

Clean Water and Flood Abatement Task Force

Thursday, October 15, 2015

2:30 p.m. – 4:30 p.m.

Tatnall Building

Meeting Attendance

Task Force Members:

Present:

Senator Bryan Townsend
 Senator Bryant Richardson
 Representative Ronald Gray
 Secretary David Small
 Holly Porter
 Robert Baldwin
 Thom May
 Howard Morrison
 George Haggerty
 Gerard Esposito
 Paul Morrill
 Patty Cannon
 Brenna Goggin
 Roy Miller
 Gerald Kauffman
 Michael Riemann
 Bruce Jones
 Lew Killmer
 Joseph Corrado

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jerryk@udel.edu
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Absent:

Sam Lathem
 Jen Adkins
 Dian Taylor
 Christine Mason
 Jeffrey Bross
 Secretary Jennifer Cohan
 William Lucks
 Thomas Unruh
 Representative Michael Mulrooney
 Kent County Administrator

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Michael.Mulrooney@state.de.us
 N/A

Staff:

Michelle Zdeb
 Caitlyn Gordon

Michelle.Zdeb@state.de.us
Caitlyn.Gordon@state.de.us

Attendees:

Stewart Ramsey
 Terry Deputy

Organization:

Delaware Farm Bureau
 DNREC

Minutes prepared by Caitlyn Gordon, Legislative Aide

Minutes reviewed by Michelle Zdeb, Legislative Assistant & Task Force Staffer

Jay Meyer	Protecting our Indian River
Scott Andres	DGS
Todd Keyser	DNREC-DWHS
Heather Warren	DPH
David Wolanski	DNREC
Kash Srinivasan	Kash Srinivasan Group
Charles Postles	Public
Andrew Homsey	UD
Frank Piorko	DNREC

The Task Force meeting was brought to order at 2:38 pm.

Senator Bryan Townsend, Co-Chair, thanked Task Force members for their patience with the change of meeting time, as he attended the funeral of Senator Hall-Long's father. He also apologized for the change in location due to the fire in Legislative Hall. The Senator also expressed Representative Mulrooney's regrets that he could not make the Task Force Meeting.

Next, Senator Townsend went over some housekeeping necessities before moving onto the formal agenda. During the last Task Force meeting, Holly Porter was asked a question that she agreed to follow-up on. The Senator read in the question and her answer.

Question: Whether any public (state or federal) land in Delaware has poultry manure applied to them.

Answer: The short answer is no. It is not used for right-of-ways or medians as a soil additive with DelDOT (Delaware Department of Transportation) or DNREC (Department of Natural Resources and Environmental Control) in open space land. However, there are farmers that have agriculture leases with public lands (state forests, etc.) and they may be applying it, but that would all be factored into their nutrient management plans.

Roy Miller, Delaware Center for Inland Bays, referenced last month's meeting when Task Force members heard from Holly Porter, Robert Baldwin, and Marcia Fox about what has been achieved by the agricultural (Ag) sector in terms of nutrient waste reductions to Delaware's watersheds. Mr. Miller commended the Ag community for their considerable accomplishments in this regard.

Mr. Miller reminded Task Force members that there is still work to be done. He referenced the Inland Bays watershed. He noted that agriculture has the largest land use but developed land is increasing rapidly as a land use. He added that croplands still contribute more nutrients to the Inland Bays than any other type of land use.

Buffer widths have decreased over the years to where the median buffer width is less than 50 feet. Nitrogen loads into the Inland Bays are still well above target levels, and people cannot see their feet standing in waist or knee deep water during the summer. Bay grasses are barely hanging on in small isolated pockets in spite of repeated plantings and protective management over the years. Dissolved oxygen levels seldom exceed 4 parts per million in surface waters during the summer, the State standard being 5 parts per million. Mr. Miller states that this is a fact about the Inland Bays because for the past 5 years, every month between April and October, he stands waist deep in Rehoboth Bay waters doing seine surveys of shore zone fishes as a part of a team of Center for the Inland Bays volunteers. Even in the

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Minutes reviewed by Michelle Zdeb, Legislative Assistant & Task Force Staffer

Chesapeake drainage area of Delaware, present sources of funding for BMPs (Best Management Practices) are 1/10th of what is needed to achieve TMDL (Total Maximum Daily Load) targets, according to Ms. Fox's presentation at the last meeting.

In summary, Mr. Miller states there is still a lot that needs to be done to restore treasured Inland Bays' water quality that the State wants, and finding funding for BMPs that are needed to improve water quality remains a major challenge. Lastly, Mr. Miller thanked Senator Townsend for the opportunity to speak.

Senator Townsend expressed his apologies again for having to leave the last meeting a little early. The Senator noted that he does not like missing any part of a meeting because as the meeting finishes off, it is important to clarify what the dialogue and tone was. He clarified that the Meeting Minutes from the last meeting will be prepared for the next time the Task Force meets. The Senator added if anyone would like to make a statement on the basis of the last meeting, he certainly welcomes additional dialogue from Task Force Members.

Senator Townsend asked for additional comments or statements. There were none, so he moved on to the next portion of the agenda.

Delaware's Groundwater

Senator Townsend turned the floor over to Frank Piorko who presented on *Surface Water Quality Management in Delaware*.

The presentation Task Force members received is inserted below:

Additional handout information from
9/23

Priority Watersheds Cost of Implementation for
Conservation Practices in Priority Watersheds

Watershed	Capital Investment (Amendment Cost to State)	Capital Investment (Amendment Cost to State)	Future Needs (Amendment Cost of Implementation)
Indian River	\$13,641,578	\$245,019	\$2,179,793
Chesapeake Bay	\$18,914,674	\$1,201,937	\$2,122,251
Brandywine River	\$1,157,419	\$242,013	\$70,851
St. Jones River	\$1,192,976	\$162,720	\$241,650
Martinsville River	\$2,265,823	\$472,410	\$191,219
Thomas River	\$23,119	\$1,949	\$8,013
Total	\$42,228,859	\$2,327,048	\$4,693,541

Surface Water Quality Management in Delaware

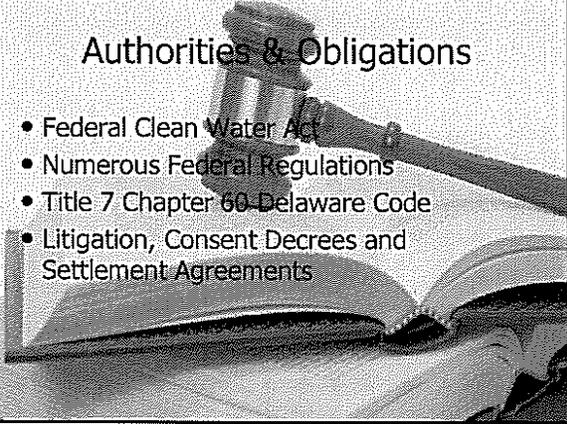
Clean Water & Flood Abatement Task Force
October 15, 2015

Frank Piorko
Division of Watershed Stewardship



Authorities & Obligations

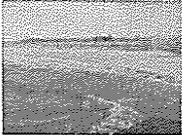
- Federal Clean Water Act
- Numerous Federal Regulations
- Title 7 Chapter 60 Delaware Code
- Litigation, Consent Decrees and Settlement Agreements



Whole Basin Planning

- Early 1990's development of Whole Basin Plans for the four major basins.
- WBP's went beyond just water quality focus.
- Revisited the Plans in 2014.





Federal and State Consent Decree and Settlement Agreement

CONSENT DECREE

WHEREAS on April 2, 1996, American Littoral Society sent a 60-day Notice of Intent to the United States Environmental Protection Agency ("EPA") alleging various violations of Section 303(d) and (e) of the Clean Water Act ("CWA" or "the Act"), 33 U.S.C. § 1313(d) and (e), and Section 7 of the Endangered Species Act, 16 U.S.C. § 1536;

Settlement Agreement

Delaware will establish TMDL's for the impaired stream segments in the state.

