

Delaware Water Supply Coordinating Council Meeting
April 19, 2018
Draft Meeting Minutes

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

Mr. Smailer called the meeting to order at 8:58 a.m. and welcomed everyone. Mr. Smailer informed everyone that today's meeting must end by 11:00 a.m. due to an afternoon meeting being held in the conference room. The meeting attendance list is included at the end of the meeting minutes.

REVIEW OF THE JANUARY 25, 2018 DRAFT MEETING MINUTES

Mr. Joe DiNunzio motioned to approved. Mr. Charles Jenner complimented the quality of the meeting minutes and seconded Mr. DiNunzio's motion to approve. Mr. Vic Singer suggested an edit or possibly have stricken from page 8 what he believes was an incorrect statement from him (since this meeting the sentence has been stricken from the draft meeting minutes before making final). Mr. DiNunzio motioned to approve minutes with Mr. Singer's edit. Ms. Sheila Shannon seconded. All were in favor.

Final meeting minutes are posted online at <https://publicmeetings.delaware.gov/Meeting/55885> .

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

Mr. Smailer announced that he wanted to move this agenda item until later in the meeting once Dr. Jerry Kauffman arrived. However, Mr. Smailer stated that he still has yet to receive any guidance from the Governor's office and Ms. Lydia Massey regarding the required Council members and he will keep reporting back to Council on the status.

WATER CONDITIONS REPORT –Stefanie Baxter, DGS

Ms. Baxter presented a handout summary as of April 18, 2018, 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*).

Ms. Baxter stated, "There are no indicators in drought status."

As stated in Ms. Baxter's handout:

- Precipitation for a 12-month period at the Wilmington Airport was +1.26" and -1.64" for a 6-month period.
- Brandywine Creek (30-day moving avg) was at 333.2 mgd.

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- White Clay Creek-Stanton (30-day moving avg) was at 128.7 mgd. White Clay Creek-Newark (30-day moving avg) was at 60.6 mgd.
- Well Db24-18 was at 12.49 (fbls) (average 7.7 to 12.4 fbls).
- Water Conditions Index was 7.12.
- Chlorides at 19.04 ppm as of 4/17/18 - average.
- Hoopes Reservoir (City of Wilmington) was at -1.2 ft as of 3/7/18. Mr. Sean Duffy was not present at the meeting to update.
- Newark Reservoir was at -6.0 ft as of 3/5/18. Mr. Tim Filasky stated that Newark Reservoir as of today is 2 ft. down and is now at -4.0 ft.
- Aquifer Storage and Recovery: SUEZ was at 29 mg as of 4/19/18; and AWC was at 15 mg as of 4/19/18. Mr. Larry Finnicum stated that as of today SUEZ was still at 29 mg and Mr. DiNunzio stated that as of today AWC is now at 38 mg.
- Chlorides on the Delaware River as of 4/15/18 are currently at River Mile 71 and the normal is River Mile 67.
- NYC DRB Reservoirs (DRBC as of 4/16/18) storage 270.7 bg or 89 bg above drought watch.
- The Kent County Hydrologic Conditions: precipitation Dover 12-month +1.73", 6-month -2.33", 5-month -1.13". Streamflow for the St. Jones at Dover 30-day moving average for March 19 to April 17 at 54.5 mgd and is above normal. Groundwater for Mc51-01a for April 2018 at 11.50 ft below land surface and is normal.
- The Sussex County Hydrologic Conditions: precipitation Georgetown 12-month -2.67", 6-month -3.45", 5-month -2.33". Streamflow for the Nanticoke River at Bridgeville 30-day moving average for March 19 to April 17 at 72.3 mgd and is normal. Groundwater for Qe44-01 for April 2018 at 7.49 ft below land surface and is below normal (avg. 6.2 to 7.1 fbls).

Ms. Baxter proceeded to discuss *Ground Water Levels from 2014-2018 in Db24-18* (New Castle), *Mc51-01a* (Kent), and *Qe44-01* (Sussex).

Ms. Baxter stated the following regarding Db24-18: "It is recharging. Not in drought watch but below normal range. Since 2014, water levels have been declining and we're keeping an eye on them." Ms. Baxter continued, "We're getting rain but we're not getting enough at the right amount of times for well to be recharging. Not coming back up to normal. We need a lot of rain. Once the plants start taking water from the ground, the level is not going to climb again. It's only going to go back down which it typically does this time of the year. The last four years it's steadily been declining." Mr. Smailer asked Ms. Baxter, "The average is over what time period?" Ms. Baxter deferred to Mr. Scott Andres, "Do you know the period of record for that well?" and Mr. Andres replied, "It dates back to the late 1950's." Ms. Baxter stated that this isn't unique to Delaware and that she had spoken to some representatives in New Jersey who also monitor groundwater levels and their wells in the Coastal Plain rebound but they are not recharging back up to their normal levels in the spring time. Mr. Kevin Brinson asked, "What is the typical lag between the precipitation we see in that area versus the recharge?" Ms. Baxter answered, "Weeks." Mr. Singer asked if there were manual readings and Ms. Baxter replied that there are manual and water level recordings. "Readings are taken every fifteen minutes," Ms. Baxter said.

Ms. Baxter stated the following regarding Mc51-01a: “No downward trend but it is lower than normal for this time of year. This well is even having a hard time getting back to normal after recharge.” Ms. Baxter continued to discuss.

Ms. Baxter stated the following regarding Qe44-01: “Trends along normal. Has points where it’s lower but it recharges and follows a similar trend where it typically does this time of year.”

Ms. Baxter added, “Sussex County groundwater levels are fine. Kent County is lagging a little bit but no obvious downward trend. New Castle has a trend. It’s just not recharging like several years ago.”

Mr. Jenner said, “The water level in Db24-10 is a concern for the Water Supply Coordinating Council. Also, if the trend were to be examined, the first thing to be looked at would be the correlation between the well level and the precipitation pattern.” Mr. Smailer also commented, “Without knowing specifics of recharge area can also possibly include usage in the area.” Ms. Baxter stated that she believes it’s mostly precipitation. Mr. DiNunzio stated, “One factor could be the frozen ground for a period of time delayed the recharge.” Mr. Smailer, Ms. Baxter, Mr. DiNunzio and Mr. Jenner continued to discuss.

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

FORECAST SYNOPSIS – Kevin Brinson, Assistant State Climatologist

Mr. Brinson presented a Power Point presentation (see attachment titled *Delaware Weather Update and Seasonal Outlook*):

Mr. Brinson said, “As Ms. Baxter stated, our water situation is in pretty good shape.”

As stated in the presentation *Winter 2018 Precipitation*:

- January-March 2018 was 45th wettest winter since 1895, with no month having too much or too little precipitation.
- Statewide Precipitation Average was 11.24 inches (0.73 inches above normal)
- Last 90 days have been 2-4 inches above normal!

Mr. Brinson said, “The last few months overall have been a little wet but not extremely wet. Kent County and Southern New Castle County have seen 2-4” of precipitation above average. Sussex County slightly less. The last 90 days have been pretty good as far as precipitation is concerned.”

Mr. Brinson continued, “We had an above average snowfall year.”

- Above normal snowfall this winter for Delaware
 - 28 inches at Wilmington airport – 7.9 inches above normal
 - 12 measurable snow events statewide. “A little busier than usual for the state. More cold air than usual this winter,” Mr. Brinson stated.

As stated in the presentation *Winter 2018 Temperatures*:

- Up and down temperatures this winter, but average overall.
 - January 0.9 BELOW normal
 - February 8.2 ABOVE normal
 - March 2.6 ABOVE normal
 - Technically, the last 3 months were just about normal (on average) (0.2 ABOVE normal)

Mr. Brinson said, “The only slightly warm anomaly was in the middle of Sussex County. This winter was a lot of ups and downs but the average over a three month period were pretty typical temperatures.”

As stated in the presentation *Drought Monitor*:

- About 17% of Delaware (southern Sussex County mainly) in D0 (abnormally dry) as of 4/10/18
- Three months ago, 59% of state was D0.
- Nothing unusual drought-wise statewide.

Mr. Brinson said, “The only area in the northeast region right now that has any drought monitor sense is the abnormally dry area around Maryland and a part of Delmarva including a little bit of Sussex County.”

Mr. Brinson discussed the *Spring/Early Summer Forecast*. He showed a map of the Pacific Ocean looking at sea surface temperatures referring to the presentation *Our Current La Niña Event*. “The blue area on the map in the Eastern Pacific is typical of a La Niña. We have been in for a while. La Niña and El Niño have an impact on our weather patterns in the U.S. We are coming out of La Niña and moving more towards a neutral pattern as shown in the presentation *El Niño / La Niña Forecast for 2018*. Mr. Brinson then discussed the presentation *Neutral Years Temperature Departures (F)*. He stated, “This map shows Delaware in slightly above normal temperatures which is typical in neutral years of El Niño and La Niña.” Mr. Brinson then discussed the presentation *Neutral Years Precipitation Departures (inches)*. He stated, “This map shows a little above normal in our precipitation. A little warm and a little wet is what to expect for the rest of spring and into early summer.”

Mr. Brinson discussed the *NOAA Extended Outlook May-July 2018*. “Calling for slightly above temperatures for a lot of the U.S. and here in our region and calling for normal precipitation in our region,” he said.

As stated in Mr. Brinson’s *Summary*:

- Last 90 days have seen above average precipitation
- Growing season beginning soon; evaporative demand will increase
- Climate outlook suggests slightly warm, wet spring/early summer ahead

Mr. Brinson asked Council if there were any questions. There were no questions asked.

DELAWARE RIVER BASIN DROUGHT STATUS – Ken Najjar, DRBC

Mr. Najjar stated, “There are currently no drought conditions. Drought was declared in November 2016 and came out in January 2017. Conditions have improved since then. Reservoirs are full. Salt line is still above median but working its way down about a mile down from last week. Should improve over the next several weeks because of a lot of rainfall over the weekend and the flows at Trenton are above normal (32,000 cfs). Reservoirs at NYC are full and presently may be spilling. All reservoirs are full.”

Mr. Smailer said, “Back at the January 2018 meeting things were headed downward and it seems like between then and now things have gotten substantially better.”

WATER UTILITY REPORTS

Artesian – Joe DiNunzio presented: “February’s system delivery was 17.1 mgd for Northern New Castle County. March it went up to 17.6 mgd. Month-to-date for April we’re at 17 mgd with yesterday being 16.3 mgd. The interesting part of the trend this winter has been because of that cold snap and the main breaks. Not necessarily usage by customers. ASR about 38 mg stored as we speak. Injecting at a rate of about 550,000 gallons a day. Targeting about 100 mg in storage. If everything cooperates, we will continue storing past Memorial Day if there’s not a need to withdraw. Otherwise, normal routine seasonal cycle of station maintenance going on and taking care of upgrades and maintenance.”

Newark – Tim Filasky presented: “Holding steady at about 3 mgd. Reservoir is essentially full, about two feet from the top. One large project coming up for our Curtis Water Treatment Plant, our Surface Water Intake Treatment Plant, to change our chlorination over to hypo from gaseous chlorine. It goes in front of Council this coming Monday to get approval. We do have our referendum slated, if it moves forward, on June 19 and not sure what the questions are going to be but right now some questions include a recap of our South Wellfield Treatment Plan which is over top of a Super Fund site.”

New Castle – Jay Guyer presented: “Everything normal. Well levels are good for this time of year. January we did about an average of ½ mgd. February, March and April month-to-date consumption has been a little less. No water main breaks, no issues during the cold snap. Upcoming activities include a couple of large water main projects and re-pipe our interconnection room at our School Lane Treatment Facility. Have some upgrades going on with pumps to VFD controllers and crews doing maintenance on the system as far as projects for the City. Start spring hydro-flushing program on April 23 which should take about ten days to complete the system.”

SUEZ – Larry Finnicum presented: “Up about 1 mgd from this time last year so we are at about 15 mgd right now driven by our industrial/commercial customers. Started to recharge the ASR this week and the goal is to have it recharged by Labor Day so that we can recover in October/November. Our Edgemoor Reservoir is currently out of service right now for some maintenance and will be back in service in two weeks.”

Wilmington – Not present.

Tidewater – Sheila Shannon presented: “Fairly normal. Did experience a lot of main breaks with the cold. New Castle County about 0.49 mgd, Kent County 1.54 mgd and Sussex County 2.63 mgd. Year-to-date March, New Castle County 6.4% above, Kent County 5.0% below, and Sussex County 1.4% above.”

Sussex Shores – Not present.

OLD BUSINESS (moved from earlier on the agenda) – Steven M. Smailer, P.G., Chair, and Dr. Jerry Kauffman, WRA, Director

Dr. Kauffman gave an update on the Thirteenth Report to the Governor and General Assembly. “It’s ready to go,” Dr. Kauffman said. He continued, “Projected Water Supply and Demands through 2030. There’s plenty of water in Northern New Castle County. Healthy surplus due to the work of the all the water purveyors and the Water Supply Coordinating Council. Still waiting on a couple of progress reports from a couple of the water purveyors. Once we receive those it’s ready to go to the Governor and General Assembly.” Mr. Smailer made a comment that the letter for the Secretary is ready to go but he needs the report to go with it so he can at least comment on the report. Dr. Kauffman said, “The report will be printed at the University’s graphics like we have done in the past and we’ll get a count of how many reports are needed. It will be posted on the website.” Dr. Kauffman asked Mr. Smailer when will it be given to the Governor and General Assembly and Mr. Smailer replied that the Secretary will receive the draft letter as soon as we receive the report for him to review. Mr. Smailer added that he is not sure how long it will take for the Secretary to review. Dr. Kauffman said, “Let’s shoot for the end of the month.”

Mr. Jenner asked if the final draft will be going out to the Council and Dr. Kauffman replied, “Yes.” Mr. Jenner asked Mr. Smailer to comment again on the status of the letter for the Secretary that is to be included in the report. Discussion continued between Mr. Smailer and Mr. Jenner about the Progress Reports to be included in the report. Mr. Singer wanted to clarify again with Dr. Kauffman if he is understanding correctly that the final draft of the Thirteenth Report will be distributed to the Council by the end of April and Dr. Kauffman replied, “Yes.”

Mr. Jenner added that 2018 is a certification year and after reviewing the January 2018 minutes, Dr. Kauffman had indicated that he was planning to post the demand data for the providers on the website. Dr. Kauffman commented, “We have some hard working graduate students poring through the water demand data from the last five years and project it out to the next three years and then a memo will go out shortly after this meeting.” Mr. Jenner asked, “Realistically will you project that the June 30 or whatever the statute deadline is might not be realistic this year and the providers might have until the end of July or August to get everything together? Usually there is a fair amount of process in getting these reports prepared and reviewed and commented, etc.” Dr. Kauffman replied, “The law was passed in 2003. We’ve been through 15 years worth, so that means five cycles. There’s not going to be anything that is new in the projection of

demands because we've already done projections through 2030. We're just going to scale the next three years so it's going to be very similar to what it was three years ago." Mr. Jenner said, "There's always a possibility that you're going to have more discussions about supply projections than we've had in the past." Mr. Smailer added, "Once the memo goes out if the providers that are responsible for putting this together have issues with timing constraints to contact him or Dr. Kauffman directly." Mr. DiNunzio added, "And to Dr. Kauffman's point, for us, we're progressing on putting things together as we speak and just waiting for the memo to confirm the demand side because we have to plug that in and the June 30 deadline should not present a problem for us but I cannot speak for others." Council continued to discuss.

Mr. Singer commented that he would like to see in the three year reports some indication that we are operating under a threshold that's far more than three years. Mr. Smailer commented, "If I could summarize some concerns, if you look at the three year time frame period right now, it could be used against us by people in Pennsylvania." Mr. Singer agreed. Council continued to discuss.

Mr. Najjar commented, "Pennsylvania and Delaware are a perfect example of an interstate issue that the DRBC does get involved in." Mr. Smailer, Dr. Kauffman, Mr. Najjar and Mr. Singer continued to discuss.

DGS KENT COUNTY PROJECT UPDATE – Scott Andres, DGS

Before presenting, Mr. Andres introduced Changming He and Rachel McQuiggan from the University who assisted in the research for the presentation. Mr. Andres presented a Power Point presentation (see attachment titled *Kent Co. Monitoring Network progress report*):

As stated in the presentation *Project Background*:

- First pitch for capital funding to WSCC in 2008
 - 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 FY2017
 - Currently used aquifers throughout County
 - East Dover focus area

Mr. Andres said, "In reasonably good shape with what we found about groundwater supplies in that area. There are some trends we want to keep an eye on. We continue to monitor much of the infrastructure that is put in place in Southern New Castle County and Kent County. We don't monitor all those at the same intensity that we did during that project. We've moved our people resources with Kent County at this time and the automated instrumentation taking care of a large portion. One of the focus areas for doing this work is we're monitoring the resources that we are actively using right now. So for Southern New Castle County, this was an important distinction. We're monitoring the shallower aquifers with 500 feet of land surface. There are aquifers hundreds of feet below that that we cannot afford to look at at this time. Some of those resources

are counted in our planning documents as available water supply. We really don't know. It's an educated guess at this time what the quantity of water is in some of those deeper water supply aquifers in Southern New Castle County and we can say the same thing about Kent and Sussex Counties. There is water there we just don't know how much or what quality it is."

Mr. Andres discussed the presentation *Timeline* and how the Kent County capital project was started in late 2016 (FY2017) - Looking again at the aquifers that are currently used in Kent County and also focusing on an area east of Dover. He said, "We are about a year and a half in."

