

**Source Water Protection Citizen Technical Advisory Committee (CTAC)**  
**Source Water Assessment Plan Update - Subcommittee Meeting**

May 30, 2019

Final Meeting Minutes

Meeting Location: Tidewater Utilities Conference Room

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**WELCOME & INTRODUCTIONS – Matthew T. Grabowski, DNREC, Division of Water**

Mr. Grabowski called the meeting to order at 10:05 a.m. and welcomed everyone. He asked for introductions around the table. Mr. Grabowski provided an overview to date so far of what the subcommittee has discussed and he thanked everyone for their participation. The attendance list is included at the end of the meeting minutes.

**REVIEW AND APPROVAL OF THE MARCH 28, 2019 DRAFT MEETING MINUTES**

Mr. Grabowski asked if anyone had any edits to the March meeting minutes. Prior to today's meeting, Mrs. Anita Beckel e-mailed the following edits that were made prior to the meeting:

- On the 1<sup>st</sup> page first paragraph about the sixth line down - Rural Water should have been raw water.
- On the 2<sup>nd</sup> page first paragraph fourth line down - perimeters should have been parameters.
- On the 2<sup>nd</sup> page fourth paragraph sixth line down – look.
- On the 2<sup>nd</sup> page very last line - Please insert "the wells" between ago and were.
- On the 7<sup>th</sup> page third paragraph Matt G. said and action plan should be an action plan.
- On the 10<sup>th</sup> page second paragraph Plan and the Delaware should be Plan and then Delaware.

No other edits were made. Final meeting minutes are posted online at <https://publicmeetings.delaware.gov/Meeting/62507> .

**MAPPING ISSUES – ACCURACY – Steven M. Smailer, P.G., DNREC, Division of Water**

Mr. Grabowski said, “We collect high accuracy GPS coordinates for all public wells as part of the Source Water Program. The locational data associated with those wells isn't really publically available for protection of those wells but we do use the coordinate data to generate our wellhead protection area layers and that information is available through Delaware First Map as well as available to any of the water entities. Currently as the Program stands over a number of years has been to collect better information over time but to what end, I guess, is kind of the conversation point that we want to have today. We're currently using a Trimble hand held unit to collect this information. If you're a GPS person, its' a GeoXT Science 6000 series. With the correction factors we believe we collect coordinate data between 10 and 30 cm accuracy.” He continued, “In regards to accuracy of the effectiveness of that, you lose some accuracy when you

actually project this information onto the map.” Mr. Grabowski continued to discuss with the Committee and asked for feedback and said some screen shots will also be shown regarding this discussion on the projection issues. Mr. Grabowski asked the Committee if they would like to mention what tools they are currently using.

Mr. Smailer said, “We’ve always functioned under the premise that more precise is better but there’s a cost to that precision and then associated with it as well is if we’re communicating it as being precise but in reality it’s not in effect that the application of it is not that precise. I don’t want to mislead is the best way to put it. We can take a point on the GPS and we can graph it to sub meter, decimeter at level accuracy and we say that that’s what it is but then if we put it on a map and look at, depending on what scale that map is, it’s kind of irrelevant at whether you’re accurate within 10 cm as some of the proliferation of some of the easier ways to use the data not just the point but the wellheads associated with it – Google Earth and some other aspects of some of the online mapping – there’s some ramifications of some inherent inaccuracies in how that data’s represented and so I think that one of the discussions is if we wanted to modernize some of the GPS equipment that we have now to be more accurate we’re looking at units that are \$20,000. To get where we are a level of accuracy that may be applicable to what we actually apply and want to use we may be at \$1,200. It’s kind of what do we want to portray, how do we want to communicate that, and what’s the need from both the utilities perspectives and the publics perspectives consuming that information.”

Mr. Smailer presented an example of the well house in Bethany Beach, Route 26, on the screen to the Committee showing how visual interpretation and Google Earth differ when put on a map and he continued to show other differentiations. He addressed the Committee and said, “What are we trying to communicate and what level of precision do we want?” He discussed and then continued, “Or should we not allow the open use of the wellhead protection areas in anybody’s external applications? Is there a use constraint that says this has to be used in this fashion and that’s not where we want to be from a transparency of an open data perspective but it really does come into play when we’re trying to say what are you trying to communicate? Because if you have a map showing the extent of your local ordinance and if you put in the wrong coordinates, the visual representation is different than the real world.

Mr. Grabowski asked for any comments or discussions from the Committee. Mr. Paul Cartanza said, “My question is how accurate do you have to be on certain things? I mean unless there’s an issue then you want the accuracy but if you’re just trying to portray a section of saying there’s five wells in this general area, I mean that’s basically all you really need unless you’re specifically targeting that point for an issue. Really it should be made mandatory for the certain coordinates to be made so everybody has that same agenda.” He continued to discuss. He added, “Sometimes you have to create a plan and this is what everybody has to go by to reach out.” He continued to state that too much information can run together.

Mr. Smailer addressed Mr. Cartanza and said, “I couldn’t agree more about how much precision do you need and how much accuracy do you need. I don’t want to say that the maps we have are super precise in everybody’s use of it and if there is a problem in an area maybe that’s a requirement that we need an actual survey at that location or something like that and kind of have a tiered approach. This is for common consumption, common use, but for legal

determinations and other stuff, these are the criteria and that's a different piece about where the burden lies on acquiring that and some other components because for the source water the piece is getting the information out and available and putting that stuff together and then depending on what concern is being addressed at a particular point maybe that's the plan you're talking about."

Mr. Smailer and Mrs. Beckel discussed the visual example he shared earlier with the wellheads in Bethany Beach and how the two circles shown were 50 ft in difference with the Web Mercator projection and the Delaware State Plane Meters in the vicinity of Bethany.

