

Delaware Water Supply Coordinating Council Meeting

DRAFT Meeting Minutes

Meeting Date: May 8, 2019

Meeting Location: Kent County Administration Building, Conference Room 220

ADMINISTRATIVE - Steven M. Smailer, P.G., DNREC, Chair

Mr. Smailer called the meeting to order at 10:00 a.m. and welcomed everyone. He mentioned that some attendees will be late due to an incident up north on the bridge. Mr. Smailer announced Mr. Ken Najjar's retirement from the DRBC and introduced Ms. SeungAh Byun who will now represent the DRBC. The meeting attendance list is included at the end of the meeting minutes.

REVIEW AND APPROVAL OF THE JANUARY 24, 2019 DRAFT MEETING MINUTES

Mr. Smailer asked for a motion to approve. Mr. Vic Singer motioned to approve and Mr. Joe DiNunzio seconded. Mr. Smailer asked if there was any discussion. There was none. Mr. Smailer asked if all were in favor of approval. All were in favor to approve.

Final meeting minutes are posted online at <https://publicmeetings.delaware.gov/Meeting/60777> .

OLD BUSINESS – Steven M. Smailer, P.G., DNREC, Chair

Mr. Smailer stated that all old business is listed on today's meeting agenda for discussion. No other old business was added.

WATER CONDITIONS REPORT –Stefanie Baxter, P.G., Delaware Geological Survey

Ms. Baxter presented a handout summary as of April 30, 2019, of hydrologic conditions that is considered a snapshot of water conditions and are tracked on a monthly basis (see attachment titled *Northern Delaware Drought Advisory Guidelines*).

She began by saying, "It's wet. It's so wet that that's pretty much all I'm going to say." She continued, "If you take a look down about half way down the page at the Water Conditions Index, we are at 16.61 and last month we were at 20. It dropped a little bit but anything above 10 is awesome because between 5 and 10 is considered normal." She stated, "That's a great place where we want to start when the weather starts getting warmer. We obviously are starting to get evapotranspiration. Stream flows have been above the median since last July. Groundwater levels in Db 24-18, April was the first month where they actually took a little decline by about half a foot but that's expected for this time of year. Up until that point, they had been rising since January 2018. The only thing that hasn't been updated are the reservoirs and ASR numbers but I will get those numbers when the water purveyors do their reports. Even the

chlorides on the Delaware River are 3 miles lower than they typically are. Kent County and Sussex County are also good. They are in the normal ranges. Their 5-month precipitation isn't quite as excessive as Northern New Castle County but they are still showing a bit of a surplus. Groundwater conditions are normal in Kent and just slightly below normal in Sussex just by a few tenths of a foot." Ms. Baxter continued to discuss the DRBC Hydrologic Conditions Report as of May 6. She said, "There's a lot of useful information about the reservoir levels and stream flows throughout the basin as a whole." She continued, "We're heading into the summer with a nice surplus of water which is wonderful."

Mr. Smailer asked Ms. Baxter, "So you said Db 24-18 is beginning to actually drop?" Ms. Baxter replied, "A half a foot. It's actually starting to decline which you typically would see this time of year, when we stop recharge, but it's the first decline since January 2018." Mr. Smailer asked, "What about the Kent and Sussex wells?" Ms. Baxter answered, "Kent is normal and Sussex is below normal." She continued, "The difference between normal and below normal is three tenths of a foot in this particular well. So it's below normal but it's like three tenths of a foot." Mr. Smailer said, "Will they follow the same recharge pattern as New Castle?" Ms. Baxter responded, "They drop a lot faster but then they recharge a lot faster so they didn't have quite the same increase because they're going to be more subject to the quick recharge."

The DGS' full analysis is found on <http://www.dgs.udel.edu>.

FORECAST SYNOPSIS – Dr. Daniel Leathers, State Climatologist

Dr. Leathers presented a Power Point presentation (see attachment titled *Weather Summary and Forecast*).

Dr. Leathers agreed with Ms. Baxter and stated that it's wet. He stated that as it was mentioned at the last meeting that 2018 was either the wettest year on record or the second wettest year on record and we're coming out of that.

As stated in the presentation on the slide titled *January-March Temperature Anomalies*: Dr. Leathers stated, "Just to show you a little bit about what conditions have been like and I'm putting the whole country here so we can put ourselves kind of in context. Unfortunately, we don't get the April numbers until today so I couldn't throw April in here, too. But the January through March temperatures across the U.S. were extremely cold and this winter was colder than most (referring to the Dakota regions)." Dr. Leathers then referred to Delaware and said, "We were very near normal for the January through March time period. The southeast was a little bit above normal."

As stated in the presentation on the slide titled *January-March Precipitation Anomalies*: Dr. Leathers stated, "For precipitation, our region in general was either normal or a little bit wet. You can actually see in the southeast Pennsylvania climate region where our streams in northern Delaware come from we actually were a little bit above normal in precipitation but only a couple of inches. And so the January through March time period, and this really goes over into April, has been pretty close to normal for us after coming out of that extremely wet year."

As stated in the presentation on the slide titled *DEOS Precipitation Totals January 1, 2019 through May 5, 2019*: Dr. Leathers stated, “This is actually up to date. By this time of the year we should have 15” to 16” of rain and you can see across most of the state we’ve had anywhere between 15” and 20” of rain through the beginning of May which is pretty much normal for us. Maybe a little bit above normal especially up in Chester County.”

As stated in the presentation on the slide titled *90-Day Precipitation Departures*: Dr. Leathers stated that all of Delaware is above normal except for a few places where it is pretty close to normal in Sussex County. He said, “As you look across the State, we’re anywhere from about 1” to up towards 4” above normal in the last 90-days.” Dr. Leathers added that this does include the up to 2” of rain from last Sunday across the State.

Dr. Leathers then went on to discuss the *Spring/Early Summer Forecast* and as stated in the presentation on the slide titled *Our Current “Weak” El Niño Event* he said, “Once again the only thing really globally that’s going on that you could forecast from is we still have a “Weak” El Niño Event. This just shows the sea surface temperatures and this is the anomalies. Anywhere you see these yellow and orange colors in the tropical Pacific it’s warm. And so the question is is how does a “Weak” El Niño Event usually affect us going into the growing season, the summer months, and it looks like that El Niño is going to continue.”

As stated in the presentation on the slide titled *ENSO Forecast for 2019*: Dr. Leathers said, “The red bars are what the models are suggesting conditions are going to be like as we go through March, April, and May say through July, August, and September and you can see the models all think we’re going to stay in a “Weak” El Niño. So what does that really mean for us? Well, not a lot.”

As stated in the presentation on the slide titled *El Niño Years May-September Temperature Departures (°F)*: Dr. Leathers said, “This is actually temperatures, May through September, temperature departures during a “Weak” El Niño. They’re a little bit below normal across the northern tier but for us near normal.”

As stated in the presentation on the slide titled *El Niño Years May-September Precipitation Departures (inches)*: Dr. Leathers said, “If you look at precipitation, this is kind of interesting. During El Niño years, the growing season tends to be a little bit below normal precipitation but that’s only an inch or two.”

As stated in the presentation on the slide titled *NOAA Extended Outlook May-July 2019*: Dr. Leathers said, “And so you would think that if you look at the National Weather Service Extended Forecast for us it would say near normal temperatures and maybe a chance for some dryness here but interestingly if you take a look at the May through July forecast from the National Weather Service they actually have us as having a very good probability of above normal temperatures which would mean above normal evapotranspiration for this summer but also slightly above normal chances for wetter than normal conditions. And that’s almost the exact opposite of what we just saw with the El Niño event.” Dr. Leathers stated that, “El Niño events in the summer don’t make a huge big difference across most of the country and most of

these extended forecasts go with persistence and trend if there's nothing else big going on. We've been warned in the last few summers. We've been wet. So they're using persistence and trend to forecast what's likely to happen this summer just saying we've been going in that direction and it's probably going to continue in that direction. So right now we're in great shape except it's too wet everywhere. There's no reason to really believe, at least according to this forecast, that we should see any smaller amounts of precipitation and any type of dry conditions this summer. We'll just have to wait and see."

Dr. Leathers asked if there were any questions. There were none.

DELAWARE RIVER BASIN STATUS – SeungAh Byun, DRBC

Ms. Byun said, "From the Delaware River Basin perspective I'm going to reiterate what Dan (Dr. Leathers) said which is that it's wet. Over the weekend we did get in some places about 2 ½" of rain and other places probably an inch to 2 ½" which means the New York reservoirs in the basin are at capacity and they're spilling at the moment and then Beltzville and Blue Marsh are both at capacity as well and flow at most of the gages are above normal, much above normal. The salt line is at RM 65 which is 3 miles downstream of what's normal for this time of year." Ms. Byun stated to the Council that if anyone is interested in receiving this weekly report to please e-mail her.

Mr. Smailer asked if there were any questions. There were none.

WATER UTILITY REPORTS – Water Purveyors

Artesian – Joe DiNunzio presented: "Situation normal for the season. Demands right now for system delivery about 18 mgd. We have 55.9 mg stored in our ASR as of May 5. Adding about 480,000 gallons a day. We intend to continue to add through June 30 and then turn it around for recovery on July 2. This season we should have about 83 mg in storage. A little behind our typical target of 130 mg but we had well redevelopment that delayed injection this year. Otherwise, just the normal kinds of things like well pumps being replaced and such."

Newark – Tim Filasky presented: "We are normal as well. We do currently, just for about a week or so, we had South Well Field Treatment Plant shut down for some minor repair and we'll be getting that back up later this week. We're between 30% and 60% plans for the South Well Field Treatment Plant upgrades." Ms. Baxter asked Mr. Filasky for the current reservoir status and Mr. Filasky replied, "It's full but we are cycling it so it's up and down." Ms. Baxter asked Mr. Filasky could she put down -1 ft. on her status report for the Newark Reservoir and Mr. Filasky replied, "That's perfect."

New Castle – Jay Guyer presented: "Everything's normal in New Castle. Averaging about 0.5 mgd. More static on our levels than we are on our wells. Maintenance done and ready for the coming summer. Spring hydrant flushing program the week of April 28. No issues. Did our second carbon change out the middle of March. Increased to 40,000 pounds of carbon. Going to

monitor the performance on that. Cleaning and lining project getting ready to start on Delaware Street that's going to be about 1,300 linear ft. and 12" main. Also planning on several projects with DeIDOT."

SUEZ – Larry Finnicum presented: "Demands are down. Lots of rain and very wet. Creek flows are good. Average day so far this year is 13.9 mgd. Same period this time last year was about 15.4 mgd. Obviously, last year we had a lot of water main breaks due to a bad winter. ASR recharge started on March 14. Have a current volume stored of 16.5 mg and we're recharging at a rate of 220 gallons per minute. We expect to be able to recover by Labor Day. We continue to aggressively detect unaccounted for water with our integrated leak detection program and unaccounted for water is under 15% at SUEZ."

Wilmington – Kelly Slabick presented: "Hoopes Reservoir is at 86.5 ft. which is only down 3.5 ft. so that's great. We're not planning on refilling it unless it's necessary. We do have work planned in the fall which will require us to keep the reservoir at a lower level. Over the weekend we did switch to Hoopes because of the rain. As of yesterday we're back on the Brandywine and as of yesterday we were putting out 15.2 mgd."

Tidewater – Alexis Virdin-Gede presented. "Production is normal for this time of year. New Castle County we're pumping 0.59 mgd, Kent County around 1.76 mgd, and Sussex County 3.55 mgd. No major projects or nothing major out of service at this time."

Sussex Shores – Not present.

WATER SUPPLY COORDINATING COUNCIL GOVERNANCE – Steven M. Smailer, P.G., DNREC, Chair

Mr. Smailer stated that between last January's meeting and today's meeting we received a couple of pieces of correspondence from Mr. Singer and Mr. Charles Jenner and the City of Newark's response that was e-mailed to the Council in addition to the information that Dr. Jerry Kauffman had sent out. Mr. Smailer addressed the Council on these items of correspondence. He stated, "In Mr. Singer's correspondence, he raised a series of questions and suggested potentially having one of the State of Delaware's Deputy Attorney General's here." Mr. Smailer continued to discuss Mr. Singer's correspondence and said, "It is not the position of myself, the Secretary, or the Council that we have any authority beyond that of the Governor or the General Assembly and the question in that regard with what really pertains to the request by, very candidly, SUEZ had asked for portions of their Self-Sufficiency Report and the contracts associated, therewith, to be considered non-public records under the Public Infrastructure Securities Act and the FOIA obligations, thereunder. The review and the determination of that was done in accordance with the code that is the Infrastructure Securities Act of the Delaware State Law and the requests, specifically that this is a public utility of public use and concerns from that regard. So it was deemed those records, the contracts, and the other aspects, they were deemed non-public records. That does not mean that they are not available for us as Council members to review in an Executive Session." He continued to state that they are not for public distribution, they are not for me to send out to anyone else, but they are for any member of this Council and are available

on file with the Department and Mr. Smailer also stated that he also had them with him at the meeting if anyone wished to see them. He added that also included in the files is the documentation that went through and the determination of the non-public status of those records. Mr. Smailer continued, "In the context there, we're not assuming any powers or authority beyond what's in the State law but these are available for the members of this Council, not the public at large to review."

Mr. Smailer continued to discuss Mr. Singer's correspondence specifically pertaining to the Oath of Office, adequate supply, the Public Service Commission, and Hoopes Reservoir. Mr. Smailer then mentioned that Mr. Jenner's correspondence was specific to the Self-Sufficiency Reports portion of the agenda and will be discussed during that time. Mr. Smailer then discussed Mr. Singer's request to have the Council e-mail distribution list sent to the members. He stated, "One of the things that has happened over the history of this Council is that we have had members show up that may not be the gubernatorial appointees for that position that are coming in as an alternate and some other components and people have been using their personal e-mail addresses and other components and historically we have always forwarded out to the distribution list through the Department. It predates me but since the Council formation we have been the facilitator of the communication to that distribution list and the component that I felt before we made that distribution list containing individuals personal contact information available to anyone at large we needed to ask the people is it okay to use that." Mr. Smailer stated that Council Board members were e-mailed (on March 21, 2019) and that of those who responded back were okay with having their personal contact information distributed. Mr. Smailer continued, "We have gone on and created a distribution list because I feel strongly that not only should we be able to communicate amongst ourselves but if anybody wants to send something to this Council at large they should have an opportunity to do so. So we have created a distribution list based on the e-mail addresses we have and will accompany the minutes upon distribution. The distribution list is WSCC@lists.delaware.gov." Mr. Smailer mentioned to Mr. Singer and Mr. Jenner that he wanted to vet this distribution list in this format before it was distributed and being used. He continued, "That list is a self-subscribe and self-unsubscribe list. Therefore, it will not be considered the formal correspondence list if we want to send out the minutes, the other actions, the other components, because people could subscribe and unsubscribe." Mr. Smailer added, "When we are sending stuff out to members of this Council, we need to have certainty that we are getting it to those members. It is a public forum for them to send information to and for us to share information amongst each other but we will still maintain a formal list of the appointees and members so we have definitive record of what's going to those people and not have to see whether somebody unsubscribed." Mr. Smailer continued to discuss.

Mr. Jenner asked Mr. Smailer, "My understanding is that you would still extend the courtesy of distributing correspondence to other members of the Council?" Mr. Smailer replied, "As appropriate, yes." Mr. Jenner asked Mr. Smailer if they could do the same with the distribution list and Mr. Smailer answered, "Yes, it is an open distribution list." Mr. Jenner then asked Mr. Smailer if correspondence could be sent to only certain members on that distribution list and Mr. Smailer replied, "People have said that the e-mails we have on file they are fine with being contacted for the purposed of this Council. You will get that as part of the distribution list." He continued, "How you choose to use that outside of here, and I would respectfully request to not

abuse that, is not up to me or to the Council to scrutinize. It is public notice, public information that these are the contact information for the members of this Council. How you so choose to use that information going forward is up to you.” Mr. Jenner replied, “Sounds like great policy.” Mr. Smailer continued to discuss how it was owed to everyone about the use of their contact information.”

Mr. Singer asked Mr. Smailer if he was under oath and Mr. Smailer replied he has not taken an Oath of Office. Mr. Smailer added he is not obligated to take an oath.

Mr. Richard Wilkins asked Mr. Smailer if the distribution list link will be included in the meeting minutes and Mr. Smailer replied, “Yes”, and he again stated the link title that was mentioned earlier on in the meeting. Mr. Smailer also said that the steps to subscribe and unsubscribe will also be included. He continued, “Other non-Council members, it’s a public forum, and if anybody’s interested in the actions of this Council, they can subscribe to it. It’s a way that we can get more communication with the people beyond this room.”

Mr. Singer inquired about Dr. Jerry Kauffman’s correspondence that was referred to earlier saying that he didn’t receive it, however, it was stated that Dr. Kauffman’s correspondence was an e-mail about the Thirteenth Report to the Governor and General Assembly and Mr. Singer said he actually did receive that.

SELF-SUFFICIENCY CERTIFICATIONS – Steven M. Smailer, P.G., DNREC, Chair

Mr. Smailer said, “I want to be really clear on a couple components because this was in the minutes and some other aspects there was uncertainty and it’s specifically one of the reasons why we did not resend the original submissions of the Self-Sufficiency Reports back out with the notice for this meeting.” He continued, “Prior to the October meeting, we had just received the City of Newark’s Self-Sufficiency Report and at the January meeting we had not yet received the City of Wilmington’s. We have had everything but the City of Wilmington since October, had the City of Wilmington since January, and in January the perception was we had sent it out the week before and some of the comments were, “Well, you expected us to review this in a week” and some of the stuff we had we already had for three or four months. The only thing that changed, and I appreciated based on Mr. Jenner’s correspondence and the City’s response to that, some clarifications to Newark’s which was a revision to their report that we did accompany as part of the agenda packet that went out but in the context of the time from the original October submissions until now you have been privy to the extent of the correspondence that we have received with regards to those reports.”