As stated in the presentation *Infrastructure progress*:

- Test borings, logs, and wells completed at 9 of 10 proposed sites
 - >7500 linear feet of wells
 - Costs lower than originally projected
- Two stream gages re-activated by USGS
- Instrumentation installed and operating in new wells and east Dover
- Hydraulic testing completed in all new wells
- Surface water salinity stations in progress
- Assessment / re-use of wells used for 1970's monitoring

Mr. Andres discussed *Important Interim Results (Piney Point)*. Mr. Andres stated, "The large proportion of the sand grains that make up the aquifer are pelletized clays. If you put extra force on them, they will squeeze and deform." Mr. Andres mentioned that the aquifer if not directly connected to the water table at any location in Delaware, Maryland, or New Jersey where it is used as water supply. He continued, "This means that the water that gets into the Piney Point aquifer is by slow diffuse recharge that leaks through overlying clay beds. The good side is that it protects the aquifer from contamination. The down side is that we are withdrawing water at a much higher rate. The permeability, the ability to transmit water, is ok but it's not great. It's adequate to supply several users in Cumberland County, NJ, Kent County, DE, and counties in adjacent Eastern Shore, MD, and even over to St. Mary's County on the Western Shore."

As stated in the presentation *Piney Point Aquifer*:

- Uncommon hydrogeologic conditions
- Used by City of Dover, DAFB, Cambridge, Easton, Bridgeton ...
- 1970's - a lot of work because of concern about overpumping
- 1980's - water use reductions by DAFB and in Dover area
- Continued slow long-term decline in gwl between 1980's-2005
- Accelerated rate of gwl decline in DE since 2012
- Projections for loss of resource

Also refers to the maps in the presentation *Groundwater Elevations in the Point Point Aquifer - 1970's and 2010's*.

Mr. Andres and Council discussed the presentation *Drawdown in the Piney Point Aquifer from the 1970's to Present*. Mr. Andres said, "We do not want the water level to go above the top of the Piney Point aquifer. If we pull the water level down into the aquifer, the water pressure that is now holding the pore spaces open will be gone and all the weight will be resting on those clay

pellets.” He continued, “Another issue is if you pump the water level down into the aquifer you can introduce air and oxygen into it and this aquifer has not seen oxygen for millions of years.” Mr. Najjar asked if this aquifer was confined or partially confined and Mr. Andres said it is a confined aquifer at this time because the water pressure is above the top of the aquifer. Mr. Andres continued to say it all depends if you want to use the legal definition or technical definition of confined. Mr. Andrew Homsey asked if the Cheswold aquifer was a concern right now. Mr. Andres replied, “Haven’t researched the Cheswold aquifer in as much detail as Piney Point. There aren’t as many monitoring points. It doesn’t appear to have the same amount of urgency as Piney Point.”

Mr. Andres discussed the Piney Point Time Series. “Piney Point is an impending issue for Central Kent County if economic growth and water demand take off again,” Mr. Andres said.

As stated in the presentation, and continuation of *Important Interim Results, East Dover update*:

- Issues
 - Competing water demands
 - Salty and tidal water
- Opportunities
 - Large quantities of monitoring data
 - Simulation work – 3D solids, climatic water budget and irrigation needs, gw flow

Mr. Andres said, “In addition to the competing water demands, which would give concern because you pull the water level to far down then there’s a loss of resources, it’s surrounded by salty and tidal water and then there’s a water quality concern.”

As stated in the presentation *Basics*:

- City of Dover Long Point Rd Wellfield built 1980’s-90’s in shallow aquifer
- 22 allocated irrigation wells, 7 ponds in shallow aquifer but 72 irrigation systems

Mr. Andres added, “Each of the 72 irrigation systems has a water source. Some users are not either permitted or allocated.”

- Many additional irrigation systems supplied by ponds and wells that are extracting water from shallow aquifer

Mr. Andres added, “This is common in Eastern Kent County and Sussex County.”

- Area bounded by salty tidal marshes and dissected by salty tidal creeks
- Numerical model boundary shown on map

Mr. Andres discussed the map along Route 8, east of Dover – *Location of le53-16*. He said, “The City does monthly grab samples and they don’t see hardly any variation in any of these parameters month to month. Just normal changes to the climate. When you put instrumentation in you get a much clearer picture.”

Mr. Andres discussed the *Simulation 3D solids model-water table aquifer and Pumping scenarios*-reported water use, estimated water use, projected water use. He said this is what has been reported.

“What are the risks,” Mr. Andres said as he referred to the presentation *Salinity Risk-2015 reported use (2a) and 1992 allocation-modeled irrigation use (3c)*. “When the water elevations

get below a half a meter on this model, I begin to get worried,” he said. “Right now reported water use (left side model), pink or yellow are not good. The pink and yellow are way to the east right along the marsh. This is on water use. However, if the City gets its allocation for full use, over 1.6 billion gallons a year, this area of concern now incorporates several irrigation systems along Route 9 and to the east of Route 9.

Mr. Andres stated that the other issue that is important is the *Drawdown Risk-2015 reported use and 1992 allocation-modeled irrigation use*. “There is drawdown around the City of Dover’s wellfield but it’s less than 20% of the saturated thickness of the aquifer. Our indicator is 20%. When the drawdowns exceed 20% of the aquifer thickness, then you will start to have well yield declines. If the City of Dover gets its full use and this is model irrigation this is probably what is happening right now. We had a large area of dewatering that is of significant concern. The drawdowns are more than 20% of the saturated thickness of the aquifer. There are sensors in that area in 7-8 different wells pulling data from the City,” Mr. Andres said. He added, “Now working with one of the farm operators in that area and looking at how their irrigation ponds are operating and what the salinity impacts are. Most of the irrigation ponds are located within the vicinity of the salt marsh.”

As stated in the presentation *Interim results summary*:

- Piney Point aquifer
 - Accelerated rate of gwl decline in DE since 2012
 - Projections for loss of resource
- East Dover
 - Competing water demands by Dover and irrigation
 - Ponds into water table are commonly used for irrigation
 - Potential loss of resource due to saltwater and dewatering

Mr. Wilkins commented, “On the point that you made, I think if I heard correctly that you’re claiming that many of the irrigation well systems were paid for with Federal or State dollars. I’m somewhat familiar with those programs. It’s not qualified to use those programs for putting in irrigation systems. They actually are only used for making existing irrigation systems more efficient.” Mr. Andres said, “There are a number of farms with helping locate water sources where I was told this is drip money paying for this.” Mr. Wilkins replied, “So, drip is loans.” Mr. Andres commented, “Low interest, no interest, or sometimes grants.” Mr. Wilkins said, “Drip is a minor allocated program. Not that many dollars allocated for drip. The qualifying criteria for drip is difficult. It is loan money. It is a revolving loan fund. It is zero interest. But, yes, that can be used for putting in new irrigation systems and the purpose of that program is for improving water quality. It’s proven that when you apply the needed nutrients for an expected yield goal that if you don’t have the adequate amount of water to reach the yield goal that you’re fertilizing for then you have a situation where you have excess nutrients. So it’s a very good program in order to improve water quality and in order to meet our total maximum daily load needs for water quality.” Mr. Andres replied, “The reason I brought that up was not really to point out this is a bad thing. My point is the State has ‘skin in the game.’” Mr. Wilkins said, “But the Federal program through NRCS are only if you have existing irrigation systems that are not operating efficiently. Primarily that they’re using excessive amounts of energy then you can apply for it and if you’re ranked high enough, again, there’s not enough funding to meet the

demand to meet the needs. Then you can revamp your irrigation system, you can modify it, you can refit your existing irrigation system in order to increase the efficiency, reduce the pressure, reduce the amount of water that you need. So don't characterize those programs as being a fault for the City of Dover's concerns. Characterize those programs as being solutions to what you are alleging to be a problem."

Mr. Smailer commented, "From the perspective of this Council, this presentation, even the study and evaluation, is not to cast blame, fault, or any aspect of it. The Water Supply Coordinating Council's charge, and we've actually reached out to other folks to get people here to hear this, is we're trying to identify are there concerns for the resource for any user. We're not saying that agriculture shouldn't use, that Dover shouldn't use, that's not our job. Our job is as water supply coordination for any user that wants to be able to use the resource." Mr. Smailer continued to discuss. Mr. Smailer then stated, "The issue to me from this Council's perspective is if we are seeing salt water migration, no one, not the City of Dover or farmer, does not want to be pumping salt water. No one does. As the Council, charged with water supply coordination, we need to start looking before we have that problem about what we can collectively do. I would agree with you completely that if you're looking at systems that are more efficient, less evaporative loss, less other components, more efficient well production, more efficient well location, that's fantastic. That's a tool in the direction of helping us start to address some of these components. The fact of the matter is, I think we have an obligation as the Council, similar to what the Council did (a phenomenal job) with New Castle County of long term projections and our needs before we came to a crisis. We were focused on drought and the water supply for large populations upstate and that was a priority at the time." Mr. Smailer continued, "We need to start looking at how we can plan ahead statewide as the State Water Supply Coordinating Council so we don't have a crisis and the first part of that is identifying where do we potentially see conflicts arising before they become a crisis. In the context of today's presentation, it's not to point blame, it's to say that in this area we have a concern and this Council needs to say alright, how do we start working towards planning to address that concern. It's all the members appointed by the Governor to start saying this is a concern that we have and we want to plan accordingly." Mr. Smailer continued to discuss. Mr. Smailer added, "It's a shared resource and if there is data that shows use that the resource is becoming less available or of inadequate quality, everyone on the Council has a vested interest in making sure that doesn't happen. They also have a vested interest in trying to maintain their stake in what they need." Mr. Smailer continued to discuss and added, "We have statewide issues that we should be looking at 20-30 years ahead before they become a crisis."

Dr. Kauffman commented, "My view point is, we wrote a Twelfth Report on this for Kent and Sussex. Farmers were here a long time before the City. Agriculture's an 8 billion dollar economy in Delaware." Mr. Wilkins corrected, "Nearly 9 billion." Dr. Kauffman agreed and said he went to Washington, DC, and bragged about it to other States. Mr. Wilkins added, "The Economic Development analysis says 8.7." Dr. Kauffman said, "That's good. Irrigation, farmers need it." Dr. Kauffman continued to discuss how farmers need irrigation and weather situations. Dr. Kauffman mentioned that, to him, this is in the allocation purview and asked Mr. Andres if he is going to recommend a maximum drawdown out of this study that the State can use in their allocations to look at when the City asks for that maximum of the allocation to protect the farmers. Dr. Kauffman added, "That seems what needs to be done. There needs to be

a very conservative allocation issued so that the farmers and all the other surrounding users are protected.” Mr. Andres replied, “In the result of your statement, yes, there needs to be an equitable allocation of the resource to all the people. Think of all the other things that go along with that. There are grants and loan dollars involved. It’s not only for agriculture but for economic development on top of that. Everyone is relying on the water source being there.” Mr. Andres continued, “What we’re doing is saying there’s some potential conflicts here or there will be conflicts if we continue down this road in the current mode. Something has to happen and this Council is the place where we have the discussions. The role of the DGS is more of a technical look. We make the observations and projections based on statistics or simulations or presence in the field watching it as it happens and provide it to the Council.”

Mr. Wilkins said, “Mr. Chairman, I may have spoke up prematurely. I just wanted to make sure that we avoided the proliferation of a myth of the government program involving irrigation. The report, the insinuation, was that those programs are perpetuating an impending problem. I just wanted to make sure that the myth was not allowed to be proliferated and that a corrected statement that those irrigation assistance programs have the purpose of improving the situation and not a cause.”

Mr. Smailer addressed Mr. Wilkins, “This is one of the reasons why you’re here.” He continued, “We’ve asked people to come to this meeting to have a voice that’s a different perspective than some of the voices that we’ve had and I think that’s imperative moving forward in the coordination that we’re trying to get. To Dr. Kauffman’s point, it’s not at all that the message right now is that irrigation is bad. I think the message is irrigation is happening and so are the other withdrawals and if everything keeps on going we see a problem looming.” Mr. Wilkins commented, “Dr. Kauffman is very correct that the farmers were here before the population influence.” Dr. Kauffman stated again to Mr. Andres about his comment earlier about the allocation amount. He said, “Based on the best professional judgment as a geologist so that the State can use that in the allocation program. I think from this and reading the Twelfth Report again and your presentations, the City may have to go deeper at some point or elsewhere. The farmers need the shallow water and there are deeper aquifers out there, isn’t that true?” Mr. Andres replied, “Yes, there are and they are poorly characterized.” Mr. Andres continued to discuss and said he is not sure what kind of water is there. “Based on good estimates, it’s not fresh. Are there options, yes, but now we’re talking about very expensive options if you go deeper,” he said. Dr. Kauffman and Mr. Andres continued to discuss.

Mr. Andres added, “Not only do we have the Water Supply Coordinating Council but we also have a Water Infrastructure Advisory Council holding the big purse. It operates largely without our input. We have a lot of work ahead of us to try to make the existing administrative regulatory advisory panel structures work together.” Mr. Smailer added, “I want to add, from the department’s perspective, with a point Dr. Kauffman made, it is an allocation issue in some ways but it’s also beyond that. For the Piney Point, we stopped issuing allocations when we saw the decreasing trends. That doesn’t mean that we’ve stopped issuing small domestic well permits in Piney Point.” Mr. Smailer continued to discuss. Mr. Smailer added, “What I would like to see moving forward with this is whether we end up forming a Kent County, or an eastern Kent County, working group that we can bring in some other expertise, some of the irrigation

designers, the City representatives, and other components. I think that is a prudent course of action if we want to plan as opposed to react.”

Ms. Ellen Kohler addressed Mr. Andres, “I thought your point was very well taken about the fact that this information needs to be shared with others.” She continued to address Council, “Is there anything that stops us from suggesting either that we do this presentation for them or that we send them a memo saying we’re concerned about this? I mean nothing stops us from trying to bridge those gaps ourselves, right?” Mr. Smailer replied, “No.” Mr. DiNunzio said, “It’s nice to see this being addressed. Piney Point’s a pretty big problem that we face. We’re currently not in crisis and have time to work towards a solution.” Mr. DiNunzio then referenced back to Northern New Castle County in 1999 and the reaction in crisis to solve a problem. “We have an opportunity to get ahead of it,” he said. Mr. Smailer and Mr. DiNunzio continued to discuss with getting the right people in the room, a working group, to discuss solutions. Council continued to discuss.

DISCUSSION OF WSCC GOVERNANCE – Discussion of “Working Groups” and “Sub-Committees” - Steven M. Smailer, P.G., Chair

Mr. Smailer said, “We’ve talked in previous meetings about whether they’re formal committees or whether they’re working groups. We talked about forming a working group initially before we get to a formal committee aspect and I think we were all in consensus that that makes sense. We talked previously about whether we would want to establish a working group for looking at potentially re-evaluating climatic drought versus the indices and some other components. I think that’s still on the table. I think that the Kent County working group or something does make sense. I don’t think we’re at the point yet where we want to do the similar thing for Coastal Sussex but we may very well get there.” Mr. Smailer asked the Council, “Are we ready to start looking at having those two working groups started and getting attendance?” Mr. Jenner replied, “Seems to make sense. Just more of a voice.” Mr. DiNunzio said, “Certainly with the drought operating plan that we discussed before. I think that’s appropriate. On the Piney Point Kent County discussion, with the caveat that the working group by definition needs to go beyond what may be in the membership for this committee because of those other key interested parties.” Mr. Jenner agreed.

Mr. Smailer made the motion to establish those two working groups. Mr. Singer moved to approve and Mr. DiNunzio seconded the motion. All were in favor. Mr. Smailer continued discussion with Council and Mr. Homsey, Mr. Andres and Dr. Kauffman continued to discuss salinity levels.

Mr. Smailer will “reach out” to the Council for representation for the drought management working group and also for the Kent County working group. Mr. Smailer asked, “If there is other adequate representation for the working group that we want to invite to let him know.” Ms. Kohler briefly commented and Mr. Wilkins said, “Not sure if there are agricultural stakeholders that are a member of the Council.” Mr. Smailer replied, “The Delaware Farm Bureau technically is Governor appointed.” Mr. Wilkins said, “I think the agriculture stakeholders insist.”

Dr. Kauffman added, "The point about the working group on the drought, I think technically we are just resurrecting the existing drought advisory guideline sub-committees." Dr. Kauffman added that he would be happy to have the meetings in his office. Mr. Jenner said, "I don't think you're trying to imply that individuals that did not participate in the earlier group are precluded from participating in the one that we are now proposing." Dr. Kauffman said, "We're looking for volunteers." Mr. Smailer said that he will send an e-mail out requesting the working groups this week. Discussion continued.

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

Mr. Smailer stated that new business was already discussed in the meeting. No other new business was presented.

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

The next meeting was announced tentatively for July (since this meeting ended the next meeting has been scheduled for June 28, 2018, at 10:00 a.m. in the Kent County Building Conference Room 220).

Mr. Singer asked if the WSCC Governance issue could be discussed at the next meeting and Mr. Smailer agreed.

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

Mr. Smailer motioned to adjourn. Ms. Baxter and Mr. Jenner asked if advance notices could be sent out for future meetings and Mrs. Burris replied that they would. Ms. Baxter then motioned to approve adjournment and Mr. DiNunzio seconded. All were in favor. Meeting adjourned at 10:53 a.m.