Ms. Cathy Magliocchetti asked Mr. Smailer, "Are you providing guidance for the end user?" Mr. Smailer replied, "That goes back to the Plan." Mr. Smailer continued to discuss and added, "We've never said the use constraints and what we need to do and I think that's a section that we need to incorporate into this." Ms. Magliocchetti agreed and said, "Even if you give an example for that point so that folks know when they're transferring it to their CAD or whatever plan they have that they're complying with the guidance that you give as a double check." Mr. Smailer agreed and added, "I think that's really what we're getting to." He continued to discuss examples such as ArcGIS. He again went to the wellhead visual image located in Bethany Beach that he showed earlier. Mr. Smailer addressed Mr. Cartanza and Ms. Magliocchetti and the entire Committee and said, "Is it worthwhile putting in proper use constraints, possibly as an appendix?"

Ms. Nicole Minni discussed with Mr. Smailer about the display of the points on First Map versus displaying the final buffer of the wellhead area and what to include with the metadata. Mr. Smailer and Ms. Minni continued to discuss. Mrs. Beckel added, "I can see where that would make a big difference if somebody was trying to install a septic system and your distance is off." She continued, "A lot of people download that data from First Map so if you use it in First Map then it's not skewed?" Mr. Smailer said, "So what brought this to our (the Department's) attention is every well that gets permitted gets a 1,000 ft fixed radius contaminant review so when this well is going in are there any things that may contribute to water quality concerns for that well." He continued, "The interface that we use to say this is where the well's going, putting the dot on the map and that component, is State Plane Meters, imagery associated with it, it's got an inaccuracy because not every aerial is as accurate." Mr. Smailer, Mrs. Beckel, Mr. Cartanza, and the Committee continued to discuss First Map versus Web Mercator, etc. and how the dots can shift and move. Mr. Smailer addressed Mr. Jay Guyer and said, "You know where your wells are. You don't look to us (the Department) to get the GPS coordinates from where the wells are. To me it's almost like, I'm not sure what our obligation is there from a precision of where that initial point is." He continued to discuss and also mentioned to Ms. Minni if she could give a better perspective in regards to GIS practices. Mr. Smailer continued, "Needless to say, I'm looking at this and saying we probably don't need to spend \$20,000 on a new GPS unit."

Ms. Magliocchetti asked Mr. Smailer, "So correct me if I'm wrong, but from a source water protection standpoint, the misapplication of the projection would only cause the system to extend it, right, so you're being more protective or is that not true?" Mr. Smailer said, "I haven't done it from different projections. I think its projection dependent. So you have your base projection that everything was established in, your points there, but then the buffer or the wellhead area is

in that projection. If you're moving that to another sub projection shift or stretch, I can't tell you if it's more protective or not. The official Delaware coordinate system is Delaware State Plane 1983 datum in meters. And that was chosen for a couple of different reasons but Delaware State Plane does not distort across, the origin is somewhere in the Chesapeake and everything's positive and a grid cell is the same size from Delmar to Wilmington, the exact same physical size across that and that's why we do that. So that's what we'd be working in to generate the data. Where we go from that is out of our control once we release that information." Mr. Smailer said, "Another piece for discussion. This is just x and y. There's a huge component that we have ignored up until this point, the Source Water Plans as to the vertical data. I would argue that that's a component that we probably also need to address as part of the precision because if we're looking at vulnerability of wells in coastal areas based on elevation and some other components, that top of the well, the first unsealed component of the well, becomes a critical elevation as it relates to flood plain, as it relates to the coastal storm events and some of the other stuff. We have been silent on the vertical in the Source Water Plans that existed and my recommendation to this group is that we incorporate some vertical components to what we're saying. That changes some pieces to a lot of the discussion because I think the only way we really do that is then start requiring surveying on when the public wells are going in. You guys may already be doing that as part of what you do, but I think in terms of what our charge is that's something we really want to be thinking about from the Citizen's Technical Advisory Committee (CTAC) looking at is getting the vertical elevations relative to an absolute datum component for the source water protection communication standpoint."

Mrs. Samantha Smith said, "So how accurate would you need to be with something like that?" Mr. Smailer discussed with Mrs. Smith and stated, "If you want to use these data for actual other purposes like groundwater flow and other stuff, Delaware being as flat as it is, you really need survey grade elevations. I think the reality of it is if you're going to go that route you're going to get them to require to survey into a benchmark." He continued to discuss and added he thinks this group needs to make a recommendation as to whether they feel having that level of accuracy for public wells is relevant to the protection of those wells and the use, thereof.

Ms. Virginia Eisenbrey said, "So then you would take that survey and upload it into your system?" Mr. Smailer replied, "Yes." He continued, "In an ideal world to me we the Department would require, for public water systems, wells that are of import survey grade x, y, and z and that just becomes a standard across the board if we're going to be concerned about this here. There's components that source water protection, and you hear everybody talk about it the z value, the vertical, if you're looking at dewatering a confined aquifer that becomes critical as well and it's something that I think moving forward we need to consider how we would get that and whether that's the Department's obligation or part of the obligation of the driller or the person putting the well in. I don't know the answer to that. I just think that once that's known then we can make some logical decisions based upon that."

Mr. Cartanza said, "Production wells, as farmers, where are we going to be, we have the public and then we have our production wells for our crops. Will that also have to be looked at with the rising tide?" Mr. Smailer asked Mr. Cartanza if he has been talking with Mr. Scott Andres and Mr. Cartanza replied, "Yes." Mr. Smailer said that this was a topic of discussion at the last Water Supply Coordinating Council (WSCC) meeting (on 5/8/19). He said, "One of the

conversations was we never thought that we should potentially look at proximity to salt water body and tidal stage as it relates to some of those recommendations. I think to your point when you said earlier in an area where there may be a problem maybe we do want that level of precision. It's in everyone's best interest to say these standards help us answer these questions and if we're in an area where we may have those questions we want to apply those standards." Mr. Cartanza said, "That's what I'm asking is how far out does it all reach because like I said if we all start drawing down on these aquifers that were in, that's Scott's (Mr. Andres) big thing right now is the infiltration of what's happening around us." Mr. Smailer said, "We're dealing with a multitude of data sets of varying levels of accuracy or inaccuracy that we don't even know. Where a lot of the wells are, we don't know. We know it's permitted somewhere in this area and so we can't help answer that question but looking at the studies that they're doing on induced salt water intrusion, depression of the water table and some other stuff, I think it's good that we're looking in those areas right now. I don't know what the answers are." Mr. Smailer and Mr. Cartanza continued to discuss.

