

**Appomattox River Water Authority  
Board of Directors Meeting**

**DATE:** January 16, 2019

**TIME:** 2:30 PM

**LOCATION:** Appomattox River Water Authority  
Board Room, Administration Building  
21300 Chesdin Road  
South Chesterfield, Virginia 23803

**AGENDA**

1. Call to Order/Roll Call
2. Approval of Minutes: Minutes of the Board Meeting held on November 15, 2018
3. Public Comment
4. Presentation by HydroLogics on 2018 Chesdin Reservoir Modeling Results (Includes Irrigation Withdrawal Impact)
5. Continued Public Hearing on and Consideration of Proposed Amendments Related to the Direct Irrigation Withdrawal Policy
6. Executive Director's Report:
  - Reservoir Status Update for December/January 2018/19
  - Annual Flushing Notice
  - Presentation by Golder Associates on Chesdin Reservoir Hydrilla Survey
  - Work Plan Summary/Update: January 1, 2019 to June 30, 2019
  - Presentation of Proposed FY 2019/20 Operating Budget
  - Presentation/Approval of Additional In-Plant 2017 Bond Funded Projects
  - Status Report: Ongoing Projects/Operations/Financials
7. Items from Counsel
8. Closed Session
9. Other Items from Board Members/Staff Not on Agenda:
  - Internal Audit Subcommittee Update
10. Adjourn

Cc: W. Dupler/George Hayes, Chesterfield  
L. Lyons, Petersburg  
W. Henley, Colonial Heights  
F. Haltom, Prince George  
R. Wilson, Dinwiddie Water Authority  
A. Anderson, McGuire Woods

**1. Call to Order/Roll Call**

**2. Approval of Minutes: Minutes of the Board Meeting held on November 15, 2018**

Following are minutes of the Regular Scheduled Board Meeting held on November 15, 2018

Absent any corrections or revisions, we recommend approval of the minutes as submitted.

# **BOARD OF DIRECTORS MEETING**

**Appomattox River Water Authority**

**November 15, 2018 at 2:00 p.m.**

**Location: Eastside Enhancement Center**

**7301 Boydton Plank Road, North Dinwiddie, Virginia 23803**

## **PRESENT:**

Percy Ashcraft, Chairman (Prince George)  
Joseph Casey, Vice Chairman (Chesterfield)  
Kevin Massengill, Secretary/Treasurer (Dinwiddie)  
Douglas Smith, (Colonial Heights)  
Lionel Lyons, (Alternate, Petersburg)  
Robert B. Wilson, (Alternate, Dinwiddie)  
Frank Haltom, (Alternate, Prince George)  
George Hayes, (Alternate, Chesterfield)

## **ABSENT:**

Aretha Ferrell-Benavides, (Petersburg)  
William Henley, (Alternate, Colonial Heights)  
William Dupler, (Alternate, Chesterfield)

## **STAFF:**

Robert C. Wichser, Executive Director, (ARWA & SCWWA)  
James C. Gordon, Asst. Executive Director (ARWA & SCWWA)  
Arthur Anderson, (McGuire Woods)  
Melissa Wilkins, Accounting/Office Manager (ARWA & SCWWA)  
Kathy Summerson, Administrative Assistant (SCWWA)

## **OTHERS:**

Denny Morris, (Crater Region Planning Commission)  
Matthew McLearen, (Robinson, Farmer, Cox Associates)  
Greg Akers, (Chesterfield County)  
Chris Meade, (Chesterfield County)  
Keith Boswell, (VGR)  
Brian Cobb, (Waterford Landing Homeowners Assoc.)  
Doris Jaeger, (Resident)  
Jamie Segner, (Resident)  
David Segner, (Resident)  
Walter Worontsoff, (Resident)  
Kathleen Worontsoff, (Resident)  
Roger Young, (Resident)  
Bill Roberts, (Resident)  
Ernest W. Coleman, (Resident)  
Woody Arakawa, (Resident)  
James Davis, (Resident)  
Gail Davis, (Resident)

Mr. Ashcraft, Chairman, called the meeting to order at 2:03 p.m.

### **1. Call to Order/Roll Call.**

The roll was called.

### **2. Approval of Minutes: Minutes of the Regular Meeting of the Board on October 18, 2018**

Upon a motion made by Mr. Lyons and seconded by Mr. Massengill the following resolution was adopted:

**RESOLVED, that the minutes of the Regular Meeting of the Board on October 18, 2018 are hereby approved:**

**For: 5                  Against: 0                  Abstain: 0**

### **3. Public Comment**

There were no Public Comments.

### **4. Continued Public Hearing on and Consideration of Proposed Amendments Related to the Direct Irrigation Withdrawal Policy**

Mr. Ashcraft asked Staff if there was anything they wanted to add before continuing the public hearing. Dr. Wichser stated Staff was asked at the October 18, 2018 Board Meeting to provide additional information on what is being withdrawn from the upper reaches of the Appomattox River. He stated the main water withdrawal is the City of Farmville water treatment plant with a daily average 1 MGD withdrawal from the upper Appomattox River. He stated the total accumulation of raw water withdrawals from golf courses, farms, and nurseries that the Virginia Department of Environmental Quality retained in their database showed that the average daily withdrawal is about 1.2 MGD for the Appomattox River above the entrance to the main body of the Chesdin Reservoir. Dr. Casey stated this is great information and helps him out quite a bit. He further stated this probably doesn't show the other people who have withdrawal rights through direct irrigation of river front lots throughout the entire river and asked if that was correct. Dr. Wichser stated that above the Chesdin Reservoir the majority of the land is agricultural.

Dr. Wichser stated that in Dinwiddie County and Chesterfield County there are presently ninety-nine lake front property owners with ARWA irrigation permits and an estimated 280 lake front property owners without permits. He further stated that by conducting an estimate based on county GIS and additionally what was provided by Dinwiddie County and Chesterfield County, that the estimated total number of potential new irrigation permits at complete build-out would be 837 permits for a total of 936 permits. He stated that if all the 936 homes were taking water for irrigation purposes, they would be using between six to seven million gallons of raw water per week.

Mr. Ashcraft re-opened the public hearing at 2:13 p.m.

Mr. Brian Cobb stated he was here as a representative of Waterford Landing Homeowners Association (WLHA), which is a subdivision located in Dinwiddie County and a few of the residents here today are a part of Waterford Landing. He stated he wasn't present at the previous meeting, but he is here to present what was talked about at their Board of Directors Meeting of the Homeowners Association. He stated evidently there were some recommendations that were being thrown back and forth between the Board and some of the residents at that time. He further stated the WLHA Board would like to address the public hearing as a representative of the community with the following position; 1) WLHA supports the addition of the original resolution for one five-year extension with modifications; 2) That the moratorium on existing permits be ended and the properties and communities where some lots have permits be allowed to apply for a permit if they do not have one; 3) To clarify the rules on existing permits and ensure when a lot has a permit and the property is sold, that the new owner is granted the right for the remainder of that permit. He stated he thinks they mean extending the permit to run with the land rather than run with the actual permittee; 4) That the resolution be modified to allow for a second five-year contract period. He stated this is basically what the WLHA Board would like to put forward as their stance on the action being taken.

Roger Young, 19602 Oxford Lane, Sutherland, VA, asked Dr. Wichser how many people had actually applied for permits and haven't been issued permits. Dr. Wichser stated in the last twenty-four months he has had approximately five inquiries. Mr. Young stated you had two hundred and some homes that did not have permits, and you really don't have many people trying to get permits. Mr. Young stated issued permits would not be a main issue for the lake for how much water withdrawn, because you don't have that many people interested in it. Dr. Wichser stated any withdrawal from the reservoir has a potential impact, but over the last couple of years with the new permit, the reservoir has been under less stress. He further stated that our recommendation to the Board at the October Board meeting was to move forward and renew the existing permits. Mr. Young stated what about the people who don't have a permit that wants one. Dr. Wichser stated that would be a Board of Directors decision on lifting the existing moratorium or not. Mr. Young stated if he wanted a permit, he would have to go to Dr. Wichser or the Water Authority and state that he wanted one. Dr. Wichser stated once the Board makes a decision moving forward on what they want to do, and if they did lift the existing moratorium, there would be an irrigation permit application to be submitted by the applicant. The Authority would then come out to the site location and inspect the proposed installation, and if all was in order, the Authority would issue a permit.

Gail Davis, Chesdin Landing, 12800 Chesdin Point Court, stated they purchased lake front property three years ago; the home was in existence for seventeen years before they purchased. She further stated the first she heard of any of this was when they got a letter a week or two ago. She knew nothing about it so she emailed the Authority asking about getting an application for a permit since they didn't know about it and she was told there were no new permits being issued at this time. She stated what she'd like to ask is that people that have bought existing homes on the lake knew nothing of this going on, be grandfathered in because this was going on before they were homeowners there.

Mr. Ashcraft closed the public hearing at 2:20 p.m.

Mr. Massengill stated he had a couple comments that maybe will give everyone in the audience, that wasn't at the last meeting, a sense of clarity. He further stated the Board asked Staff to develop this analysis not to determine how many people we hook up, but to see what the rough order of magnitude would be in the event that every single person who signed up, what would it look like knowing that's a really high number, however the practical reality of it would be less than this. He thinks the point Dr. Wichser was making was not an assertion that this was going to be real numbers but giving us what's the worst-case scenario. Mr. Massengill stated that's the data that is being presented here. He further stated at the last Board meeting he was open and honest about this subject, and he is in favor of lifting the moratorium for the many reasons he talked about at the last meeting. He stated that he thinks we have, as an Authority, under present management and the Staff that we have, been able to really manage the lake levels in such a way as they will meet the VWP Permit, and as such we have seen with good weather how the Reservoir responds. He further stated back when the irrigation withdrawal committee was originally formed there was a lot of angst, there was a lot of questions about whether the permit would even come into fruition, and he thinks we have seen that is the case. He stated for those who currently have a permit, from Dinwiddie's perspective, they are okay with renewing that permit. He referred to the comment by Ms. Davis' relative to an individual who has a home for seventeen years, then she comes in and she doesn't have the opportunity for the transfer of permit. He stated from Dinwiddie's perspective he is okay with allowing the permit to be transferable. He further stated the only question in his mind is the overall length of time for the renewal period. He stated he had a conversation about this earlier with Dr. Wichser in not looking at it in five-year increments. He further stated that Mr. Anderson had a pretty good recommendation in that to use the Virginia Water Protection renewal cycle as the term rather than doing these five-year increments. He asked when was the next renewal period and Dr. Wichser stated October 31, 2028. Mr. Massengill stated that 2028 gives us that ten-year period.

Mr. Lyons stated historically when we review these kinds of issues it's a Staff recommendation. He asked if Staff had a recommendation. He stated his question from a Staff perspective is, if there is a recommendation that they have that you think you could live with, and then we as a group start to work off of that recommendation in light of all the comments and implications from you all who are the day to day professionals that are in charge of this. Dr. Wichser stated that at the October Board meeting Staff recommended the

renewal of the permits be approved by the Board. He further stated at that meeting we had recommended with Counsel to continue the moratorium. He stated based on a great deal of additional information and analysis we would concur with the Board if they feel the moratorium needs to be lifted.

Dr. Casey asked how many people were notified or made aware of this topic in the last week or two. He stated he is trying to take the first step backwards and asked what our notification process is as he finds it disappointing from their perspective. He stated this is a topic we have been talking about for thirty to sixty days and actually every five-years. He asked how did we pick and choose what people got notified. Ms. Wilkins stated to Dr. Casey that after our last Board meeting, we reached out to both Chesterfield and Dinwiddie for assistance to try and get all of the names and addresses of everyone who currently owns reservoir front property. She stated it took their teams a week to a week and a half to get that information back to us. She further stated that we then took that list and removed from that the addresses we already had for permits on file. She stated that within two days we turned around letters and had them sent out. Dr. Casey stated that just going forward means they come from the re-zoning side of the shop so that they are the people who are most affected and then as a courtesy you try and draw a circle around more people. He stated that people who do not have river front property are not aware of what we are talking about right now, correct? Ms. Wilkins stated only those with reservoir front and Dr. Casey stated that for disclosure sake those are the only eligible lots we are talking about in all of these discussions and Ms. Wilkins answered that was correct. Dr. Casey stated from Chesterfield's perspective, and he talked to Steve Elswick the Chesterfield County Board member from the Matoaca district about this topic, and he concurred with what Dr. Casey thought at the last Board meeting is this restriction of the ninety-nine lots, whatever is extra special about them doesn't need to be extra special. He stated he agreed one hundred percent with what Mr. Massengill said, and he would only add to it that we had a placeholder in place with our dam raising analysis of when that water is needed for us so it can be one or the other, not that it would eliminate it but bring the awareness of the topic of what we are talking about. He further stated that he's fine for all the people bordered on the Chesterfield side to put their pipe in the water or the methodology that is behind the fee.

Mr. Massengill stated one issue that should be discussed is in the current practice of the Authority, when there are current water conservation measures, the County of Dinwiddie will have to enforce those mandatory restrictions, if they are put in place. He further stated it isn't necessarily an issue for Petersburg, Colonial Heights or Prince George. He stated that for Chesterfield and Dinwiddie in the event there is a mandatory restriction trigger, the question of who is going to be held responsible for going to the individual homeowners and insuring they follow the same restrictions that would be for Petersburg, Colonial Heights and Prince George. He thinks Dinwiddie should be responsible for their folks, which needs to be the same for Chesterfield. He stated another important comment that needs to be made is with him knowing the lake the way he does, if we are in a mandatory water restriction mode, keep in mind that the people who have these systems are using raw water, which is not treated water. He further stated it does not go through our transmission system; they have their own straw into the lake. He stated knowing where the trigger might be in a warmer month, he would imagine most of these systems are going to be high and dry. Mr. Massengill stated he didn't know the average depth the residents have their pumps, but the ones he's seen, if it starts getting four or five feet out of the water you are already not pumping, which is an important piece, just to recognize for the cities of Colonial Heights and Petersburg and potentially Prince George. He stated if you have a pipe going to your home and you are getting water from our system, you are still allowed to pump. He further stated that it's up to Dinwiddie County to monitor their side of the lake, Chesterfield to monitor their side, and unless it's a main lake withdrawal, if you're in the back of the cove you are going to be high and dry anyway.

Dr. Casey stated that disclosure going forward in the future for Dinwiddie and Chesterfield if they are doing any re-zoning and especially any density type re-zoning, he does think that we as a Board should have it brought to our attention and have Staff determine it is such a new neighborhood, an extraordinary impact of what we already have. He further stated we may want to say just the existing lot owners or the buy right that can naturally occur from an agricultural perspective, those may all be permissible but he doesn't have any in his back pocket. He stated if someone wants to build a thousand units because they were going through a process, we would want to know.

Mr. Smith asked Staff if we were at the point now of total build out, everyone was participating in this with the withdrawal amount shown here, is that any concern to Staff regarding the water supply with that amount coming out per week. He asked are we okay with that even if we were at the max right now, and Dr. Wichser replied we are okay with that level. He stated that during the October Board meeting a statement was made that during a hot June, July, August and September the lake through evapotranspiration could be losing between 15-20 MGD. He further stated we are estimating at full build out, that approximately six to seven million gallons of raw water could be withdrawn.

Mr. Haltom asked if the existing permits address the level that a pump can be installed, and Dr. Wichser stated it does. Mr. Haltom stated if not, is it below that level where we enforce restrictions, and in the event new permits are issued, can we set that level higher to be sure that restrictions are enforced. Dr. Wichser stated the existing License Agreement states that the system shall not have a pump or other intake device located beyond the end of the licensee dock, pier or bulkhead or in the absence of a dock, pier or bulkhead, the pump is restricted to thirty feet from the normal reservoir pool level. Mr. Haltom asked if it were possible to raise that so that once we get in restriction mode, it's kind of self-enforced. Dr. Wichser replied that it states in both the existing permits under the Conservation section that a Licensee must agree to abide by irrigation and other water use restrictions imposed by the Participating Jurisdiction in which they live.

Mr. Ashcraft asked the Board if there were any amendments to the Policy. Mr. Massengill asked Mr. Anderson about the question Ms. Davis brought up about the transference of an irrigation permit and asked if existing policy covered this. Mr. Anderson stated that this is addressed and stated that the permit is transferrable to its successor. As Ms. Davis stated in their case the previous owners didn't have a permit and Mr. Anderson stated that would be addressed by lifting the moratorium. Mr. Massengill stated he thinks one potential

discussion point is truly what is the period of time we are talking about for the length of the permit. He further stated there was also an excellent point relative to the VA Water Protection Permit and that's being potentially the term for an irrigation permit. Mr. Massengill stated to the Chairman that he was okay with most of the Policy, but felt we needed to define the specific term and nature of it. Mr. Ashcraft asked where it was in the Policy, and Mr. Massengill stated it was under Renewal Term which lists the Renewal Term as five-years and that would terminate on December 31, 2024. He further stated if we wanted to modify this language to Dr. Casey's point or that of the Attorney, to suggest that it correlate with the VA Water Protection Permit. He stated it would need to be modified in the Renewal Term section.

Dr. Casey stated we don't have to get involved in this topic again and make people come out for these types of meetings. He stated on the renewal term unless there is some adverse effect of it being whatever the permitting process we are talking about or if there is some adverse effect of the dam itself, it's a perpetuity type topic. Mr. Lyons stated he thinks Dr. Casey is very much on spot. He further stated he thinks the reality is that unless there is a major challenge, he didn't see any problem with it. He stated the other side of that is because of you all too and your jurisdictions are taking forth a communication with municipalities and the citizens to explain your concerns, there are control mechanisms in that place that kicks in what you are talking about so he's very much supportive. Dr. Casey told Staff to correct him if he was wrong, but the renewal of the permit is more of a procedural matter, their interest of knowing who is pulling what water, when, where and how is immaterial to him as far as review of the permit process with the State. Dr. Wichser stated he can't speak for DEQ in ten years, if they are going to start to show specific interest or regulatory permit control related to direct raw water irrigation withdrawals from the reservoir. Dr. Casey stated if DEQ in ten years is more of a beast then it is today, we are all in the same boat. He further stated he thought it is the adverse impact of a regulatory authority that's going to cause us not to renew these permits, and we're on the same team with them. He stated he felt we were all on different teams when we go through this exercise, and it's not meant to be that way.

Mr. Massengill asked Dr. Casey if he would modify the renewal term to be in all perpetuity, and Dr. Casey replied unless there are regulatory changes to warrant a change in the license agreement. Mr. Smith stated if we did that methodology, we would want to talk about how we would structure the fees associated with that and this one was based on a cycle that would have some type of CPI adjustment maybe, and how we would want to structure that. He further stated maybe dividing by five whatever the fee is now and then whatever increment it goes up or not, whatever we decide. Dr. Casey stated he doesn't need to worry about that now. He further stated he thinks what he would insert is, if we are going to open it up to all these lot owners, there needs to be some restriction, as some future elected body may put five thousand people in some place on the lake. He stated we have to protect ourselves from that loop hole of having that water withdrawn.

Mr. Ashcraft asked Mr. Anderson if he wanted the meeting to continue with the rest of the Agenda and then come back to this item and was told yes. Mr. Ashcraft asked with any amendment related to this policy, is there a substantial reason you would have to have another public hearing, and Mr. Anderson replies yes as policy states any amendment needs a public hearing. Mr. Ashcraft asked the Board if they wanted to have counsel go ahead with the amendment and consider it later on in this meeting, and if adopted, the policy would have to go back out for public comment.