WSCC Draft Meeting Minutes
April 19, 2018

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, Scott – University of Delaware, DGS
Barndt, John – DNREC, Water Supply (retired)
Baxter, Stefanie – University of Delaware, DGS
Brinson, Kevin – Assistant State Climatologist
DiNunzio, Joseph – Artesian Water
Filasky, Tim – City of Newark
Finnicum, Larry – SUEZ
Guyer, Jay – City of New Castle, Municipal Services Commission
He, Changming – University of Delaware, DGS Research Associate
Hokuf, Doug – New Castle County Government
Homsey, Andrew – University of Delaware, Water Resources Agency
Houseman, Adam – Golf Course Superintendent for Garrison's Lake
Jenner, Charles – Delaware Grounds Management Association
Kauffman, Jerry – University of Delaware, Water Resources Agency, Director
Keyser, Todd – DNREC, Delaware Waste & Hazardous Substances
Kohler, Ellen – Delaware Nature Society
McQuiggan, Rachel – University of Delaware, DGS Research Associate
Mensch, Keith – Division of Public Health, Office of Drinking Water
Mensch, Laura – Department of Agriculture
Mills, Kate – City of Dover
Neilson, Kevin – Public Service Commission
Price, Barry – Artesian Water
Rambo, Douglas – DNREC, Water Supply Source Water Protection Program
Reamer, Betsy – Lewes Chamber of Commerce
Rowland, R. Douglas - DRBC
Rudd, John – Office of the State Fire Marshal
Shannon, Sheila – Tidewater Utilities
Singer, Victor – Civic League for New Castle County
Smailer, Steven – DNREC, Division of Water
Sumption Grace – DNREC, Water Supply Allocation Branch
Wilkins, Richard – Delaware Farm Bureau
Woodward, Amy – Delaware Public Service Commission

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 Apr 18, 2018
Precipitation Wilmington Arprt/Porter Rsvr 12-month	-6.00" to -8.99"	-9.00" to -11.99"	>-12.00"	+1.26"
Precipitation Wilmington Arprt/Porter Rsvr 6-month	-3.00" to -4.50"	-4.50" to - 6.00"	>-6.00"	-1.64"
Brandywine Creek (30-day moving avg)	85 mgd	70 mgd	48 mgd	333.2 mgd
White Clay Creek - Stanton (30-day moving avg)	42 mgd	37 mgd	31 mgd	128.7 mgd
White Clay Creek - Newark (30-day moving avg)	19 mgd	16 mgd	13 mgd	60.6 mgd
Well Db24-18	14 - 14.99 (fbls)	15 - 15.99 (fbls)	16 (fbls)	12.49 (fbls) (Avg. 7.7 to 12.4 fbls)
Water Conditions Index	5.0-4.0	3.99-3.00	<3.00	7.12
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	Average 19.04 ppm (4/17/2018)
Hoopes Reservoir (City of Wilmington)	-10 ft (68% capacity)	-12 ft (64% capacity)	-15 ft (57% capacity)	-1.2ft (3/7/2018)
Newark Reservoir	- 10 ft (70% capacity)	-17 ft (52% capacity)	-27 ft (28% capacity)	-6.0 ft (3/5/2018)
Monitored				
Aquifer Storage and Recovery	Monitor Status	Monitor Status	Monitor Status	SUEZ: 29 mg (1/25/2018) AWC: 15 mg (3/6/2018)
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 4/15/2018	Monitor Status	Monitor Status	Monitor Status	Normal RM: 67 Current RM: 71
DRBC Lower Basin Drought Criteria	Monitor Status	Monitor Status	Monitor Status	
NYC DRB Reservoirs (DRBC 4/16/2018)	Monitor Status	Monitor Status	Monitor Status	Storage 270.7 bg or 89 bg above drought watch

fbls = 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 17, 2018

PRECIPITATION

Dover – Running surplus/
deficit 12-month: +1.73" 6-month: -2.33" 5-month: -1.13"

STREAMFLOW

St. Jones at Dover – 30-day moving average for March 19 to April 17
54.5 MGD Status: Above Normal

GROUNDWATER

Mc51-01a – April 2018
11.50 ft below land surface Status: Normal

Sussex County Hydrologic Conditions – April 17, 2018

PRECIPITATION

Georgetown - Running surplus/deficit
12- month: -2.67" 6-month: -3.45" 5-month: -2.33"

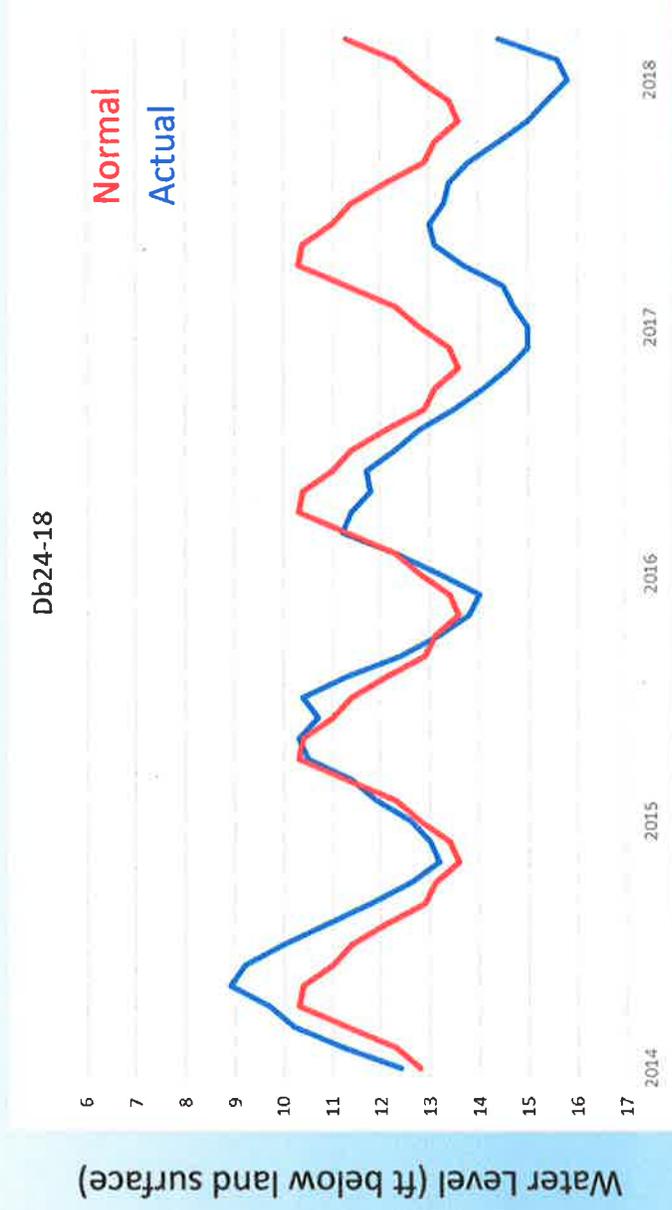
STREAMFLOW

Nanticoke River at Bridgeville - 30-day moving average for March 19 to April 17
72.3 MGD Status: Normal

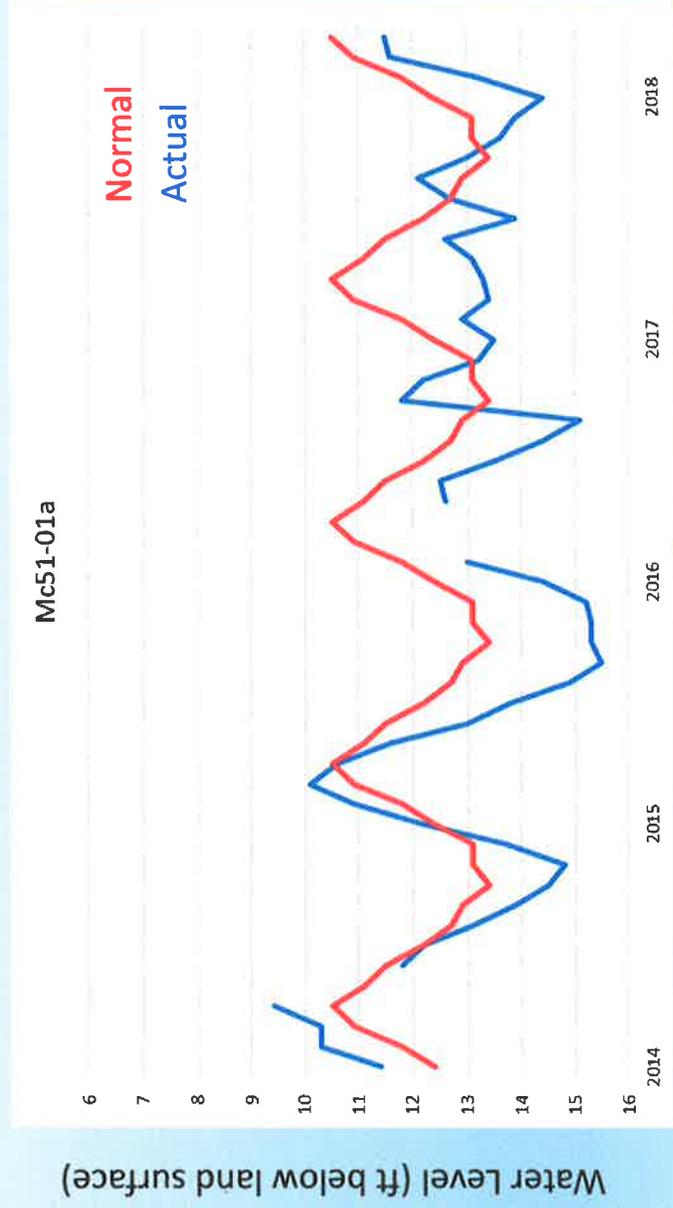
GROUNDWATER

Qe44-01 – April 2018
7.49 ft below land surface Status: Below Normal (avg. 6.2 to 7.1 fbls)

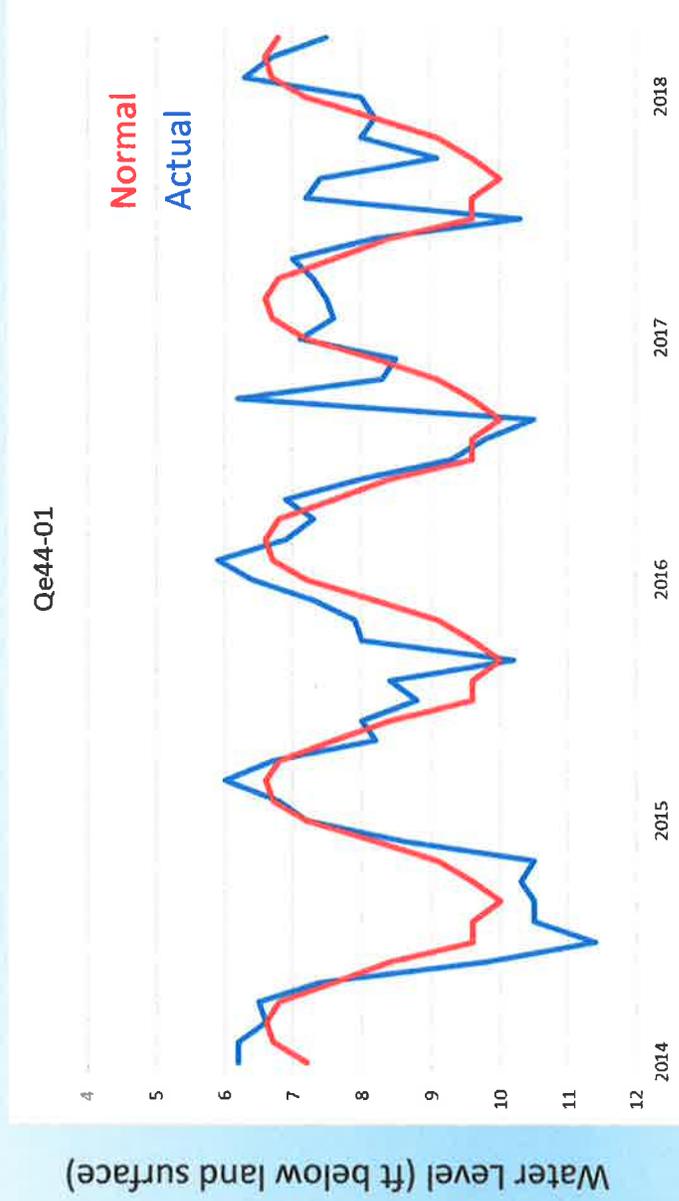
Water Level in Db24-18 2014 - 2018



Water Level in Mc51-01a 2014 - 2018



Water Level in Qe44-01 2014 - 2018

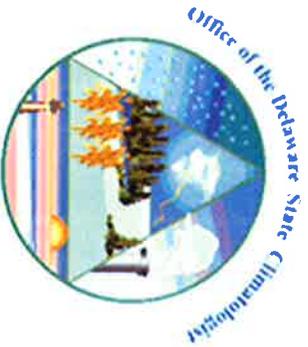


Delaware Weather Update and Seasonal Outlook

Water Supply Coordinating Council Meeting

April 19, 2018

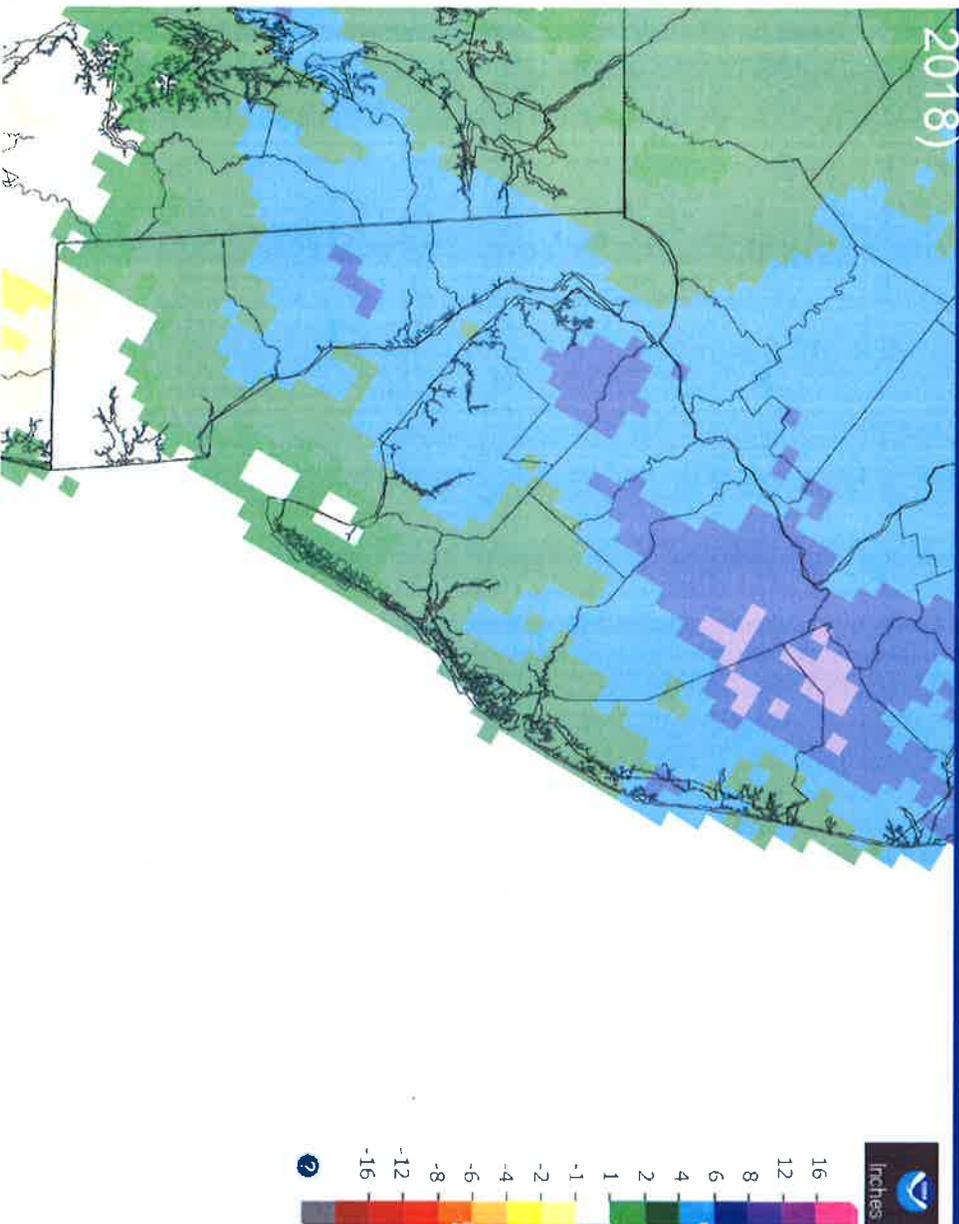
Office of the Delaware State Climatologist



Winter 2018 Precipitation

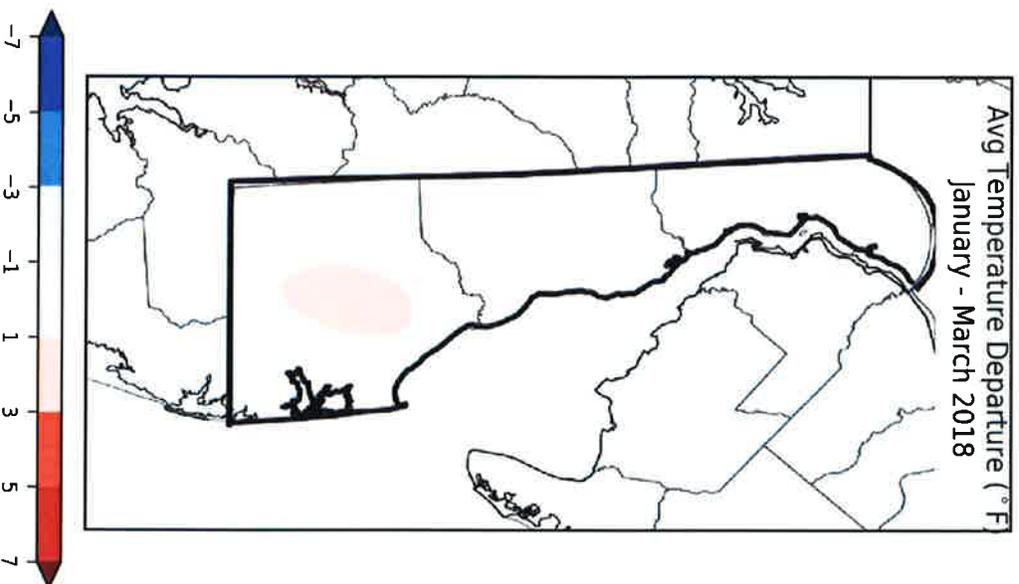
90 Day Departure in Precipitation (through April 18,

2018)



- January-March 2018 was 45th wettest winter since 1895, with no month having too much or too little precipitation.
- Statewide Precipitation Average was 11.24 inches (0.73 inches above normal)
- Last 90 days have been 2-4 inches above normal!
- Above normal snowfall this winter for Delaware
 - 28 inches at Wilmington airport (7.9 inches above normal).
 - 12 measurable snow events statewide.

