Welcome to today's webinar on Asset Management! We are going to explore the question about asset management: Is it the Wave of the Future, or the Bridge to the Past, or Both? Before we get started, let me introduce the NHDES Asset Management Team to you (next slide)

I am Sharon Rivard from the Wastewater Engineering Bureau. I have been with DES for 19 years now and 16 of those years have been spent in the WWEB. I will be starting off the webinar talking about the link from the past to the future and the role that asset management plays in that link along with why we need asset management!

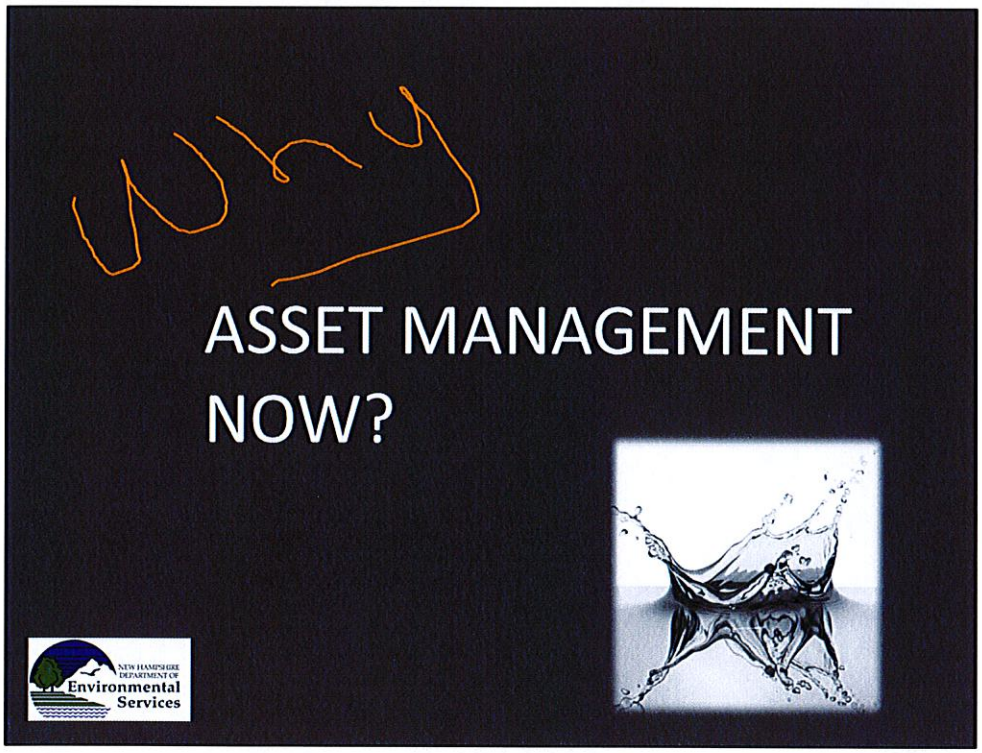
Luis Adorno from our Drinking Water and Groundwater Bureau will explain the reasoning to why you need asset management now rather than later! Luis has been with NHDES over 2 years now and prior to DES, Luis spent 6 years working for the City of Laconia putting asset management into practice.

Following Luis, Barbara McMillan of the Watershed Management Bureau will demystify stormwater for us. Barbara has worked for DES for 20 years, with 16 years of that time helping manage the state's stormwater. I hope you will all have several "ah-ha" moments as you listen to Barbara as she describes the various stormwater assets commonly found in NH communities and explains why and how asset management is a critical tool for these assets.

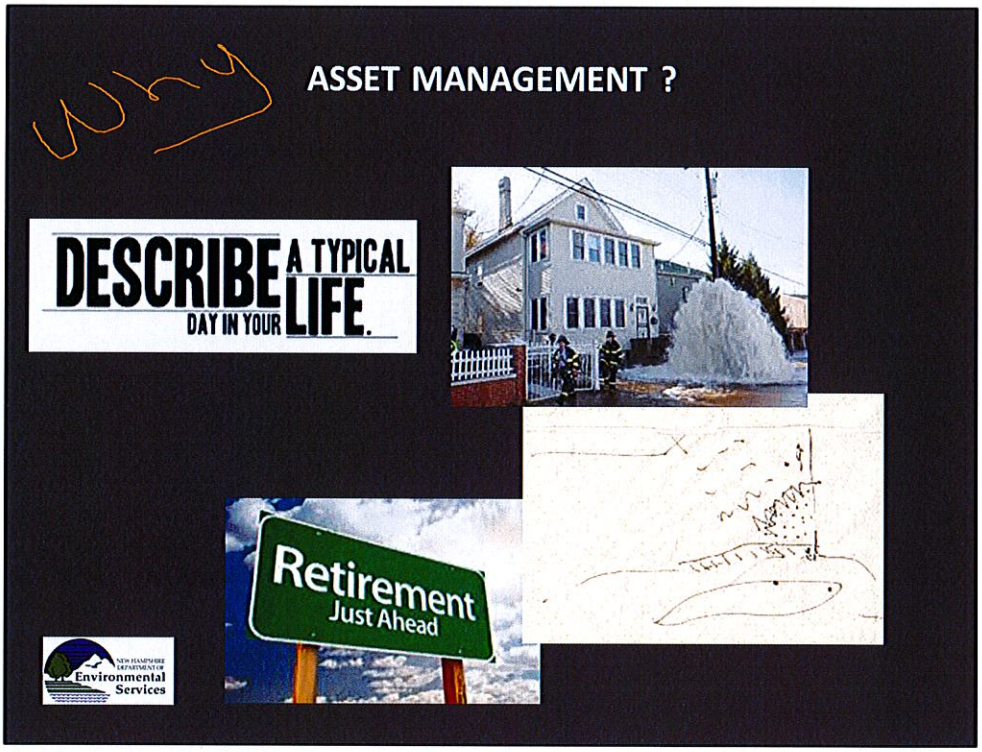
We are at a critical junction in time. So much of our water infrastructure was constructed in the two decades after the Clean Water Act was passed in 1970, with many of our wastewater and drinking water treatment facilities now pushing 40-50 years of age. Our pipe infrastructure is even older, some pipes are older than 100 years! I'm sure you have all heard the phrase, "out of sight, out of mind". This is certainly true for buried pipes. If we are going to successfully manage, maintain and replace our water infrastructure that is critical to the lifestyle we all take for granted, we cannot take the wave to the future without building the bridge to the past. Today, we are going to show you the importance of the link between past and future and we hope to convince you that asset management is the tool...or the time machine...needed to bridge that connection.

At the same time that our infrastructure is reaching the end of its useful life, our dedicated public works employees are retiring at an unprecedented, although predicted, rate. For years now, we have all been hearing about the retiring baby boomer generation and the issues that will create. Asset management is a critical tool that can capture the knowledge in the heads of employees before they retire, making asset management the bridge between past and future!

The wave of the future is critical if we want to provide clean drinking water and healthy natural resources to our children and grandchildren. The wave of the future means that we need to take care of the valuable assets we constructed in the past that protect both public health and the environment.



Asset management is not just a tool that provides you with a snapshot of your inventory, their condition and their locations. Asset management is a framework you can use as a model for running your business. And yes, publically-owned water infrastructure assets can and should be run as a business!



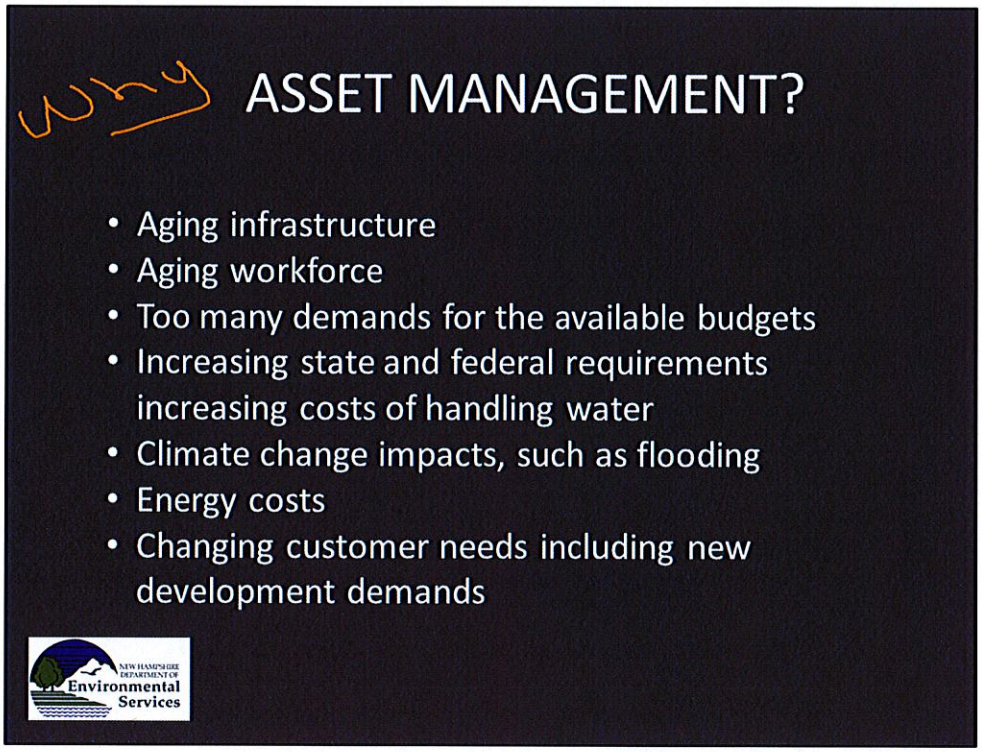
If the following describes a typical day in your life, then we are here to tell you that asset management is a MUST in your near future.

1. You average 5-7 pipe breaks in a month;
   Or sewer overflows every time it rains;
   Or your culverts wash out regularly with high flows;
   Or your water and wastewater operators are pulling their hair out and asking for more duct tape and prayers so they can keep
   that pump installed in 1976 running for another year. (Click)

2. You can't find the shutoff valve for the latest pipe break because the records are suspect at best, if they even exist anywhere but in your 60-year-old operator's head. (Click)

3. And by the way your foreman just told you he is retiring next year…or worse, next month…

Do these scenarios sound familiar? You are not alone…(next slide)



So let's list the reasons why asset management is a critical tool you need ~~now~~...

Click each and read:

1) Aging Infrastructure – as I mentioned earlier, our water infrastructure is old and needs attention! (Click)

2) Aging Workforce – We have a significant brain drain in our workforce as we go through this wave of baby boomer retirements. We must capture that knowledge as much as possible before it is lost. (Click)

3) Too many demands for the available budgets – This is one area that if we learn to run water, wastewater and stormwater utilities more like businesses, we can close the gap on this issue. Asset management plays a critical role in determining how wide the gap is between "needs" and "available budgets" and can help support data-driven decisions that align with the predetermined Level of Service Agreement. (Click)

4) Increasing state and federal requirements increasing costs of handling water – We come to expect cleaner and cleaner environments. We have dealt with "the easy stuff" and now, we are dealing with the "hard stuff" which is also the "expensive stuff". By identifying critical infrastructure and knowing the level of service desired by your customers, asset management can help you take a step back and assess the big picture as you move your community forward on meeting these demands.

