BOARD OF PUBLIC WORKS

Vision

The Board of Public Works exists to improve the quality of life of the customers we serve.

Mission

We are dedicated to providing our current and future customers with utility and other value added services in a safe, reliable, and economical manner consistent with sustainable growth, community involvement, and environmental stewardship.

Public Workshop on the Present and Proposed Operation and Management of the Lewes Board of Public Work's Storm water Utility was held in Lewes City Hall, Council Chambers, 114 East Third Street, Lewes, Delaware on Thursday, April 4, 2013 at 7:00 PM.

Board Members Present:

D. Preston Lee
Jack Lesher
James N. Richmann
Candace Vessella

Board Members Not Present:

C. Wendell Alfred

Ex-Officio Members Present:

James L. Ford III, Mayor
Darrin Gordon, General Manager
Glenn C. Mandalas, Legal Council
Heidi Wagner, Asst. General Manager

Others Present:

Henry Evans, The Cape Gazette
Joe Hoechner, Pilottown Village HOA
Jim and Wanda Berryman, Pilottown Village
Michael Tyler, 10 Drake Knoll
Pat Sheehy, Pilottown Village
Frosty McDaniel, PPHA, 206 Marina Drive
John Fanchalsky, PVHOA, 203 Seagull Drive
Ron and Peggy Kernehan, 9 Clayton Avenue
D. Tyler, 8 Delmar
Mark D. Gatanas, 54 Pilot Point
Jeff Lillquist, 8A Clayton Avenue
Dennis Reardon, 1302 Bay Avenue
Helga Gayowski, 105 Ocean View Blvd.
C. Boggs, 7 Ocean View Court
Bo French, 7 Liszak Drive
Rob Davis, 202 East Savannah Road
Jim Sleasman, Pilottown Road
Dave Ennis, Harborview Road

*****Please note that there were several other attendees who did not sign in.***

1. Welcome, Call Meeting to Order and Pledge of Allegiance

At 7:00 PM, Candace Vessella, in President Alfred's place, welcomed everyone, called the workshop to order and led Pledge of Allegiance. A moment of silence was observed for our troops serving our country.

Candace Vessella said this workshop is being conducted to facilitate information, dissemination to the directors and the public, on the state of the Board of Public Works' storm water system. The workshop will also provide a review of goals for future operations and storm water system management. The BPW has installed a storm water system and charges its customers a storm water fee to maintain the storm water infrastructure and manage its affects for the greater good of the community. The information papers we have published, and we have copies here, have been published and provided in the bills to our customers and are also available on the BPW website. I will turn it over to our General Manager, Darrin Gordon.