Winter 2018 Temperatures

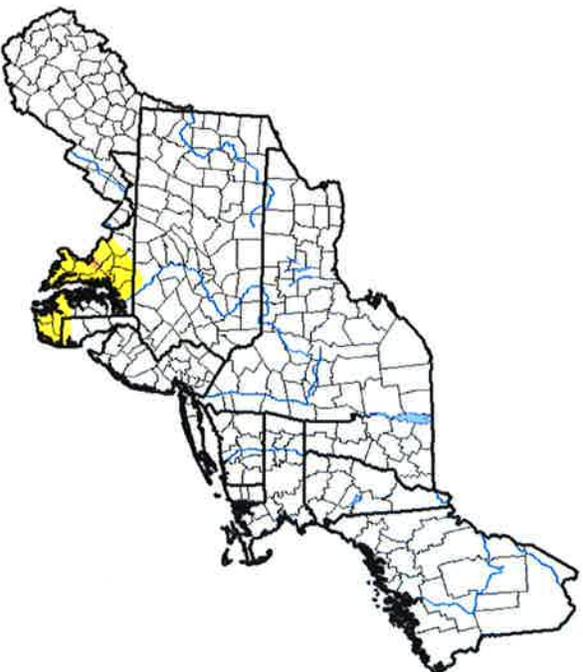


- Up and down temperatures this winter, but average overall.
- January 0.9 BELOW normal
- February 8.2 ABOVE normal
- March 2.6 ABOVE normal
- Technically, the last 3 months were just about normal (on average) (0.2 ABOVE normal).

Drought Monitor

U.S. Drought Monitor Northeast

April 10, 2018
(Released Thursday, Apr. 12, 2018)
Valid 8 a.m. EDT



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

David Miskus
NOAA/NWS/NCEP/CPC



<http://droughtmonitor.unl.edu/>

- About 17% of Delaware (southern Sussex Co. mainly) in D0 (abnormally dry) as of 4/10/18
- Three months ago, 59% of state was D0.
- Nothing unusual drought-wise statewide.

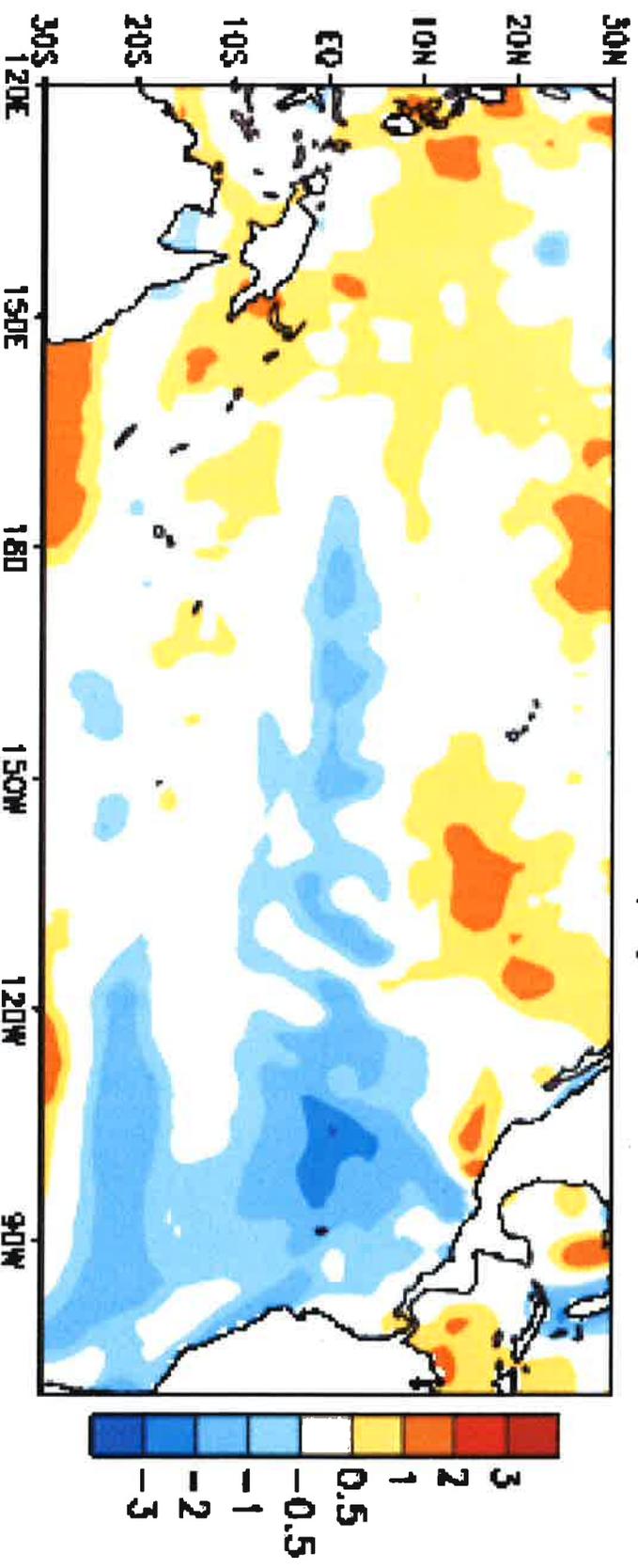


January 9, 2018

Spring / Early Summer Forecast

Our Current La Nina Event

Week centered on 24 JAN 2018
SST Anomalies (°C)

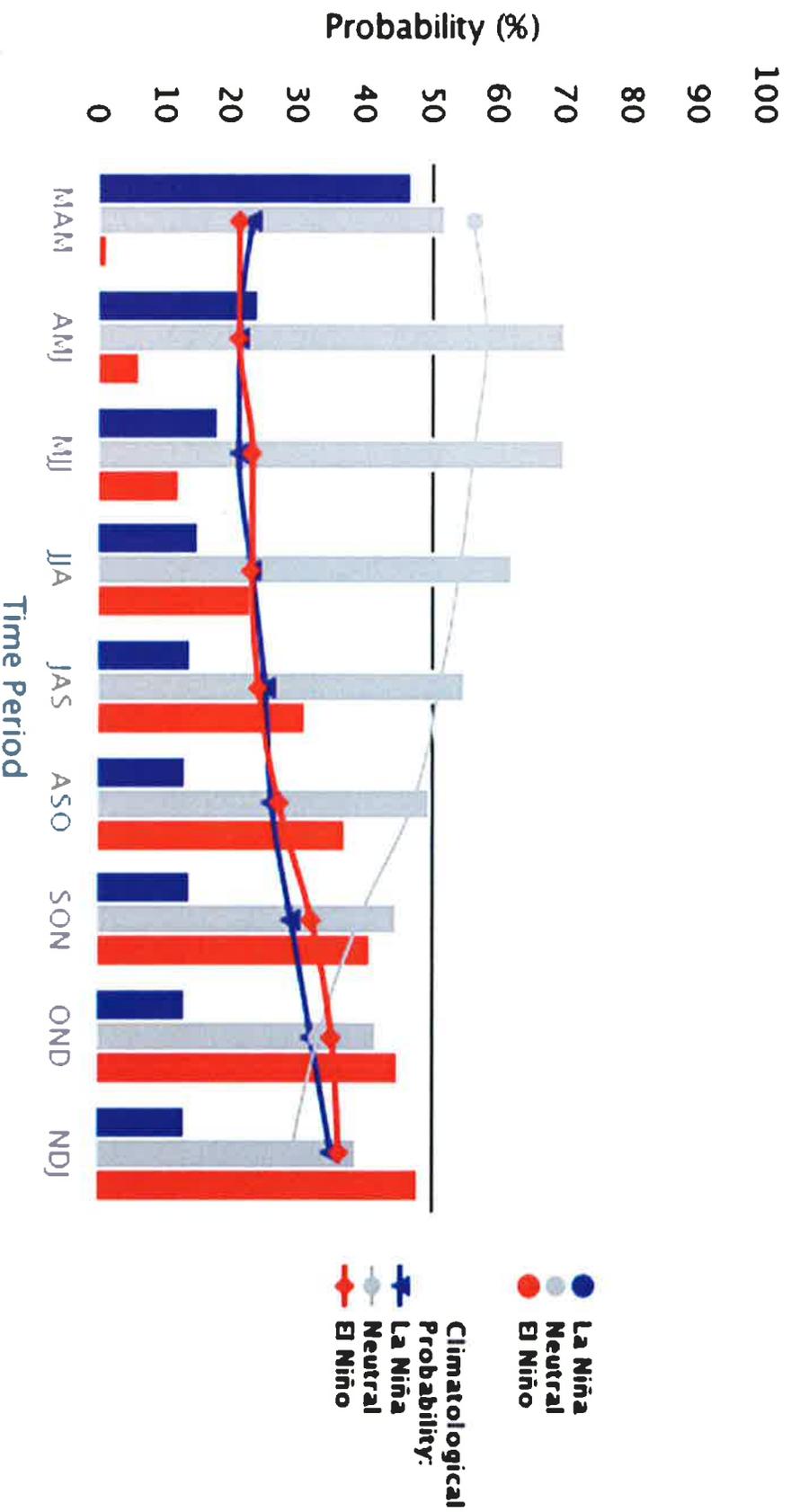


El Niño / La Niña Forecast for 2018

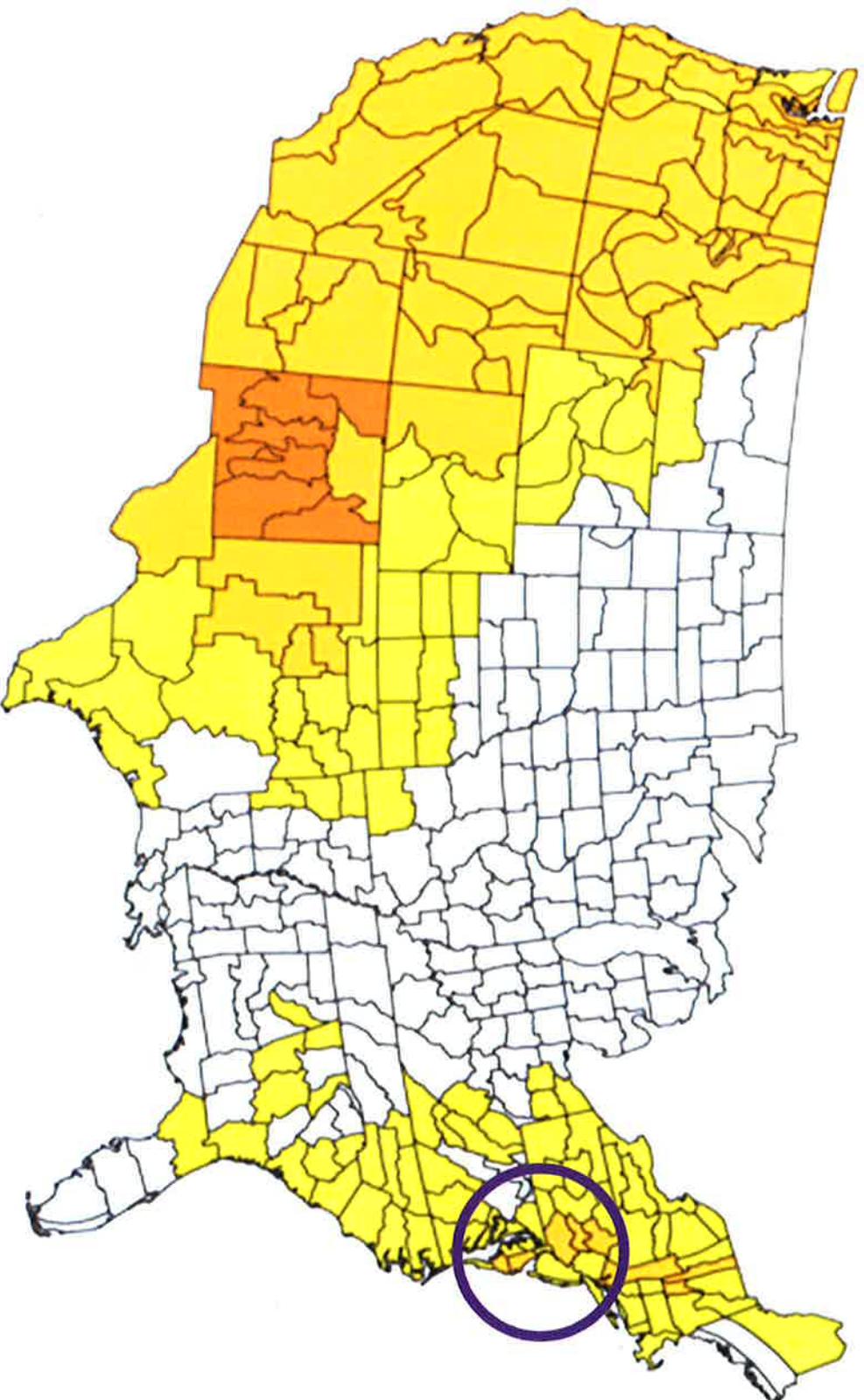
Early-Apr CPC/IRI Official Probabilistic ENSO Forecasts

ENSO state based on NINO3.4 SST Anomaly

Neutral ENSO: -0.5 °C to 0.5 °C



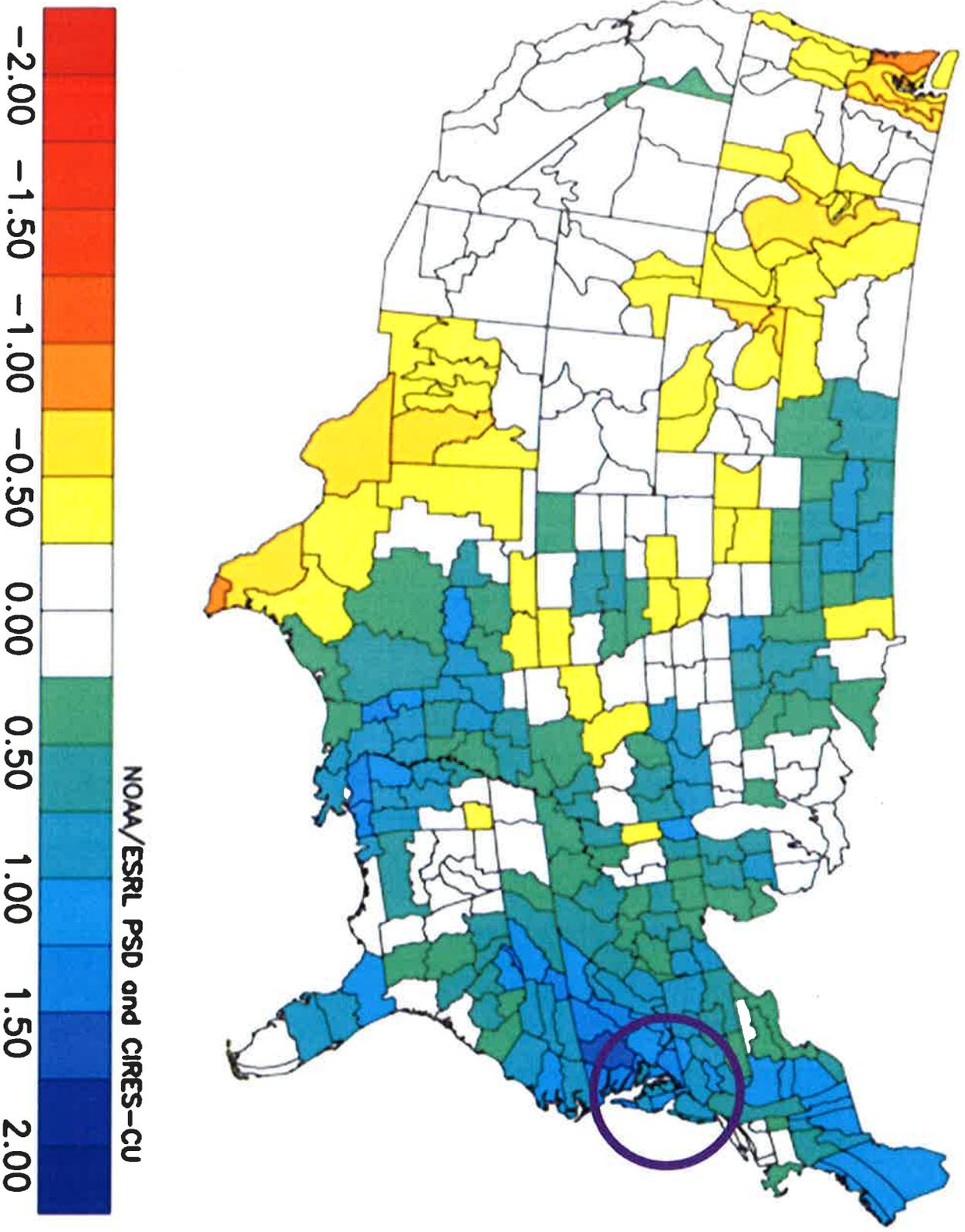
Neutral Years Temperature Departures (°F)