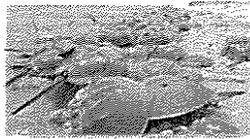
Water Quality Management Process

- Water Quality Standards
- Monitoring
- Assessment & Reporting
- Establish Total Maximum Daily Loads (TMDLs)
- Pollution Control Strategies & Watershed Plans
- Regulatory & Voluntary Implementation
- Lather Rinse and Repeat

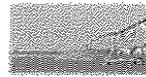


Water Quality Standards

- Designated Uses
 - Societal goals for the use of our waters
- Criteria
 - Quality necessary to meet those uses
- Required by the Federal Clean Water Act
- Must be approved by EPA



Examples of Designated Uses



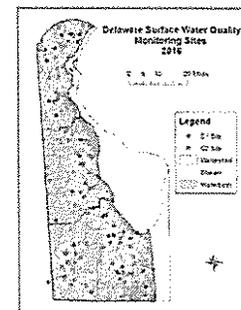
- Propagation of Fish, Aquatic Life, and Wildlife
- Primary Contact Recreation (Swimming)
- Secondary Contact Recreation
- Industrial Water Supply
- Agricultural Water Supply (Freshwater)

Examples of Criteria

- Dissolved Oxygen (Propagation of Aquatic Life)
- 5.5 mg/l (for freshwater)
 - 5.0 mg/l (for marine water)
 - 4.0 mg/l (minimum)
- Temperature (Propagation of Aquatic Life)
- Maximum daily : 86° F
 - Average daily: 82° F
- Enterococcus Bacteria (Swimmer Protection)
- 100 colonies/100 ml

Surface Water Quality Monitoring Sites

- 134 active stations
- 22 C1 are monitored monthly with stream or tidal gage and are critical to our TMDL monitoring needs.
- 112 C2 stations are monitored monthly for 2 years and bi-monthly for three years in our five year cycle.
- Reduction of 9 stations since last year.

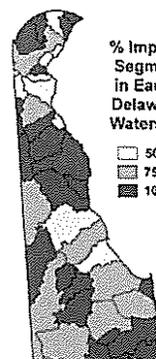


Data Analysis & Reporting

- 5-Year Snapshot of Water Quality
- Required by Federal Clean Water Act
- Report Due Every April 1 of Every Even-Numbered Year
- Includes a List of Waters Not Meeting Standards ("303(d) List")
- Must Develop Total Maximum Daily Loads (TMDLs) for Those Waters



Delaware Impaired Waters



% Impaired Segments in Each of Delaware's Watersheds

- 50-74%
- 75-99%
- 100%

- The most common causes of impairments are bacteria and nutrients
- Nutrient and bacteria TMDLs have been developed for all watersheds
- Tributary Action Teams and other stakeholders are implementing actions for reducing pollution, known as Pollution Control Strategies (PCSs) and Watershed Implementation Plans (WIPs)

Pollution Control Strategies & Watershed Plans

The pollution control strategy (often abbreviated PCS) includes a combination of more than one pollution-reducing method and is tailored specifically for each watershed. Methods could include:

- The removal of direct point-source discharges from waterways.
- Better management of fertilizer and manure.
- Replacement of failing septic systems with enhanced on-site or central wastewater systems.
- Protective agricultural practices such as the planting of vegetative buffer strips between cropland and waterways.
- Expanded levels of treatment of residential stormwater through the use of best management practices.

Each Tributary Action Team was engaged in approaches that would be most effective in its watershed, based on extensive study, comments at citizen forums, advice from experts, and discussions at public team meetings. For more specific information on current pollution control strategies and other watershed plans

Pollution Control Strategies & Watershed Plans

<http://www.dnrec.delaware.gov/swc/wa/Pages/WatershedManagementPlans.aspx>

- <http://delawarewatersheds.org/>

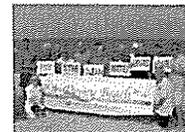
http://demac.udel.edu/waterquality/#./?&_suid=144467457532707296809322577135

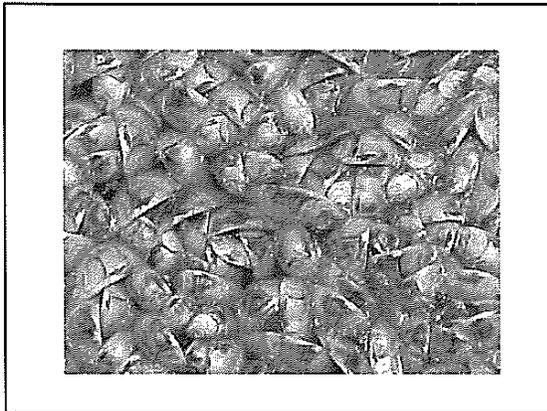
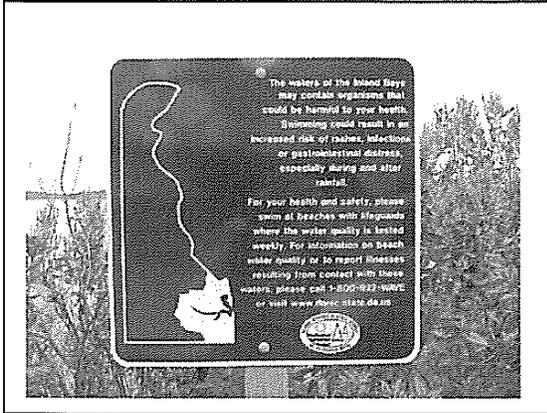
And the Process Starts Over Again

Water Quality Standards (Are they appropriate?)
 Monitoring (Adjustments needed?)
 Assessment & Reporting (Are we making progress?
 Deletions from list of waters needing TMDL?
 Additions?)
 Total Maximum Daily Loads (New standards=New
 TMDLs)
 Pollution Control Strategies & Watershed Plans
 (Progress?)
 Regulated & Voluntary Implementation (Progress?)

Recreational Water Program

- 2013 Natural Resources Defense Council award for #1 recreational and beach water quality in the nation. Dewey and Rehoboth 5-star beaches for the fourth year in a row!
- Monitored 25 miles of marine coastal beaches weekly and bi-weekly.
- 600 recreational water quality samples collected.





FY 16 Unfunded Annual Assessment Needs			
Project	FY 16 Budgeted	FY 16 ACTUAL	
Habitat & Aquatic Life Monitoring	275,215.00	0.00	
Installation of a new continuous monitoring site at Rt. 1 Bridge, Broadkill River	55,000.00	0.00	
Bacteria Source Tracking for TMDLs, Beaches & Shellfish Areas	300,000.00	0.00	
Headwater Stream Monitoring Enhancement for BMP Effectiveness Assessment	264,000.00	0.00	
TOTAL	894,215.00	0.00	

During the presentation the following questions were asked:

Paul Morrill, Committee of 100, asked a question referencing the summary table on slide 1, directing Mr. Piorko's attention to the "Chesapeake Bay Watershed" section of the table. He wanted to know if the \$2 million that was listed would achieve WIP (Watershed Implementation Plan) goals.

Mr. Piorko answered yes, for the conservation practices section. Mr. Piorko noted that there are different elements of WIPs, and the data on the slide 1 table speaks specifically to the conservation practices.

Mr. Morrill asked if the conservation practices included forest buffers.

Mr. Piorko answered yes. Mr. Piorko clarified that it is based off of the amount of acres people are willing to convert to forest buffers.

Representative Ronald Gray asked a question referencing Mr. Piorko's link for researching water quality data. Representative Gray wanted to know how often Mr. Piorko collects his automatic sampling data.

Dave Wolanski, a presenter with Department of Natural Resources and Environmental Control, answered that there are very few automated sampling sites that occur every 15 minutes. Mr. Wolanski added that there are also monthly stations and that the site that Mr. Piorko presented is updated weekly.

Senator Bryant Richardson asked when the last fish kill in Delaware was.

Mr. Piorko answered that the Inland Bays has not had a fish kill in 3 or 4 seasons. He added that those kills are usually related to other stressors. For example, if there are 10,000 fish and they cannot get out, the DO (Dissolved Oxygen) is really low. Another example is if the temperature spikes. These instances have all led to fish kills in the past.

Mr. Miller added that the year 2000 was the worst year for Inland Bay fish kills. That year there were tens of millions of fish that died. Mr. Miller added that fish kills have varied through the years. It depends on when the fish move into the estuaries and when they move out and how abundant they are in that given year. He added that it also varies with rainfall and atmospheric events. It is too soon to say, based on fish kills, that things are looking better, but Mr. Miller hoped that the State can make optimistic statements in that regard.

Senator Richardson referenced that some of what the State is monitoring and changing reduces the risks of fish kills. The Senator continued by asking if there is anything the State can do to prevent it entirely.

Mr. Miller replied by saying with some fish kills, Mother Nature intervenes and there is nothing one can really do to prevent them.

Michael Riemann, Delaware Homebuilders Association, asked if the monitoring on Mr. Piorko's presented website shows trends or does it just give a snapshot?

