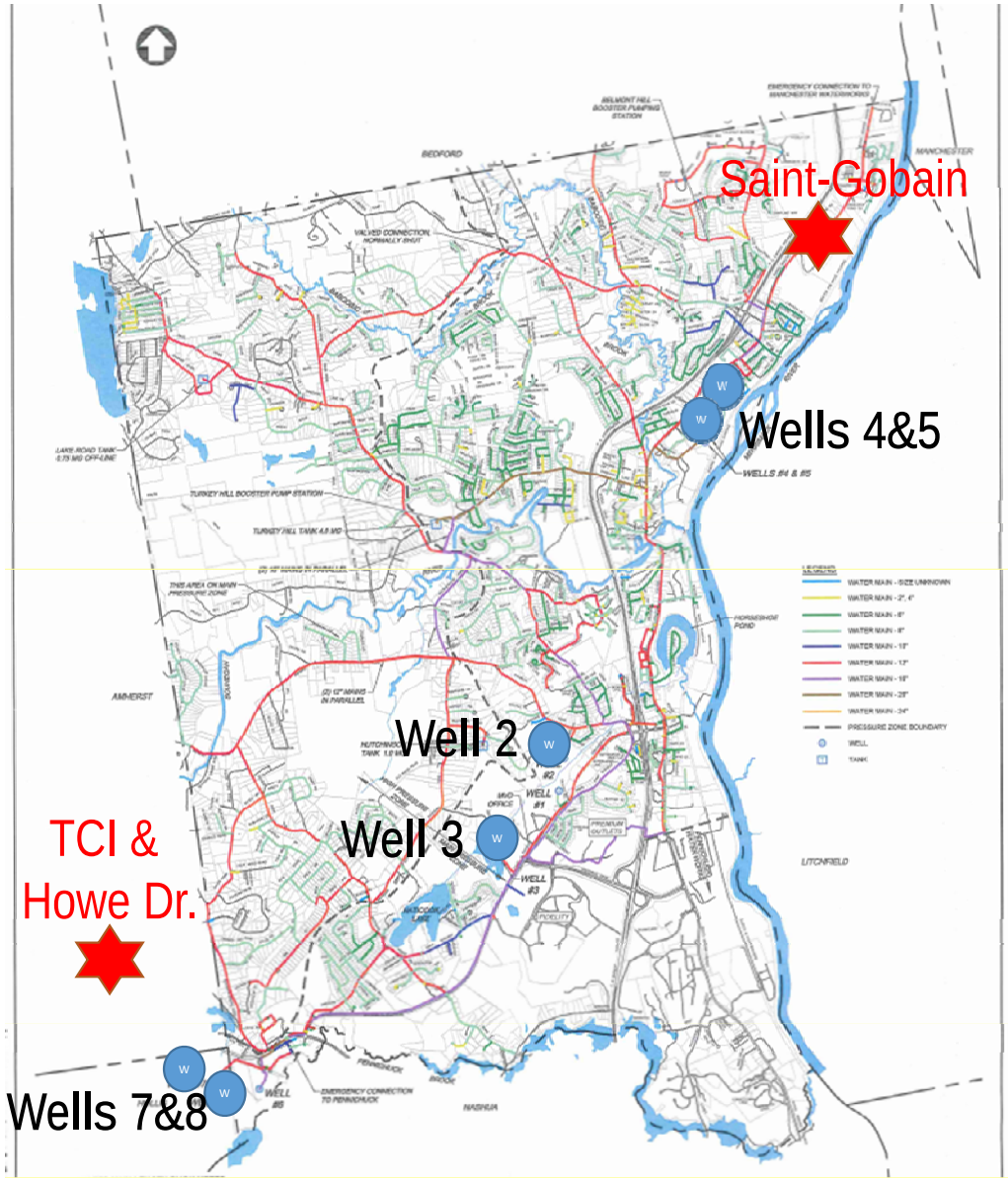
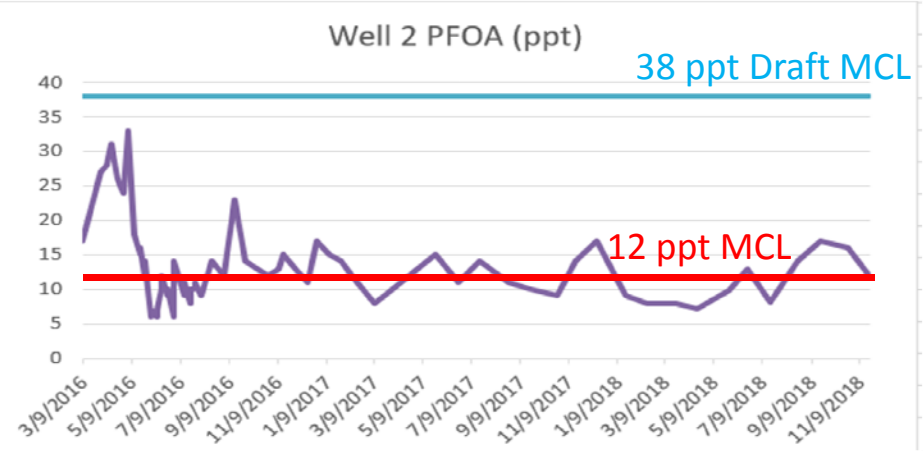
Merrimack Village District
Water Supply System