Mr. Smailer said, "I think to your point as it comes down to the Source Water Program and our charge here, I think coming up with the rationale of the standards for the data acquisition, what we want and why and how we apply it, that can be pulled separate to applications for large production wells and the other components and identifying areas of concern and that same methodology would apply that we would recommend that these areas, these are the procedures you would follow if you want to have somebody survey your well so you can see where your well elevations are and where the water table elevation is relative to tidal stage to follow these guidelines so you're on the same datum and you're not just saying I don't know what that means." Mr. Cartanza said he just wanted to make sure his voice was heard from a farmer's standpoint and he continued to discuss accuracy of the wells.

Ms. Minni asked Mr. Smailer, "What are other coastal states doing as far as accuracy?" Mr. Smailer replied that he does not have the answer to that and it's a good question and he's actually here at today's meeting as a stand in for Mr. Doug Rambo who usually runs these meetings and that it's being looked into. Mr. Smailer asked Ms. Magliocchetti if she knows how to respond to Ms. Minni's question and Ms. Magliocchetti said, "I think Delaware, again, is the first state." She added that to her knowledge there are no other coastal states in the mid-Atlantic currently looking at this.

Mr. Smailer said, "To me, tying that in, whether it's agricultural irrigation production wells, whether it's the public production wells, or whatever, for Delaware and for a lot of our uses, tying the reality of how we look at these data as it relates to salt water, flooding inundation, more frequent storm events, and stuff like that is not something that was in our original Source Water Plan, but I think it absolutely makes sense from a capital investment standpoint. Whether it's a farm or whether it's a municipality or whatever, it absolutely makes sense from a capital investment standpoint for us to look at that and that's one of the reasons why when we charge the Source Water Program for updating the Plan that's 20 years old, how can we make this Program relevant to the needs of today and I think looking at that as how we can help guide and give the information for some capital investments or avoidance of some of that aspects I would like to think that's practical information we could be able to provide." Mr. Cartanza said, "It's very critical for everybody." Mr. Cartanza and Mr. Smailer continued to discuss.

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Mr. Guyer said, “What you illustrated earlier with the well house in Bethany and the delineation there, the information, and this is something I struggled with when we mapped our system, is you’re only as accurate as the data you’re surveying and when you’re out there surveying you can be standing directly on top of something and you could acquire a minimum of seven satellites and you need five to get a reading and depending on which one of those you get could skew you one way or the other.” He continued to discuss. He added, “It’s only as good as all the layers that you’re putting under it. We use the County tax parcel map, the State Plane coordinate map and you turn on/off all those different illustrations on our mapping system you can see things move depending upon what you’re looking at and if you throw Google in there, it’s entirely different. For me, I view two things. We invest a lot of time and money in keeping our mapping updated where we can physically go out and get measurements off of known points and confirm what we update, everything that we’ve done. Two, if I have a concern about something, I get surveyed data.” He continued to discuss that if you want true accuracy to get a survey done.

Mr. Smailer said, “To me that also holds true as we look at the contaminant category because the Source Water Program and the initial charge of the Source Water Program was to assemble this information to better inform people about what’s happening in the area, it’s kind of a public outreach component. But then when we get into the contaminant levels and each of those individual other pieces you kind of get lost in the details.” He continued to discuss the contaminant details of the raw water data and the survey precision to the mapping. He said, “The water purveyors may want to know all the imminent details of the raw water data to each of those perimeters. The general public just wants to know should I be concerned and how concerned should I be?” Mr. Smailer continued to discuss the pictures shown earlier at Bethany versus surveys and said how in the earlier Plan they tried to address both audiences simultaneously and didn’t hit either of them and that’s what he wants to communicate better.

Mrs. Smith said, “In all reality there’s not this magical barrier at 150 ft. that’s going to stop contaminant sources.” She continued, “It’s just getting the public aware of what’s out there.” Ms. Eisenbrey added that it goes back to construction and Mrs. Smith said that that goes back to Mr. Guyer’s point if you’re going to construct something you’ll need a survey. Mrs. Beckel said, “But it’s going to have an effect on the reports depending on what you use (she referenced to the circles in the visual image earlier) when you do the assessment.” She asked Mr. Smailer, “To clarify better for me, what is the best database or whatever to use to try to avoid some of this?” Mr. Smailer said, “It’s kind of to Samantha’s (Mrs. Smith) point that we’ve been focused on, the Source Water Plan is 150 ft. fixed radius and putting the dots on the maps and some other pieces, maybe the reality of it is the best communication tool going back to the concept of the story maps and the other components is an interactive GIS where you can see what’s around that system regardless of whether there’s 150 ft or not you can see what’s around so if there’s something 157 ft you can still see it and if we have that type of an application that is not these individual publications for one system after another, then we have control over how they use the data that we are providing.” He continued, “Maybe it’s rethinking about how we want to release the information and utility of that information because then we can steer the conversation in the direction that makes sense to the limitations of the data or the message we want to deliver.” Mr. Cartanza added, “Keep it simple.” Mr. Cartanza and Mr. Smailer continued to discuss.

Ms. Magliocchetti said, “Going back to that question of when a public water supply looks at the point, does the Department have the ability to require a survey or is that something that we need to add?” Mr. Smailer replied, “Do we have the ability, yes. We could put a condition on every public water supply well, we could put that we need to survey x, y, and z to benchmark datum. We could put that on every public well.” He continued to discuss. Mrs. Smith said, “And there’s also public wells that are installed but not necessarily picked up by the Office of Drinking Water.” Mr. Smailer explained how if there are certain well types then certain conditions can be added and these are requirements to get surveyed. He continued to discuss and then answered Ms. Magliocchetti, “Yes, we could. Would it be easier if that was actually legislated as opposed to us applying a policy of a permit condition, absolutely. But we do have authority and we could defend that authority.” Mr. Cartanza stated that we need to start collecting that information and data now so when something comes up the information and data is already there. Mr. Smailer added, “That’s exactly why we’re sitting here today because we’re a subcommittee of the Source Water Protection (the CTAC) which is a public sounding board that we have to help the Department look at policy decisions and other pieces. If a recommendation comes from this Committee and its members or the Water Supply Coordinating Council and its members then it is for the Department to just issue an edict and say this is what we’re going to do. If we react to a public forum and the intelligence that we gather through a Committee like this and the CTAC, that is politically a much more viable and a much more beneficial product.” He continued to discuss.