Dr. Kauffman referred back to an earlier comment that Mr. Singer made about Mr. Smailer not taking an Oath of Office. Dr. Kauffman asked Mr. Singer if he had taken an Oath of Office himself and Mr. Singer replied, “Yes, under Article 14 of the Delaware constitution.” Dr. Kauffman asked Mr. Singer, “For what duty?” Mr. Singer responded, “For public office.” Ms. Ellen Kohler asked Mr. Singer, “As an elected office?” Mr. Singer said, “Elected or appointed.” Dr. Kauffman stated, “You mentioned earlier that Steve (Mr. Smailer) is not.” Ms. Kohler also included, “Steve (Mr. Smailer) is not an elected or appointed official so why would he take that

oath?” Mr. Singer replied, “He is appointed.” Ms. Kohler said, “He’s not. He’s a delegate.” Mr. Smailer, Dr. Kauffman, Mr. Singer, and Ms. Kohler continued to discuss. Mr. Singer added, “The question I imposed was since by act of the General Assembly the Chairman of this Council is the Secretary of DNREC or his designee and since the Secretary of DNREC is required to take the oath does that mean that his designee is also required to?” Ms. Kohler said, “No, because he’s the designee.” Council continued to discuss.

Mr. Smailer presented two letters to the Council. He stated, “We have drafted letters that I intend to send to the Governor’s office in regards to updating and clarifying the points that were raised by them regarding how outdated some of our memberships are. There are two components in the State law that state there are the appointees by position (Mr. Smailer gave examples) and the others that are representatives as appointed by the Governor.” Mr. Smailer presented the two letters and said, “My intent is that they will go out to the entities that are within the law as to the organizations that are supposed to be represented here asking is this information current and if it’s not current to please update it with your designee that will then go to the Governor’s office for potential reappointment of those positions which will close that loop hole in questions of quorum, questions of voting authority, and other aspects that are there. I had said this a number of times over the past and I never heard back so I’ve taken the step of drafting them to get them to respond.” Dr. Kauffman asked if this is an appointment letter and Mr. Smailer said there are two letters. Mr. Smailer continued, “The organization as listed in the law as participating members with the representation as appointed by the Governor. For those organizations, the Governor’s office has a list of the gubernatorial appointees and some need to be updated. The organization needs to assign a designee.” He continued, “The other letter is to the individuals that are by position (he gave examples) and they are not gubernatorial appointees.” Mr. Smailer stated that the original legislation for this actually stated which ones were to be gubernatorial and then the Council was expanded to add the State Climatologist and others. One letter would go to those that were specified as gubernatorial appointees and the other would go to those by position.” Mrs. Laura Mensch asked Mr. Smailer, “To clarify, the second letter you showed would go to, in my case, the Secretary of Agriculture and he would in turn state the actual person to represent?” Mr. Smailer said, “By law, he could be sitting in your seat or he could say you are his designee.” Mrs. Mensch said, “And this would be the official confirmation that we’ve been working on for a while.” Mr. Smailer replied, “That’s absolutely correct. I have that from the Secretary of DNREC that I am his designee. We’re just asking for that formally from all of the others by position.”

Council members continued discussion regarding the Oath of Office.

SELF-SUFFICIENCY REPORTS REVIEW AND APPROVAL

Mr. Smailer said, “Point of Order and open for discussion with the Council at large, I believe we should probably go through the Self-Sufficiency Reports one at a time for review and approval.” Mr. Singer said, “So moved.” Mr. Doug Hokuf seconded.

Mr. Jenner asked Mr. Smailer if he could distribute a handout to the Council at this time.

Mr. Smailer said the first vote will be for the 2018 Self-Sufficiency Report for Artesian and asked Council if there was a motion to enable discussion. Mr. Singer motioned to enable discussion. Ms. Baxter suggested that there should be a motion first to approve Artesian's Self-Sufficiency Report and then a second to enable discussion. Mr. Singer amended his motion and he then motioned to approve the 2018 Artesian Self-Sufficiency Report. Mr. Singer seconded the motion. Mr. Smailer then asked if there were any discussions. There were none. Mr. Smailer asked Mrs. Kimberly Burris to do a roll call by each organization listed in the law. Mr. Smailer said, "If there are more than one representative here from each organization, it should be the Primary representative of the organization casting the vote. Each organization does not get multiple votes." Roll call votes by each organization are attached at the end of the meeting minutes. The 2018 Artesian Self-Sufficiency Report passed. Mr. Smailer stated, "I think you can see from the number of non-responses why I felt necessary to generate those letters."

Mr. Smailer asked for a motion of approval for the 2018 Municipal Services Commission Self-Sufficiency Report. Ms. Baxter motioned to approve and Mr. Jenner seconded. Mr. Smailer asked if there were any discussions. There was none. Mr. Smailer asked Mrs. Burris for a roll call. The 2018 Municipal Services Commission Self-Sufficiency Report passed. The roll call votes are attached at the end of the meeting minutes.

Mr. Smailer asked for a motion of approval for the 2018 City of Wilmington Self-Sufficiency Report. Ms. Baxter motioned to approve and Ms. Valann Budischak seconded. Mr. Smailer asked if there were any discussions. Mr. Larry Finnicum stated that the report referred to United Water of Delaware and asked if future correspondence could be changed to say SUEZ. Mr. Singer said, "In my memo of March 24, 2019, I have three objections to the City of Wilmington's submission. There is a commitment on Page 2 of the City's submission to release 2.7 mgd for agreement with United Water of Delaware (correction to SUEZ). There is not an acknowledgement that I have found of a commitment to transfer 7.53 mgd additionally to SUEZ via interconnections or an acknowledgement that this transfer is or is not included in the 18.7 mgd demand projection on Page 2 for the 2021 reporting period." Mr. Jenner commented and said, "Even though we've been doing this since say 2006 the certifications of adequate supply and reviewing them I don't think we've really worked out all the bugs yet about how to do it." Mr. Jenner continued to discuss his opinion about the reports and how they are submitted. Mr. Smailer said, "At the October meeting, I said we are charged with the review of Self-Sufficiency Reports that do not have anything specified as to what they need to specifically contain and we get five very different flavors of those Self-Sufficiency Reports. I had suggested that one of the things I think this Council should do is look at, via a subcommittee or working group, establish a template that communicates to the providers our expectations about what should or should not be included in the Self-Sufficiency Reports explicitly so that we do not have a subjective discussion upon each submission. I think that would be a very good course of action to put in place prior to the next three-year cycle for the Self-Sufficiency Reports. I think where we fall into a lot of the pitfalls that we've been falling into is there are varied levels of scrutiny, varied levels of expectations, amongst all of us as to what those reports should contain and must contain and every one of us has the right to make their own opinion in that regard and I appreciate your comments, Charles (Mr. Jenner) and Vic (Mr. Singer), because they're additional information for this Council as a whole to consider during their votes on this subject but minus a specific requirement of does it contain x, y, and z we are still left to self-subjective determination and

professional opinion.” Mr. Jenner said, “That was very well said.” Mr. Jenner continued to talk about a template and said, “My assertion is we very definitely have a template in the form of the statute of 1404.” He continued to discuss his concerns, specifically regarding SUEZ’s Self-Sufficiency Report. Mr. Finnicum said, “Steve (Mr. Smailer), you and I have talked. Charles (Mr. Jenner), you and I have talked. All those documents are on file with DNREC and they are available to any of the Council members for review. I am willing to sit with any Council member either at my headquarters or DNREC’s headquarters and go through all of that material and I think any Council member will find all that material is sufficient to support our Self-Sufficiency Report.” Mr. Smailer said, “To Point of Order, we’re going through and we were reviewing the City of Wilmington’s Self-Sufficiency Report and Vic (Mr. Singer) has communicated his objections to their certifications.” Mr. Smailer addressed Mr. Jenner that he also his opinion and then stated that it is now up to the Council who have had these reports for multiple months. Mr. Joe DiNunzio said, “We cannot look at Wilmington’s report without looking at SUEZ’s because SUEZ says 7.53 mgd from the City of Wilmington interconnections but does Wilmington’s report tie to that or not.” Mr. DiNunzio continued to discuss. He said, “I’m not sure it’s clear in Wilmington’s report if it accounts for in their monthly demand what SUEZ is saying they have available from Wilmington.” Dr. Kauffman said, “Intra County interconnections that are interconnection between one water purveyor and another are not counted as supply because then you would be double counting.” Dr. Kauffman and Mr. DiNunzio continued to discuss the interconnections. Mr. Smailer addressed Mr. Finnicum and said, “SUEZ’s report states that your demand is 20.7 mg.” Mr. Finnicum replied, “Correct.” Mr. Smailer continued to discuss with Mr. Finnicum and said, “The 7.53 mgd interconnection with the City of Wilmington is in addition to your needs. So you’re acknowledging that you have an interconnection with Wilmington for that but it is not necessary for your self-sufficiency to meet your projected demands.” Mr. Smailer and Mr. Finnicum continued to discuss and Mr. Smailer said, “The sources that Wilmington has, the Brandywine and Hoopes, and the volume that’s there speaking to their self-sufficiency in that regard plus they have the ability to transfer to SUEZ who doesn’t need it to meet their own Self-Sufficiency Reports.” Mr. Smailer continued to discuss and stated that Wilmington is self-sufficient regardless and both Wilmington and SUEZ are stating that on record. Mr. Smailer, Dr. Kauffman, Mr. Finnicum, Mr. DiNunzio, and Ms. Kohler continued to discuss. Mr. Smailer said, “If there’s other discussions on the City of Wilmington, we have a motion and we have the comments that are so noted, I’m going to call for a vote.” Mr. Smailer asked Mrs. Burris for a roll call. The 2018 City of Wilmington Self-Sufficiency Report passed. The roll call votes are attached at the end of the meeting minutes.

Mr. Smailer said, “Since we were also just discussing SUEZ, do I have a motion for review and approval of SUEZ’s 2018 Self-Sufficiency Report?” Mr. Singer motioned and Dr. Leathers seconded. Mr. Smailer asked if there were any discussions. There were none. Mr. Smailer asked Mrs. Burris for a roll call. The 2018 SUEZ Self-Sufficiency Report passed. The roll call votes are attached at the end of the meeting minutes.

Mr. Smailer asked for a motion for review and approval of the 2018 City of Newark Self-Sufficiency Report. Ms. Baxter motioned and Mrs. Mensch seconded. Mr. Smailer asked for discussions. Mr. Jenner apologized to Mr. Filasky for being critical of their report. He continued, “I had had problems with your report and some of the problems and objections I raised in my letter that was sent out to the Council at large that was called *Dissenting Opinion*

were satisfactorily answered by the City of Newark.” Mr. Jenner continued to discuss his letter and Mr. Smailer and Mr. Filasky made clarifications to Mr. Jenner. Mr. DiNunzio, Mr. Filasky, and Dr. Kauffman discussed how Newark intends to utilize its Laird Tract wells in light of raw water quality requiring treatment as Mr. Filasky and Mr. Smailer had discussed. Dr. Kauffman stated, “There is surplus and that’s the bottom line.” Mr. Smailer asked if there was any further discussion on the City of Newark. Mr. Singer withdrew his previous objection after reviewing Newark’s revision. Mr. Jenner asked Mr. Filasky for further clarification on Laird Tract and Mr. Smailer asked if Mr. Jenner could continue that conversation with Mr. Filasky after the meeting so Council could vote. Mr. Smailer asked Mrs. Burris for a roll call. The 2018 City of Newark Self-Sufficiency Report passed. The roll call votes are attached at the end of the meeting minutes.

Mr. Smailer stated before the next three years when the Self-Sufficiency Reports are due he would like to have a template in place. He added, “I think it’s phenomenal through all the discussions we’ve had there’s not been a conversation once that there’s not adequate supply.” Mr. Smailer continued to discuss.

EASTERN KENT COUNTY UPDATE (KENT COUNTY BOND BILL) – A. Scott Andres, P.G.

Mr. Andres said, “Once a year I am obligated to present to the Water Supply Coordinating Council progress on this project. This is the official project name *Groundwater and Saline Water Intrusion Monitoring Network Infrastructure Improvements: Kent County, Delaware*. *Kent County Bond Bill* is another way to refer to it.”

As stated in the presentation on the slide titled *Project Background*:

- Purpose
 - Modernize water monitoring infrastructure
 - Fill gaps in monitoring network
 - Provide baseline data for previously unmonitored areas
 - Fill data needs for water management and policy
- Southern NCC and northern KC project 2012-2015
- KC project capital funding approved FY 2017 – ends FY 2020
 - Currently used aquifers throughout County
 - East Dover focus area
- Project WiCCED, NGWMN overlap and leveraging

Mr. Andres added, “This is an infrastructure project. We spent a lot of money on infrastructure and a lot of effort on the East Dover area in particular.” He said, “This is really 12 years old. We did a project in New Castle County a few years back. A capital project for Kent County was approved a couple years back and we’re now into it.”

As discussed in the presentation on the slide titled *Timeline*:

Mr. Andres stated, “We’re well through this project and you’ll see that it’s reflected in the types of things that we can show you and what we promised to give you in the future.”

As stated in the presentation on the slide titled *Infrastructure Progress*:

- Test borings, logs and wells completed at 10 of 10 proposed sites
 - Multiple aquifers at each site
 - Costs lower than NCC project

Mr. Andres said, “We had 10 sites where we installed a lot of monitoring wells. Over 8,000 lf of monitoring wells were installed into 5 different aquifers and we occupied several other existing wells with long term monitoring equipment and took advantage of a bunch of newly constructed domestic wells to make measurements and collect samples. One of the key things our costs for this were much lower than we had for New Castle County because of the contracting services that were available to us when this project started compared to New Castle’s.” Mr. Andres said this will be discussed with the Water Supply Section.

- 2 stream gages re-activated by USGS

Mr. Andres said, “DGS is operating a third one.”

- Monitoring stations and wells installed at two irrigation ponds/marshes in east Dover focus area
- Mr. Andres said, “Soon we will be moving into other irrigation systems.”

- Instrumentation installed and operating in new wells and east Dover

- 3 short-term partial record tide height/salinity gages

Mr. Andres said, “We started something new as an acknowledgement to the rising sea levels that Delaware is experiencing. We want to know how do we monitor salinity intrusion in our surface water because the surface waters are directly connected to some of our water supply aquifers and can have a big impact on, especially, agriculture. So we are looking at how do you operate these partial record tide height/salinity gages. How much does it cost and what kind of resource do we need to allocate in the future?”

As discussed in the presentation on the slide titled *Project Results Released*:

Mr. Andres said, “There’s already project results released.” He continued, “A report on initial phases of this project, the initial steps of this project, well construction, hydraulic measurements, and an assessment of the confining beds between aquifers are coming out in the near future. I would say in about 3-4 months it should be ready for release.” He continued to discuss.

As stated in the presentation on the slide titled *Piney Point Regional Issues*:

- Multi-state issue
 - Monitoring DE, NJ & MD
- Recent more rapid decline
 - Increase in water use in DE (Dover) and NJ (Bridgeton)
- Potential for drawdown in Dover

Mr. Andres said, “We have identified a key issue in the Piney Point aquifer. There’s a deep depression in the Potentiometric Surface on the pressure field in the Piney Point aquifer centered on the town of Dover and extending over to New Jersey at the City of Bridgeton. There is now a multi-state issue to deal with and hopefully this can be dealt with in the near future.”

As stated in the presentation on the slide titled *Groundwater Quality*:

- 8 of the 10 new sites sampled, plus 2 additional domestic wells in Bowers Beach and Felton
- No surprises in the data
- 2nd round of sampling will occur this summer and include all 10 sites

Mr. Andres said, “This keys into State planning efforts for how do we maintain water quality monitoring in the State of Delaware? We now know what it costs, how much time it takes to do this kind of work, and we want to make sure we continue to use the physical infrastructure of the wells in the ground for the long term and not just a one and done study.”

- Continuous salinity monitoring found hint of elevated values in Milford aquifer at MNWA, Piney Point at WBWA

Mr. Smailer said, “This Council has also supported, has yet to be funded, in the terms of the extension of this type of work to Eastern Sussex.” Mr. Smailer continued to discuss.

As stated in the presentation on the slide titled *East Dover Focus Area*:

- Working with farmers near LPRW
- New infrastructure installed
 - Level + salinity monitoring at 2 irrigation ponds and connected marshes
 - Level + salinity monitoring in 10 wells

Mr. Andres said, “City of Dover Long Point Road Wellfield and many irrigation systems along that area are especially prone to salt water intrusion and aquifer dewatering because of a thin aquifer and salt water intrusion because it’s so close to bodies of salt water. So we put monitoring infrastructure in place to look at some of the high risk areas.” Mr. Andres continued to discuss.

- EPSCoR WiCCED will work on more farms

Mr. Andres said, “Project WiCCED (Water in the Changing Coastal Environment of Delaware) is throwing a lot of money at the East Dover area to do field monitoring and modeling. Much more sophisticated than what’s been done to date.” Scott continued to discuss.

As discussed in the presentation on the slide titled *East Dover Water Levels*:

Mr. Andres stated that Site A is south and Site B is north and the tide is in grey and precipitation events up on top are water levels in the marsh and in the irrigation ponds and that the left chart include wells. He said, “Key thing here on the left chart are water levels in the ponds and are above the top. Marsh water elevation is higher than the tide at the Leipsic River. Pond on the right those two things are closer together. It has profound impacts on how salt water moves. Key things we see, we see the effects of lunar high tides and low tides. This is something that’s never been described by anybody before because nobody really ever measures.”