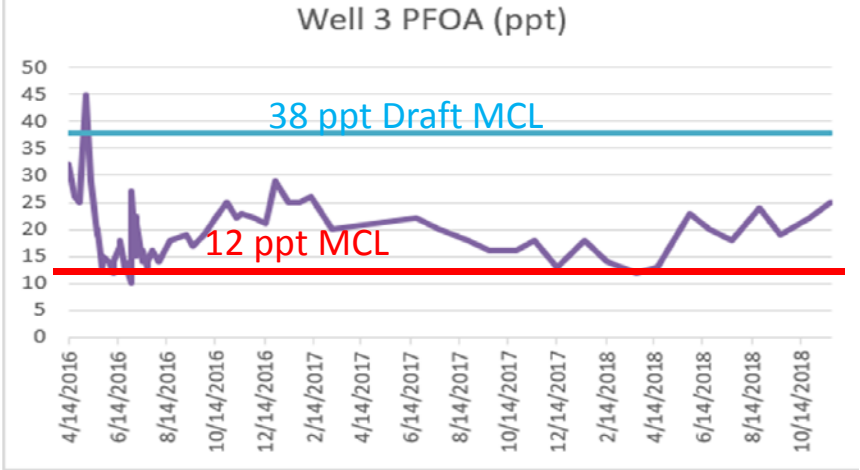
- 6 Public Water Supply Wells
- All 6 have exceeded PFOA MCL=12 ppt
  - Wells 4&5 northeast area
  - Wells 2&3 south central area
  - Wells 7&8 southwest area
- 1 GAC plant at Wells 4&5 (for PFAS)
- 1 Greensand plant at Wells 7&8 (for Iron & Manganese)
- 2 Pressure Zones
- 3 storage tanks (1 is a backup)
- 166 Miles of Distribution System Pipes
- $175 Million in Assets
- Avg/Peak Demands: 2 – 5 Mgal/day

