, presented information on the Lake Purdy Dam Conceptual Design. The State of Alabama does not have a formal dam safety program; however, the Board does use best practices according to Mr. Ruggs. The probable maximum flood (PMF) number for Birmingham is 42” to 43” of rainfall in a 72-hour period. Three dams that are considered “high hazard” that the Board owns are Inland Lake, Lake Purdy and the South Dam at Shades Mountain Filter Plant. Director Clark asked what is meant by a “high hazard” dam. Mr. Ruggs explained that if such a dam breaches there is an expectation of loss of life downstream of the dam. Director Alexander stated he never remembered having 42” of rain in a 72-hour period. Mr. Ruggs stated that is a good thing and statically there is a low probability of that ever happening. Patrick Flannelly added that along the coastline and in the cities of Nashville and Atlanta, they have seen some heavy rain amounts that they thought they would never see. Various recent extreme rain events occurring in the southeast were mentioned. Lake Purdy Dam was built between 1906 and

1910 and it is a gravity dam built with cyclopean concrete and stacked stone. In 1928 to 1929, the dam was raised about 20-feet and a 30-foot buttress was added to the downstream side of the spillway. Mr. Ruggs stated ARCADIS has been looking at seepage and erosion at Lake Purdy Dam. The seepage rate has continued to increase since 1979. Grout was pumped under the Grouting Program from 1979 to 1980 until the seepage stopped to slow the continuation. Some discussion occurred regarding the grouting process not being particularly scientific. Presently, the seepage rate average is 5.1 MGD. Seepage was noted in February 2018 and a geotechnical report was completed in May 2018 with the work being completed in June 2018 at a cost of \$32,000.00 according to Mr. Ruggs to stop the erosion. The dam as constructed today can safely pass 40% PMF (approximately 14 inches of rainfall) without overtopping abutment sections. Chairman Alexander asked if this had ever happened. Patrick Flannelly responded the dam is over 110 years old and it has never seen 17 inches of rainfall. Mr. Ruggs explained the analysis of hydraulics and overtopping. A scenario of what would happen during an overtopping event was described. Mr. Flannelly stated a more scientific approach rather than grouting would be to build a cut-off wall, 120 feet below rock. Mr. Ruggs stated regarding stability, they recommend adding a concrete mass to the dam. Diagrams of the proposed work were shown to the Committee. Schnabel Engineering and the Board's Engineering Department are part of the team, Mr. Flannelly stated. Director Lewis asked what they are doing to reinforce the actual dam. Mr. Ruggs stated they are adding a concrete mass. Chairman Alexander asked about underneath the dam due to the limestone washing away. Mr. Flannelly stated walls will be raised to prevent overtopping and concrete will add mass to hold the dam together, which will cut off additional flow under the dam and will stop the formation of sinkholes. Director Lewis asked if additional grouting would be performed. Mr. Flannelly stated it is possible that additional grouting would be used. Mr. Flannelly also stated that the dam is being monitored currently; explaining that we can mobilize quickly to grout if necessary in the interim. Chairman Alexander stated he would like someone to come in and talk to the Committee at a future meeting regarding federal grants to assist with the cost of the Lake Purdy rehab. Director Mims asked how much it would cost to build a new dam. Mr. Flannelly stated it would be at least double the cost of the rehab. More discussion occurred regarding limestone and seepage. Director Clark asked if the firm ARCADIS is working with had performed dam work with issues like our dam. Mr. Flannelly responded yes and stated ARCADIS has researched this for a long time along with Schnabel and they both believe this is the best design recommendation to rehab the dam. Estimated construction costs are \$35 million, which includes construction and engineering services with a 10% contingency included. Next steps include the detailed design, November 2018 through June 2019; the bid phase, June 2019 through September 2019 and the construction phase, September 2019 for a three-year period. Some discussion occurred regarding blasting and it was confirmed that would not be done. Director King asked if there was a loss of life event if the Board has insurance to cover that. Attorney Parnell responded by saying the Board carries \$20 million of liability coverage along with property damage and general liability. Mr. Ruggs asked the Committee to keep in mind that ARCADIS is improving the dam to be able to pass 42" of rainfall. Chairman Alexander asked if he could get the historic data on rainfall at Lake Purdy and Inland Lake. Mr. Flannelly responded he would get that information adding

we will not see anything like the extremes discussed today. Director Lewis asked if there was any discussion in Montgomery regarding a dam safety program for Alabama. GM Underwood responded it had not been discussed at all that he knew of. Director Lewis stated Alabama should be moving in the direction of other states to have a dam safety program and the Birmingham Water Works Board (BWWB) should be leading the way. Director Dickerson asked what role our lobbyists play in this issue. Director Lewis responded that they would need direction from the Board. Chairman Alexander stated he believed our governor is interested.