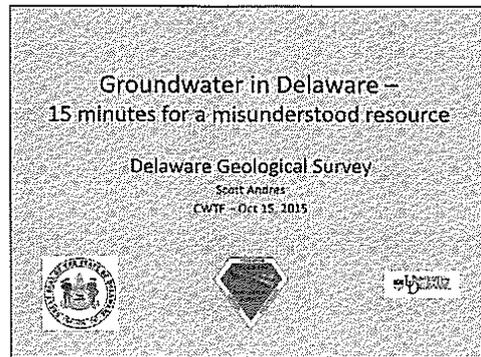
Mr. Piorko answered that it shows historic trends and historic data with some of the data going back pretty far. The website gives a complete look at the history of the State's monitoring efforts.

Mr. Piorko turned the floor over to Scott Andres from the University of Delaware who presented on *Ground Water in Delaware*

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Minutes reviewed by Michelle Zdeb, Legislative Assistant & Task Force Staffer

The presentation the Task Force members received is inserted below:



The Delaware Geological Survey (DGS) is a research and service agency organized at the University of Delaware.

DGS products are routinely used by multiple state agencies to address resource and emergency management, planning, and policy concerns.

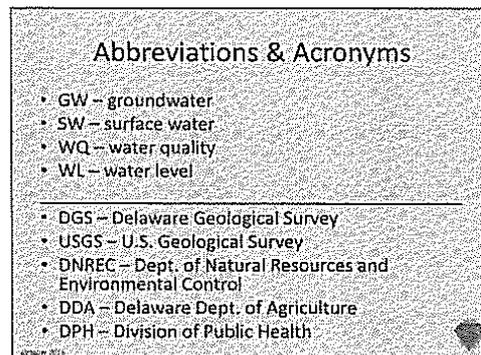
DGS has been actively working on water resources for the State for over 60 years.

Groundwater is a resource that is critical to the economy and environment of Delaware.

Come visit us
257 Academy St
Newark, DE 19716
302-831-2833

www.dgs.udel.edu

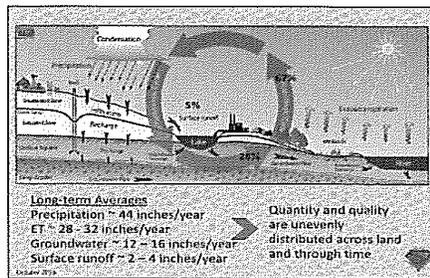
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These abbreviations are frequently used in this presentation.

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Blessed with abundant rainfall and productive aquifers but cursed with limited surface water resources and a host of contaminant sources
 GW availability and quality has affected development of land.
 GW critical to overall budget and represents a majority of water available for use.
 A vast majority of streamflow has passed through the ground.

3

Groundwater Occurrence and Use

- Water in the ground - a geologic phenomenon
- Occurs in spaces between sand grains or cracks in the rocks
- 14 Aquifers, none present throughout state - a few feet to thousands of feet deep, 10s to 100s feet thick
- Very slow flow compared to surface water
- Close connection to surface water flow and quality
- Aquifers are used for supply and wastewater disposal
- Hydraulic properties of aquifers vary with location - limits supply and disposal options in some area

Water in the ground and occurs in spaces between sand grains or in cracks in the rocks - no underground rivers, no magic sand to filter contaminants.

Water originates as precipitation on local area.

Very slow flow compared to surface water.

14 Aquifers, not all are present throughout state - Piedmont fractured rock, Coastal Plain sands.

Aquifers are geologic phenomena - Critical importance to know which aquifers are being used by which wells.

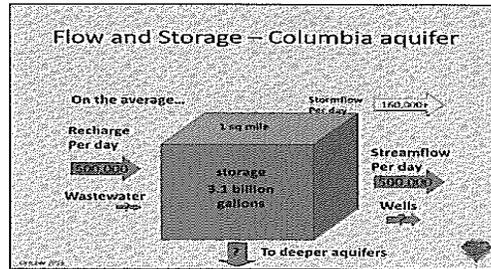
Close connection to surface water flow and quality - Groundwater provides the vast majority of flow to streams.

Aquifers are used for supply and wastewater disposal.

Fresh gw use varies by geographic areas - Public wells serve larger proportion of population in northern DE, irrigation dominant in Kent and Sussex, larger percentage of population served by domestic wells in Kent and Sussex.

Hydraulic properties of aquifers vary with location - limits supply and disposal options in some areas, has affected land development patterns.

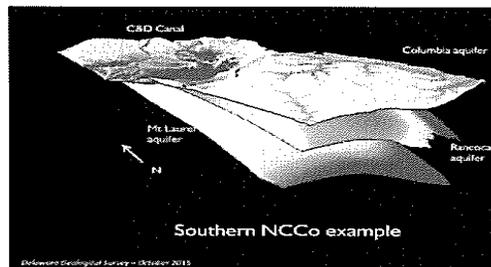
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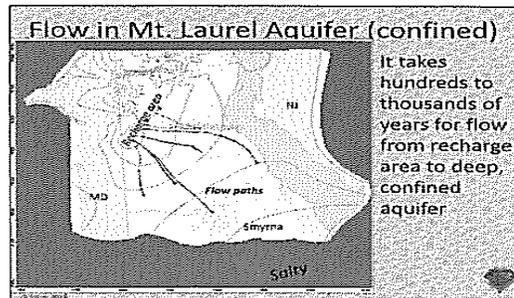
Simple box model shows that GW represents a vast quantity of water, but there are areas where the resource is limited by geologic or contamination factors.

Units are gallons per day.

Infrastructure is needed to move water from one location to another.



This example of 3-D mapping from southern New Castle County illustrates Delaware Coastal Plain hydrogeology. This pattern of stacked and dipping aquifers is repeated multiple times from north to south. Deeper aquifers are not shown here. Columbia aquifer is the shallow "blanket" at the top – water table occurs within Columbia. Deeper aquifers rise to near land surface at their northern extents. Deeper aquifers are confined by layers of low permeability silt and clay. 3-D mapping helps identify where/how/when water flows between aquifers, and where there are spatial or temporal constraints on supply imposed by segments of water budget. Total depth at southeast corner is approximately 600 feet. Work to date clearly shows the critical importance of knowing the geology - which aquifer is being used by which well.



Aquifers receive water (recharge) where they occur closest to land surface and intersect the Columbia aquifer.
 Water flows down and away from the recharge area.
 Flow paths are miles long and flow takes hundreds to thousands of years.
 At greater depths and distances from recharge area, the aquifers are saturated with salty water. Little is known about the exact locations of salty water.

Contamination

- Contamination fairly common and has affected land use through history
- Natural (saltwater) and human (nitrate)
- Large scale land use and waste and storm water disposal practices
- Small scale industrial, fuel, solid waste issues
- Result in problems that can take decades to centuries to flush or require expensive steps to treat

Contamination of GW is a ubiquitous problem worldwide.

Being a coastal state, salty groundwater is very common in Delaware.

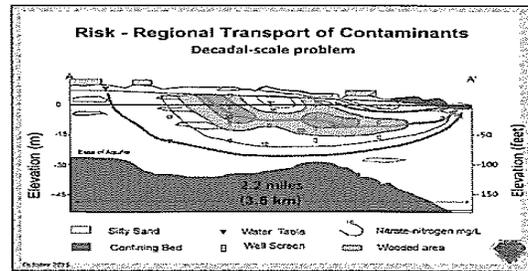
Sea level rise will have significant impacts on water supply and water disposal infrastructure – monitoring and research ongoing since 1970's.

Problems will be seen as gw flooding (water table rise) and salinization of gw resources due to overwash and intrusion from below.

Regional scale non-point source pollution problems affect quality of thousands of wells and hundreds of billions of gallons of groundwater and slowly bleed out into surface water

Point-source pollution problems have affected many large-capacity public and domestic wells costing millions of dollars for treatment or mitigation

Inappropriate contaminant handling and disposal practices and engineering decisions are at the heart of the issue



Regional transport of nitrate (NO₃) in groundwater, a Coastal Plain risk has been well known for decades.

Moderately permeable Columbia aquifer, a major source of drinking and irrigation water.

NO₃ stats for DE – 15 % of shallow wells have NO₃ in excess of drinking water standard - some areas the exceedence rate approaches 1/3.

