

Water in Rye

November 8, 2017

**Rye Water
District**



**Eversource/
Aquarion Water**



**Portsmouth
Water**



Private Wells



Who are the Water Suppliers

- Rye Water District
- Aquarion / Eversource
- Portsmouth Water
- Private Wells

Rye Hydrology

What Impacts our Water

- Storm Water Run Off
- Bacteria
- Landfills

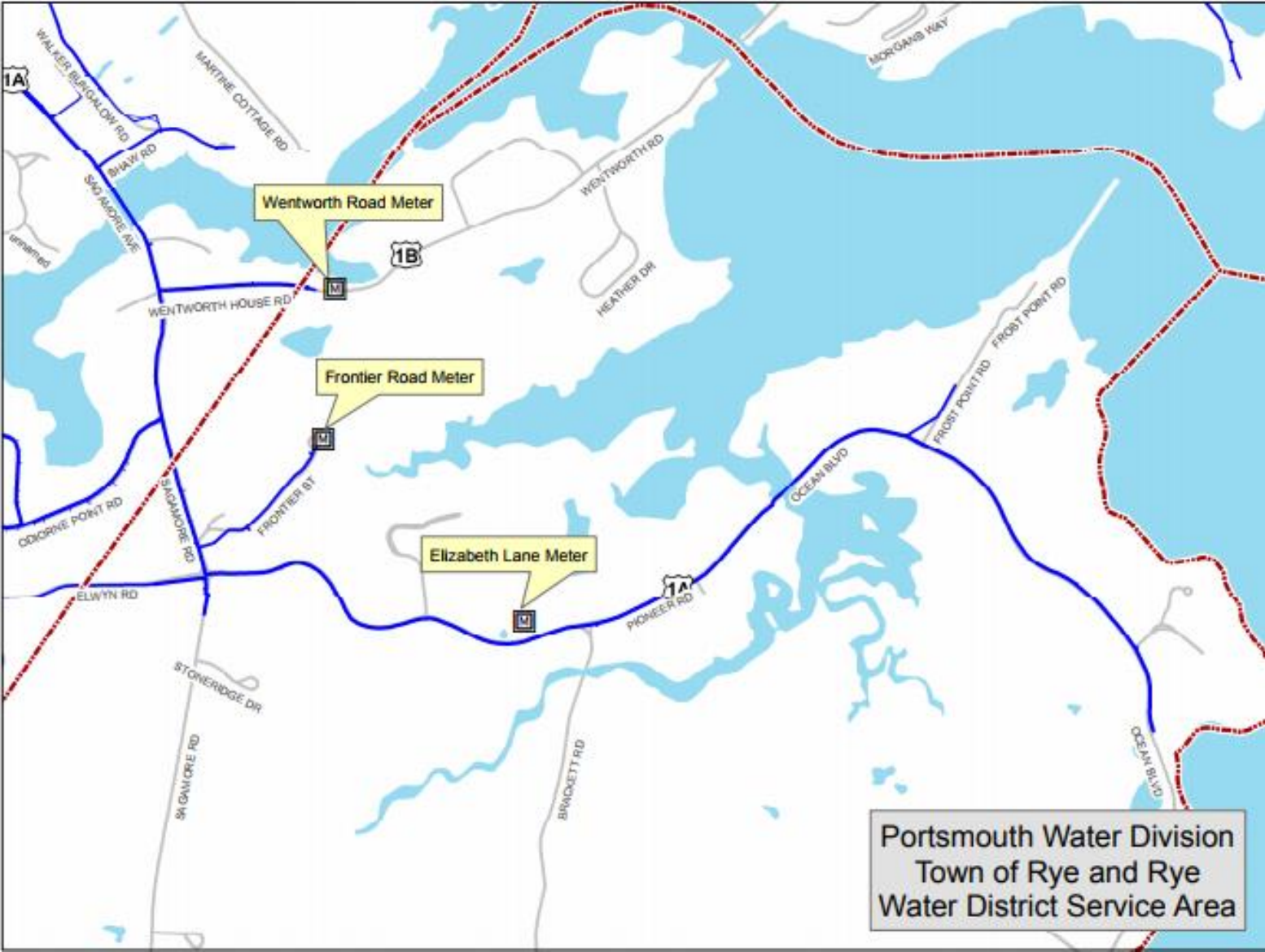
Options for Rye

Rye is intricately tied to water resources of many kinds.

We have the ocean, 2,649 acres of Open Wetlands, 441 acres of water, surrounded by development, and a very productive aquifer.

Our quality of life and health depends on these resources. We take a look at the public water supplies, their protection or lack thereof, and the threats to our water resources.





**RWD Supplied Users Annual Charge**

Service Meter Size (inches)	Annual Charge
5/8	\$130.00
3/4	\$160.00
1	\$190.00
1-1/4	\$225.00
1-1/2	\$265.00
2	\$385.00
3	\$775.00
4	\$1,555.00

RWD Supplied Seasonal Unit Annual Charge

Unit Range	Annual Charge
1-4 Units	\$150.00
5-7 units	\$190.00
8-10 units	\$225.00
11-14 units	\$265.00
15-22 units	\$385.00

RWD Supplied Users Overage Rate Structure

Overage (gallons)	Overage Rate
50,001-100,000	\$3.00
100,001-200,000	\$3.50
200,001-500,000	\$4.50
500,001-999,999,999	\$5.50

RWD is run by Town Meeting by those who live in the Water District. So, not managed by the "Town". Monthly meetings are the first Wednesday of the month 9:00am 60 Sagamore Rd.

Your Water Bill:

You are billed in two parts for RWD, usage (a base annual service fee) and a tax.

Annual Service fee for first 50,000 gallons of water. Most homes average 4,167 gallons per month.

Larger meter allows for more water usage without a drop in water pressure. You pay more for that.

Overage fees are for 1,000 gallons of water, a RWD Unit of water. Note the standard is 748 gallons or 100 cubic feet. Increasing cost by water units.

Also taxed at a rate of \$0.386 per \$1,000. So if your house is assessed at \$500,000 that would be \$193 per year to RWD, plus your usage bill.

Water District	2017 Actual	2018	2019	2020	2021	2022	2023	CIP Priority
Service Truck #102A Replacement	\$40,000							
Garland Rd. Pump House Refurb.		\$535,000						
Harbor Rd Water Line Replacement		\$300,000						
New Well Investigation		\$150,000						
Wash Rd. Waterline Replacement			\$585,000					
Service Truck #103D Replacement			\$45,000					
Wentworth Rd Waterline Replacement				\$960,000				
Total Water	\$40,000	\$985,000	\$630,000	\$960,000	\$0	\$0	\$0	



RWD [2017 annual budget](#) is \$1.3 million

One truck was replaced. RWD owns three vehicles

Garland Rd. Pump House needs refurbishing

New Waterline for Harbor Road

New Well Investigation: 2016 Drought, continued developments and accessory dwelling units