**WATER SYSTEM SECURITY – FROM THE GROUND UP – Steven M. Smailer, P.G.,  
DNREC, Division of Water**

Mr. Grabowski said, “We’re not talking primarily about the public wells themselves but the surrounding well network that a lot of public entities use for test wells, observation wells, monitoring wells that are in the general area where the production wells are. Is that system overall secure? Is the building locked? Do the wells have a lockable cap on them? Do they have a cap at all?” He continued to discuss and said if the conduit isn’t secure it could pose a risk to the water systems. Mr. Grabowski suggested to the Committee if whether that becomes an appendix or a section of the updated Source Water Plan where it would be a more formal way of looking at that and then it would become part of a Source Water Assessment down the road which the entities would have an opportunity to comment on. He addressed and asked the Committee what are they doing to secure their systems and do they feel it’s a concern.

Mr. Cartanza said regarding his production wells, “How secure do I need them to be? My wells are submersibles and how secure do my wells have to be versus the public wells and Tidewater, etc.?” He continued to discuss and specifically asked what is this security for.

Mrs. Beckel replied, “As far as public water systems go, prior to 9/11/01 it was more or less that we were concerned about kids, vandalism, accidental damage to a well and then after 9/11/01 the EPA made water systems that had over 10,000 people do a vulnerability assessment and an Emergency Response Plan and that all went to EPA because some States didn’t have the capability to protect the data.” She continued to discuss the Water Improvement Act from 2018 and how it’s a requirement for the public water systems not for private wells or irrigation wells

or anything and they're going to have to revisit this by 2021 to redo their vulnerability assessments and then they'll have to do an Emergency Response Plan and they'll have to be redone every five years. She continued to discuss.

Mr. Smailer asked Mrs. Beckel if she knew what the Office of Drinking Water has to submit to EPA. Mrs. Beckel replied, "There are three pieces of data that the Office of Drinking Water has to submit to EPA so I think these plans will stay on site of the water system and not go to the State and I think what they will report to the EPA will be three pieces of data. I don't remember what they are but it was something like the water system's name and ID, the date it was completed, and something else. Then the vulnerability assessment had six areas that they had to cover." She continued to discuss.

Mr. Smailer said, "One of the components of this is I don't think we are trying to say we are security experts and we want to go out and make this determination and we don't want to be a repository of infrastructure security information in any regard." Mr. Smailer gave an example of how a test well is drilled before you put the production well in and the test well is sitting there maybe with a push cap on it but it costs money to abandon it and do other stuff and it's just sitting there. He continued to say that the production well has a well cap, lock box, and other stuff and someone can remove it and then there's a direct conduit to your water supply. He said, "We (the staff) see that and what obligation and tools do we have to communicate that back to the system with some authority." He continued to discuss how in the current Source Water Plan there's nothing that says if we see something that's physically wrong from a security standpoint we can try to make it an enforcement to the well construction components through the Office of Drinking Water but what mechanism do we have to memorialize what we saw and communicate that to the systems and public. Mr. Cartanza replied, "That makes good sense." Mr. Cartanza and Mr. Smailer continued to discuss how test wells can be converted to a monitoring or an observation well and Mr. Cartanza said he feels that should fall back on the well drillers. Mr. Smailer added that most of these test wells are in open space. Mr. Cartanza, Mr. Smailer, and Mr. Grabowski discussed. Mrs. Amber Bataille added that sometimes it's not even the larger systems but it's where you have the small public systems that are space constrained due to parking, etc. because of isolation distances and she discussed examples. She added that if she knows that a well is going in near an area that something could happen to the well such as being hit by a vehicle, etc. she suggests putting some kind of barrier around it to protect it.

Mr. Smailer said to the Committee, "Is it worthwhile to incorporate a section on security and how we handle the communications with the entity themselves and potentially with the Office of Drinking Water into a section of the Source Water Plan? Is that meaningful information that we should memorialize and how we manage?" Ms. Eisenbrey, Mrs. Smith, and Mr. Todd Keyser all replied, "Yes." Ms. Eisenbrey added, "I think at a minimum it should be a cap and a lock." Mrs. Smith replied, "But then that forces us to go out and when we do the Source Water Assessments to actually physically go out and inspect them." Mrs. Bataille said, "But I want a caption in the report that says 'we are not security experts but at this time we have identified a potential issue.'" Mr. Smailer said, "We can certainly revisit the language but when we're out there to GPS, etc. we don't want to just get that point. Let's make our time valuable while we're out there."



Ms. Minni discussed with Mr. Smailer the suggestion about how test wells can be converted to a monitoring or an observation well and Mr. Cartanza, Mr. Smailer, and Mrs. Beckel continued to discuss. Mr. Smailer and Mr. Guyer discussed about test wells being abandoned or repurposed.

Mr. Smailer said, “We’ll look at putting some language in about what our physical security observations are during the assessment.” He continued to say how it will be interesting how we memorialize that communication with the property owner, the entity, and the Office of Drinking Water and what the follow-up is because it’s still a non-regulatory program but it touches on some regulations. Mr. Cartanza and Mr. Smailer discussed language in the permit and enforcement. The Committee continued to discuss about repurposing test wells.

Ms. Magliocchetti said, “Just to reiterate the connection that Anita (Mrs. Beckel) brought up earlier is actually called America’s Water Infrastructure Act.” She said EPA will be communicating guidance this summer on how that’s going to be implemented and she said she believes the threshold is going to be effecting all community systems serving 3,300 people or more. She continued, “So you can make a connection in the Source Water Assessment to that activity going on and that can maybe cover your bases in terms of not being more security experts and part of that legislation is going to require that the utilities have Emergency Response Plans on site and that’s what’s going to be updated every five years.” Mrs. Beckel discussed an example of how if staff sees a possible security observation it could affect the assessment and she suggested you could say on a certain date it’s vulnerable to bacteria contamination or it was noticed that there was vandalism. Mrs. Beckel, Mr. Smailer, and Ms. Eisenbrey discussed the communication aspect and Ms. Eisenbrey and Mr. Smailer added about the sanitary survey.

