Paradise Irrigation District

Water Supply Recovery Program Update

May 14, 2019

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Water Works Engineers

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Summary of Progress Since Last Town Hall Meeting

- Last Town Hall Meeting was 7 weeks ago (March 27th)
  - We knew we had a problem with VOC contamination
  - We said we were developing a plan
  - The plan could take up to 3 years to execute (until 2022)
  - We said we would work on optimizing the approach and being responsive to the community's need for clean water
- Since then
  - A detailed Recovery Plan was developed and delivered in mid-April
  - Initial implementation of the Recovery Plan started in April and is ongoing

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Interim Water Supply

- Policies and procedures are in place to provide interim supply of construction and/or irrigation water supply to anyone requesting it for any service which serves a burned lot
  - Requests for Interim Water to be made to PID. Four step process
    - Contact PID (by phone or in person) to make a request for Interim Water Supply
    - Pay the fee for the cost of materials, installation and testing of a backflow preventer (between $546 - $957 depending on service size)
    - PID will schedule the installation of the backflow preventer and restored service
    - Once Install is complete, water use can begin under the current use advisory
    - Still only readiness to serve fee will apply, no demand charge for Interim Water Supply

Recovery Plan

- Draft Recovery Plan Presented at PID Board Meeting April 17th
- Includes five major components
  - Temporary Water Supply
  - Preparation of Sampling Sites
  - Sampling
  - Replacement of Damaged Infrastructure
  - Return to Potable Service
- This is a living document. As we learn more we will make adjustments

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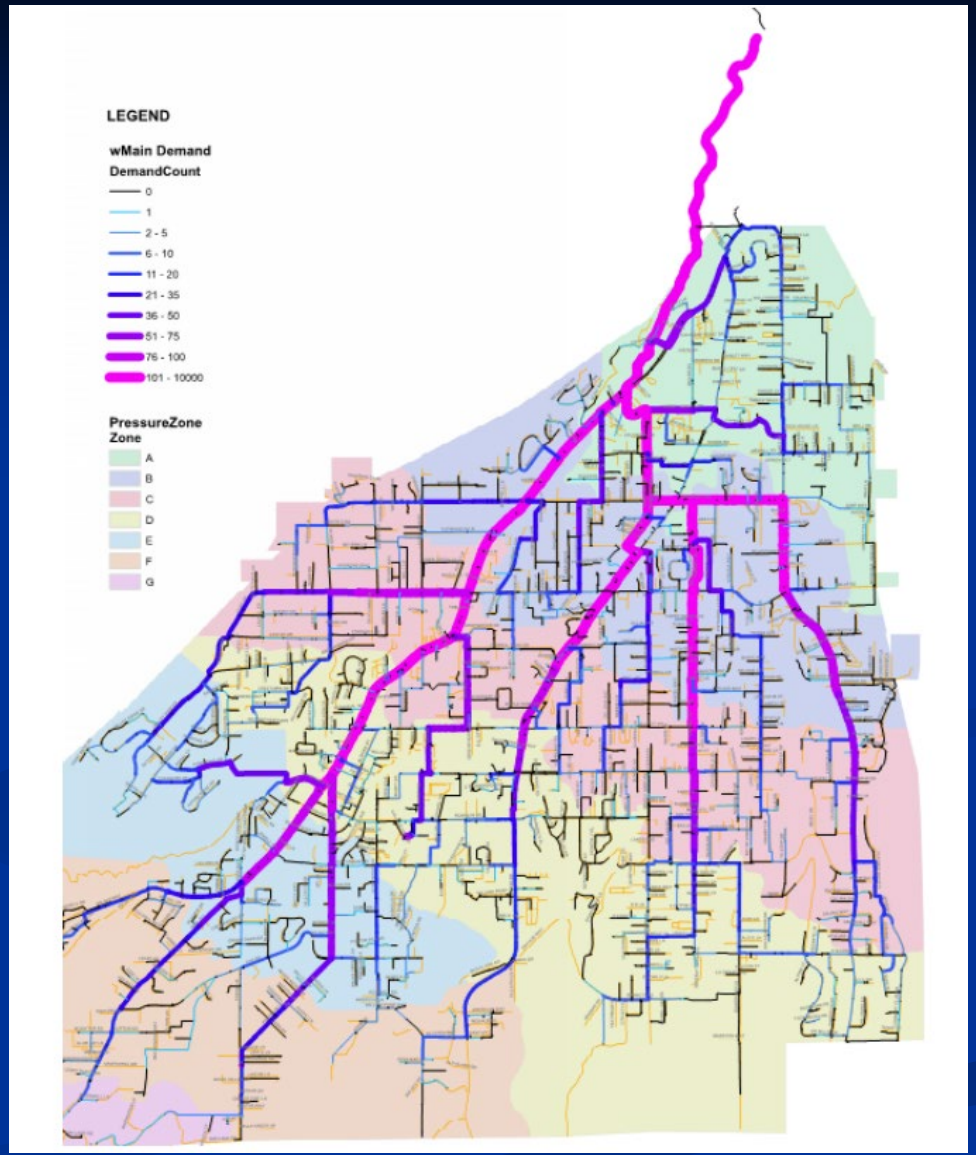
Recovery Plan