Replacement of another truck in 2019

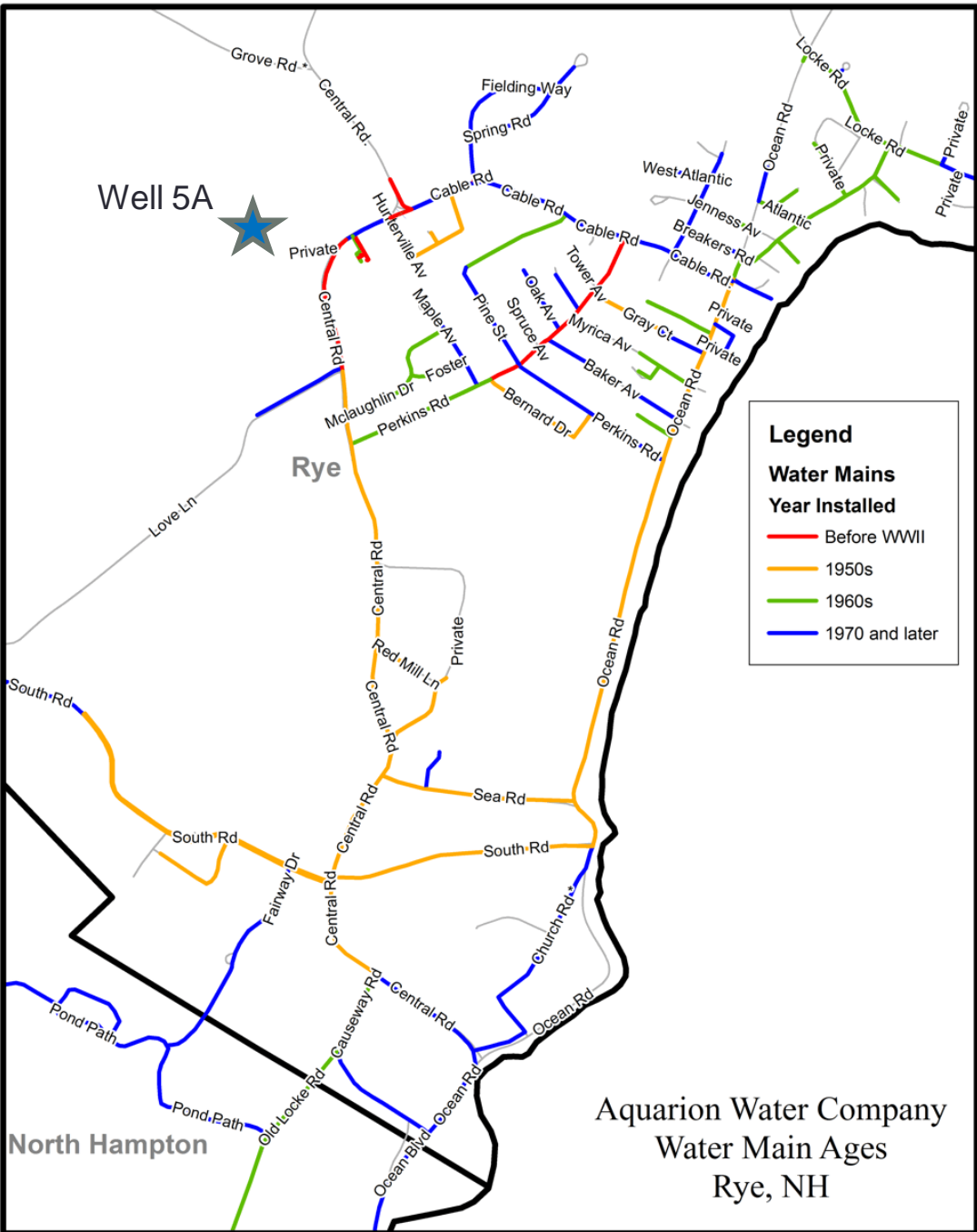
Rt 1B Wentworth Rd. New pipe if a fixed bridge is installed.

Note: Water Treatment plan has been in past CIP documents, but is not included now. About \$250,000 has already been spent on a design that focused on iron and manganese removal, if the State or contamination require the water to be chlorinated. PFOA would be a different design to incorporate these.

Aquarion serves 691 customers in the Rye Beach and Jenness Beach Districts.

Jenness Beach customers are partially served by Well 5A on Central Road.

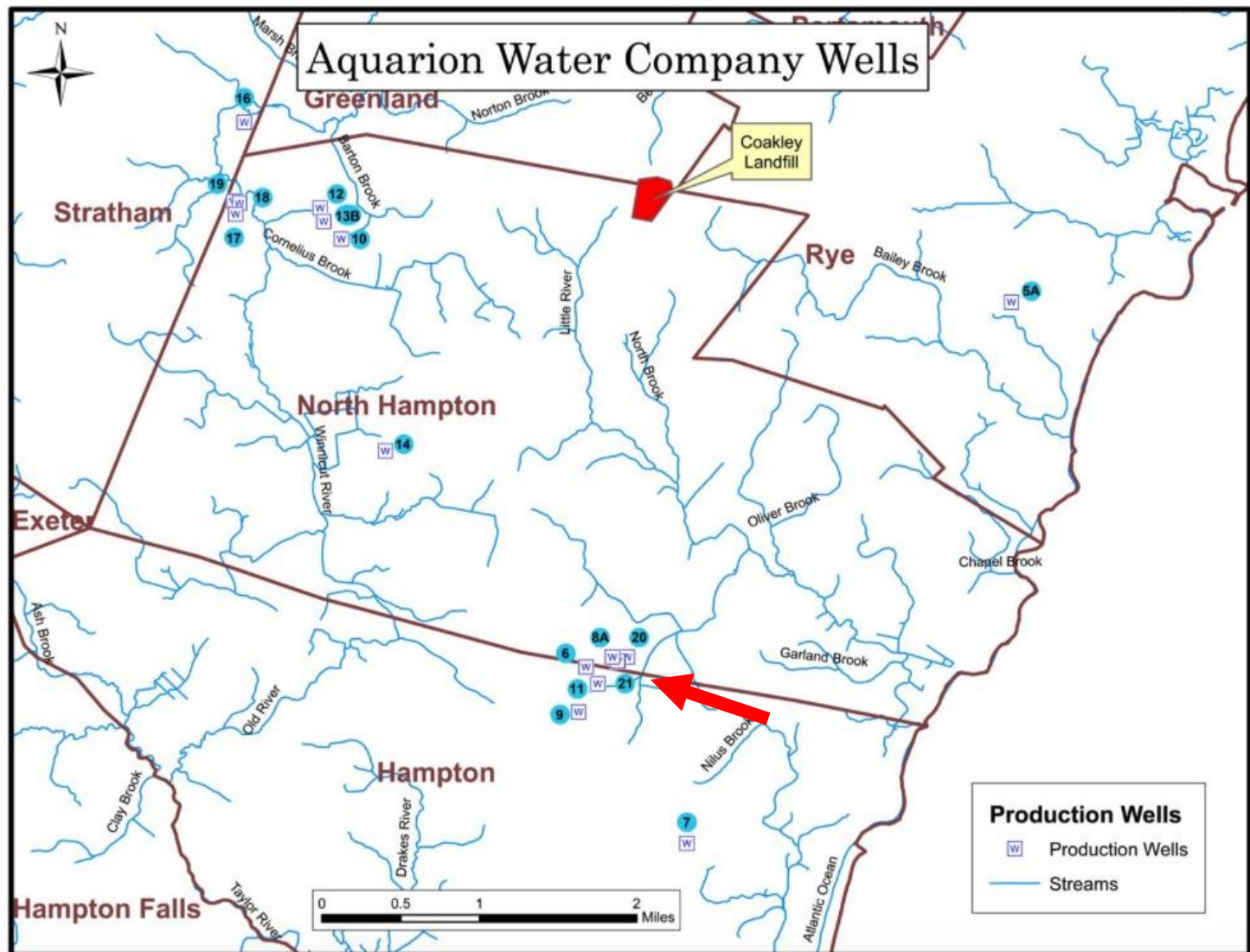
Rye Beach customers are served by wells in Hampton and North Hampton



Aquarion Water Company
Water Main Ages
Rye, NH

Aquarion Wells

- A new well at the cluster on the Hampton North Hampton line is under regulatory review
- Well 6 in the same cluster was recently closed due to high PFC's



Water is billed at:

\$4.536 per 100 Cubic feet (748 gallons)

Annual Service charge based on meter
(see table)

[Click Here](#) for full document:.

Aquarion PCF Water Testing Data [Click Here](#)

Size of Meter	Annual Fee
5/8 Inchn	\$ 187
3/4 Inch	\$ 281
1 inch	\$ 468
1 1/2 inch	\$ 937
2 inch	\$ 1,498
3 inch	\$ 2,808
4 inch	\$ 4,680
6 inch	\$ 9,360
8 inch	\$ 14,976
10 inch	\$ 21,528



NH 1899 Session Law granted Portsmouth the authority to supply Newington, Greenland, New Castle and parts of Rye with water services.

79 Rye homes directly served by Portsmouth Water . They pay \$4.17/unit (748 gallons) for the first 10 units of use in a monthly billing cycle (7,480 gallons) and \$5.00/unit for anything over that.

Portsmouth sells (wholesales) water to the Rye Water District

Nov. to Mar. Usage: 6,000 gallons per day
Summer usage : **300,000 gallons per day**

Wholesale rates were flat for 27 years and recently went up. Current wholesale rate is \$3.35 per unit (1 unit = 748 gallons of water).

Annual RWD fees for Portsmouth water are higher but there is no tax assessment. Overage rate is higher and there is less water per billing unit.

Cap colors are different on Portsmouth Fire Hydrants – they follow this standard

Blue : >1500 gallons per minute
Green: 1000 to 1499 gallons per minute
Orange: 500 to 999 gallons per minute
Red : <499 gallons per minute



Portsmouth Supplied Users Annual Charge	
Service Meter Size (inches)	Annual Charge
5/8	\$250.00
3/4	\$280.00
1	\$320.00
1-1/4	\$355.00
1-1/2	\$395.00
2	\$515.00
3	\$905.00
4	\$1,685.00

Portsmouth Supplied Users Overage Rate Overage Structure	
Usage (gallons)	Overage Rate
50,001-150,000	\$5.00
150,001-999,999,999	\$5.50

NHDES recommends having the following tests done every 3 to 5 years, except for bacteria and nitrate, which are recommended annually.