1. Review of current Board of Public Works Storm Water Utility efforts. (D. Gordon)
INFORMATION:
PowerPoint Presentation by Darrin Gordon:
Back in 2010, the resolution was passed that the Board of Public Works begin a storm water utility. This was a point where it was established that it would be a resident fee of $5.00 per month, a commercial fee of $10.00 per month, and an industrial fee of $20.00 per month. What I would ask you to remember and know is that the efforts that have been going into maintaining the storm water system have been here for a really long time. We have had pipes in the ground, catch basins in the ground that have been here for many years, fifty years plus in some areas. The efforts to take care of those were being paid for through your water, sewer, and some through the electric. Cumulative was also being collected. So what this did was as we created this storm water utility and we set it apart and was able to start doing a better job of accounting for of what is going into that system. I would like to show you some of the struggles and characteristics of what have here in Lewes. We had a LiDAR study map done. LiDAR is using light detection and ranging and is very precise. If you look at the legend, it shows that is two foot intervals. In my mind we have three areas. This right here you can see the lowlands which happens to include Pilot Town Village. There is New Road going through. These higher areas are your continental divide. This area drains into Canary Creek and out into the marshes and the ocean. Everything here goes right to the canal. Then we have the beach side. There is zero to two feet. If you see, there is the canal, and it is obviously the zero foot line. If you follow that coloring around, there are places inside of the beach where there is only zero to two feet. Even though LiDAR is very effective, your homes may vary by six to eight inches. The principal I am showing you is that we have a very unique struggle to try and improve. There is a ditch that goes around and drops into the canal. This ditch allows the storm water and tides to come in and go out every single day. This other map and what I would like you see is this starts at Massachusetts and Midland and comes all the way through. It takes 1.2 miles for it to get from there to there. If you are running a sewer pipe, you have to have "x" amount of slope in order for the stuff that goes into it to move fast enough for stuff to be carried away. The percent slope on that is horrible; it is dead flat. So what I am saying is there is not much we can do to slow up or speed up the ground water. We will do some things that will do just that though. This happens to be Preston Lee's house and that is his driveway. We took some shots comparing it to where we are on the canal and that showed at the end of his cul de sac and that is one foot and eleven inches above the pipe that we took the shot on. Relative, give it another six inches or a foot, we are still talking extremely low elevations. The ocean is right there. Another feature that we get to deal with is the Highland Acres Tax Ditch. We had some discussions with them. Here is the outline of the Tax Ditch, and you can see here is Highland Acres, here is the forest, right here is Harbor Health, and here is the ditch that the Tax Ditch is still responsible for maintaining and taking care of. They also take care of this ditch that runs right along here. About six or eight months ago, we had some discussions with the County and the Tax Ditch itself, and we said the Tax Ditch still has easements that are expressed out in those properties. If you can see the homes behind there, they are still overlapping those. We pursued taking and allowing the Tax Ditch to moving their easements over top of our storm pipes so that it would no longer encompass homes but there were some disagreements by the Tax Ditch. We haven't worried about overcoming that because we have it from the County that says that we had concerns that possibly it would harm the homeowners if they went to sell, etc. and told by them that is not an issue. There is one pipe that goes from right here that the Tax Ditch is maintain, but it is connected to our system by an eight inch pipe and we are considering that we may need to increase that size. This happens to be the outlet standing on Fourth Street out to the large ditch. This is what it looks like going forward. This is the Tax Ditch and this is what they are responsible for maintaining. They have talked in the past about some the encroachments that make it difficult for them to maintain that. This is a map that shows our storm system with all of the grates, all of the catch basins. All of those green rectangles are our catch basins that we maintain and help clean out and try to keep available for the storm water to go into. Here is the real question: what are we doing with your $5.00? The answer is for the greater good of the community. When we started this storm water utility, we wanted to capture what we were doing and continue doing it. What we do for the greater good of the community is that we make sure Savannah Road is open to you, and that Kings Highway is open and available, and that we can get through Pilottown Road and Gill's Neck, and Cedar. These are the main arteries of the community. We are not concentrating so much on the individual problems. We would have to expand to do that. We are trying to be as efficient as we can so that we can get to those projects. I will show you what we have done in that step. Currently, first one on the list and the biggest one are mapping, inventory, and assessment. The map I showed you of all the catch basins came from an effort from the GIS. I am going to let Dave Athey talk about the next thing we are doing. We have pipes, catch basins, ditches, inmates we use, outside contractors we use, and equipment. We have gone through in specific places, not everywhere, we have taken a look at the pipes. We have had a rough look at that and we have concerns in certain areas. We have videoed, looked at, and inspected. Some of the pipes have holes in them; they fall apart, and become disconnected. We have tried to inspect and vacuum out catch basins at least annually. There are some that fill up faster, such as on the beach side with sand. Here is a picture from Pilottown Village that has a beautiful catch basin and has been well maintained. Here is a catch basin with a skirting that is in disrepair and we are getting ready to repair. We have some that look pretty rough. This happens to be one between Harborview and Hornkill where we replaced the pipe. The pipe itself was only an eight inch pipe. Our engineer said it needs to be a minimum of twelve inches for it to be a productive storm pipe. Everything we do; cleaning up ditches and cleaning pipes, is always for efficiency of our storm system. That is a two edged sword because we can speed it up with that twelve inch pipe and that means the water can go into the canal very quickly, but it also means it can come from the canal and go in very quickly. When we take that ditch that is behind Cedar and clean it out, it will help it go away quicker, but also come quicker. All we can do is improve the efficiency of that system and how that channel or pipe moves water. During the storm that pipe was working well. These next couple slides will show you pictures of the canal and the ditches behind Harborview and Hornkill. This is a picture of one our employees, Emmett Forker, who has our DR mower and chopping things down like crazy. We will be taking care of our side of those ditches. The other sides are private and we can't touch it. They have done a great job. Here is the end of it where I am standing