- 1,000,000 feet of water main
- 10,500 service laterals
- 1400 standing structures
- Includes a plan for prioritizing testing and recovery
- With prioritization, recovery timelines improve
  - Mid to late 2020 for standing structures
  - 2021 for all services



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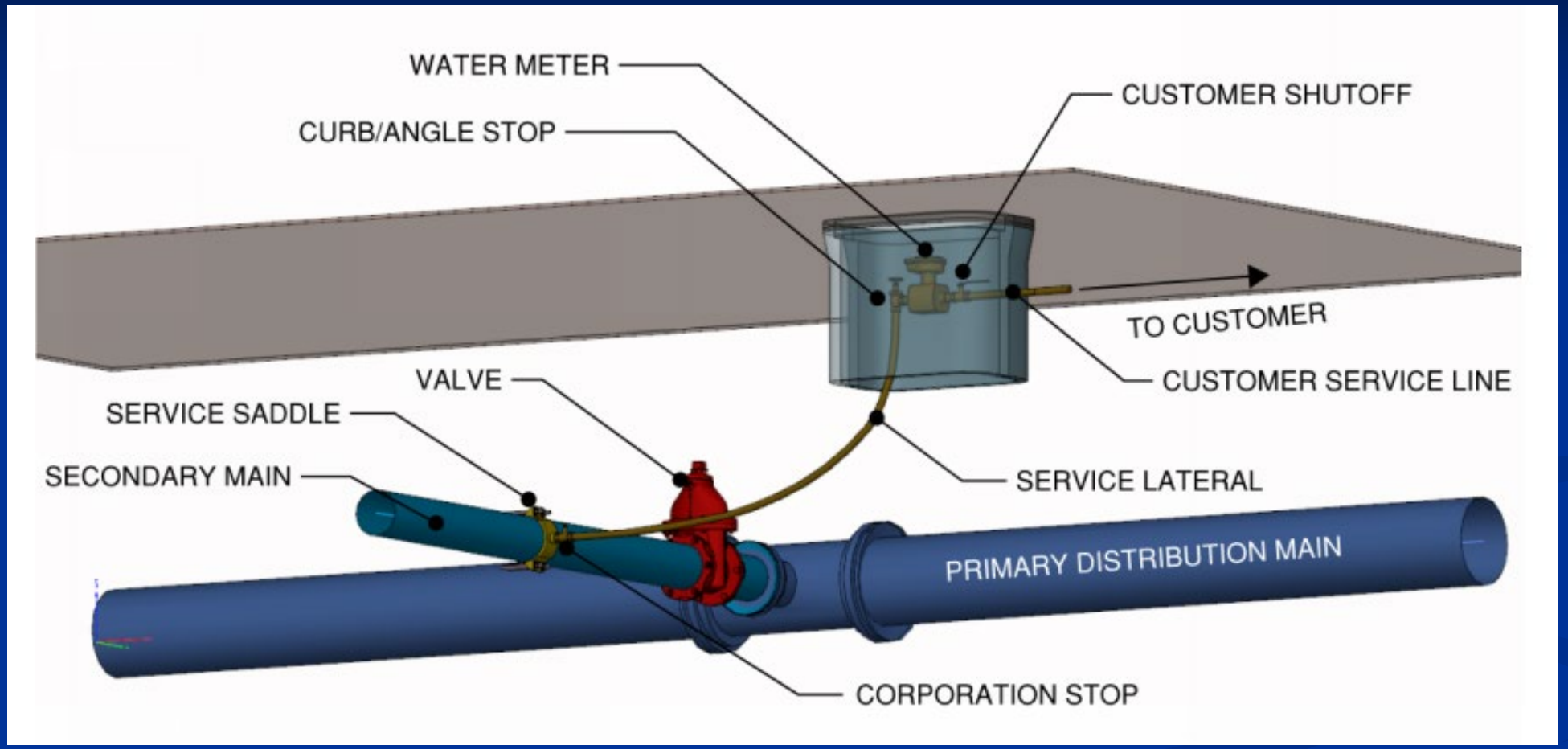
PID Water Infrastructure