Mr. Massengill asked if we changed the renewal period to something other than what's been stated in the policy, then a new public hearing would be needed and Mr. Anderson replied, yes. He stated that this was to protect the homeowners. Mr. Massengill stated he thought Dr. Casey was right from Chesterfield and Dinwiddie's perspective, and they are on the same side as the homeowners on this particular issue. He thinks perpetuity is a great measure, and the only caution he has, after going through the DEQ's Water Protection Permit last time, is that we worked really hard to prove to DEQ that we would conserve as much water as we possibly could and prove downstream that we weren't having any impacts. He stated he didn't want us to cut our noses off to spite our face, but he thinks for the citizens ten years is a good time frame, it's more than the five years presented here. He stated he would be somewhat hesitant that DEQ may come back and say we are asking them to maintain the permit and at the same time we've opened up policies that are hard for them to regulate. Mr. Massengill stated that a safer approach would be the ten-year period as that kind of solves what Mr. Smith was talking about renewal periods and financial implications. He further stated he was for lifting the moratorium, and extending the permit to ten-year period.

Mr. Lyons stated based on all we were talking about, and asked, if we go to approve this, do we need to have another public hearing and Mr. Ashcraft stated it's not significant enough. He further stated right now we were excusing Counsel to affect that amendment and we would come back to that.

## **5. Executive Director's Report:**

- **Reservoir Status Update for October/November 2018**

Dr. Wichser reported on the reservoir status update for October/November 2018. He stated normal precipitation year-to-date normally is about 39 inches and by today we are approaching 60 inches. He stated that currently at the dam our cone valve is open, and the hydroelectric facility is about 1,000 CFS and is maxed out. He further stated that the Route 602 raw water feed into the reservoir generally could be expected to be between 50 to 100 million gallons per day, but yesterday and today the USGS gauge was recording approximately 6,400 million gallons per day.

- **Annual Financial Report Year Ended June 30, 2018: Robinson, Farmer, Cox Associates**

Dr. Wichser introduced Matthew McLearn of Robinson, Farmer & Cox Associates who provided a presentation on ARWA's Annual Financial Accounting Audit. Mr. McLearn stated ARWA received a clean compliance report from VRS, which has been submitted to the Auditor of Public Accountants.

Upon a motion made by Mr. Massengill and seconded by Mr. Smith the following resolution was adopted:

**RESOLVED, that the financial statements are hereby approved as presented:**

**For: 5      Against: 0      Abstain: 0**

- **Status Report: Ongoing Projects/Operations/Financials**

Mr. Gordon reported on the Ongoing Projects/Operations/Financials.

- **Internal Audit Subcommittee Update**

Mr. Smith stated that he and Mr. Massengill met yesterday with ARWA Staff, and today met with Chesterfield Staff, Mr. Akers, Internal Audit Director, and Mr. Meade, Senior Auditor. He further stated that at the end of the discussion ARWA Staff was introduced to them. He stated that from our previous discussion we came to the conclusion in the Board discussion that they would come back with something in the form of a Scope of Work, and that would potentially be at the January meeting. He further stated that Mr. Akers and Meade were giving us an outline of the basic Scope of what they would be looking at to see if the Board would just agree to allow Mr. Massengill and himself as a subcommittee to work with Chesterfield and go ahead and get started on that process. He further stated the time frame is not going to be long for this, as they are projecting to have a draft report back to us by February. He stated that would help to get it moving versus waiting for the January Board meeting to make another decision. Mr. Smith gave some handouts to members from the meeting of what Mr. Akers and Mr. Meade were talking about.

Mr. Massengill stated they met with Staff yesterday and would like to thank Dr. Casey for recommending to do this type of external audit. He further stated he thinks from both the Staff's perspective and the Audit Subcommittee, it's a real good opportunity for us to evaluate where we are specifically. He stated that we go back and look at how much turnover we have had over the years, and look at some of the foundational documents like the Service Agreements and looking at a better way to onboard ourselves to the goals and responsibilities. He further stated he was very impressed with Mr. Akers and Mr. Meade and to their ability to evaluate us at a high level in the way our organization should be. He stated he is very comfortable in their leadership and stewardship in this process. He further stated that in the handout under the Scope and Objective section we talk about Service Agreement requirements, billing policy and procedures, billing calculation and documentation, participant disputes with billing accuracy, and under the Other Section we talk about the development of potential best practices of looking at our Annual Financial Statements and other documents and anything else they may be able to provide. He stated we had some discussion about the 2012 and 2017 bonds, but we also said to make this broad enough that we can capture some of these best practices. He agreed with Mr. Smith in that we had a good meeting with Staff and as a committee we have this onboard with the team rather than wait. He stated if it would be the Board's discretion to allow Mr. Smith and himself to continue and go ahead and start work on this process, he felt they could wrap this up in an expeditious way and be responsive of Board's and Staff's time to move forward.

Mr. Smith stated in addition to the issue we talked about at the last meeting of the 2012 and 2017 bonds, they also included a few other topics that had been brought up about the engineering costs, the capital program study, and the reserve allocation with those being the overview of the topics. He further stated that, as Mr. Massengill said, they are going through their review of governance type documents, and they hope to provide best practice recommendations to us of maybe it would be nice to include this particular piece, or this is a policy that could let it happen. He stated hopefully by the end of the day, kind of confirming what we had, but if we had some ideas and some input on some new things, that's a plus. He thanked Dr. Casey for the opportunity to have his Staff assist.

Mr. Massengill stated we talked about the professional objectivity of having this type of audit done, and he can tell you this from his perspective, and he's sure Mr. Smith agrees, is we feel like that's going to take place in this process and by adding both of them to be responsible for this. Mr. Massengill thanked Mr. Ashcraft for putting him on this committee.

Dr. Casey stated they use Internal Audit Services, and for most of the committees it's been deployed is from their regional entities to the North, and they may take turns amongst those shops amongst the Internal Audit Department. He further stated he had that conversation with Mr. Akers to avail that service to a variety of other regional entities, and those could be separate conversations between them. He further stated he didn't sit on as many to the South as you all may sit on, so if you're on the front lines for which there are Chesterfield representatives there for which they may be the only body to have Internal Audit division. He stated you all are welcome to call on Mr. Akers, and it's in his blood to want to serve in this capacity.

Mr. Ashcraft stated we need to give a nod for Mr. Massengill and Mr. Smith to move forward and assumes that the task would not interfere in any way with budget preparation, and it's always a harassing time for staff to gather information and he hopes that we could step along side. Mr. Massengill stated he thought that giving them the ability to move forward today would allow them to finish this before they get too specific.

#### **4. Continued Public Hearing on and Consideration of Proposed Amendments Related to the Direct Irrigation Withdrawal Policy**

Mr. Ashcraft continued the Public Hearing. Mr. Anderson went through the changes on the Policy. He referred to Page 13 of the Board package under the second to last recital of the Whereas clause, what he would propose based on what he heard would be to delete "ARWA staff and counsel recommended", and strike all that language to the semi-colon and replace that with "and the Board wishes to make certain changes to the First Amended Policy which was adopted in 2011". He further stated the only other thing, and he would have to get with Ms. Wilkins on this, as there was some miscommunication between his computer system and the ARWA computer system as all these paragraphs should be numbered, and he will make sure it gets done before this is finalized.

Mr. Anderson stated the next change he would make would be to "Applications for Licenses" and strike out of the heading "for Renewal Term". He further stated where the sentence starts "Each Licensee existing as of November 15, 2018, who desires to renew his or her License" and then add "and any landowner who is at the time of application the current owner of a parcel land fronting Lake Chesdin shown on the map attached as Exhibit A hereto and made a part hereof, which is defined as a Parcel". Dr. Casey stated our rights to this control are just restricted to the Lake Chesdin itself as there is a point in time when Lake Chesdin is the Appomattox River and those landowners have differences for water withdrawal and asked if this was correct, and Mr. Anderson answered yes. Mr. Anderson stated under the same paragraph he would propose to strike "Applications must be received by the Executive Director by June 30, 2019", because we are lifting the moratorium so the applications could come in at any time.

Mr. Anderson stated the next change would be to "Renewal Term" where it should just say "Term". He further stated it should read "Regardless of when an application for a renewed License is received, the License, if granted, shall commence on the date it is granted and end on October 31, 2028".

Mr. Anderson stated the next change would be to "License Fee" where we don't have a renewal term in here, we would just say that it is the \$343.92 for the license. Dr. Casey stated the only thing he would mention for that would be since we are going ten years out, would be that they pay \$343.92, and in another five-years pay \$343.92. Mr. Anderson stated you could set up your fee at the end of the ten year. He further stated the way he reads this is that it's \$343.92 for the ten years. Ms. Wilkins stated it was five-years. Dr. Casey stated if someone walks in and you're three of this ten-year process, he thinks in fairness to them that we would do a proration for that whether it's a five-year fee or proration for the ten.

Mr. Ashcraft asked if this had to be approved and voted on today and is it time sensitive and Dr. Wichser stated he would feel better if we could defer action until the January 17, 2019 Board meeting. Dr. Casey stated to give the public comfort he thinks we are trying to get to that goal line, and they have to respect the fact that we just want to do this once, and not to have to come out again in another month. Mr. Massengill stated that maybe to extend another courtesy we could get the names and addresses of residents that are here that would like to get a copy of the red line version. He stated we could do that or email it to them. Dr. Wichser stated it could be posted on our website. Mr. Lyons stated once we make our final decision on what we are going to do to make sure communication is available to all parties.

Mr. Anderson stated that paragraph four would be dropped and that he would be working on the proration section. Mr. Ashcraft asked Mr. Anderson if he were confident that we wouldn't need a public hearing. Mr. Worontsoff stated he had been practicing for many years and went back and forth with lawyers. He further stated what they would be comfortable with that wouldn't require another meeting so they would have to come out to listen is: 1) The current people drawing water would continue to be allowed to do it; 2) Lift the moratorium; 3) Add two five-year terms, and he says that because he personally would prefer pay half and then another half. If elected there's a CPI level increase as it was in the last one, he doesn't think anyone would have a problem with it; 4) Grandfather the permits to homeowners, and 5) There would be a proration. He stated however that is worded from a legal standpoint he didn't think they would have that much concern if you included those five elements in the contract. He further stated he would like to see it voted on today subject to the final outcome of the contract that would be presented. Mr. Ashcraft stated it looks like we are going to defer action on this policy until the amendments are perfected, and the Board would again consider at the January 17, 2019 meeting. Mr. Worontsoff asked if their dues would be affected January 1<sup>st</sup> like they are supposed to be. Mr. Anderson stated that he has a one-page resolution that would allow the current policy and current licenses to run on until further notice.

Dr. Casey stated that Mr. Worontsoff summarized all our points, but one other is, if there is a very large lot rezoning to occur on either side, and he thinks we might want to consider that. He stated he didn't know what the number is and would let Staff figure that out, but we should all be aware and protected because the way it would be written they would all have access to it and you can cut up lots in many ways where you have hundreds of pipes at once.

Mr. Anderson stated he just drew up a resolution to continue existing policy, continue existing licenses until further notice until the January 17, 2019 meeting.

Upon a motion made by Mr. Massengill and seconded by Dr. Casey, the following resolution was adopted:

**RESOLVED, that the Authority's current irrigation and withdrawal policy and all the licenses outstanding under the current policy be extended until further notice:**

**For: 5                      Against: 0                      Abstain: 0**

Mr. Ashcraft asked for a motion to table Item number 4 until January 17, 2019 Board meeting.

Upon a motion made by Mr. Lyons and seconded by Mr. Massengill, the following resolution was adopted:

**RESOLVED, that Item Number 4 be tabled and have a public hearing on this issue on January 17, 2019:**

**For: 5                    Against: 0                    Abstain: 0**

Dr. Casey stated at the next meeting we should just be briefed on the enforcement provisions, because there are pirating people on both sides, and what are the enforcement and penalties for those, because we are trying to be more inclusive there may be people who are not part of this initially who have a pipe in the water.

Mr. Ashcraft recessed the meeting at 3:27 p.m.

Mr. Ashcraft called the meeting back to order at 3:35 p.m.

**7.                    Items from Counsel**

There were no Items from Counsel.

**8.                    Other Items from Board Members/Staff Not on Agenda**

There were no Other Items from Board Members/Staff Not on Agenda.

**6.                    Election of Authority Officers**

Mr. Ashcraft stated he has had the pleasure of serving as Chairman of this Board for the last two years and now it's time for another member to assume this responsibility.

Officer terms expire at the end of year of even numbered years. Elections were held and the results are as below.

The following officers were elected for 2019 starting January 1, 2019 for a term of two years:

Mr. Massengill nominated Doug Smith as Chairman of ARWA's Board of Directors, which was seconded by Dr. Casey.

Doug Smith was elected Chairman of ARWA's Board of Directors on a motion made by Mr. Massengill and seconded by Dr. Casey:

**For: 5                    Against: 0                    Abstain: 0**

Mr. Ashcraft nominated Kevin Massengill for Vice-Chairman of ARWA's Board of Directors, which was seconded by Dr. Casey.

Kevin Massengill was elected Vice-Chairman of ARWA's Board of Directors on a motion made by Mr. Smith and seconded by Mr. Lyons:

**For: 4                    Against: 0                    Abstain: 1**

Dr. Casey nominated George Hayes for Secretary/Treasurer of ARWA's Board of Directors, which was seconded by Mr. Lyons.

George Hayes was elected Secretary/Treasurer of ARWA's Board of Directors on a motion made by Dr. Casey and seconded by Mr. Lyons:

**For: 5                    Against: 0                    Abstain: 0**

Ms. Ferrell-Benavides arrived at 3:40 p.m.

Mr. Ashcraft thanked the Board for allowing us to come together and tackle some difficult issues. He stated he is filled with some regret because he thinks there are some very difficult issues that are still out there that he wasn't able to see completed during his term. He further stated he is leaving this to Mr. Smith, Mr. Massengill and Mr. Hayes. He knows they won't be missing tackling the Raftelis reports and studies. He stated he hoped we would review it to the extent that it deserves, and if there are any new issues that need to come before the Authority that we at least give it its due diligence. He stated he is willing to assist new officers in anyway in the future. He thanked the Staff and said we tried to tackle what might have been shortcoming between the Board and Staff in terms of communication, goal setting and strategic planning and serving the budgetary process. He stated he felt we were cutting through some of the smaller issues and hang ups for this Authority. He thanks everyone for the opportunity and stated it had been a privilege.

Dr. Casey stated to Mr. Ashcraft that he cared about all of the customers of the region. He also stated that Mr. Ashcraft was personally and professionally vested in knowing each of us coming to the table trying to bring our best to it, and when it's not the best it's frustrating but it doesn't stop you from starting the next meeting with that same intent. He further stated he has learned a lot about how this region

works, the mechanics behind it, the histories but Mr. Ashcraft brings that professional wisdom and he thinks we have moved the ball down the field.

Dr. Wichser stated to Mr. Ashcraft that staff appreciates his wisdom and knowledge and direction provided over the last two years. He congratulated Mr. Ashcraft on his successful Chairmanship and wished him the best in the future.

**9. Closed Session**

There was no Closed Session.

**10. Adjourn**

Upon a motion made by Mr. Massengill and seconded by Dr. Casey the meeting was adjourned at 3:45 p.m.

MINUTES APPROVED BY:

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**Kevin Massengill**  
**Secretary/Treasurer**

### 3. Public Comment

The Guidelines for Public Comment are:

#### GUIDELINES FOR PUBLIC COMMENT AT SCWWA/ARWA BOARD OF DIRECTORS MEETINGS

If you wish to address the SCWWA/ARWA Board of Directors during the time allocated for public comment, please raise your hand or stand when the Chairman asks for public comments.

Members of the public requesting to speak will be recognized during the specific time designated on the meeting agenda for "Public Comment Period." Each person will be allowed to speak for up to three minutes.

When two or more individuals are present from the same group, it is recommended that the group designate a spokesperson to present its comments to the Board and the designated speaker can ask other members of the group to be recognized by raising their hand or standing. Each spokesperson for a group will be allowed to speak for up to five minutes.

During the Public Comment Period, the Board will attempt to hear all members of the public who wish to speak on a subject, but it must be recognized that on rare occasion presentations may have to be limited because of time constraints. If a previous speaker has articulated your position, it is recommended that you not fully repeat the comments and instead advise the Board of your agreement. The time allocated for speakers at public hearings are the same as for regular Board meeting, although the Board can allow exceptions at its discretion.

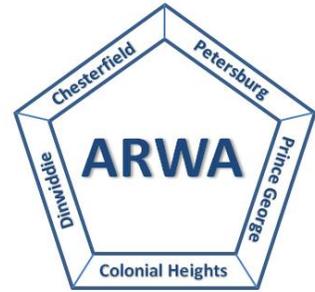
Speakers should keep in mind that Board of Directors meetings are formal proceedings and all comments are recorded on tape. For that reason, speakers are requested to speak from the podium and wait to be recognized by the Chairman. In order to give all speakers proper respect and courtesy, the Board requests that speakers follow the following guidelines:

- Wait at your seat until recognized by the Chairman;
- Come forward and state your full name and address. If speaking for a group, state your organizational affiliation;
- Address your comments to the Board as a whole;
- State your position clearly and succinctly and give facts and data to support your position;
- Summarize your key points and provide the Board with a written statement or supporting rationale, when possible;
- If you represent a group, you may ask others at the meeting to be recognized by raising their hand or standing;
- Be respectful and civil in all interactions at Board meetings;
- The Board may ask speakers questions or seek clarification, but recognize that Board meetings are not a forum for public debate; Board Members will not recognize comments made from the audience and ask that members of the audience not interrupt the comments of speakers and remain silent while others are speaking so that other members in the audience can hear the speaker;
- The Board will have the opportunity to address public comments after the Public Comment Period has been closed;
- At the request of the Chairman, the Executive Director may address public comments after the session has been closed as well; and
- As appropriate, staff will research questions by the public and respond through a report back to the Board at the next regular meeting of the full Board. It is suggested that citizens who have questions for the Board or staff submit those questions in advance of the meeting to permit the opportunity for some research before the meeting.

**4. Presentation by HydroLogics on 2018 Chesdin Reservoir Modeling Results (Includes Irrigation Withdrawal Impact)**

Hydrologics will present the 2018 Chesdin Reservoir Modeling Results.

# Appomattox River Water Authority



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21300 Chesdin Rd. - Petersburg, VA 23803 - Phone (804) 590-1145 - Fax (804) 590-9285

## **BACKGROUND:**

### **Inflow Verification**

A crucial component to water supply forecasting is to have an accurate estimate of the inflow into the reservoir. In this task, HydroLogics will examine the 2018 USGS gauge flows and computed inflows, and update the verification results.

### **Implementation of Position Analysis Mode for ARWA OASIS Model**

Position Analysis (PA) is the run mode of the OASIS model that allows for water supply forecasts. Instead of running one continuous hydrologic record (Simulation mode) as has been done for ARWA to date for planning analysis, PA mode starts the run on the date of the forecast, and processes multiple one-year traces based on the historic inflows. The inflow traces are all conditioned – or adjusted – to account for how wet or dry it is at the time of the forecast. The output of all the traces can then be used to compute probabilities of drawdown at a certain time horizon in the future. This task involves HydroLogics setting up ARWA’s existing model to run PA mode, including QA/QC, and developing all the necessary output files to display forecast results.

### **Water Supply Forecast**

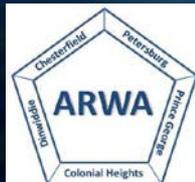
Once the OASIS model is configured for PA mode, this task is for the running and presentation of a water supply forecast to be presented and discussed as needed at the ARWA Board Meeting.