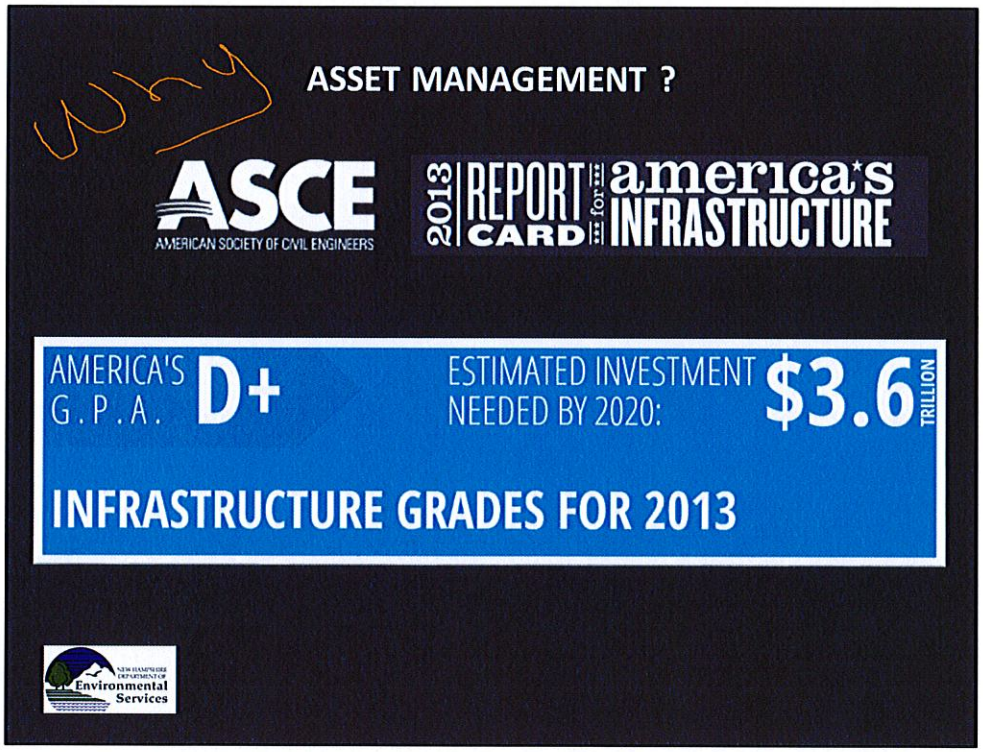
(Click)

5) Climate change impacts such as flooding can be another driving factor for developing an asset management program. Again, Asset management provides both a big picture look at your infrastructure as well as detailed data about each inventoried asset. Barbara will talk more about flood impacts relative to asset management. (Click)

6) Energy costs play a critical role in the life cycle cost analysis that is part of a good asset management program. Energy costs over the life of a piece of equipment may be orders of magnitude higher than the capital needed to replace an old, inefficient piece of equipment. (Click)

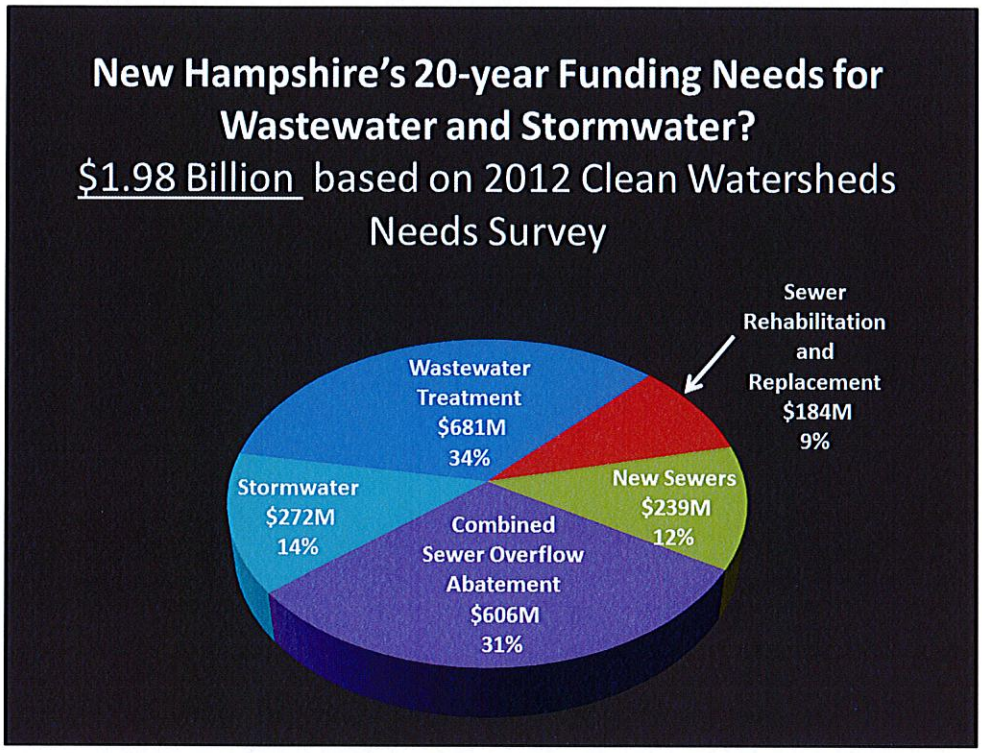
7) Customer needs change over time. We have seen more push for development of land that was previously considered undesireable. A developed asset management program will help determine the best development approach for a community using data driven decision making. The asset management program will help guide decisions such as appropriate connection fees and user fees that will help the utility be sustainable. The other critical piece of changing needs over time is to develop a level of service agreement with your users and revisit that agreement on a regular basis. Have you had the conversations with your users to understand their needs? Or, like most communities, you have assumed what the needs are and have skipped having those conversations. Have the conversations...they may surprise you!

After looking at this list, you may be thinking that you have more questions than answers or, are just totally overwhelmed with it all. Over the next few slides, we may continue to overwhelm you just a little more...and then we will start breaking it down, step by step to hopefully give you a feeling of hope and a direction to start.



Those kinds of scenarios are part of why America's infrastructure scored a D+!

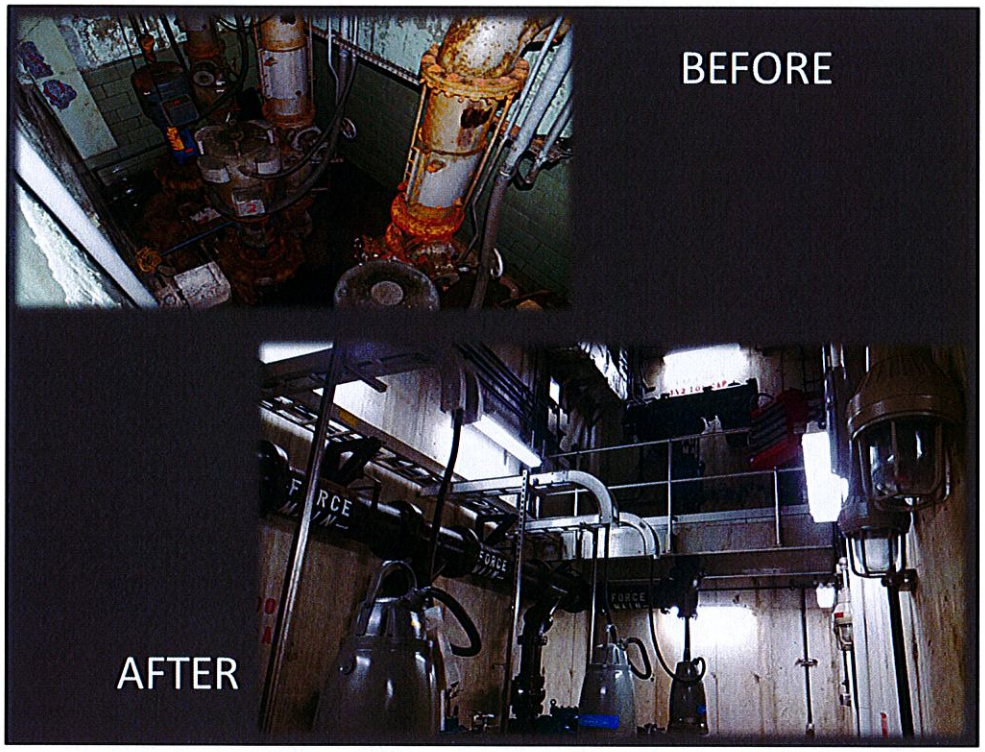
This kind of report can be completely overwhelming and paralyzing (but it is reality- which we will speak about it more in this presentation)! But where do we start? Next slide…



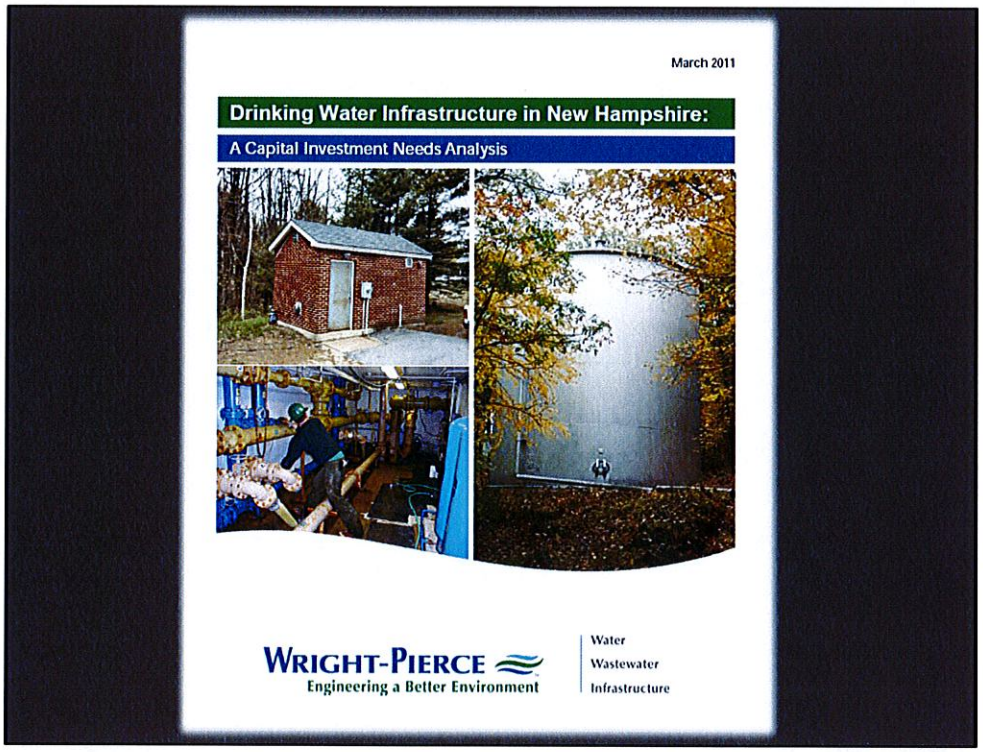
First, to get started, we can identify the needs of NH communities!

Back in 2012, NH's Wastewater and Stormwater needs totaled about $2 Billion...so this is a LITTLE bit less overwhelming than $3.6 Trillion!

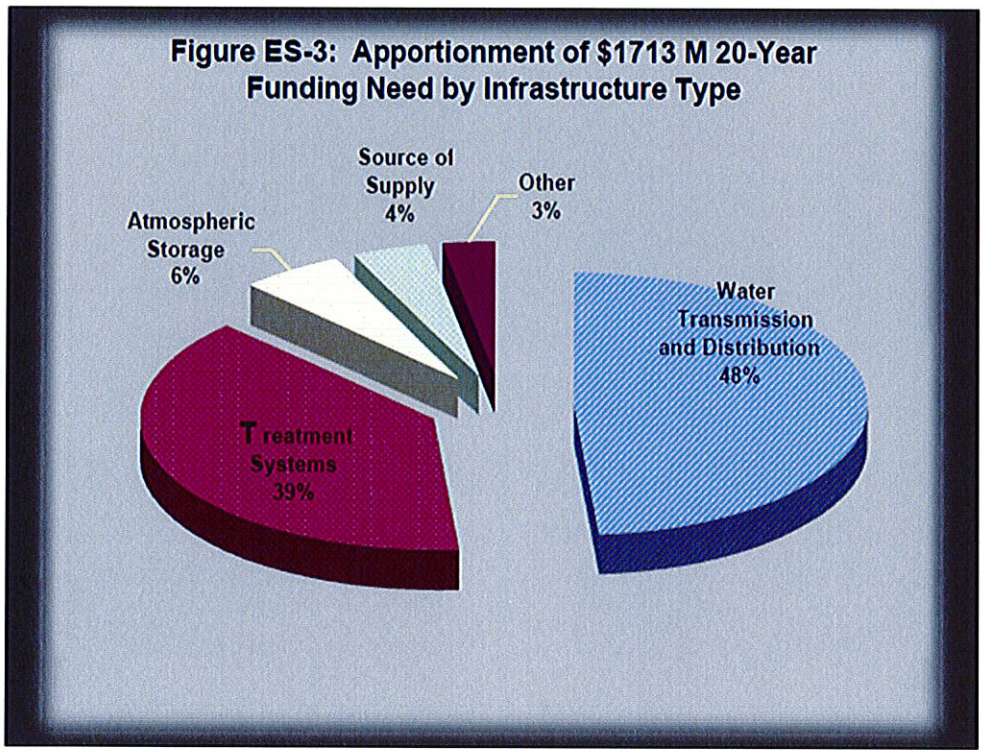
The projects included in this survey were only projects that were identified in reports and other documents that met very strict criteria. Due to this, we estimate the actual wastewater and stormwater needs of NH communities to be, in reality, higher than estimated over the next 20 years.