As discussed in the presentation on the slide titled *East Dover Salinity*:

Mr. Andres stated that Site A is south and Site B is north and green is the salinity of the marsh, blue is the salinity in the irrigation source. He added that the spikes are lunar high tides. He continued to discuss the impacts and risks to irrigation. Mr. Richard Wilkins asked, “So at times of elevated high tides as part of irrigation water management to not be pumping?” Mr. Andres replied, “That’s when your risk is highest to pump salty water. If it’s the highest tide and you’re irrigation water source is located near a tidal creek or marsh.” Mr. Wilkins and Mr. Andres continued to discuss the Delaware Irrigation Schedule and Mr. Andres said that this is on their

radar as a potential thing to include in their Irrigation Management System. Mr. Andres continued to discuss.

As stated in the presentation on the slide titled *Crop Tolerance to Salinity*:

- Soybeans are “moderately tolerant”
- Corn is “moderately sensitive”
- Lines represent salinity/conductivity

PEAKS during summer irrigation season

Mr. Andres said, “We see that our ponds are producing water that would reduce crop yield by potentially substantial amounts if you put the water on at the wrong time.”

As stated in the presentation on the slide titled *Future Work*:

- EPSCoR WiCCED project adding to the east Dover study
- 2nd round of water quality sampling will provide further data to establish general trends in aquifer geochemistry
- Groundwater model proposal being prepared – will need input from WSCC Kent County working group

Mr. Andres turned the presentation over to Changming He and he talked about what they think is a reasonable thing to do next to deal with some of the issues in Water Supply for Kent County and he discussed the following slides: *Case for GW Model of Piney Point Aquifer, GW Models are S.O.P., Objectives of Flow Model*

Mr. Smailer discussed the Kent County Bond Bill to the Council and hopes to get Eastern Sussex funded and what is yet to come.

Mr. Wilkins asked Mr. Andres, “So at this point you don’t feel you’ve had an adequate number of monitoring sites to be able to confirm that your initial theories are sound?” Mr. Andres replied, “You are partially correct.” They continued to discuss.

NEW BUSINESS - Steven M. Smailer, P.G., DNREC, Chair

Mr. Smailer had no new business to discuss.

PUBLIC COMMENT

No public comments.

NEXT MEETING - Steven M. Smailer, P.G., DNREC, Chair

The next meeting has been scheduled for September 25, 2019, at 10:00 a.m. in the Kent County Building, Conference Room 220.

ADJOURN - Steven M. Smailer, P.G., DNREC, Chair

Mr. Smailer asked for a motion to adjourn. Mr. Jenner motioned and Ms. Baxter seconded. Meeting adjourned at 12:13 p.m.

These minutes are not intended to be a detailed record. They are for the use of the Water Supply Coordinating Council members in supplementing their personal notes and recall of Council discussions and presentations and to provide information to Council members unable to attend. Minutes recorded and submitted by Kimberly Burris.

Meeting Attendees are listed below alphabetically, last name first:

Andres, A. Scott - DGS
Baxter, Stefanie – University of Delaware, DGS
Budischak, Valann – Delaware Nursery and Landscape
Byun, SeungAh - DRBC
Cocke, William – DNREC, Division of Water, Allocation Branch
DiNunzio, Joe – Artesian Water Company
Driggins, Lisa – Public Service Commission
Eisenbrey, Virginia – Artesian Water Company
Filasky, Tim – City of Newark
Finnicum, Larry - SUEZ
Grabowski, Matthew – DNREC, Division of Water, Water Supply
Guyer, Jay – City of New Castle, Municipal Services Commission
He, Changming - DGS
Hokuf, Doug – New Castle County Government
Homsey, Andrew – University of Delaware, Water Resources Agency
Houseman, Adam – Delaware State Golf Association
Jenner, Charles – Delaware Grounds Management Association
Kauffman, Dr. Gerald – Water Resources Center
Kohler, Ellen – Delaware Nature Society
Leathers, Dr. Daniel – State Climatologist
McQuiggan, Rachel - DGS
Mensch, Keith – Division of Public Health, Office of Drinking Water
Mensch, Laura – Department of Agriculture
Neilson, Kevin – Public Service Commission
Patone, Pam – Municipal Services Commission
Priester, Tawanda – Tidewater Utilities
Rambo, Douglas – DNREC, Division of Water, Source Water Protection Branch
Rudd, John – Office of the State Fire Marshal
Singer, Victor – Civic League for New Castle County
Slabick, Kelly – City of Wilmington
Smailer, Steven – DNREC, Division of Water
Viridin-Gede, Alexis – Tidewater Utilities
Wilkins, Richard – Delaware Farm Bureau

Northern Delaware Drought Advisory Guidelines

Reported by the Drought Advisory Guidelines Subcommittee (DAGS), which is composed of the Delaware Department of Natural Resources and Environmental Control, Delaware Geological Survey, and University of Delaware Water Resources Agency with input from the water purveyors and representatives from the landscaping industry. These drought operating guidelines are designed to provide guidance to the Delaware Water Supply Coordinating Council (WSCC) and the Governor's Drought Advisory Committee (GDAC). Responsibility for providing technical guidance for a move up to or down from Drought Watch is with the WSCC. Responsibility for providing technical guidance for a move up to or down from Drought Warning or Emergency is with the GDAC. Final declaration of drought advisories rests with the Governor.

Indicators	Drought Watch Voluntary Conservation	Drought Warning Voluntary Conservation	Drought Emergency Mandatory Restrictions	Status April 30, 2019
Precipitation Wilmington Arprt/Porter Rsvr 12-month	-6.00" to -8.99"	-9.00" to -11.99"	>-12.00"	+16.51"
Precipitation Wilmington Arprt/Porter Rsvr 6-month	-3.00" to -4.50"	-4.50" to -6.00"	>-6.00"	+9.17"
Brandywine Creek (30-day moving avg)	85 mgd	70 mgd	48 mgd	529 mgd
White Clay Creek - Stanton (30-day moving avg)	42 mgd	37 mgd	31 mgd	203 mgd
White Clay Creek - Newark (30-day moving avg)	19 mgd	16 mgd	13 mgd	102 mgd
Well Db24-18	14 - 14.99 (fbls)	15 - 15.99 (fbls)	16 (fbls)	7.60 (fbls) <small>(above normal)</small>
Water Conditions Index	5.0-4.0	3.99-3.00	<3.00	16.61
Chlorides	WCC ≤ 37 mgd for 5 consecutive days at SUEZ Stanton Intake	Cl > 250 ppm for 3 days at Christina River at Newport	Cl > 250 ppm for 3 days at UWD Stanton Intake	6.72 ppm
Hoopes Reservoir (City of Wilmington)	-10 ft (68% capacity)	-12 ft (64% capacity)	-15 ft (57% capacity)	-7.2ft (1/25/2018)
Newark Reservoir	- 10 ft (70% capacity)	-17 ft (52% capacity)	-27 ft (28% capacity)	-3.0 ft (1/25/2019)
Monitored				
Aquifer Storage and Recovery	Monitor Status	Monitor Status	Monitor Status	SUEZ: 4.5 mg (1/25/2019) AWC: 17.5mg (1/25/2019)
Octoraro Reservoir (Chester Water Authority)	Monitor Status	Monitor Status	Monitor Status	

Marsh Creek Reservoir	Monitor Status	Monitor Status	Monitor Status	
Chlorides on the Delaware River 5/6/2019	Monitor Status	Monitor Status	Monitor Status	Normal RM: 68 Current RM: 65
DRBC Lower Basin Drought Criteria	Monitor Status	Monitor Status	Monitor Status	
NYC DRB Reservoirs (DRBC 5/6/2019)	Monitor Status	Monitor Status	Monitor Status	Storage 268.3 bg or 78 bg above drought watch

fbfs = feet below land surface
mg = million gallons
mgd = million gallons per day
RM = River Mile
bg = billion gallons

Delaware Geological Survey:
<http://www.dgs.udel.edu>

U.S. Geological Survey Streamflows:
<http://waterdata.usgs.gov/de/nwis/current/?type=flow>

Delaware River Basin Commission:
<http://www.state.nj.us/drbc>

Delaware Environmental Observing System
<http://www.deos.udel.edu>

Delaware Geological Survey

State of Delaware
University of Delaware • Delaware Geological Survey Building
Newark, Delaware 19716-7501



Kent County Hydrologic Conditions – April 30, 2019

PRECIPITATION

Dover – Running surplus/deficit

12-month: +17.72" 6-month: +5.63" 5-month: +1.70"

STREAMFLOW

St. Jones at Dover – 30-day moving average for April 1 - April 30

33.2 MGD Status: Normal

GROUNDWATER

Mc51-01a – April 2019

10.20 ft below land surface Status: Normal

Sussex County Hydrologic Conditions – April 30, 2019

PRECIPITATION

Georgetown - Running surplus/deficit

12- month: +14.61" 6-month: +5.50" 5-month: +2.45"

STREAMFLOW

Nanticoke River at Bridgeville - 30-day moving average for April 1 - April 30

81.2 MGD Status: Normal

GROUNDWATER

Qe44-01 – April 2019

7.40 ft below land surface Status: Below Normal

HYDROLOGIC CONDITIONS REPORT

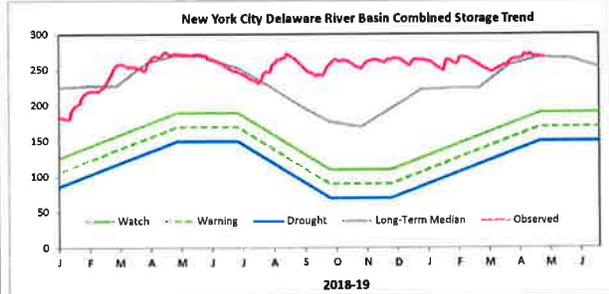
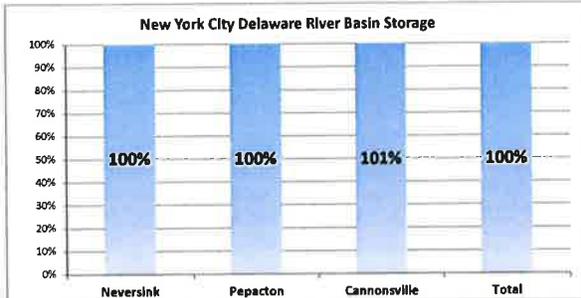
Monday, May 6, 2019



The combined storage in the New York City DRB reservoirs is 270 BG, which is 100 percent of capacity and 1 BG above the daily storage median for this time of year. All three NYC DRB reservoirs are spilling. Beltzville and Blue Marsh are at 102 and 103 percent of capacity. The available flood control capacities are 97 and 98 percent, respectively. Flows at most of the gages in the basin are above normal to much above normal. This morning, the flows at Montague and Trenton were 14,700 cfs and 29,500 cfs, respectively. The salt front is estimated to be at River Mile 65, which is three miles downstream of the normal location for May. Much of the basin has received an inch or more rain over the last 48 hours, with Northampton County, in PA, getting more than 2.5 inches in some locations. NY and NE PA received less than 0.5 inches. Over the next seven days, the forecast is for 0.50 to 0.75 inches of rain below Philadelphia, up to 1.25 inches between the Water Gap and Philadelphia and 1.5 to 2.5 inches in the Poconos and NY.

UPPER BASIN STORAGE

Rule Curves define drought conditions.
STATUS: NORMAL OPERATIONS



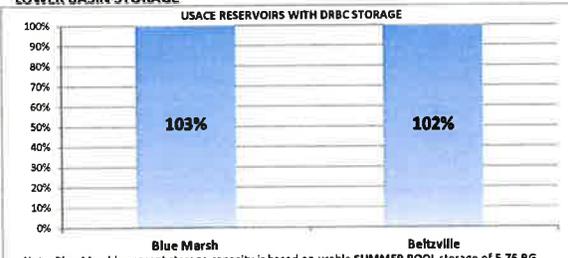
RESERVOIR OBSERVATIONS: 5/6/2019					STATUS	
	Most recent available data.					
	7-Day Precip (Inches)	Usable (BG)	Storage (%)	Draft (MG)	Directed Rel* (MGD)	
Neversink	0.89	35	100%	0	0	NYC Daily Storage (BG) = 268 100%
Pepacton	1.15	139	100%	434	0	NYC Daily Storage Median (BG) = 267 100%
Cannonsville	0.98	94	101%	0	0	BG Above Daily Storage Median = 1 0%
Total		268	100%	434	0	BG Above Drought Watch = 78
						BG Above Drought Warning = 98
						BG Above Drought = 118
						BG Below One Year Ago = 3

*Amount of release required to meet the Montague Flow Objective.

NYC Delaware reservoir storages were revised based on 2016 USGS bathymetric survey.

LOWER BASIN STORAGE

Lower Basin Drought Warning: Storage in Beltzville <74% and Blue Marsh <69% Lower Basin Drought: Storage in Beltzville <38% and Blue Marsh <37%



Note: Blue Marsh's percent storage capacity is based on usable SUMMER POOL storage of 5.76 BG.

STATUS: NORMAL OPERATIONS

Lower Delaware Basin Storage:			Salt Front (River Mile)	
	Vol. (BG)	Capacity ¹	65 Today ²	
Blue Marsh	5.9	103%	Below 54	Last week (estimated)
Beltzville	13.7	102%	68	Median

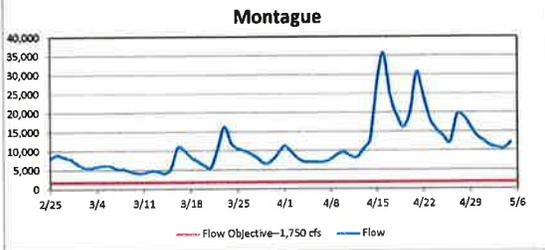
Directed Releases for Trenton Today (cfs):		DRBC Available Water Supply Storage (BG) ³	
Blue Marsh	0	Blue Marsh	2.43 BG -100%
Beltzville	0	Beltzville	9.44 BG -100%

¹Capacity in Blue Marsh and Beltzville reservoirs is based on normal storage (pool). Additional flood storage is available in each reservoir above the normal storage and spills do not occur until the flood storage is exceeded.

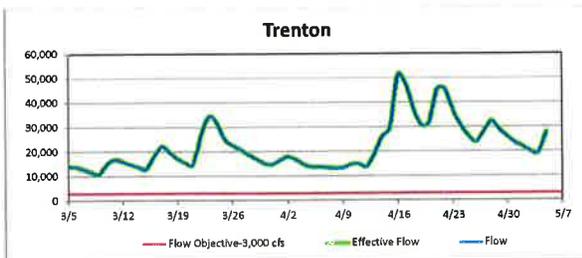
² Estimated using best available data as of report date. DRBC does not track the salt front below river mile 54.

³Volume available for DRBC to release.

DAILY STREAMFLOW



7-day Running Average: 12530 cfs



7-day Running Average: 32000 cfs 7-Day Effective Flow Average: 32100 cfs

DRBC Directed Releases for Trenton in 2018-2019 (Requested)			Quantitative Precipitation Forecast		
	Used (BG)	Available (BG)	NOTE: FORECASTS CONTINUALLY CHANGE		
ERQ	0	6.09 BG	0 to 3 days	0.10 - 0.25 inches, with lower amounts below Trenton	
Beltzville	0	9.44 of 9.44 (refills with inflow)	4-5 days**	0.50 - 0.75 inches above Trenton with up to an inch in the Poconos and NY	
Blue Marsh	0	2.43 of 2.43 (refills with inflow)	6-7 days**	0.1 - 0.25 inches upper basin, 0.25 - 0.5 inches mid-basin, 0.5 inches in DE	

*The Excess Release Quantity is a set quantity of water in the New York City Reservoirs reserved for thermal mitigation, rapid flow change mitigation and the Trenton flow objective. It is not replenished by inflow and resets to the full amount on June 1 in non-drought years.

* NWS Mid-Atlantic River Forecast Center (72-hr) Precipitation Forecast; **NWS Weather Prediction Center Quantitative Precipitation Forecast for Days 4 and 5, Days 6 and 7.

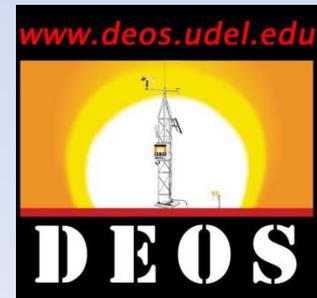
FOR INFORMATIONAL PURPOSES ONLY. ALL DATA ARE PROVISIONAL AND SUBJECT TO REVISION AT ANY TIME BY THE AGENCY OF ORIGIN.