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MCLs and PPBs

- MCL is Maximum Contaminant Limit
  - For Benzene
    - CA MCL is 1 part per billion (ppb)
    - Federal MCL is 5 ppb
- For VOCs, the MCL is based on the effects of chronic (lifetime) exposure

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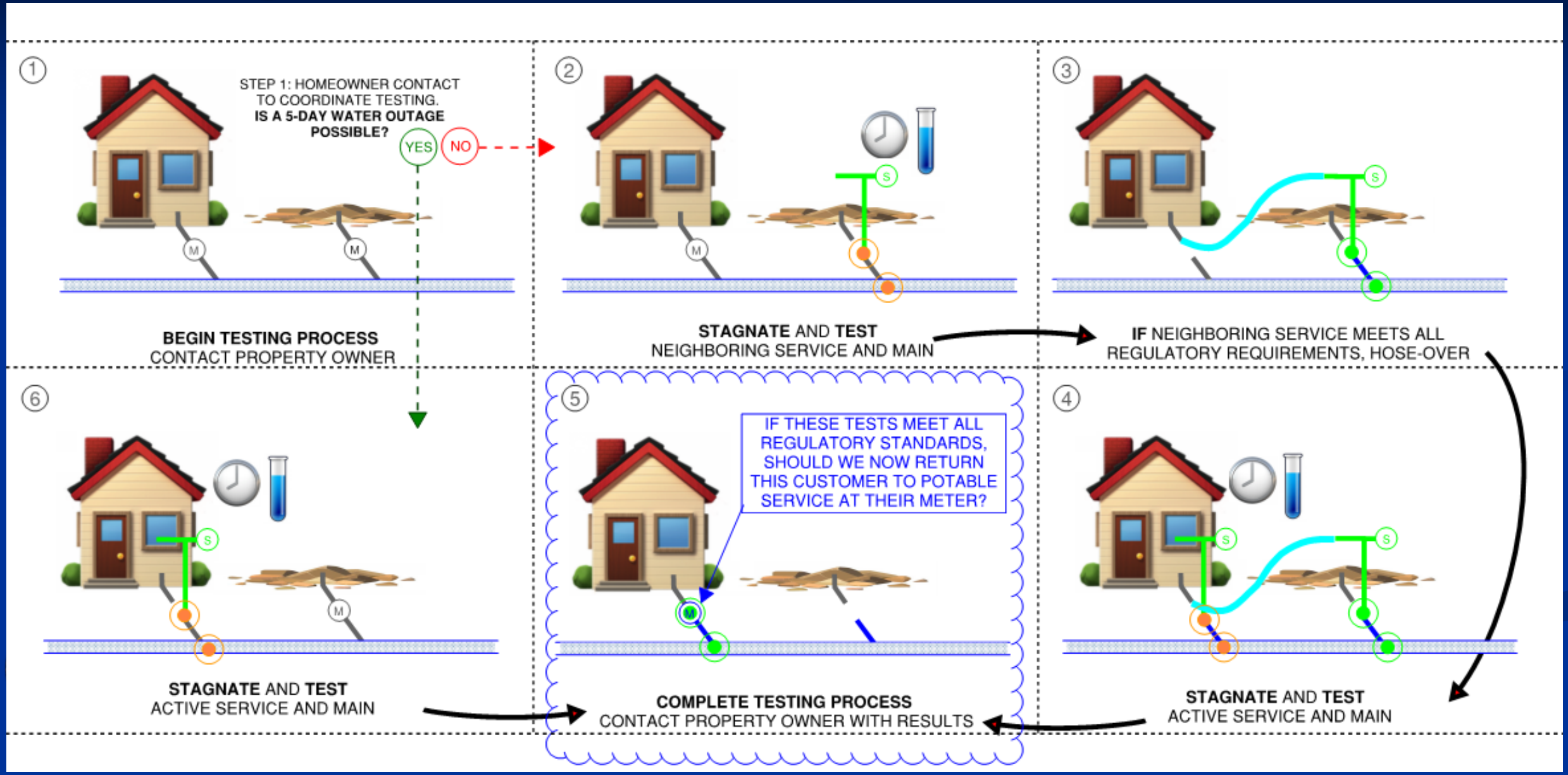
Summary so far…