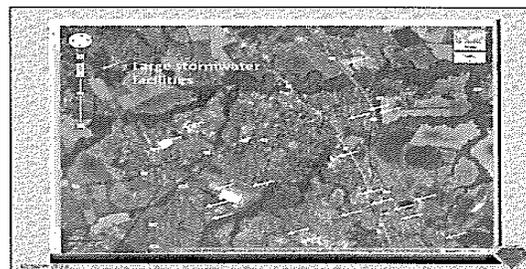
Contaminants slowly discharge to surface water leading to eutrophication problems.

Because of relatively slow flow velocities there is a large reservoir of contaminants in storage that will take decades to diminish.

Research done in 1980s and 90s developed the science to understand the causes and processes.

Cross section illustrates vertical variation of water quality within aquifer in eastern Sussex Co. - variation due to intersection of different flow paths with depth.

This example was caused by dry animal waste disposal in a natural recharge setting – imagine if water were added.



Aquifers are used for water disposal, both wastewater and stormwater - Balancing needs for water disposal and water quality requires careful application of engineering and science.

Wastewater disposal ranges from home septic systems to large systems that use spray irrigation or rapid infiltration.

Stormwater management has to use aquifers to temporarily store water.

In many areas the aquifers have limited capacity to filter or attenuate contaminants.

These practices have contaminated vast quantities of shallow groundwater – and cause long-term problems with surface water and limit use for drinking water

Balancing needs for water disposal and water quality requires careful application of engineering and science

Planning for the Future

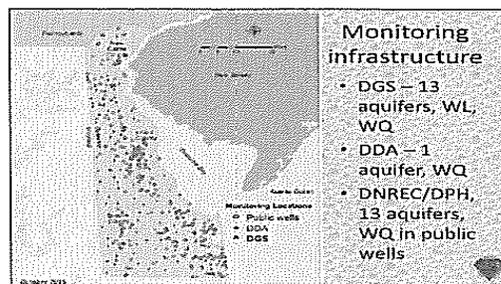
- Professional planning requires adequate monitoring – quantity and quality
- Hampered by “out of sight – out of mind”
- Current spending – SW \$ >>> GW \$
- GW monitoring more expensive than SW monitoring – an infrastructure issue
- Plans for monitoring systems developed – collaboration, cooperation, & leveraging

Monitoring is key for identifying emerging problems, tracking known problems, and planning for future water needs. Monitoring is affordable, resource loss may not be - Monitoring is a risk management tool. Funding for GW monitoring has been much less than that for SW – coming from a mix of federal and state sources. There are not any clearly identified regular State appropriations to support GW monitoring. There have been capital appropriations in recent past.

Responsibility for GW quality monitoring is fragmented across multiple programs in state and local governments and private concerns. Due to funding constraints, GW monitoring is funded and managed separately from SW monitoring. Programs and regulations have vastly different monitoring and data needs so it is extremely difficult to leverage existing programs for general use. For example, data from monitoring for pesticides in 20 foot deep wells has little use in assessment of aquifers that are hundreds of feet deep and waters thousands of years old.

GW monitoring is expensive because the infrastructure costs are expensive. For example a 400 foot deep well will cost a minimum of about \$15K. The cost will double if there are special needs for well construction materials or triple if drilling-waste testing and secure disposal are required.

11



DGS – with DNREC support for GW levels, GW quality in 100+ wells in 13 aquifers, since 1970s, intermittent WQ projects

DDA – Agriculture/GW quality project with USGS in 70+ wells in water table aquifer just started, GW quality program for pesticides regulation

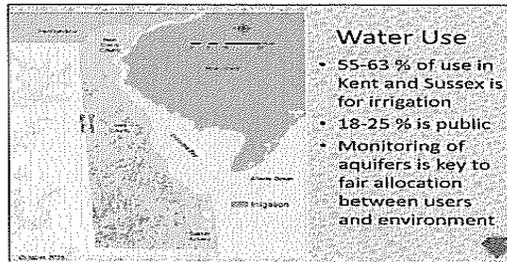
DNREC – ~ 300 public wells for Clean Water Act 305b reporting
> 1000 wells for site specific GW quality monitoring projects by site owners for specific permitting and contaminant mitigation programs

DPH – Office of Drinking Water potable water source testing, includes public and private wells

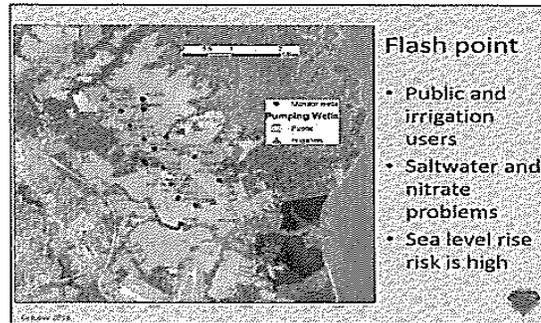
The Water Supply Coordinating Council (WSCC) has advocated for improvement of GW monitoring infrastructure. Some of this work has been funded – a \$600 K project for NCCo was completed in 2014. We have identified approximately \$1.4 M in immediate infrastructure needs for Kent and Sussex County. Longer term (10+ years) needs for deep aquifers in New Castle County are estimated at \$2.5-3 M.

Current annual GW monitoring costs are not well known. DGS receives approximately \$45K/year of EPA pass-through funds for quantity and limited quality monitoring. Annual GW quality monitoring funding needs depend on many factors. Start-up of a rudimentary GW quality network will cost approximately \$125K/year with the largest

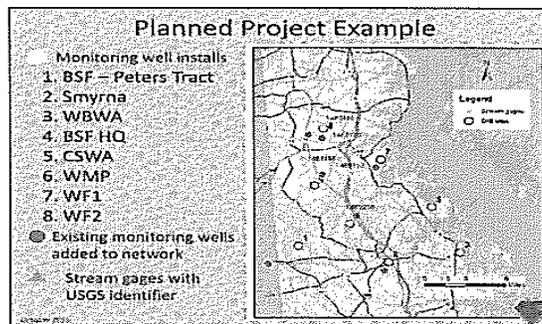
uncertainty in cost coming from the types of laboratory testing services desired.



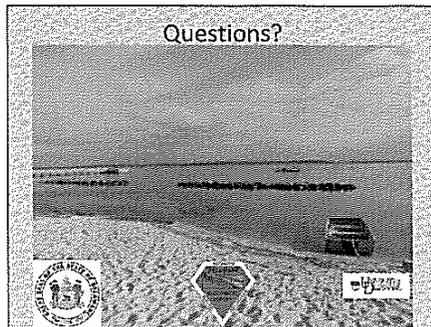
Nearly all freshwater used in southern Delaware for all purposes comes from aquifers
Water use monitoring is critical for evaluating quantity issues and forecasting future conditions
Impacts of irrigation water use will be a significant concern in the near future
We use complex simulations to model and forecast
Simulations require reasonably accurate measures of water use by aquifer to determine reasonable forecasts
Accuracy implies proper identification of geology and aquifer



The east Dover area is one of the first flash points in the need to balance multiple users and contamination problems
 New water supply needs are causing concern for sustainability of resource and friction between user groups
 Monitoring infrastructure was built for much different conditions and conditions – funding inadequate to address monitoring needs



Water Supply Coordinating Council supported capital-funded project to improve monitoring in a growing area of the State
 Cooperative with DNREC, ODA, NCCo, Smyrna
 More than 60 % if funds for infrastructure construction – wells and stream gages
 Leveraged existing infrastructure where appropriate
 Project was a balance of applied science and basic monitoring of geology, GW, SW, and GW replenishment/sustainability



For more information please contact us:
 257 Academy St
 Newark, DE 19716
 302-831-2833
www.dgs.udel.edu

During the presentation the following questions were asked:

Stewart Ramsey, Delaware Farm Bureau representative for Thomas Unruh, referenced Mr. Andres' statement that a balance and intrusion of salt water will happen. Mr. Ramsey asked how impactful the sea level rise is compared to the other dynamics that Mr. Andres spoke about.

Mr. Andres answered that it is a simple balance approach. For every foot of fresh water Delaware has above sea level, the State will have about 40 feet of fresh water below sea level. So, if the sea level increases a couple feet, fresh water will be pushed inland. Mr. Andres added that this is not a static system; it is a dynamic system of water pressure created by flow. The actual number of how far salt water will be moved inland is a more complicated assessment, but it will be substantial. There will be intrusion from below, and as sea levels rise there will be flooding from above and both will cause problems.