Weather Summary and Forecast

Water Supply Coordinating Council Meeting

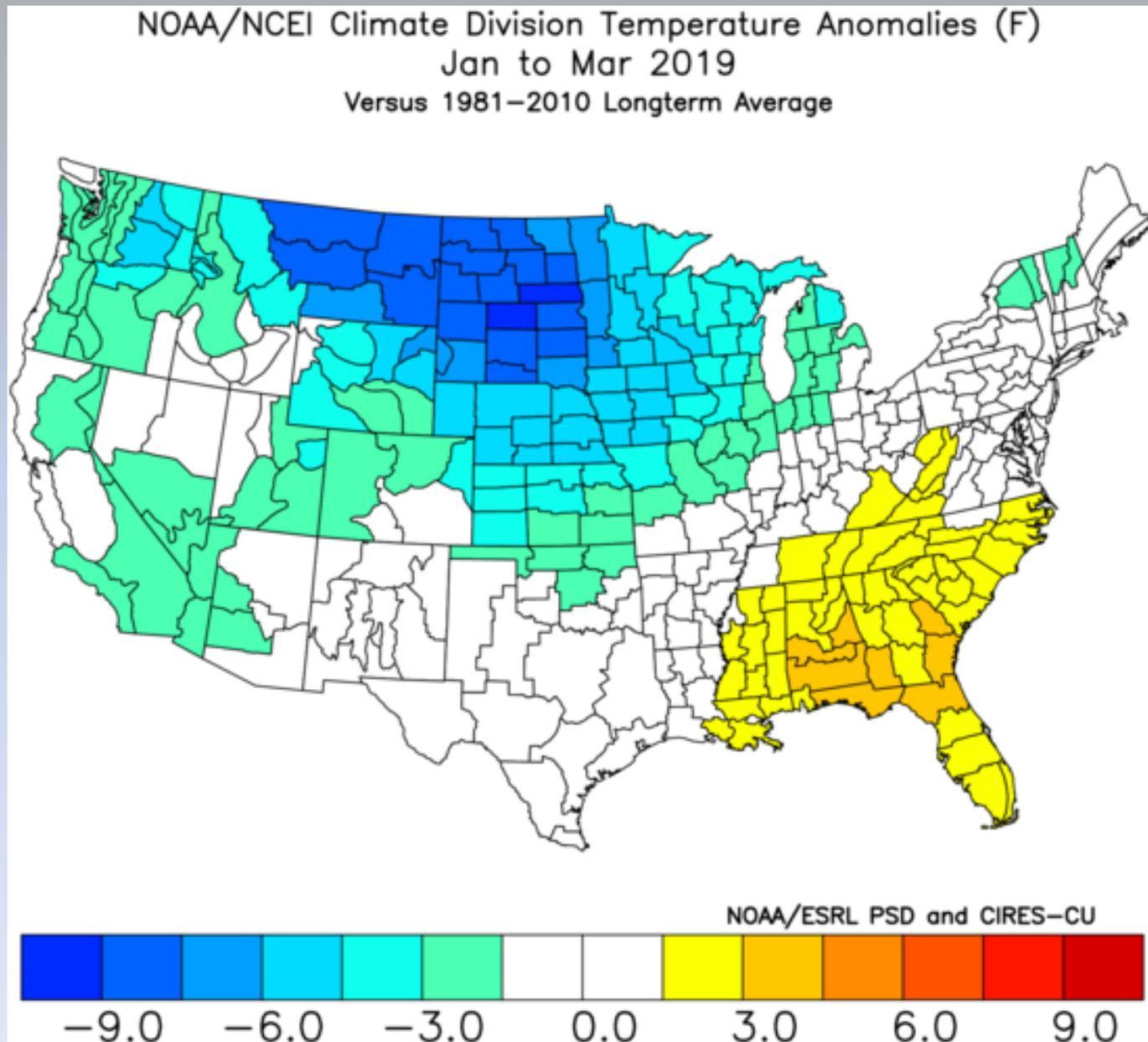
May 8, 2019

*Center for Environmental Monitoring and Analysis (CEMA)
Office of the Delaware State Climatologist*

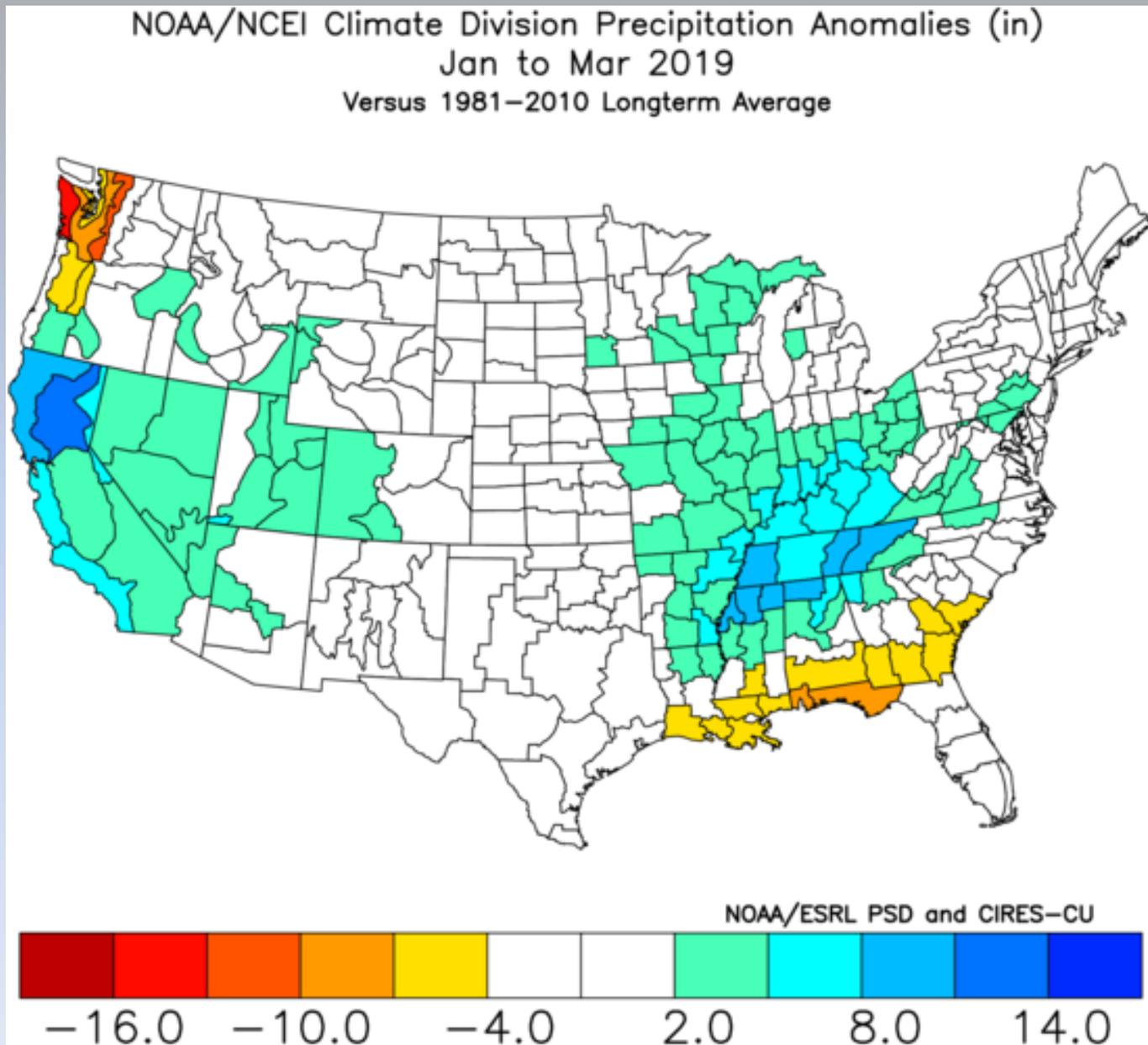


2019 Year-to-Date Weather Summary

January – March Temperature Anomalies

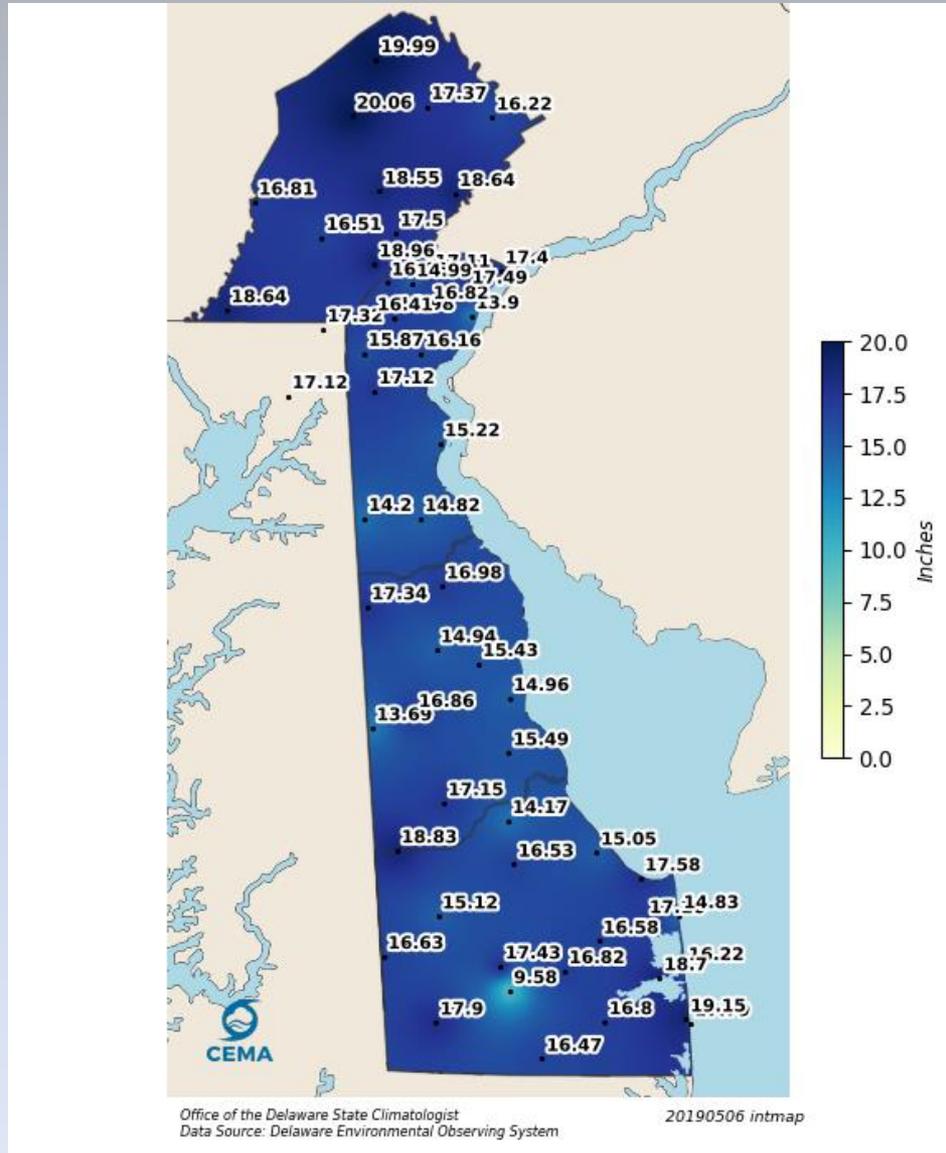


January – March Precipitation Anomalies

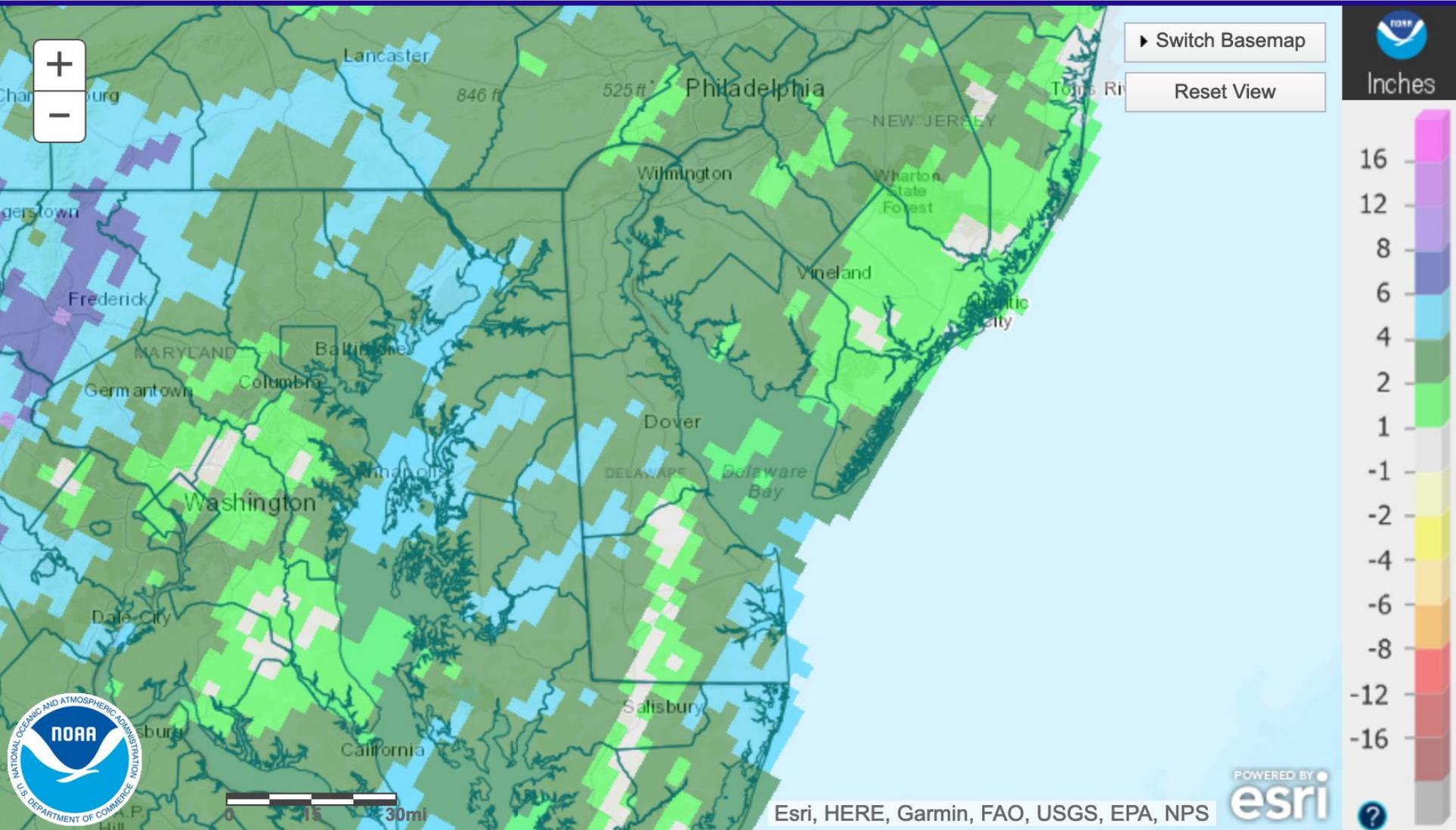


DEOS Precipitation Totals January 1, 2019 through May 5, 2019

Most Locations 15" to 20"