# Summary of Chesdin Reservoir Reliability

January 16, 2019

Casey Caldwell  
Steven Nebiker

Advancing the Management  
of Water Resources



# Summary

- 2018 assessment
- Overall reliability assessment

# 2018 Assessment

- Use OASIS model of the reservoir; model was initially developed in 2012 to support development of the new permit
  - For this analysis, used updated raw water demand and process water return patterns
- Use model to develop drawdown percentiles for the entire hydrologic record (1926 – 2018)
- Compare 2018 drawdown to period-of-record percentiles
- Note that Chesdin was intentionally drawn down 6 inches in preparation for Hurricane Florence
  - No drawdown due to low inflows in 2018

# Demand & Return Patterns

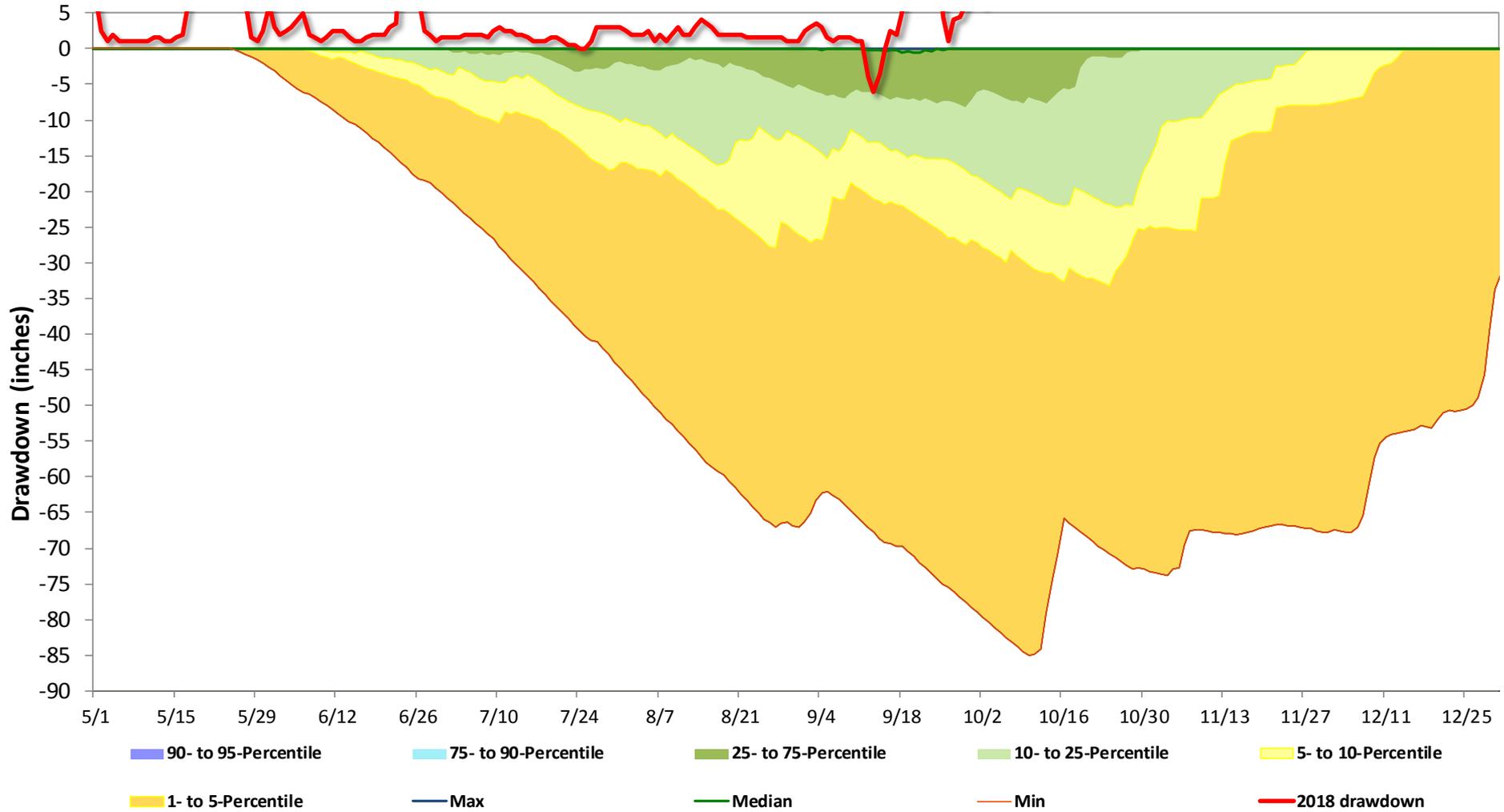
- For average annual withdrawal use 2014-2018 average of **32.4 mgd**

Year	Avg. Annual Raw Water Demand (mgd)
2014	33.5
2015	31.6
2016	31.2
2017	32.6
2018*	32.9
<b>Average</b>	<b>32.4</b>

- Monthly withdrawal and return patterns in the model were updated in Jan. 2018 based on average 2013 – 2017

\* 2018 Oct-Dec data estimated from 2017 data

# 2018 Chesdin Drawdown (inches) vs. Percentiles from Simulated Record



# Overall Reliability Assessment

- With record updated through Sep. 2018, show the reliability metrics that were used in 2013 to support the approval of the current minimum release permit
  - Metrics were developed with ARWA and VA DEQ
- These metrics assess water supply reliability (including how often the drought plan would be activated), and also environmental (fish habitat) and recreational goals
- Assess future demands using linear projections based on data since 2007, and also using alternative ARWA projections

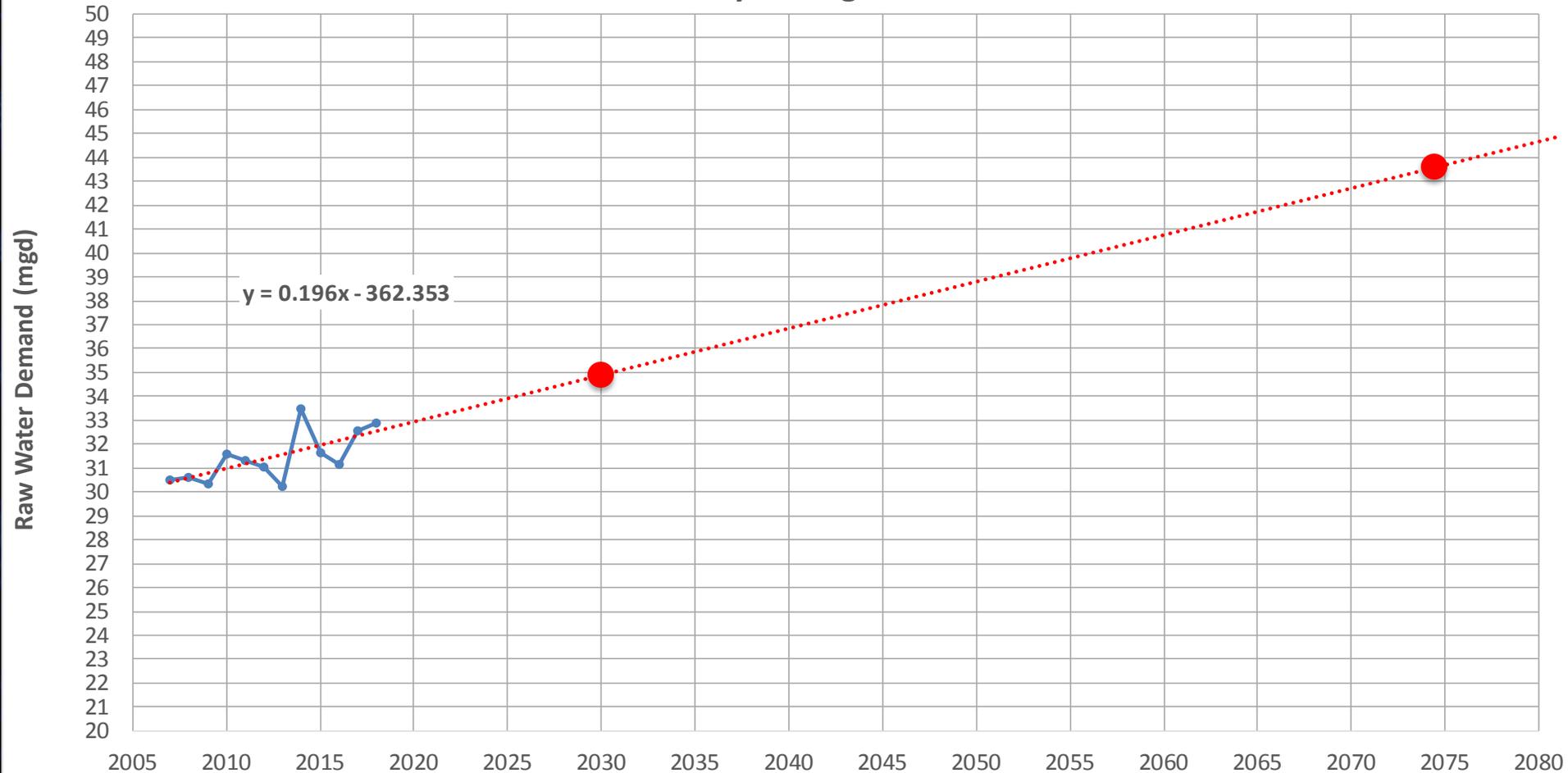
# System Performance Goals

- Drought plan activation frequency
  - Voluntary – 1 in 5 years
  - Mandatory – 1 in 25 years
  - Emergency – 1 in 93 years (hydrologic period of record)
- Drawdown frequency
  - Recreation > 2 ft (May 15 – Sep 30) – 1 in 5 years
  - Recreation > 4 ft (May 15 – Sep 30) – 1 in 10 years
  - Out-Migration > 3.5 ft, 45+ consecutive days (Sep 1 – Nov 30) – 1 in 17 years
- Maintain minimum storage – 60 days of supply
- Preservation of downstream habitat (determined by DEQ)

# Demand Projections

- Use linear interpolation of 2007-2018 raw water demand to estimate future demands

Annual Daily Average Raw Flow



# Reliability Metrics

Drought Plan	Trigger	Current Conditions 32.4 MGD	Linear 2030 Projection 34.9 MGD	Linear ~2074 Projection 43.5 MGD
Frequency of Trigger Activation	Stage 1 (Voluntary)	1 in 19 yrs	1 in 16 yrs	1 in 7 yrs
	Stage 2 (Mandatory)	1 in 93 yrs	1 in 47 yrs	1 in 31 yrs
	Stage 3 (Emergency)	< 1 in 93 yrs	< 1 in 93 yrs	< 1 in 93 yrs
Frequency of Drawdown Event	Rec > 2 ft	1 in 7 yrs	1 in 6 yrs	1 in 4 yrs
	Rec > 4 ft	1 in 31 yrs	1 in 31 yrs	1 in 10 yrs
	Mig > 3.5 ft, 45+ days	1 in 47 yrs	1 in 31 yrs	1 in 19 yrs
Preserves 60-day supply?*		Yes (130 days)	Yes (116 days)	No (50 days)

Red = goal not met

Yellow = within 1 event of goal

Green = goal met

Recreation statistics are for May 15 – Sep 30

Out-Migration statistics are for Sep 1 – Nov 30

\* Days of supply remaining based on supply above sediment pool, which assumed to increase by ~22 MG per year since 2011, when the sediment pool was estimated to be 152 MG. Days of supply remaining in later years would be significantly higher if based on the lowest intake

# Reliability Metrics – with 280 additional irrigation permits (assumed to add 2 MG per week (0.28 MGD) Apr-Oct)

Drought Plan	Trigger	Current Conditions 32.4 MGD	Linear 2030 Projection 34.9 MGD	Linear ~2074 Projection 43.5 MGD	Current Cond. w/ Irrg. 32.4 MGD	Linear 2030 Proj. w/ irrig 34.9 MGD	Linear 2074 Proj. w/ irrig 43.5 MGD
Frequency of Trigger Activation	Stage 1 (Voluntary)	1 in 19 yrs	1 in 16 yrs	1 in 7 yrs	No change	No change	No change
	Stage 2 (Mandatory)	1 in 93 yrs	1 in 47 yrs	1 in 31 yrs	No change	No change	No change
	Stage 3 (Emergency)	< 1 in 93 yrs	< 1 in 93 yrs	< 1 in 93 yrs	No change	No change	No change
Frequency of Drawdown Event	Rec > 2 ft	1 in 7 yrs	1 in 6 yrs	1 in 4 yrs	No change	No change	No change
	Rec > 4 ft	1 in 31 yrs	1 in 31 yrs	1 in 10 yrs	No change	No change	1 in 9 yrs
	Mig > 3.5 ft, 45+ days	1 in 47 yrs	1 in 31 yrs	1 in 19 yrs	No change	No change	No change
Preserves 60-day supply?*		Yes (130 days)	Yes (116 days)	No (50 days)	Yes (129 days)	Yes (114 days)	No (45 days)

Red = goal not met  
 Yellow = within 1 event of goal  
 Green = goal met

Recreation statistics are for May  
 15 – Sep 30

Out-Migration statistics are for  
 Sep 1 – Nov 30

\* Days of supply remaining based on supply above sediment pool, which assumed to increase by ~22 MG per year since 2011, when the sediment pool was estimated to be 152 MG. Days of supply remaining in later years would be significantly higher if based on the lowest intake

# Reliability Metrics – with 280 additional irrigation permits plus maximum golf course withdrawals (assumed to add 8 MG total per week (1.14 MGD) Apr-Oct)

Drought Plan	Trigger	Current Conditions 32.4 MGD	Linear 2030 Projection 34.9 MGD	Linear ~2074 Projection 43.5 MGD	Current Cond. w/ Irrig.+Golf 32.4 MGD	Linear 2030 Proj. w/ irrig+Golf 34.9 MGD	Linear 2074 Proj. w/ irrig+Golf 43.5 MGD
Frequency of Trigger Activation	Stage 1 (Voluntary)	1 in 19 yrs	1 in 16 yrs	1 in 7 yrs	No change	No change	1 in 6 yrs
	Stage 2 (Mandatory)	1 in 93 yrs	1 in 47 yrs	1 in 31 yrs	No change	No change	No change
	Stage 3 (Emergency)	< 1 in 93 yrs	< 1 in 93 yrs	< 1 in 93 yrs	No change	No change	1 in 93 yrs
Frequency of Drawdown Event	Rec > 2 ft	1 in 7 yrs	1 in 6 yrs	1 in 4 yrs	No change	No change	No change
	Rec > 4 ft	1 in 31 yrs	1 in 31 yrs	1 in 10 yrs	No change	1 in 23 years	1 in 9 yrs
	Mig > 3.5 ft, 45+ days	1 in 47 yrs	1 in 31 yrs	1 in 19 yrs	No change	No change	1 in 16 years
Preserves 60-day supply?*		Yes (130 days)	Yes (116 days)	No (50 days)	Yes (126 days)	Yes (111 days)	No (43 days)

Red = goal not met  
 Yellow = within 1 event of goal  
 Green = goal met

Recreation statistics are for May 15 – Sep 30

Out-Migration statistics are for Sep 1 – Nov 30

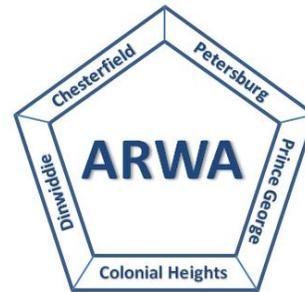
\* Days of supply remaining based on supply above sediment pool, which assumed to increase by ~22 MG per year since 2011, when the sediment pool was estimated to be 152 MG. Days of supply remaining in later years would be significantly higher if based on the lowest intake

# Conclusions

- Chesdin Reservoir is very reliable at current system demand levels
- 2018 was a wet year, and the intentional drawdown for Hurricane Florence did not impact water supply reliability
- The new permit for minimum releases added a significant amount of reliability over the old release requirement (previously presented)
- 280 additional irrigation permits (2 MG / week Apr-Oct) and max golf course withdrawals (6 MG / week Apr-Oct) would have minimal impact on reliability
- Under linear demand growth projections, the reservoir will be able to maintain water supply reliability for the next 50 years

**5. Continued Public Hearing on and Consideration of Proposed Amendments Related to the Direct Irrigation Withdrawal Policy**

Following is the Amended and Restated Policy pertaining to Direct Irrigation Withdrawals from Lake Chesdin



**APPOMATTOX RIVER WATER AUTHORITY**

**- RESOLUTION -**

**AMENDED AND RESTATED POLICY PERTAINING TO  
DIRECT IRRIGATION WITHDRAWALS FROM LAKE CHESDIN**

Originally Adopted: November 20, 2008  
First Amended and Restated: June 23, 2011  
Second Amended and Restated: January 16, 2019

**WHEREAS**, the Appomattox River Water Authority ("ARWA") is the owner of certain property surrounding and lying underneath Lake Chesdin, a 3,100-acre reservoir located on the Appomattox River on the Chesterfield County and Dinwiddie County line that provides a drinking water supply to the Cities of Colonial Heights and Petersburg and the Counties of Chesterfield, Dinwiddie, and Prince George (the "Participating Jurisdictions");

**WHEREAS**, ARWA faces increases in demand for drinking water for all purposes throughout ARWA's service area;

**WHEREAS**, the Lake Chesdin area experienced extended droughts between 2001 and 2002 and in 2007 and 2010, which resulted in low lake levels and the imposition of mandatory and emergency water use restrictions for the first times in ARWA's history;

**WHEREAS**, lawn and garden irrigation may use thousands of gallons of water each day on just one landowner's property;

**WHEREAS**, in 2007 ARWA noted that a number of persons residing near Lake Chesdin had installed pumps, intake devices, and other equipment and taken other measures for the purpose of withdrawing water directly from Lake Chesdin for the purpose of lawn and garden irrigation ("Direct Irrigation Withdrawals"), and the potential existed for others to do the same as growth occurs around Lake Chesdin;

**WHEREAS**, none of the Direct Irrigation Withdrawals or pumps, intake devices, or other equipment for making Direct Irrigation Withdrawals ("Systems") had been approved previously by ARWA's Board of Directors (the "Board"), and, on November 2, 2007, the Board appointed a committee

to review the issue of Direct Irrigation Withdrawals and to make recommendations pertaining to such activity (the "Committee");

**WHEREAS**, the Committee met and reported its recommendations to the Board at the Board's regular meeting on December 20, 2007, which the Board adopted by resolution on December 20, 2007;

**WHEREAS**, the Board authorized and directed the Committee to (i) draft an appropriate permit or license document in furtherance of its recommendations; and (ii) develop policies and procedures for application for, and issuance of, such documents and for the collection and administration of the recommended fees;

**WHEREAS**, ARWA held a public hearing on the adoption of a proposed policy pertaining to Direct Irrigation Withdrawals on August 11, 2008, after notice of the public hearing was published once in a newspaper of general circulation in ARWA's service area;

**WHEREAS**, as agreed during the public hearing, the Committee met with a self-selected group of interested citizens on September 15, 2008 (the "Committee-Citizen Meeting");

**WHEREAS**, during the Board's September 18, 2008 regular meeting, the Board discussed the public hearing and the Committee-Citizen Meeting;

**WHEREAS**, the Board determined to schedule a second public hearing on a proposed policy pertaining to Direct Irrigation Withdrawals and held such public hearing on November 20, 2008, after notice of the public hearing was published twice in several newspapers of general circulation in ARWA's service area, and following the public hearing adopted a policy and guidance (the "Original Policy") for the approval of Direct Irrigation Withdrawal licenses ("Licenses");

**WHEREAS**, on June 23, 2011, ARWA's Executive Director recommended making certain minor changes to the Original Policy and the Board adopted the first amendment and restatement of the Original Policy (the "First Amended Policy");

**WHEREAS**, the term of the current Licenses for Direct Irrigation Withdrawals expired on December 31, 2018, and the Board has determined to (i) allow the Licenses to be renewed for a term to end simultaneously with the expiration of ARWA's current Virginia Water Protection Permit on October 31, 2028, (ii) end the moratorium on additional Licenses imposed under the Original Policy and the First Amended Policy and authorize the issuance of new Licenses, (iii) set the fee for renewing or obtaining a License and (iv) make certain other conforming or minor changes to the First Amended Policy; and

**WHEREAS**, the Board held public hearings regarding the above-described recommendations on October 18, 2018, November 15, 2018, and January 16, 2019 for each of which notice was published twice in several newspapers of general circulation in ARWA's service area;

**NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF THE APPOMATTOX RIVER WATER AUTHORITY THAT:**

**1. Protection of Lake Chesdin for Public Drinking Water Supply.** The Board hereby finds and determines that this second amended and restated policy (the "Second Amended

Policy") will further the public purposes for which ARWA was created, including without limitation the purposes of conserving, protecting and beneficially utilizing the surface water in Lake Chesdin to ensure the public welfare, safety, and health of the inhabitants of the Participating Jurisdictions who rely upon Lake Chesdin as a source of drinking water and enabling ARWA to obtain permits for additional water sources reasonably required to serve such inhabitants.