Gerard Esposito, Delaware State Chamber of Commerce, referenced Mr. Andres slide about Mt. Laurel which has deeper aquifers and travel time. He asked how far the out-cropping was to the Delaware River Bay.

Mr. Andres answered that the out-cropping is between 10 to 20 miles for most of the flow paths.

Mr. Esposito mentioned that in the Inland Bays there is only 5 miles and it was only decades. He asked why this was so long. Mr. Esposito also asked if it is because it is a confined aquifer.

Mr. Andres answered yes, that is the easy answer because of the longer flow paths and the confined aquifer. The gradient and the driving force is much lower in a confined aquifer, and that is the dominant cause.

Lew Killmer, Delaware League of Local Governments, mentioned the large scale agricultural irrigation and asked what percentage actually returns to the aquifer, other than evaporation and transpiration.

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Minutes reviewed by Michelle Zdeb, Legislative Assistant & Task Force Staffer

Mr. Andres replied that if irrigation is managed properly, one should only put on what the crops really need. However, this does not always happen. There are places in the United States where people have to irrigate using flood irrigation, where they have a lot of return flood. Delaware practices spray irrigation, center pivots, or drip. This is much more efficient because there isn't much return flood.

Representative Gray asked if Delaware is being too aggressive with the State's irrigation wells.

Mr. Andres replied that many segments of Delaware rely on that. Without groundwater, Delaware would not have a poultry industry; Delaware would lose that whole part of the economy. He added that it is a balance in Kent and Sussex. The State does not have the regulatory pressure that New Castle has, which limits what people can take for water resources. Mr. Andres added that in the Christina Basin, Delaware has to limit what we take out of the Red and White Clay Creeks to let the water go past for the biological life in the stream. Mr. Andres stated that southern Delaware has not hit that point yet but it will probably happen because it has become noticeable that the stream flow has declined. Once the public notices, things will start to take shape.

Mr. Esposito referenced the domestic irrigation well phenomenon that has rapidly increased. He also mentioned that irrigation wells are not classified as irrigation wells for domestic purposes, which is a category that needs to be tracked. Mr. Esposito added that this may dominate some of the agricultural irrigation in certain areas because you have 100 wells that are drawing the equivalent of 1 agricultural irrigation well.

Mr. Andres answered that it is certainly possible.

Mr. Killmer added that where he lives in Bethany Beach, the town owns all of the water. Wells cannot be put down other than the wells that the town puts down.

Mr. Esposito replied, yes State law does not allow that.

Mr. Andres responded that there is a study that has recently been released on the water use in Kent and Sussex counties and it is interesting to look at how the water is divided amongst different individual domestic wells.

Senator Townsend asked if there were any additional questions. Seeing none, he turned to the next presentation.

Urban Watersheds

Mr. Andres turned the floor over to Todd Keyser who gave a presentation on *Watershed Approach to Toxics Assessment and Restoration*.

The presentation the Task Force members received is inserted below:

Watershed Approach to Toxics Assessment and Restoration

Addressing Chemical Contaminants and Legacy Pollutants in Delaware Waterways



Clean Water Task Force
October 15, 2015

Todd A. Keyser
DNREC - Division of Waste And Hazardous Substances
Director's Office

Introduction

- Background / Context
- What is the approach, what makes it different?
- “W.A.T.A.R.”
- Benefits of the 5 Year Plan
- Success Stories
- Priority Projects
- 2015 Sampling Plan

Background/Context

- Toxic substances in Delaware surface water and sediment are largely a legacy issue.
- Primary contaminants of concern are Persistent, Bioaccumulative, and Toxic (PBT) substances (e.g., PCBs, dioxins & furans, mercury, & organochlorine pesticides).
- Media affected: fish, sediments, surface water, groundwater & soils
- Heaviest toxic contamination in urban waterways
- Positive trends over time, but recovery is slow. Collaboration and innovation can speed the trajectory.

Same Goals – Different Approaches

- Site Investigation and Restoration (SIRS) – state level “Superfund” clean-up and oversight
 - Addresses sites one at a time (VCP, Brownfield, Enforcement, State-Lead)
 - Develops clean up plan that reduces risk at the site
 - Eliminates off-site transport pathway in most cases
 - Funded through Hazardous Substance Clean-up Act (HSCA)
- Watershed Assessment Section (WAS) – state level Clean Water Act implementation
 - Addresses waterways one at a time
 - Develops Total Maximum Daily Load (TMDL) that defines allowable point & nonpoint loads to water without exceeding water quality criteria
 - TMDLs not effective in addressing legacy issues: aim to limit future release
 - TMDLs aren’t self-implementing
 - Funded through Federal Grant and State General Fund

To overcome limitations in each program, we built a bridge

Let’s call it W.A.T.A.R.

- Watershed Approach to Toxics Assessment and Restoration
- A watershed-scale approach to the evaluation of contaminant sources, transport pathways, and receptors resulting in decisions that mitigate and/or eliminate toxins that individual sites release to the State’s waterways.
- A mechanism to implement restoration actions (including Natural Resource Damage restoration) based upon site prioritizations that consider the level of threat to public health, welfare, and the environment and the benefit to all environmental media in its watershed

Plan Available: <http://www.dnrec.delaware.gov/sirc/ocs/Docs/WatershedAssessment.aspx>
<http://www.dnrec.delaware.gov/doh/SIRB/ocs/WATAR.aspx>

Benefits of WATAR 5 Year Plan

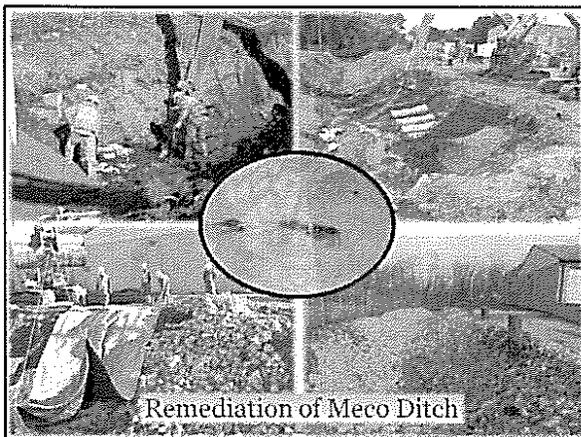
Funded: \$1 million over 5 Years

- Create a centralized location for ambient and site related toxics data
- Engage partners – public, private, Federal, State
- Link contaminant sources (sites, facilities) and sinks (waterways) to prioritize and justify remediation
- Evaluate and advance state-of-the-art remediation and restoration techniques for use across Delaware
- Create a culture to address toxics through *demonstrated success* of WATAR implementation projects
- Restore surface water to fishable, swimmable, and potable in the shortest possible timeframe

Little Mill Creek/Meco Ditch

- Little Mill Creek is tributary to tidal Christiana River
- Severe flooding requiring joint USACE, NCCD project
- Contaminant concerns expressed, WATAR monitoring performed; active source(s) discovered
- Re-evaluation led to expedited remediation and path forward on flood mitigation project
- In addition, secondary source identified at proximal site to initiate new action
- Remediation in ditch occurred using HSCA funds

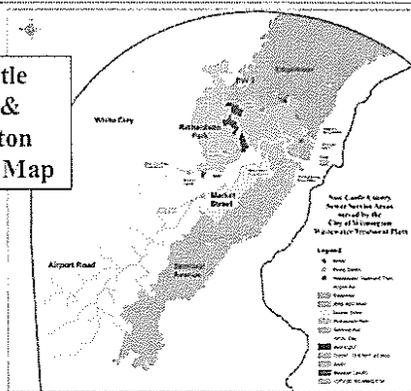
Little Mill Creek / Meco Ditch



PCB Sewershed Trackback

- PCB discharge from the CoW's permitted WWTP exceeds TMDL for PCBs in the Delaware Estuary as established by EPA
- The CoW's NPDES permit contains a special condition to reduce PCB mass loading to estuary through a Pollutant Minimization Plan (PMP)
- Key element of the PMP is an ongoing PCB "trackback" study to identify PCB sources.
- DNREC provides technical assistance through multiple programs and partners with NCC, DRBC, CoW, private contractors
- To date, 90% reduction in PCB load through CoW facility over the past 10 years

New Castle County & Wilmington Sewershed Map

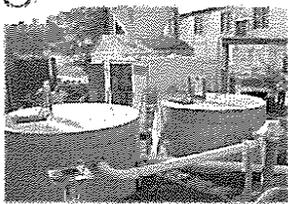


NVF Yorklyn - Zinc TMDL

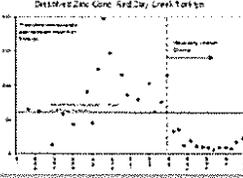
- NVF-Yorklyn manufactured vulcanized fiber from 1900 to ~2005. Zinc used in process.
- Recycle line damaged, releasing dissolved zinc to groundwater and Red Clay Creek.
- Zinc TMDL adopted
- Zinc recovery system installed Fall 2008 by DNREC
- Site is currently being investigated/remediated under HSCA as a Brownfield
- Partnering with FEMA



NVF Yorkdyn - Zinc TMDL

Disturbed Zinc Core 5rd 2nd, Creek Torkyn



An estimated 70,000 pounds of zinc has been kept from entering the creek through groundwater discharge since 2008.