Worn out systems like this account for much of the wastewater needs in NH. Nutrient limits being added to NPDES discharge permits are causing the treatment needs to escalate as well. These are photos of some of these very real needs for the wastewater infrastructure...and those needs being met!



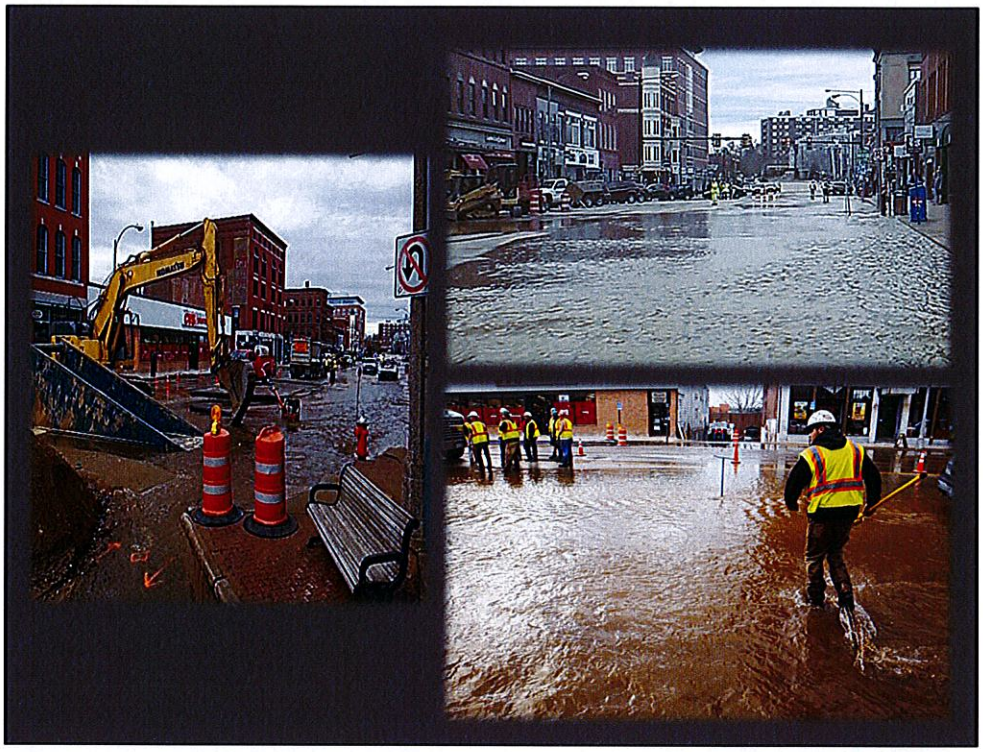
On the drinking water side, in 2011, Wright-Pierce was hired to conduct a study of the drinking water infrastructure needs in New Hampshire. The results…next slide



The results of Wright-Pierce's study are shown here. So, here is another $1.7 Billion we need to come up with over the next 20 years. That makes close to $4 billion just for wastewater, storm water and drinking water. Now, we are all overwhelmed!

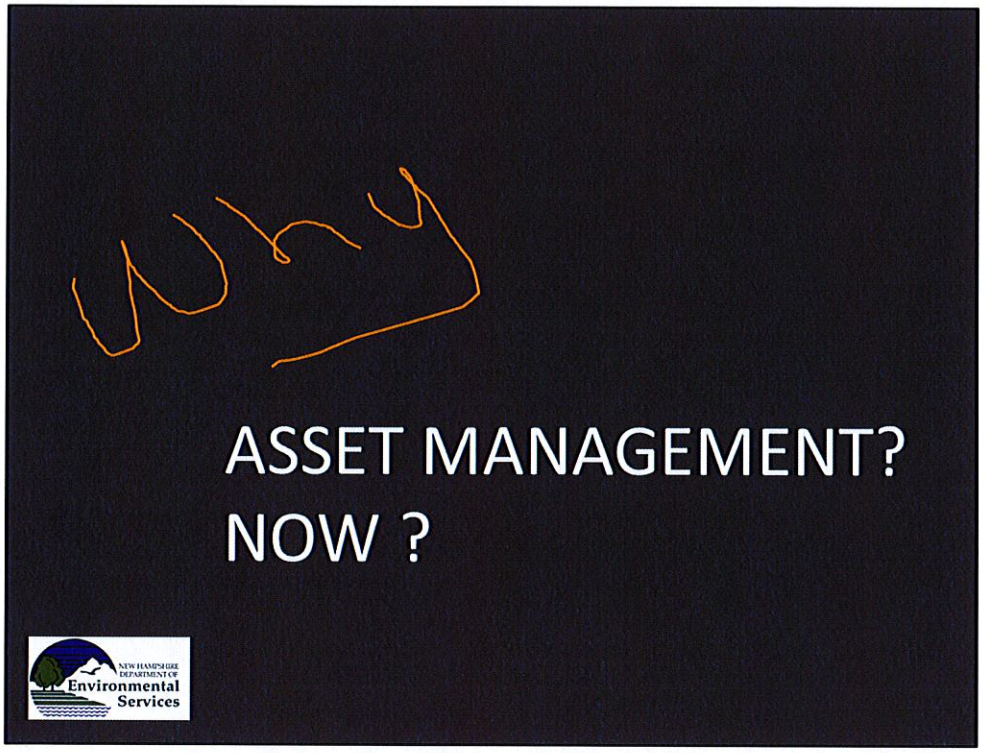
As you saw in the previous slide, almost 50% of the drinking water needs are in the distribution and transmission system...or the pipes in the ground! Here is just a sampling of the damage cause when a water main breaks.

The same level of damage can happen wither culverts washing or sewers breaking.



And while this looks like a flood from a big storm, this is actually flooding caused by a broken water main on Main Street here in Concord.

These impacts are have a tendency to cost 3 to 4 times more than planned pipe replacements, which puts a huge burden on your budgets and causing other implications within your systems. (next slide)

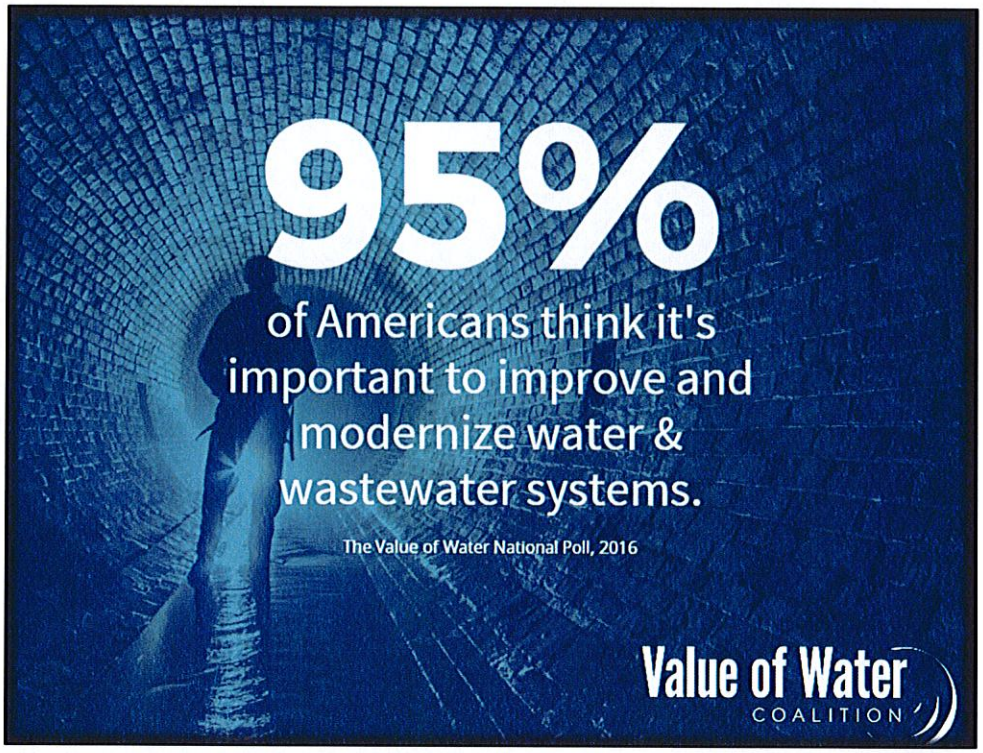


Do you still need to ask "Why Asset Management?"

When you start looking at it, the why is pretty simple. An asset management program can be the time machine that ties the past to the future.

The question should be Why NOW?! To answer this question, I will turn the presentation over to Luis Adorno.

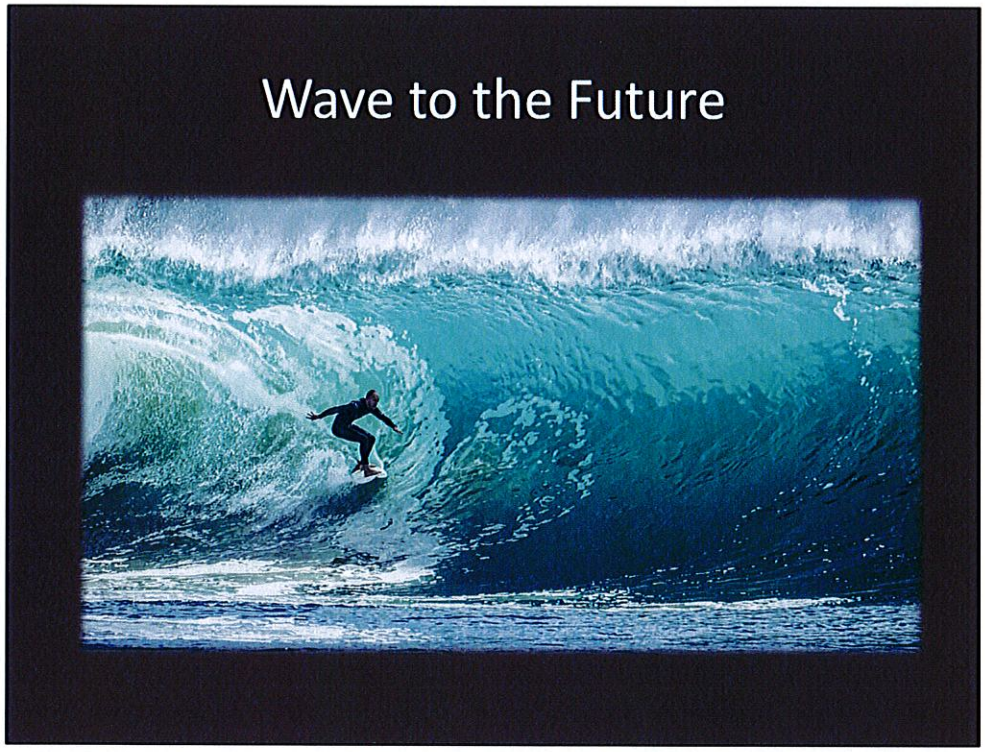
Thanks Sharon!
As Sharon mentioned why now!!! While I could provide you with dozens of reasons for the why now (as illustrated from Sharon's presentation starting with the report card and the many of billion of dollars that will be needed to improve the infrastructure) I'm actually going to provide you with a different statistic and that is (next slide)



95% of Americans think it's important to improve and modernize water and wastewater systems... February 25, 2016 The Value of Water Coalition released their latest poll...