**2. License Required for Continued Direct Irrigation Withdrawals.** No Direct Irrigation Withdrawal shall occur except as authorized by the terms of a License Agreement to be executed by ARWA's Executive Director and the Licensee (the "License Agreement"). The License Agreement shall be substantially in the form presented at this meeting, with such insertions, deletions, or other changes not inconsistent with this Second Amended Policy as may be approved by the Executive Director in his discretion.

**3. Applications for Renewals or New Licenses; Grace Period for Renewals.** Any person who is (i) a current Licensee as of December 31, 2018, and desires to renew his or her License or (ii) the current owner of a Parcel fronting Lake Chesdin (each, an "Eligible Parcel") and wishes to obtain a new License shall submit an application to the Executive Director (the "Application"). As used herein, a "Parcel" shall mean a discrete parcel of land located in either of the Counties of Chesterfield and Dinwiddie, Virginia, that is separately assessed for real property taxation purposes. For reference purposes, parcel property mapping of Eligible Parcels may be viewed through the public GIS websites provided by the Counties of Chesterfield and Dinwiddie. The Application shall be substantially in the form presented at this meeting, with such insertions, deletions, or other changes as may be approved by the Executive Director in his discretion and not inconsistent with this Second Amended Policy. Any current Licensee as of December 31, 2018, shall have a grace period until June 30, 2019, to renew his or her License and may continue Direct Irrigation Withdrawals without any penalty or additional cost until the renewal date.

**4. Term.** Regardless of when an application for a new or renewed License is received, the License shall be for a term commencing on the later of June 30, 2019, or the date the License is issued or renewed and ending on October 31, 2028 (the "Term"), unless sooner terminated in accordance with the License Agreement.

**5. License Fee.** The fee (the "License Fee") for a License newly issued or renewed between January 17, 2019, and June 30, 2019, shall be six hundred seventy-four dollars (\$674). The License Fee for any License renewed or issued after June 30, 2019, shall be prorated over the remaining Term at \$6.00 per month, including the full month in which the License is renewed or issued. The License Fee is payable immediately upon the renewal or issuance of a License; provided that any current Licensee as of December 31, 2018, who renews his or her License before June 30, 2019, may pay the License Fee in two installments of \$337 on the renewal date and \$337 on June 30, 2024. The License Fee is nonrefundable except as provided in paragraph 13(d) of this Second Amended Policy.

**6. Conservation.** For purposes of this Second Amended Policy and the water conservation measures of the Participating Jurisdictions, each Licensee's System shall be considered to be connected to the public water supply of the Participating Jurisdiction in which the Licensee lives. Each Licensee must agree to abide by irrigation and other water use restrictions imposed by the Participating Jurisdiction in which the Licensee lives, regardless of the level of Lake Chesdin.

**7. Health, Environmental, or Other Restrictions Required by Law or Governmental Entity.** Each Licensee must agree to abide by all local, state, and federal laws and regulations now or hereafter in effect and applicable to his Direct Irrigation Withdrawal or System and that ARWA may, as Licensor, impose upon him or her, as Licensee, any health, environmental, or other restrictions required under local, state, or federal law or as may be required by any local, state, or federal governmental entities that regulate or provide assistance to ARWA, including restrictions imposed as a requirement to obtaining permits to construct improvements or enlargements of ARWA's water treatment and/or storage capacity. Each Licensee shall agree to not cause or permit the use, generation, storage, release, or disposal in, on, or about Lake Chesdin of any substances, materials, or wastes in violation of local, state, or federal law.

**8. Limitation on Number and Transferability of Licenses.** Licenses shall be limited to one per Eligible Parcel, regardless of whether an Eligible Parcel owner subdivides or intends to subdivide his Eligible Parcel. Each Eligible Parcel for which a License has been issued is referred to herein as a "Licensed Parcel". Each Licensee shall promptly report to ARWA the subdivision of any Licensed Parcel the Licensee owns and may transfer the License applicable thereto to a single successor owner of an Eligible Parcel subdivided out of such Licensed Parcel, but may not transfer, assign, divide, allocate, or distribute duplicates of his or her License among the successor owners of any subdivided portions of such Licensed Parcel, regardless of whether the subdivided portions constitute Eligible Parcels in their own right. Any attempt on the part of a Licensee to do so, or any failure by a Licensee to promptly report the subdivision of their Licensed Parcel(s), may result in the immediate termination of such Licensee's License(s) by ARWA, acting in its sole discretion.

**9. System Limitations.** Each Licensee's System shall originate from a single withdrawal point from Lake Chesdin, which has been identified by Licensee as part of his or her Application, and use a single pump or other intake device. Systems shall not: (i) have a pump capacity greater than 20 gallons per minute, (ii) have the pump or other intake device located beyond the end of the Licensee's dock, pier, or bulkhead, or, in the absence of a dock, pier, or bulkhead, thirty (30) feet from the normal pool limit, and (iii) be used to pump or intake water for storage (i.e., all water removed from Lake Chesdin by Systems must be immediately applied to irrigation). Each Licensee may replace failing equipment that is part of his or her System with functioning equipment that is the same or, if the same equipment is not available, the functional equivalent of the failing equipment, but may not extend, expand, or otherwise improve his or her System or increase its ability to make Direct Irrigation Withdrawals.

**10. Right to Enter, Inspect, and Remediate.** Each Licensee shall grant ARWA and any of its duly authorized agents or representatives the rights (i) to enter, at reasonable times and under reasonable circumstances, his or her Parcel for the purposes of obtaining information about or conducting a survey or inspection of his or her System and its operation to ensure compliance with any laws, regulations, rules, permits, standards, or policies of ARWA and any applicable local, state, or federal government or governmental entity and (ii) to the extent permitted by law, to remove, dismantle, or otherwise remediate a noncompliant System or portion thereof after written notice of noncompliance has been given by ARWA to the Licensee, unless the Licensee has caused the System to become compliant, as determined by ARWA, within thirty (30) days after the notice was given.

**11. Indemnity.** Each Licensee shall defend, indemnify, and save harmless ARWA and its Board members, agents, employees, contractors, representatives, affiliates, and other related entities (the "Indemnitees" or an "Indemnitee") from and against any loss, claims, expenses (including

reasonable attorney's fees), or damage incurred or suffered by an Indemnitee, by reasons directly or indirectly arising out of, caused (in whole or in part) by, or in any way connected with the Licensee's Direct Irrigation Withdrawal. ARWA shall have no responsibility, liability, or obligation with respect to any property of the Licensee at, in, or on Lake Chesdin, it being acknowledged and understood by the Licensee that the safety, security, and effects of any such property are the sole responsibility and risk of the Licensee.

**12. Licensee Shall Have No Other Privileges or Any Right or Interest in ARWA Property.** Each Licensee must agree that (i) the License shall be only a license to make Direct Irrigation Withdrawals in accordance with this Second Amended Policy and the terms of the License Agreement, and shall not be construed as granting any other privileges or any right or interest in Lake Chesdin or other ARWA property, (ii) he or she does not have and shall not claim at any time any right or interest of any kind or nature whatsoever in Lake Chesdin or other ARWA property by virtue of the License Agreement or the License, and (iii) the License is personal to the Licensee, and except as may be provided pursuant to paragraph 8 of this Second Amended Policy, the privileges appurtenant thereto shall not inure to the successors and/or assigns of the Licensee.

**13. Amendment of Second Amended Policy and Termination of License.**

(a) Each Licensee shall agree that the Board may, in its sole discretion, at any time or from time to time, unilaterally amend this Second Amended Policy and, as a result, the License, to the extent it is inconsistent with the amendments. Before the adoption of any amendment to this Second Amended Policy, the Board shall hold a public hearing regarding the proposed amendment, of which notice shall be published twice in one or more newspapers of general circulation in ARWA's service area and posted on ARWA's website. In addition, ARWA shall provide written notice of any amendment to this Second Amended Policy and the License to each Licensee within thirty (30) days of its adoption by the Board. Any notice to a Licensee pursuant to this Second Amended Policy shall be sent by first class U.S. mail to the address provided in the Application or such other address designated in writing to ARWA at the address provided in paragraph 19 of this Second Amended Policy.

(b) Any License, License Agreement, and the privileges created and conferred thereby on a Licensee are terminable at will by either the Board or the Licensee. Termination of the License, License Agreement, and the privileges shall occur immediately upon providing written notice to the other party. Upon termination, the Licensee shall proceed with diligence to remove his or her System at his or her sole expense.

(c) Notwithstanding the foregoing, before the Board amends this Second Amended Policy or terminates any License, the Board shall make a finding that such amendment or termination furthers the public purposes for which ARWA was created, including without limitation the conservation, protection, and beneficial utilization of the surface water in Lake Chesdin to ensure the public welfare, safety, and health of the inhabitants of the Participating Jurisdictions who rely upon Lake Chesdin as a source of drinking water and enabling ARWA to obtain permits for additional water sources reasonably required to serve such inhabitants.

(d) If an amendment of the Second Amended Policy results in the termination of a License and the privileges granted thereby, or if a License is directly terminated by the Board, the Board shall return to the affected Licensee a pro rata portion of the License Fee based on the same methodology provided in paragraph 5 of this Second Amended Policy.

**14. Unlicensed Direct Irrigation Withdrawals; Grace Period for Unlicensed Direct Irrigation Withdrawals.** After June 30, 2019, all Direct Irrigation Withdrawals for which a License has not been renewed or issued shall cease, and all property and equipment used for unlicensed Direct Irrigation Withdrawals shall be removed from Lake Chesdin at the sole expense of the owner. No penalty or cost shall be imposed for unlicensed Direct Irrigation Withdrawals occurring on or before June 30, 2019.

**15. Other Water Withdrawals Prohibited.** Except for withdrawals (i) permitted under the terms of this Second Amended Policy, (ii) by fire departments or companies and federal, state and local governmental entities to fight fires or address other public safety emergencies on a temporary basis or (iii) otherwise expressly approved by the Board, all withdrawals from Lake Chesdin other than by ARWA are prohibited.

**16. Enforcement.** The Executive Director is hereby authorized to engage counsel to undertake appropriate legal action on ARWA's behalf to enforce this Second Amended Policy or the terms of any License approved by the Board.

**17. Golf Course Irrigation.** ARWA has previously approved direct withdrawals from Lake Chesdin for golf course irrigation at Lake Chesdin Golf Club. The Executive Director shall periodically review the agreement with Lake Chesdin Golfers' Club LLC and make recommendations to the Board for amending the conditions upon which that entity may continue to withdraw water from Lake Chesdin consistent with this Second Amended Policy.

**18. Conflict with Other Policies.** This Second Amended Policy supersedes all prior policies pertaining to Direct Irrigation Withdrawals.

**19. Reports of Unauthorized Withdrawals.** Anyone observing unauthorized withdrawals from Lake Chesdin can report it to ARWA's Executive Director at:

Appomattox River Water Authority  
Executive Director  
21300 Chesdin Road  
South Chesterfield, Virginia 23803  
Phone: (804) 590-1145

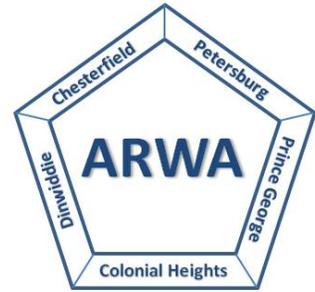
**20. Effective Date.** This Second Amended Policy shall take effect immediately.

**6. Executive Director's Report:**

- **Reservoir Status Update for December/January 2018/19**

- **Annual Flushing Notice**

Following is the Annual Flushing Notice the Authority intends to post on its website and release to the media.



**FOR IMMEDIATE RELEASE  
February 28, 2019**

For more information contact:  
Bob Wichser, Executive Director  
(804) 590-1145

## **ARWA Announces 2019 Schedule for Annual Water Transmission System Flushing Program**

The Appomattox River Water Authority (ARWA) announced its schedule today for its annual water main line flushing program during the fourth week of March.

For over the past twenty-four years, ARWA has annually flushed out its wholesale water transmission lines to remove any settled material (sediment, sand, etc.). Flushing of the system is a routine maintenance effort that helps assure appropriate water quality and availability to all ARWA customers. This process is completed by ARWA staff each year, generally in March.

The current schedule this year calls for the water main transmission line flushing to occur from March 26<sup>th</sup> to March 29<sup>th</sup>. If inclement weather occurs, the flushing will be pushed back to the week of April 2<sup>nd</sup>.

While it is possible for this maintenance process to create some discoloration of water in isolated situations, it will have no adverse effect on the quality or safety of drinking water.

ARWA customers with questions or concerns about the waterline flushing program are encouraged to call ARWA at 590-1145 or contact their local water service provider directly.

\* \* \*

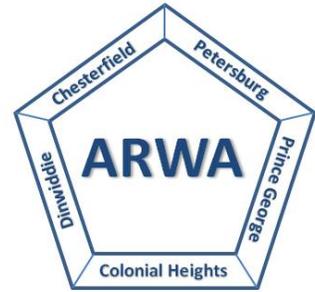
### **About ARWA**

The Appomattox River Water Authority (ARWA) provides safe, reliable, clean water to customers in Chesterfield, Dinwiddie and Prince George Counties, and the Cities of Colonial Heights and Petersburg, Virginia, from facilities located next to Brasfield Dam, at the Chesdin Reservoir. For more information about ARWA, please visit <http://arwava.org/>

- **Presentation by Golder Associates on Chesdin Reservoir Hydrilla Survey**

Following is a summary background of Hydrilla and Golder Associates' Chesdin Reservoir Hydrilla Survey Presentation.

# Appomattox River Water Authority



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21300 Chesdin Rd. - Petersburg, VA 23803 - Phone (804) 590-1145 - Fax (804) 590-9285

## **SUMMARY:**

- Hydrilla is an aquatic invasive plant that can outcompete native species and infest lakes, reservoirs and rivers, causing a variety of impacts to water quality, natural resources, and recreational use.
- Control options for hydrilla include biological controls and herbicides.
- It is important to include a robust public outreach component for any hydrilla management program to maintain public confidence in the safety of the drinking water supply.
- ARWA has been aware over the past years that hydrilla had been establishing itself in select areas of the Chesdin Reservoir.
- ARWA has never conducted an inventory of where and to what extent hydrilla has established itself in the Chesdin Reservoir.
- ARWA has spot treated hydrilla growth areas (small coves) based on citizen request over the past 6-8 years in the Chesdin Reservoir.
- Once the Hydrilla is identified within a waterbody, the water resource managers must decide between available management options or no actions.
- Because the primary objective of the drinking water sector is protecting public health, utilities and the public require assurances that the decision mechanism to control hydrilla will not result in potential negative health effects.

## **BACKGROUND:**

Hydrilla was first introduced into Florida, California and the Mid-Atlantic states during the 1950s-1980s via the aquarium industry. Over the past decades it has spread throughout the U.S. and is currently present in 32 states. The Southeast and Texas have the most heavily infested areas, but hydrilla is rapidly expanding into the Midwest and Northeast despite substantial investment in education, management and control projects. In the coming years it is expected that more drinking water utilities will be faced with its presence in the reservoirs and rivers that serve as sources of drinking water.

Hydrilla is a federally listed aquatic invasive species that has the potential to cause significant economic and environmental impacts once established. Hydrilla is a high priority risk for reservoir systems as it can impact water quality, aquatic habitat, and recreational uses. The species forms dense mats of vegetation, outcompeting native species, reducing dissolved oxygen, and raising pH of the water (Langeland 1996). Decay of plant litter can increase natural organic matter in reservoirs, which is a precursor to disinfection byproduct formation. The dense vegetation can also impact flow rates through channels and can clog raw water intake structures. As a result of its ability to reproduce from plant fragments, turions, and tubers, hydrilla spreads easily.

## **ARWA's APPROACH:**

- Conduct the initial 2018 Chesdin Reservoir hydrilla inventory on where and to what extent hydrilla has established itself.

- ARWA has also conducted a meeting in 2018 with the Virginia Department of Game & Inland Fisheries and Chesterfield County to discuss status, effectiveness and regulatory requirements related to Hydrilla control programs.
- Continue to monitor the extent of Hydrilla's establishment in the Chesdin Reservoir on a three year recurring time frame.
- Based on results from the second Hydrilla inventory, ARWA will consider taking "No Action" versus implementation of a publicly acceptable Hydrilla control program.



**GOLDER**

# **Lake Chesdin Hydrilla Survey**

**APPOMATTOX RIVER WATER AUTHORITY**

January 16, 2019

# AGENDA

**Introduction**

**Sonar Survey**

**Aquatic Vegetation Survey**

**Findings and Recommendations**

# Lake Chesdin Hydrilla Survey

## INTRODUCTION

Lake Chesdin is 3,500 acres, twice the size of Swift Creek, and has three times the shoreline (approx. 70 miles). Includes deep run-of-river channel

- Downstream section generally greater than 10 feet deep with steep shoreline
- Upstream section includes narrow main channel and inundated floodplain typically less than four feet deep
- *Hydrilla* sp. has been positively identified at a few locations in Lake Chesdin but has not been systematically surveyed. Some areas have been treated for *Hydrilla* sp.
- Tasked to assess the presence/distribution of *Hydrilla* sp. in Lake Chesdin

# Lake Chesdin Hydrilla Survey

## SCOPE OF WORK

Two separate tasks as survey was conducted in November – late in growing season

Sonar Survey to assess the distribution of aquatic vegetation

- Visual survey not possible due to poor visibility
- Can cover large areas
- Provide targets for Aquatic Vegetation Survey

Aquatic Vegetation Survey,

- Conduct limited surveys based on Sonar Survey in addition to systematic surveys
- “Rake toss” survey for species identification, presence/absence of *Hydrilla* sp.,

# Lake Chesdin Hydrilla Survey

## SONAR SURVEY

Different survey methods for the varying conditions found in Lake Chesdin.

- Lower 6-mile long portion surveyed along the shoreline at water depths of approximately 5 and 10 feet
- Upstream portion surveyed perpendicular to shoreline on a 500 feet spacing and parallel to the shoreline 200 feet from the shoreline
- All coves and inlets accessible by boat (> 3 feet deep) were surveyed

Used a GPS-enabled Lowrance Sonar HDS-5 echo sounder for continuous data collection. Tracked lake bathymetry and defined survey lines to collect accurate spatial data.