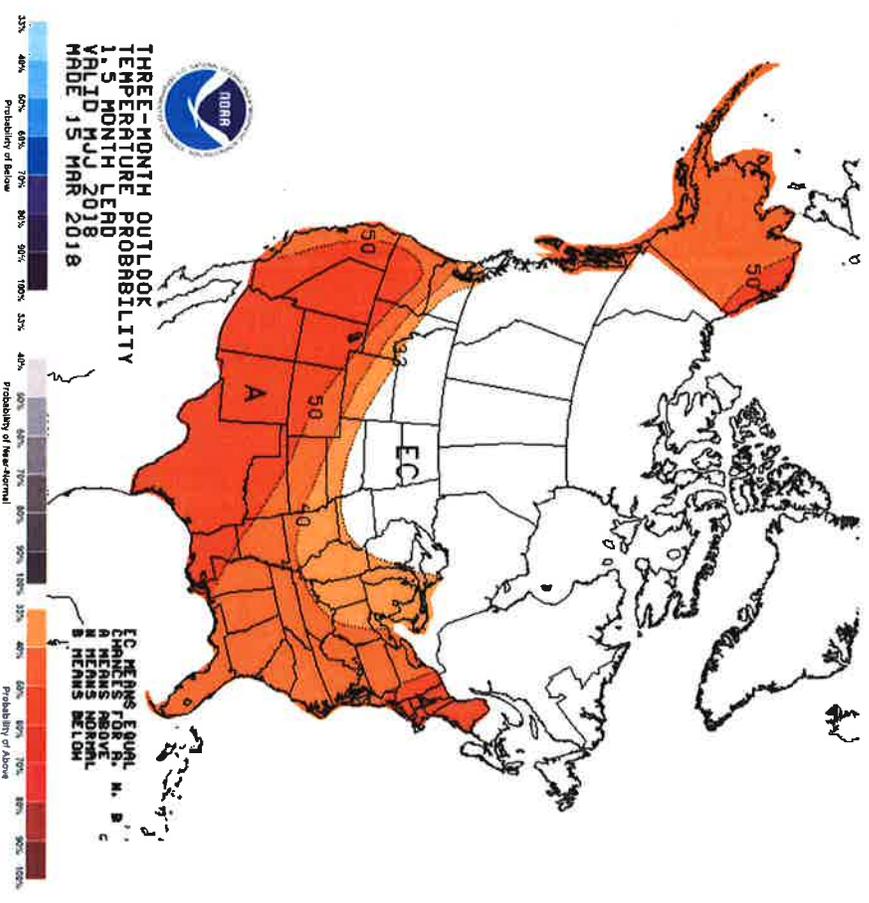
NOAA/ESRL PSD and CIRES-CU

-2.00 -1.50 -1.00 -0.50 0.00 0.50 1.00 1.50 2.00

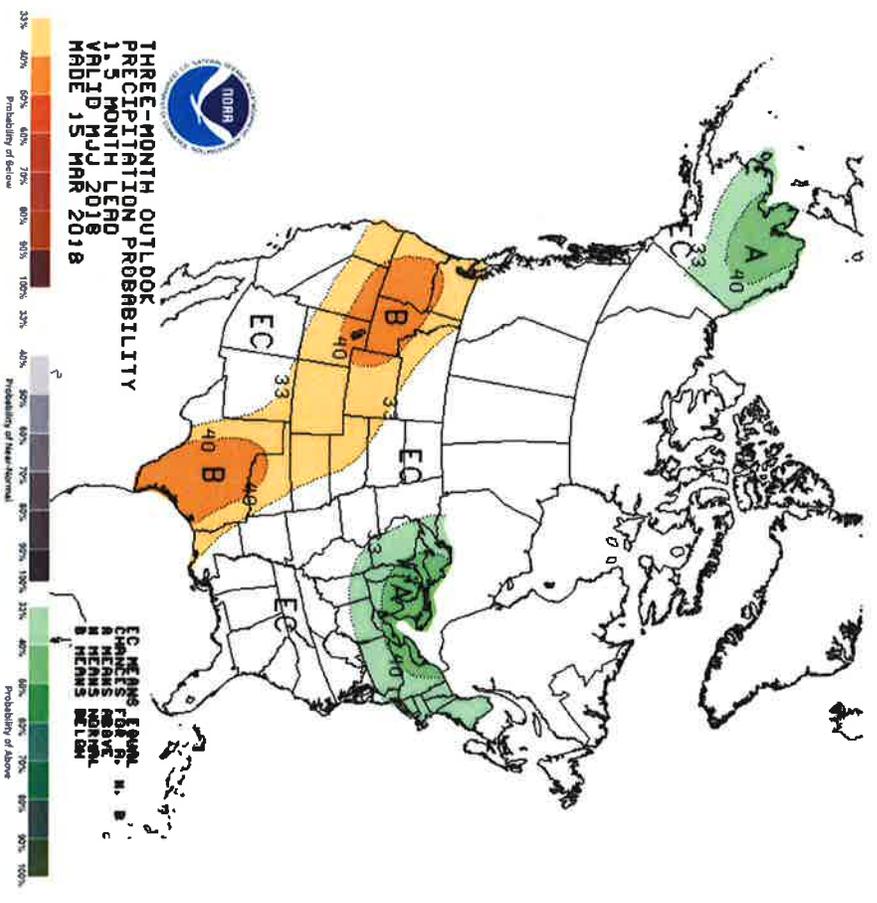
Neutral Years Precipitation Departures (inches)



NOAA Extended Outlook May - July 2018



Temperature



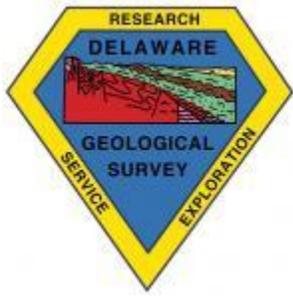
Precipitation

Summary

- Last 90 have been days have seen above average precipitation
- Growing season beginning soon; evaporative demand will increase
- Climate outlook suggests slightly warm, wet spring/early summer ahead



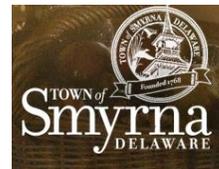
Questions?



Kent Co. Monitoring Network progress report

Water Supply Coordinating Council

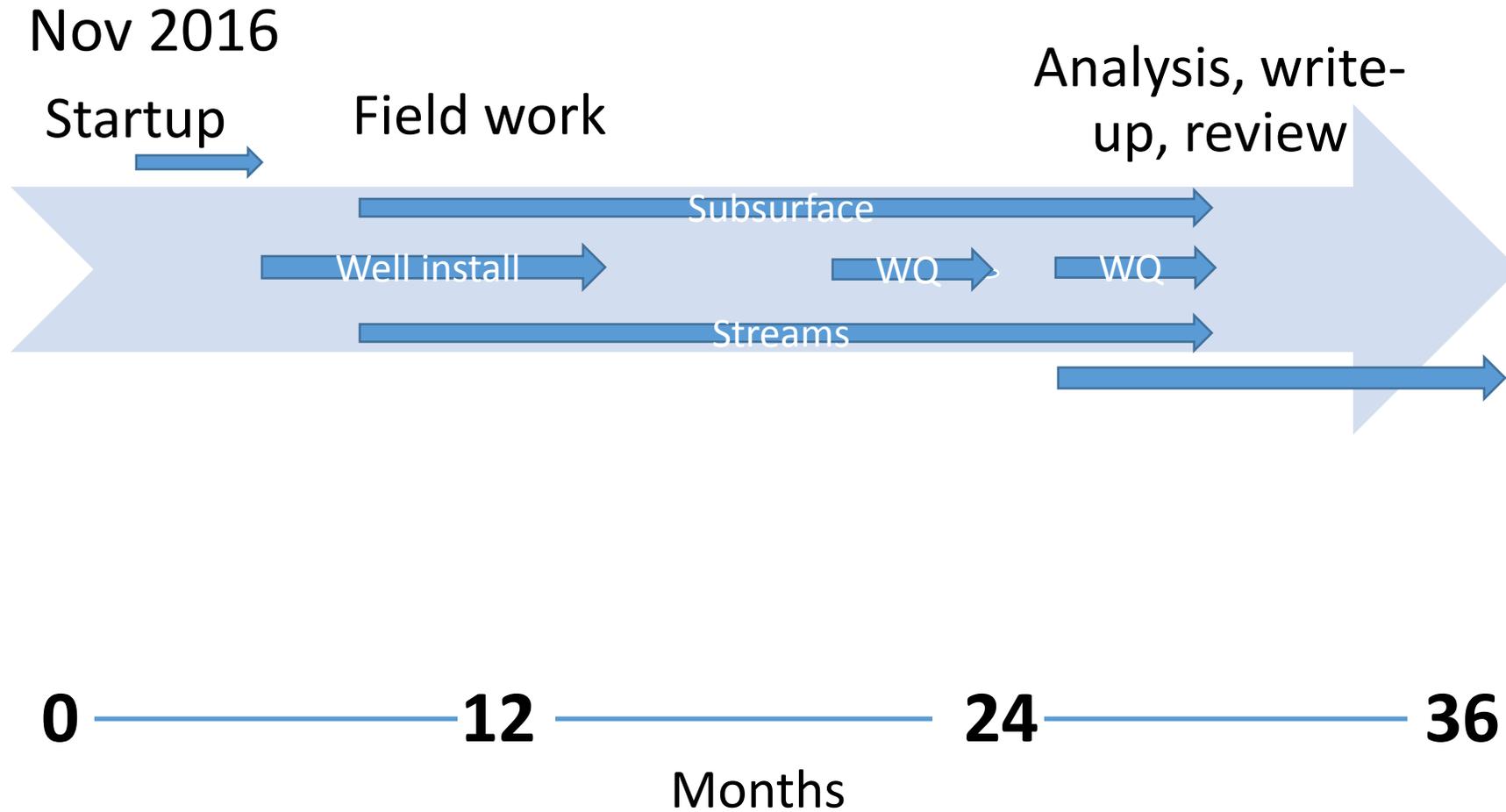
April 19, 2018



Project Background

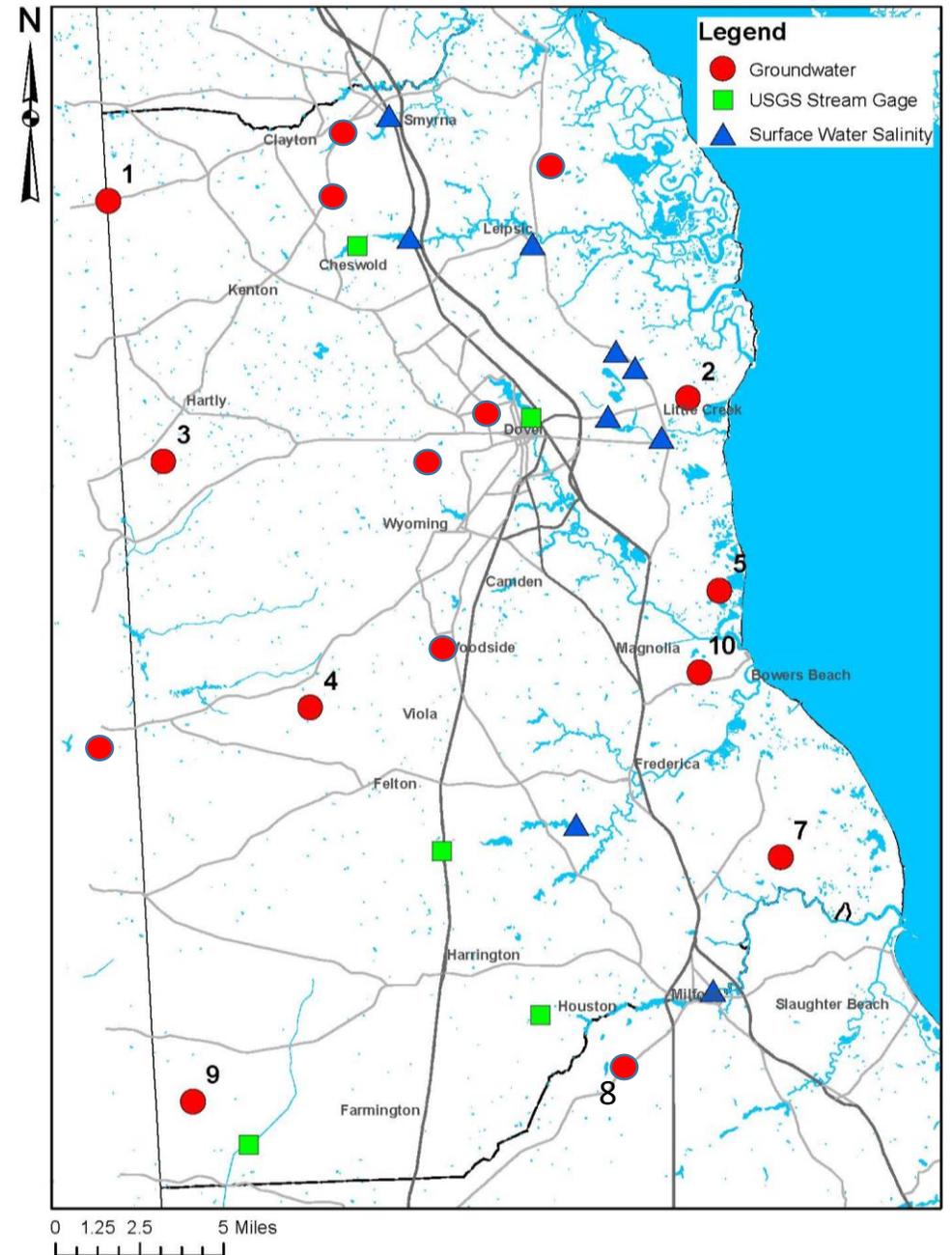
- First pitch for capital funding to WSCC in 2008
 - Modernize water monitoring infrastructure
 - Fill gaps in monitoring network
 - Provide baseline data for previously unmonitored areas
 - Fill data needs for water management and policy
- Southern NCC and northern KC project 2012-2015
- KC project capital funding approved FY 2017
 - Currently used aquifers throughout County
 - East Dover focus area

Timeline



Infrastructure progress

- Test borings, logs, and wells completed at 9 of 10 proposed sites
 - > 7500 linear feet of wells
 - Costs lower than originally projected
- Two stream gages re-activated by USGS
- Instrumentation installed and operating in new wells and east Dover
- Hydraulic testing completed in all new wells
- Surface water salinity stations in progress
- Assessment/re-use of wells used for 1970s monitoring