with the camera and it goes into the marsh. That is the part that we can't touch. We can't get into the marshes; it's illegal. A lot of times even with that ditch that comes from Cedar, half of it is on city property, but I can only go so far because the rest of it is the Army Corp of Engineer's and we cannot touch it. These are some of the struggles that we have that makes it difficult. We use inmates. A couple of years ago we had Gilbert Holt who was fabulous at getting inmates. He had a great relationship with the Department of Corrections. They would come out and clean regularly. We picked it up again. About a year and half there was an article about the DOC getting in trouble because they were sending them out to work and they were not keeping the right paperwork so that fell off. We are working at getting them back again. We have used them over by Harborview and Hornkill and the railroad tracks. This is a picture of our vac truck and it is a great tool to pop the grates and clean out the basins. It is priceless and sometimes repairing it is also priceless. Maintaining that vehicle is another real cost and was another value in adding the storm water utility as it supports that. We will continue to have rain events. When the water is that high, this was part of Sandy, it is not going to flow. We just have to wait for it to go away and then things will start settling down. A couple of those maps in the very back talk about groundwater as some of the questions about sea rise that you may have. We have problems when it gets high with water going into our sewers. Over on the beach, we have several storm grates, but only one pipe down by the Yacht Club that comes across down to Mason's Way and it dumps into the canal. We have a couple of these throughout Cedar and even up on Bay that are French drains. There is no pipe going from that grate out to canal or to the ocean and I would like to kick whoever put that there because it creates a sense of storm draining that isn't there. You put aggregate (stone) around the French drain and around that stone is the Earth, so it creates greater surface area for that water to go into the earth. The problem is when your groundwater is high enough it is not going anywhere, so what you have created is a 10-gallon bucket. Commitment and support going forward: this is speaking specifically of the Board. This is the approved budget for this year. This is our storm water up here. An important line is the Operating Expenses and Salaries, Wages, & Benefits. Last year we had about $5000 we spent on employee salaries. We have increased that eight times. We want to have someone that is specifically set and is able to take care of storm water issues. We are going to have at least that person for the summer. Your Board has committed, and you are seeing that, we need to do better in our storm water effort. We are committing to that with dollars to make that happen. This next arrow you will see the cost of adding that extra employee actually puts us in the negative. We are looking at spending over $8,000 of what we will have as income to take care of that. I can pinch and I can save and I am going to try to get that to zero. But we are committed to spending some money to make it a better system. If we do go to that negative $8,000, we will probably subsidize with the sewer and the water. But I did the math very quickly and it would cost an extra quarter per month to cover that $8,000. I am not making any announcements so don't leave here telling anyone I am threatening to raise the rate. I am just saying that is what the value of that it is. At the bottom which you can't see very well is a $50,000 grant which is what Mr. Athey will talk to you about. One of the questions we have is why don't we get into the pond business and why don't we be responsible for cleaning that out. First of all, looking at that budget we are right at our limit of what we can do and if you want us to clean out those ponds we can do it but it will just take time and money. You can probably do it through your HOA or yourself much cheaper. The other thing is that we are in the operation of conveyance; we own the pipe and I keep the pipe clean from Point A to Point B, and that is our job and we are good at it. The ponds have nothing to do with that. We get it to the ponds. The ponds are required by the County and they stay with the organizations that own them. There have been some concerns about divots in the roads and I will tell you that we are not trying to ignore it or put it off, but I we have some places that are in much greater need. My job is to prioritize and we are trying to take care of those things that are in worse shape and could cause a catastrophe. Everything is on a list from worst to least. This one is in pretty bad shape and we are going to be able to get in there relatively soon, hopefully within the next couple of weeks. This catch basin has not moved and the pipe underneath is fine, but we will have to take care of that. Third one, sump pumps. It is in city code that a sump pump coming out of the bottom of someone's home and tying it in to our sanitary sewer is illegal. Same with downspouts from roofs; anything counting as runoff is illegal to put into our sanitary sewer. We have a lot of that. You saw the picture of my manhole with the water sitting on top of it – after that is gone it will be pumped through our system and probably used within a day. We are going three and four days because we are still having raw water pumped through our system above our normal sewage usage. It is coming from cross connections which are illegal. I want you to share that with your neighbor. What I want to do, which I believe is appropriate is first I want to say there is a problem. So what do you do with it? There is also a rule in the city code that says you can't push it across the sidewalk. What I propose is that as a homeowner you take that storm water and bring it to zero energy. In other words, if you are pumping it with your sump pump it simply comes straight up, they even have caps that are spring loaded, it will dissipate that energy, and nature will determine where it goes. That is my proposal and I would love to anyone's input on that. So if that water can be taken to zero energy, just put out in the yard and where it goes it goes, but I need to take it and get it out of my sewer. If there is a storm drain available, I want you to put it in the storm drain. Please do that. That is where it belongs. Some people don't have that option. We need to reduce the number of connections from our storm water to our sewer. That is imperative, and is one of my goals that I am going to work on. Please spread the word; ultimately we have to be careful what is going into our storm water systems. Oils are horrible and we want to avoid that. We have seen some signs of grass cuttings and clippings, leaves being raked in and pushed down the storm drain. Ultimately it gets to the canal and we would like to avoid those things. That is the end of my presentation. Any questions?

Frosty McDaniel, 206 Marina Drive:
I am the Manager of the Highland Acre Tax Ditch. You made a comment and showed a picture of that ditch being full of water. When was that taken and are you suggesting that we are not taking care of those ditches?
Darrin Gordon said I think I was suggesting the opposite. I think you are doing a very good job. That picture was during the beginning of Hurricane Sandy.
Frosty McDaniel *said what is the City's position on the Highland Acre Tax Ditch? Are you going to leave it as is or are you going to take it over?*

Darrin Gordon said I am going to leave it as is. It's all yours. We would like to talk about getting that pipe dug, the one coming out by Harbor Healthcare. We talked about taking care of it, we were pushing it and were set to the point of where we were ready to sign the paper and if we don't need it, let's not worry about it. We can let it die. I have no reason to push that.