- Surveyed 110 miles in 5 days
- Data uploaded to Biobase for analysis

# Lake Chesdin Hydrilla Survey

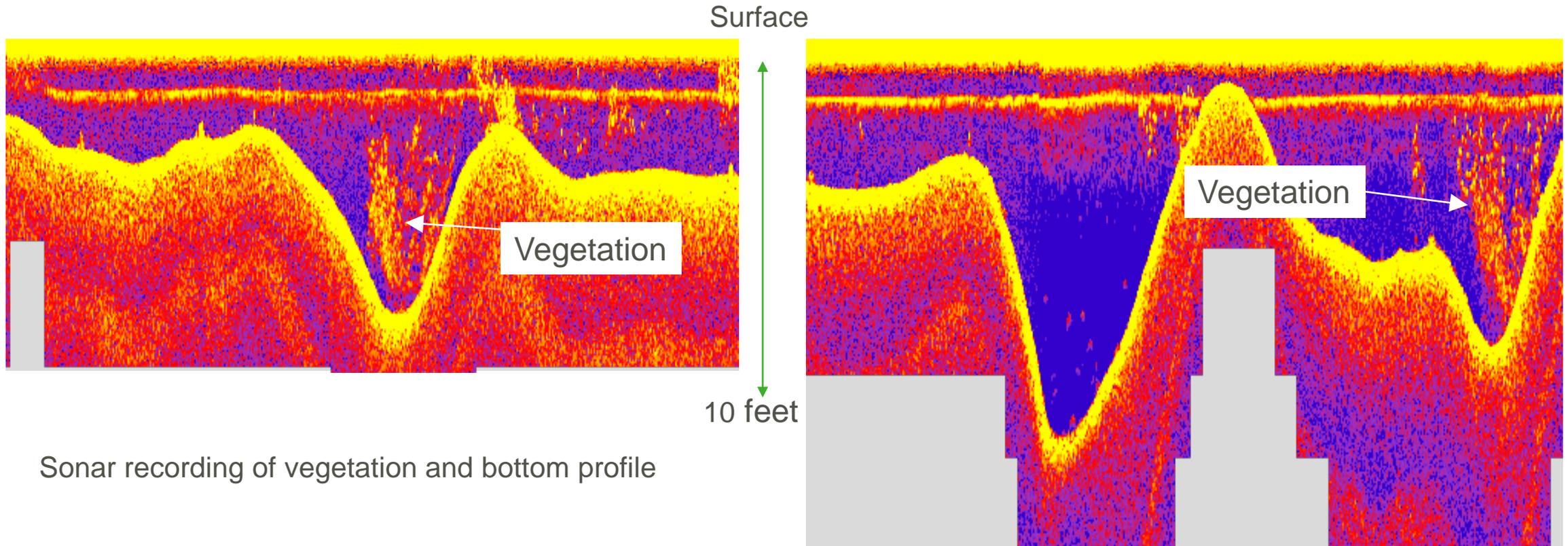
## SONAR SURVEY AREA

— Sonar Survey Lines



# Lake Chesdin Hydrilla Survey

## SONAR SURVEY RESULTS



Sonar recording of vegetation and bottom profile

# Lake Chesdin Hydrilla Survey

## SONAR SURVEY RESULTS

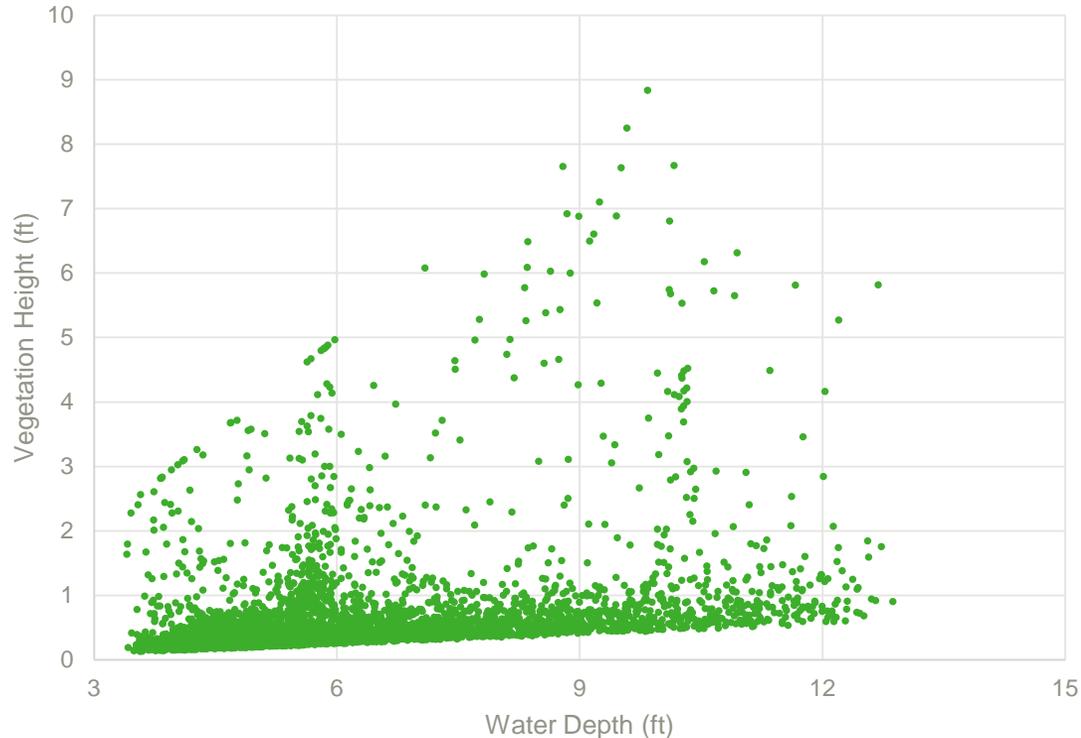
Sonar Survey processed using Biobase

- Developed biovolume maps (% of water column containing vegetation).
- Results were reviewed along with the sonar profiles to confirm/reject the results
- Vegetation features of interest were identified from the sonar profiles and geo-located for further visual inspection
- Visually, at the time of the survey, vegetation was sparse and large plant communities were generally isolated

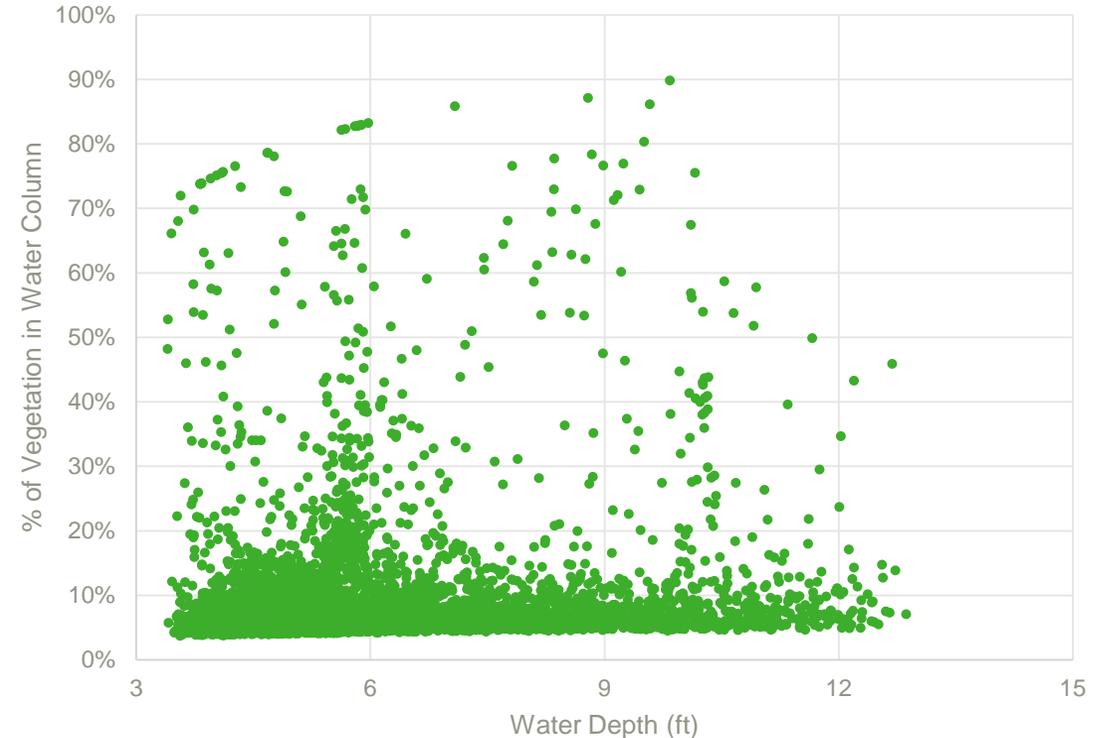
# Lake Chesdin Hydrilla Survey

## SONAR SURVEY RESULTS

Vegetation Height vs Depth



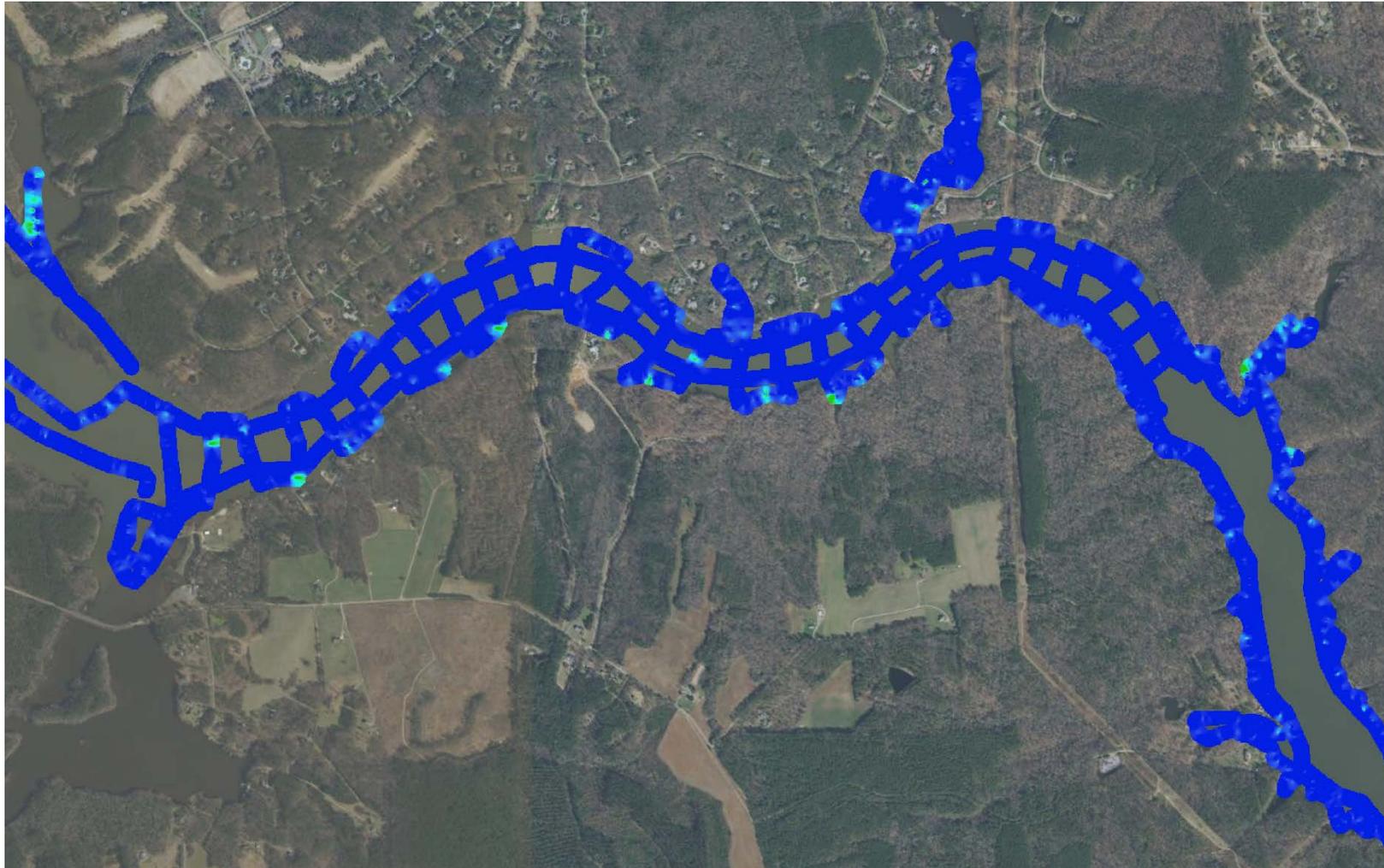
Biovolume vs Water Depth



Biobase processing indicated vegetation growth mostly at depths of <6 feet. Limited growth below 12 feet. May be seasonal or affected by water turbidity

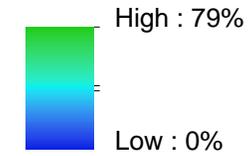
# Lake Chesdin Hydrilla Survey

## SONAR SURVEY BIOBASE RESULTS



Vegetation Biovolume

**Water Column %  
Vegetation**



# Lake Chesdin Hydrilla Survey

## AQUATIC VEGETATION SURVEY METHODOLOGY

Locations for the survey transferred to GPS enabled tablets running ESRI ArcCollector GIS software. Results were uploaded in real-time.

Survey conducted using systematic random sample point method.

- Standard rake toss equipment used to collect samples from 4 quadrants at each location. Plant species identification was performed by qualified biologists. Visual inspection using underwater camera was not possible due to turbid water.
- Presence of *Hydrilla* sp. was ranked as absent, sparse, common, and dense (0%, 1-33%, 34-66% and 67-100% of plant mass respectively)
- Individual plant species were identified

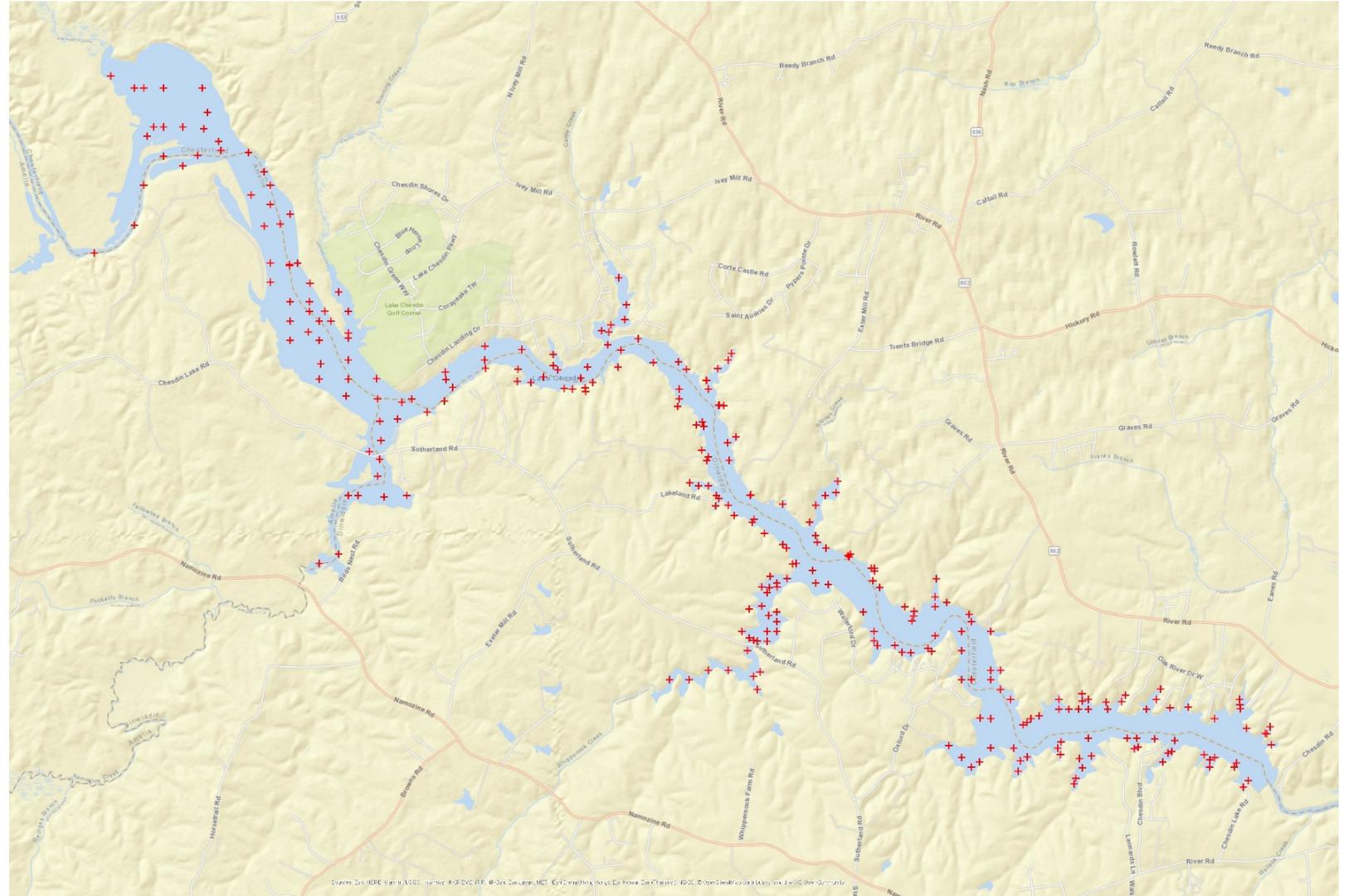
# Lake Chesdin Hydrilla Survey

## VEGETATION SURVEY

Approximately 280 vegetation survey locations identified.

Lower 6-mile region locations included areas identified from sonar survey and at water depths generally <12 feet. Survey efforts concentrated in coves and inlets, and regular spacing along exposed shoreline

Upper 7-mile region gridded on 800 foot spacing and included areas identified from sonar survey.



# Lake Chesdin Hydrilla Survey

## VEGETATION SURVEY OBSERVATIONS

176 locations surveyed successfully over 5 days. Strong currents, obstructions or shallow water limited surveys in some areas. Surveys supplemented with visual surveys and sonar.

*Hydrilla* sp. positively identified at 56 locations. 10 locations deemed “extensive” infestations (found in 3 or more quadrants). “Dense” samples collected within and adjacent to Nooning Creek.



Example of a “dense” record for *Hydrilla verticillata* on a rake toss.

# Lake Chesdin Hydrilla Survey

## VEGETATION SURVEY OBSERVATIONS

Free-floating *Hydrilla* sp. recorded at 10 locations.

Sources upstream or dislodged by high flows. Some of the “sparse” records may have been free floating hydrilla fragments and not rooted, growing plants. New growth was observed on free floating *Hydrilla* sp.



Free floating *Hydrilla verticillata* observed on surface of lake.

# Lake Chesdin Hydrilla Survey

## VEGETATION SURVEY OBSERVATIONS

*Hydrilla* sp. was commonly found in the upper reaches of coves, particularly coves fed by flowing creeks. Was common where recreational activities such as duck hunting and fishing occurred.

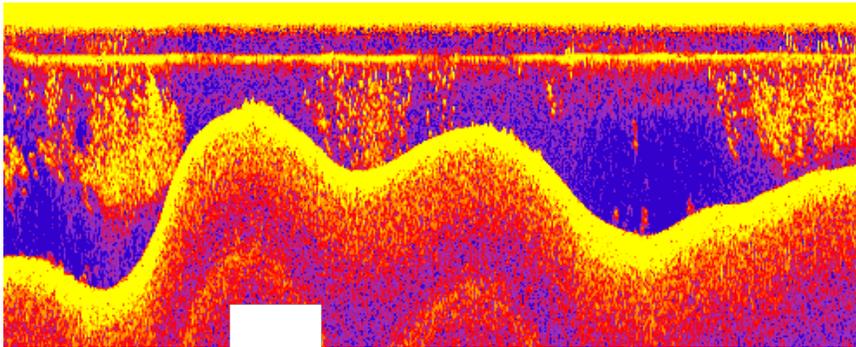
*Hydrilla* sp. was generally not present at water depths >10 feet (only found at 2 locations below 10 feet), relatively high water turbidity, moderate or high flow zones, and areas with limited boat access or traffic.