Mr. Keyser said, “If you think about when you do the assessments you’re looking specifically for the public wells currently connected to the system being used. The concept of the test well or something that’s in close proximity or within that same radius should that not be listed as a vulnerability? A potential of not a source of contamination but a conduit for contamination.” Mr. Smailer said, “For a confined aquifer well that may be the most vulnerable component of that entire water system.” Mr. Smailer and Mr. Keyser continued to discuss. Ms. Eisenbrey asked Mr. Keyser how far would you go for that and Mr. Keyser responded there is a standard that if it’s within the wellhead protection area it can be considered a potential conduit. Mr. Keyser and Mr. Smailer discussed examples.

Mr. Smailer asked Ms. Magliocchetti when the guidance comes out from EPA if she could provide updates.

#### **DISCUSSION OF UPDATES TO TABLE 4-1 – Committee Discussion**

Mr. Grabowski said the name of the table changed to *Contaminants of Interest*. He said, “Some of the changes being made to it were within coordination with the Office of Drinking Water and others. Moving to three levels, Tier 1, Tier 2, and Tier 3. If you have feedback related to the contents on the shape or design of this table we’ll take them now but we want to focus mainly on how do we convey some of this information to the public in a way that’s user friendly.”

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Mr. Cartanza suggested color-coding to red, yellow, green and Mrs. Beckel said, “I think that’s how we did the assessments.” She continued to discuss. Mr. Grabowski added for clarification these are contaminants that are identified in the raw water samplings. Mrs. Beckel said, The first time we did the Source Water Assessment we had this Table 4-1 and it was a list of regulated contaminants from 3/31/91 so it wasn’t even an up to date list of contaminants at that time and we’ve had the 1996 Drinking Water Amendments and some things have been added.” She continued to discuss her suggestions to the Committee and added that we may want to put the contaminant category back.

Mr. Keyser mentioned that superscript 6 is missing and needs to be added. Mrs. Beckel, Mrs. Bataille, and Ms. Eisenbrey continued discussion.

Mr. Smailer asked, “With this list, what are we trying to communicate and to whom?” He discussed this list in relation to the CCR’s which should be considered. Mr. Cartanza said this list is confusing to him. He said, “It might not be to the water suppliers or the municipalities.” Mr. Smailer said there’s actually another column that you don’t see which is the actual values of the water tested relative to the standards. He continued to discuss an example. Mr. Smailer added that the CCR actually states whether you should be concerned or not. Mr. Cartanza said that less is better and to keep it simple where everyone can understand. Mr. Smailer, Mrs. Beckel, and Mrs. Bataille discussed the CCR reference in the existing Source Water Assessments. Ms. Magliocchetti said that at a previous meeting it was discussed about whatever was online for the assessment update to have a link to CCR’s for an area. Mr. Smailer said, “Yes, if they exist for that system.”

Mr. Smailer said, “Also what is confusing is the larger systems are doing their own raw water samplings and testing and this list is an added value to that and it’s confusing for the public but on the other hand we have smaller systems where the raw water data may be meaningful before it becomes a problem in the drinking water data. It may give them an idea of what you may want to plan for if you see this in your raw water out there maybe you do want to start thinking about some type of water treatment. And it’s how we bridge that gap in making it meaningful and is that our obligation to do so from the Source Water Program.” Mr. Cartanza said it’s meaningful if there’s a problem down the road. Ms. Eisenbrey said, “I think the color coding will help with that understanding.” The Committee discussed other options to communicate.

Mr. Keyser asked the purveyors in regards to the list what are they required to sample. He said, “It’s not everything is it?” Mr. Guyer responded, “No.” Mr. Keyser continued, “Is there a standard list that everyone who has a public water system must sample?” Mr. Guyer answered, “It depends upon the contaminants and what you have in your system.” Ms. Eisenbrey said, “And it depends on the utility.” Mr. Keyser said, “Is there a minimum list that if you are a water purveyor in the State you must sample.” Mr. Smailer and Mr. Keyser discussed.

Mrs. Beckel said, “The whole part of the Source Water Assessment was supposed to give water systems monitoring relief in case there was not a source of that chemical found in your Source Water Assessment in your area then you could apply for a waiver or monitoring relief. But in actuality the Office of Drinking Water does have a waiver program and probably is not tied to

this as close as it could be but it's a little more simple and it might be time to review and revise that, too." She continued to discuss the categories on the list.

Mr. Keyser discussed and stated, "We talk about schedules and waivers and other things and I understand the burden it does place from a financial and logistical to say we have to do this on a more regular basis and get more data and watch and in the non-detects we get from a lot of these things take a level of comfort to be able to report we are not detecting any of these things and we can tell you that. But then when we stop detecting those things we say we don't have to sample as much anymore." He continued to discuss security observations and then said, "I would push for a standardized list on a regular basis of things related to the vulnerabilities that we determine from the assessments. So we assess this stuff and we say these things are here and we have a concern about it but you don't have to sample this for three years. I think the Source Water Assessment can inform some of the sampling." Discussion began about the STRIDE Conference held the day before.

Mr. Smailer said, "The reality is we do not get raw water data for a large majority of the systems that we are assessing. So some people that have it may end up with the worst assessment under our current Plan because they have raw water data than people that don't because they're only required to test is only of what's in your distribution system and not of the raw water data." Mr. Smailer continued to discuss. Mr. Smailer said what should be communicated is, "What should you be concerned about and how concerned should you be."

Mr. Ross Elliott said he likes how the table is organized for the technical piece and he said the risk portion that was mentioned earlier by Mr. Cartanza should be in the CCR.

Ms. Eisenbrey and Mrs. Beckel asked if acronyms could be consistent throughout the list.