Standard Analysis

Arsenic	Lead
Bacteria	Manganese
Chloride	Nitrate/Nitrite
Copper	pH
Fluoride	Sodium
Hardness	Uranium*
Iron	

Radiological Analysis

Analytical Gross Alpha
Radon
Uranium*

Volatile Organic Compounds (VOCs)

*Please note: Uranium is part of both the standard and radiological analysis for the State of NH Lab.

More information will be provided during the Hydrology section



NH DES Rules for Private Wells [Click Here](#)

State Water Testing Brochure: [Click Here](#)

NH DES Drinking Water fact sheets: [Click Here](#)

NH DES Video on containments: [Click Here](#)

NH DES Suggested Testing is not updated for PFCs:
[Click Here](#)

Rye Beach Jenness Beach Public Sewer

In 1992, under a consent decree with the EPA, a public sewer was installed in portions of the Rye Beach and Jenness Beach Village Districts (see map). 547 parcels are on the Sewer.

The sewer system connects to Hampton's under a long term contract, that is due for renewal. Rye contributes to capital costs.

Residents are billed by the Rye Sewer Commission as follows. All department costs are covered by user feeds:

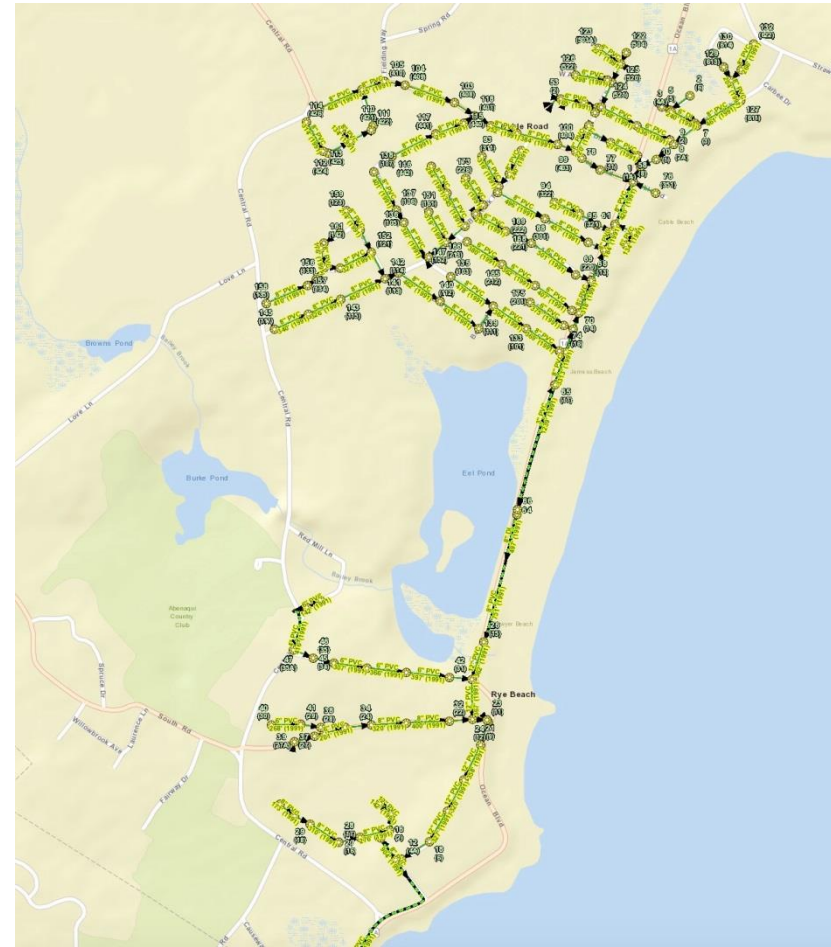
Sewer rate is : .055 cents per cubic feet of H2O Consumption

Hook-up Fee: Front Footage Charge \$242.35/per foot
50 Foot Front (minimum charge) \$12,117.50
100 Foot Front \$24,235.00
170 Foot Front (maximum charge) \$41,199.50

Portsmouth Sewer:

The Adams Trailer Park gets RWD water and is connected to the Portsmouth Sewer, Rye Sewer is the administrator

Atlantic Grill is connected to the Portsmouth Sewer and future development could also be connected.

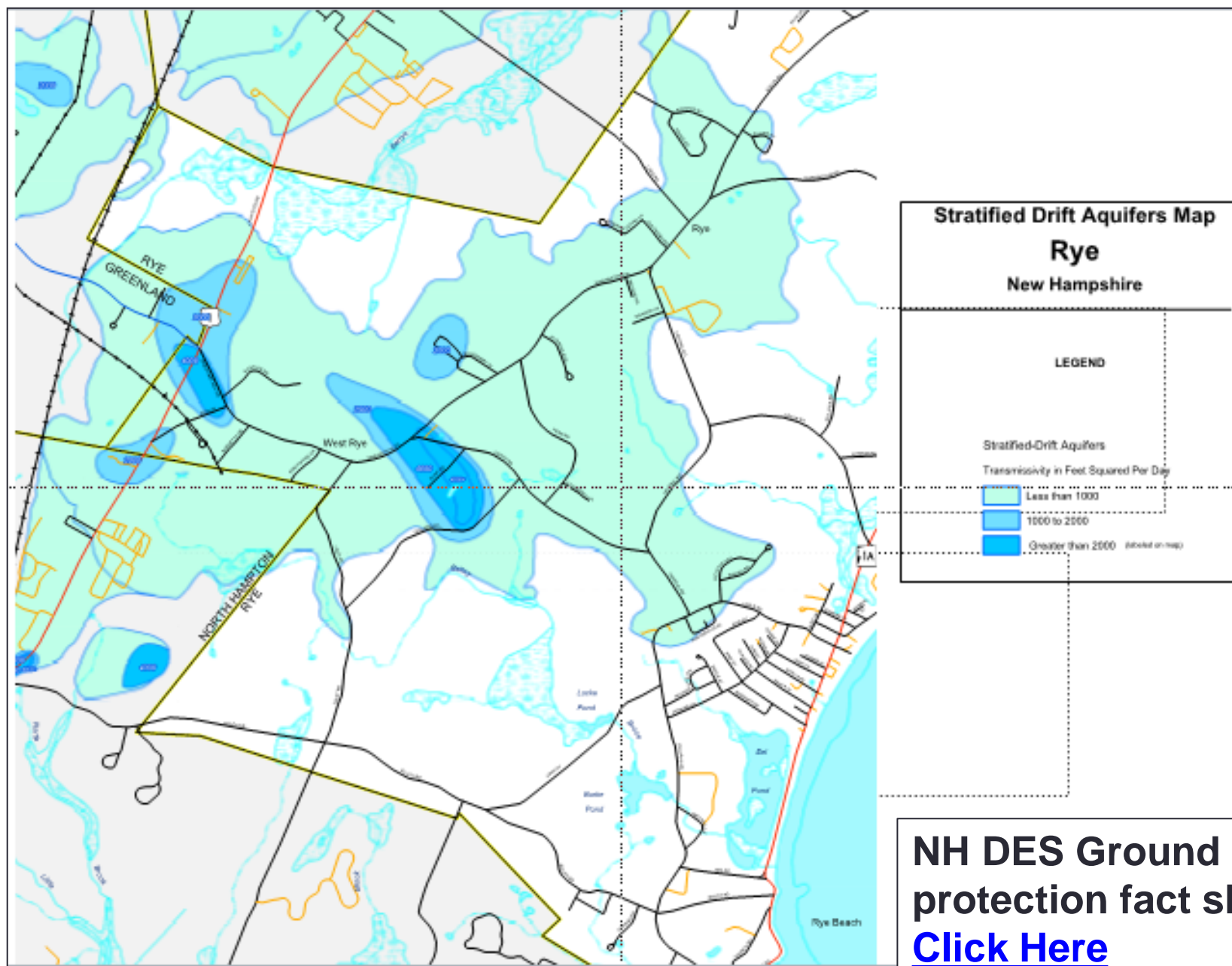


Facts:

6.9 Miles of Sewer

3 pumping stations, that are maintained by Hampton Sewer

[1989 Agreement with Hampton](#)