Joe Hoechner, Pilottown Village:
You were mentioning the cost for labor and benefits and all that stuff. Is that annual or is that monthly?
Darrin Gordon said that is annual.
Joe Hoechner *said based on the number of residents, and commercial and industrial, you are probably getting $15,000-$20,000 per month which should easily cover your annual fees. So it's not like you should be raising the rates.*
Darrin Gordon said I showed you one line. There are a lot of others. We got a $50,000 grant, but we also have to pay a matching grant which is $50,000 plus another $25,000, which is $125,000 to Mr. Athey alone. So please don't take one line and extrapolate that to anything else. What I am showing you is the commitment of the Board to put manpower and man hours into maintaining the storm water system.

Unknown Attendee:
You mentioned there are places that drain into the sewer line. How do you detect that?
Darrin Gordon said one way is through cameras. We have thirty-two lift stations throughout our system. We have a pretty good idea what is normally run through those during the dry season. We have some of those lift stations where can watch and know when they spike. That is not because of sewer usage. When it spikes on the beach side, and there is no one there because they have all evacuated, that is a sign. Then we have a camera. We run that camera through and we can see water flowing and that is a sign. We can also do a smoke test. We have a smoke blower that we can take and put it on the sewer line and push smoke through. It is tougher on the sumps but we can tell all of the drains that open up into rafters and stuff like that.

Jeff Lillquist, Clayton Avenue:
I live on the end of Clayton Avenue and I would like to know where your start and finish is to the city-owned property on that ditch.
Darrin Gordon said very close to you right there where the crossing on the canal and as it turns it runs south.
Jeff Lillquist *said they came and dug it out not too long ago. You have a contractor that works on your side and I take care of my side very well.*

Helga Gayowski, 105 Ocean View Boulevard:
The ditch that crosses Fourth Street – is that one that mother nature made or is than an official one?
Darrin Gordon said I believe that is from mother nature. That is coming from what I call the wooded area and all of that is covered by the Tax Ditch.
Helga Gayowski *said it is all draining into the lots.*
Darrin Gordon said it is coming from the Tax Ditch.

Jeff Locust, Clayton Avenue:
Where that culvert is and when they put that new one in several years ago, they didn't put any rip wraps or anything around the outside. Since then it has eroded three feet back onto those culverts. I came in one time and asked if we could get some kind of a rip wrap because I know you have some.
Darrin Gordon said to talk to me later.

Gentleman who said he lives across the street from Jeff Lillquist:
How far down, or out, the beach are you planning to clean that ditch out?
Darrin Gordon said I plan on putting inmates on foot and cleaning the rest of the way down there.
Gentleman *said if you don't, it's a plug. I want to thank you for sending your water down and making it deeper at my house. That is what will happen. That has got to be cleaned out all the way down to where that Spartina Marsh thing goes down to the canal.*
Darrin Gordon said what we can do is send the inmates on foot to go through there and clean it out.
Gentleman *said there is nothing you can do other than putting a levy the whole distance around there to keep the ocean out and that is not the problem. The problem is getting it back down to the ocean. It won't flush.*

Mark D. Gatanas, Secretary of the Pilot Point Association:
Do you have catch basins at Pilot Point by the Ferry?
Darrin Gordon said I know there are a couple of storm drains there that really just run right under the road back into the marsh inland. That is all I can remember. I would have to look at a map.
Mark Gatanas *said is there a need for catch basins?*
Darrin Gordon said I am going to leave that up to Mr. Athey. I don't have an answer for you

Mike Tyler, 10 Drake Knoll:
There is a stream behind my house and we would fish in it. There was a bridge but storm water washed it away and I put a new bridge in. When Hurricane Sandy came, I had a fifty-foot lake in my backyard. That stream has been filled with sediment that

comes off of Kings Highway. I find beer cans, Styrofoam cups, cigarette packs, and plastic bags. Is there anything you can do to stop that kind of action? I can't dig that out anymore and I would like to have my stream back. But I have grass growing in it now because of sediment from street run-off. My neighbor had his tractor swamped one time because he parks it in my shed. Gilbert used to have the inmates come and they did some digging. I went to see the Federal people to see if I could get something done there but they said it was classified as a certain type of stream.
Darrin Gordon said that is a tougher question than I can answer right now.
Mike Tyler *said when the water comes in, it is really trashy there along the railroad and it needs to be maintained.*
Darrin Gordon said that is one of the tough parts there because you are in that highland area which is really good but you are receiving run off from the tail end of things where we don't have any control
Mike Tyler *said I have a sixteen foot wide garden and it was underwater. If you could come out and take a look and maybe we could try to think about what might be done to help that. If there was some way to retain the water farther upstream I wouldn't be getting all of that.*
Darrin Gordon said I don't have an answer for you. Most of that comes from the railroad, right?
Mike Tyler *said underneath the railroad. There is a pipe that runs under the tracks and the pipe comes from the big circle. I have even seen bluish colored stuff so it's got to be from cars. It's like oil or something.*
Darrin Gordon said that is coming from easements that aren't ours. That is coming from drainage that is outside of our control. I don't have a quick answer for you, but we will look at it.