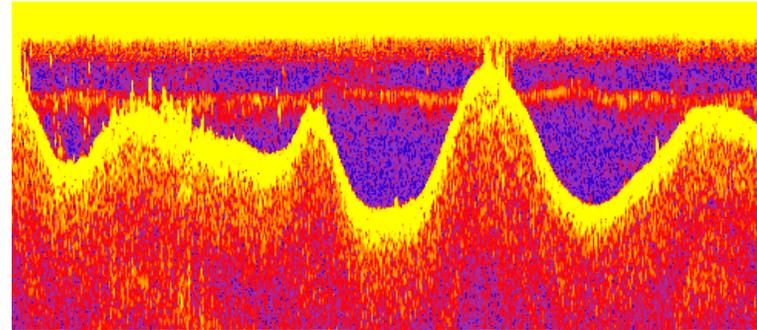
View of cove with *Hydrilla verticillata* present. Several other aquatic plants also present. Cove supplied by spring and upper impoundment.

# Lake Chesdin Hydrilla Survey

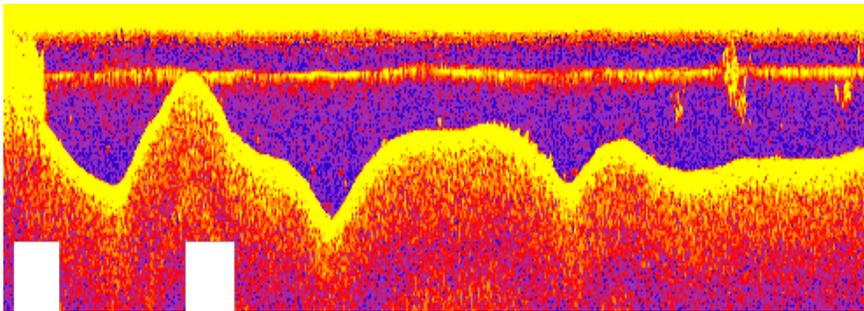
## SURVEY RESULTS - SONAR PROFILES AT LOCATIONS WITH *HYDRILLA*



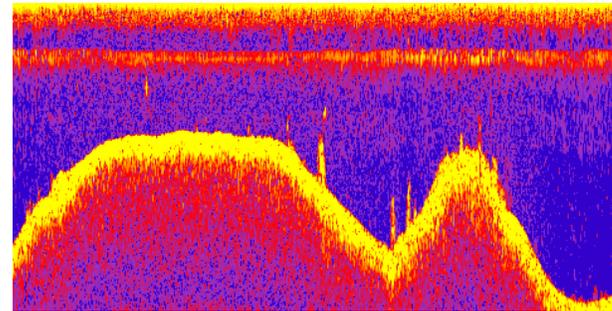
SP6 – sparse Hydrilla in one quadrant with Pond Weed.



SP54 – sparse Hydrilla in two quadrants



SP21 – sparse Hydrilla in one quadrant



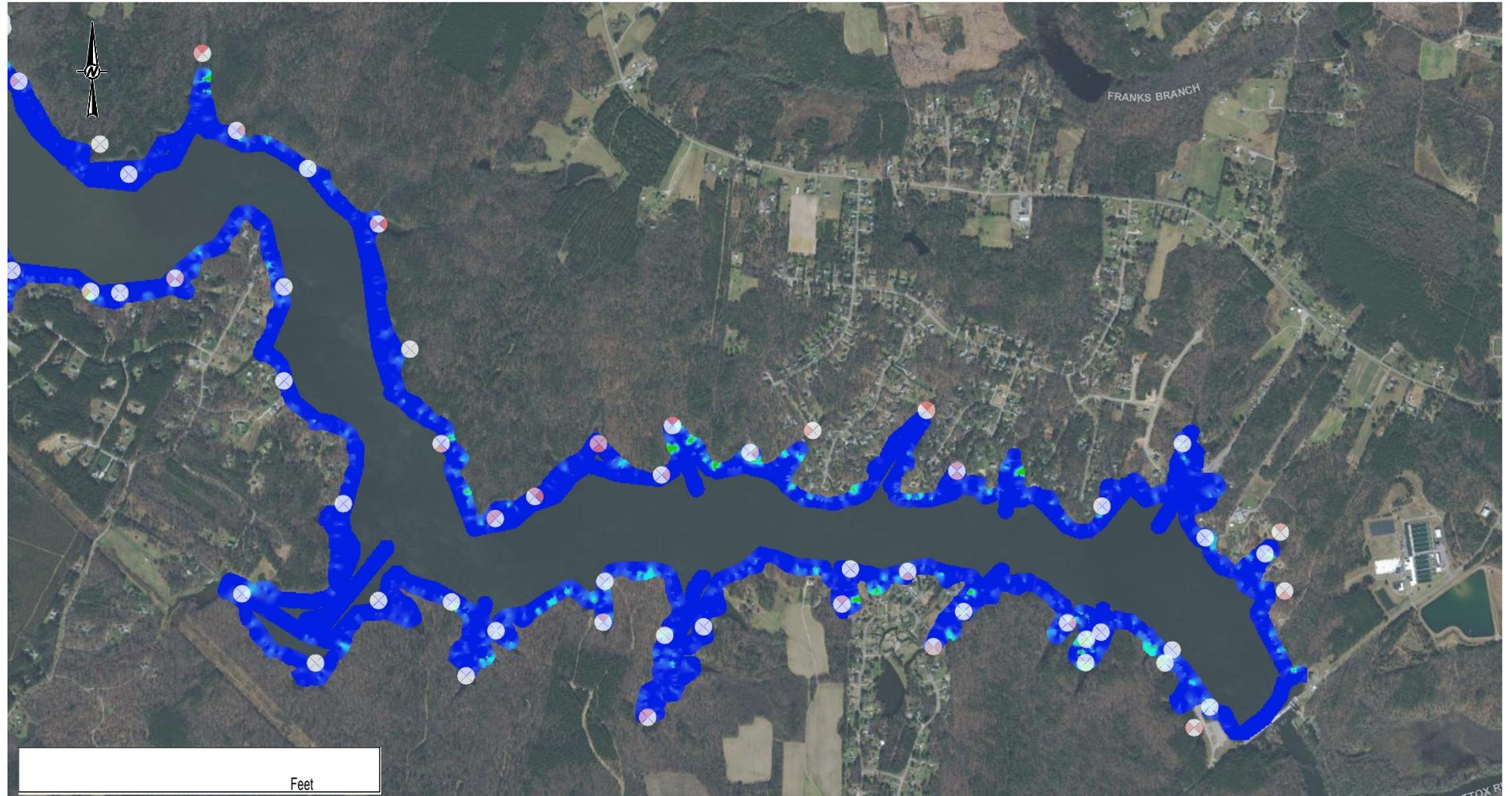
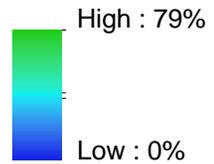
SP163 –common Hydrilla in one quadrant

# Lake Chesdin Hydrilla Survey

## SURVEY RESULTS

Lower Extent  
- East

**Legend**  
Water Column %  
Vegetation



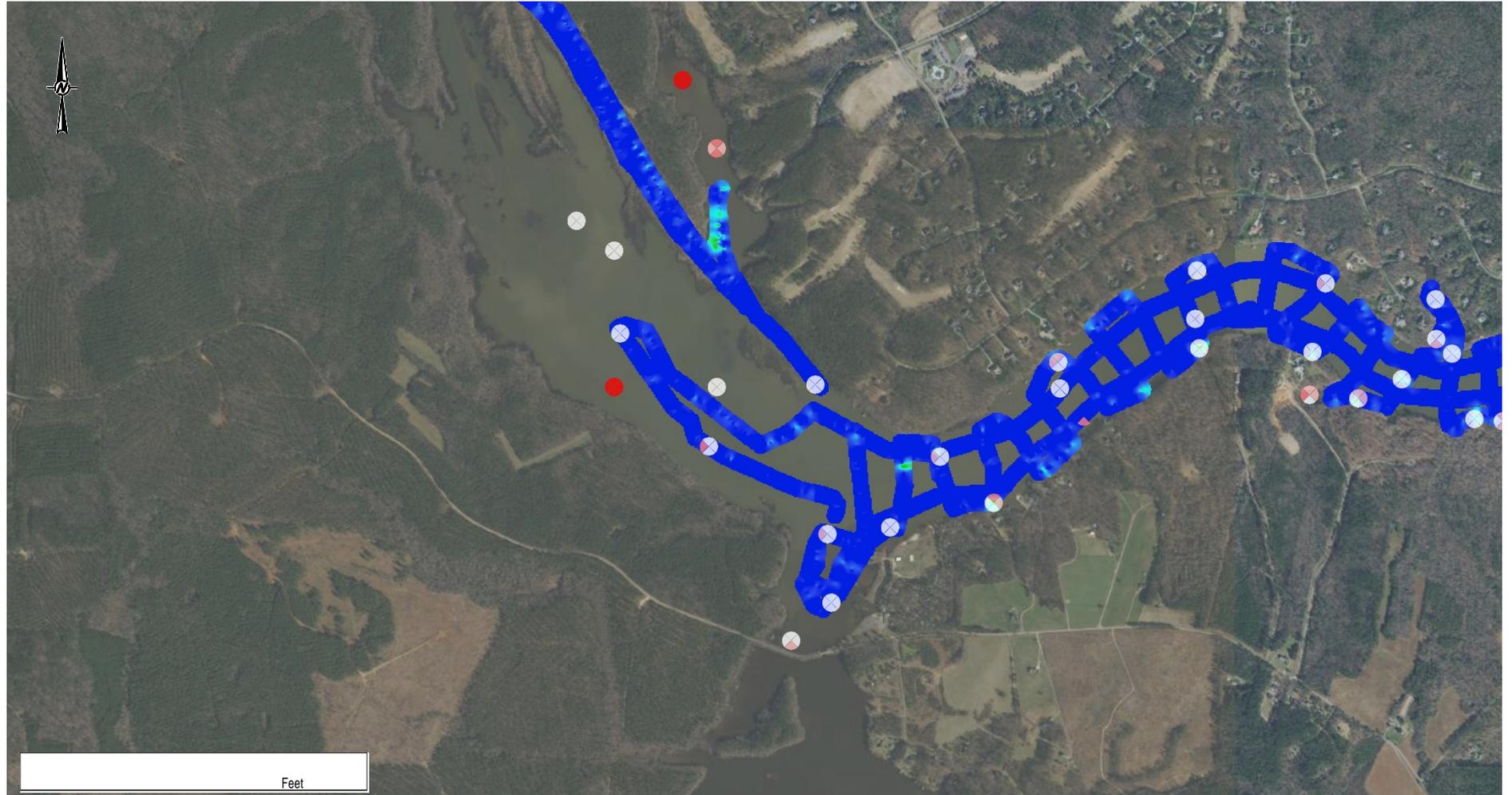
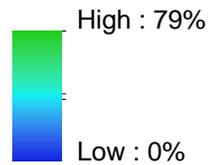
# Lake Chesdin Hydrilla Survey

## SURVEY RESULTS

Middle Extent -  
South

### Legend

Water Column %  
Vegetation



# Lake Chesdin Hydrilla Survey

## FINDINGS

*Hydrilla* sp. appears to be widely established.

From the rake toss survey, at locations where *Hydrilla* sp. was present, approximately 20% of the locations found *Hydrilla* sp. in 3 or more quadrants, indicating established communities. These locations were generally found at depths <6 feet. At the time of the survey, few locations appear to have dense or aerially extensive infestations.

Sonar survey identified large plants but was difficult to differentiate species. May be more useful during growing season.

*Hydrilla* sp. was present in previously treated areas. Live, free floating specimens were observed that could re-establish *Hydrilla* sp.

In the lower 6-mile section of the lake, *Hydrilla* sp. is established in shallow coves. The limited presence below water depths of 10 feet may be associated with turbidity.

In the upper 7-mile section, *Hydrilla* sp. is established in some coves, shoreline, and shallow areas but was not found in the main channel.

# Lake Chesdin Hydrilla Survey

## RECOMMENDATIONS

Eradication of *Hydrilla* sp. is likely not feasible.

Controls to preserve recreational activities and aesthetic standards for residents are likely practical.

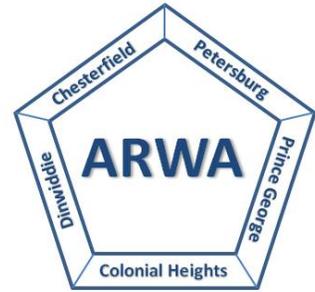
*Hydrilla* sp. should be re-evaluated during growing season and low turbidity to confirm results and to assess problem areas.

Develop a Management Plan. The plan may manage/maintain *Hydrilla* sp. in some areas to manage water quality.



- **Work Plan Summary/Update: January 1, 2019 to June 30, 2019**

Following is the ARWA Work Plan Summary/Update for January 1, 2019 to June 30, 2019



## Appomattox River Water Authority Executive Level Strategic Work Plan Summary/Update

*January 1, 2019 to June 30, 2019*

**Purpose:** Provide the Appomattox River Water Authority with a plan to ensure ongoing reliable service to Authority members.

This information is provided at the request of the Board and is intended to highlight critical activities that are planned and expected to be accomplished during the next six months. We realize that unplanned circumstances could occur that impact the Authority's financial capability to complete the tasks and projects, and are totally out of the control of Authority management. Projects are dependent on funding, engineering consultants and contractors.

**Overarching Goal:** The Authority will continue to expand as needed, operating and maintaining the water system in an efficient and economical manner consistent with good business, engineering and operating practices.

The Authority will provide safe, reliable drinking water, meeting or exceeding the Safe Drinking Water Act regulation standards.

### Strategic Framework

#### Vision

To serve our Members and be a recognized leader by providing exceptional water services.

#### Values

The Authority is committed to the following values:

- Integrity
- Teamwork
- Respect
- Quality

## **Mission**

Our team of professional and experienced employees serve our Members and the community by providing high quality water treatment in a financially and sustainable manner.

## **Interactions with the Board/Members/Member Staff:**

- Increase efforts to facilitating policy development;
- Continue to meet the diverse needs of Authority members;
- Continue to improve long-term planning strategies;
- Expand and explore opportunities to enable the Board to reach consensus more frequently on policy issues;
- Aggressively develop and present viable alternatives and/or solutions to the Authority members;
- Provide for advance discussions/notifications to members and their staff on items that significantly impact the future of the Authority;
- Keep open dialog with members on relevant and various issues.

## **Capital Projects:**

1. **Off-site Alternative Raw Water Supply Source ON-HOLD based on Board request**

### **In-Plant Capital Projects:**

1. February 2017: Issue RFP for Engineering Services towards the In-Plant upgrade project: Engineer of Record selected, presently in preliminary design on In-Plant Project upgrade. This project held a kick-off meeting on June 19<sup>th</sup>. Expect to advertise for project equipment procurement by September 2017 with design finished by mid-November 2017.  
*Final Design completed. Pre-Purchase of all project Pumps out for bid. Prequalification Process to be presented at January 18, 2018 Board Meeting. Expect construction bidding phase to occur from March to early April with contractor construction contract award at Special Board Meeting on April 26, 2018. Project construction phase expected to begin on April 27, 2018.*  
***Update: This phase of the project is COMPLETE.***
2. November/December: Hire Contractor: Most likely this timeline will be February/March 2018.  
***Update: Expected bidding phase: March to early April 2018. Expected contractor construction contract award on April 27, 2018. COMPLETED: Construction contract awarded in April and signed in May with MEB General Contractors.***
3. March/April 2018: Contractor mobilized  
***Update: In-Plant Project construction phase: June 2018-December 2019. Notice to proceed issued early June 2018.***

## **Administration:**

1. January 2019-May 2019: Develop, present, defend and issue a public notice on the proposed 2019/20 Operations & Maintenance Budget including Capital Projects. Member utility Directors were presented with the proposed FY 2019/20 budget on November 16, 2018: ***Budget Process Underway***
2. Implement updated ARWA Residential Irrigation Permits to be completed by June 30, 2019.

3. The Amended and Restated Unified Water Service Agreement and Amendment Four to the Water Service Agreement was developed and presented to the ARWA Board.

***Update: Three ARWA Member Governments have approved Amendment Four. The updated Water Service Agreement has been discussed in-depth with the member utility engineers. Both documents are available for Board review and approval at their discretion.***

**Virginia Pollution and Discharge Elimination System Permit (VPDES):**

Comply with Virginia Department of Environmental Quality requirements related to the updated facility Groundwater Quality Monitoring Plan

**VPDES Permit Action Item to be completed:**

The ARWA has submitted to the VA-DEQ Piedmont Regional Office a revised Groundwater Quality Monitoring (GQM) Plan. The revised GQM Plan included:

- (1) A site plan identifying all groundwater monitoring well locations (including any proposed wells to replace current wells), which may yield samples representative of actual aquifer conditions.
- (2) Well installation information, depth to screened intervals, boring logs, and other geotechnical information including a description of site geology and hydrology (i.e., potentiometric surface map) that supports the current (or proposed) monitoring well locations and installation depths.
- (3) An updated groundwater monitoring constituent list. Constituents included on this sampling list should be based on an evaluation of the liquids and solids entering the monitored units. The evaluation shall be submitted under separate cover and be based upon the sampling and process information of both liquids and solids entering the unit. Once an updated sampling list has been finalized, all future analytical results for any metals on the constituent list shall be provided in the form of total recoverable inorganics. The samples shall not be filtered in the field prior to analysis, and shall be sampled in accordance with an approved method under EPA's SW-846.
- (4) An updated methodology for comparing the analytical results of each sampling event against applicable groundwater protection standards set in this permit or the GQM Plan. This statistical analysis shall be performed by the permittee after each groundwater sampling event and shall be consistent with the approved method described in the GQM Plan.

The purpose of this plan is to determine if the system integrity is being maintained at the monitored unit boundary and to indicate if activities at the site are resulting in violations of the Board's Groundwater Standards. The approved plan is an enforceable part of the permit. Any changes to the plan must be submitted for approval to the DEQ Piedmont Regional Office and such plan must be amended or updated when requested by the DEQ Piedmont Regional Office or when new information or data requires amendment of the plan.

**ARWA has submitted to VA-DEQ a technically justified Groundwater Monitoring Plan as required by the VPDES permit and awaits VA-DEQ approval on this Plan. *The groundwater chemistry results on future groundwater monitoring related to the two process waste lagoons has the potential to lead to a capital upgrade project.***

**Facility Instrumentation/SCADA Upgrades (January 2019-June 30, 2019):** Continue the work of upgrading the filter gallery HMIs. This project is scheduled to be completed by May 2019.

**Facility Process Chemicals:** December 2018/January 2019-Issue annual IFB on all process chemicals and issue new 12 month chemical contracts upon receiving lowest outside bids.