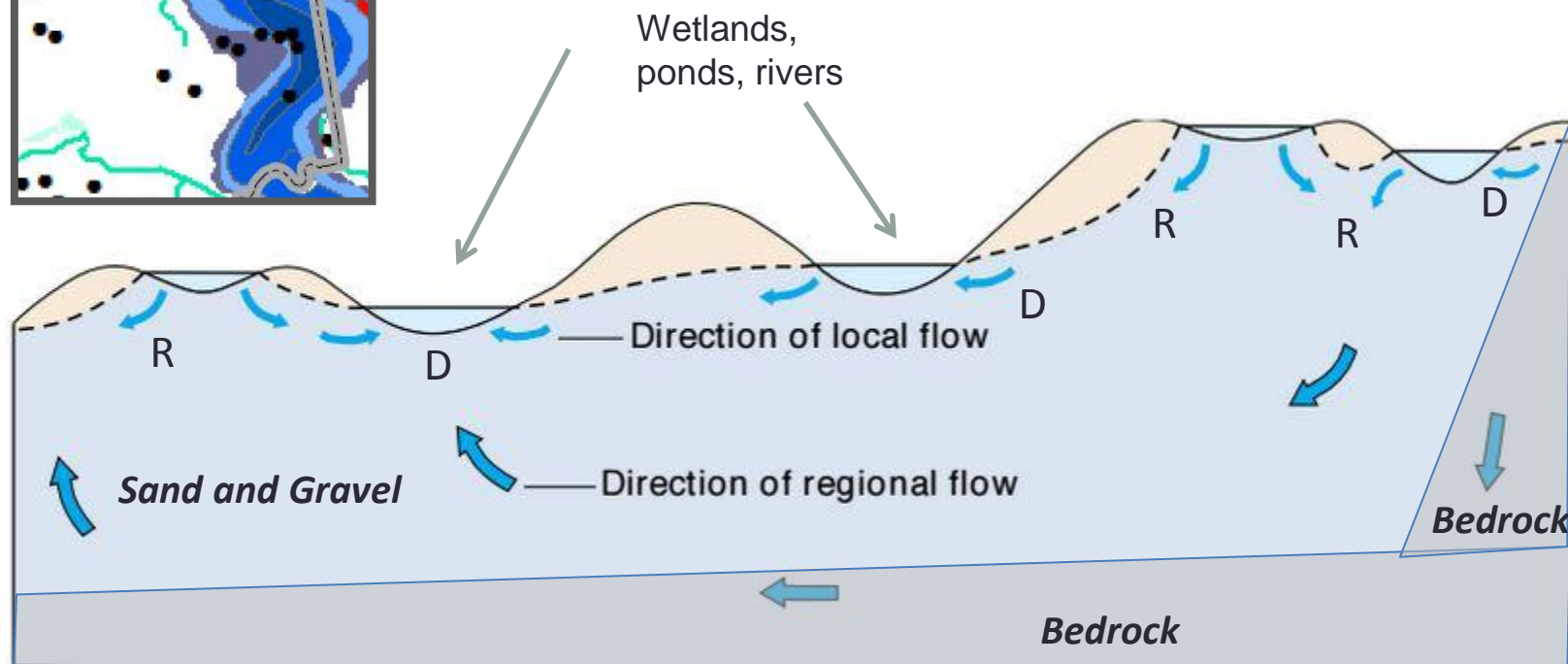
Surface water and groundwater are Interconnected

Sand and Gravel
Aquifer



- Wetland
- Stream
- Aquifer: Highest Transmissivity

In sand and gravel, groundwater flow is similar to land contours.



Winter et al. 1998

R – Recharge to Groundwater

D – Discharge to wetlands and surface water

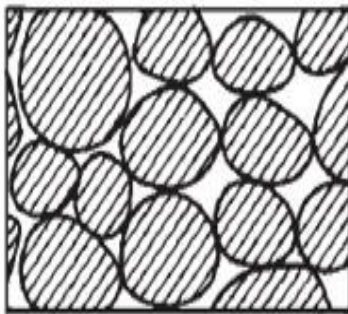
Wetlands, Rivers, Ponds, or Lakes

Groundwater : Key Vocabulary

Aquifer - an underground layer of water-bearing permeable rock or unconsolidated materials (gravel, sand, or silt) from which groundwater can be extracted using a water well.

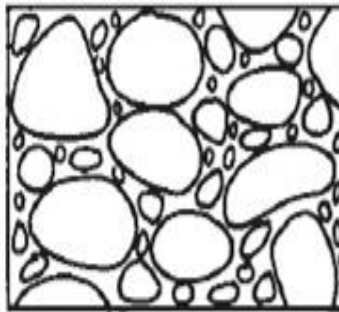
Transmissivity - ability of an aquifer to transmit water through its thickness

High Transmissivity



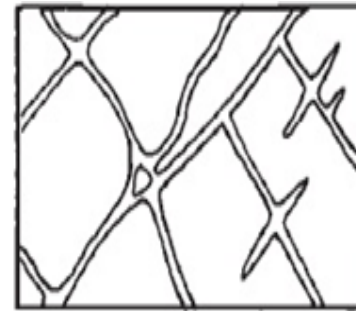
Well- Sorted Material
(ex. Sand and gravel aquifer)

Low Transmissivity



Poorly-Sorted Material
(ex. Glacial till, hardpan)

Low or Localized Transmissivity



Bedrock

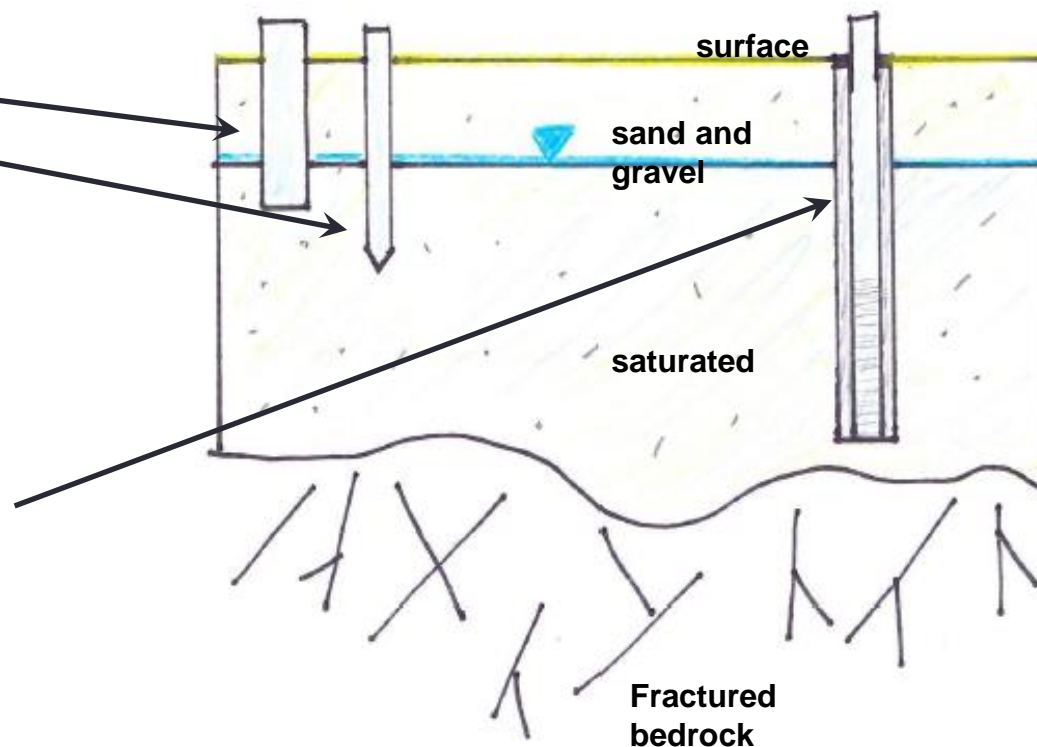
Sand and Gravel Well Types

Water flows through pores between grains of sand and gravel – relatively **high transmissivity**

RWD Garland and Aquarion Well 5A are these type of wells. RWD blends Garland with the two bedrock wells.