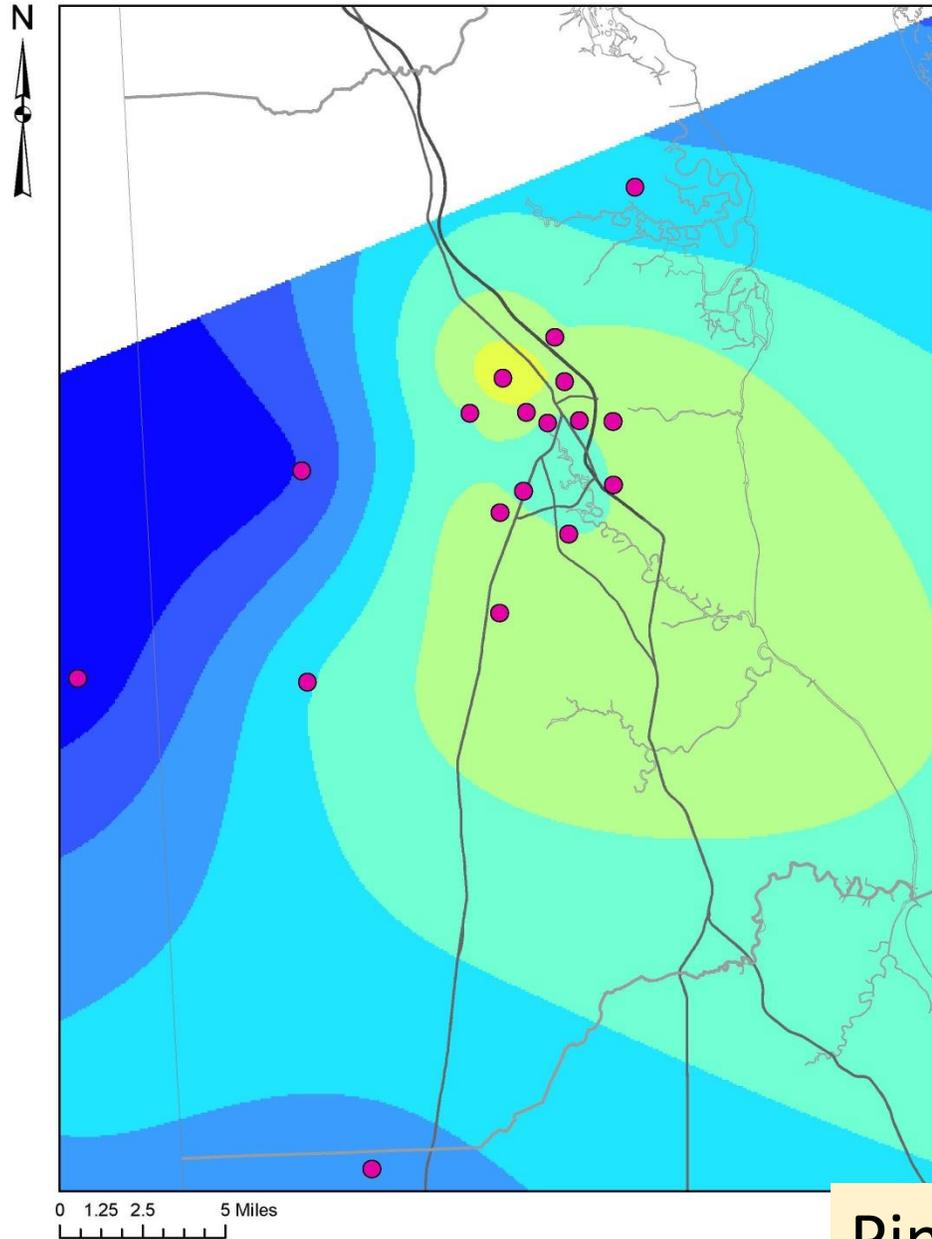
Important interim results

- Piney Point aquifer
- East Dover and irrigation

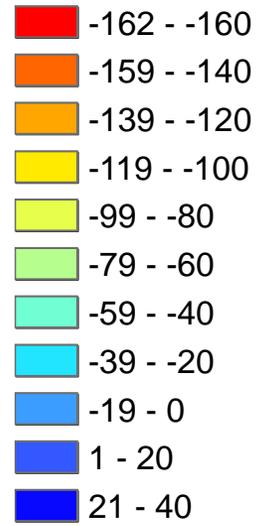
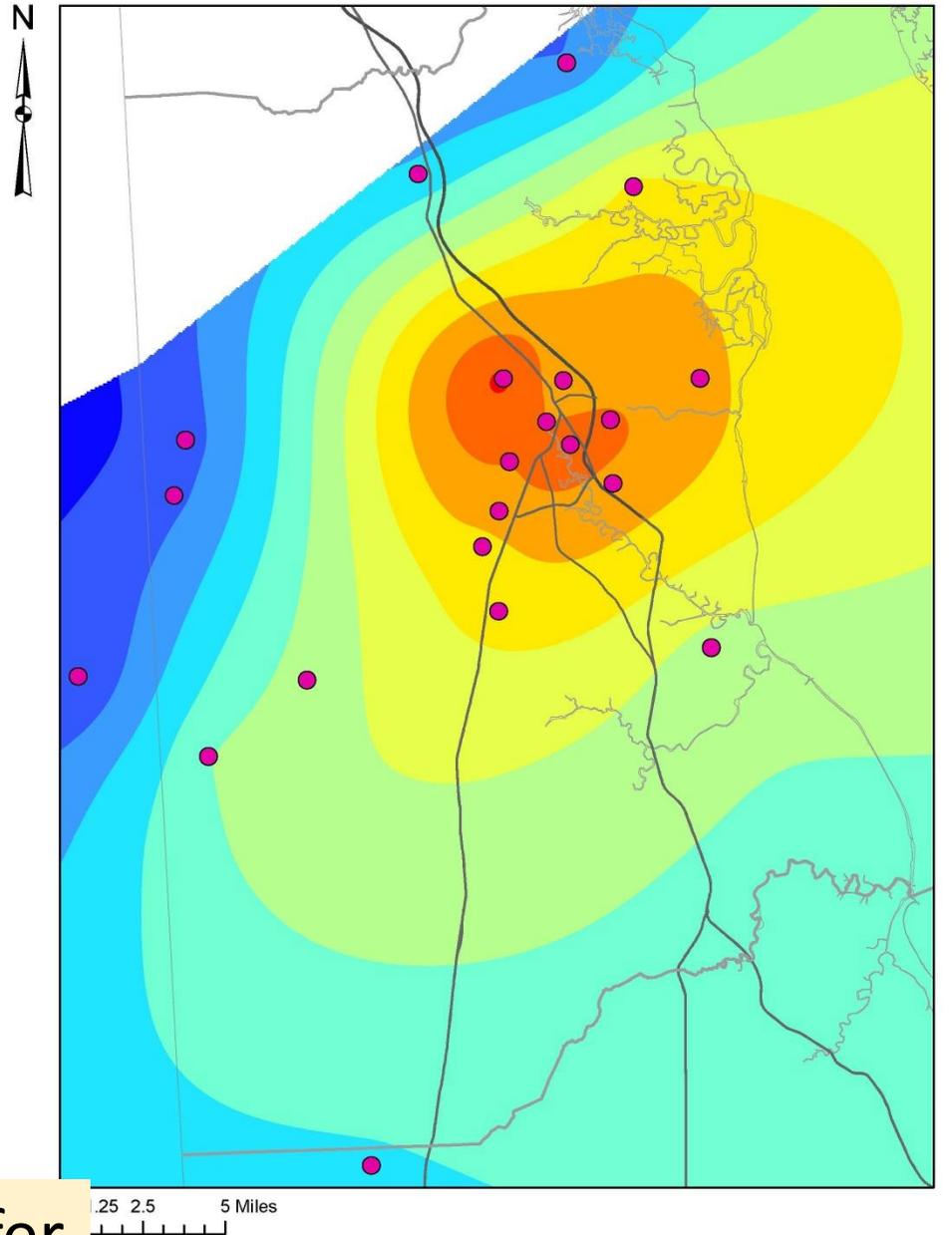
Piney Point aquifer

- Uncommon hydrogeologic characteristics
- Used by City of Dover, DAFB, Cambridge, Easton, Bridgeton.....
- 1970s - a lot of work because of concern about overpumping
- 1980s – water use reductions by DAFB and in Dover area
- Continued slow long-term decline in gwl between 1980s – 2005
- Accelerated rate of gwl decline in DE since 2012.
- Projections for loss of resource

Groundwater Elevations in the Piney Point Aquifer- 1970s

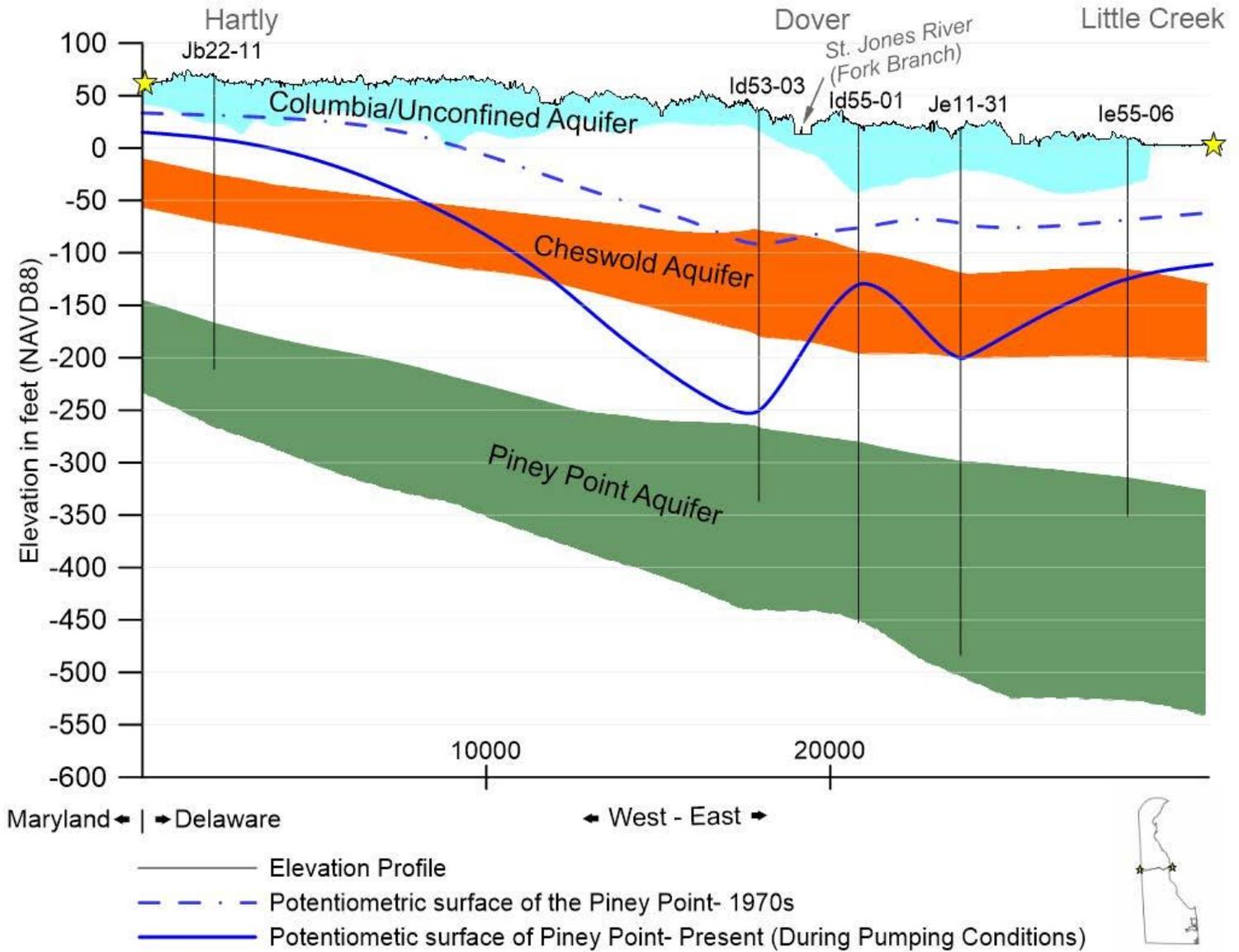
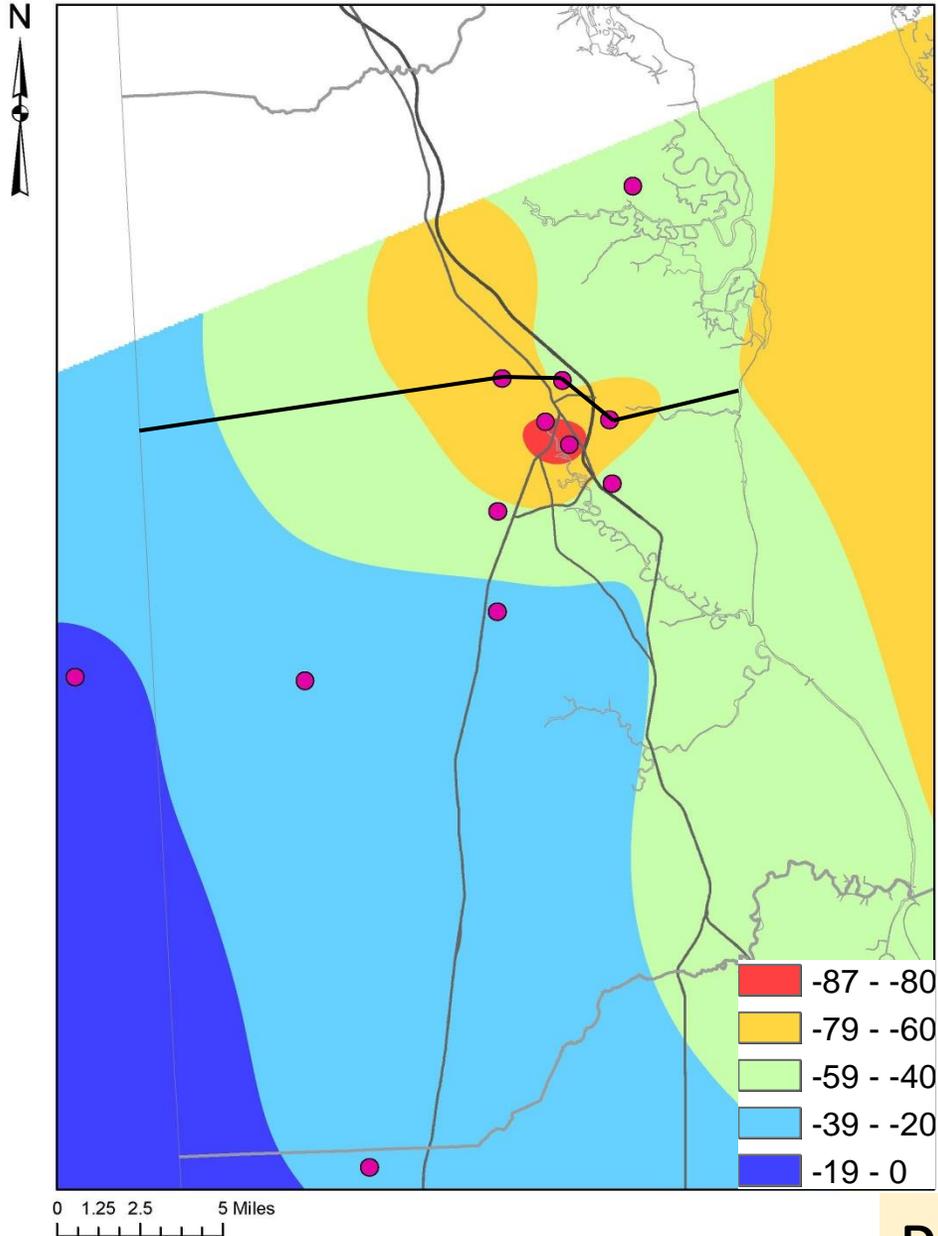


Groundwater Elevations in the Piney Point Aquifer- 2010s

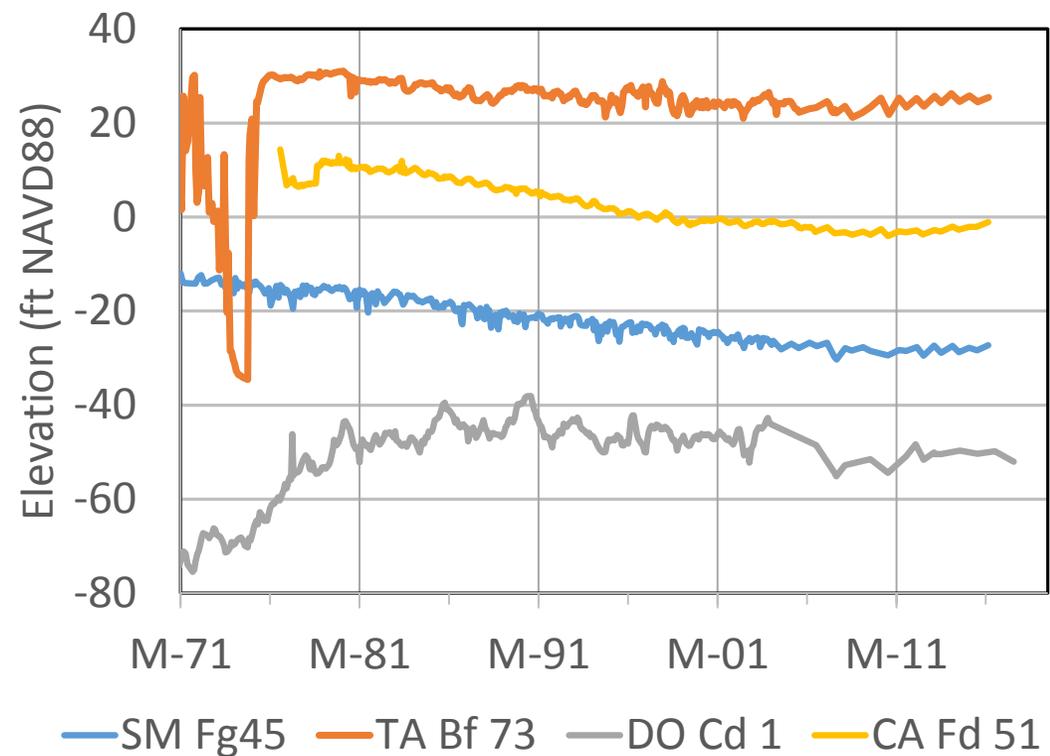
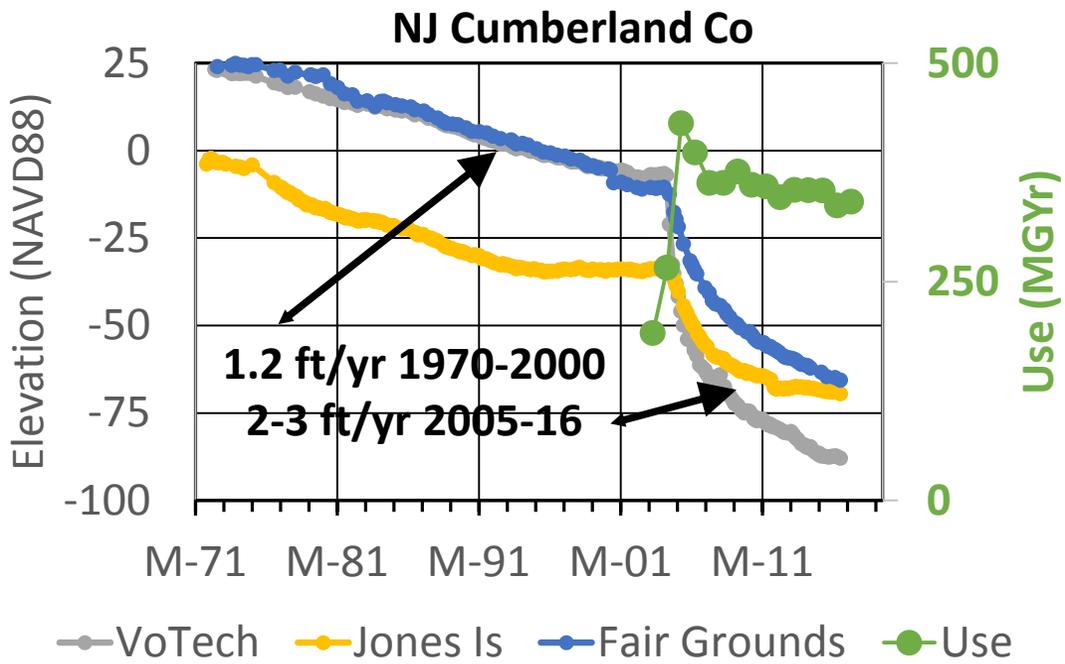