2. Open forum/general discussion with David Athey, P.E. of Duffield Engineering, consultant on the Surface Water Matching Grant Award – Citywide Master Drainage Plan AND Storm Water Quality Feasibility Assessment, to review.
INFORMATION:
Power Point Presentation by David Athey:
Thank you very much it is always a pleasure to do a presentation in Lewes. Darrin mentioned the resolution that was passed in 2010 that implemented the storm water fee. In December 2007 I had the pleasure of doing a presentation to implement the storm water fee at the library. As Darrin said, he retained Duffield Associates to try to give a better baseline for what the Board is responsible for maintaining. Several of the issues came up just a couple of moments ago, but because of the way the storm drainage evolved into Board responsibility, there really is a contrast to the water, sewer, and electric systems. There really is no good baseline of knowledge of how many miles of pipes or how many inlets there are. Basically he has asked us to get a better handle on the quantification aspect of it as well as the overall general quality. So as he said the current effort is about a $125,000 job. The good news is that we were able to secure a $50,000 grant from DNREC through the state to offset about 40% of the cost for the project. The Board is still putting forth $75,000. You have two very general components to it. One is what we are calling the Master Drainage Plan, which is basically the lion's share of what we are doing. The grant is actually a water quality grant, so in order to qualify for that program we had to throw out a water quality benefit. The second part of it is Storm Water Quality Feasibility Assessment. We spent about the first week of December basically starting to get a handle on the inventory, looking at the inlets where we already know where those are. I am going to show you a video of a pipe system as well. We are looking at the depths, the sizes, type of materials and things along those lines. We are also trying to come up with a baseline for the condition assessment. Some of the drainage system is probably 50, 60, or 70 years old. I guarantee there are going to be some problems and we are trying to get a handle on the severity of some of those might be. We are going to be doing an assessment of the outfalls as well which is commonly called a duck bill; it's a new modern way to prevent the drainage from coming back up. It's either a pro or a con whether you put a flat gate or a duck bill on an outlet into a tidal water body. As well as some of the others we talked about; the Highland Acres Tax Ditch and the other one by the town village. There is a fine line between natural channels and man-made; you use them both so we are going to at least try to get a handle on what some of those might be and where they are. This is a similar map that Darrin used. The gold rectangles are roughly about 600 inlets within the city limits. We chose Pilot Town Village as our first project because the system was fairly new and we didn't anticipate a lot of problems. We spent the first two or three days and looked at about 36 catch basins and found a couple of pipe outfalls. As we expected the pipes were generally in pretty decent condition. An issue that we will talk about in a moment is that we did find multiple junction boxes, which are basically where pipes are going into back yards and they either change direction or change size. This creates a little bit of an issue. Darrin mentioned easements; we haven't really gotten into where the drainage easements are but anytime the drainage system leaves the public right of way, it can be problematic because either people have planted something that is in the way or you are going into people's yards to have to clean something or repair something. It's not necessarily a great situation but it is a situation that exists. We shifted a little bit closer into town and got another 31 basins. We found a couple where the brick work was starting to fall apart. Out at Pilot Town Village they are all nice and concrete and new. Not surprisingly, in town, with some of the older systems, some the brick work was starting to come loose a little bit. We also found a lot of manholes which are basically like junction boxes but within the public right of way. We are also finding which will be a recurring problem, and I will explain in a moment what I think the Board intends to do with the study; some of the catch basins have a lot of leaf build-up in them. Leave decompose and then turn into sediment. As Darrin noted, you have to keep on drainage system maintenance but it is not always the easiest thing to do. Just a couple of things out on Pilot Town Road, the engineer who was out on the loop said a couple things didn't even have a bottom to it. I said you will find that in Lewes to some degree because of the sandy soil, but it can create some problems. We have some information where the outfalls should be, and one of them that was supposed to be there was not. Either the plan is outdated or it got taken out at some point but we don't know, and not knowing really underscores the importance of getting a really good baseline to find out what is there. Out by Savannah on the other side of the canal we looked at 16 basins. Some of these had significant sand and sediment build-up, and some of the basins are bottomless. We are trying to inventory all of this. Finally, out at Bay Avenue, because that was recently