## On-Going Department Goals

### **Administration/Accounting/Human Resources**

- Ensure compliance with all Federal/State/Local Income Tax Laws
- Ensure that accounting and inventory systems are kept up to date
- Work with managers/supervisors to monitor expenses and control costs
- Work with inventory clerks to improve cycle counting processing and inventory ordering

### **Maintenance Department:**

- Complete mechanical/electrical training for employees as needed
- Maintain schedule on preventive maintenance activities
- Ensure effective and rapid response on corrective actions towards equipment failures
- Maintain parts and equipment inventory in a cost effective manner

### **Laboratory Department:**

- Maintain Member's Safe Drinking Water Act/VDH analytical (THM/HAA) testing requirements
- Maintain Member's Safe Drinking Water Act/VDH bacterial testing requirements
- Maintain ARWA VDH process analytical testing requirements

### **Operations Department:**

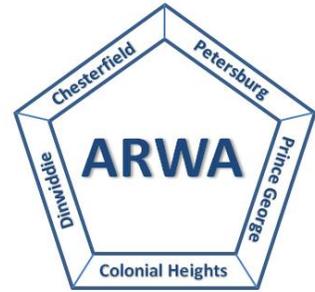
- Maintain water plant production at all times to meet member demands
- Maintain finished water quality to meet all Safe Drinking Water Act/VDH regulatory requirements
- Ensure all Operators maintain DPOR required annual training requirements
- Ensure all Operators continue to strive for Class 1 Waterworks Operator license
- Maintain Water Product Facility in a clean and orderly manner

### **IT/Instrumentation Office:**

- Ensure all process instrumentation is functional and accurate
- Ensure the Supervisory Control and Data Acquisition System is functioning to enable Operations Department to operate the process control equipment
- Replacement of 1960's instrument equipment with 2018/19 HMI screens and connection into SCADA.  
***Update:*** July 1, 2018 to December 31, 2018: ***HMI Upgrade project presently underway with instrumentation consultant completing HMI equipment installation. Project scheduled to be completed by May 2019.***

- **Presentation of Proposed FY 2019/20 Operating Budget**

Following is a memo and presentation of the Proposed FY2019/20 Operating Budget



## MEMORANDUM

**TO: APPOMATTOX RIVER WATER AUTHORITY  
BOARD OF DIRECTORS**

**FROM: ROBERT C. WICHSER, EXECUTIVE DIRECTOR  
JAMES C. GORDON, ASSISTANT EXECUTIVE DIRECTOR**

**SUBJECT: FISCAL YEAR 2019-2020 PROPOSED BUDGET**

**DATE: JANUARY 16, 2019**

We are pleased to present to you the Appomattox River Water Authority fiscal year 2019-2020 proposed budget for your review and consideration. The Board is not requested to approve at today's meeting the proposed budget; however, we request that you review and advise staff to ready the proposed budget to advertise for a public hearing at the March 21, 2019 Board Meeting by the required 14-day period in advance of the scheduled public hearing. Any Board requested changes to the proposed budget can be made on or before the May 16, 2019 Board Meeting where you will approve the budget.

A review of the proposed budget changes follows for your consideration.

Cost items increasing are:

- Hospitalization Insurance: \$90,000 (The 2018-19 Health Insurance was higher than budgeted; the 2019/20 proposed budget adjusts for this deficit plus an additional ten percent due to expected health insurance premium increases.)
- Contractual Services: \$267,000 (Mainly due to transferring the Reservoir Studies and Reservoir Management/Invasive Control Program (\$250,000) from Replacement Fund to O&M based on Accountant's placement)
- Other Charges: Electricity-Pumping: \$25,000
- Repair & Maintenance-Shop: \$25,000

Cost items reducing are:

- Other Consulting Services: \$25,000
- Small Equipment Purchases: \$10,000
- Equipment Parts: \$5,000

### **Debt Service:**

2012 & 2017 bond debt service will be covered from the base rate in FY 2019/20.

FY 2019/20 Bond payments are set at \$2,141,175, with the new "In-Plant" project costing \$1,080,116

### **Reserve Fund:**

FY 2019/20 reserve contributions will be covered from the base rate. The total to be funded is \$188,750 which is a \$19,056 increase over FY 2018/19 funding.

### **Salaries & Wages:**

It is important to understand the maintenance and operations of our wastewater infrastructure, not only by implementing the latest technologies, but also by continuing to invest in a skilled workforce. Thus we are requesting a performance based salary increase up to four percent (4%). As you are aware, a significant portion of the Authority's workforce will exit the field in the next three to five years (Hazen and Sawyer Merger Analysis), depleting the pool of experienced certified and licensed professionals. The job sector in the wastewater field is necessitating a more skilled workforce. The upcoming retirement of experienced Operators and Maintenance staff who can train new personnel further exacerbates the problem. Competition will continue for certified and licensed employees between other local utilities and will force the Authority to make cost related decisions to attract and retain new employees. We must continue to invest in our skilled employees and maintain market competitive salaries.

As part of staff's annual performance evaluation, each employee will be reviewed and rated in May 2019 on the following elements:

- Knowledge & Ability
- Productivity
- Initiative
- Interpersonal Relationships
- Time Management
- Communication
- Attendance
- Judgment
- Adaptability
- Meeting defined goals

An average employee would receive a 2% salary increase with only the higher scoring employees eligible for a higher increase. Non-performing employees will receive less than 2% with certain employees with a lower score being placed into a required performance improvement probation period.

### **Replacement Fund**

The Replacement Fund is being decreased from \$784,000 to \$768,000 (decrease of \$16,000). The following additions and/or adjustments have been made:

- Addition of \$30,000 to cover replacement of worn polymer chemical feed equipment

- \$30,000 for mandatory Verizon modem upgrade
- Replacement of aged vehicles: \$105,000
- Addition of \$130,000 for needed forklifts
- Critical valve replacements: \$100,000
- Prince George Meter Vault upgrade: \$30,000
- Matoaca Meter & Meter Box: \$125,000

**Construction Fund**

The Construction Fund (Capital Projects) supports the implementation of the May 2016 Board approved “In-Plant” project (Upgrades to: Finished Water Pump Station No. 1, Raw Water Pump Station No. 1, Raw and Finished Water Pump Station electrical upgrades, and a new Emergency Generator) with a ninety-percent design cost estimate at \$13.5M by the Engineer. Contractor/equipment manufacturer payment impacts during the FY 2019/20 budget year are expected to be approximately \$3,104,000.

**Rate Consideration:**

As you reflect on the below proposed rate changes for 2019/20, consider the following suggested ARWA wholesale rate table below showing the proposed changes:

<b>ARWA Member</b>	<b>FY2018/19</b>	<b>Proposed FY2019/20</b>	<b>Proposed % Rate Diff / \$ Diff</b>
Chesterfield	0.9637	0.9797	1.66 /\$326,646
Colonial Heights	0.9878	1.0083	2.08 /\$9,334
Dinwiddie	1.4349	1.4522	1.21 /(8,238)
Petersburg	0.9601	0.9760	1.66 /\$39,554
Prince George	1.3733	1.3698	-0.26 /\$12,414

**BOARD ACTION REQUESTED:**

No budget approval action is required by the Board at this time. Board approval to advertise the 2019-2020 proposed budget is requested. The public hearing on the proposed budget will be at the March 21, 2019 Board of Directors meeting (to be held at SCWWA). Final Board action on budget approval is scheduled to be taken at the May 16, 2019 ARWA Board of Directors meeting (to be held at ARWA). Any budget changes or edits required or requested by the Board can be taken before or during the May Board of Directors meeting.

**APPOMATTOX RIVER WATER AUTHORITY**

Proposed: January 16, 2019

Approved:

**PROPOSED OPERATION & MAINTENANCE BUDGET 2019/2020**

	2018/2019 Budget	2019/2020 Budget	Increase/ (Decrease) FY18/19 to FY19/20	Change
				Reason for Changes
<b>O&amp;M EXPENSES</b>				
<b>41000 · Salary</b>	<b>\$1,655,000</b>	<b>\$1,700,000</b>	<b>\$45,000</b>	Includes 4% Performance Based merit increase.
<b>42000 · Employee Benefits</b>	<b>\$723,100</b>	<b>\$747,600</b>	<b>\$24,500</b>	Primarily the increase is due to Anthem Blue Cross Blue Shield Health Insurance Increase. The Health Insurance for FY18-19 was higher than budgeted so the FY19-20 budget factors that increase plus an additional 10%
42100 · Employer FICA	\$123,000	\$125,000		
42200 · Virginia Retirement System	\$96,000	\$97,500		
42210 · Deferred Comp 457	\$6,300	\$6,300		
42300 · Hospitalization Insurance	\$400,000	\$490,000		
42400 · VRS Group Life Insurance	\$21,300	\$21,300		
42500 · Group Term Life	\$2,000	\$2,000		
42600 · Unemployment Insurance	\$0	\$0		
42800 · Employee Promotions	\$3,500	\$3,500		
42900 · Other Fringe Benefits - EAP	\$2,000	\$2,000		
42950 · OPEB Health Insurance Adj	\$69,000	\$0		
42952 · Net Pension Adjustment				
<b>43000 · Contractual Services</b>	<b>\$937,500</b>	<b>\$1,204,500</b>	<b>\$267,000</b>	
43121 · Auditing Services	\$8,000	\$8,000		
43122 · Accounting Services	\$9,000	\$14,000		
43130 · Legal/Engineering and Reservoir Studies		\$100,000		
43140 · Consulting Engineers	\$75,000	\$75,000		
43150 · Legal Services	\$75,000	\$100,000		
43152 · Medical - Testing	\$2,500	\$7,500		
43155 · Other Consulting Services	\$50,000	\$25,000		
43156 · Admin and Maintenance Svc-SCWWA	\$5,000	-\$37,000		
43160 · Trustee Services	\$7,500	\$9,500		
43162 · Bank Service Charges	\$2,500	\$2,500		
43170 · Research	\$17,500	\$17,500		
43180 · Potable Water Contract	\$500,000	\$500,000		
43190 · Samples and Tests	\$25,000	\$48,500		
43200 · Lake Patrol	\$4,000	\$4,000		
43201 · Reservoir Management - Invasive Control Program		\$150,000		

**APPOMATTOX RIVER WATER AUTHORITY**

Proposed: January 16, 2019

Approved:

**PROPOSED OPERATION & MAINTENANCE BUDGET 2019/2020**

	Change			Reason for Changes
	<u>2018/2019</u> Budget	<u>2019/2020</u> Budget	<u>Increase/ (Decrease)</u> FY18/19 to FY19/20	
43210 · Software Support	\$20,000	\$20,000		
43220 · VPDES Permit Fee	\$500	\$10,000		
43310 · Repair Services	\$50,000	\$40,000		
43320 · Service Contracts	\$50,000	\$75,000		
43500 · Printing and Binding	\$1,000	\$0		
43600 · Grounds Maintenance	\$35,000	\$35,000		
<b>45000 · Other Charges</b>	<b>\$1,017,600</b>	<b>\$1,051,600</b>	<b>\$34,000</b>	
45110 · Electricity - Pumping	\$450,000	\$475,000		
45111 · Electricity - Purification	\$270,000	\$270,000		
45120 · Heating Fuel	\$100,000	\$100,000		
45130 · Trash Pickup	\$4,000	\$5,000		
45210 · Postal Services	\$2,200	\$2,200		
45220 · Freight	\$12,000	\$15,000		
45230 · Telecommunications	\$25,000	\$30,000		
45308 · General Liability Insurance	\$90,000	\$90,000		
45410 · Lease/Rent of Equipment	\$20,000	\$20,000		
45530 · Meals and Lodging	\$10,000	\$10,000		
45540 · Education and Training	\$16,400	\$16,400		
45550 · Safety Supplies	\$18,000	\$18,000		
<b>46000 · Materials and Supplies</b>	<b>\$2,764,000</b>	<b>\$2,771,000</b>	<b>\$7,000</b>	
46001 · Office Supplies	\$12,000	\$12,000		
46004 · Laboratory Supplies	\$74,000	\$74,000		
46005 · Purification Chemicals	\$2,300,000	\$2,300,000		
46006 · Purification Process and Janitorial Supplies	\$15,000	\$12,000		
46007 · Repair & Maint Supplies-Shop	\$150,000	\$175,000		
46008 · Vehicle and Equipment Fuels	\$20,000	\$20,000		
46009 · Vehicle and Equipment Supplies	\$10,000	\$13,000		
46010 · Equipment Parts and Small Equipment Purchases	\$65,000	\$60,000		
46011 · Uniforms	\$8,000	\$8,000		
46012 · Dues and Subscriptions	\$25,000	\$22,000		
46014 · Repair & Maint Supplies-IT	\$65,000	\$65,000		
46015 · Small Equipment Purchases	\$10,000	\$0		

**APPOMATTOX RIVER WATER AUTHORITY**

Proposed: January 16, 2019

Approved:

**PROPOSED OPERATION & MAINTENANCE BUDGET 2019/2020**

	<u>2018/2019</u> Budget	<u>2019/2020</u> Budget	Change	
			Increase/ (Decrease) FY18/19 to FY19/20	Reason for Changes
46016 - Operations Supplies and Maintenance	\$10,000	\$10,000		
<b>Total Operating Expenses</b>	<b>\$7,097,200</b>	<b>\$7,474,700</b>	<b>\$377,500</b>	\$250,000 is due to reallocation of studies from Replacement to O&M expenses (contractual services).
<b>58000 - Equipment Replacement</b>	<b>\$784,000</b>	<b>\$768,000</b>	<b>(\$16,000)</b>	
Debt - 2010 Issue	\$759,778	\$759,123	(\$655)	
Debt - 2012 Issue	\$302,020	\$301,936	(\$84)	
Debt - 2017 Issue	\$1,080,225	\$1,080,116	(\$109)	
<b>Total Debt</b>	<b>\$2,142,023</b>	<b>\$2,141,175</b>	<b>(\$848)</b>	
<b>Reserve Fund</b>	<b>\$169,694</b>	<b>\$188,750</b>	<b>\$19,056</b>	
<b>Total Expenses</b>	<b>\$10,192,916</b>	<b>\$10,572,625</b>	<b>\$379,709</b>	

**APPOMATTOX RIVER WATER AUTHORITY  
Replacement Fund Budget - 58000**

**FY19/20**

Acct#	Proposed FY ITEM	Budget 18/19	Proposed Budget 19/20	INFORMATIONAL & PLANNING				Totals
				20/21	21/22	22/23	23/24	
<b>58010 - Machinery and Motors</b>	Emergency/ Miscellaneous Repairs	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 600,000
	Flocculation Spare Parts	\$ 45,000						\$ 45,000
	HVAC Replacement		\$ 15,000					\$ 15,000
	Dual Polymer Feed System		\$ 30,000					\$ 30,000
	Filter 1-16 flow meter upgrade		\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000		\$ 60,000
	Exterior Actuators	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 90,000
<b>58020 - Instrumentation</b>	Verizon RTU modem mandatory upgrade		\$ 30,000					\$ 30,000
	YSI ProDSS Meter and Sonde		\$ 10,000					\$ 10,000
	Chesdin East PLC Swap Out		\$ 12,000					\$ 12,000
	Replacement AA			\$ 24,000				\$ 24,000
<b>58030 - SCADA</b>	Replace and move existing LAN Panel	\$ 35,000						\$ 35,000
	SCADA Server Upgrade (3)	\$ 15,000						\$ 15,000
	SCADA/Network Master Plan Development	\$ 15,000						\$ 15,000
<b>58040 - Computer Equipment</b>	Replacement Computers	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 60,000
<b>58050 - Furniture and Fixtures</b>	Upgrade Facility Lighting	\$ 6,000	\$ 6,000	\$ 6,000	\$ 6,000	\$ 6,000	\$ 6,000	\$ 36,000
<b>58060 - Motor Vehicles</b>	Reservoir Sampling work boat	\$ 28,000						\$ 28,000
	2003 Maintenance Supervisors 4x4		\$ 35,000					\$ 35,000
	2005 Lab Ford Explorer		\$ 35,000					\$ 35,000
	Fleet 4dr 4x4 (Replace 1998 GMC)		\$ 35,000					\$ 35,000
	Fork Lift - small telescopic		\$ 45,000					\$ 45,000
	4dr 4x4 Pick Up				\$ 40,000	\$ 40,000	\$ 40,000	\$ 120,000

	Telescopic forklift		\$ 85,000						\$ 85,000
	Tractor 50 hp					\$ 50,000			\$ 50,000
<b>58070 - Special Studies</b>	Groundwater Quality Monitoring Plan	\$ 200,000							\$ 200,000
	Legal/Engineering analysis and studies	\$ 200,000	\$ -						\$ 200,000
<b>58090 - Construction</b>	Valve Replacement	\$ 50,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 550,000
	PG Meter Vault Upgrade (16")		\$ 30,000						\$ 30,000
	General Concrete Repairs	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 150,000
	Chesdin East Flow Meter Upgrades (16" and 30")	\$ 40,000							\$ 40,000
	Install Bollards and Security Fences at Remote Sites		\$ 10,000						\$ 10,000
	Matoaca Meter and Meter Box		\$ 125,000						\$ 125,000
	Replacement of Single pane windows				\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 300,000
<b>TOTALS:</b>		\$ 784,000	\$ 768,000	\$ 295,000	\$ 411,000	\$ 461,000	\$ 396,000	\$ 3,115,000	

NOTE: FY 19/20 TO BE APPROVED WITH BUDGET

**Construction Fund (Capital Projects)  
FY19/20**

ITEM	Budget 18/19	Proposed Budget 19/20	INFORMATIONAL & PLANNING							Totals	>10 years
			20/21	21/22	22/23	23/24	24/25	25/26	26/27		
Finished Water Pump Stations No. 1 Upgrade - see note 2	\$ 3,886,983	\$ 3,886,983								\$ 7,773,965	
Raw Water Pump Station No. 1 Upgrade - see note 2	\$ 2,321,263	\$ 2,321,263								\$ 4,642,525	
Clearwell #4										\$ -	\$ 8,750,000
PAC Feed System						\$ 2,500,000				\$ 2,500,000	
Transmission Main - Chesdin Rd. to Pickett Rd							\$ 400,000	\$ 9,969,000		\$ 10,369,000	
Transmission Main - Pickett Ave. to Matoaca Tank							\$ 400,000	\$ 9,969,000		\$ 10,369,000	
Transmission Main - Matoaca Tank to Branders Bridge							\$ 500,000	\$ 11,446,000		\$ 11,946,000	
Transmission Main - Branders Bridge to Lakeview							\$ 200,000	\$ 3,326,000		\$ 3,526,000	
<b>Totals</b>	\$ 6,208,245	\$ 6,208,245	\$ -	\$ -	\$ -	\$ 2,500,000	\$ 1,500,000	\$ 34,710,000	\$ -	\$ 51,126,490	

NOTE:

1) The above items for information only. Approval required from BOD at time of project award.

2) Bond Funding will be required for these Proposed Capital Project.