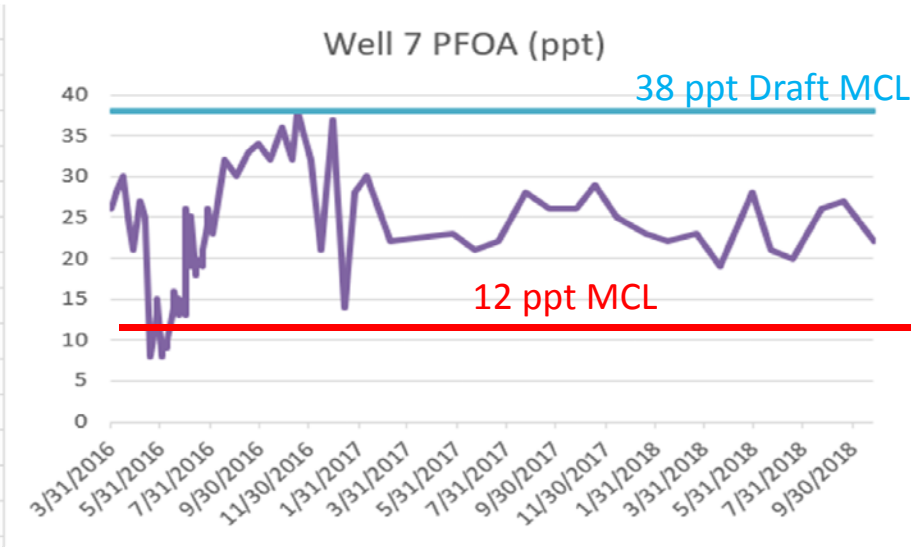


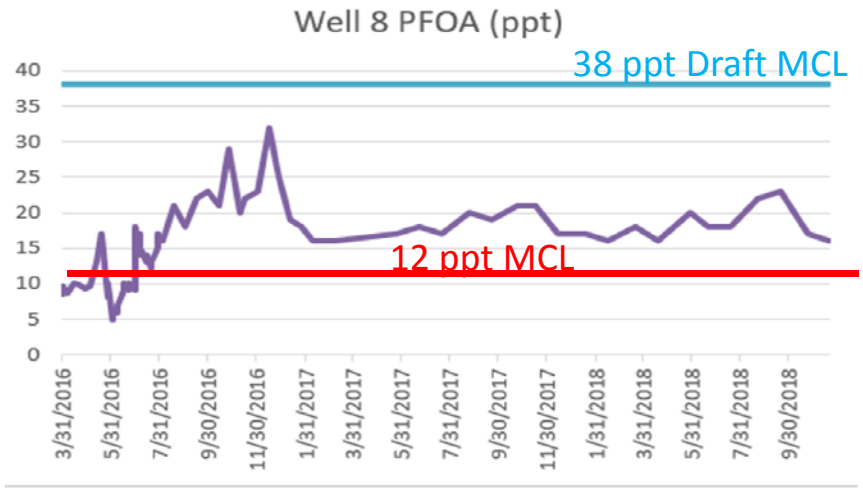
MVD Wells - PFOA Concentration History

PFOA is the only PFAS violation in all MVD wells









History of Contamination of Wells 4&5

- 1980's: Plastics factory in Merrimack owned by General Electric, then Chemfab Corp. began emitting PFAS into the air
- Early 2000's: Saint-Gobain's ***Vermont factory*** was mandated by State of Vermont to install air emission abaters to filter PFAS emissions
- Mid 2000's: Saint-Gobain relocated to Merrimack, purchased Chemfab factory, continued unfiltered PFAS emissions
- Wind currents dispersed PFAS regionally across southern NH
- Widespread contamination of soil & Groundwater resulted
- Unfiltered PFAS emissions continue to present day
- 2019: New Legislation now requires air emission limits
- PFAS air emission abaters now required; Installation in 2021

History of Contamination of Wells 4&5

- Spring 2016: Saint-Gobain tested their own MVD tap water at their own Merrimack facility; PFOA detected at 42 ppt
- MVD tested all wells, shut down Wells 4&5 (PFOA>100 ppt)
- Remaining Wells 2,3,7,8 ranged 8-48 ppt (compliant < 70 ppt)
- MVD opened interconnect w/ Nashua NH for makeup water
- 2016+: NH DES & Saint-Gobain investigated and identified wide-spread contamination (Litchfield, Bedford, Merrimack, Londonderry, Manchester, more?)
- 2017: NH DHHS tested blood of 217 MVD customers
  - Average MVD blood PFOA was DOUBLE the national average (4 ppb MVD customer vs. 2 ppb national avg for blood PFOA)
  - Note: Blood measured in ppb; drinking water in ppt
  - PFOA is highly Bioaccumulative by 2-3 orders of magnitude

Settlement Agreement Wells 4&5

- Two years after contamination was discovered in 2016, MVD signed settlement agreement w/ Saint-Gobain in spring 2018
- Covered $3.3 million of $4.1 million *estimated* treatment plant cost; (approx. 75%); left MVD with a $810,000 shortfall
- *Actual* shortfall was $1.8 million, vs. construction cost of $5.1 Million
- Settlement agreement escrow amount was based on a preliminary treatment plant 30% design level
- Covers 5 years of estimated GAC media replacement cost
- Estimated GAC replacement is based only on PFOA breakthrough, ***now*** estimated every 2 years
- GAC treatment plant designer was selected by MVD under contract with MVD; design fees paid by settlement escrow
- All other MVD Wells 2, 3, 7, & 8 were in compliance below NH AGQS 70 ppt limit at that time

Benefits of the Settlement Agreement

- Avoided costly multiple years of litigation
- Build a PFAS treatment plant sooner than later
- MVD maintains autonomous control of its destiny:
  - All settlement funds were placed in escrow for MVD to design & build the treatment plant that they desire
  - MVD staff can operate treatment plant as they desire
- Agreement limited only to PFOA & PFOS; can be re-opened if other PFAS MCLs are established ***and violated***
- Wells 4&5 PFAS treatment plant on-line October 2020

Drawbacks of the Settlement Agreement

- MVD assumed ***all the risks*** (cost escalation, design unknowns, etc.)
- Funds only covered 75% of ***estimated*** total project cost; Non-PFAS costs are not covered (Chemicals, generator, pavement, addt'l bldg. size, etc.)
- O&M Funds only cover 5 years of ***estimated*** GAC media replacement costs, only for PFOA / PFOS breakthrough, estimated every 2 years.
- Ignores faster breakthrough of short chain PFAS compounds like PFBA, estimated at only 1 year, if used as a criteria for GAC media replacement
- MVD assumes GAC replacement costs ***in perpetuity*** after 5 yr. funds spent
- Settlement agreement only applies to MVD Wells 4&5, no other MVD wells
- MVD solely responsible for compliance with MCLs, not Saint-Gobain
- Excluded public review, participation, voting (many customers not happy)
- Polluter assumes zero risk (cost escalation, overruns, MCL compliance, etc)