Following, was a request for the Committee to hear a presentation on the Water Quality Benchmark Study presented by ARCADIS. A handout was provided titled Focusing on Water Quality (a copy of which is on file with the Committee meeting book). Mr. Flannelly explained that the quality of BWWB's finished and distributed water is compared to other community water systems using four benchmarking sources. The first benchmark is the American Water Works Association (AWWA) Partnership for Safe Water (PSW) Program. The BWWB is an award winning AWWA PSW subscriber and is only one of 13 utilities to receive the Phase IV Excellence in Water Treatment Award for one of the Board's treatment plants; Western Filter Plant, in the last 22 years. Director Clark questioned why this positive information is not publicized and if Agency 54 needed to know this. Director Lewis responded that would be under communications. AGM Darryl Jones added that this occurred in 2015 and there was a lot of Public Relations surrounding this award. The BWWB has received awards on the treatment side according to Mr. Flannelly. Mr. Flannelly talked about the two major awards; the President's Award and the Excellence Award and three of the Board's plants have received these awards. The second benchmark relates to regulation requiring select water systems to monitor for unregulated contaminants which is the Third Unregulated Contaminants Monitoring Rule (UCMR3). None of the 30 unregulated contaminants were detected in the BWWB distribution system above the EPA health guidelines and 14 of the unregulated contaminants were not detected in any of the sampling rounds. The third benchmark is the Environmental Protection Agency (EPA) Safe Drinking Water Information System (SDWIS) Federal Reporting Database. The BWWB consistently exceeds regulatory standards and achieved best industry practices for finished and distributed water quality and has had no water quality regulatory violations over the past 37 years. The fourth benchmark is the Community Water System (CWS) Consumer Confidence Reports, an annual water quality report that provides information on levels of detected contaminants. Based on current water regulatory framework and standards, BWWB is a top-tier water utility when compared to its peers. Mr. Flannelly stated this information is scheduled to be presented next month at the AWWA Alabama Mississippi section conference by Darryl Jones and himself.

Next, was a request for the Committee to hear a presentation on Lake Purdy Wells. Brian Ruggs stated there were some questions asked by the Board and ARCADIS wanted to address those. To take some of the load off the Shades Mountain Filter Plant (SMFP) in 2016 due to the drought, wells were utilized. The finished water production at SMFP went from 55 million gallons per day to 34 million gallons per day during the drought situation. Director Lewis stated she remembered some issues with the wells.

Mr. Ruggs responded the wells do not produce a lot of water. The first course of action in management would be to try to reduce the load. Chairman Alexander stated water could be purchased from Irondale up to a million gallons per day. Director Clark asked Mr. Ruggs about the cost versus the benefit of using the wells. In 2013 the wells became operational. Locations of the wells were discussed. The total spent to install the 6 wells was \$5.7 million, which calculates to \$2.85 per gallon per day. Patrick Flannelly stated ARCADIS wrote a report in 2009 that told the Board that the next big source would be the lower Holt pool on the Warrior River. In the meantime, it was cheaper to install the wells to supplement during a drought. The cost of treating well water from our own wells compared to purchasing water from Shelby County is much less. Darryl Jones stated the number one goal would be to finish the Carson Loop, then to augment with Lake Purdy wells and as a last resort, purchase water from Shelby County. Some discussion occurred regarding the dependability of the wells. Darryl Jones stated the wells were designed so that we would pump until they go dry in an estimated 90-day cycle. Sustained flow every day and all year long would be to complete the Carson Loop according to Darryl Jones. Geoff Goodwin stated the wells were specifically designed to pull water for drought mitigation. Patrick Flannelly stated we could produce enough water for a 90-day period again. The wells are cost effective to operate until the Carson Loop is completed Mr. Flannelly stated. The well pumping could have contributed to the sinkholes as could water dissolving limestone or groundwater table changes; however, they may have happened anyway and did not show up until 18 months after. Darryl Jones explained that we have emergency agreements with adjacent systems. The water was needed to supply a small area in Shelby County; therefore, we purchased water from Shelby County. AGM Sonny Jones explained that Leeds water declined to sell us water at the last minute. Director Lewis asked if there are more sinkholes and if there are drought predictions in the near future. Darryl Jones responded that the next six months is showing no drought predictions. Patrick Flannelly stated even with the repairs, it was still cost effective to use the wells. Director Lewis stated she did not agree with the report adding she would get with Mr. Flannelly because there were other factors. Mr. Flannelly stated he believed the wells are good to have in the tool box. Director King asked about maintenance of the wells. Darryl Jones stated monthly maintenance is performed with very minor costs.

