75 Million Gallons Later 5 Year Update on World's First Regenerable Resin System for PFAS







## Agenda

World's First Regenerable Resin – PFAS Removal

- Site history & background
- · How does ion exchange resin remove PFAS?
- Pilot test at Pease AFB former FTA (Site 8)
- Full-scale design and implementation
- PFAS removal results
- · Lessons learned
- Summary
- Q&A

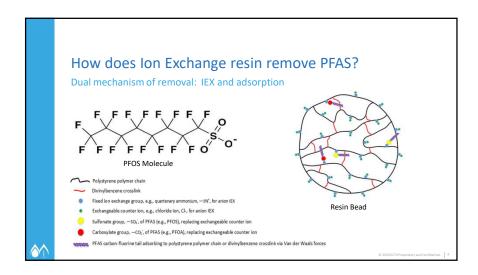


## Site history and background: Former Pease AFB

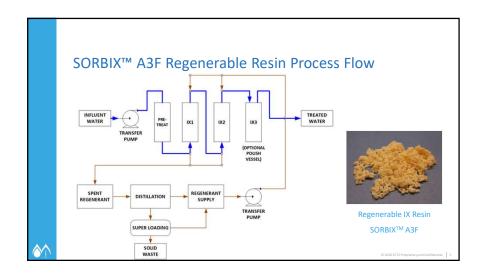
- Decades of fire fighting training activities on
   Sito
- Other sources of PFAS contamination include misc. spills and response to aircraft fire, etc.
- PFAS detected in drinking water during 2014 sampling event
- Public advocacy groups formed
  - · PFAS Blood Testing Program
  - · Risk assessment and remediation
- High profile site that drew local and regional media attention



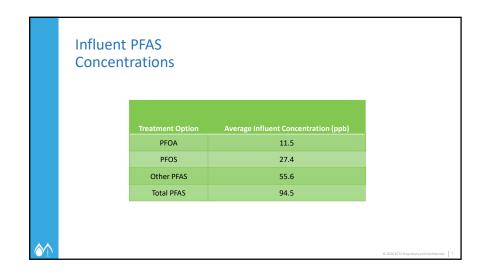
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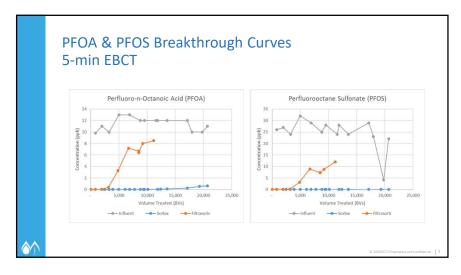