reconstructed, we considered that a low priority. I know $125,000 probably seems like a great deal, but when you have three people out in the field with a lot of modeling that will be done afterwards we have to keep an eye on the budget as well. We also got a little bit on Cape Henlopen Drive and found relatively similar things. This is about a 30 second video and let me explain. Darrin talked about a TV camera, which is commonly done more for sanitary systems. It can be rather costly and time consuming, and with all the storm drainage pipe we didn't want to bog the project down that much. We wanted a better screening tool than a camera would allow. We found a camera and it's pretty neat. We will be back April 22nd for three or four more weeks and you may actually see this if you are driving around town. This camera is on a pole, and the guys don't have to enter the catch basin. They can stand on the ground and lower it, and it has a very bright light and a zoom feature to it. This is the end result of what it looks like. It's not perfect. As you are looking at this video, that is not the camera moving, the camera is stationary and it is just the lens moving. This is also a pristine pipe we are showing you. I am not sure the distance there from start to finish. The vendor guarantees that for a 24 inch pipe it can go 300 feet, but most pipes are usually smaller than that. I specifically included the next picture. You can see as you get closer up, the bright light and it coming into focus, there is some sort of a dip in the pipe. Maybe the joint wasn't constructed properly or the ground settled around it, but clearly this pipe has a bit of sag to it. Personally, I would not call this a very major issue. It is something you want to keep your eye on because if there is a problem, sooner or later you will see other issues with that, like a sinkhole in an extreme case. Like a leak in your roof, you may not need to do anything about this year, but sooner or later you are going to have to deal with it. This is the information we are trying to get to Darrin; what the issues are that you have to deal with today and what kind of stuff is coming a little bit farther down the pipe. Here is a hand full of pictures. The one on the upper left is in Pilot Town Village and is what I alluded to a moment ago; someone put a fence over that inlet. It is probably not affecting it drainage wise but nothing lasts forever and sooner or later the Board is going to have to go in there and clean it out or repair the grate or do some concrete work and now you have a fence on top of it, so someone is in for an unhappy surprise. It gets really bad when people put a rose garden around it. That gets touchy that you would have to dig up someone's yard to get to the catch basin. That goes back to where the easements are and where are they being enforced. The upper middle picture could be a sign of a pipe; it's never easy to put a pipe in a catch basin. It sounds simple but that joint has to be water tight and it is tough to do particularly in an area with high ground water like Lewes. My guess is that a pipe where the joint came a little loose and now it's allowing some sediment into it and the ground above it is starting to settle. I call that a minor issue, but sooner or later it will become more severe. On the upper right I see a beautiful catch basin but again it is right smack in someone's yard. The three on the bottom are all relatively similar. The one on the right I am pretty sure is around Bay Avenue. As Darrin noted, as far as I know the guys are cleaning those inlets annually. This is one of the things he has asked us to evaluate; to come up with a maintenance schedule. There are some locations where annually isn't going to cut it and this is the end result. There is no such thing as a maintenance free storm water structure. That is the heart of the project. The image that we keep referring to with all the catch basins was done with another DNREC grant, the Coastal Resiliency Project, so we already know where all the inlets are and there is already a database that exists for those. Basically we are going to supplement that database. We will create linkages for all these videos and pictures we are taking into a geo-reference database so the Board or whoever can just click on an inlet and have the information at their fingertips. The other activity is a capacity evaluation. The budget would not allow us to do it for every 12 or 15 inch crawl space, but we have identified an 18 inch trunk line so we are going to go in there and try to find the drainage areas going into the larger pipes. Pipes in Lewes, there are some pretty flat areas as well, and the steeper the slope the more capacity you can have. No one has done a nice broad capacity analysis so we will be doing that as well. Then we will roll it all up into a final report with a summary and recommendations. Regarding the Repair and Rehabilitation segment; finding out what some of those undersized pipe segments might be, make recommendations as far as system maintenance, and start developing hopefully a small long term capital so that you don't have to worry about pump stations and wastewater plants and really big ticket items like that. More than likely there will be some pipe segments that are either under sized and/or failing and sooner or later will have to be looked at. Preston asked me to keep this brief as this could be a presentation unto itself, but it really is relevant to moving forward on the water quality aspect of it. The major focus in the environmental field is what is called non-point source pollution, which is pollution running off all of our yards, off the street and parking lots and things along those lines. Thirty or forty years ago most of the effort was on the wastewater treatment plant, so this is all coming out of the Clean Water Act many years ago. They obviously vary in their nature and what we are really looking at is that non-point source issue and everything is being driven by what is called a TMDL, a Total Maximum Daily Load. I see a couple of heads nodding but I assume this is a fairly foreign concept. By and large, the waters in the state of Delaware, the Broadkill and the inland bays, the two of them are not meeting the water quality standards that DNREC has met. So what they do, and it is usually PhD's running these really complex models, is come up with what I refer to is a pollution diet. In order for this water body to be swimmable, fishable, etc., it can only take 1,000 kg of nitrogen a year, or whatever that quantity might be. Then they back into allocating that load to different sources. It's a difficult science, but that is what is driving a lot of this right now. In the Broadkill they actually had a Tributary Action Team several years ago that dealt with agriculture, septic systems, etc. to find out what needs to be done for these pollution diets. The National Pollutant Discharge Elimination System is the regulatory driver. I won't go much further as I could really go on a tangent about this, but basically in Delaware many urbanized areas, for which there is a legal definition, are already covered by these storm water permits. Why Eastern Sussex County hasn't gotten into it yet, as developed as the area is, my guess is the more seasonal nature lowers your overall permanent population pool, but I suspect it is not a matter of "if" but of "when". Sooner or later it will come to Lewes, and I compliment the Board for getting a head start on some of this which is what the project we are working on will do. The plan has what is commonly called the Six Minimum Controls; two of them deal with the public involvement. One of the great things about coming to Lewes is that is has very actively involved citizens. Darrin mentioned the sump pump disconnect program which is an illicit discharge. The construction and post-constructions controls are really deferred to the conservation district which has the preview over storm water management anywhere in Sussex County but there is still some municipal tie-in with that. What is called Pollution Prevention are really your own facilities. What is interesting to Lewes, regarding the City and the Board, the City has a maintenance yard as far as I know and is responsible for the roadways, so that would have to be some