- The Recovery Plan was drafted
- Interim Water Supply is available to customers
- Implementation of the Recovery Plan has begun

Recovery Plan Implementation

- PID Staff have applied intense efforts to begin implementation of the Recovery Plan
- Mutual Aid from other water utilities are augmenting PID Staff in the initial steps of Recovery Plan implementation
  - EBMUD – 6 water utility professionals for a week in early May
  - SFPUC – 14 water utility professionals for a week in early June
- In early May, this team was able to prepare and sample approximately 20 sites per day (each site with a service and main sample)

Sampling Protocol for Standing Structures

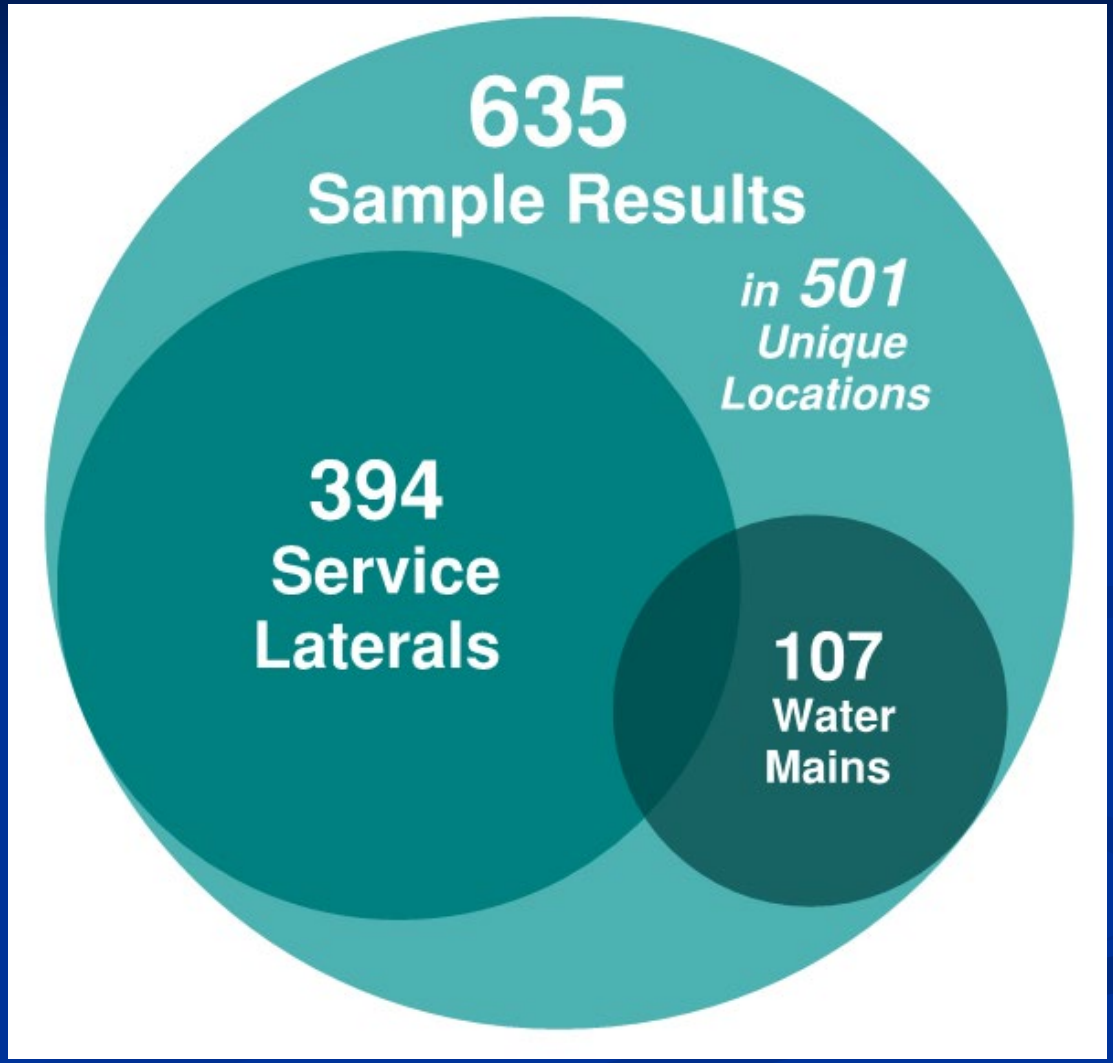


Sampling Protocol Video

- Working with our partners at CalOES, a video was produced to describe this sampling protocol
- Let's take a look!

How many samples have been taken?

- Over 800 samples taken to date
- 635 sample analysis results available as of May 9th
- Sampling and analysis is ongoing



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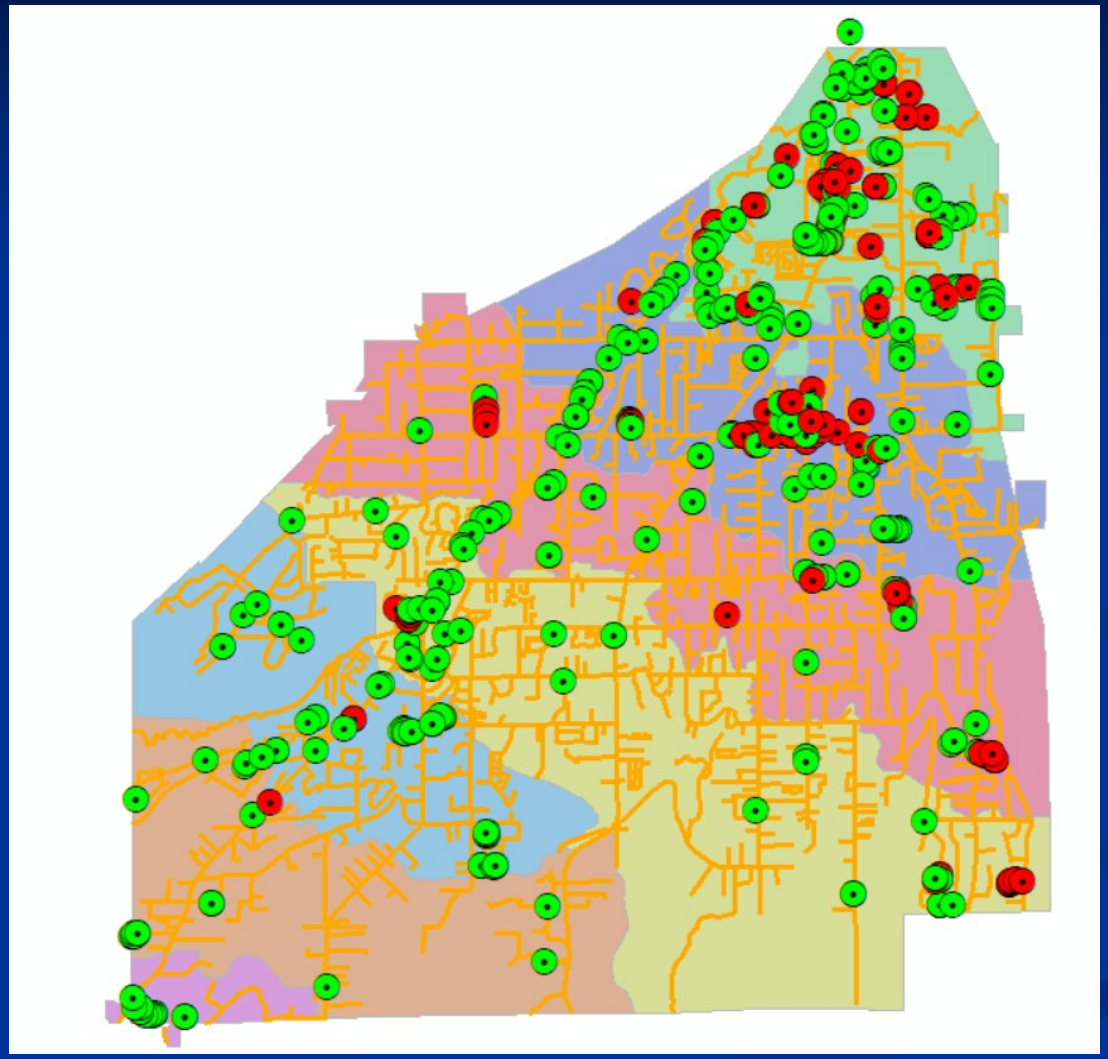
How much VOC contamination is there?