Settlement Agreement Comparison

Saint-Gobain PFAS air emissions facility in Hoosick Falls, NY

2016: ***NY Dept of Conservation*** issued "Order on Consent and Administrative Settlement" for ***Hoosick Falls, NY; Saint-Gobain responsible for the following***:

- Designed & built new PFAS treatment plant expansion to existing Hoosick Falls treatment plant at its own cost
- Operates / Maintains PFAS treatment plant GAC filters at its own cost
- Replaces GAC media at breakthrough of first PFAS compound (PFBA) at its own cost, despite PFBA not even being regulated in NY
- Responsible for PFAS compliance at its own cost
- Continues to fully fund PFAS related costs and to maintain PFAS treatment in perpetuity, to present day
- NY DEC advocated on behalf of Hoosick Falls, and effected the settlement

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
STATE SUPERFUND PROGRAM
ECL §27-1301 *et seq.*

In the Matter a Remedial Program for

ORDER ON CONSENT AND ADMINISTRATIVE SETTLEMENT
Index No. CO 4-20160212-18

PFOA impacting the Village of Hoosick Falls Municipal Water Supply, private drinking water wells in the Town of Hoosick,

and

DEC Site Name:	**Saint-Gobain McCaffrey Street**
DEC Site No.:	442046
Site Address:	14 McCaffrey Street Hoosick Falls, NY 12090 Rensselaer County

Hereinafter referred to as "McCaffrey Site" or "Site"

for the Site in accordance with the terms of this Order.

C. IRM - Village of Hoosick Falls Municipal Water Supply Emergency Measures

1. a. Respondent Saint-Gobain has paid for the design and installation of a temporary granular activated carbon (GAC) water treatment system to address PFOA in the Village's municipal water supply system ("Temporary System"). The Temporary System was selected and designed as the best available technology to reach the lowest achievable levels of PFOA. The Temporary System is now fully operational and DOH announced on March 30, 2016 that repeated testing of the MWS shows non detection of PFOA. Respondents shall pay for all costs associated with the continued operation, monitoring and maintenance, and any additional modifications thereto, of the Temporary System by the Village until a full capacity treatment system is installed as per

sampling data shall be made available to the public in a timely manner. Respondents shall pay, on a timely basis, for all costs associated with the design, installation, operation, monitoring and maintenance and any necessary additional modifications or assessments of the Full Capacity System, and all additional incidental operation and maintenance costs of the MWS caused by the installation of Full Capacity System. All submittals pursuant to this Subsection II.C.1.b shall be deemed submittals to DEC pursuant to this Order.

The State of New Hampshire

DEPARTMENT OF ENVIRONMENTAL SERVICES

Thomas S. Burack, Commissioner

April 1, 2016

Sent Via Email and Regular Mail

Edward J. Canning, Director
Environment, Health & Safety
Saint-Gobain Performance Plastics
One Sealants Park
Granville, NY 12832

RE: PFOA matters in Southern New Hampshire

Dear Mr. Canning:

This letter is a follow up to our meeting held on March 28, 2016, regarding environmental contamination, including but not necessarily limited to drinking water and groundwater contamination, near the Saint-Gobain Performance Plastics (Saint-Gobain) facility located at 701 Daniel Webster Highway in Merrimack, New Hampshire (the Facility). As you are aware, a number of public water systems and private drinking water wells tested in recent weeks have been found to contain elevated levels of perfluorinated compounds (PFCs), in particular, perfluorooctanoic acid (PFOA). Several of these wells have shown levels of PFOA that are above the EPA Provisional Health Advisory of 0.4 ug/l. Based on the information available to date, the New Hampshire Department of Environmental Services (NHDES) has determined that Saint-Gobain is potentially responsible for the cleanup of the Site, restoration of impacted groundwater and drinking water, other actions necessary to protect public health and the environment, and any costs NHDES incurs for addressing the impacts of this contamination.

3. Public Water Supply Treatment:

   a. Provide for the design, installation, operation, maintenance and monitoring of all water treatment system(s) necessary to effectively treat and remove PFC contamination from all affected public water systems. This may most effectively be accomplished by Saint-Gobain by working in collaboration with the affected public water system suppliers, to ensure fully operational treatment not later than August 1, 2016, and will include, but may not necessarily be limited to, the following elements:
      - Retain the services of a qualified professional engineer to design the treatment system(s) necessary to effectively treat and remove PFC contamination from all affected public water systems.
      - Upon approval from NHDES and the public water supply owner(s), construct, install and make operational the approved treatment system(s).
      - Provide for the necessary long term operation, maintenance, and monitoring of the installed treatment systems.
   b. As an interim measure, provide all necessary funding to the public water suppliers to enable the use of alternative water supplies or installation of temporary water treatment systems while the permanent systems are being designed and installed. This must be accomplished not later than June 1, 2016.