sort of joint permit, but this is a ways down the pipe. A storm water utility is often implemented because of a municipality covered under one of these permits so yet again the Board is ahead of things. The Water Quality Assessment that we are going to be doing through the wonders of GIS tools and mapping, we are going to divide the City into various sub-water sheds and calculate what the impervious cover is under each one. It's pretty intuitive, and typically the more impervious cover you have the more problems you have. What we are going to do is pick one sub-water shed to hone in on a little bit more for a little more focused work and do some field evaluations and superficial soil permeability testing. I know Pilottown has that one storm pond. Where we are right now on Second Street there are no storm water controls and all that run off basically goes totally untreated and unmanaged right out to the canal. One of these days that is probably going to have to change. What the general intent of the project is to start getting our arms around how that would get addressed in Lewes. There are always right of way issues; does the City even own land to put something on? If not, can the City buy the land? Are there easements that can be obtained? You want to infiltrate storm water as much as you can and the soils in Lewes are usually fairly favorable, but what we are going to try and do is identify a pilot to use to create a conceptual study and do a final report. This is one of the conditions to get that grant. We would be looking at what the drainage areas are, what are the levels of pollutants being removed, and trying to quantify this stuff as best we can. The bottom line is we will try to use that as a foundation to create a more holistic way to be managing storm water in the city limits. I am happy to answer questions.

Joe Hoechner, Pilottown Village:
Does your survey include the new development going out at Canary Creek?
David Athey answered no. Anything built more recently…part of the problem with Lewes is that it does have some age to it and you don't know a lot of what is there. A plan built recently or anything under construction right now there are checklists that need to be followed and the plans are there. We are happy to do it, but frankly I think it is a waste of time to send people out there to survey what we already know is there. Plus developers, at least for the storm water basins, have requirements. I should also say when we met with Darrin after our first week of work, and tried to project where the budget would be to get all 600 inlets, we decided to concentrate on the areas where we don't really know what is going on. Bay Avenue is a good example as it was recently reconstructed and we have the plans so it doesn't make sense to go back there.

Jim Sleasman, Pilottown Road:
What kind of pipe is preferable in this soil?
David Athey said corrugated metal pipe, which I know is prevalent in Pilottown Village, does not have the longevity that it was claimed to have had. The pipes in Pilottown Village look pretty good. I know DelDOT is spending significant dollars within their budget to in the future repair a lot of the corrugated metal pipe culverts. To answer your question, it is really more what do you not want to use. So concrete pipe, and developers love ADS as a plastic one. It is still kind of new but state DOP's use it as well and compared to concrete it is a snap to use. You can pick up a twenty foot section with a back hoe. With concrete you can only pick it up in very small sections, but concrete is a little more tried and true. Plastic is definitely an acceptable alternative and developers love it.

Preston Lee said this year is the beginning of establishing the storm water utility to get it up to the same level and on par with the wonderful job the Manager has done with the electric utility and the water and sewer utilities. The storm water has been more reactive than proactive and this is the beginning of that effort to try and our arms of what we have and what we have to maintain. The study that Dave is conducting right now is the basic information we need to know. We didn't really know everything that we owned and what kind of condition it was in and what its capacities were, and we weren't keeping our eye on the ball as far as future regulations as well as we could have. Tonight is the kick off for that effort. As you can see we have gotten a pretty good start with the work that has been done to date. Hopefully going forward we will be just as proactive with the storm water as we have always been with the other utilities by budgeting manpower and money and scheduling things ahead of time rather than just responding to requests from people. I think the General Manager has done a fabulous job with the support of Duffield Associates. Thank you very much.

Jim Sleasman, Pilottown Road:
I have two questions. We were discussing the run off on Ocean View from Pilottown Road. It actually comes off the Rollins property the way the elevation is there. It is actually washed out underneath the electric and telephone boxes. There is gravel all over the road. The City fixed that as far as the street was concerned I think about four years ago. It runs off as gravel and dirt and is just going to tear the road up more. A culvert or something would redirect it back to the Tax Ditch or straight down and further away from coming underneath these homes because it is causing water damage in the crawl spaces. How would you approach that? Is there someone we can contact? Can they re-grate it?
Darrin Gordon said that is lot of questions there that sitting here just having heard about it. We would have to go explore it.
Jim Sleasman *said my second question is I know we talked a year ago, but I am still getting calls about sill in the ponds and people coming down and throwing dirt down holes without assessing the cause and I thought we were not going to do that. Are we going to assess what is going on before we start throwing dirt in? The dirt ends up in our pond. You have really been doing well and I appreciate it. There is a nice structured approach to the whole thing and I applaud that. There are still these little things that pop up occasionally.*
Darrin Gordon said are we talking about sinkholes? We have found a new product and I think it was you who gave me the idea. It is kind of like caulk. We have been using that. We have repaired a whole bunch of stuff out there. Some of it has been because of the caulking need, and some of it has been because of cavities and things under there that are sinking and settling over

time. There is that balance and we will continue to stay on top of it as we have the ability to come out there and dig things up.