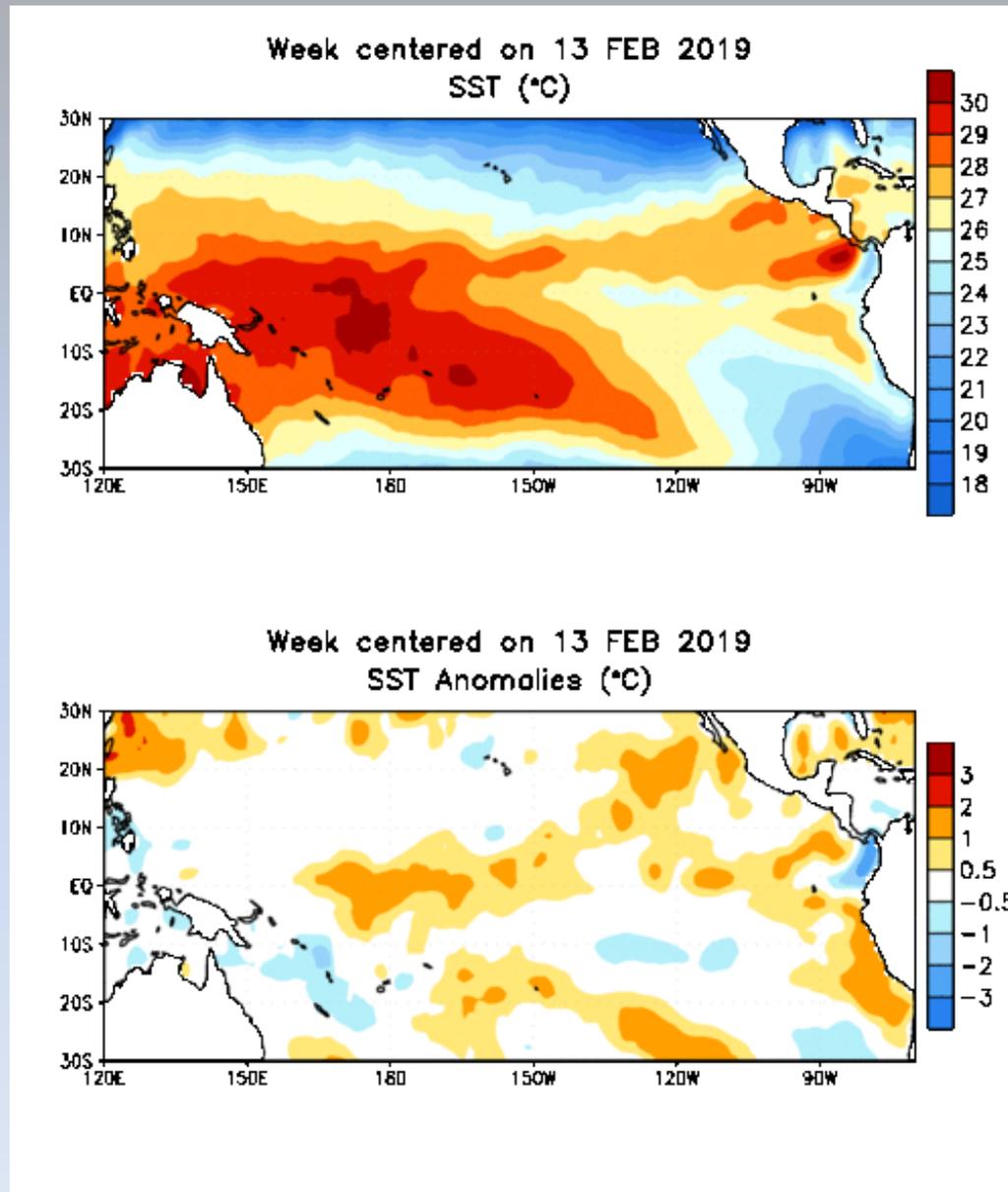


90 – Day Precipitation Departures



Spring / Early Summer Forecast

Our Current “Weak” El Nino Event

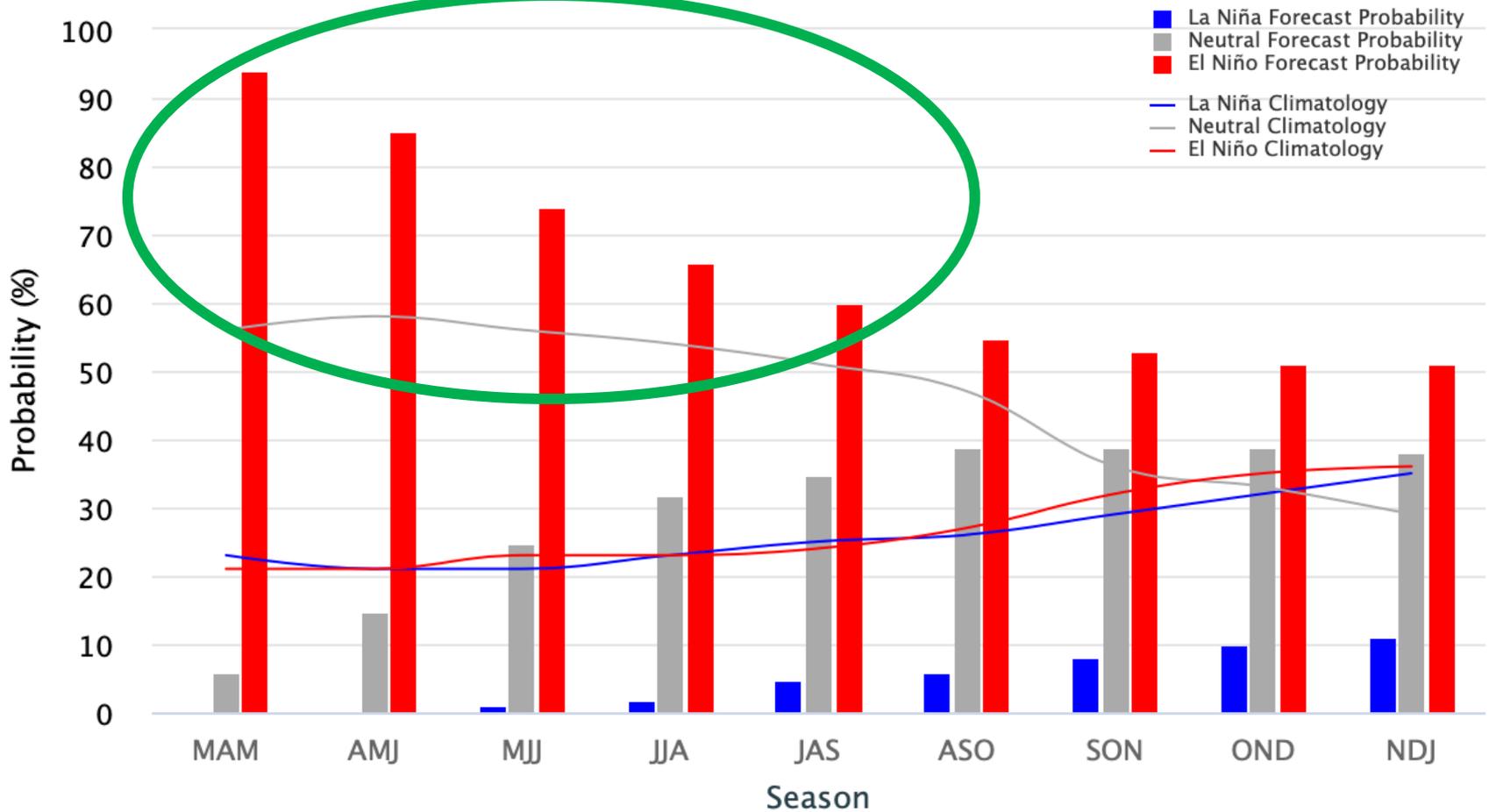


ENSO Forecast for 2019

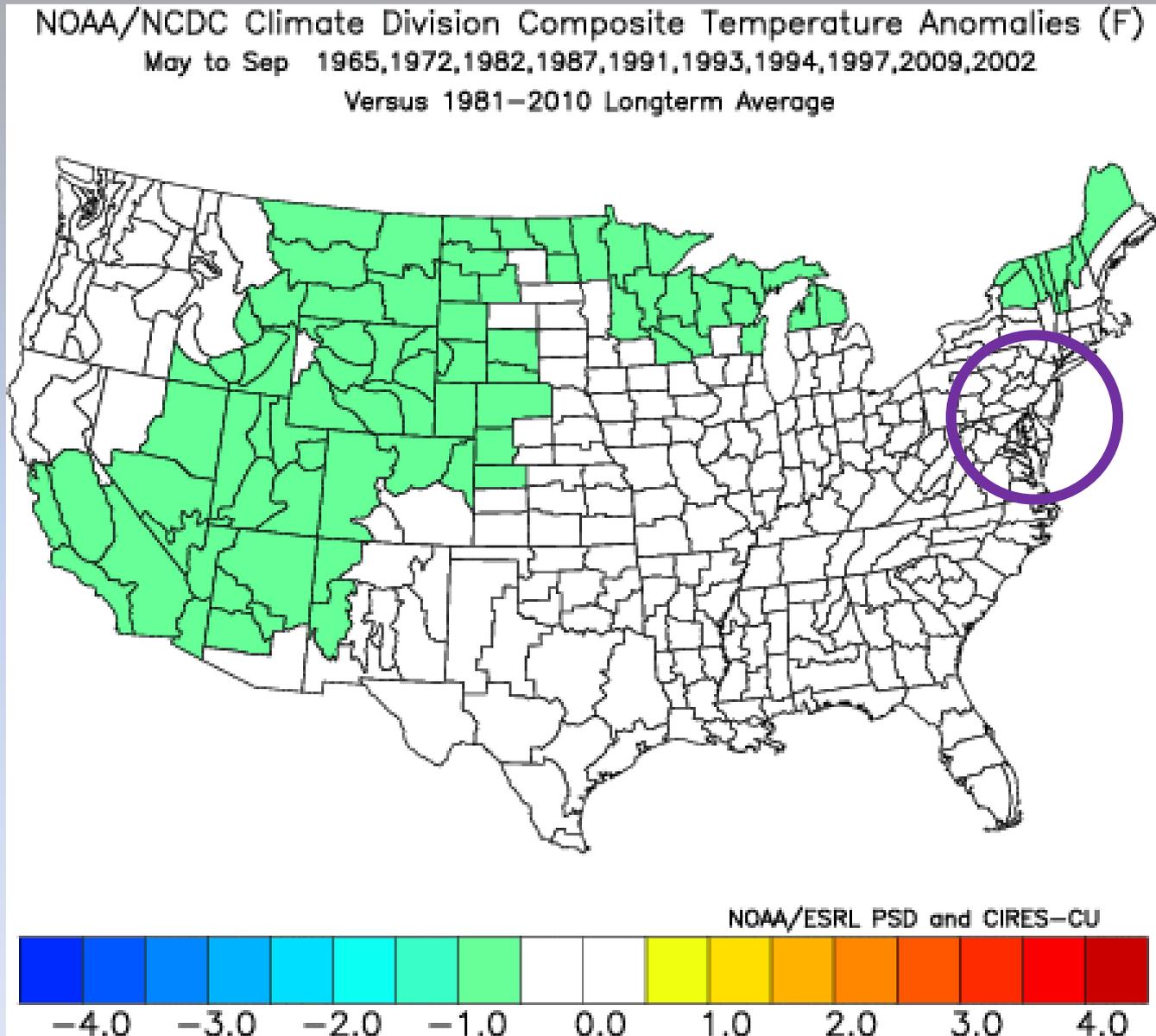
Early-April 2019 CPC/IRI Official Probabilistic ENSO Forecasts

ENSO state based on NINO3.4 SST Anomaly

Neutral ENSO: $-0.5\text{ }^{\circ}\text{C}$ to $0.5\text{ }^{\circ}\text{C}$

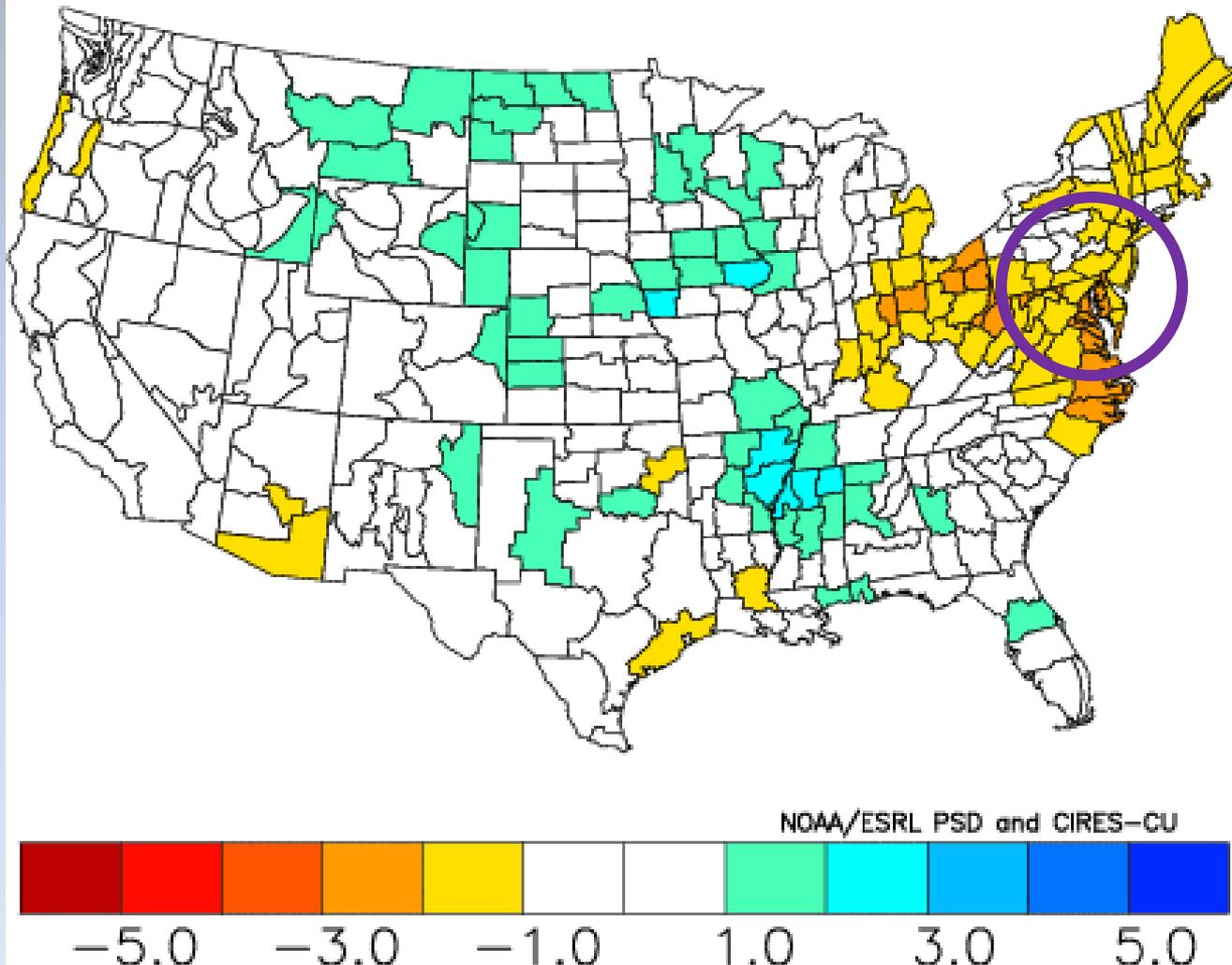


El Nino Years May – Sep. Temperature Departures (°F)



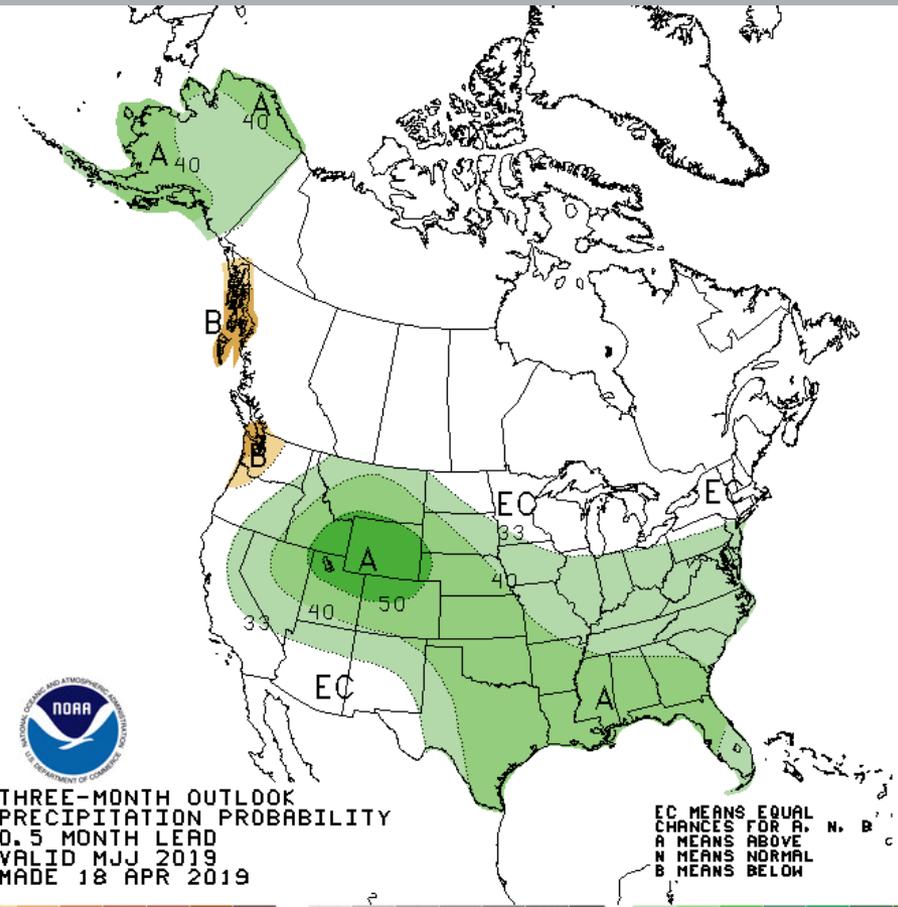
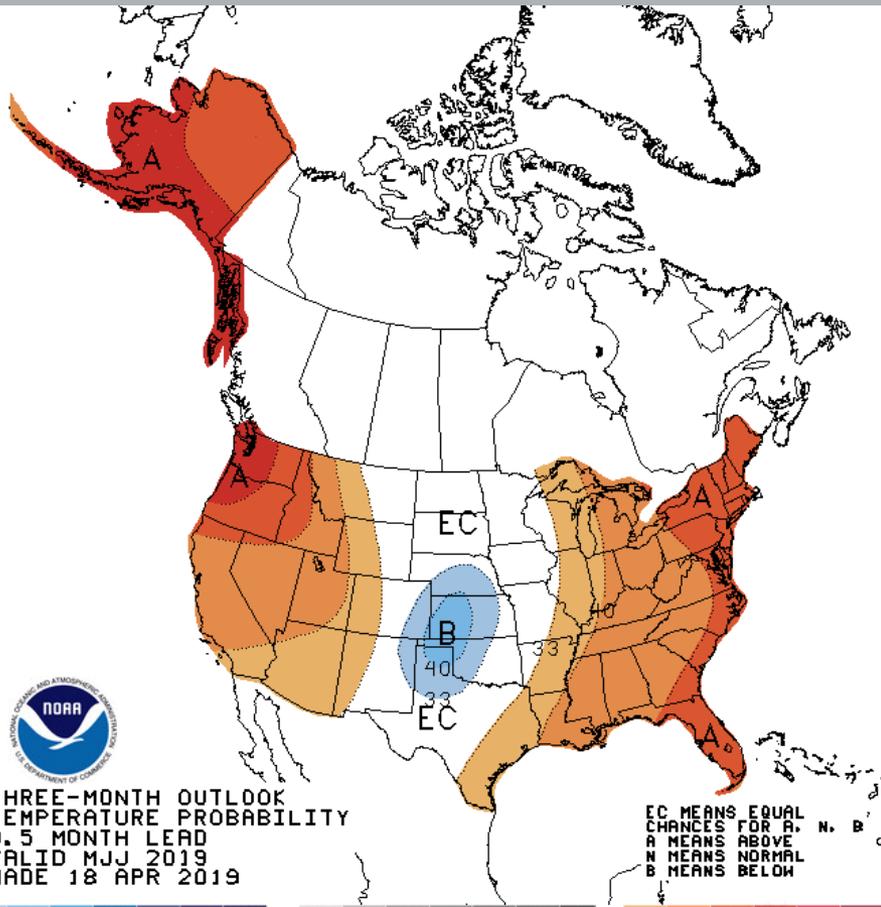
El Nino Years May – Sep. Precipitation Departures (inches)

NOAA/NCDC Climate Division Composite Precipitation Anomalies (in)
May to Sep 1965,1972,1982,1987,1991,1993,1994,1997,2009,2002
Versus 1981–2010 Longterm Average



NOAA Extended Outlook May - July 2019

Much of the outlook is due to persistence and trend...



Temperature

Precipitation



Questions?