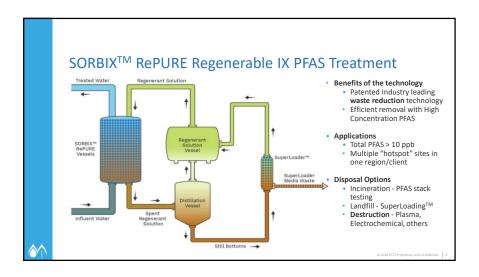


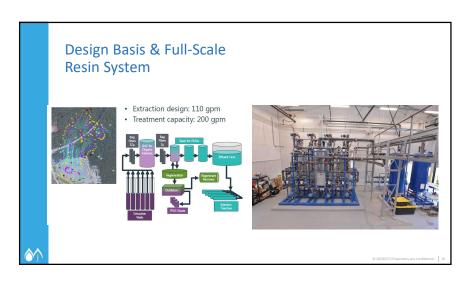


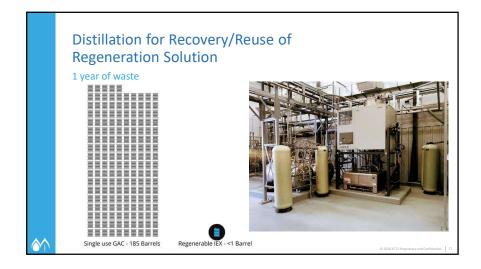


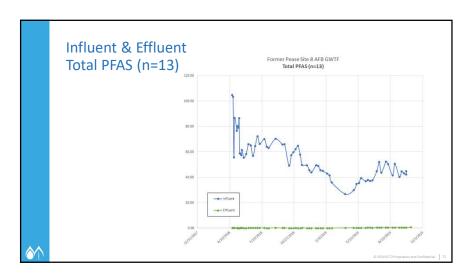


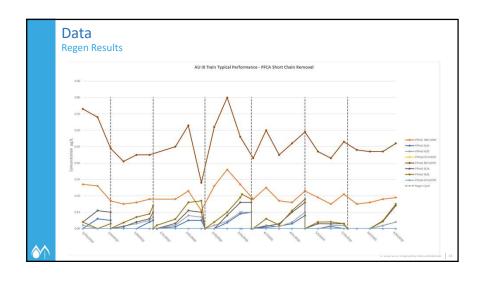




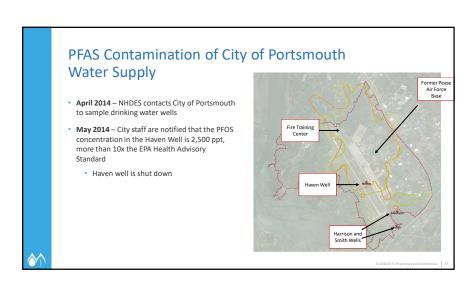


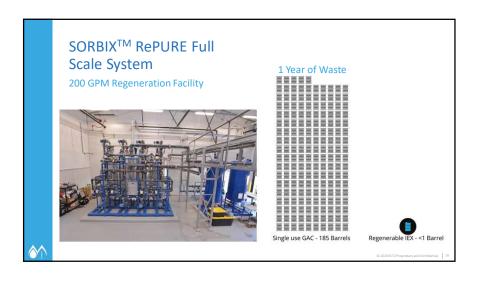




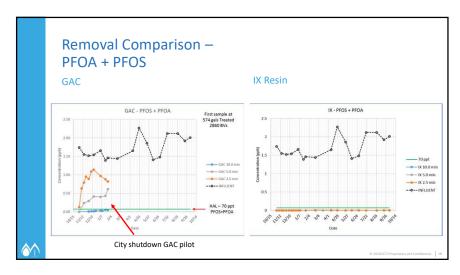


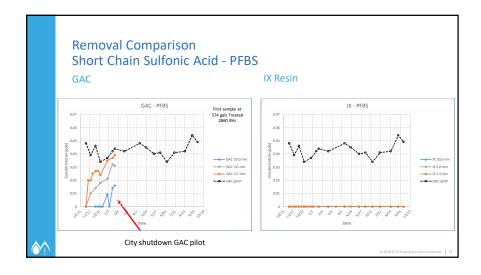
## Challenges and Lessons Learned Iron fouling at the front end of the plant Iron <0.4 mg/L during initial pumping tests of three wells Iron >8 mg/L with ten wells operational Required shutdown of seven wells until pre-treatment was put in place

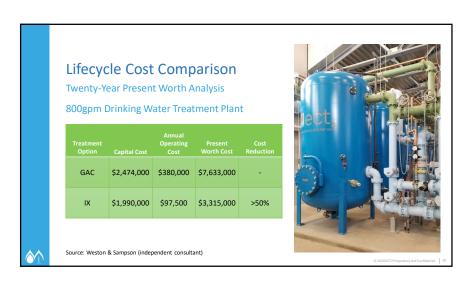












## **Summary & Conclusions**

- IX resin systems are very effective at treating waters impacted by PFAS
- The effluent quality from the IX resin system has been consistently non-detect for all 13 monitored PFAS compounds, including the short chain species, regularly achieving compliance with the 70 ppt HAL target.
- Multiple successful IX resin regenerations have been performed to date.
   Operational modifications have been made to address and correct minor challenges with the distillation system.
- The original super-loading media is still operational, having removed and concentrated greater than 99.99% of the recovered PFAS mass, and therefore no PFAS waste has needed to be hauled off site after years of operation.
- Based on the success of the drinking water pilot test, the City of Portsmouth also decided to install an IX resin system to treat water extracted from on-site drinking water wells.







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