Fort DuPont Permeable Reactive Barrier

- Fort DuPont landfill is located along the Delaware River in Delaware City.
- Elevated lead, arsenic, and PCBs present in soil, sediment, and groundwater.
- In 2014, USEPA Emergency and Rapid Response Services excavated debris beyond low tide line to above high tide line.
- Innovative technology using fish bone (Apatite II™) to sequester metals.
- DNREC - HSCA funds in collaboration with USEPA Removal program



Fort Dupont Permeable Reactive Barrier

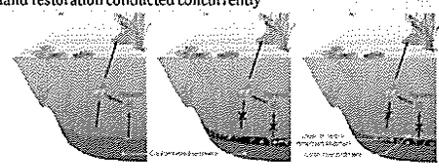


Mirror Lake – Dover

- Mirror Lake located at gateway to historic Dover
- PCBs in sediments contribute to fish advisory for St Jones River
- Innovative pilot project to sequester contaminants in place and restore ecological function
- Remediation used activated carbon to reduce bioavailability of contaminants
- Multiple agencies provided support with notable funds through HSCA
- Results: 78% reduction in dissolved PCB in sediment pore water; 72% reduction in dissolved PCB in water column; and 60% reduction in PCB in resident fish.
- This 1-year reduction of PCB amounts in fish would have taken ~20 years if left to restore naturally.

Mirror Lake Remediation/Restoration

- Rather than dig it out, contaminants were sequestered in place with SediMite™
- First full scale application of SediMite™ by anyone in the U.S.
- Awarded 2nd place in the U.S. in the small projects category (<\$5M) from the American Academy of Environmental Engineers and Scientists
- Wetland restoration conducted concurrently

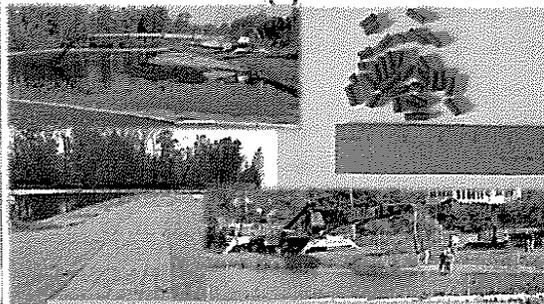


1. Initial state of the lake bed showing contaminants in the sediment.

2. SediMite is applied to the sediment, creating a barrier that sequesters contaminants in place.

3. The application of SediMite creates a barrier that sequesters contaminants in place, allowing for wetland restoration and water quality improvement.

Mirror Lake Remediation/Restoration



Success so compelling that Governor Markell and Secretary O'Mara asked for a list of priority projects.

During the presentation the following questions were asked:

Mr. Miller referenced legacy issues and mentioned something Mr. Keyser did not talk about. There are some non-legacy issues as well, with regard to toxics like endocrine disrupters and issues that are evolving. Mr. Miller asked how much attention DNREC was paying to evolving issues.

Mr. Keyser stated that DNREC is definitely paying attention to evolving issues. Since there is not a set codified standard, if DNREC attempts to regulate something that doesn't have a regulatory scheme, DNREC gets pushback saying that they do not have the authority. Mr. Keyser agrees that DNREC does not have the authority to do this; DNREC must get something in the books saying they are going to regulate this issue. Mr. Keyser stated that he was not sure if some of the things Mr. Miller described would fit into the definition of a "hazardous substance," which is the definition in DNREC's statutory authority. Mr. Keyser noted that DNREC is sort of limited by the federal authorities.

Brenna Goggin, Delaware Nature Society, asked what percentage of Delaware waterways are protected by legacy contamination.

Mr. Keyser mentioned that this is a tough number to pinpoint. However, he added that everything in New Castle County is protected by legacy contamination, 30% or less is protected in Kent, and he did not believe there is any protected in Sussex County as relates to a "hazardous substance."

Mr. Miller added that one could make the argument that toxic issues, in terms of fish consumption, are pervasive statewide.

Mr. Keyser answered that one could definitely make that argument. Delaware also faces the challenge of tidal waterways, where the State must continue to engage other states as they address the same problems Delaware addresses. For instance, if Delaware cleans up the Christina, the State will still be affected by whatever is in the Delaware River. Moreover, what is in the larger body of water will affect the smaller body of water.

Mr. Riemann referenced a list of projects that were on one of Mr. Keyser's slides (slide 18); however Mr. Riemann quoted Mr. Keyser's comment that he also had a longer list. Mr. Riemann asked if Mr. Keyser had a complete list of every problem he would solve if Delaware had the funds to do so.

Mr. Keyser answered yes, DNREC has come up with a very rough estimate. He also noted that the majority of the list is comprised of just what the State would pay. With many of their projects, the State will have to engage partners.

Mr. Riemann asked if the State knows where all of the toxic areas are.

Mr. Keyser answered that the State has a very strong handle on what it needs to know. However, they are also very aware that they still might discover something.

Mr. Morrill asked to follow up on numbers; if there are about \$50 million over 10 years, he wanted to know if the State is looking at about \$5 million per year to complete the priority projects.

Mr. Keyser answered yes.

Mr. Morrill asked about how much of the total problem in New Castle County it would fix.

Mr. Keyser answered that the first two projects are significant. The State could make a huge positive impact on the Brandywine with the first two projects. He also mentioned that they would like the USEPA (United States Environmental Protection Agency) to take the reins on the “Red Lion Creek” priority project because the State might be 10 years away from starting it. If the federal government and the USEPA cannot get funds towards this remediation, the State is behind the hurdle on it.

Ms. Goggin asked Mr. Keyser if the list on slide 18 was his entire list.

Mr. Keyser answered that he cut the list short because some of the examples he gave were not on the list and instead of mentioning them twice, he cut the list short. Mr. Keyser mentioned that he has an expanded presentation that talks about those projects.

Ms. Goggin stated that she was concerned with Delaware City and the EPA (Environmental Protection Agency) investigating the Delaware City site.

Senator Townsend asked if Mr. Keyser has data readily available of what the annual cost of abatement or damages from not fixing these items is.

Mr. Keyser answered that they do have access to reports which talk about the general health of water ways as it relates to the economy. Mr. Keyser added that there is nobody fishing in the Christina, but if there was, that person could eat something that harms them. Mr. Keyser stated that this fact concerns him. Moreover, any incremental improvements that the State could make would have a huge impact. He added that he is not sure the correct numbers on that, but would be happy to work on it.

Senator Townsend stated that this list is multidimensional, of not only the things that should be on this list but what this list is doing to the broader picture of water quality in Delaware. Senator Townsend added that you could take this framework and apply it to all of the topics that the Task Force has talked about. This is a topic that is much more directly intuitive to people.

Mr. Riemann added that one example would be development that doesn’t occur in a particular area that would otherwise occur, but developers do not want to take on the burden of the cost and possibly the liability.

Gerald Kauffman, University of Delaware, replied in mentioning the case study of the Christina Riverfront. With programs like the ones the Task Force is referring to, the State would not have that whole renaissance there from the DNS site at the train station. He added a dollar number could be put on that.

Senator Townsend added that he thinks the State will ultimately get there.

Mr. Killmer asked a question regarding the dredging of the Delaware River. He wanted to know what impact it had in increasing the number of different types of pollutants, as well as the concentrations to the State of Delaware.

Mr. Keyser answered that Dr. Rick Green has handled that topic. It is interesting; from the assessment and actual monitoring of dredging, there is very limited and localized negative impact of dredging.