Ms. Eisenbrey asked why are PFOS and PFOA under Regulated Secondary Contaminants and Mrs. Beckel agreed with Ms. Eisenbrey and also suggested having another category of Emerging Contaminants of Concern and put PFOS and PFOA there. Mrs. Beckel continued to discuss. Ms. Magliocchetti said to Mrs. Beckel, "I think when we had talked about PFOS and PFOA we had also mentioned categorizing it as any of the chemicals that could be detected with the Method 537. There's 14 now but could be more in the future. The list that they can identify is growing every day." Ms. Eisenbrey said there are 14 and Mr. Keyser said there are 16. Mrs. Beckel continued to discuss the tiers and susceptibilities.

Mr. Smailer said, "I think do we take what these are, the regulated and organic contaminants, whether they become new contaminant categories and it's assessed under those and the other thing the Committee needs to consider is whether or not we do adjust, because of the reality of the lack of raw water data and other pieces, the susceptibility based upon that because it may be a false perception of what we know." Mr. Smailer, Mr. Keyser, and Mrs. Beckel continued to discuss.

Mr. Cartanza asked, "Who supplies the raw water testing?" He asked if there's a way to back track and look in past history at what has been found. He added, "If you have the information then you can chart it." He continued to discuss. Mr. Smailer discussed that the Office of

Drinking Water is required to do a sanitary survey once every three years to many of the systems and we were under the misconception in 1999 that that also included mandatory raw water sampling from the wells itself so we thought we were going to be getting raw water data once every three years at a minimum from all these systems. He added, “The reality is it’s not an obligation and it’s a potential financial burden to do that on a regular basis so we started getting less and less of that data. Also, when we were doing some of these assessments how far back do you go?” He gave an example of something that may have been gone for several years. He continued, “And last, and this is something Todd (Mr. Keyser) and I are working on at a Department scale, we rely on raw water data coming from the water systems themselves. As we’re looking at other Programs that generate data in that wellhead area if there is a Tanks Program investigation that is sampling water in that area that’s not in your raw water system but it is your wellhead area, if there’s a Super Fund site that has monitoring wells there, bits and pieces of that stuff, assembling that data, what we know about the water resource in that area of potential concern that’s where we’re trying to head so we can consolidate that because it’s been done but in as many different locations as there are Programs looking at those data.” He continued to discuss how to consolidate. Mr. Cartanza said, “What is the health cost if we don’t look back.” He discussed further.

Ms. Minni asked if water purveyors have volunteers from residents, businesses, etc. and provide samples on occasion. Ms. Eisenbrey said, “Only for lead and copper and it’s sent to the Office of Drinking Water.”

Ms. Chris Edginton asked if some group within the State monitors the quality of the groundwater throughout the State to see how polluted all the aquifers currently are. Mr. Smailer replied, “There are multiple Programs that have specific obligations to monitor that for various reasons.” Mr. Smailer gave Ms. Edginton examples and they discussed and Ms. Edginton thanked Mr. Smailer.

Mr. Grabowski asked if there were any other discussions on Table 4-1 and Mrs. Beckel make additional suggestions and Mr. Smailer said that is what Mr. Keyser mentioned earlier about a specific targeted list and the Committee continued to discuss.

## **OPEN DISCUSSION / PUBLIC COMMENT**

Ms. Edginton asked if we need to worry about depleting our aquifers? Mr. Smailer replied that the Department has an Allocation Program and explained that if anyone is using greater than 50,000 gallons a day from a source or multiple sources combined you should be getting an Allocation permit associated with it. He continued to discuss and Ms. Edginton thanked Mr. Smailer.

Mr. Grabowski mentioned the next CTAC Subcommittee meeting is currently scheduled for June 27<sup>th</sup> at 10:00 a.m. at Tidewater and the next regular CTAC meeting is currently scheduled for July 18<sup>th</sup> at 9:00 a.m. at the Kent County building.

**ADJOURN – Matthew T. Grabowski, DNREC, Division of Water**

Meeting adjourned at 12:01 p.m.

These minutes are not intended to be a detailed record. They are for the use of the Source Water Assessment and Protection Program, Source Water Assessment Plan Subcommittee members in supplementing their personal notes and recall of Committee discussions and presentations and to provide information to Committee members unable to attend. Minutes recorded and submitted by Kimberly Burris.

Attendees are listed below alphabetically, last name first:

Bataille, Amber – DNREC, Source Water Protection Program  
Beckel, Anita – Delaware Rural Water Association  
Brown, Patrick – Sussex County Engineering  
Cartanza, Paul – Delaware Farm Bureau  
Burris, Kimberly – DNREC, Division of Water, Administration  
Edginton, Chris – Citizen of Milton  
Eisenbrey, Virginia – Artesian Water Company  
Elliott, Ross – DNREC, Division of Waste & Hazardous Substances, Tanks Management Branch  
Grabowski, Matthew – DNREC, Division of Water, Water Supply Section Manager  
Guyer, Jay – Municipal Services Commission  
Keyser, Todd – DNREC, Waste & Hazardous Substances  
Magliocchetti, Cathy – U.S. EPA Region 3  
Minni, Nicole – Water Resources Agency  
ONeill, Gyllian – DNREC, Division of Water  
Smaier, Steven – DNREC, Division of Water  
Smith, Samantha – DNREC, Division of Water, Source Water Protection Program