GROUNDWATER AND SALINE WATER INTRUSION MONITORING NETWORK INFRASTRUCTURE IMPROVEMENTS: KENT COUNTY, DELAWARE



Water Supply Coordinating Council
May 2019



PROJECT
Wicced
WATER in the
CHANGING COASTAL ENVIRONMENT
of DELAWARE



TIDEWATER
UTILITIES, INC.
A Middlesex Water Company Affiliate



PROJECT BACKGROUND

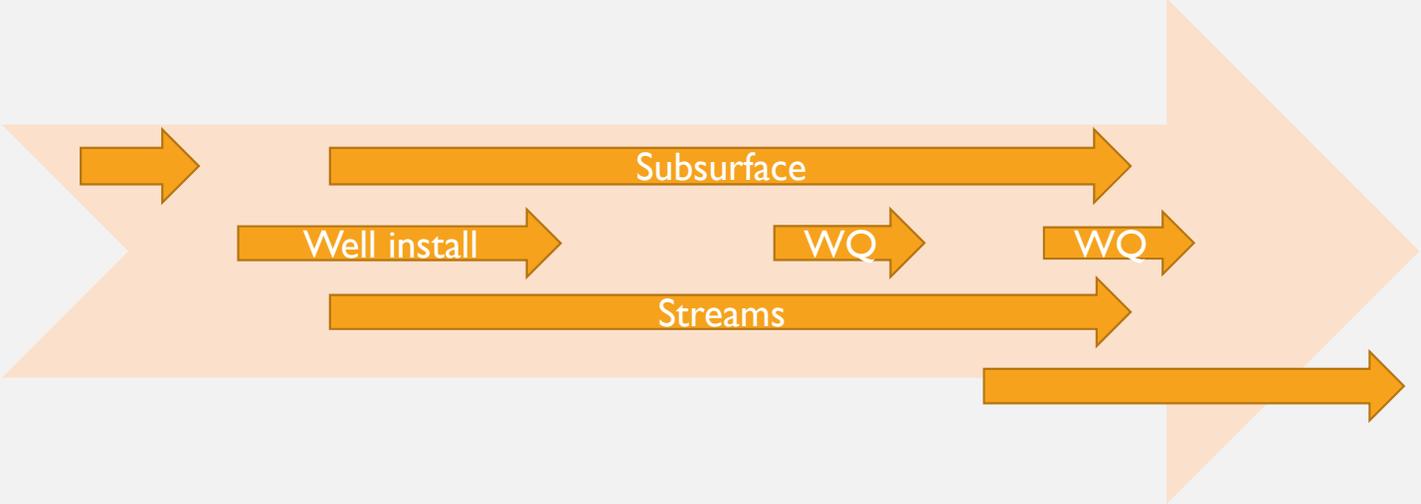
- Purpose
 - Modernize water monitoring infrastructure
 - Fill gaps in monitoring network
 - Provide baseline data for previously unmonitored areas
 - Fill data needs for water management and policy
- Southern NCC and northern KC project 2012-2015
- KC project capital funding approved FY 2017 – ends FY 2020
 - Currently used aquifers throughout County
 - East Dover focus area
- Project WiCCED, NGWMN overlap and leveraging

TIMELINE

Nov 2016
Startup

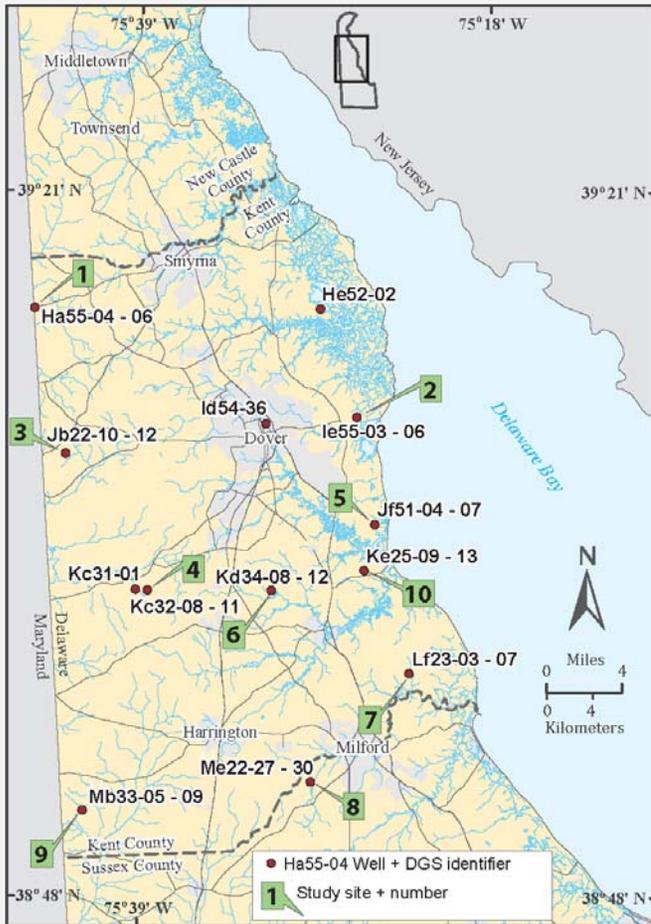
Field work

Analysis, write-up, review



0 ————— 12 ————— 24 ————— 36
Months

INFRASTRUCTURE PROGRESS



- Test borings, logs and wells completed at 10 of 10 proposed sites
 - Multiple aquifers at each site
 - Costs lower than NCCo project
- 2 stream gages re-activated by USGS
- Monitoring stations and wells installed at two irrigation ponds/marshes in east Dover focus area
- Instrumentation installed and operating in new wells and east Dover
- 3 short-term partial record tide height/salinity gages

PROJECT RESULTS RELEASED

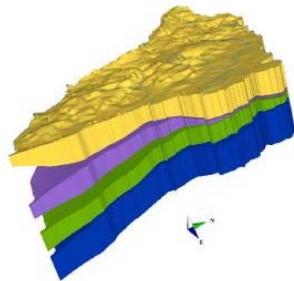


State of Delaware
DELAWARE GEOLOGICAL SURVEY
David R. Wunsch, State Geologist



OPEN FILE REPORT NO. 52

RESULTS OF GROUNDWATER FLOW SIMULATIONS IN THE EAST DOVER AREA, DELAWARE



By

Changming He and A. Scott Andres
University of Delaware
Newark, Delaware
2018

OPEN FILE REPORT No. 53 KENT COUNTY GROUNDWATER MONITORING PROJECT: RESULTS OF SUBSURFACE EXPLORATION



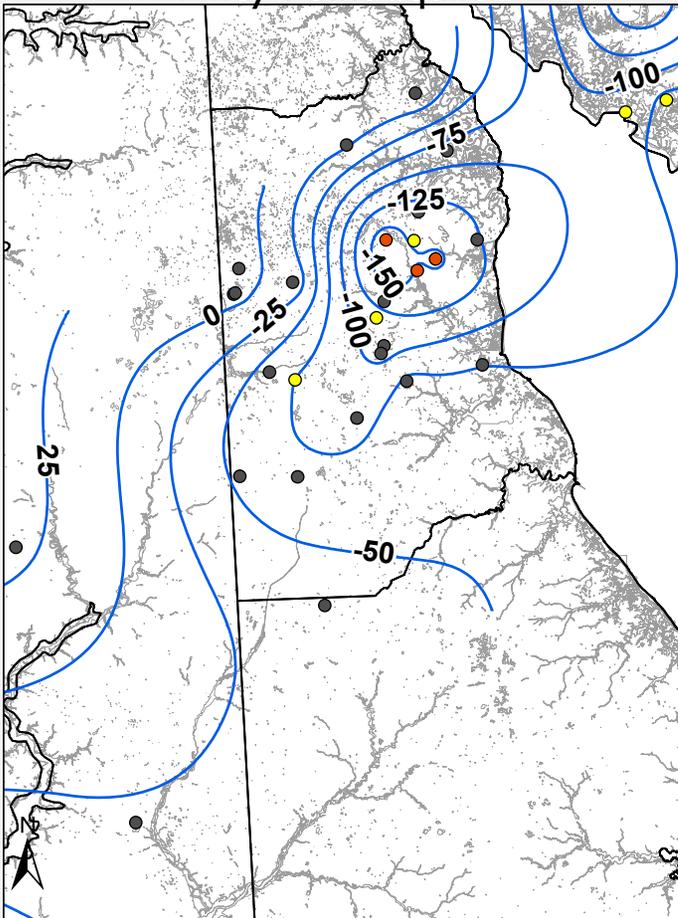
By

A. Scott Andres, Rachel W. McQuiggan and Changming He

University of Delaware
Newark, Delaware
2019

PINEY POINT REGIONAL ISSUES

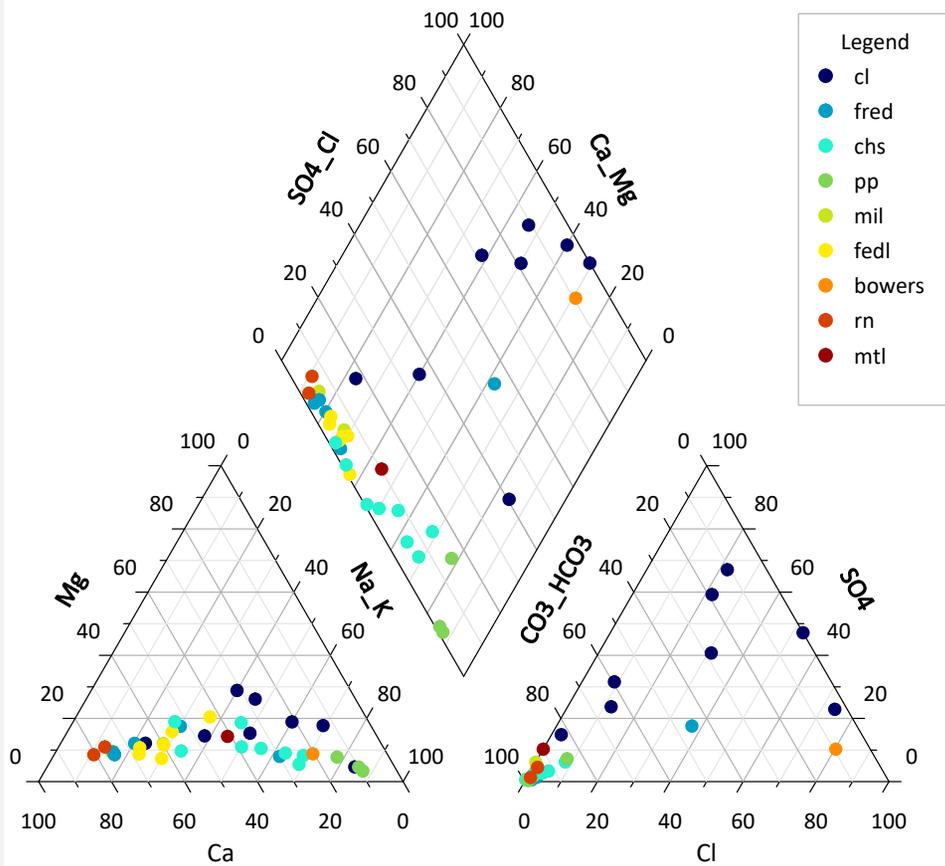
Piney Point aquifer



- Multi-state issue
 - Monitoring DE, NJ & MD
- Recent more rapid decline
 - Increase in water use in DE (Dover) and NJ (Bridgeton)
- Potential for drawdown in Dover to reach the top of aquifer within 10 to 15 years

GROUNDWATER QUALITY

Kent County Aquifers



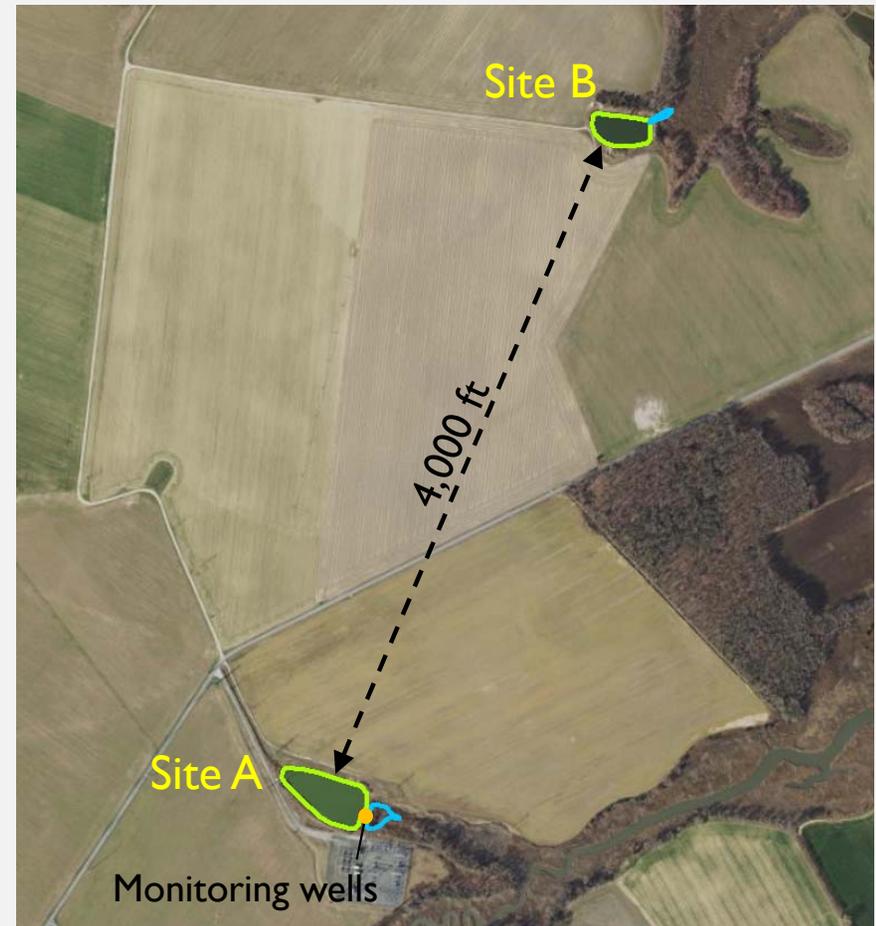
- 8 of the 10 new sites sampled, plus 2 additional domestic wells in Bowers Beach and Felton
- No surprises in the data
- 2nd round of sampling will occur this summer and include all 10 sites
- Continuous salinity monitoring found hint of elevated values in Milford aquifer at MNWA, Piney Point at WBWA

EAST DOVER FOCUS AREA

- Working with farmers near LPRW
- New infrastructure installed
 - Level + salinity monitoring at 2 irrigation ponds and connected marshes
 - Level + salinity monitoring in 10 wells
- EPSCoR WiCCED will work on more farms



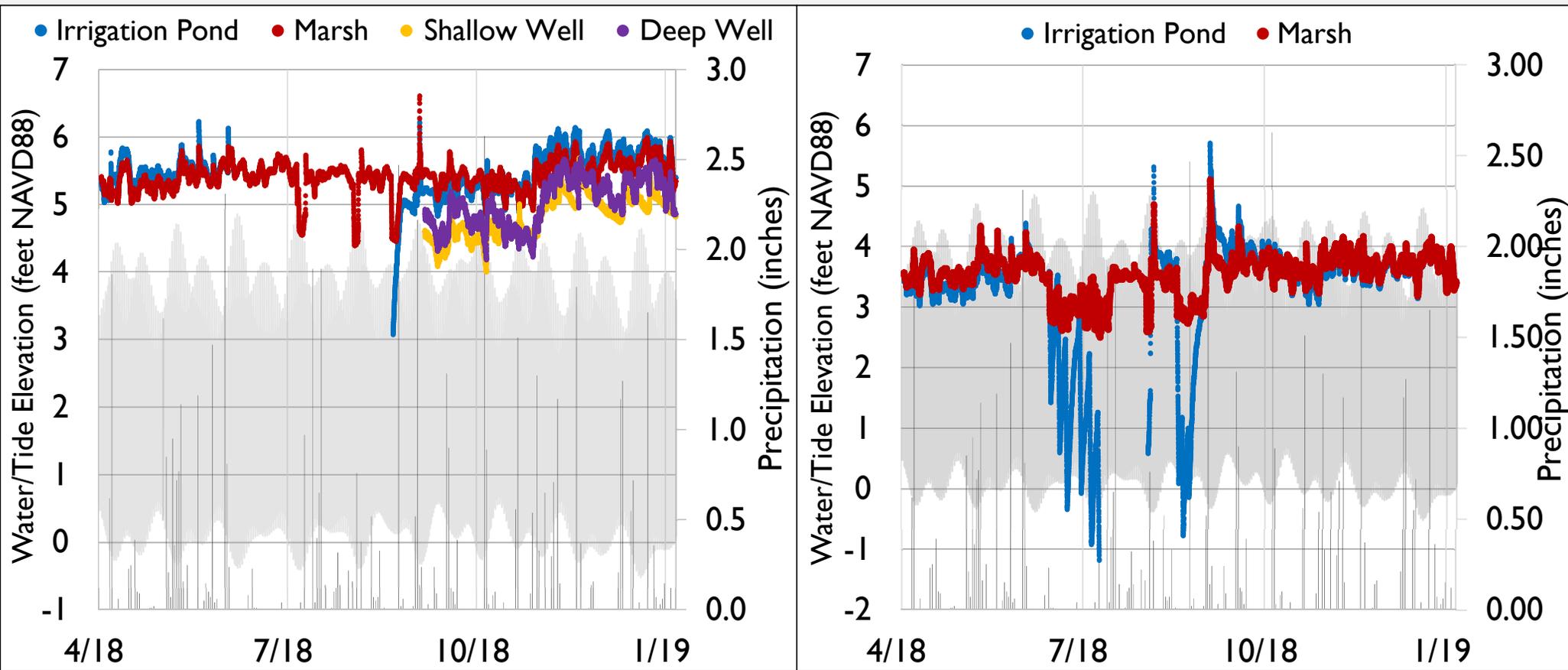
*Level gage and
logger housing at
Site A marsh*