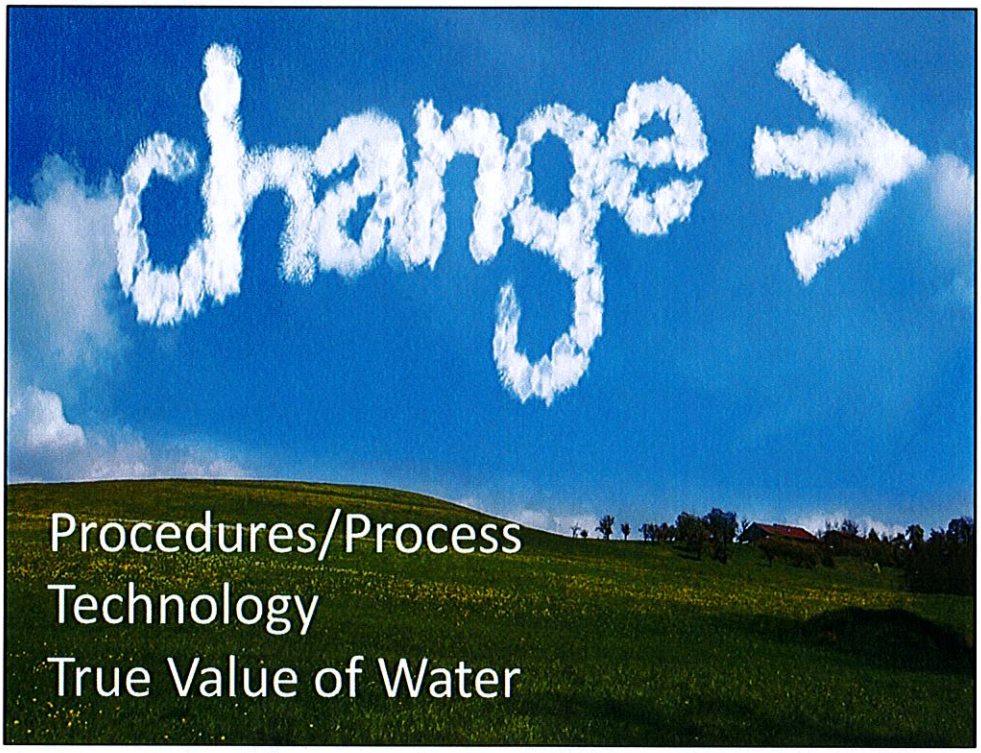
Unfortunately, this poll did addressed stormwater but our experience is that although the percentage is not as high, people are also starting to think about the stormwater infrastructure.

Asset management is the system that can lay the foundation to do just this. (Next Slide)



As this slide suggests, we must ride this wave and continue the conversation on why we need to modernizing and updating our infrastructures. (next Slide)

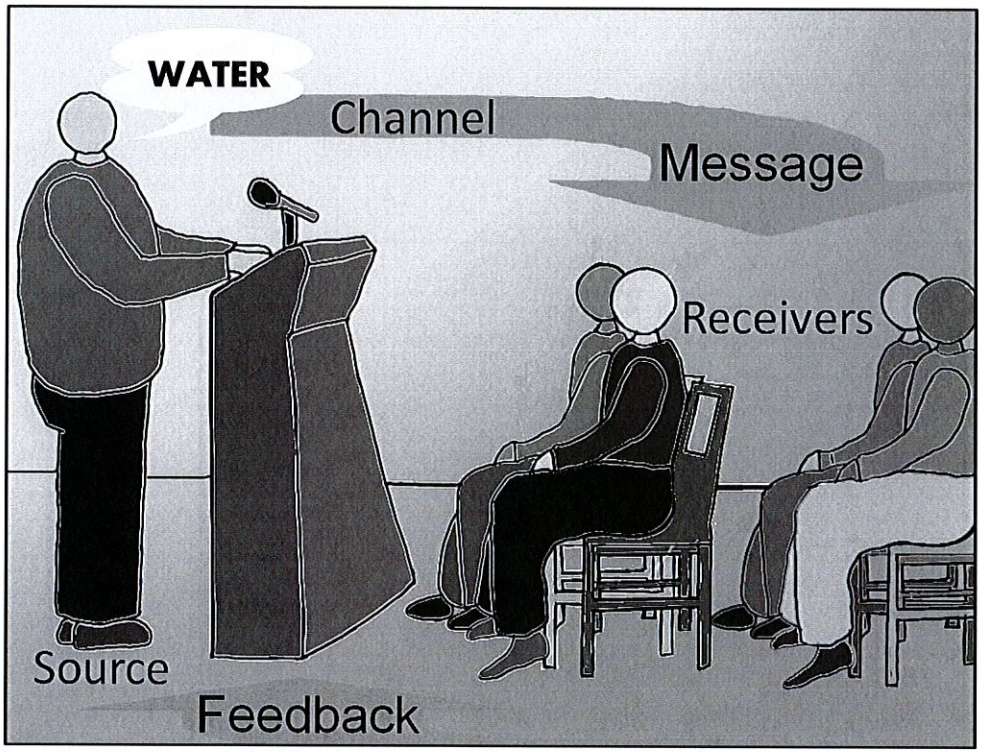
Industry wide we truly need to make equipment changes, but we must expand our horizons and not minimize ourselves to just equipment and physical assets. (next slide)



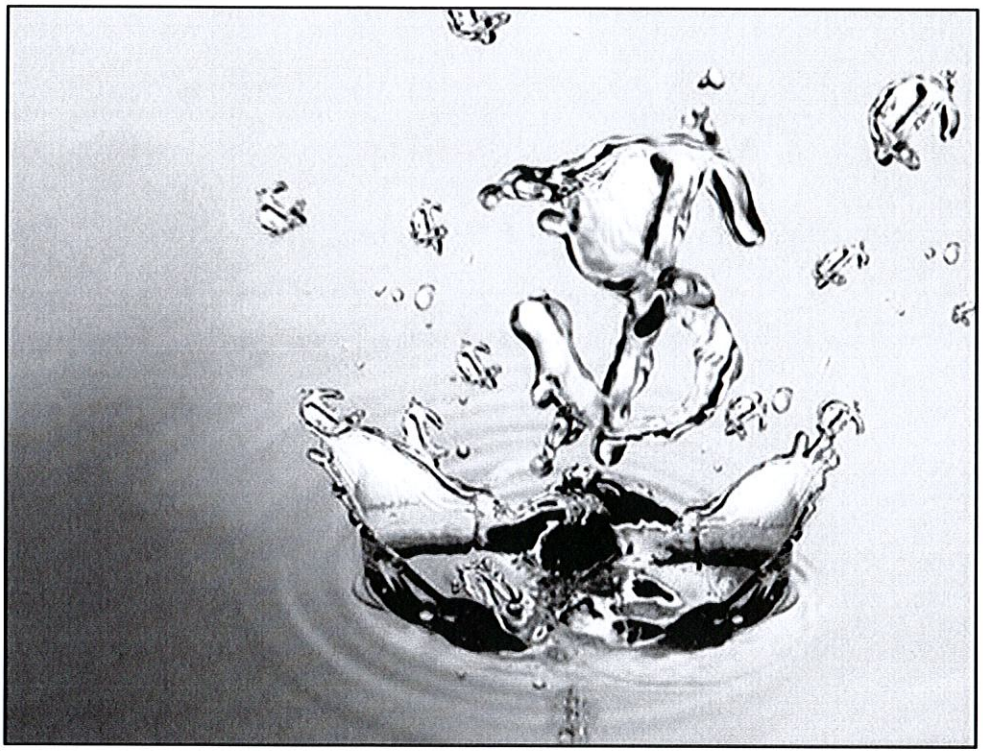
Changes must occur on other levels such as: (click)

- Procedures and process- We need to make sure that all of the regulatory requirements are met but more importantly to provide the level of service that your community expect. Recent events have forced the issue for more regulations and more oversight that communities are conducting proper techniques when it comes to safety. (click)
- Technology- Here again Technology will aid in assuring that we are meeting regulatory standards such as better testing for contaminants. But technology will also aid with attracting new skilled employees to transition the ageing task-force that your community may be experiencing as Sharon mentioned previously. The industry has moved into a new era in which technology is connected in almost every aspect of what we do. (Click)
- And last but not the least and that is the "True Value of Water"- We need to have an honest and sincere conversation on the true cost of water (and this is for all drinking water, wastewater, and stormwater). This maybe the most challenging change proposed as we have fallen into a cultural believe that "water is free".

- The poll conducted by the value of water coalition showed us that if you are willing to talk and provide the proper reasoning for water upgrades people are ready to listen (next slide)



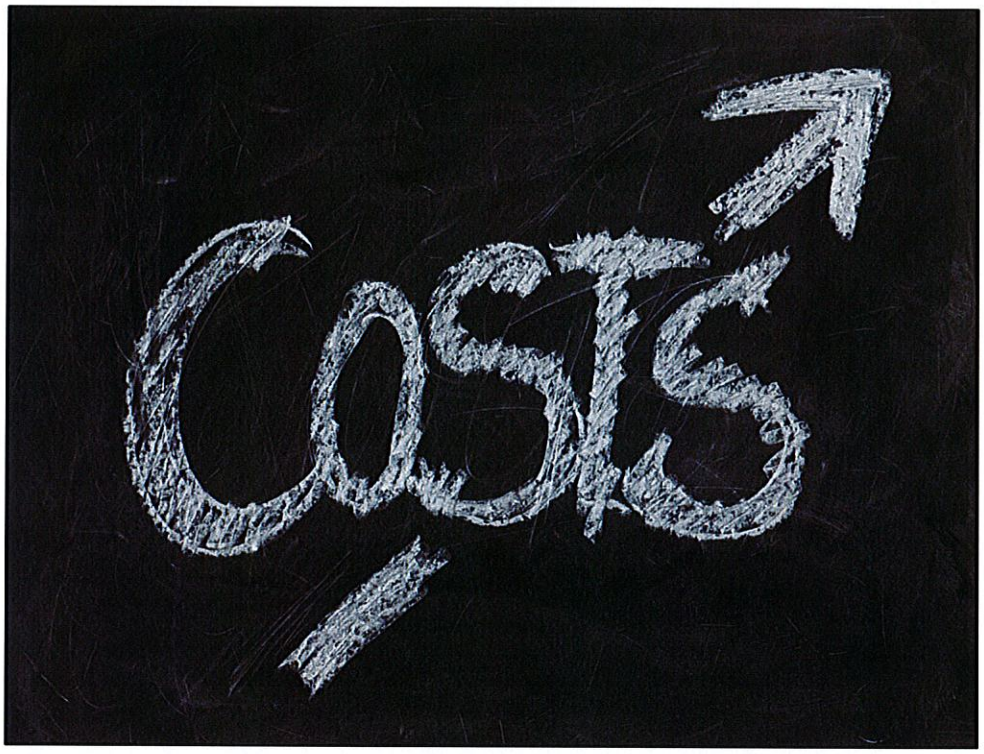
This slide here says it all. Now that we have people's attention (apparent from the value of water's poll), this is a perfect opportunity to hammer in the message that our water infrastructure is in need of repairs. The message should be clear and precise.... (Next Slide)



How much? How much what you may ask? How much are people willing to pay for water?

Let me take that statement back and rephrase the questions and ask How much are they willing to pay for the service to collect, treat, provide, and re-collect the water at the convenience of their home…. As a consumer myself, I want the best at the most affordable cost. And there is no difference with your residents at your communities.

But you have to ask yourself:(next slide)

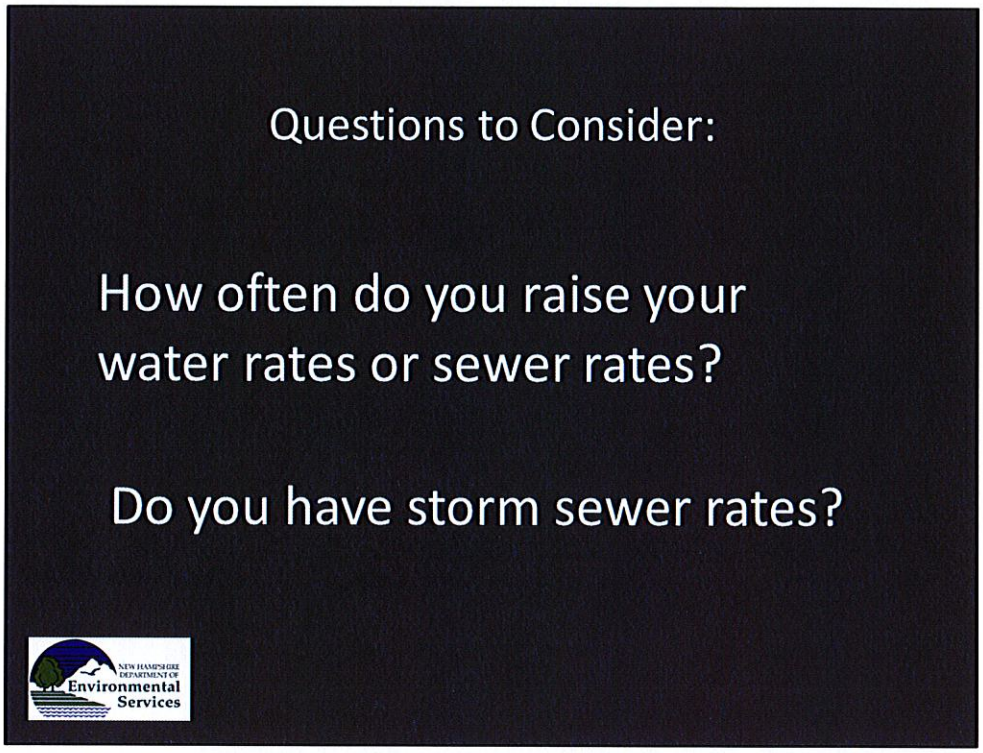


Well we all know the answer to this question is a **resound YES**!