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Minutes reviewed by Michelle Zdeb, Legislative Assistant & Task Force Staffer

Secretary David Small added to this point, stating Dr. Green's view of this topic is that there are localized hot spots where there may be concentrations of legacy contaminants. Dr. Green's view is that getting them out of the system and into a confined disposal area is much better. Secretary Small added that there is a lot of sampling that is done on those sediments. For example, the State is taking main channel sand from the lower reach project. That is what is happening on Broadkill Beach, which is clean material. However, upriver where those hotspots exist, that material is being taken out of the river and put into a confined disposal area.

Mr. Killmer asked if tertiary butyl methyl ether is still an issue in Delaware as a pollutant.

Mr. Keyser answered yes, it is not necessarily a PBT (Persistent Bioaccumulative Toxic) but it is a volatile. Mr. Keyser continued to state that tertiary butyl methyl ether is definitely an issue for groundwater.

Mr. Killmer clarified that he was speaking about well contamination.

Mr. Keyser answered yes to well contamination.

Mr. Esposito asked if carbon materials had an absorption capacity. Mr. Esposito also asked if the replacement, flushing, or cleansing is part of the State's cost.

Mr. Keyser responded that there is no need to do a re-charge of the material, once it is absorbed. But, the essential component of bio-availability is no longer available to affect us or affect the critters that live there.

Mr. Esposito asked if the State estimated or modeled the amount to decide how much material to put in.

Mr. Keyser answered that the State samples before, above and below.

Mr. Killmer clarified that he has a background in chemistry. Mr. Killmer explained how potent an environmental toxic can be because they can even spread worldwide.

Mr. Morrill asked what the range is between the public investments that Mr. Keyser is proposing, and what the private responsibility would be.

Mr. Keyser answered that for the first two investments he proposed it is 10% or less of what private actors may have to spend.

Senator Townsend wanted to clarify that when Mr. Keyser says "what they may have to spend" is he referring to adjudicated legal liability, settlement agreement, or a theoretical cost?

Mr. Keyser replied that he would like to spend more time looking into Senator Townsend's question. However, he clarified that the numbers he put up on his presentation are all estimates based off of what the State currently knows. Furthermore, Mr. Keyser explained that DNREC (Department of Natural Resources and Environmental Control) is sampling adjacent to 6 of their projects this week and the last time they sampled that comprehensively was 8 years ago. Mr. Keyser stated that Delaware will see a positive trend, but the problem is still here.

He added that there is current discussion and investigation going on for most of the projects. Mr. Keyser clarified that DNREC is not waiting to find funding to start working. This is DNREC talking about the option of spending more money now, to solve the problem now, and get us on the track to recovery. But, DNREC is dealing with agencies that they do not have control of.

Mr. Morrill clarified that he brought this question up because there was a negative reaction when the Governor put his proposal forth a couple years ago about why the public is paying for legacy pollution. Mr. Morrill stated that Delaware should keep in mind that where there is somebody engaged in a project, the State should be investing about 10% of what that person may be investing.

Ms. Goggin clarified that when the State did the polling work for the clean water campaign, they asked Delawareans what they would like to see their money go towards when using the Governor's model. In all three counties, 90% of them answered toxic removal.

Secretary Small stated that Mr. Keyser did not mention the number but he did mention the funding source, which was established by state law in 1990. To compare, the State's number is about \$12 million annually, give or take. That \$12 million funds the staff, the monitoring, some sites, and brownfields, so the State has to make choices.

Public Comment

Senator Townsend moved the discussion along to public comment.

Jay Meyer introduced himself. He lives in Millsboro, Delaware and he is a part of a group called "Protecting Our Indian River." He stated that their group's goal is clean water. He continued to say that water is the center of Delaware communities and it is an essential economic driver. People come from all over to fish, boat, swim, crab, and enjoy all that Delaware's water has to offer. Delaware can only protect the State's communities if the State learns from past mistakes. Delaware must limit the amount of pollution that affects our way of life in this State. Dirty water is the world's biggest health risk and continues to threaten quality of life and public health in the United States.

In Possum Point, community members are opposed to a poultry slaughter house dumping 12 million gallons of waste water per week into the Indian River. Today, the Task Force talked about eliminating point source discharges. The citizens of Possum Point are against this project; it is right in the community's backyard. Possum Point recently had a health impact assessment done by the University of Maryland. The community tried to get support from the State to come and listen to what the University of Maryland found out. The study found out how this plant is going to affect our water quality, way of live, air quality, and health. However we did not receive any support from the State. Mr. Meyer states that he is sure the Task Force's job, to bring clean water to Delaware, will be difficult just like Possum Point's job to protect the community is difficult.

Mr. Meyer mentioned the EPA's "National Priority List" that contains the most serious, uncontrolled, or abandoned hazardous sites throughout the United States. Millsboro has an area of less than 2 square miles and has more hazardous waste sites than the entire states of Nevada and North Dakota.

Mr. Meyer would like the Task Force to include environmental justice in their planning. He stated that environmental justice is the fair treatment and meaningful involvement of all people regardless of race,

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color, sex, national origin, or income, with respect to the development, implementation, and enforcement of environmental regulations and policy.

Mr. Meyer stated that his group, “Protecting Our Indian River,” is composed of the voices of people who are too old, too tired, and uneducated to take on the State of Delaware. Mr. Meyer added that everyone in America deserves to live, learn, and work in a healthy and sustainable community.

He finished by saying that poultry plants are adding 104 million chickens to be produced in Delaware. Mr. Meyer added that the State needs to consider how much manure this will add. He stated that 104 million more chickens will produce about 572 tons of additional manure for the State of Delaware.

Senator Townsend thanked Mr. Meyer for speaking.

Next Steps

Senator Townsend stated that in some ways, the Task Force has gotten through most of the initial framing they talked about. The Senator asked if there are any topics that Task Force members would like to cover going forward. Senator Townsend restated that the Task Force is still trying to connect the different themes, which will help framing the report and help move along discussion.

The Senator stated that the Task Force has not had much discussion, beyond the first meeting, about the different groups in the Task Force and how each person addresses the issues in one form or another. He mentioned information that was reported in a news article about the funding source that the Task Force might suggest. He asked members several questions about topics that should still be discussed.

Mr. Kauffman said that he would like the Task Force to discuss more of the economics. He mentioned the DNS (Delaware Nature Society) study funded by the William Penn Foundation. Mr. Kauffman stated that he would like to see a presentation on how members of the public in Delaware are overwhelmingly 2/3 margin support for this type of initiative. He added that it is a pretty resounding margin, 2/3 in favor of clean water. He continued by stating that his office at the University of Delaware has done an economic study that has proven clean water is a huge part of Delaware’s GDP (Gross Domestic Product). Mr. Kauffman added that he has a presentation that he would be happy to give at a future meeting.

Ms. Goggin added that there are three meetings left and the Task Force has yet to invite others who have dealt with water quality issues in an umbrella sort of way. She continued by noting that there are ideas out there on how to fund them. In order for the Task Force to make recommendations about a funding mechanism, members should have a good idea about what some of those ideas might be.

Mr. Killmer stated that from the town’s point of view, the Task Force should be cautious about the ultimate cost about any potential regulations to individual towns and communities. Many of these towns and communities are having a hard time for someone to even run for a local office and the cost of things is a very sensitive topic to individuals who are hardly making it now. Mr. Killmer restated that clean water is important, but costs need to be reasonable to the individuals of Delaware’s communities.

Senator Townsend agrees with keeping costs down for Delaware’s individual communities. Senator Townsend added that at the first meeting, the Task Force had talked about lessons learned and different municipalities who were not taking advantage of different opportunities that were made available to them. These opportunities would have helped them address their own issues in a way that did involve support from the State. Senator Townsend agrees that cost sensitivity is important. However, municipalities have often over-leveraged revenues from utilities, and have not necessarily addressed the revenue sources in a

more robust and candid way. The Task Force needs to figure out a way for local governments to tackle this and embrace opportunities for assistance.

Mr. Killmer stated that he did read all of the minutes before he came onto the Task Force. He clarified that he was referencing towns that the Task Force might not even had thought about like Dagsboro and Selbyville. Selbyville just recently had a major disaster with their water supply, and they do not even have the funds to maintain what they have. Killmer added that the Task Force needs to be sensitive to situations and towns like these.

Mr. Morrill stated that the Task Force needs to circle back substantially on how they are going to prioritize projects that the Task Force does. Mr. Morrill explained that if there is going to be push back on a funding mechanism, they are going to ask how the money is going to be spent and who is going to make those decisions. Mr. Morrill reinforced that the Task Force needs a strong answer for these questions.