EAST DOVER WATER LEVELS

Site A

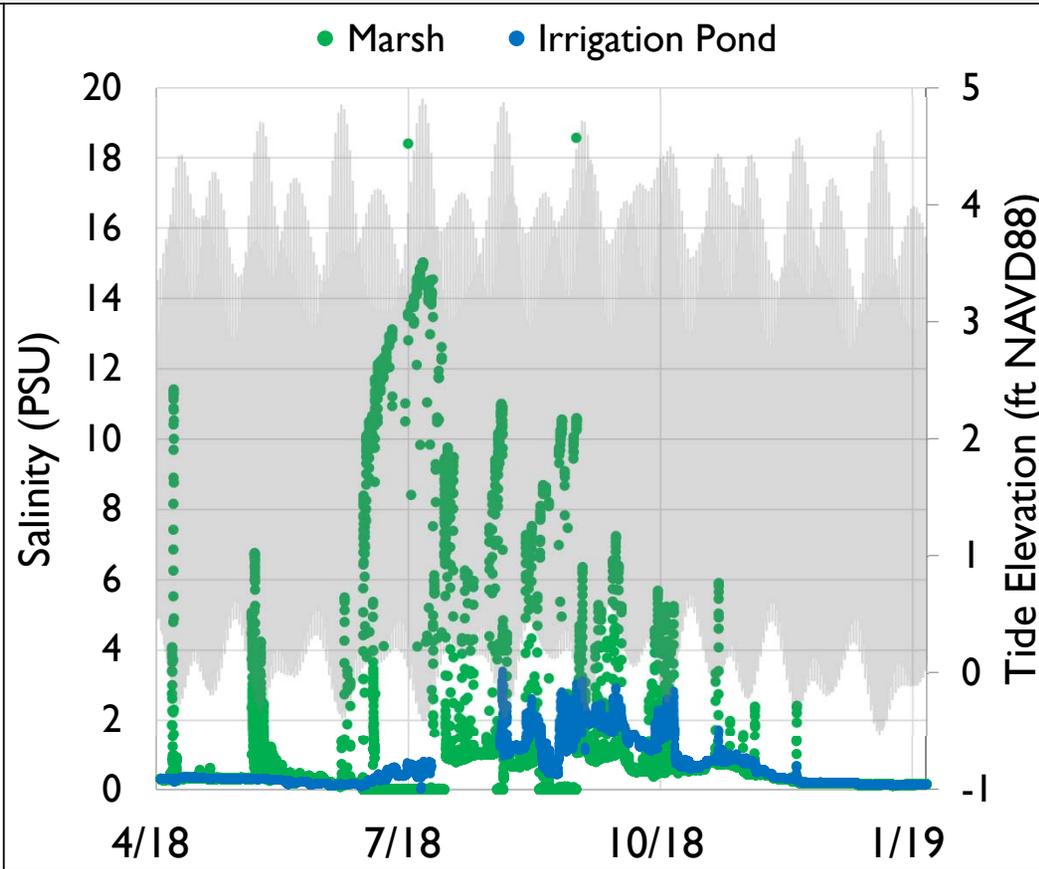
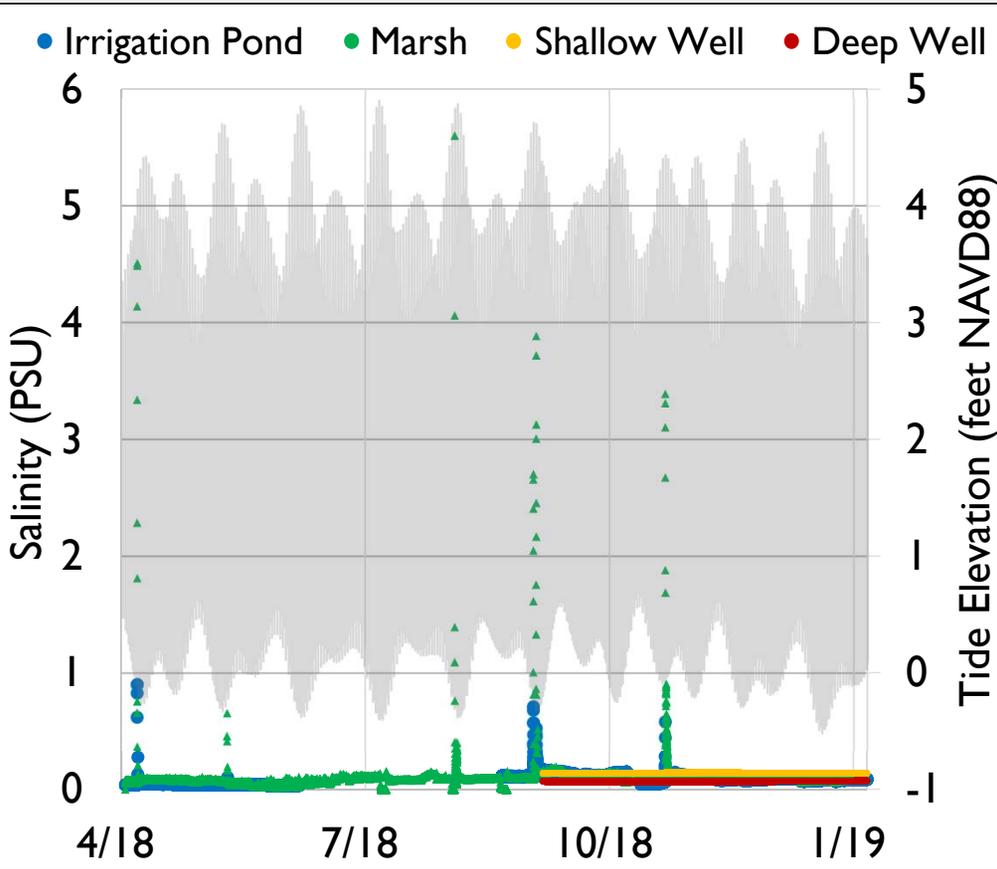
Site B



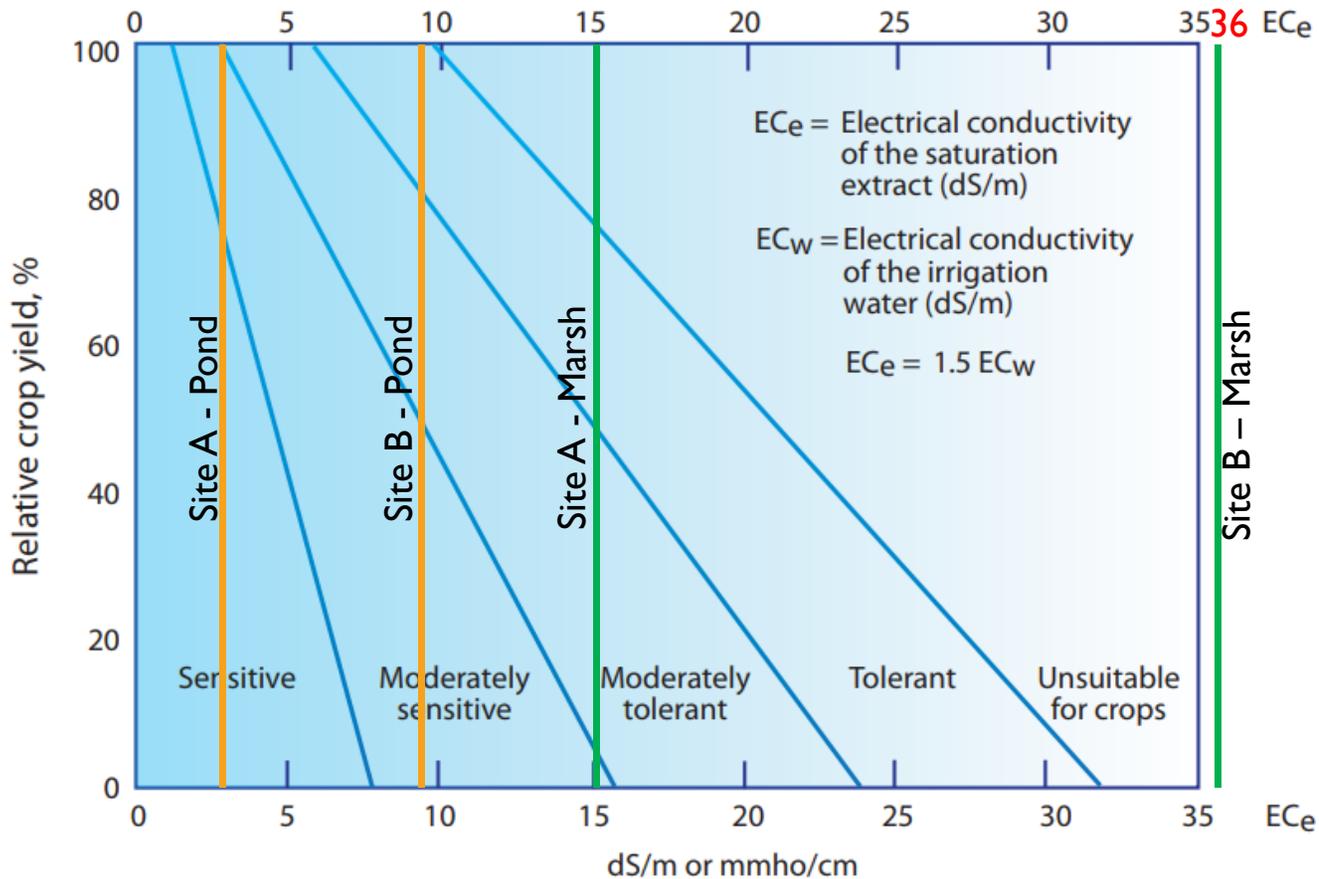
EAST DOVER SALINITY

Site A

Site B



CROP TOLERANCE TO SALINITY



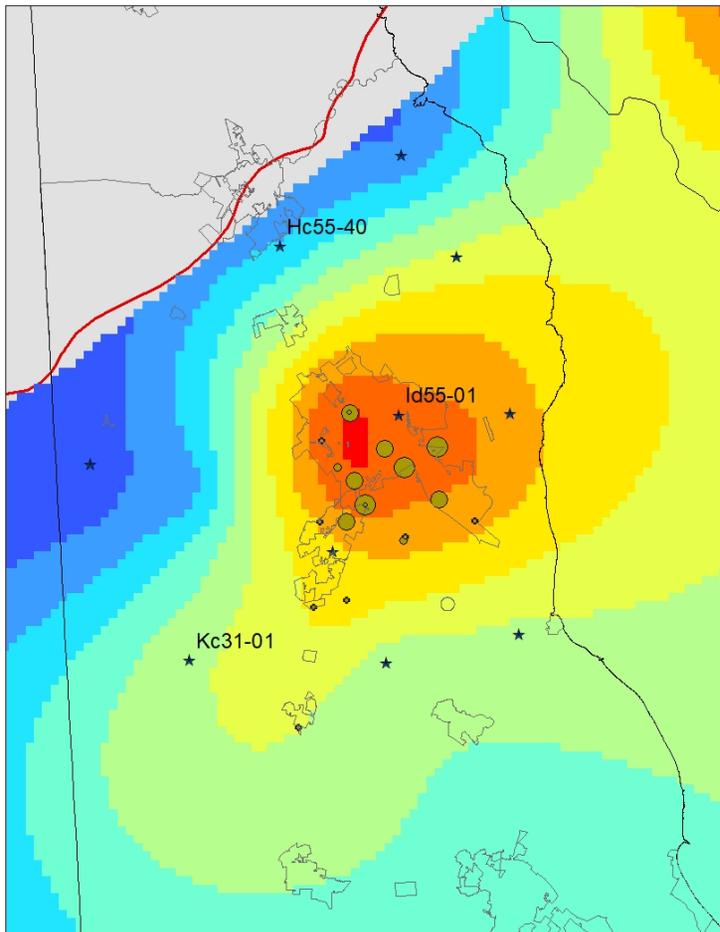
- Soybeans are “moderately tolerant”
- Corn is “moderately sensitive”
- Lines represent salinity/conductivity PEAKS during summer irrigation season

UCANR, 2016, adapted from Maas and Grattan, 1999; Grieve et al., 2012).

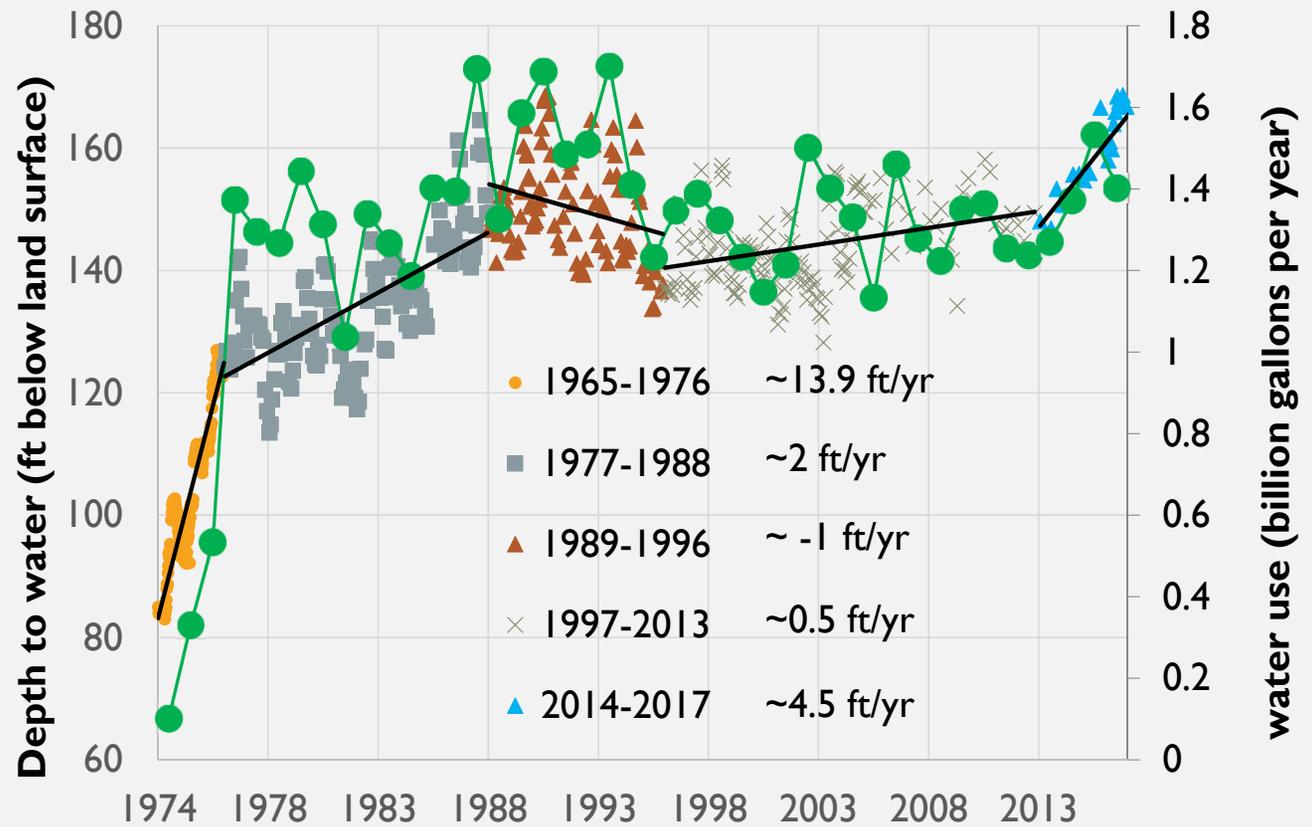
FUTURE WORK

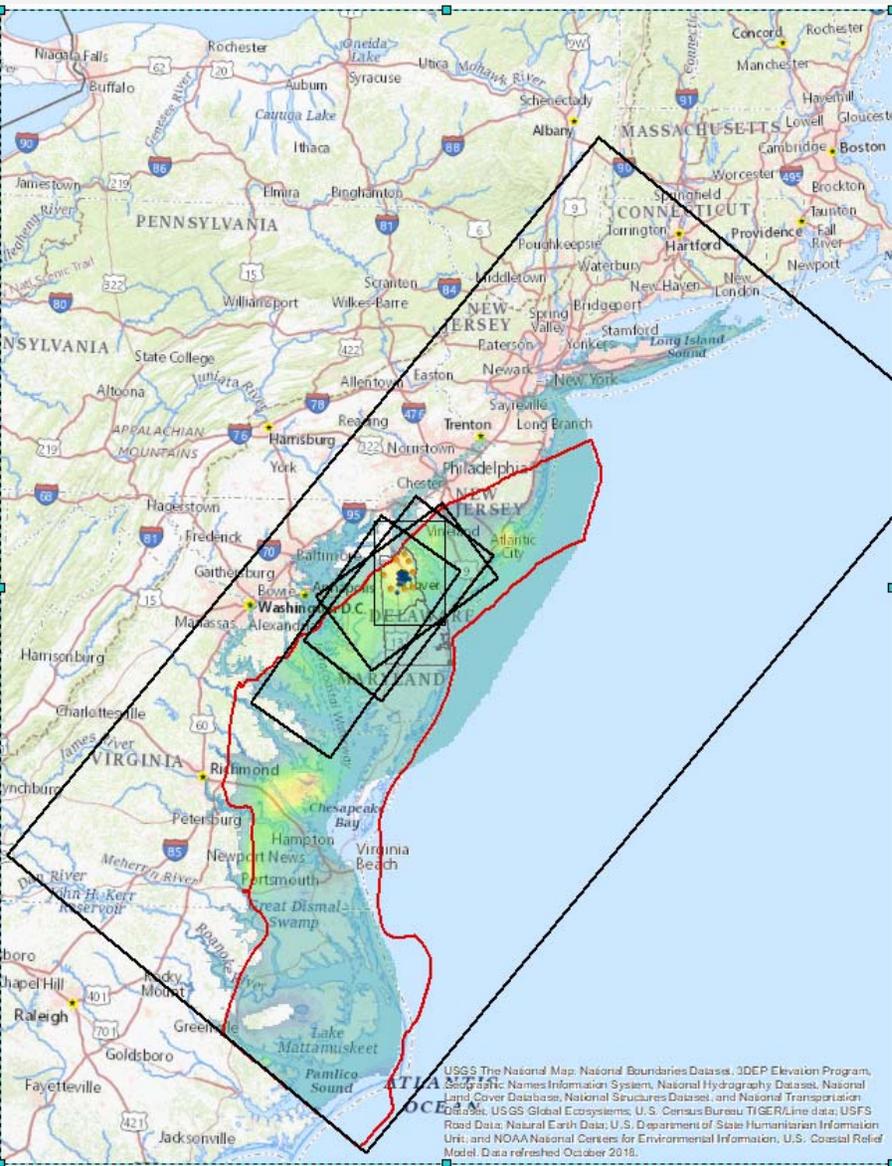
- EPSCoR WiCCED project adding to the east Dover study
- 2nd round of water quality sampling will provide further data to establish general trends in aquifer geochemistry
- Groundwater model proposal being prepared – will need input from WSCC Kent County working group