- 501 locations sampled and analyzed
- 207 VOC detect (41%)
- 109 over MCL (22%)



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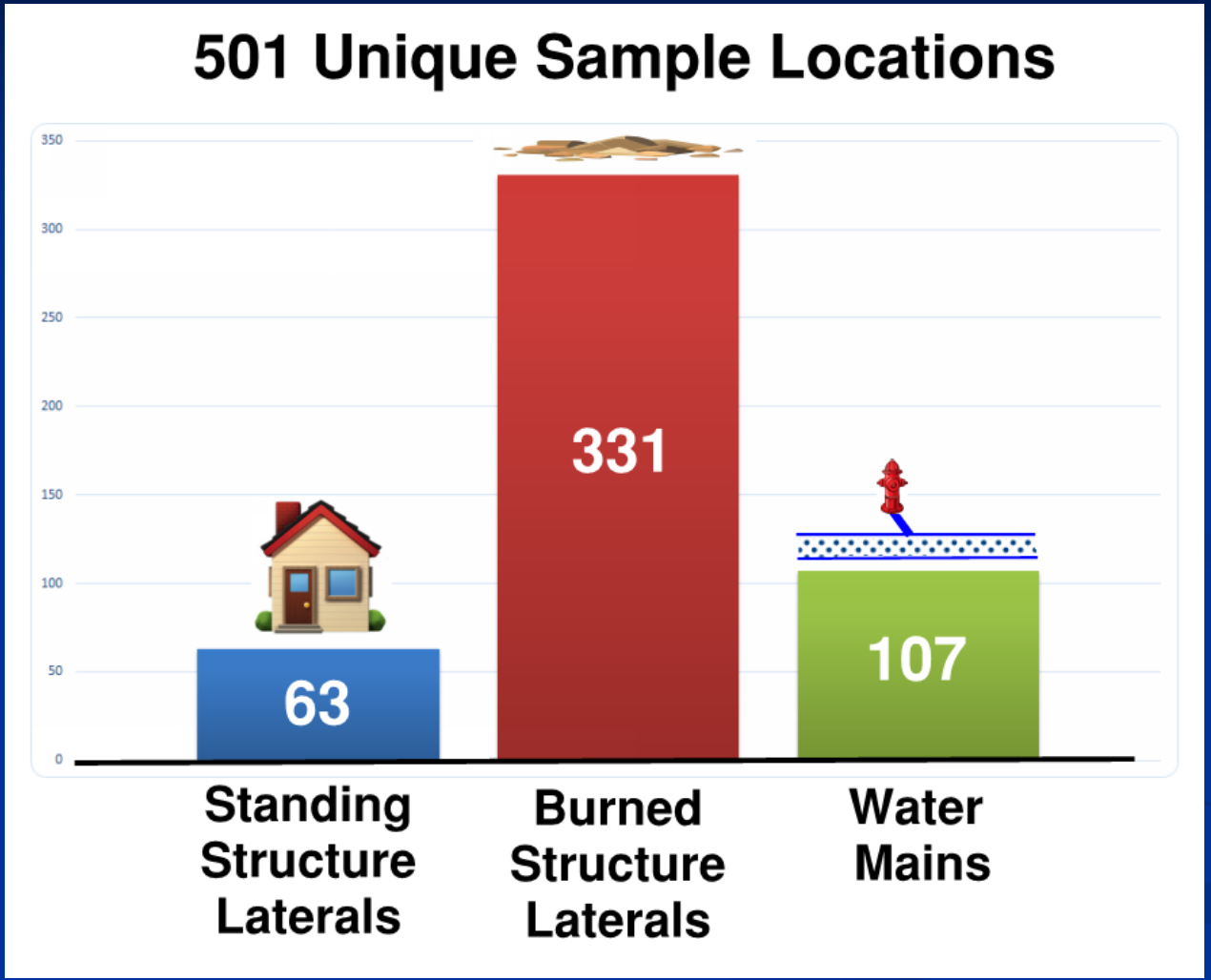
Where has sampling been done?