Piney Point aquifer

Drawdown in the Piney Point Aquifer from the 1970s to Present

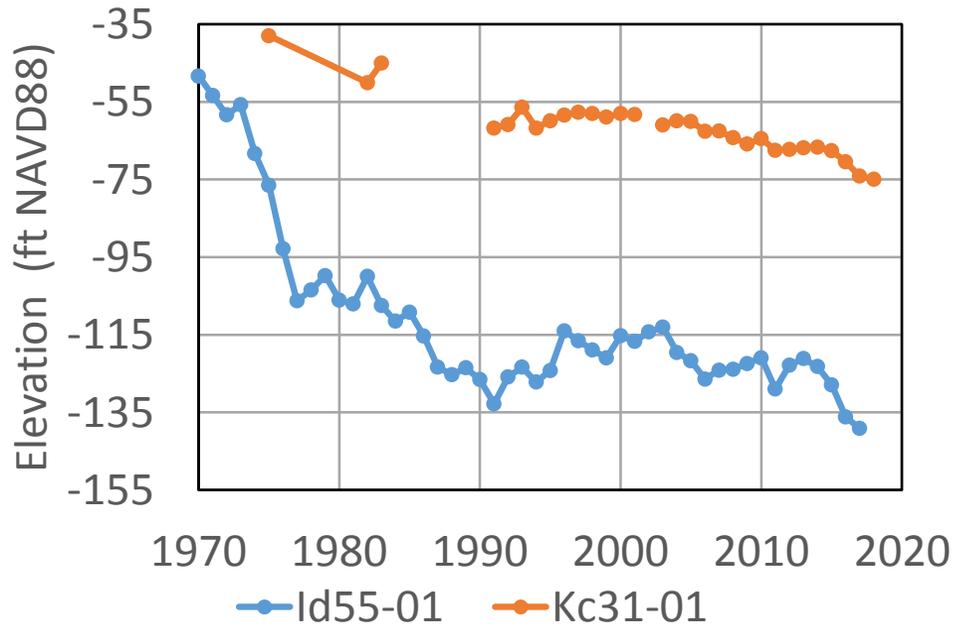


Piney Point aquifer



Delaware Kent Co
Annual decline rate
 2.4 ft/yr - 1977-92
 4.9 ft/yr - 2013-18

0.88 ft/yr 1977-92
 1.87 ft/yr 2013-18



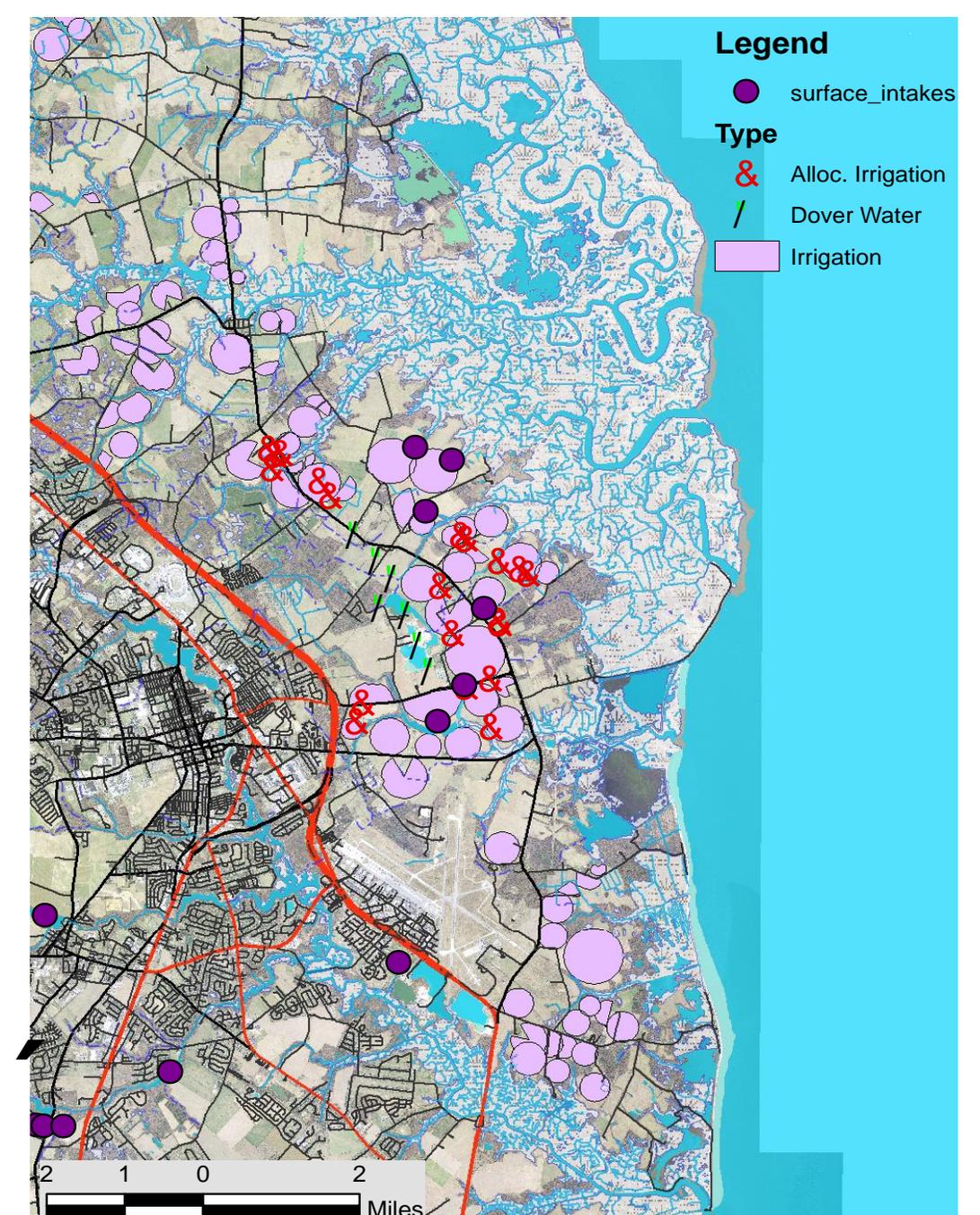
Maryland
 Eastern Shore

Decline has stopped in many wells

Piney Point aquifer

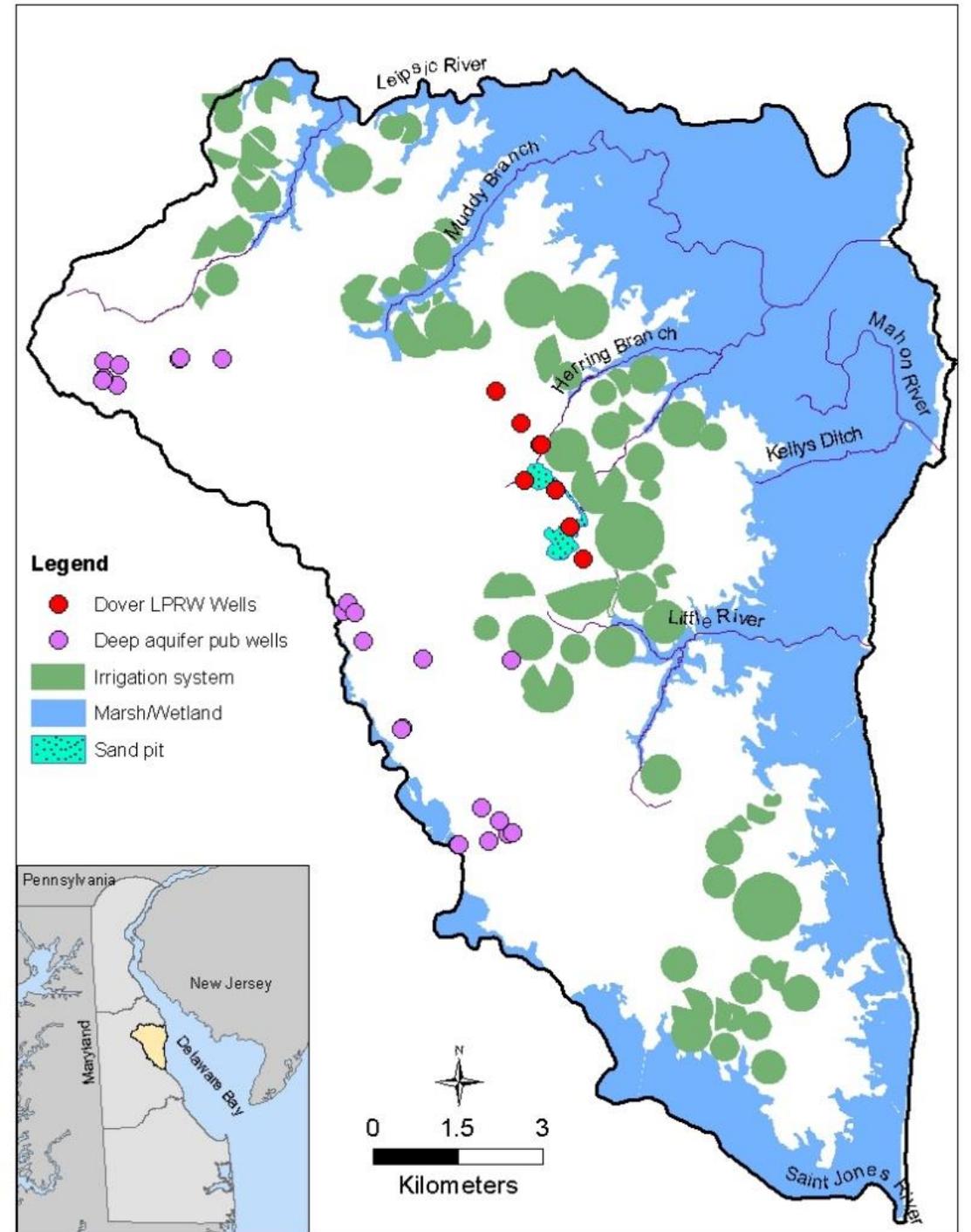
East Dover update

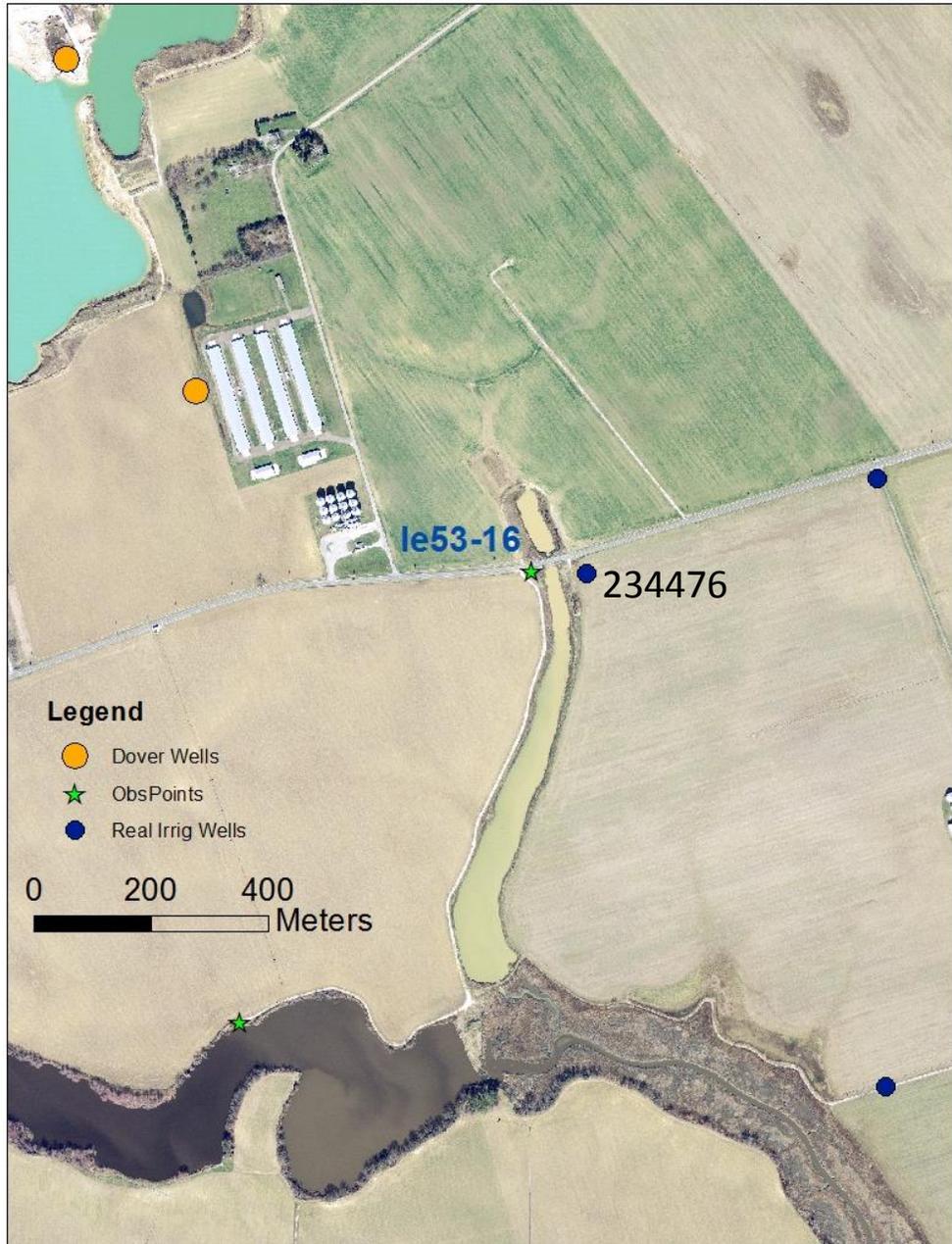
- Issues
 - Competing water demands
 - Salty and tidal water
- Opportunities
 - Large quantities of monitoring data
 - Simulation work – 3D solids, climatic water budget and irrigation needs, gw flow



Basics

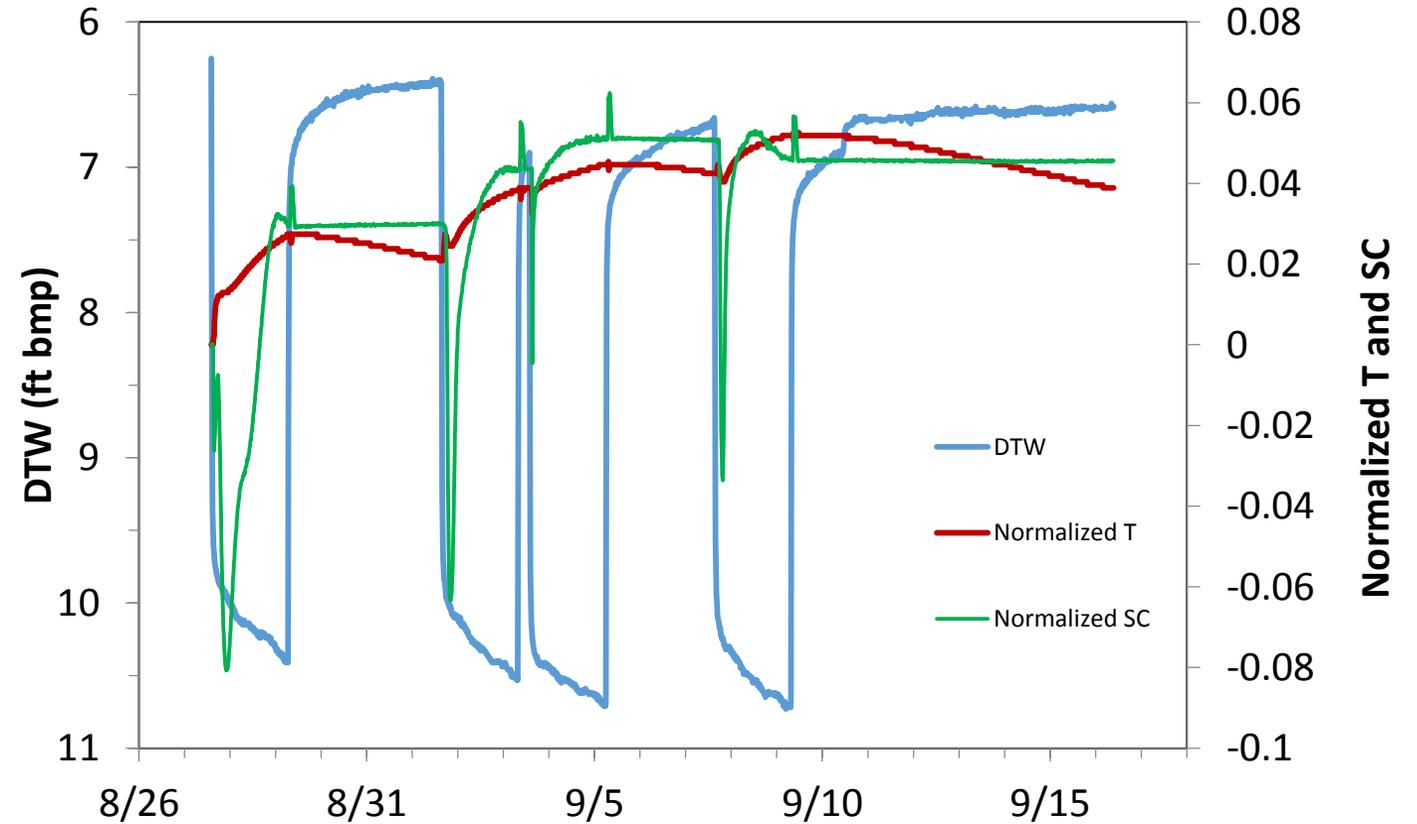
- City of Dover Long Point Rd Wellfield built 1980s-90s in shallow aquifer
- 22 allocated irrigation wells, 7 ponds in shallow aquifer but 72 irrigation systems
- Many additional irrigation systems supplied by ponds and wells that are extracting water from shallow aquifer
- Area bounded by salty tidal marshes and dissected by salty tidal creeks
- Numerical model boundary shown on map



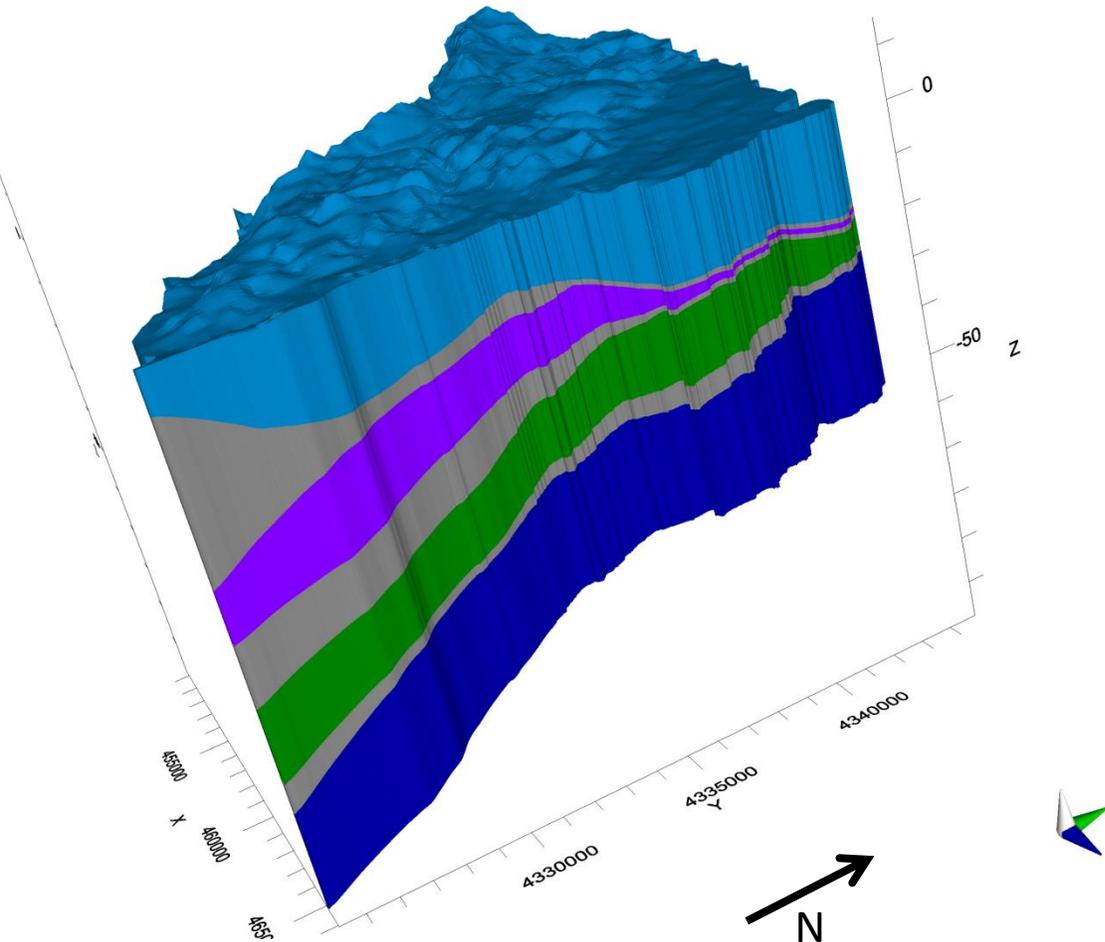


Location of le53-16

- 93.7 m=307 feet away from a irrigation pumping well, 660m away from the nearest Dover well.
- 15-min data logger was installed in le53-16.