The way to offset these costs is to use An asset management program to validate your request and need to increase the cost of your service by providing data to support your decision.

I recently heard from a community that raises their water and sewer rates each year to match the inflation rate. While this is more of an outlier scenario, I personally think that it creates for a better situation with the customer as the increase is not force upon to them all at once.

It is well documented that when communities waits to raise their rates, they end up getting more pushback from the users. (Next Slide)

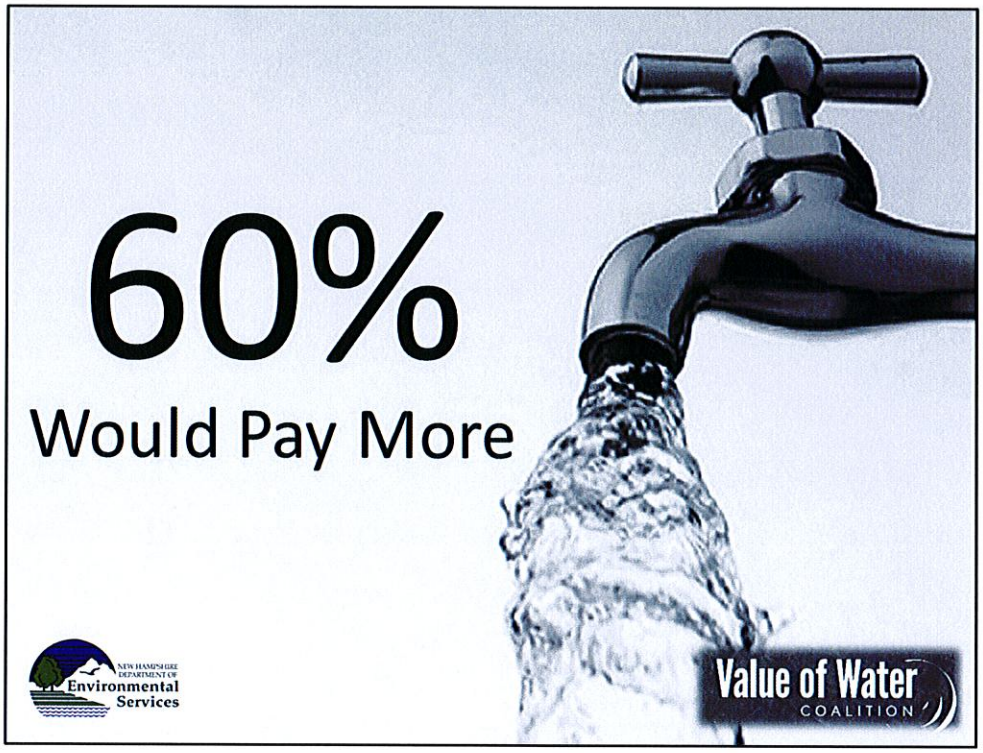


Here are some question to consider:

Most often, the answer to the first question is "not often" or maybe "once every 8-10 years". And the reasons for why this prices have stayed artificially low vary from community to community. Unfortunately, I have not heard a reasonable excuse for this action. (Click)

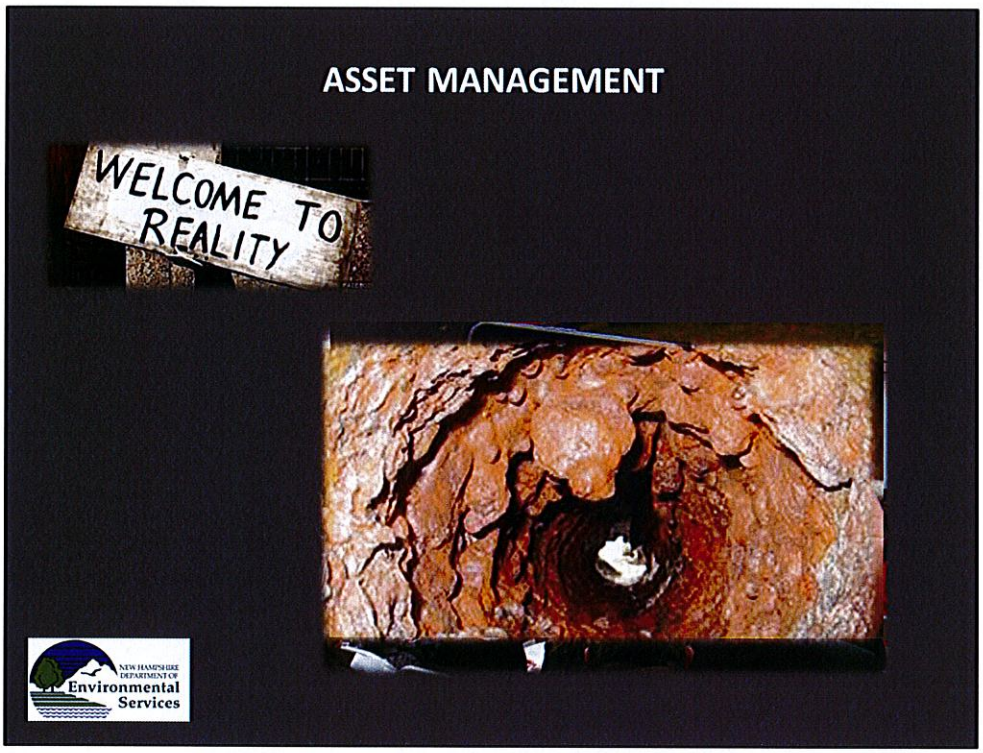
Most often, the answer to the second question is a resounding "no"!

I hope you recall that slide where 95% of the people polled from the Value of Water Coalition think we should improve our water and wastewater systems and I mentioned how impressed I was with this statistic. (Next Slide)



What I find even more impressive, is that 60% of these folks, have said that they would pay more to do so. Now you may say that there is a 35% drop between people acknowledging that improvements must happen and the folks that are willing to pay for these improvements but when you think about where we were just a few years ago, in which water and their infrastructure were not even in peoples thoughts, I say we have made a huge improvement.

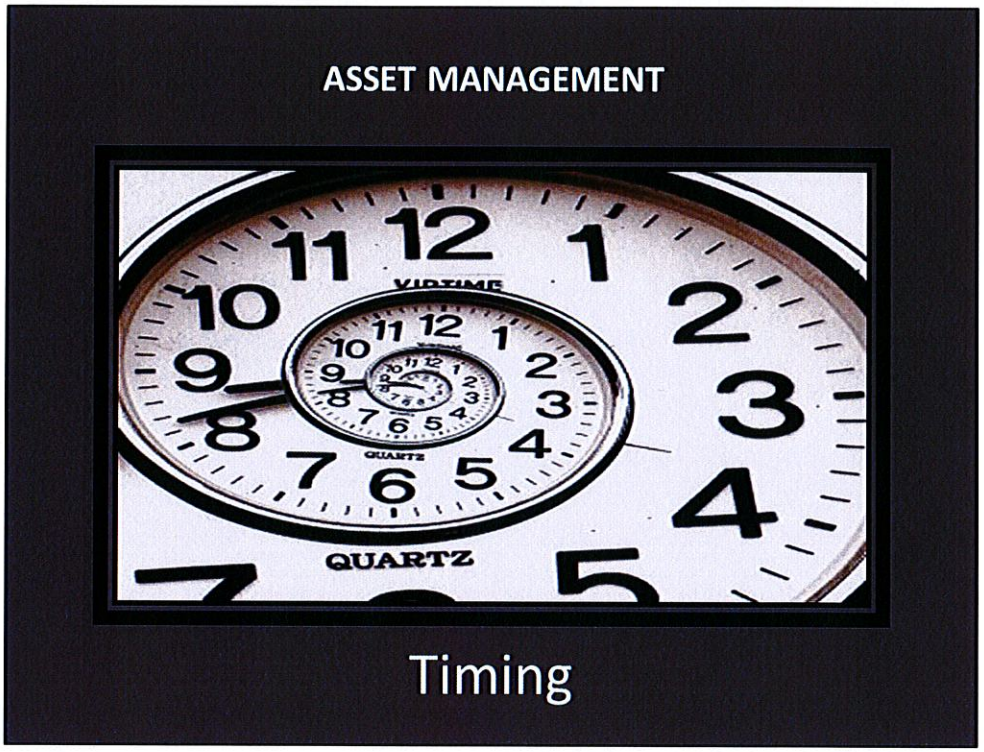
But here again, it will take for communities to ride this wave and continue the conversations regarding what it's going to take to move our infrastructure from the D+ report card to a B or even higher (next slide)



But the reality is that in order for you to have this meeting with your board (click), constituents, and customers, you must be well-informed.

What I mean by this is that you must have (click)

- recent and accurate data, that will illustrate what you own and the location of the assets(click)
- It also tells you the condition of your assets and
- most importantly the life cycle cost which tells you the true cost to repair or replace the assets as it reaches its life expectancy. (next Slide)



Again, the timing is now, not only for the fact that people have expressed the interest to improve the water infrastructure but we have other drivers that will expedite your decision on AM implementation. Such as(next slide)

The current financial assistance that the state have to offer.

From the drinking water and groundwater we have
- DWSRF Grant (and I will tell you a bit more about this on my next slide)
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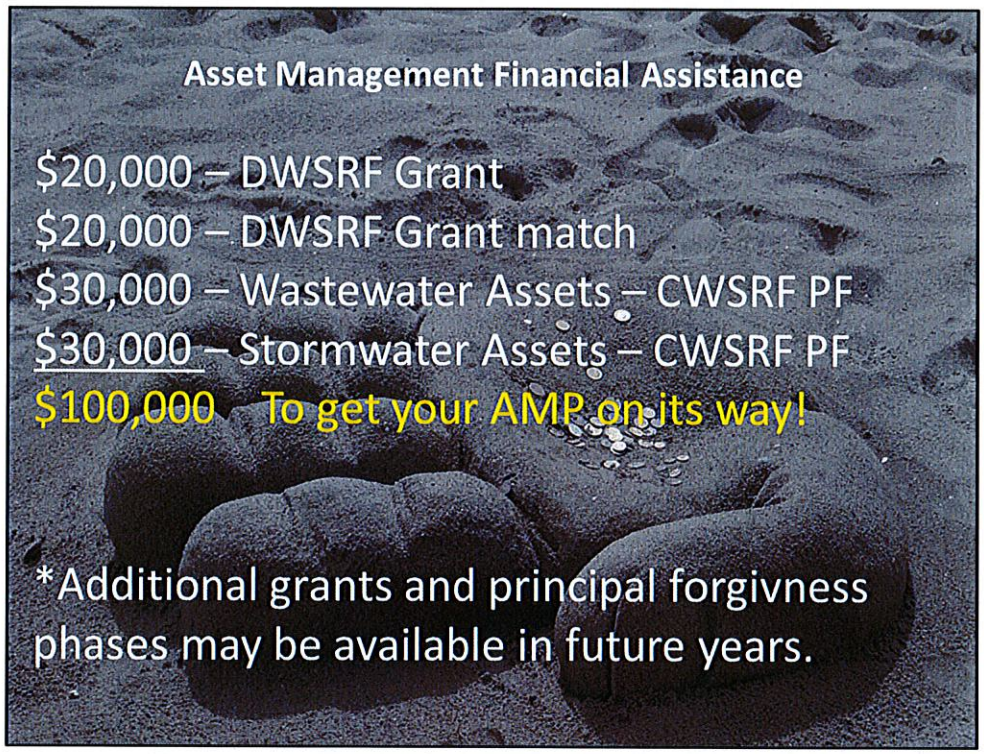


I previously mentioned to you that the Drinking Water and Groundwater Bureau has a Grant:

The Asset Management and Financial Planning Grant, which now it is currently in its 5th round and it has helped over 40 communities to implement or further the development of programs throughout the state.