Following, was a request for the Committee to recommend to the full Board to authorize management to enter into a 1-year select service plan with Teledyne Tekmar, a sole source provider, that will give necessary support to maintain the EnviroLab's Tekmar Fusion TOC Analyzer for a total out-of-pocket cost to the Board of \$6,217.00; and to authorize the General Manager and/or the Assistant General Manager to execute the plan. Drusilla Hudson addressed the service plan request and provided a handout of the lab instrument service agreements (a copy of which is on file with the Committee meeting book). On a motion made by Director Lewis and seconded by Director Dickerson, the Committee agreed to move the item to the full Board.

Next, was a request for the Committee to recommend to the full Board to exercise its Right of First Refusal on Inland Lake Lot #15A. On a motion made by Director Lewis

and seconded by Director Dickerson, the Committee agreed to move the item to the full Board.

Following, was a request for the Committee to recommend to the full Board to take bids for the replacement of approximately 4,620' of 2" galvanized steel pipe / 2" unlined cast iron pipe, 360' of 2" cast iron cement lined (CICL) pipe and 330' of 6" unlined cast iron pipe with approximately 100' of 4" DICL pipe; 2,680' of 6" DICL pipe; 2,850' of 8" DICL pipe and related appurtenances; and 104 water services along Steiner Avenue SW; Lee Avenue SW; 19th Place SW; 19th Street SW; 18th Way SW; and 18th Place SW located in the West End Community of the City of Birmingham, Alabama at an estimated out-of-pocket cost to the Board of \$1,182,300.00. On a motion made by Director Dickerson and seconded by Director Mims, the Committee agreed to move the item to the full Board.

Next, for information only, Engineering Department's documentation to be used during observations/inspections of project construction sites was discussed. Ben Sorrell provided a handout, The Alabama Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas (a copy is on file with the Committee meeting book). This is the section on inspections. Director Dickerson asked if she could have a copy of the manual's Table of Contents. Mr. Sorrell stated he would get that. Director Clark asked for a copy as well. Director King asked Mr. Sorrell to hang around after the meeting to answer questions the Committee may have.

Following, was a request for the Committee to recommend to the full Board to authorize the General Manager or the Assistant General Manager to start the process for utilizing the State of Alabama Contract for Microsoft Software Usage and Maintenance with SHI International Corporation to present for Board approval. George Anderson stated the 2015 agreement cost was \$606,788.37 and the 2018 agreement cost is \$859,986.00. Mr. Anderson explained that the cores have increased at the BWWB and Microsoft is now charging based on cores. Director Dickerson asked if this was in the budget. Mr. Anderson responded yes. The various level of licenses was discussed. Director Lewis stated \$200,000.00 more is concerning. On a motion made by Director King and seconded by Director Dickerson, the Committee agreed to move the item to the full Board. Director Lewis asked the record to reflect a no vote for her, adding she would like to meet with Mr. Anderson.

Next, the Committee was asked to hear a presentation on Addressing Business Continuity via Off-Premise Technology Options. George Anderson stated Staff is looking to be prepared in case of a disastrous event to have off-premise storage of certain applications. This one-time step would move approximately 700 email accounts from on premise to off premise at a cost of \$28,000.00. On a motion made by Director Lewis and seconded by Director Dickerson, the Committee agreed to move the item to the full Board.

As there was no further business to be brought before the Committee, the meeting was adjourned at 1:29 p.m.

/s/

Michael Johnson
Interim General Manager

/s/

Brett A. King, Esq.
Director

/s/

Sherry W. Lewis
Director

/s/

Ronald A. Mims
Director

/s/

Brenda J. Dickerson, Ph.D.
Second-Vice Chairwoman/Second Vice President