Simulation

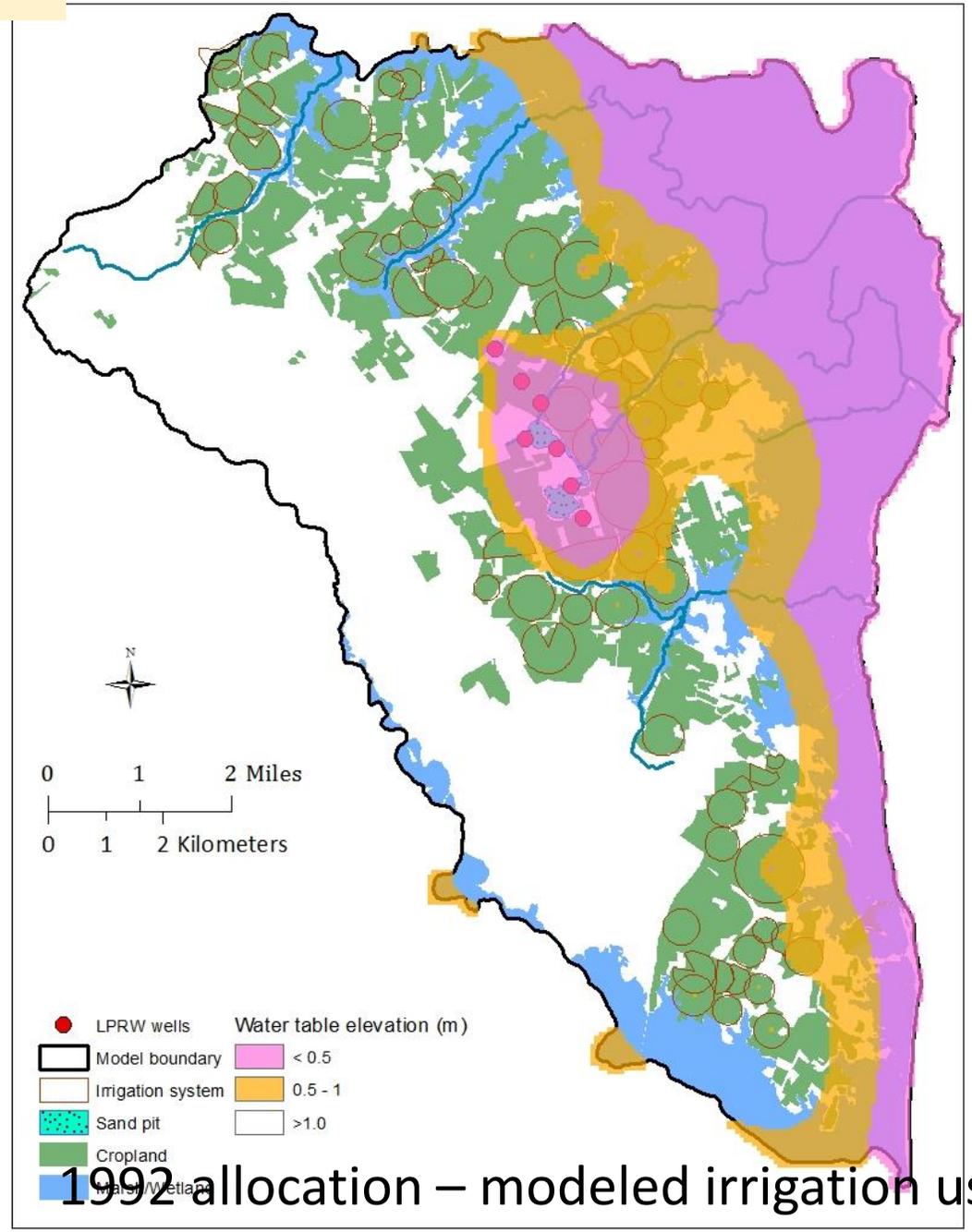
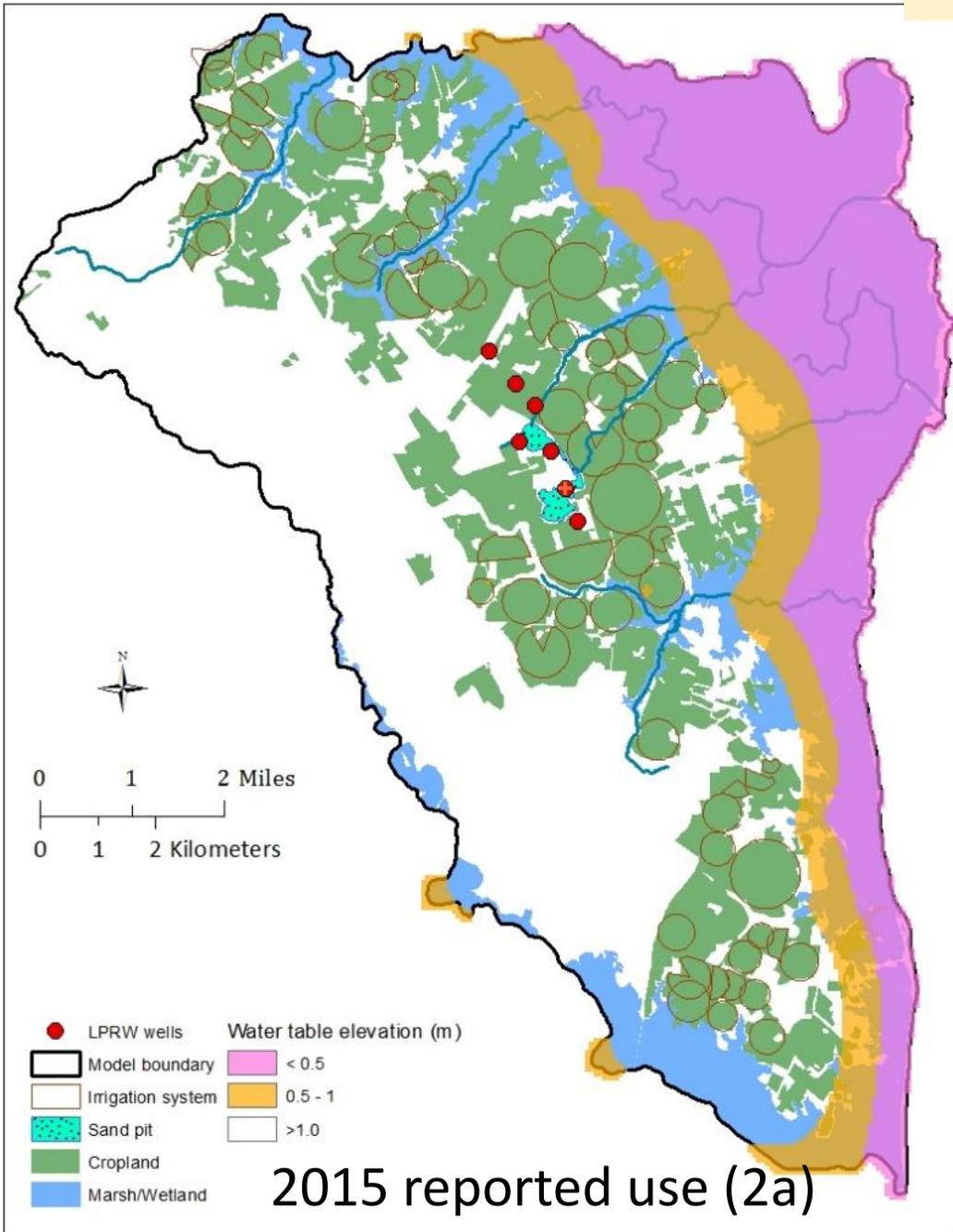


3D solids model

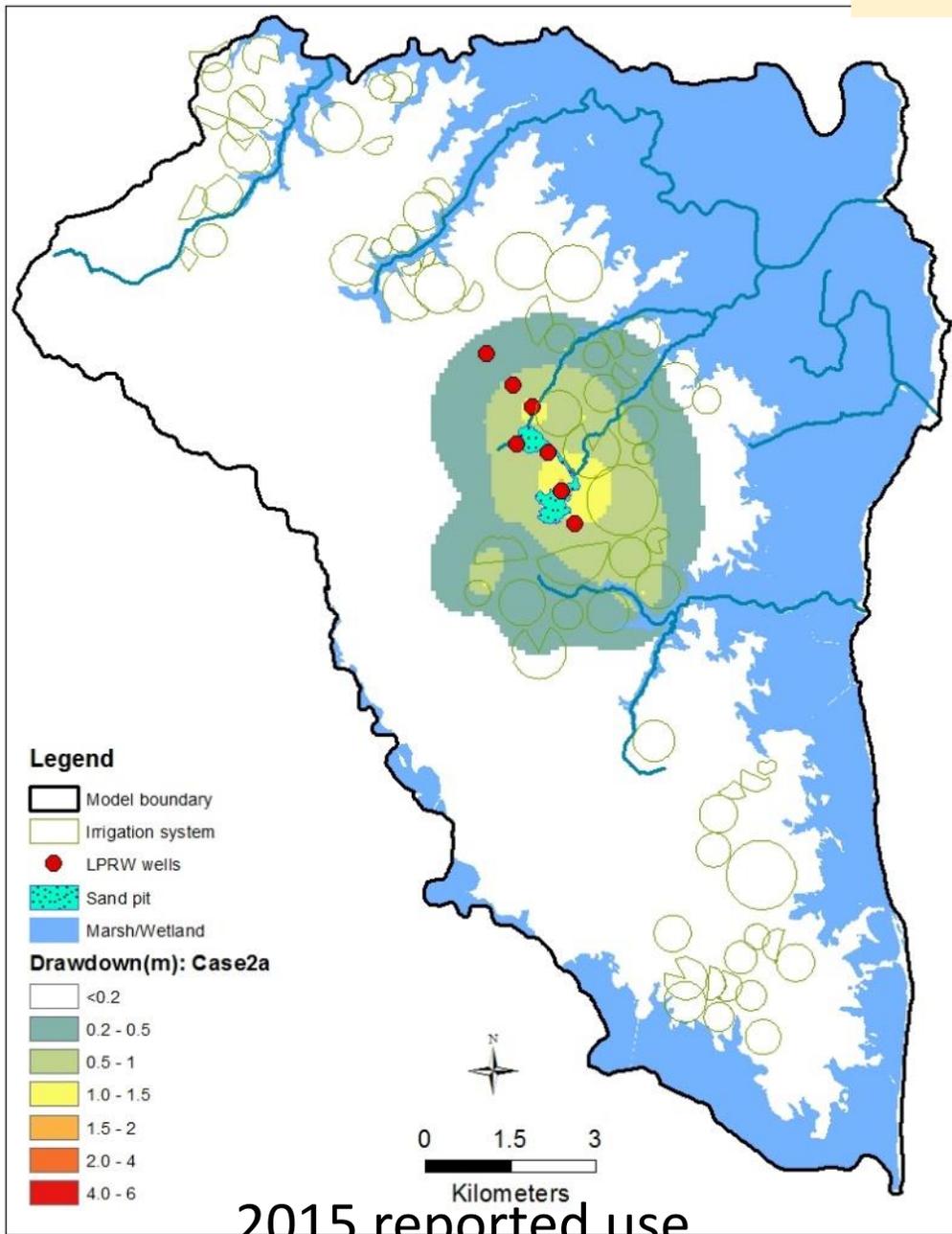
Scenarios	Irrigation Wells	Dover Wells		
		Total pump In 2015 (million gallons)	Description	
Case 1	No pumping	0	No pumping	
Case 2	a	Recorded Data	74	Recorded Data
	b	Recorded Data	630	2015 Allocation Data
	c	Recorded Data	1659	1992 Allocation Data
Case 3	a	Estimated Data	74	Recorded Data
	b	Estimated Data	630	2015 Allocation Data
	c	Estimated Data	1659	1992 Allocation Data

Pumping scenarios

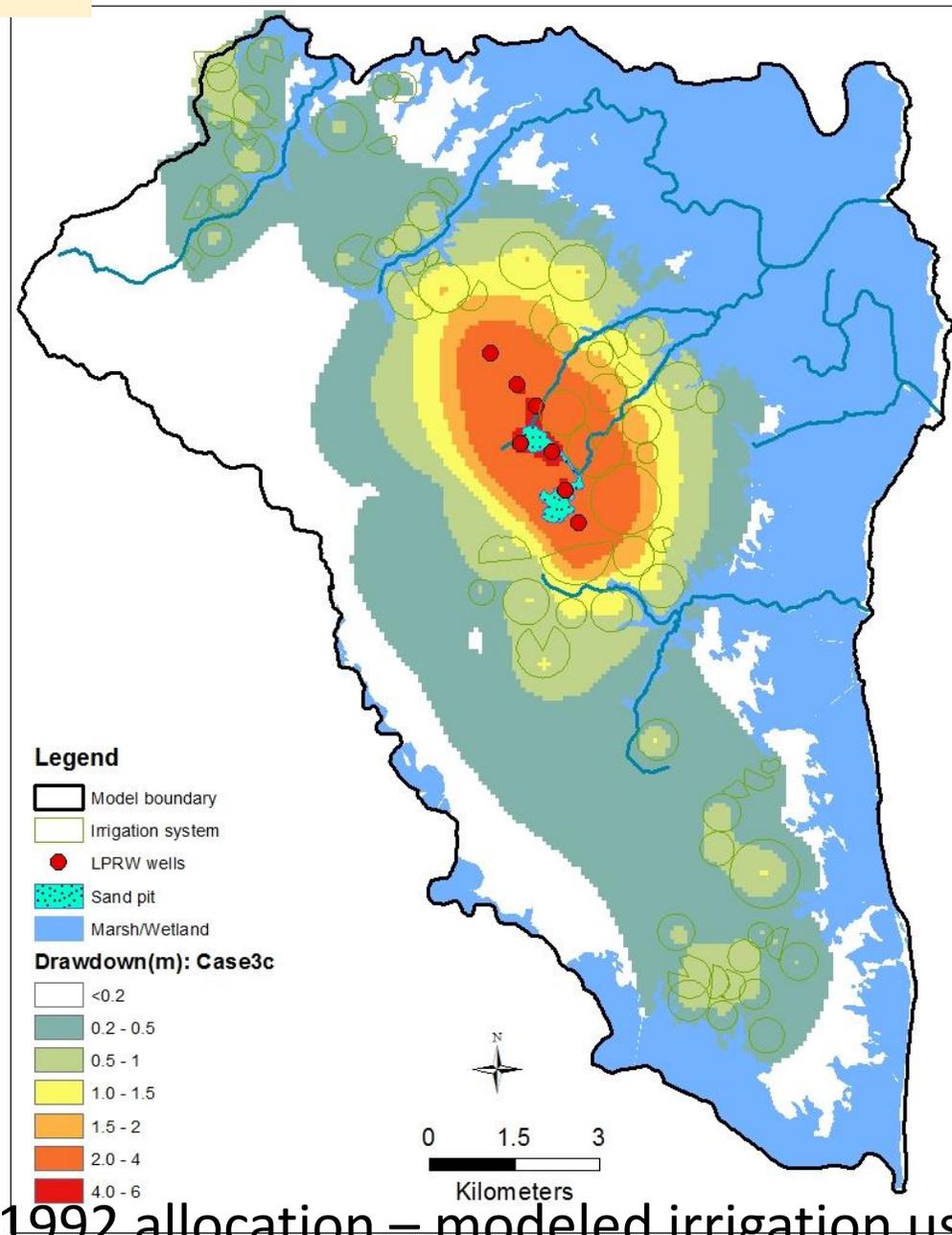
Salinity Risk



Drawdown Risk



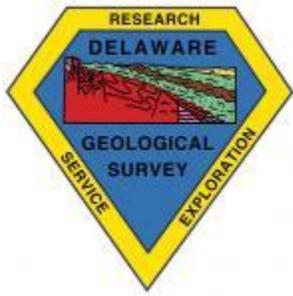
2015 reported use



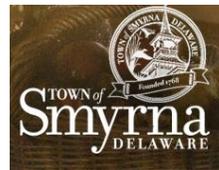
1992 allocation - modeled irrigation use

Interim results summary

- Piney Point aquifer
 - Accelerated rate of gwl decline in DE since 2012.
 - Projections for loss of resource
- East Dover
 - Competing water demands by Dover and irrigation
 - Ponds into water table are commonly used for irrigation
 - Potential loss of resource due to saltwater and dewatering



Kent Co. Monitoring Network progress report



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