1- This grant is a 100% matching grant up to $20K- (Click)

I also mentioned to you that the Clean Water State Revolving Fund has some financial assistance for the implementation of asset management. Unlike the Drinking water where we are providing grants, the Clean Water is offering principal forgiveness on SRF Loans.

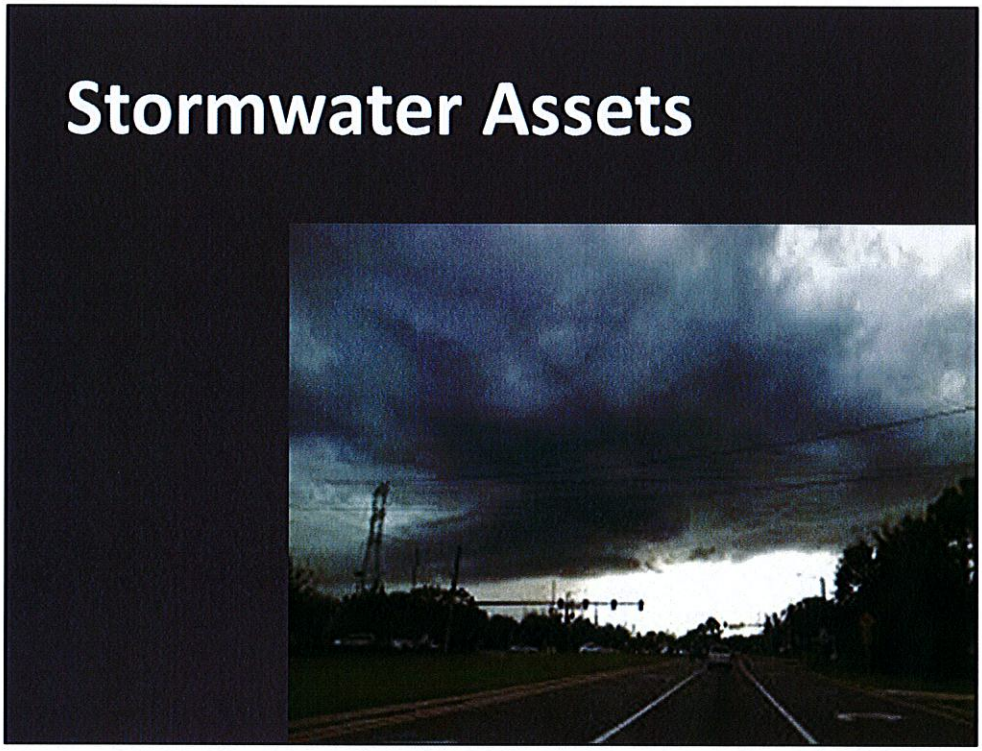
1- The Wastewater is providing up to $30K dollars in forgiveness on loans for asset management*

2- The Stormwater is providing and additional up to $30K dollars in forgiveness on loans for stormwater asset management*

When you look at the entire financial assistance package, you have up to $100K for the implementation of asset management as a community.

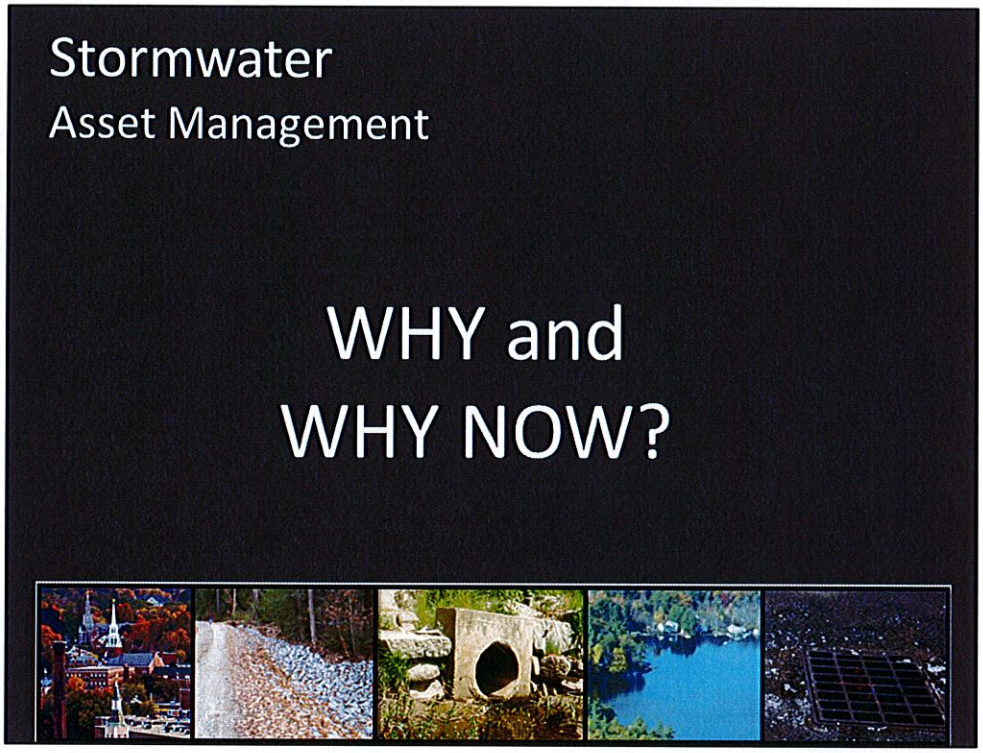
*Communities may qualify for multiple phases of wastewater and/or stormwater principal forgiveness with a pre-approved phasing plan.

Now that I have provided you with reasons as to why now!! and I have also provided you with ways to pay for the implementation of a community wide asset management lets talk about a bit more about the Stormwater infrastructure. (Next Slide)



Everyone understands drinking water and wastewater assets. They are actually pretty simple when you think about it! For drinking water, you have a source to protect, you have pipes and possibly pumping from the source to treatment to the end users or, if you are lucky, directly to users without treatment. For wastewater, you have pipes and pumps to collect the wastewater from the users and deliver it to the treatment plant for reclamation. And then the treated effluent is put back in the rivers or ground water to be used again. Fairly simple, right?

Stormwater, however, is the new kid on the block...not really though since we have had stormwater around since the rains first began as Noah filled the Ark! We just haven't been paying attention to stormwater and many of us wonder what exactly is "a stormwater asset"? This is not always an easy question to answer so Barbara McMillan will help to demystify stormwater and show us why stormwater should be included in an asset management program.



As Luis and Sharon keep reminding me:

"people don't buy what you do, people buy why you do it" And I think this couldn't be more true with stormwater than anything else. I am going to talk about some reasons why we should be thinking about stormwater asset management and why we should be thinking about it NOW.

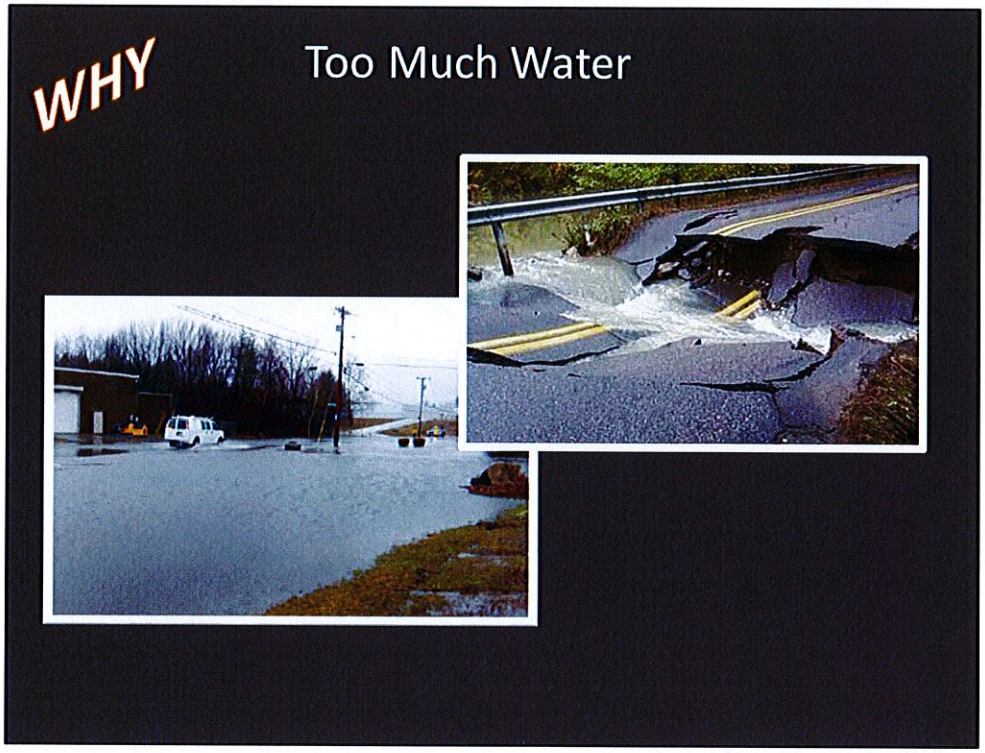
So why should Stormwater Asset Management matter?

As with drinking water and waste water, the WHY for doing stormwater asset management ties into the service you provide customers – but your customers don't **drink stormwater** or **flush it** so it is hard for them to actually relate to stormwater. There is-no-real end user that can identify with stormwater.

However there are plenty of reasons Why Stormwater Asset Management is crucial in all municipalities. A good place to start is thinking about how stormwater impacts your residents and businesses. Stormwater runoff can cause two big issues:

- **The first** is that there is too much water – more water than our natural systems and even our manmade systems are designed to handle. Like this photo in downtown Manchester during the mothers day flood that is totally overloading the stormwater system.
- **The other big problem** with stormwater is that it carries pollution. Anything on the ground can get swept up and carried away with

stormwater.



These are some of the impacts of too much runoff.

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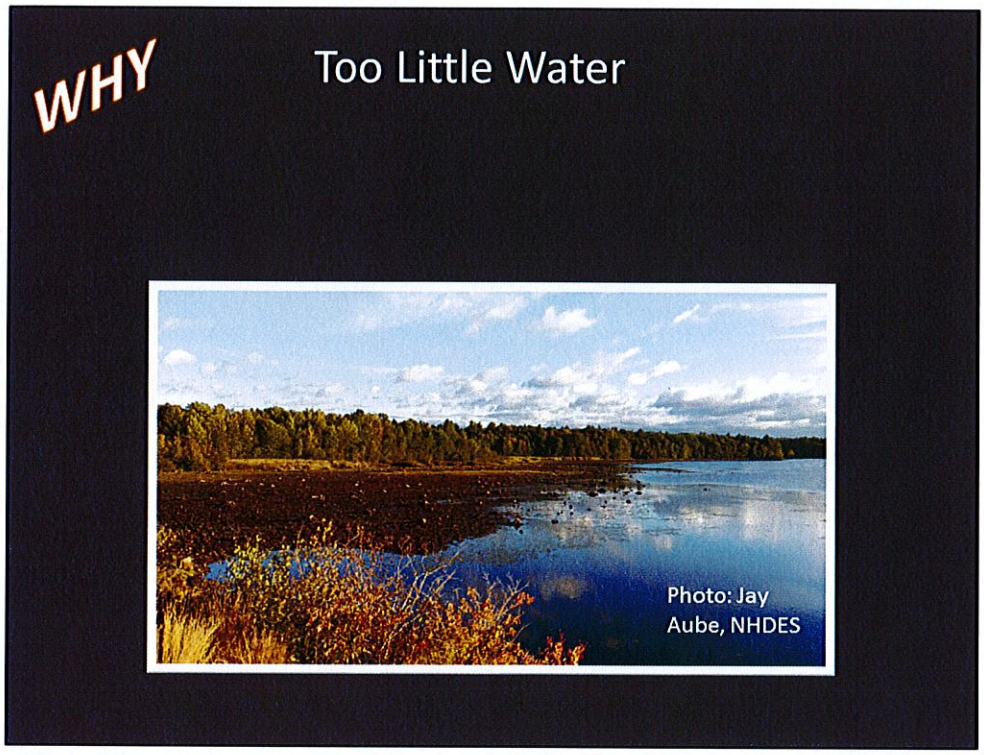
- Flooding is an obvious effect damaging homes and businesses and closing roadways as you see in this Nashua photo.