Settlement Agreement - Lessons Learned

- Put burden of construction, costs, risks, on polluter, not the victim
- Research other settlement agreements thoroughly first
- Seek public's review, comments, votes, if possible before signing
- Set settlement amount = bid amount ($5.1M bid vs. $4.1M Estimate)
- Make polluter design, build & operate the treatment system
- Specify GAC media replacement based on actual breakthrough of first PFAS compound (PFBA), not based on estimated PFOA or PFOS breakthrough (i.e. 1 year vs. 2 year media replacement)
- Don't agree to too short of O&M period (goal is perpetuity!) Really?
- YES, really! Hoosick Falls! Consider PFOA's half-life is 90 years
- 100 ppt will take 300+ years to drop to 12 ppt PFOA MCL (not including recurring GW contamination from contaminated soil)

Customer Petition Warrant Articles

- Main funding mechanism used for Wells 2, 3, 7, 8 PFAS Plants
- MVD is private / governmental entity, not part of Town
- "Village District" form of government – Annual Meeting
  - 5 Commissioners, meet monthly, 3 year term, $100/month
  - MVD can propose its own warrant articles (but litigation)
  - Customers can propose their own petition warrant articles
  - All warrant articles are discussed, can be modified, and are voted on at annual meeting by ballot
  - Warrant articles that require bonding / loans over $100,000 must pass by 2/3 majority
- No specific polluters yet identified at wells 2,3,7,8
  - Settlement agreement not currently possible w/o polluters

Why Petition Warrant Articles Needed?

- PFOA at MVD Wells 2, 3, 7, 8 is below 70 ppt ***(was compliant)***
- ***BUT!:*** Public became concerned 70 ppt PFOA limit is too high!
- ***WHY?:*** PFOA "limits" drop from ***400 to 100 to 70 ppt*** in 2016
- January 2018: NH Legislature passes a law requiring NH DES to establish Science-Based MCLs for 4 PFAS compounds by 2019
- June 2018: ATSDR issues screening level for PFOA at ***11 ppt***
- January 2019: DES sets draft PFOA MCL at ***38 ppt***
- February 2019: DES issues Notice that MCLs may need to be ***lowered "substantially" below 38 ppt*** due to Minnesota Model
- MVD Wells 2,3,7,8 exceed ***half of 38 ppt*** proposed draft MCL
- No specific polluters presently identified at Wells 2,3,7,8
- February 2019: Customer files two petition warrant articles: One requires elective PFAS treatment at MVD Wells 2&3; one at 7&8

Tools from MVD Used by Petitioners

- April 2018: MVD aware PFAS MCLs were due end of 2018, PFAS treatment could be required (by MCLs or warrants), & wanted to understand PFAS treatment options, costs, & rate impacts
- June 2018: MVD commissioned ***PFAS Treatment Cost Study***
  - Considered Granular Activated Carbon (GAC) & Anion Resin
  - Recommended GAC treatment (no lag vessels – compliant)
  - Recommended Two GAC PFAS Treatment Plant Solutions:
    1. Expand existing greensand plant at Wells 7&8 for PFAS
    2. Combine Wells 2&3 and build one new PFAS treatment plant for both wells combined
- October 2018: MVD commissioned ***PFAS Treatment rate Impact study,*** based on costs in the PFAS Treatment Cost Study

March 2019 MVD Annual Meeting

- Prior to meeting, **significant grass roots public outreach** by concerned residents, Merrimack Citizens for Clean Water (cleanwaternh.org), Facebook (Merrimack, NH Water Issue), public postings, community meetings, presentations, etc.
- Petition ***Warrant Articles #2 & #3 both pass, 92%*** voted in favor; 286 people in attendance
- Vote requires that MVD must move forward with PFAS treatment of MVD wells 2,3,7,8 (all MVD wells will be treated)
- This vote was for ***elective PFAS treatment***, not required by regulation, since no violations of 70 ppt limits existed at that time (no lag vessels were needed)