- **Shallow wells** – domestic/agriculture
 - Dug well
 - Driven well point
 - Sensitive to water level change
 - Vulnerable to surface contamination
 - Usually <20' deep

- **Deep gravel-packed well** – municipal or commercial
 - Gravel pack increases transmissivity
 - Less sensitive to seasonal changes or drought
 - Deeper wells for more storage and yield



Bedrock Well Types

Groundwater flows to wells via fracture zones – **lower transmissivity**

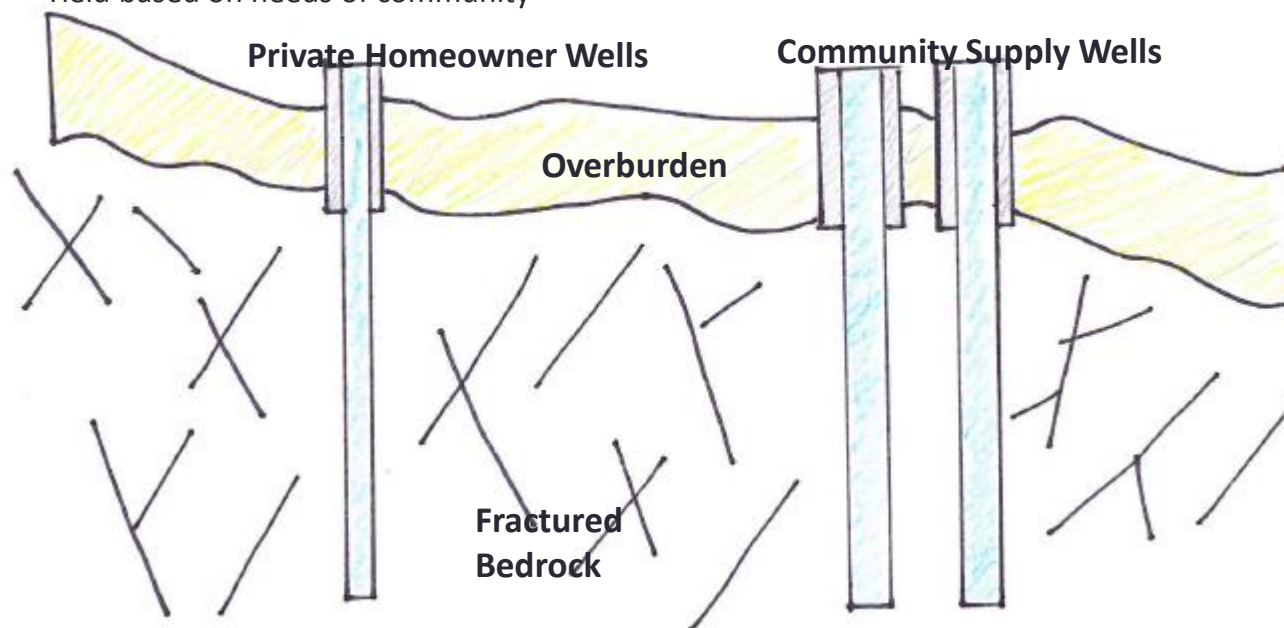
Private homeowner wells

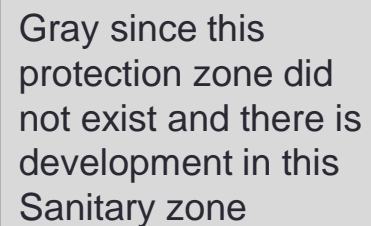
- Casing Driven to bedrock – open borehole in bedrock
- Large storage capacity
- Yield 5 gpm+

Larger community supply wells

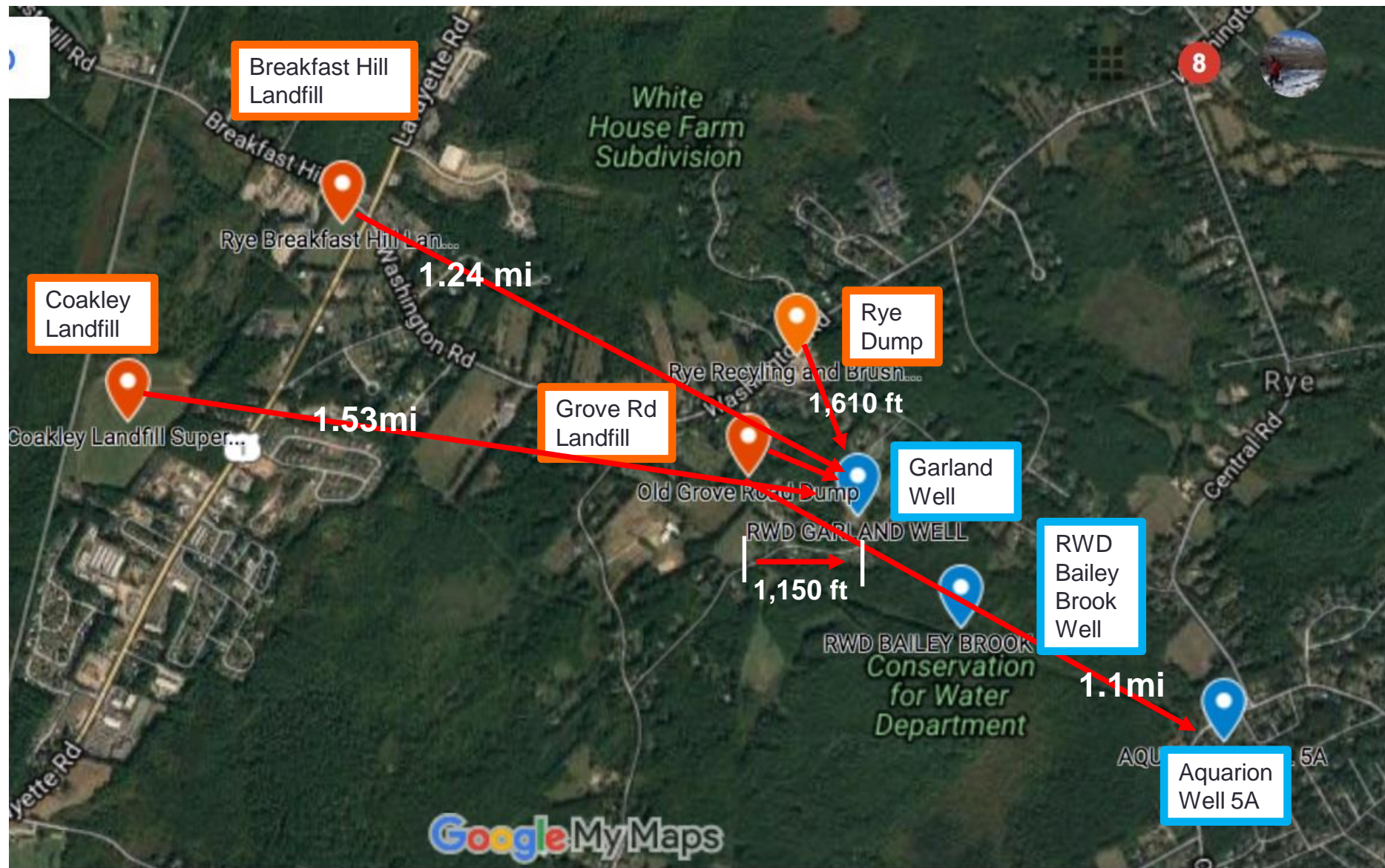
- Casing driven to bedrock – open borehole in bedrock
- Duplicate wells for backup
- Yield based on needs of community

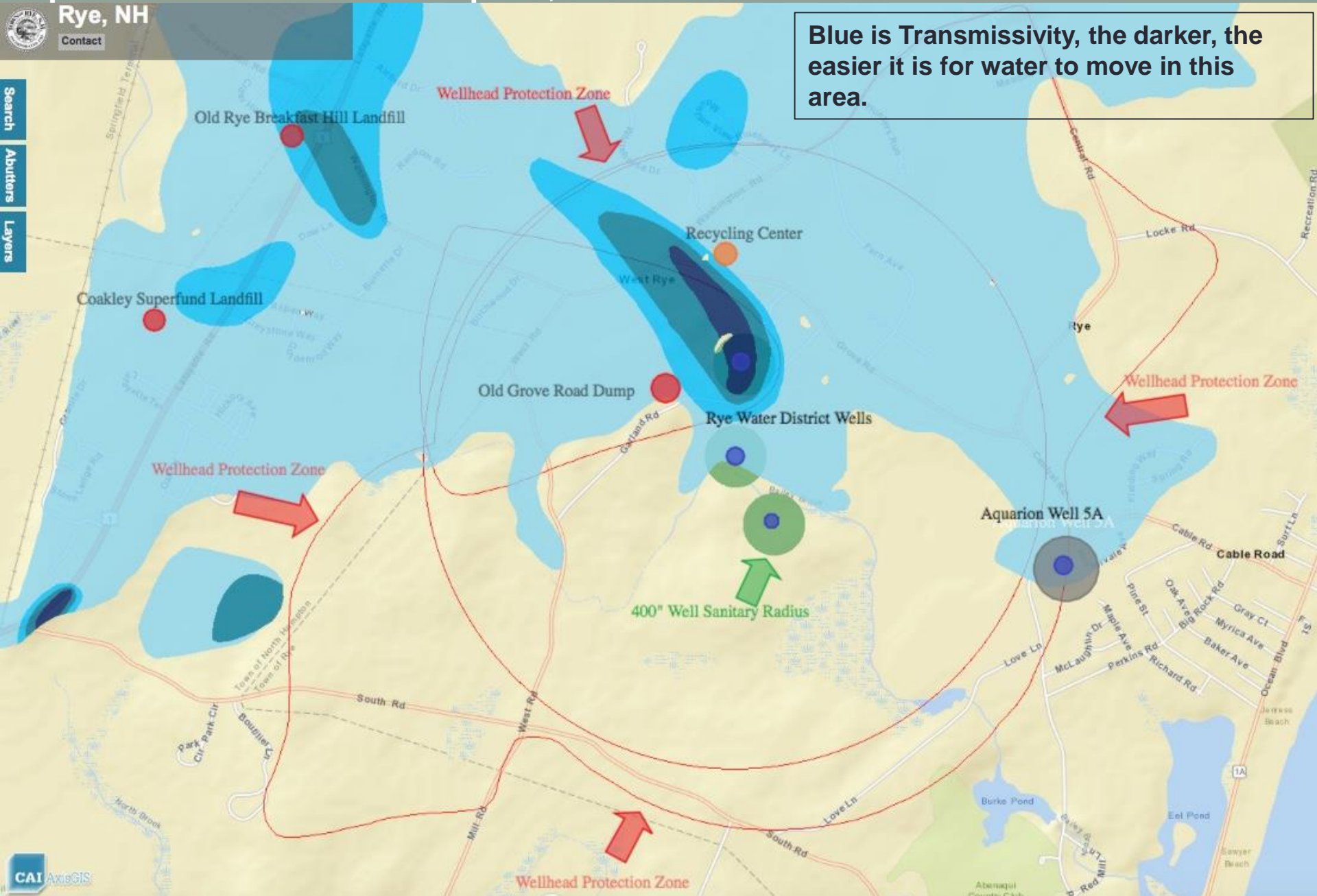
RWD Bailey Brook Well and Cedar Run are this type. These wells put higher levels of iron (Fe) and manganese (Mn) – tints the water red. Blending with the Garland Well masks this.