- **Also** when we have more hard surfaces that create more runoff and combine that with more frequent and intense storm events, all of a sudden our bridges and culverts become undersized. This can undermine the road and cause a lot of damage.

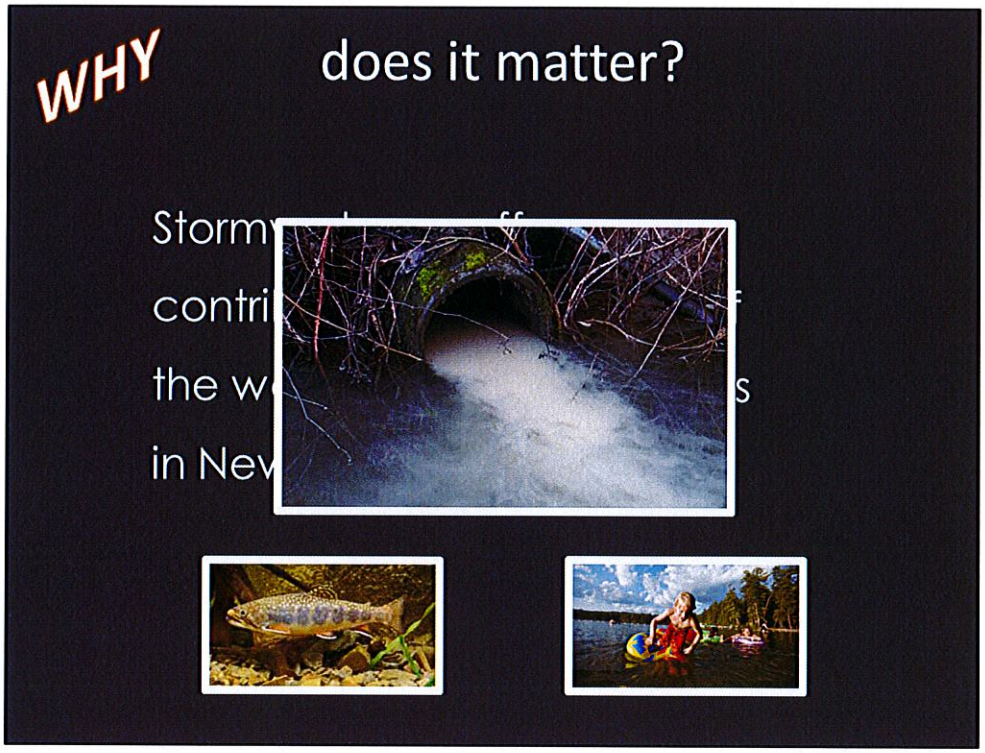


And one other impact that is difficult to see is the reduced groundwater recharge. When all of the rain runs off of hard surfaces and into our waters, it doesn't soak into the ground. This can exasperate drought problems for individuals and communities that use groundwater as a source of drinking water.

This is a drinking water source for Portsmouth this past summer - the Bellamy Reservoir.

Stormwater transporting pollution is the other problem I mentioned.

- Whether stormwater **runoff flows** over **the ground** or down the road and directly into a surface water or it goes into a **catch basin** and is then piped into a surface water,
- the result is going to be the same… **Polluted stormwater**.
- any possible pollutant on the ground is swept up in the stormwater and carried –It could be pet waste, excess fertilizer, exposed soil, gas or motor oil on the roads – it all ends up mixing with the stormwater and then flows or gets piped UNTREATED – into nearby surface waters.
- We basically lose the filtering capacity that soil and vegetation can provide to <u>treat</u> some pollutants.



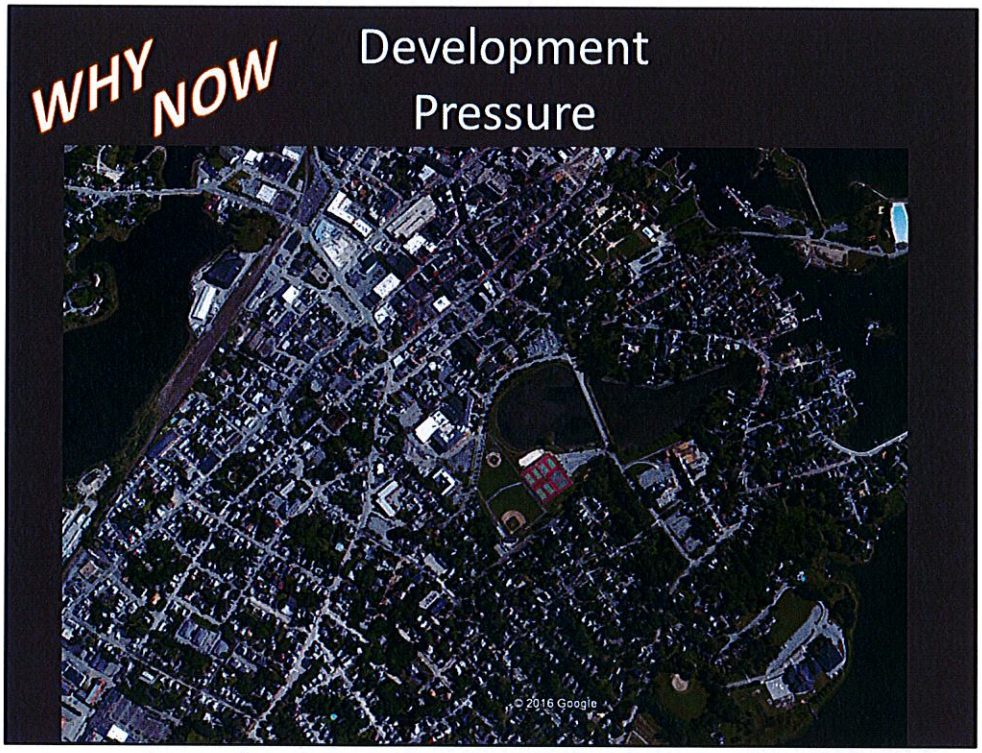
So why does it matter? Why do we care?

If we take a look at the big picture of how clean and healthy our lakes and streams are in New Hampshire, if we look at the data, we see that stormwater management (or the lack of it) has an enormous impact on water quality.

Stormwater runoff causes or contributes to over 90% of water quality impairments!

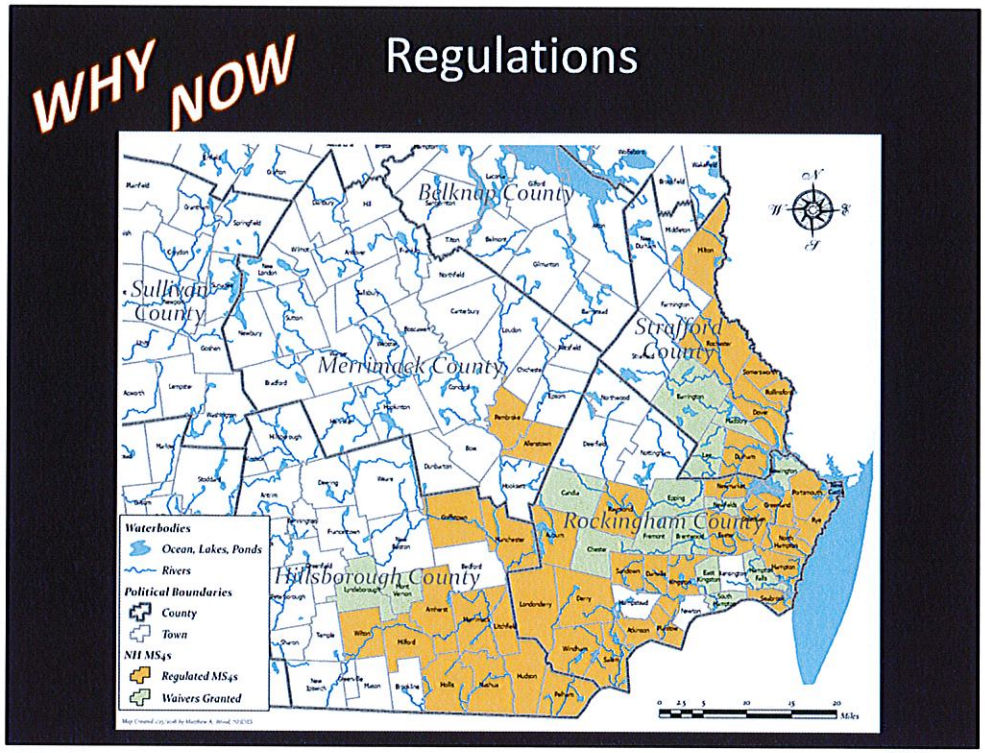
Some waters are not **healthy enough** to support the fish populations that should be there – **and some** are not clean enough for us to swim in without risking getting sick.

And then there is the demand for **safe** and healthy water for recreation like swimming, boating or fishing, and associated tourism. We are learning more and more about the stormwater connection to clean water.



So, why should we be thinking about stormwater asset management now more than ever? As we think about taking stormwater management into the future we need to **look at population growth and development** as putting added stress on your stormwater system AND the water quality.

- Studies show that when the impervious surface in a watershed or drainage area is more than 10%, area streams become impaired.
- At more than 25% impervious area, we see extreme habitat and water quality impairments. This is Portsmouth NH with the Great Bay to the right, which is impaired for Nitrogen - North Mill Pond in the left upper corner is impaired for nitrogen, bacteria, chloride and more.



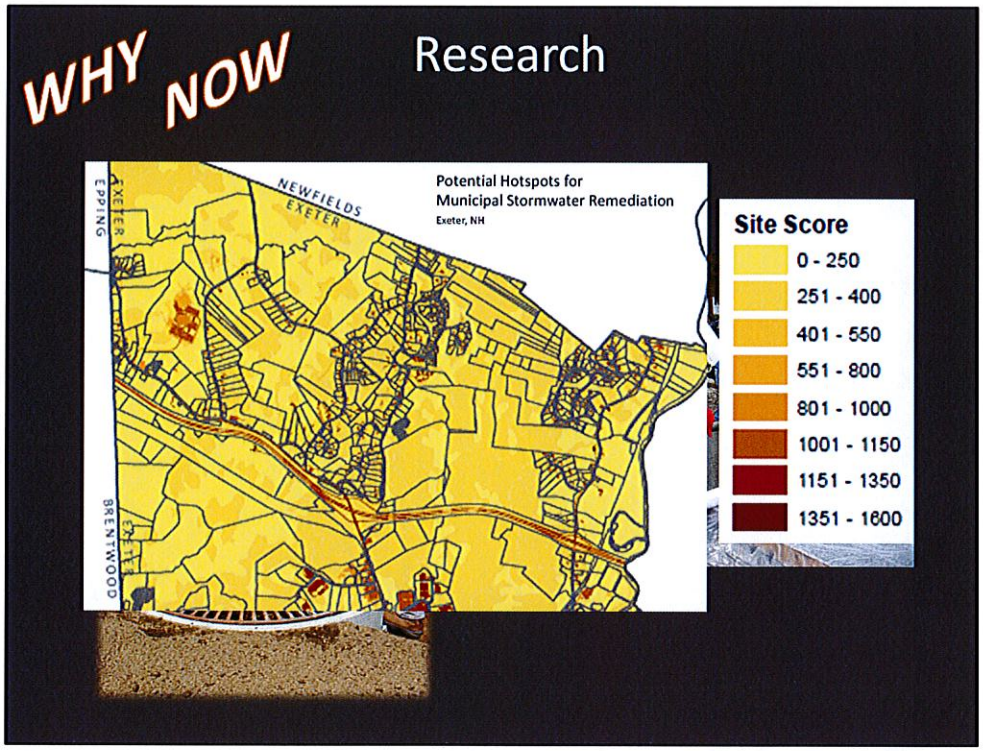
Existing and NEW regulations are another reason to start thinking about stormwater assets now.