Table 4-1 Contaminants of Interest

Substance	Standard (mg/L unless otherwise indicated)	Standard Classification	Substance Origin
<b>TIER 1</b>			
<b>Regulated Inorganic Contaminants</b>			
Antimony (Sb)	0.006	MCL <sup>(1)</sup>	
Arsenic (As)	0.010	MCL <sup>(1)</sup>	Natural
Asbestos	7 MF/1. <sup>(6)</sup>	MCL <sup>(1)</sup>	
Barium (Ba)	2	MCL <sup>(1)</sup>	Natural
Beryllium (Be)	0.004	MCL <sup>(1)</sup>	
Cadmium (Cd)	0.005	MCL <sup>(1)</sup>	Natural
Chromium (Cr)	0.1	MCL <sup>(1)</sup>	Natural
Cyanide (Cn)	0.2	MCL <sup>(1)</sup>	
Fluoride (F)	2.0	MCL <sup>(1)</sup>	Natural
Lead (Pb)	0.015	AL <sup>(2)(3)</sup>	Natural
Mercury (Hg)	0.002	MCL <sup>(1)</sup>	Natural
Nickel (Ni)	0.1 mg/L	MCL <sup>(1)</sup>	
Nitrate Nitrogen (NO <sub>3</sub> -N)	10	MCL <sup>(1)</sup>	Natural
Nitrite Nitrogen (NO <sub>2</sub> -N)	1	MCL <sup>(1)</sup>	
Total Nitrate-Nitrogen and Nitrite-Nitrogen (NO <sub>3</sub> -N) + (NO <sub>2</sub> -N)	10	MCL <sup>(1)</sup>	
Selenium (Se)	0.05	MCL <sup>(1)</sup>	Natural
Turbidity	See regulations <sup>(2)</sup>		Combined Natural/Synthetic
<b>Regulated Microbiological Contaminants</b>			
Total Coliform Bacteria	See regulations <sup>(2)</sup>		Combined Natural/Synthetic
<i>E. coli</i>	Negative	MCL <sup>(1)</sup>	Combined Natural/Synthetic
<i>Cryptosporidium</i>	See regulations <sup>(2)</sup>		Combined Natural/Synthetic
<i>Giardia lamblia</i>	See regulations <sup>(2)</sup>		Combined Natural/Synthetic
<b>Regulated Radionuclides</b>			
Radium 226 and 228 (combined)	5 pci/l	MCL <sup>(1)</sup>	Combined Natural/Synthetic
Alpha Particles	15 pci/l	MCL <sup>(1)</sup>	Combined Natural/Synthetic
Beta Particles and Photon Emitters	4 mRem/yr	MCL <sup>(1)</sup>	Combined Natural/Synthetic
Uranium	30 pci/l	MCL <sup>(1)</sup>	Combined Natural/Synthetic
<b>Regulated Disinfection Byproducts</b>			
Haloacetic Acids (HAA5) [dibromoacetic acid, dichloroacetic acid, monobromoacetic acid, monochloroacetic acid, trichloroacetic acid]	0.060	MCL <sup>(1)</sup>	Synthetic
Total Trihalomethanes (THM) [Chloroform, Bromoform, Bromodichloromethane, Dibromochloromethane]	0.080	MCL <sup>(1)</sup>	Synthetic
<b>Regulated Volatile Organic Compounds (VOCs)</b>			
Benzene	0.005	MCL <sup>(1)</sup>	Synthetic
Carbon tetrachloride	0.005	MCL <sup>(1)</sup>	Synthetic
Ortho-dichlorobenzene	0.6	MCL <sup>(1)</sup>	Synthetic
Para-dichlorobenzene	0.075	MCL <sup>(1)</sup>	Synthetic
1,2-dichloroethane	0.005	MCL <sup>(1)</sup>	Synthetic
1,1-dichloroethene	0.007	MCL <sup>(1)</sup>	Synthetic
Cis-1,2-dichloroethene	0.07	MCL <sup>(1)</sup>	Synthetic
Trans-1,2-dichloroethene	0.1	MCL <sup>(1)</sup>	Synthetic
Dichloromethane	0.005	MCL <sup>(1)</sup>	Synthetic
1,2-dichloropropane	0.005	MCL <sup>(1)</sup>	Synthetic
Ethylbenzene	0.7	MCL <sup>(1)</sup>	Synthetic
Monochlorobenzene	0.1	MCL <sup>(1)</sup>	Synthetic
Methyl Tertiary Butyl Ether (MTBE)	0.01	MCL <sup>(1)</sup>	Synthetic
Styrene	0.1	MCL <sup>(1)</sup>	Synthetic
Tetrachloroethene	0.001	MCL <sup>(1)</sup>	Synthetic
Toluene	1	MCL <sup>(1)</sup>	Synthetic
1,2,4-trichlorobenzene	0.07	MCL <sup>(1)</sup>	Synthetic
1,1,1-trichloroethane	0.2	MCL <sup>(1)</sup>	Synthetic
1,1,2-trichloroethane	0.005	MCL <sup>(1)</sup>	Synthetic
Trichloroethene	0.001	MCL <sup>(1)</sup>	Synthetic
Vinyl Chloride	0.001	MCL <sup>(1)</sup>	Synthetic
Total Xylene	10	MCL <sup>(1)</sup>	Synthetic
<b>Regulated Pesticides, PCBs and Other Organics</b>			
Alachlor	0.002	MCL <sup>(1)</sup>	Synthetic
Aldicarb	0.003	MCL <sup>(1)</sup>	Synthetic
Aldicarb Sulfone	0.003	MCL <sup>(1)</sup>	Synthetic
Aldicarb Sulfoxide	0.003	MCL <sup>(1)</sup>	Synthetic
Atrazine	0.003	MCL <sup>(1)</sup>	Synthetic
Benzo(a)pyrene	0.0002	MCL <sup>(1)</sup>	Synthetic
Carbofuran	0.04	MCL <sup>(1)</sup>	Synthetic
Chlorodane	0.002	MCL <sup>(1)</sup>	Synthetic
Dalapon	0.2	MCL <sup>(1)</sup>	Synthetic
Di(2-ethylhexyl) adipate	0.4	MCL <sup>(1)</sup>	Synthetic
Di(2-ethylhexyl)phthalate	0.006	MCL <sup>(1)</sup>	Synthetic
Dibromochloropropane	0.0002	MCL <sup>(1)</sup>	Synthetic
Dinoseb	0.007	MCL <sup>(1)</sup>	Synthetic
Diquat	0.02	MCL <sup>(1)</sup>	Synthetic
2,4-D	0.07	MCL <sup>(1)</sup>	Synthetic
Endothal	0.1	MCL <sup>(1)</sup>	Synthetic
Endrin	0.002	MCL <sup>(1)</sup>	Synthetic