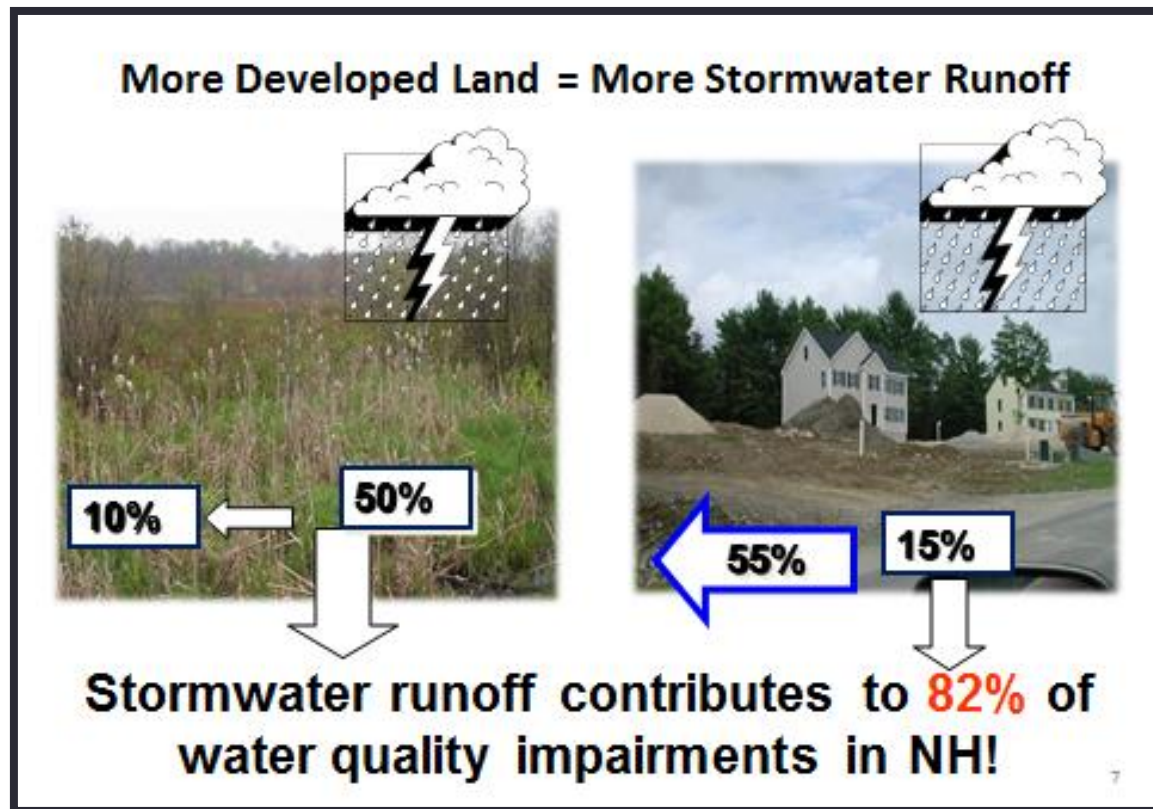


Town of Rye GIS System with annotations Blue = well; Green = Sanitary radius; Red outline – Protection Zone





Town of Rye GIS System with annotations: Red circles landfills/dump; Red is the aquifer protection



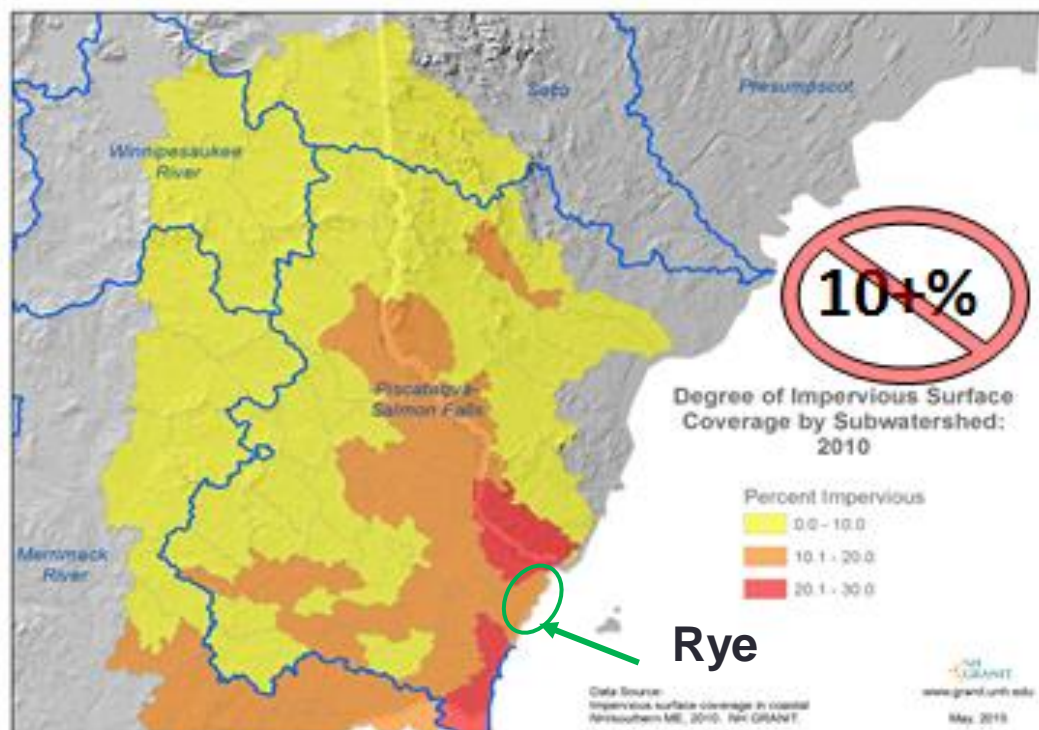
From NH DES November 2016 Presentation

Impervious Surfaces are anything that prevents water flowing straight down into the ground. So paved parking lots, patios, roadways, roofs, etc....

During rain storms and snow melt, water running off of impervious surfaces carries pollutants and sediments into streams, lakes, and estuaries.