Impacts of Recent NH PFOA MCL

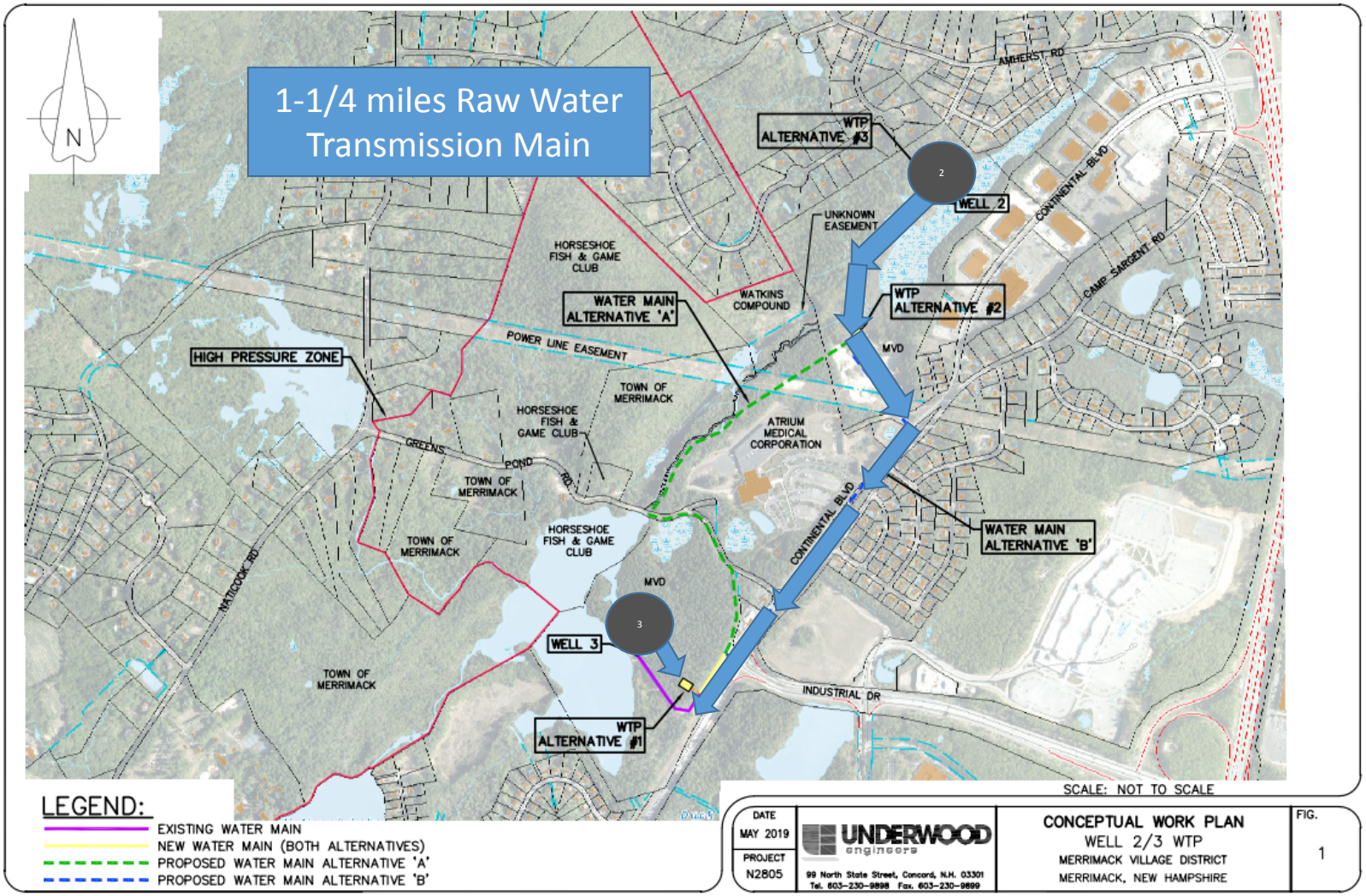
- June 2019: DES released ***PFOA MCL of 12 ppt*** (effective October 2019)
- Requires PWSs to test for PFAS for 4 quarters; if avg PFOA > 12 ppt MCL at end of 2020, then PWS ***begins to plan*** for PFAS treatment
- All MVD wells expected to exceed 12 ppt PFOA, based on historic data.
- PFAS Treatment at all MVD wells will be mandatory, no longer elective
- ***Customer Petitioner got it right!*** Recent PFAS MCL "Stay" delayes
- Will need to add lag GAC vessels for MCL compliance
  - Lag vessels will add $3 million to $14.5 Million Treatment costs
  - Treatment Costs will increase to $17.5 Million
- MVD is ahead by 2.5 years due to voters passing of petition warrant articles (MVD started planning in June 2018 vs. end of 2020 by law)