CASE FOR GW MODEL OF PINEY POINT AQUIFER

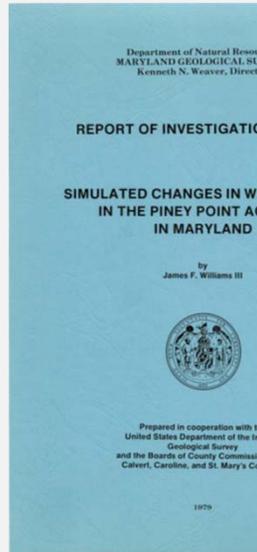


Id55-01 water level decline and PP aquifer water use

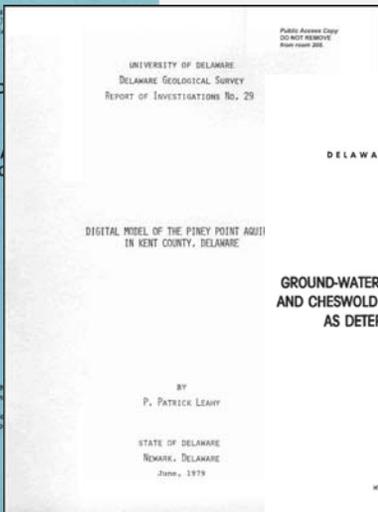




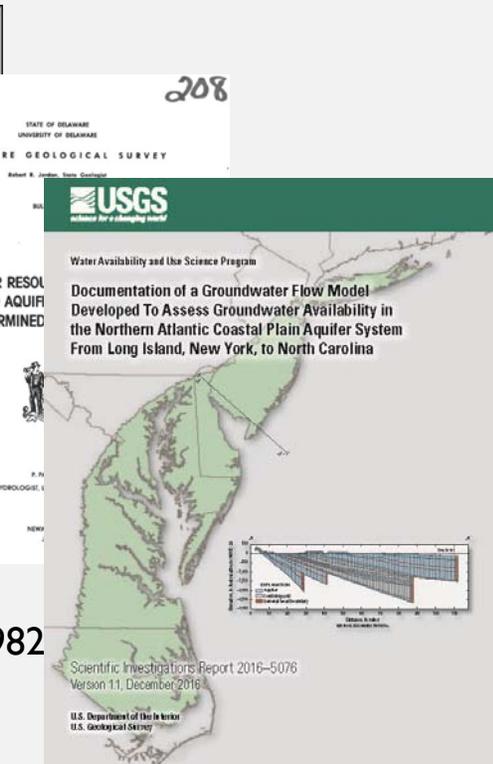
GW MODELS ARE S.O.P.



MGS RI31, 1979



DGS RI29, 1979



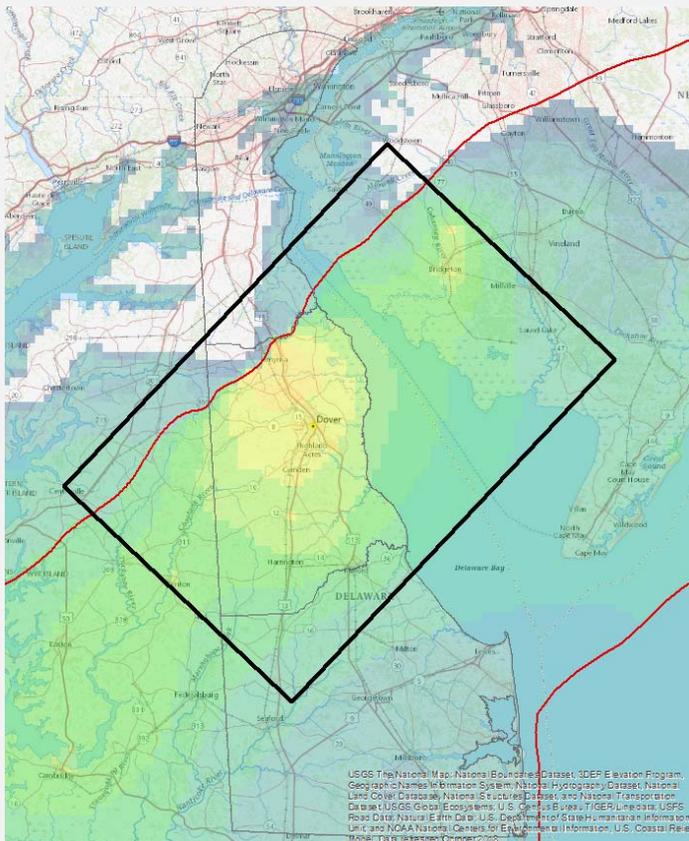
DGS BI6, 1982

USGS SIR2016-5076, 2016

Plus several county-scale models in MD and NJ

USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Database; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed October 2016.

OBJECTIVES OF FLOW MODEL



What a new modeling effort can do:

- Quantitatively define the relation between water use and groundwater drawdown in the Piney Point aquifer, past and future.
- Characterize how PP receives recharge from overlying aquifers
- Estimate land subsidence due to pumping from Piney Point.

What a new modeling effort should include:

- Steady state and transient model to simulate the groundwater flow between 1978-2018 (40 years data)
- Simulate shallow aquifers too, including Columbia, (Frederica, Federalsburg and Cheswold) aquifers.

QUESTIONS

DELAWARE WATER SUPPLY COORDINATING COUNCIL ROLL CALL SHEET

2018 Self-Sufficiency Report Vote

ARTESIAN

Designated Agency	IN FAVOR (Yeah's)	OPPOSED (Nah's)	ABSTAINED	NOT PRESENT
The Secretary of DNREC or the Secretary's Designee (serves as Chair of the Council)	✓			
The Secretary of the Dept. of Agriculture or the Secretary's Designee	✓			
The Exec. Director of the Public Service Commission or the Exec. Director's Designee			✓	
The Director of DEMA or the Director's Designee				✓
The Director of the Div. of Public Health or the Director's Designee	✓			
The Public Advocate or the Public Advocate's Designee				✓
The Director of the DGS or the Director's Designee	✓			
The Director of the <u>WRA</u> at the U of D or the Director's Designee	✓			
The Exec. Director of the <u>DRBC</u> or the Exec. Director's Designee	✓			
A representative of the office of the <u>Governor</u>				✓
New Castle County Government Representative	✓			
Kent County Government Representative				✓
Sussex County Government Representative				✓
Artesian Water			✓	
City of New Castle			✓	
City of Newark	✓			
SUEZ (formerly United Water)			✓	
City of Wilmington	✓			
Tidewater Utilities			✓	
Sussex Shores				✓
A representative of <u>public water supply utilities from the membership of Sussex County Assoc. of Towns (SCAT)</u>				✓
A representative of <u>public water supply utilities of Kent County from the membership of the League of Local Governments</u>				✓
A representative from the <u>DRWA</u>				✓
New Castle County Chamber of Commerce				✓
Kent County Chamber of Commerce				✓
Sussex County Chamber of Commerce				✓
A representative of the <u>Delaware State Chamber of Commerce</u>				✓
A representative of the <u>Delaware Nursery and Landscape Assoc.</u>	✓			
A representative of the <u>Delaware Grounds Management Assoc.</u>	✓			
A representative of the <u>Delaware State Golf Assoc.</u>	✓			
A representative of the <u>Delaware Nature Society</u>	✓			
A representative from the <u>Delaware Farm Bureau</u>	✓			
A representative from the <u>Center for Inland Bays</u>				✓
The <u>State Fire Marshal</u> or the State Fire Marshal's Designee	✓			
A representative from the <u>Civic League for NCC</u>	✓			
A representative from the <u>Coalition of Natural Stream Valleys</u>				✓
The <u>State Climatologist</u> or State Climatologist's Designee	✓			

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DELAWARE WATER SUPPLY COORDINATING COUNCIL ROLL CALL SHEET

2018 Self-Sufficiency Report Vote

MUNICIPAL SERVICES COMMISSION (New Castle)

Designated Agency	IN FAVOR (Yeah's)	OPPOSED (Nah's)	ABSTAINED	NOT PRESENT
The Secretary of DNREC or the Secretary's Designee (serves as Chair of the Council)	✓			
The Secretary of the Dept. of Agriculture or the Secretary's Designee	✓			
The Exec. Director of the Public Service Commission or the Exec. Director's Designee			✓	
The Director of DEMA or the Director's Designee				✓
The Director of the Div. of Public Health or the Director's Designee	✓			
The Public Advocate or the Public Advocate's Designee				✓
The Director of the DGS or the Director's Designee	✓			
The Director of the <u>WRA</u> at the U of D or the Director's Designee	✓			
The Exec. Director of the <u>DRBC</u> or the Exec. Director's Designee	✓			
A representative of the office of the <u>Governor</u>				✓
New Castle County Government Representative	✓			
Kent County Government Representative				✓
Sussex County Government Representative				✓
Artesian Water			✓	
City of New Castle			✓	
City of Newark	✓			
SUEZ (formerly United Water)			✓	
City of Wilmington	✓			
Tidewater Utilities			✓	
Sussex Shores				✓
A representative of <u>public water supply utilities from the membership of Sussex County Assoc. of Towns (SCAT)</u>				✓
A representative of <u>public water supply utilities of Kent County from the membership of the League of Local Governments</u>				✓
A representative from the <u>DRWA</u>				✓
New Castle County Chamber of Commerce				✓
Kent County Chamber of Commerce				✓
Sussex County Chamber of Commerce				✓
A representative of the <u>Delaware State Chamber of Commerce</u>				✓
A representative of the <u>Delaware Nursery and Landscape Assoc.</u>	✓			
A representative of the <u>Delaware Grounds Management Assoc.</u>	✓			
A representative of the <u>Delaware State Golf Assoc.</u>	✓			
A representative of the <u>Delaware Nature Society</u>	✓			
A representative from the <u>Delaware Farm Bureau</u>	✓			
A representative from the <u>Center for Inland Bays</u>				✓
The <u>State Fire Marshal</u> or the State Fire Marshal's Designee	✓			
A representative from the <u>Civic League for NCC</u>	✓			
A representative from the <u>Coalition of Natural Stream Valleys</u>				✓
The <u>State Climatologist</u> or State Climatologist's Designee	✓			

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DELAWARE WATER SUPPLY COORDINATING COUNCIL ROLL CALL SHEET

2018 Self-Sufficiency Report Vote

CITY OF WILMINGTON

Designated Agency	IN FAVOR (Yeah's)	OPPOSED (Nah's)	ABSTAINED	NOT PRESENT
The Secretary of DNREC or the Secretary's Designee (serves as Chair of the Council)	✓			
The Secretary of the Dept. of Agriculture or the Secretary's Designee	✓			
The Exec. Director of the Public Service Commission or the Exec. Director's Designee			✓	
The Director of DEMA or the Director's Designee				✓
The Director of the Div. of Public Health or the Director's Designee	✓			
The Public Advocate or the Public Advocate's Designee				✓
The Director of the DGS or the Director's Designee	✓			
The Director of the <u>WRA</u> at the U of D or the Director's Designee	✓			
The Exec. Director of the <u>DRBC</u> or the Exec. Director's Designee	✓			
A representative of the office of the <u>Governor</u>				✓
New Castle County Government Representative	✓			
Kent County Government Representative				✓
Sussex County Government Representative				✓
Artesian Water			✓	
City of New Castle			✓	
City of Newark	✓			
SUEZ (formerly United Water)			✓	
City of Wilmington	✓			
Tidewater Utilities	✓			
Sussex Shores				✓
A representative of <u>public water supply utilities from the membership of Sussex County Assoc. of Towns (SCAT)</u>				✓
A representative of <u>public water supply utilities of Kent County from the membership of the League of Local Governments</u>				✓
A representative from the <u>DRWA</u>				✓
New Castle County Chamber of Commerce				✓
Kent County Chamber of Commerce				✓
Sussex County Chamber of Commerce				✓
A representative of the <u>Delaware State Chamber of Commerce</u>				✓
A representative of the <u>Delaware Nursery and Landscape Assoc.</u>	✓			
A representative of the <u>Delaware Grounds Management Assoc.</u>			✓	
A representative of the <u>Delaware State Golf Assoc.</u>	✓			
A representative of the <u>Delaware Nature Society</u>	✓			
A representative from the <u>Delaware Farm Bureau</u>	✓			
A representative from the <u>Center for Inland Bays</u>				✓
The <u>State Fire Marshal</u> or the State Fire Marshal's Designee	✓			
A representative from the <u>Civic League for NCC</u>		✓		
A representative from the <u>Coalition of Natural Stream Valleys</u>				✓
The <u>State Climatologist</u> or State Climatologist's Designee	✓			

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DELAWARE WATER SUPPLY COORDINATING COUNCIL ROLL CALL SHEET

2018 Self-Sufficiency Report Vote

SUEZ

<u>Designated Agency</u>	<u>IN FAVOR</u> (Yeah's)	<u>OPPOSED</u> (Nah's)	<u>ABSTAINED</u>	<u>NOT</u> <u>PRESENT</u>
The Secretary of DNREC or the Secretary's Designee (serves as Chair of the Council)	✓			
The Secretary of the Dept. of Agriculture or the Secretary's Designee	✓			
The Exec. Director of the Public Service Commission or the Exec. Director's Designee			✓	
The Director of DEMA or the Director's Designee				✓
The Director of the Div. of Public Health or the Director's Designee	✓			
The Public Advocate or the Public Advocate's Designee				✓
The Director of the DGS or the Director's Designee	✓			
The Director of the <u>WRA</u> at the U of D or the Director's Designee	✓			
The Exec. Director of the <u>DRBC</u> or the Exec. Director's Designee	✓			
A representative of the office of the <u>Governor</u>				✓
New Castle County Government Representative	✓			
Kent County Government Representative				✓
Sussex County Government Representative				✓
Artesian Water			✓	
City of New Castle			✓	
City of Newark	✓			
SUEZ (formerly United Water)			✓	
City of Wilmington	✓			
Tidewater Utilities			✓	
Sussex Shores				✓
A representative of <u>public water supply utilities from the membership of Sussex County Assoc. of Towns (SCAT)</u>				✓
A representative of <u>public water supply utilities of Kent County from the membership of the League of Local Governments</u>				✓
A representative from the <u>DRWA</u>				✓
New Castle County Chamber of Commerce				✓
Kent County Chamber of Commerce				✓
Sussex County Chamber of Commerce				✓
A representative of the <u>Delaware State Chamber of Commerce</u>				✓
A representative of the <u>Delaware Nursery and Landscape Assoc.</u>	✓			
A representative of the <u>Delaware Grounds Management Assoc.</u>	✓			
A representative of the <u>Delaware State Golf Assoc.</u>	✓			
A representative of the <u>Delaware Nature Society</u>	✓			
A representative from the <u>Delaware Farm Bureau</u>	✓			
A representative from the <u>Center for Inland Bays</u>				✓
The <u>State Fire Marshal</u> or the State Fire Marshal's Designee	✓			
A representative from the <u>Civic League for NCC</u>		✓		
A representative from the <u>Coalition of Natural Stream Valleys</u>				✓
The <u>State Climatologist</u> or State Climatologist's Designee	✓			

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DELAWARE WATER SUPPLY COORDINATING COUNCIL ROLL CALL SHEET

2018 Self-Sufficiency Report Vote

CITY OF NEWARK

Designated Agency	IN FAVOR (Yeah's)	OPPOSED (Nah's)	ABSTAINED	NOT PRESENT
The Secretary of DNREC or the Secretary's Designee (serves as Chair of the Council)	✓			
The Secretary of the Dept. of Agriculture or the Secretary's Designee	✓			
The Exec. Director of the Public Service Commission or the Exec. Director's Designee			✓	
The Director of DEMA or the Director's Designee				✓
The Director of the Div. of Public Health or the Director's Designee	✓			
The Public Advocate or the Public Advocate's Designee				✓
The Director of the DGS or the Director's Designee	✓			
The Director of the WRA at the U of D or the Director's Designee	✓			
The Exec. Director of the DRBC or the Exec. Director's Designee	✓			
A representative of the office of the Governor				✓
New Castle County Government Representative	✓			
Kent County Government Representative				✓
Sussex County Government Representative				✓
Artesian Water			✓	
City of New Castle			✓	
City of Newark	✓			
SUEZ (formerly United Water)			✓	
City of Wilmington	✓			
Tidewater Utilities	✓			
Sussex Shores				✓
A representative of public water supply utilities from the membership of Sussex County Assoc. of Towns (SCAT)				✓
A representative of public water supply utilities of Kent County from the membership of the League of Local Governments				✓
A representative from the DRWA				✓
New Castle County Chamber of Commerce				✓
Kent County Chamber of Commerce				✓
Sussex County Chamber of Commerce				✓
A representative of the Delaware State Chamber of Commerce				✓
A representative of the Delaware Nursery and Landscape Assoc.	✓			
A representative of the Delaware Grounds Management Assoc.	✓			
A representative of the Delaware State Golf Assoc.	✓			
A representative of the Delaware Nature Society	✓			
A representative from the Delaware Farm Bureau	✓			
A representative from the Center for Inland Bays				✓
The State Fire Marshal or the State Fire Marshal's Designee	✓			
A representative from the Civic League for NCC	✓			
A representative from the Coalition of Natural Stream Valleys				✓
The State Climatologist or State Climatologist's Designee	✓			

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