To keep waters clean, impervious surfaces should be a low percentage of the total amount of land areas of the watershed basin. **NHDES recommends no more than 10% impervious cover for a town (or watershed). Above this, we see water quality starting to decline!!!!**

Impervious Surfaces Increase Water Quality Problems



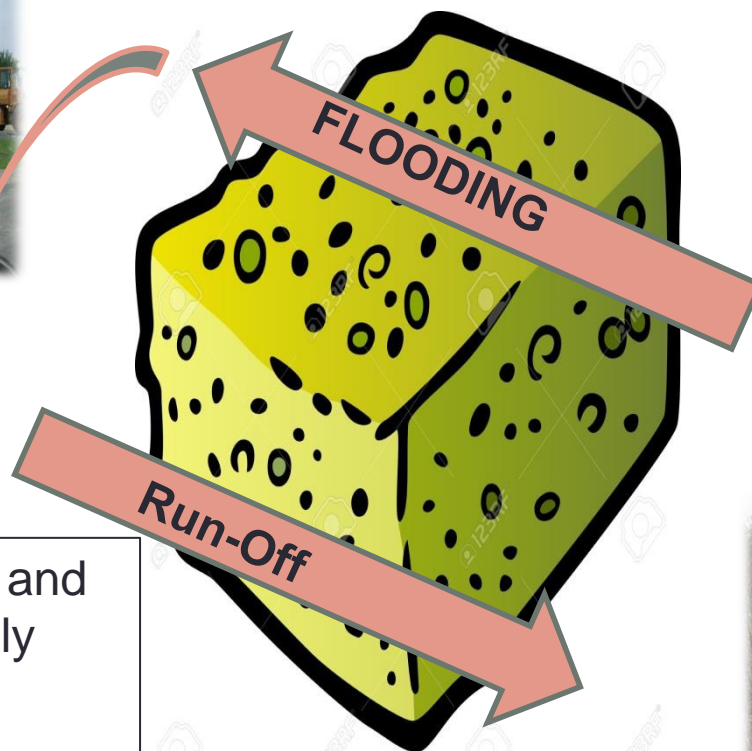
36.7% of Rye is open wetlands or water

As of **2010** Rye **already** had **15.5%** of its land impervious, causing runoff.

No 2017 update on where we are and how to track this.

“severe degradation expected beyond **25% impervious cover”**

Source: [Click Here](#)

Property**Wetlands Buffer**

Wetlands Buffers protect property from flooding. They also protect leach fields and other non-natural substances from being saturated and pulled back into the wetlands

Wetlands Buffers filter and protect the water supply from non-natural and waste.

Question: Do we know the percentage of wetland buffers already compromised (septic systems, buildings, driveways....)?

Wetlands

Rye Hot Spots for pollution:

Enterococci is what is tested for. Above **104 col/100mL** is considered a health hazard by NHDES

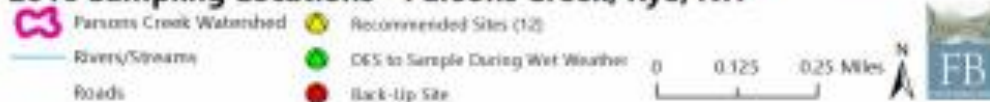
PC 07, PC08, BCH11 Parson's Road area

PC-Out Parson's Creek

Septic sniffing dogs confirmed human contamination, so it can't be said its all animal waste.



2016 Sampling Locations - Parsons Creek, Rye, NH



A septic pump out and reporting ordinance took effect in 2016

To date of the ±650 septic systems in the watershed 257 have been pumped out and “inspected” with a report to the town. All must be inspected and pumped out by June 2019

Approx. 6-8 septic systems in the watershed have been replaced in the period.

Approx. 21 properties with suspect systems due to their locations and nearby water quality readings were sent letters in 2016 offering assistance. Only one of the recipients has replied to date and was inspected with no issues.

Dog waste removal was added to town ordinances in 2017

The 2016 Parsons Creek Committee was not renewed in 2017

Sample ID	6/15/16 DRY	7/11/16 WET	8/9/16 DRY	8/11/16 WET	8/23/16 WET	Branch	Flow Direction
ACPS005-U35	85	11,199	221	96	1,124	West Branch	Upstream
PC11	10	355	DRY	DRY	1,014	West Branch	
ACPS005-U15	10	148	120	98	1,076	West Branch	
BCH15	DRY				DRY	West Branch	
BCH10	61	148	DRY	DRY	187	East Branch	
PC07	2,050	12,997	15,531	1,270	75	East Branch	
PC08	12,033	11,199	20	24,200	5,794	East Branch	
BCH08	62	2,316	1,334	84	1,281	East Branch	
BCH11	130	108	738	30	571	East Branch	
PC10	51	323	<10	20	187	East Branch	
BCH26	20	52	<10	10	175	East Branch	
BCH26A		63		20	98	East Branch	
BCH26B			<5			East Branch	
WIL-CUL	1,600	DRY	DRY	DRY	NO FLOW	Near Outlet	V
PC-OUT	10	63	20	20	63	Outlet	Downstream

Red, bolded values are above the NHDES instantaneous criteria for Enterococci (104 col/100mL).

What does the 2017 testing tell us?

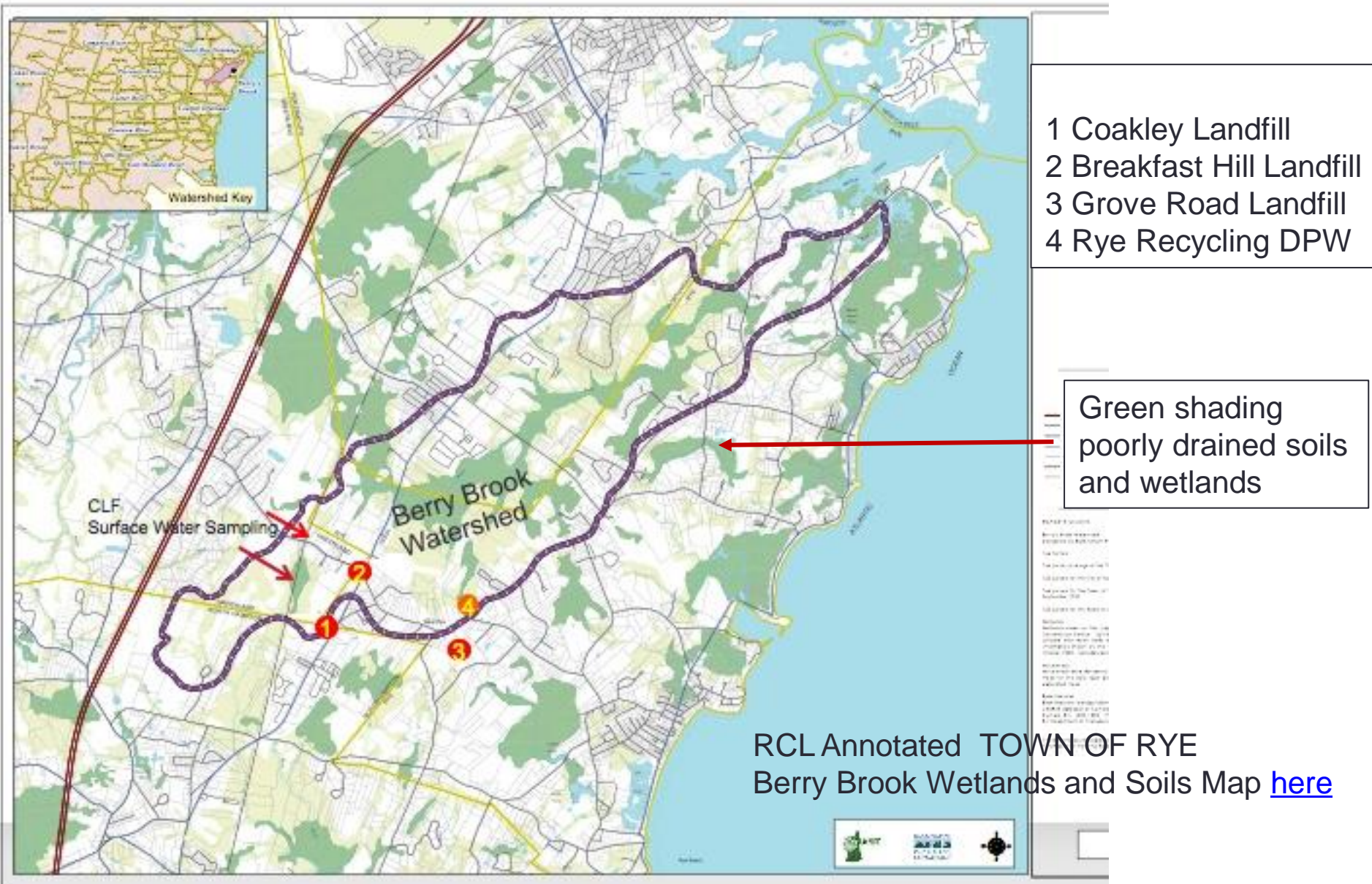
76 Data points, just over ½ (39 points are greater than 104 col/100 mL)
10 were 1,000 or more