Dave Ennis, Harborview Road:

I would like to elaborate a little bit on Mike's comment. We have acquired two homes in fifty years, and both of them have been at the bottom of a hill. My question has to do with not just the analysis of the piping in the ground, but where does the storm water start? My impression from Mike's comment is that they start outside the city. I am not sure if the consultant's energy or effort has been focused on this, but I have been led to believe that the Canary Creek starts on the other side of Route 1 behind the Wawa. I don't know how far back from Route 1. That headwater carries an awful lot of development and hard surface that has been put in there the last twenty or thirty years. One of my questions and concerns is a few years ago we had a very strong concern about a shopping center that was going to be a lot of hard surface out on King's Highway and we now have another development over by the Canary Creek that is being proposed. If that water runs off into the Canary Creek at the bottom of the hill, will that not then mean a backing up process to the homes in Pilot Town Village and further up the creek. I don't know if there is an engineering answer to that, but it seems to me that the more you build at the bottom, you are going to end up having water coming down from the other end and it's not going to go anywhere. Is there any logic to that?

Darrin Gordon said no because the bottom is the ocean. The Point Farm which is at the bottom of the hill is pervious, it has taken all of that, but when that goes it goes into the groundwater and into the marsh and into the ocean. That is your bottom level and that is where it's going. All of that water is seeking that low point. Now the stuff that is coming from up here, all of that has to have some avenue of getting there and that poses concerns. One of things that we have asked Dave to look at is the watershed and where it comes from. We can't get into the minute, tertiary waterways, but on a larger scale we can look at that and see what effect we have coming from places. With where Mike is at, we can't really control what is outside of our jurisdiction and we know there is a lot of influence there.

Dave Ennis *said the only question I was going to raise was there is a working agreement I believe between the City and the County. There is a letter of understanding or memorandum of agreement. It seems to me that the construction in the County, in this case the Point Farm, that those discussions could be evaluated as to their impact on runoff to give the community that is already having a problem with the Canary Creek bridge being overrun with water. It's hard to imagine that it won't compound that problem. There is apprehension down there by the people who have to go across that bridge.*

Darrin Gordon said I would simply say that we have our construction requirements that say they have to build according to the storm standards of Sussex County. Those are our standards as well. They will have to satisfy all of those regulations, and there are storm water requirements in there.

James Richmann said two questions to add to Dave's comment. As I heard Dave describe it, it was not just an issue with the storm water, it was the non-point pollution that might come with that storm water based on those pervious surface areas that are outside the city. The one comment that I would make is on the construction, the Soil and Conservation District, and Mr. Athey will know this, still has to approve those construction plans regardless of where they are building within the County. Lewes has never applied for a permission from the State of Delaware to have ability to review its own construction plans for storm water runoff, therefore we also use the same Soil and Conservation District approach. If you are outside the County, you don't have a choice, you will use the Soil and Conservation District. Municipalities have a choice; they can apply to the State of Delaware, but for a town of our size it has never seemed necessary to do that.

Dave Ennis *said one quick observation and conclusion. Knowing that this is a fishing village, I don't know if any of you read the DNREC fishing reports, but there is a statement on the DNREC fish consumption report that suggests something like you should eat one fish a year caught in the Lower Delaware Bay. And I am not joking, I am just deeply concerned that the runoff that Jim just mentioned is a consequence of an awful lot of not knowing about what is happening and that runoff is going out into the Delaware Bay and I just wanted you to be aware that there is a quick pro quo between the engineering aspects and the livable aspects. DNREC does have some very detailed discussions about what you should and should not eat out of the Delaware Bay.*

Darrin Gordon said one of the statements that Dave finished with is just that very fact. Right now all we deal with is water quantity. We are soon going to be faced with water quality. That is exactly what you are talking about and exactly your question and when that comes to play, we are going to have to be able to maneuver and change, and the way we do this business is going to change. I don't know where it will go, what we will have to do, or what it will cost. But it's coming. Thank you – your point is appreciated.

Mike Tyler, 10 Drake Knoll:

The water that is coming into my property is from the City, it is not from outside the City. It is coming from the circle and King's Highway. I think what Dave is talking about, and you said quality, but I think it is cumulative impact. We have to look at what is going on out there. We can't just look at one site and say it's taken care of , it is a cumulative thing, just like that Point development and whatever developments happen. It's all over. You have to have a global look here, you can't just look at us in a vacuum.

5. Adjournment.

Candace Vessella thanked everyone for coming out this evening and participating in our Storm Water Workshop.
Meeting was adjourned at 8:13 PM.

Respectfully submitted,
Stephanie Moyer