Ethylendibromide (EDB)	0.0005	MCL <sup>(1)</sup>	Synthetic
Glyphosphate	0.7	MCL <sup>(1)</sup>	Synthetic
Heptachlor	0.0004	MCL <sup>(1)</sup>	Synthetic
Hepachlor epoxide	0.0002	MCL <sup>(1)</sup>	Synthetic
Hexachlorobenzene	0.001	MCL <sup>(1)</sup>	Synthetic
Hexachlorocyclopentadiene	0.05	MCL <sup>(1)</sup>	Synthetic
Lindane	0.0002	MCL <sup>(1)</sup>	Synthetic
Methoxychlor	0.04	MCL <sup>(1)</sup>	Synthetic
Oxamyl (Vydate)	0.2	MCL <sup>(1)</sup>	Synthetic
Pentachlorophenol	0.001	MCL <sup>(1)</sup>	Synthetic
Picloram	0.5	MCL <sup>(1)</sup>	Synthetic
Polychlorinated biphenyls (PCBs)	0.0005	MCL <sup>(1)</sup>	Synthetic
Simazine	0.004	MCL <sup>(1)</sup>	Synthetic
2,3,7,8-TCDD (Dioxin)	3x10 <sup>-8</sup>	MCL <sup>(1)</sup>	Synthetic
Toxaphene	0.003	MCL <sup>(1)</sup>	Synthetic
2,4,5-TP (Silvex)	0.05	MCL <sup>(1)</sup>	Synthetic

Substance	Standard (mg/L unless otherwise indicated)	Standard Classification	Substance Origin
<b>TIER 2</b>			
<b>Regulated Secondary Contaminants</b>			
Aluminum	0.05-0.2 mg/L	SMCL <sup>(4)</sup>	Natural
Chloride (Cl)	250	SMCL <sup>(4)</sup>	Combined Natural/Synthetic
Color	15 color units	SMCL <sup>(4)</sup>	Natural
Copper (Cu)	1.0	SMCL <sup>(4)</sup>	Combined Natural/Synthetic
Corrosivity	Non-corrosive	SMCL <sup>(4)</sup>	Synthetic
Foaming Agents	0.5	SMCL <sup>(4)</sup>	Natural
Iron (Fe)	0.3	SMCL <sup>(4)</sup>	Natural
Manganese (Mn)	0.05	SMCL <sup>(4)</sup>	Combined Natural/Synthetic
Odor	3 threshold odor number	SMCL <sup>(4)</sup>	Natural
pH	6.5 - 8.5	SMCL <sup>(4)</sup>	Natural
Silver (Ag)	0.1	SMCL <sup>(4)</sup>	Natural
Sulfate (SO <sub>4</sub> )	250	SMCL <sup>(4)</sup>	Natural
Total Dissolved Solids (TDS)	500	SMCL <sup>(4)</sup>	Natural
Zinc (Zinc)	5	SMCL <sup>(4)</sup>	Natural
Sodium (Na)	See regulations <sup>(2)</sup>		Natural
Perfluorooctanoic Acid / Perfluorooctane Sulfonate (individual or combined)	70 ng/L	LHA <sup>(6)</sup>	Synthetic

Substance	Standard (mg/L unless otherwise indicated)	Standard Classification	Substance Origin
<b>TIER 3</b>			
<b>Unregulated Contaminants</b>			
Bromobenzene	N/A	N/A	Synthetic
Bromochloromethane	N/A	N/A	Synthetic
Bromomethane	N/A	N/A	Synthetic
n-butylbenzene	N/A	N/A	Synthetic
sec-butylbenzene	N/A	N/A	Synthetic
Tert-butylbenzene	N/A	N/A	Synthetic
Cesium	N/A	N/A	Natural
Chloroethane	N/A	N/A	Synthetic
Chloromethane	N/A	N/A	Synthetic
2-chlorotoluene	N/A	N/A	Synthetic
4-chlorotoluene	N/A	N/A	Synthetic
1,2-dibromo-3-chloropropane	N/A	N/A	Synthetic
1,2-dibromoethane	N/A	N/A	Synthetic
Dibromomethane	N/A	N/A	Synthetic
1,3-dichlorobenzene	N/A	N/A	Synthetic
Dichlorodifluoromethane	N/A	N/A	Synthetic
1,1-dichloroethane	N/A	N/A	Synthetic
1,2-dichloropropane	N/A	N/A	Synthetic
2,2-dichloropropane	N/A	N/A	Synthetic
1,1-dichloropropene	N/A	N/A	Synthetic
Cis-1,3-dichloropropene	N/A	N/A	Synthetic
Trans-1,3-dichloropropene	N/A	N/A	Synthetic
Hexachlorobutadiene	N/A	N/A	Synthetic
Isopropylbenzene	N/A	N/A	Synthetic
4-isopropyltoluene	N/A	N/A	Synthetic
Naphthalene	N/A	N/A	Synthetic
Tert-amyl-methyl ether (TAME)	N/A	N/A	Synthetic
tert-butyl alcohol (TBA)	N/A	N/A	Synthetic
Propylbenzene	N/A	N/A	Synthetic
1,1,1,2-tetrachloroethane	N/A	N/A	Synthetic
1,1,2,2-tetrachloroethane	N/A	N/A	Synthetic
1,2,3-trichlorobenzene	N/A	N/A	Synthetic
Trichloropropane	N/A	N/A	Synthetic
1,2,4-trimethylbenzene	N/A	N/A	Synthetic
1,3,5-trimethylbenzene	N/A	N/A	Synthetic
o-xylene	N/A	N/A	Synthetic
m-xylene	N/A	N/A	Synthetic
p-xylene	N/A	N/A	Synthetic

<sup>(1)</sup> Maximum Contaminant Level

<sup>(2)</sup> Substance regulated by the Delaware Division of Public Health in the State of Delaware Regulations Governing Public Drinking Water Systems, Revised January 1, 2016

<sup>(3)</sup> Action Level

<sup>(4)</sup> Secondary Maximum Contaminant Level

<sup>(5)</sup> Lifetime Health Advisory