EPA has started taking a closer look at municipal stormwater operations and their impacts to water quality.

As you look at this map,

- the orange highlighted towns and cities are the 40 New Hampshire municipalities that need to meet the New Federal stormwater permit requirements (known as MS4 or Municipal Separate Storm Sewer System).

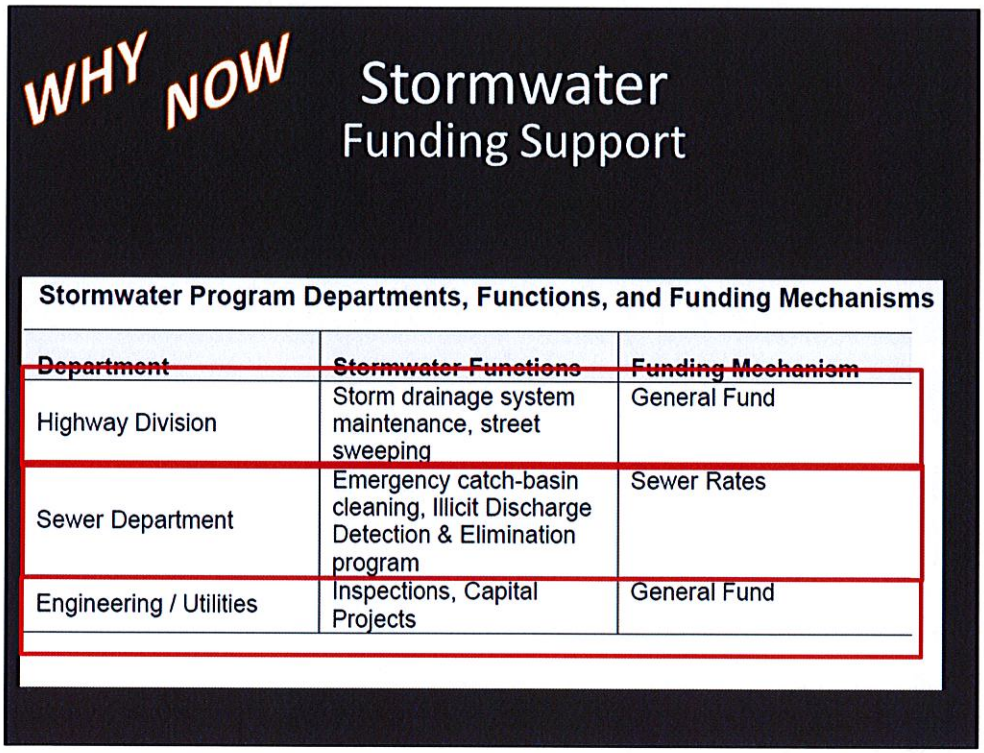
- The green towns are the 15 who have waivers currently, but may fall under this permit in the future. The permit requires that they map their stormwater systems including outfalls (basically know where they are) - and plan for how they will reduce polluted stormwater entering nearby waterbodies from their stormwater systems. Asset management can be a huge part of that.



Recently, there has been a ton of research done on how to best manage stormwater. In the past, we were focused on quickly piping our stormwater away from development - but we have found that there are unwanted consequences to doing that. **So now** we are looking at a different future for how we handle stormwater – trying to infiltrate it when possible.

There is constantly new technology and science to evaluate best management practices for managing stormwater like this tree box filter and pervious pavement that are being installed.

There are also new decision and planning tools like these Hot Spot maps from UNH Stormwater center - that look at the potential pollutant loads, soil type, and proximity to waters. A high site score (brown) indicates where there is the most risk of contamination to waters from TSS, N or P – therefore the best place to remediate a problem or get the biggest bang for your buck.



As with wastewater and drinking water and because of all the previous "whys" I have talked about, the cost of managing stormwater has increased dramatically.

However, as Luis pointed out, unlike wastewater and drinking water, in New Hampshire, Stormwater is not considered a utility in the budgeting process. There are no fees for managing the stormwater from a business or resident's property that you need to treat. And, when looking at a municipal budget, it is very difficult to get public and boards to support your stormwater program. Schools, roads, police and fire. - They all come before funding water infrastructure.

In New Hampshire – we still don't have a stormwater utility. This is an example of how Stormwater is funded in a New Hampshire coastal city:

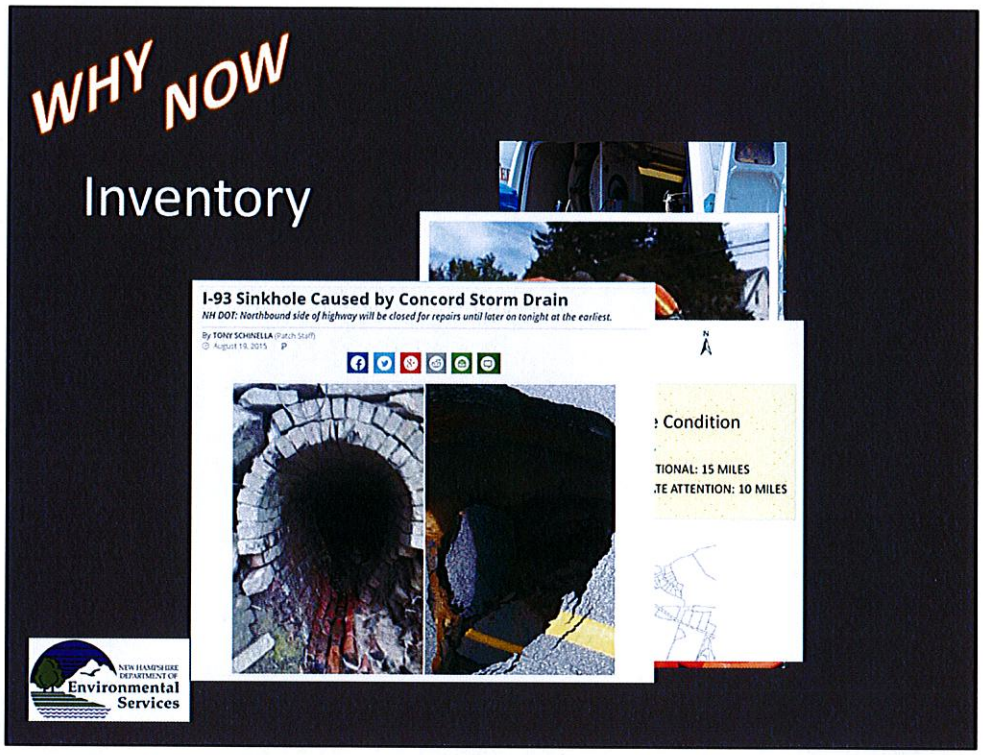
- **funding** maintenance of stormwater system that is implemented by the highway division is funded by the general fund in the city budget – like identifying a % of street reconstruction related to drainage.

- **funding** for stormwater activities undertaken by the sewer dept are funded by the sewer utility fees.

- **and then, funding** for large-scale stormwater improvement projects are funded through the CIP process.

Because of this, it is hard to determine the true costs of the stormwater program (such as: personnel, supplies, capital costs). Understanding this and identifying the connection can be a valuable planning tool to help allocate or secure program funding. It also sets you up better for other funding mechanisms like:

- Grants, Loans (we now provide SRF funding for stormwater infrastructure), Developer contributions, Permit review or inspection fees, Or even a Stormwater Utility fee.



Another huge benefit of doing a stormwater asset management program is that the components of the program's asset inventory provides you with the information to not only plan and budget, but to also promote and gain support for your program.

Through the Asset management process - You will understand what you own: **the location**, costs, and **condition** of your assets. And the maintenance and replacement needs, (as this video being done of stormwater pipes will show) and how **critica**l it is. I don't know if you remember the I-93 sinkhole in Concord last summer.

- It also gives you the data to backup your decisions
- It will assist with creating transparency within your community.

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Understanding the level of service that your residents would like - not just what you think they want or should have, is a huge part of the asset management process.

Some New Hampshire communities have identified their resident's biggest stormwater related concerns to be flooding and water quality **However**, within that, basement flooding is more of a concern than roadway flooding, while erosion is also important in some towns.

The municipal staff in those same communities have identified infrastructure stewardship as <u>their</u> biggest concern. So it is important to look at everyone's priorities.

We also look at the **water quality** and the wants or desires of the residents. Water quality falls under this especially with health and recreation. There is nothing more valuable than the local public beach or a great fishing spot.

With this information you can now demonstrate and communicate how

valuable your stormwater program is.

The way it stands with communication now is that. . .

The reality is that the timing couldn't be better. **The learning** curve is **getting** less steep and communities are starting to increase awareness, and your **residents** and businesses are starting to understand what stormwater is, how they impact it, and are even working to help you manage your stormwater in some cases.

Knowing what you have for stormwater management, what it costs, and communicating that will help you get the support you need to pay for your stormwater program.

Skip this

Key is to manage the stormwater in a sustainable manner through their lifecycles from the planning to decomissioning in order to meet the level of services goals while optimizing costs and minimizing risks.

Infrastructure:
Maintenance:

- Catch basin cleaning
- Storm sewer pipes and culvert inspections and cleaning
- Ditch and channel maintenance
- BMP maintenance – bioretention, tree box filters,
- Even curb and gutter maintenance

Regulation and Enforcement:

- Code enforcement
- NPDES permits
- State permits
- Local regulations

Emergency Management:

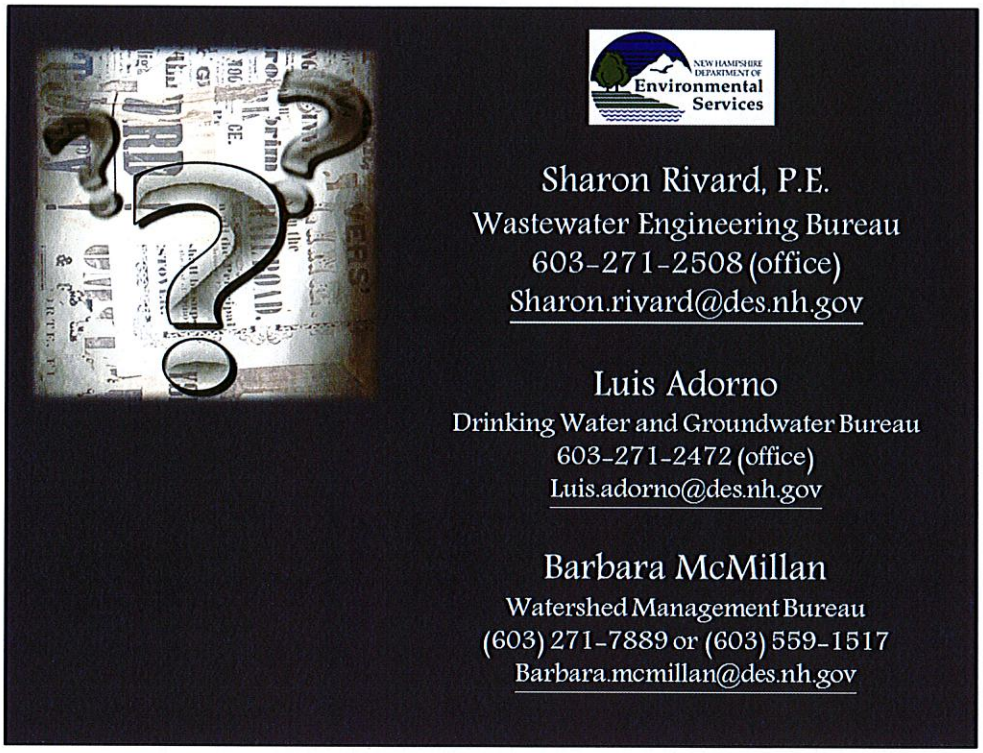
- Septic inflow (IDDE)
- Flooding

There <u>are differences</u> between stormwater and wastewater and drinking water assets. But they can all be included in one asset management program.

Stormwater may have a bit of a sordid past and some catching up to do but we see an exciting future of planning and managing the three infrastructures together.

They all need to understand and meet the expectations of the client in providing safety and clean water.

The wave of the future is critical if we want to provide clean drinking water and healthy natural resources to our children and grandchildren.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Questions????????