Joseph Corrado, Delaware Contractors Association, addressed Ms. Goggin's comment mentioning that the State of New York has a program where they funnel most of their revenue into a central pot. From this central location, they disperse those funds for several projects like waste water, drinking water, surface water and preservation. Mr. Corrado mentioned that the Task Force may want to take a look into New York's model. He does not think they have revenue funds per se but they do receive revenues from the state and federal governments, and the funds are channeled to one location and dispersed.

Mr. Corrado also added to what Mr. Morrill said. Mr. Corrado stated that the Task Force has to identify the topics that members would like to see in the report. He provided examples: whether the topics are waste water, surface water, drinking water, land water, preservation, wetlands, or toxic sites. The Task Force should consider if they want the report to address all of those topics or if members want to narrow the topics. Mr. Corrado stated the Task Force should start there so then they can determine the economic impact to address those specific areas.

Senator Townsend stated that anything the Task Force has talked about will be in the report one way or another. Senator Townsend added that the report should be framed so that the front page can tell readers exactly what is in the report and what is not.

Mr. Esposito mentioned that he is trying to envision how the Task Force is going to prioritize environmental problems. He continued by recalling the major environmental disasters the Task Force just heard about. Mr. Esposito stated that the prioritization process should consist of incorporating environmental impact and economic benefit, dollars per impact. He felt this is a way that the Task Force could focus it.

Mr. Esposito continued by saying that \$50 million might solve 1 or 2 toxic problems, or it could solve 4 small community waste water issues. He added that there is a funding process in the toxic program, whereas Coverdale Crossroads has nothing. Mr. Esposito noted that some state agencies have "strong community" lists, and he feels that the Task Force needs to get ahold of this list so they can see where the biggest bang for their buck is in small communities. Mr. Esposito added that once they solve the problem, the Task Force needs to agree on a way to maintain the solution. He finished his comment by highlighting the importance of the Task Force picking a focus so the report is effective.

Ms. Goggin noted that funding and project criteria would be helpful for the Task Force to look at. She compared her idea to the State's Vulnerability Assessment for sea level rise. Ms. Goggin added that the entire State is vulnerable; the Task Force needs to narrow it down so they have a point of focus. Ms.

Goggin reminded members to not forget regulatory requirements in that criterion because Delaware has a big stick, in terms of the EPA, and the State would not want to be on the wrong side of that.

Senator Townsend stated that he envisioned the report to give specific recommendations as to what sites to work on and the process. He added that the report may list examples of sites that are considered “no brainers” to give people an idea of what the Task Force has prioritized. But, the report should certainly focus on process, to help people understand the economic benefits broadly defined, already existing processes, and where the gaps are. There is the funding gap and a process gap, which might be based on policy merits, but there is also a political gap that exists. There is going to be a hurdle on both sides of the aisle to encourage lawmakers to address this issue during an election year.

Patty Cannon, Delaware Economic Development Office, first thanked Senator Townsend for starting the Task Force because these issues are overwhelmingly large. Ms. Cannon also referenced Holly Porter’s previous comments that the Task Force needs to work on educating people; the only way to get people moving in the right direction is to educate them.

Representative Gray stated that he thinks Ms. Cannon’s point about educating the people is paramount. He added that it is going to be a tough legislative decision to get taxes increased to pay for these issues. Representative Gray stated that clean water is crucial in Delaware’s ability to grow and continue to be a thriving State.

Mr. Corrado noted that he hopes one of the results of the Task Force is to achieve a dedicated fund. He stated that there was legislation ready in 2013 but they were missing \$30-35 million per year of dedicated funds to do the tasks the legislation talked about.

Representative Gray stated that the Task Force needs to come to a technical solution in hopes that there will be funding.

Senator Townsend replied that there was never necessarily a lack of a technical solution; it’s the fact that the funding is not there.

Representative Gray mentioned that the Task Force needs to have something ready to go out the door before they can consider where to get funding.

Ms. Goggin replied that when you consider what has been shown during the presentations, and what has been said during Task Force discussions, the shovel-ready projects and the success stories to go with it are there. She added that when one invests in the project, the solution is mapped out.

Mr. Esposito stated that there are four legislators on this Task Force; he asked them to tell the Task Force what will impact their caucuses. He asked the legislators to tell them how they can educate the General Assembly in a way that others cannot.

Mr. Morrill replied that the Task Force has been presented with a lot of great information that highlights the problems and shows some of the successes. He recommended that the Task Force highlight the problems of each district and provide a list to the representatives and senators so they are aware of the specific issues in their district.

Ms. Goggin stated that she feels it should be a priority of every organization represented at the table to go down to Legislative Hall and vouch for the issues that their organization is trying to fix.

Secretary Small wanted to address the criteria for the Water Infrastructure Advisory Council (WIAC). He referenced all of the systems that the Task Force has heard presentations about, and emphasized there is a way to evaluate priorities within those systems, whether the system is investment in agriculture best practices through USDA (United States Department of Agriculture), or conservation cost-share through the districts. He addressed the programs that Mr. Keyser presented, which are new and evolving.

Secretary Small referenced New York's system that Mr. Corrado mentioned. He stated that the Task Force could reach out to the Environmental Finance Center, which is funded through the EPA. It has enormous and extensive experience in funding water quality issues. Secretary Small suggested that the Task Force should ask them to help with their assessment work. He stated that this Task Force will not be able to pick and choose who to help; they need to characterize the need and a target.

Mr. Corrado responded to Secretary Small's point, noting that the priority lists that have been developed have only done so over the years. Moreover, the priority lists have been amended over the span of years to deal with today's problems. This has been an effective approach. Additionally, WIAC has had discussions and observations about a myriad of topics, including things that have been covered during Task Force Meetings. Mr. Corrado noted that the basis of taking care of the problem is already there; the Task Force should not reinvent the wheel. He added the Task Force should determine what they want to address, the number they need to address it with, and how they are going to fund it.

Bruce Jones, American Council of Engineering Companies - Delaware, noted that he does not think any State has tried to address all of the issues that the Task Force has mentioned with one fund. Mr. Jones stated that he thinks it would be a mistake to address all of the problems with one fee.

Mr. Esposito stated that this all comes down to the General Assembly who passes the budget. He noted that the four legislators in the room need to tell members what is going to pass; because one of the criticisms of the Governor and his Water Tax is he did not come to talk to them early enough. Mr. Esposito noted that it is never too early to start having those discussions.

Senator Townsend noted that many reasons why other initiatives did not succeed are because legislators did not want to raise taxes. Senator Townsend stated that each of the four legislators can take these ideas to their caucuses. It is not that WIAC hasn't done a good job over the years; it is that funding has not kept up. There are other issues that WIAC has not addressed, and it all ends up impacting the State economically. Senator Townsend reminded members that he will ensure this conversation is upfront in 2016, and if people do not want to support it he will figure out why.

George Haggerty, New Castle County-County Executive, stated the members have all been in this business a long time and members have seen through the presentations that there is a lot of collaboration going on. He reminded members that since he was there representing the County Executive of New Castle County, he wanted to note that the process that members are considering is becoming more cumbersome than it needs to be. If the Task Force calls it out and says they are making this fund for clean water and a person walks up to their faucet to see that there is clean water, they are not going to see where the problem is. He noted that clean water will receive positive attention but when someone tries to process it, they are not going to see that. Mr. Haggerty stated that if Delaware had the storm that South Carolina had, people would be more understanding because they would have seen the devastation that can happen.

Senator Townsend replied that it is definitely difficult to prepare people, but members cannot let difficulty lead to inaction. He noted that people have different definitions of leadership. Even though it is a difficult sell, the Task Force needs to figure out how to do that.

Ms. Goggin added that the Task Force should add “preventative measures” to the list, because members still have not talked about that.

Ms. Cannon added that she would not like Delaware to wait until the State is like California for the people to become ready for this discussion.

Mr. Haggerty added that in 1991, the Delaware Sediment and Storm Water Regulations came into effect. The State was 9 years away from Y2K. He noted that this is a long time for a state to go and really not have sediment storm regulations.

Ms. Cannon added that she respects that. She spent 2 weeks in Haiti putting bleach in water so they could drink it. Ms. Cannon clarified that she would hate to hold off on preventative measures until a flood or storm happens.

Senator Townsend replied that he thinks Mr. Haggerty was giving a word of caution, although it was said with such conviction that he was not 100% sure.

Senator Townsend asked if there were any more questions. There was no further business of the Task Force so the meeting was adjourned at 5:13 pm.