**Revenues**

**Appomattox River Water Authority**

FY Budget Year

**2019/2020**

Proposed

Jan. 16, 2019

Adopted

Revised

	<u>Chesterfield</u>	<u>Colonial Heights</u>	<u>Dinwiddie</u>	<u>Petersburg</u>	<u>Prince George</u>	<u>Total</u>
<b>1) Operations and Maintenance Base Rate</b>						
<b>O&amp;M Rate</b>						
	<b>\$/1000 gallons</b>	<b>\$ 0.9760</b>	<b>\$ 0.9760</b>	<b>\$ 0.9760</b>	<b>\$ 0.9760</b>	<b>\$ 0.9760</b>
Estimated (\$/quarter)	\$ 1,811,942	\$ 150,678.97	\$ 102,187	\$ 422,480	\$ 61,791	\$ 2,549,078.27
Total annual allocation	\$ 7,247,767	\$ 602,716	\$ 408,747	\$ 1,689,919	\$ 247,164	\$ 10,196,313
% of flows	71.08%	5.91%	4.01%	16.57%	2.42%	100.00%
Estimated (mgd)	20.344	1.692	1.147	4.744	0.694	28.621
Calc. annual usage (bg)	7.426	0.618	0.419	1.731	0.253	10.447
O&M =	\$ 7,474,700	Replacement \$ 768,000	54.38% 2010 Debt (maintenance)	\$ 412,811		
Int./Misc. Income	\$ 30,000	100% 2012 Debt \$ 301,936	100% 2017 Debt \$ 1,080,116	Reserve Funding	\$188,750	
<b>BASE RATE</b>	<b>\$/1000gals</b>	<b>\$ 0.9760</b>	<b>\$ 0.9760</b>	<b>\$ 0.9760</b>	<b>\$ 0.9760</b>	
<b>2) Expansion Rate</b>						
<b>Bonds</b>	% Financed					
Rate (cents/1000 gals)		\$ 0.0037	\$ 0.0323	\$ 0.4762	\$ -	\$ 0.3937
2010 expansion (\$/year)	45.62%	\$ 27,255	\$ 19,948	\$ 199,406	\$ -	\$ 99,703
% allocation		7.87%	5.76%	57.58%	0.00%	28.79%
FY19/20 Bond Payments	2010 =	\$ 759,123				
<b>TOTAL DEBT SERVICE RATE</b>	<b>\$/1000 gals</b>	<b>\$ 0.0037</b>	<b>\$ 0.0323</b>	<b>\$ 0.4762</b>	<b>\$ -</b>	<b>\$ 0.3937</b>
	\$/year	\$ 27,255	\$ 19,948	\$ 199,406	\$ -	\$ 99,703
<b>3) Total Rate</b>						
<b>TOTAL RATE (BASE + EXPANSION)</b>	<b>\$/1000gals</b>	<b>\$ 0.9797</b>	<b>1.0083</b>	<b>1.4522</b>	<b>0.9760</b>	<b>1.3698</b>
Estimated annual charges	\$/year	\$ 7,275,021	\$ 622,663	\$ 608,154	\$ 1,689,919	\$ 346,867
<b>4) Budget Comparison (see note 1)</b>						
Proposed FY19/20 Total Rate	\$/1000 gals	\$ 0.9797	\$ 1.0083	\$ 1.4522	\$ 0.9760	\$ 1.3698
Approved FY 18/19 Total Rate	\$/1000 gals	\$ 0.9637	\$ 0.9878	\$ 1.4349	\$ 0.9601	\$ 1.3733
<b>Total Rate Difference</b>	<b>\$/1000 gals</b>	<b>0.0160</b>	<b>0.0206</b>	<b>0.0173</b>	<b>0.0159</b>	<b>(0.0035)</b>
<b>Total Rate Difference</b>	<b>%</b>	<b>1.66%</b>	<b>2.08%</b>	<b>1.21%</b>	<b>1.66%</b>	<b>-0.26%</b>
Proposed FY19/20 Revenues	\$/year	\$ 7,275,021	\$ 622,663	\$ 608,154	\$ 1,689,919	\$ 346,867
Total FY18/19 Approved Budget	\$/year	\$ 6,948,376	\$ 613,330	\$ 616,392	\$ 1,650,365	\$ 334,454
<b>Annual Cash Difference</b>	<b>\$/year</b>	<b>\$ 326,646</b>	<b>\$ 9,334</b>	<b>\$ (8,238)</b>	<b>\$ 39,554</b>	<b>\$ 12,414</b>
<b>Annual Revenue Difference</b>	<b>%</b>	<b>4.70%</b>	<b>1.52%</b>	<b>-1.34%</b>	<b>2.40%</b>	<b>3.71%</b>
FY 19/20 Expenses	\$	10,572,625	FY 19/20 Income Revenue	\$	10,572,625	

**NOTES:**

1) FY18/19 comparison numbers are based on the true-up recommendations presented at the October 18, 2018 Board of Directors meeting. The recommendation was to true-up the current rates by moving the 2012 and 2017 debt service into the base rate. The reserves for FY18/19 would remain distributed as plant allocation.

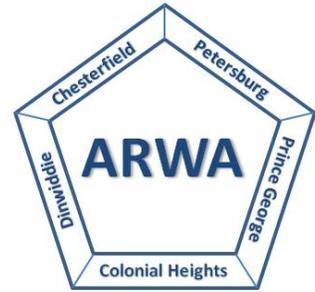
**Reserve Policy: Appomattox River Water Authority FY19/20**

Reserve Fund Calculation (year 4 of 5)

ARWA O&M Budget	Reserves as of 6/30/2018	Revenue for FY2017/2018	Total expected reserves on 6/30/2018	Recommended 50% O&M Reserves	Annual Charge to achieve 50% Reserves
\$7,474,700	\$2,438,906	\$169,694	\$3,548,600	\$3,737,350	\$188,750

- **Presentation/Approval of Additional In-Plant 2017 Bond Funded Projects**

Following is a memo and list of Proposed Additional In-Plant 2017 Bond Funded Projects for your review and approval.



## MEMORANDUM

**TO: APPOMATTOX RIVER WATER AUTHORITY  
BOARD OF DIRECTORS**

**FROM: ROBERT C. WICHSER, EXECUTIVE DIRECTOR  
JAMES C. GORDON, ASSISTANT EXECUTIVE DIRECTOR**

**SUBJECT: IN-PLANT PROJECTS APPLIED TO REMAINING 2017 BOND FUNDS**

**DATE: JANUARY 16, 2019**

Based on the Board of Directors approval and award of the lowest submitted project bid by MEB Contractors in March 2018, which also included a project contingency fund, there still remained \$2,233,469 from the December 2017 Bond fund to be considered towards additional In-Plant projects.

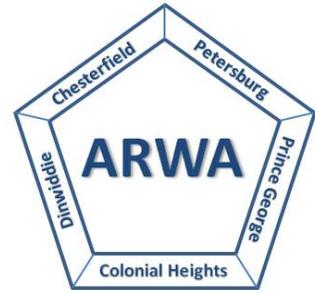
ARWA In-Plant improvements are defined in the Bond documents as “related to maintenance and improvement of ARWA’s water treatment and distribution system, including finished water system improvements and raw water system improvements.”

The 2017 Bond Transcript Documents state in Document 14 (Non-Arbitrage Certificate and Tax Compliance Agreement), in Section 2.9, under Expenditure, Time and Due Diligence Tests, that “Proceeds are expected to be expended in full by December 31, 2020”. Based on this narrative, the Authority has discussed in detail with its Trust Engineer, Managers and Directors additional In-Plant projects that would protect the water plant’s production output reliability in supporting the member’s requirements for safe, reliable drinking water in meeting their customer’s demands.

The following page presents the additional In-Plant projects that we are recommending to the Board for their approval to implement and complete by December 31, 2020. The remaining reserve of \$153,469 will be utilized as needed as actual project costs are incurred.

### **BOARD ACTION REQUESTED:**

Staff requests that the Board of Directors approve the recommended additional 2017 Bond In-Plant projects to be completed by December 31, 2020.



## Planning Level Cost Estimates January 2019

### Water Plant Proposed Additional 2017 Bond Funded Projects

➤ All Projects Below to be Completed by December 31, 2020

#### Process Equipment & Energy Conservation

- ARWA New Hypochlorite Tank (8,000 gallons min): \$125,000
- Exterior Actuators: \$30,000
- Upgrade Power Quality Meters: \$50,000
- Raw Pump Station No. 1 Subsurface Bar Screen: \$100,000
- Pre 2003 Motor Control Center Upgrade: \$350,000
- Move Pre-Chem Building Electrical Feed out of Tunnel with Water Seepage: \$250,000
- Install Chesdin East/West Exterior Interconnect 36" + 42" Meters: \$375,000
- Upgrade Bus Differential Relays: \$35,000

#### PLC & Software Upgrades:

- Rapid Mix Programmable Logic Controller replacement: \$80,000
- Ammonia Programmable Logic Controller replacement: \$80,000
- Pre-Chem Programmable Logic Controller replacement: \$80,000
- Finished Water Pump Station 2 Programmable Logic Controller Upgrade: \$80,000
- Raw Water Pump Station 2 Programmable Logic Controller Upgrade: \$80,000
- Conversion to GE I - Fix Software: \$250,000
- Blower Programmable Logic Controller: \$50,000

#### Miscellaneous Facility Improvements

- Roof Installation over Chlorine Dioxide Tank Farm: \$35,000
- Server Room Improvements: \$15,000
- Break Room Improvements: \$10,000

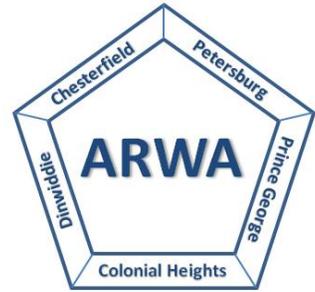
Total: \$2,080,000

Budget Option B: \$2,233,469 - \$2,080,000 = \$153,469 reserve

Note: All estimates are planning level costs (+/- 35%) subject to change based on actual costs.

- **Status Report: Ongoing Projects / Operations / Financials**

Following are status reports concerning the Ongoing Projects, Operations, and Financials for the ARWA.



## MEMORANDUM

**TO: APPOMATTOX RIVER WATER AUTHORITY: BOARD OF DIRECTORS**

**FROM: ROBERT C. WICHSER, EXECUTIVE DIRECTOR  
JAMES C. GORDON, ASSISTANT EXECUTIVE DIRECTOR**

**SUBJECT: STATUS REPORT – ON-GOING PROJECTS**

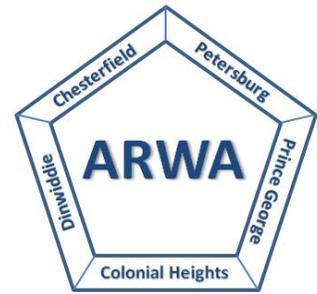
**DATE: JANUARY 16, 2019**

The following projects are underway. This report includes sections on Capital projects and large replacement projects.

### In-Plant Capital Projects:

- Construction is ongoing, predominantly at Raw Water Pump Station No. 1 and electrical work at Finished Water Pump Station No. 1.
- The generator pad was poured the first week of January 2019.
- A construction meeting was held on January 3, 2019.
- We encouraged the contractor to proceed this month with replacing pump discharge valves on a priority basis.
- Wet weather has been hindering excavation operations.
- The switchgear building is constructed, interior work is beginning.

# Appomattox River Water Authority



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21300 Chesdin Rd. - S. Chesterfield, VA 23803 - Phone (804) 590-1145 - Fax (804) 590-9285

## MEMORANDUM

**TO: APPOMATTOX RIVER WATER AUTHORITY BOARD OF DIRECTORS**

**FROM: ROBERT C. WICHSER, EXECUTIVE DIRECTOR  
JAMES C. GORDON, ASST. EXECUTIVE DIRECTOR**

**SUBJECT: OPERATING AND FINANCIAL STATUS REPORT**

**DATE: JANUARY 16, 2019**

### Operating Status Report

#### General:

- The next scheduled Board of Directors Meeting is **Thursday March 21, 2019** at the South Central Wastewater Authority at 2:00 pm.
- The Authority Trust Engineer has completed the Annual Maintenance Inspection. Results have been reviewed with Authority staff.
- The Hydrilla survey is complete.
- 2018 W-2s have been prepared and distributed.

#### Operations:

- Finished water met all permit requirements for 2018. Copies of the VDH monitoring reports are available if anyone would like to see them.
- The State Health Department was onsite on December 19th to perform a routine inspection. There were no issues.
- Staff is in communication with Calgon Carbon to schedule our Granular Activated Carbon (GAC) Caps exchange of 1/3<sup>rd</sup> of our filters with regenerated GAC.

#### Maintenance:

- Staff is inspecting Raw Water P20 for vibration alarms.
- Works continues on replacing the transmission ARVs.
- Staff is replacing a 4" chemical makeup water line in Pre-Chem.
- Collecting quotes for updating the fence on the Dinwiddie Side of Brasfield Dam.

#### Instrumentation/IT:

- Staff is investigating issues with alum feed pump 1 and 2 flow meters
- Scheduling the upgrade to the electronics and heaters in RW generator.
- Corrected RTU communication issues to improve stability of the data.

**Laboratory:**

- Communicating with DEQ regarding an update on the Authority's Groundwater Monitoring Plan.
- Preparing data for Consumer Confidence Reporting to our members.

**Financial Status Report:**

Following is the Executive Summary of the Monthly Financial Statement that includes the YTD Budget Performance and the Financial Statement for December 2018.

**Appomattox River Water Authority-Balance Sheet**  
For Month Ending December 31, 2018

**Assets**

**Current Assets**

Petty Cash	\$	400
SunTrust Operating Fund	\$	1,612,932
SunTrust Replacement Fund	\$	-
<b>Total Unrestricted Cash</b>	<b>\$</b>	<b>1,613,332</b>

Water Revenue	\$	3,197,611
Reserve Account	\$	2,861,452
Replacement Account	\$	962,102
Debt Service Reserve	\$	1,068,250
Bond Principal/Interest	\$	1,495,716
Bond Construction	\$	10,712,733
<b>Total Restricted Cash</b>	<b>\$</b>	<b>20,297,864</b>

**Total Checking/Savings** \$ 21,911,196

Accounts Receivable	\$	2,851,442
Other Current Assets	\$	12,599
Inventory	\$	160,010

**Total Current Assets** \$ 24,935,248

**Fixed Assets**

Land and Land Rights	\$	1,090,685
Water System	\$	85,625,821
Equipment	\$	1,176,668
Hydro	\$	34,873
Construction in Progress	\$	803,082
Accumulated Amortization	\$	(34,175)
Accumulated Depreciation	\$	(47,059,529)
<b>Total Fixed Assets</b>	<b>\$</b>	<b>41,637,425</b>

**Other Assets**

Def Out Res-Post ER Pension Costs	\$	74,997
Deferred Outflow-OPEB GLI	\$	7,729
Def Out Res-Net Dif Pension Inv	\$	36,171
<b>Total Other Assets</b>	<b>\$</b>	<b>118,897</b>

**Total Assets** \$ **66,691,570**

**Liabilities & Equity**

**Current Liabilities**

Accounts Payable	\$	129,077
Retainage Payable	\$	-
Accrued Interest Payable	\$	198,754
<b>Total Current Liabilities</b>	<b>\$</b>	<b>327,831</b>

**Long Term Liabilities**

Def Inf Res-Pen Chg Assumptions	\$	132,365
Def Inf Res-Pens Dif Proj/Act E	\$	82,326
Net Pension Liability	\$	(118,326)
Def Infl-OPEB Chg of Assumptions	\$	3,106
Deferred Inflow-OPEB GLI	\$	16,000
Bonds Payable-2010	\$	7,415,016
Bonds Payable-2012	\$	2,372,000
Bonds Payable-2017	\$	12,750,000
Accrued Leave Payable	\$	193,901
Post Employment Benefit	\$	107,038
OPEB Liability-GLI	\$	119,000
<b>Total Long-Term Liabilities</b>	<b>\$</b>	<b>23,072,426</b>

**Total Liabilities** \$ 23,400,257

**Equity**

Retained Earnings	\$	(3,281,219)
Reserve for Operations	\$	3,341,142
Reserve for Water Revenue	\$	5,991,639
Reserve for Replacements	\$	500,000
Reserve for Bond Interest	\$	198,754
Reserve for Debt Service	\$	2,142,022
Reserve for Bond Principal	\$	1,370,000
Reserve for Reserve	\$	2,602,136
Fixed Assets, Net of Debt	\$	30,696,880

Net Income	\$	(270,042)
<b>Total Equity</b>	<b>\$</b>	<b>43,291,313</b>

**Total Liabilities & Equity** \$ **66,691,570**

Appomattox River Water Authority  
YTD Income Statement for the period ending December 31, 2018

Water Rate Center

Revenues and Expenses Summary

<i>Budget</i>	<i>Budget</i>	<i>Actual</i>	<i>YTD Budget</i>	<i>Variance</i>
<i>FY 18/19</i>	<i>Year-to-Date</i>	<i>Year-to-Date</i>	<i>vs. Actual</i>	<i>Percentage</i>

**Operating Budget vs. Actual**

**Revenues**

Water Sales	\$ 10,163,119	\$ 5,081,559	\$ 5,679,197	\$ 597,638	11.76%
Misc. Revenue	\$ 30,000	\$ 15,000	\$ 1,015	\$ (13,985)	-93.23%
<b>Total Operating Revenues</b>	<b>\$ 10,193,119</b>	<b>\$ 5,096,559</b>	<b>\$ 5,680,213</b>	<b>\$ 583,653</b>	<b>11.45%</b>

**Expenses**

Personnel Cost	\$ 2,378,100	\$ 1,189,050	\$ 1,189,027	\$ (23)	0.00%
Contractual/Professional Services	\$ 952,500	\$ 486,750	\$ 420,760	\$ (65,990)	-13.56%
Utilities	\$ 824,000	\$ 412,000	\$ 412,000	\$ 0	0.00%
Communication/Postal/Freight	\$ 39,200	\$ 19,600	\$ 18,332	\$ (1,268)	-6.47%
Office/Lab/Purification Supplies	\$ 101,000	\$ 50,500	\$ 49,583	\$ (917)	-1.82%
Insurance	\$ 90,000	\$ 90,000	\$ 85,804	\$ (4,196)	-4.66%
Lease/Rental Equipment	\$ 20,000	\$ 10,000	\$ 5,265	\$ (4,735)	-47.35%
Travel/Training/Dues	\$ 51,400	\$ 25,700	\$ 11,753	\$ (13,947)	-54.27%
Safety/Uniforms	\$ 26,000	\$ 13,000	\$ 9,231	\$ (3,769)	-28.99%
Chemicals	\$ 2,300,000	\$ 1,150,000	\$ 1,178,232	\$ 28,232	2.45%
Repair/Maintenance Parts & Supplies	\$ 330,000	\$ 165,000	\$ 129,656	\$ (35,344)	-21.42%
<b>Total Operating Expenses</b>	<b>\$ 7,112,200</b>	<b>\$ 3,611,600</b>	<b>\$ 3,509,643</b>	<b>\$ (101,957)</b>	<b>-2.82%</b>
<b>Operating Surplus/(Deficit)</b>	<b>\$ 3,080,919</b>	<b>\$ 1,484,959</b>	<b>\$ 2,170,570</b>	<b>\$ 685,610</b>	<b>46.17%</b>

**Replacement Outlay Budget vs. Actual**

Machinery & Motors	\$ 160,000	\$ 80,000	\$ 257,633	\$ 177,633	222.04%
Instrumentation	\$ -	\$ -	\$ 350	\$ 350	#DIV/0!
SCADA	\$ 50,000	\$ 25,000	\$ 61,608	\$ 36,608	146.43%
Computer Equipment	\$ 10,000	\$ 5,000	\$ -	\$ (5,000)	-100.00%
Furniture/Fixtures	\$ 6,000	\$ 3,000	\$ -	\$ (3,000)	-100.00%
Motor Vehicles	\$ 28,000	\$ 14,000	\$ 35,540	\$ 21,540	153.86%
Special Studies	\$ 400,000	\$ 200,000	\$ 30,520	\$ (169,480)	-84.74%
Valve Replacement	\$ 50,000	\$ 25,000	\$ 7,520	\$ (17,480)	-69.92%
Concrete	\$ 25,000	\$ 12,500	\$ 3,100	\$ (9,400)	-75.20%
In-Plant Capital Upgrade	\$ -	\$ -	\$ 1,793,134	\$ 1,793,134	#DIV/0!
Chedin East Flow Meter	\$ 40,000	\$ 20,000	\$ -	\$ (20,000)	-100.00%
Replacement-Other	\$ -	\$ -	\$ 64,000	\$ 64,000	#DIV/0!
<b>Total Capital Outlay</b>	<b>\$ 769,000</b>	<b>\$ 384,500</b>	<b>\$ 2,253,405</b>	<b>\$ 1,868,905</b>	<b>486.06%</b>

**Debt Service Budget vs. Actual**

Interest Income	\$ -	\$ -	\$ 210,302	\$ 210,302	#DIV/0!
Interest Jurisdictions (Income)	\$ -	\$ -	\$ -	\$ -	#DIV/0!
Interest Expense	\$ -	\$ -	\$ 397,509	\$ 397,509	#DIV/0!
Principal Payments	\$ 2,142,225	\$ 2,142,225	\$ 1,370,000	\$ (772,225)	-36.05%

**7. Items from Counsel**

**8. Closed Session**

**9. Other Items from Board Members/Staff Not on Agenda:**

- **Internal Audit Subcommittee Update**

**10. Adjourn**