Approved Funding Requests - August 2019

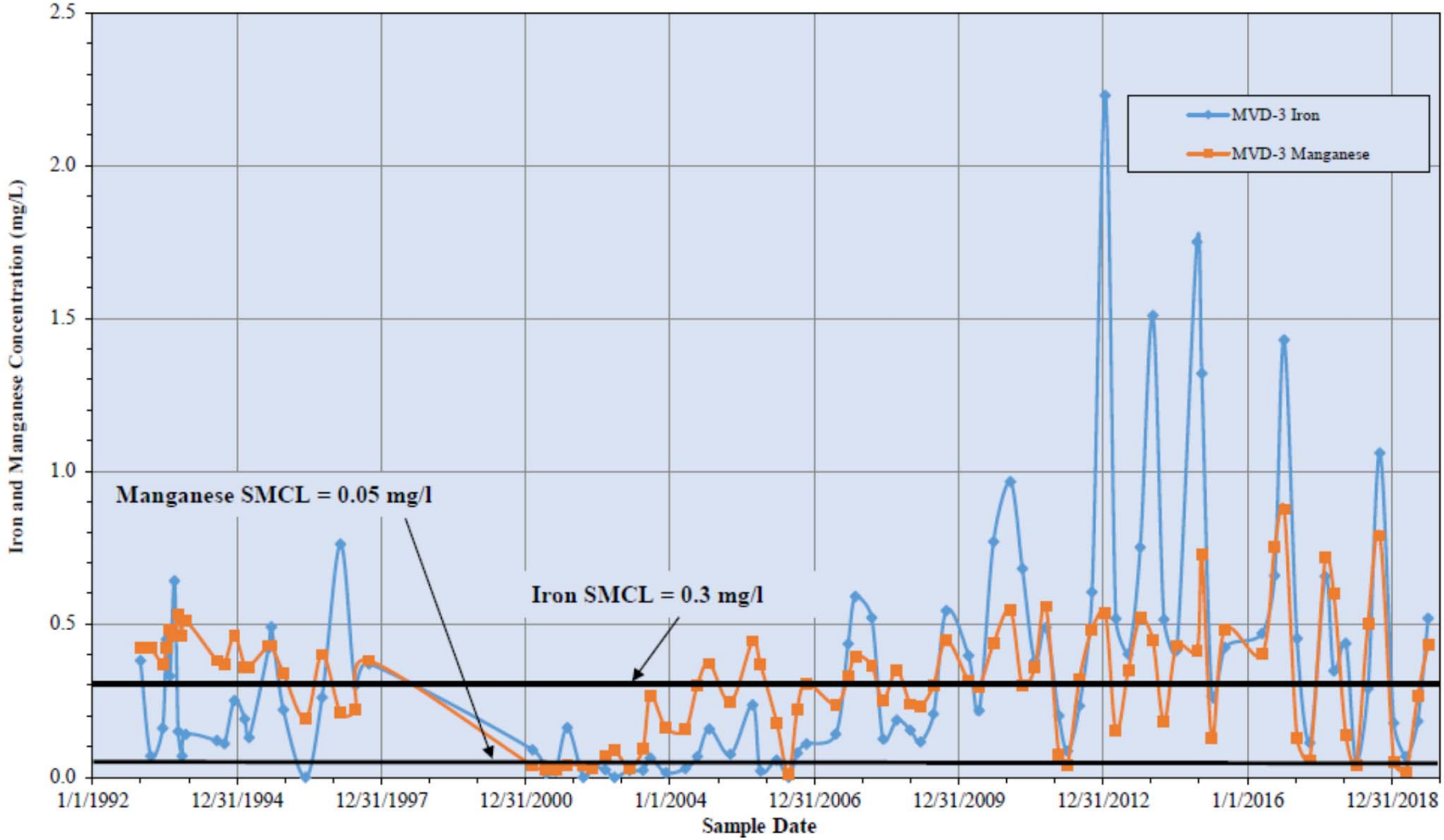
Funding Source	Award	
DWGTF (Loan)	$ 6,264,500	(Wells 2&3 and 7&8)
DWGTF (Grant)	$ 1,450,000	(Wells 7&8 only)
DWSRF (Loan)	***$ 6,500,000***	(Wells 2&3 only)
MVD Capital Reserves	$ 285,000	(Wells 2&3 and 7&8)
	$14,500,000 to meet PFAS warrants	