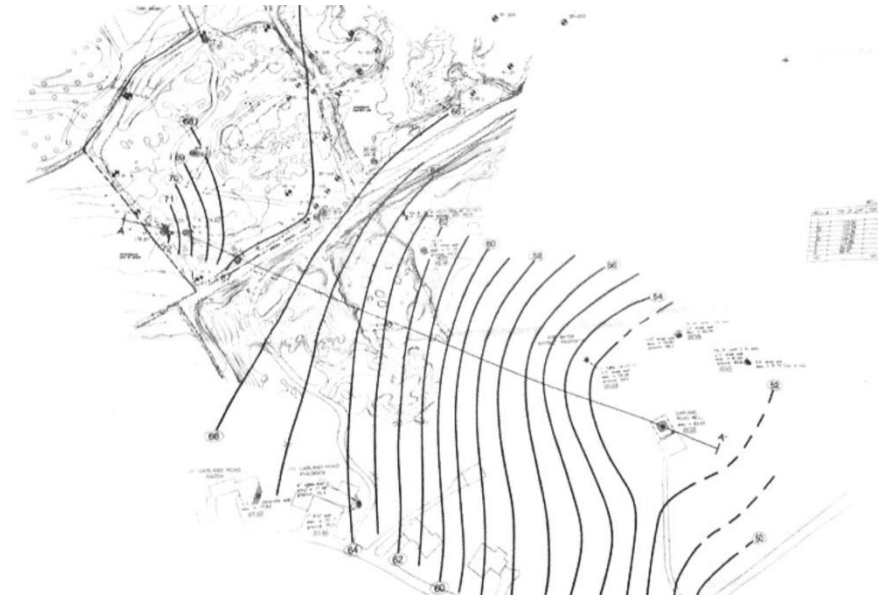
We still have a very high level of pollution that is not going away unless more is done.

ID	DRY	WET	DRY	WET	Pre-Storm	Pre-Storm	Storm	Storm	Post-Storm	DRY	WET
	6/26/17	7/25/17	7/28/17	8/24/17	9/5/17	9/6/17	9/7/17	9/8/17	9/11/17	9/21/17	10/10/17
ACPS005-U15					216	75	3,873	743	97		
ACPS005-U35	108	1,010	250	145	52					350	96
AwcominMarsh	110	313	10	31						97	86
BCH08	52	63	10	20	52	52	538	185	41	146	10
BCH11	1,120	2,600	211	465	51	826	17,329	110	86	573	373
HarborRoad	389	1,660	30	350						529	1,090
OF-EelPond	20	120	187	201						31	62
PC07	185	323	<10	86	108	121	3,448	75	31	110	246
PC08	146	1,470	20	31	41	74	1,989	52	<10	10	121
PC-OUT	52	299	10	121	97	295	4,611	457	63	388	233

PFC Testing Location	Lowest	Highest
25 Private Rye Wells Tested by NHDES	Non Detect	33.7
Old Grove Road Dump	8.9	151
Monitoring Well	4.3	88.6
Rye Water District Wells (combined)	14	21
Aquarion Well 5A (Jenness Beach)	4	8.23
Breakfast Hill Rd/Rte. 1 Dump	9.1	82
Berry's Brook Surface Water		1,250
Berry's Brook Leachate from Coakley		2,586
Aquarion Well 6 Hampton(combined)	12	88
Portsmouth City Wells	Non Detect	14

Berry Brook extends from the Breakfast Hill Coakley Landfills area through Rye to Ordiorne





- From the 1930's through 1964 Rye operated an open burning dump off of Grove Road pretty much open 24/7
- 1964-1967 a tepee incinerator was used to burn refuse.
- 1967-1974 "sanitary" landfill where garbage was covered
- 1974 landfill closed as a major water source which became the Garland Well was discovered. Landfill location purchased by RWD.
- 1990 notification from the state requiring proper closure action
- No action was taken until a "do it yourself" closure was started in 1995 using the highway department.
- 1996 CMA Engineers (Selectman Musselman's firm) hired to design a final closure system which was estimated at \$900K due to decomposed trash detected in groundwater
- Instead of removing trash, ground water monitoring wells were installed.
- PFOA+PFOS levels ranging from 4 to 155 have recently been detected in the monitoring wells at the Grove Road Dump and between 14-21 in the Garland Well

Located approximately 1650 feet from the Garland Well

44 feet upgrade at the Salt Shed (proposed to be replaced on 2018 Warrant

Town vehicle gas station on the property

Pesticides and other lawn chemicals from private properties are deposited at the brush dump

Bulk trash bins are not water tight.

Cars at the transfer station: Any leaks run down the pavement to the catch basin

Buildings are in dire need of repair, but redesign and significant repairs are not on the current Capital Improvement Plan



Prioritized Improvements

1. Salt Shed to allow completely indoor salt handling, swale to retain any run off to surround
2. New fueling location on the level with concrete pad
3. Vehicle washing system with recycle/retention of soapy water and dirt/salt

Breakfast Hill Road:

- Landfill for municipal waste approximate same time as Coakley Landfill.
- Waste from Rye. Owned by Rye.
- After Coakley was closed documents indicate that Rye received \$350K to take the Pease Waste to Energy Ash along with Jones Road landfill in Portsmouth.
- Groundwater wells have PFCs in them.

Problems:

- PFCs have been detected in several private wells at levels below 70 ppt for PFOA and PFOS.
- Wells near the landfill have ~80 ppt of PFOS and PFOA.

Next Steps:

- Warrant article to get outside sampling company to sample monitoring wells and private wells.
- Push town to clean up.

Coakley Landfill History:

1. Licensed "landfill" between 1971 and 1985.
2. Everything and anything went in the "landfill" between late 1960s and 1982.
3. Between 1982 and 1985 took Pease Waste to Energy Ash – now 50 foot layer of ash on top of waste.
4. "Responsible Parties" means 78 which dumped hazardous waste from off-site locations. Responsible parties are listed [click here](#): The parties include the Air Force and the US Navy (20% combined). The remaining 80%, or Coakley Landfill Group (CLF) is comprised of:
 - a) The city of Portsmouth (54%),
 - b) The town of North Hampton,
 - c) The town of Newington,
 - d) A variety of other private parties.
5. Capped in 1994. NO liner underneath.



Problems now:

- Over time development and wells around the landfill now drawing water out.
Note: Aquarion is looking at adding a well and so is Rye Water District
- Causing contamination in Berry's Brook. Others?
- Are fish safe to eat from Berry's Brook?
- Threatening drinking water in North Hampton, Hampton,
 - Greenland and Rye.

Current Status (Coakley, Grove Road and Breakfast Hill Landfills):

1. The Task Force is now a Commission and regular meetings are held in Concord. The Commission wants to keep the meetings in Concord.
2. NHDES said that remediation is necessary to stop contamination of Berry's Brook.
3. EPA issued an addendum to their report at our last Task Force Meeting which said no public health threat from Coakley.
4. Task Force and NHDES disagree with EPA.
5. EPA is having a public meeting on 11/15 in North Hampton.

Next Steps:

1. Tell your friends and neighbors that EPA is wrong and get as many friends and family to come to the 11/15 EPA meeting.
2. Advocate with your friends, relatives and representatives to make EPA admit it is not acceptable to contaminate our surface water.
3. Come to Rye Water/Board of Selectmen and Rep. Messmer meeting in late November (TBA).
4. Advocate for Rye water to install water treatment system on Rye water to protect health of public especially children.
5. Advocate for Grove Road and Breakfast Hill Road Landfills to be cleaned up.
6. Join New Hampshire Safe Water Alliance on Facebook to keep in touch with developments.

Water consumption:

	<u>Winter (gallons)</u>	<u>Summer (gallons)</u>
Rye Water	300,000 per day	850,000 per day
Portsmouth	6,000 per day	300,000 per day

Rye Water District new well: \$5 million – will take four to five years

If a Rye Water Treatment plan is needed: \$6m to \$7m – will take four to five years

Storm Water/Impervious surfaces:

- How much of the wetlands buffers are compromised?
- Are we in a “crisis situation now” ? If not, how do we monitor that?
- When we don’t have enough wetland buffer – what do we do?

Parsons Creek: What is an acceptable pace to correct the pollution?

PFOA: Assuming these are a health hazard, what can be done. Have that conversation now, not once action is forced.

Does the Transfer Station present a water quality risk?

Actions from slide 33

This Rye Civic League

The Rye Civic League publishes the monthly Rye Civic News. You can add yourself to the Rye Civic News distribution e-mail list at www.ryecivicleague.org

The Rye Civic League consists of Rye residents who volunteer our time. Please feel free to get involved and help residents be educated and informed.

We meet the last Wednesday of the month in the Rye Public Library at 6:30pm

When the RCL meeting ends, there is a Public Forum that is attended by very knowledgeable residents in Rye. So, this is a chance to have an open discussion about what is on your mind or to ask questions.