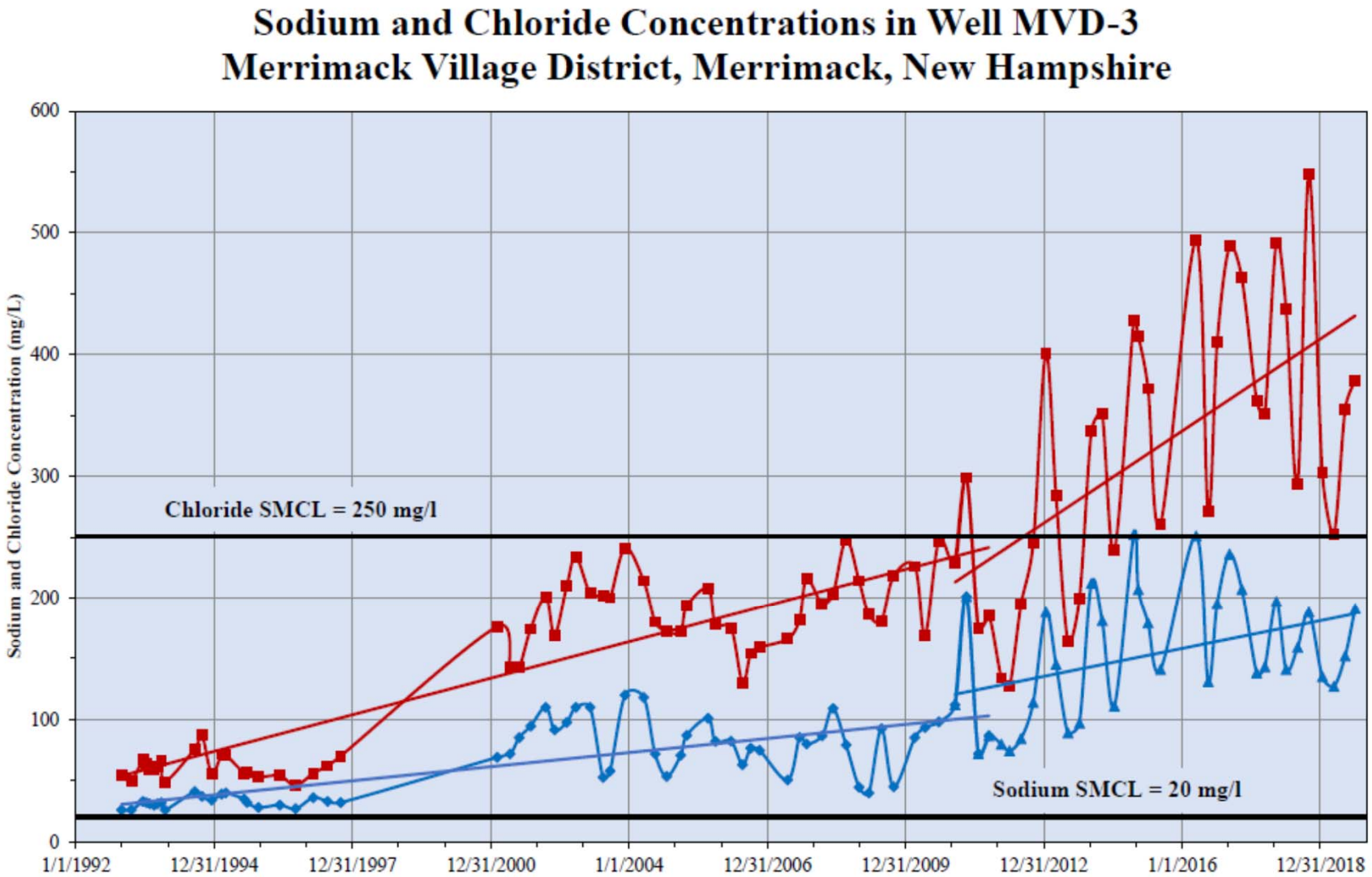
- Does not include extra $3 Million to be needed for lag vessels
- May possibly need to seek additional $ 3 Million funding by MVD warrant article at 2021 or 2022 Annual Meeting
- Well 3 Iron & Manganese treatment cost escalation and Salt Contamination has caused MVD to seek to replace Well 3

Wells 2&3 PFAS Treatment



Iron and Manganese Concentrations in Well MVD-3
Merrimack Village District, Merrimack, New Hampshire




Sodium and Chloride Concentrations in Well MVD-3
Merrimack Village District, Merrimack, New Hampshire
Sodium and Chloride Concentration (mg/L)
600
500
400
300
200
100
0
Chloride SMCL = 250 mg/l
Sodium SMCL = 20 mg/l
1/1/1992
12/31/1994
12/31/1997
12/31/2000
1/1/2004
12/31/2006
12/31/2009
12/31/2012
1/1/2016
12/31/2018

New Hampshire Legislative Service Requests (LSR's)

Query Results

New Query

LSR's Found: **4**

2021-0011	HB	**Title:**	requiring parties responsible for pollution of a drinking water supply to be financially responsible for certain consequences of that pollution.
		Sponsors: (Prime)	Ralph Boehm, Richard Hinch, Jeanine Notter, Richard Lascelles
2021-0068	HB	**Title:**	creating a statute of limitation on civil actions relative to damage caused by perfluoro**alkyl** and polyfluoro**alkyl** substances.
		Sponsors: (Prime)	Suzanne Vail
2021-0087	HB	**Title:**	relative to standards for per and polyfluoro**alkyl** substances (PFAS) in drinking water and ambient groundwater.
		Sponsors: (Prime)	Rosemarie Rung