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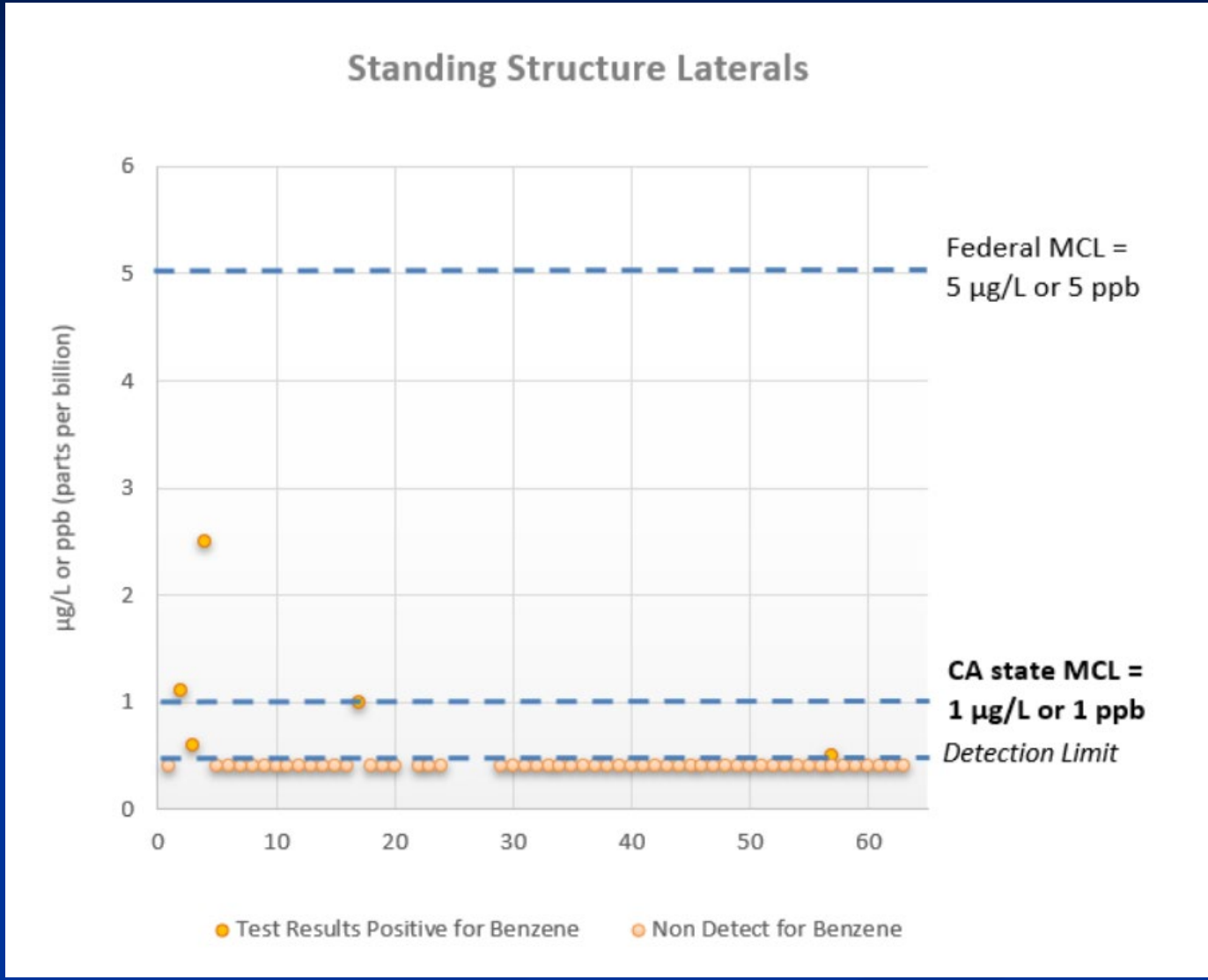
Where is the VOC contamination being observed?



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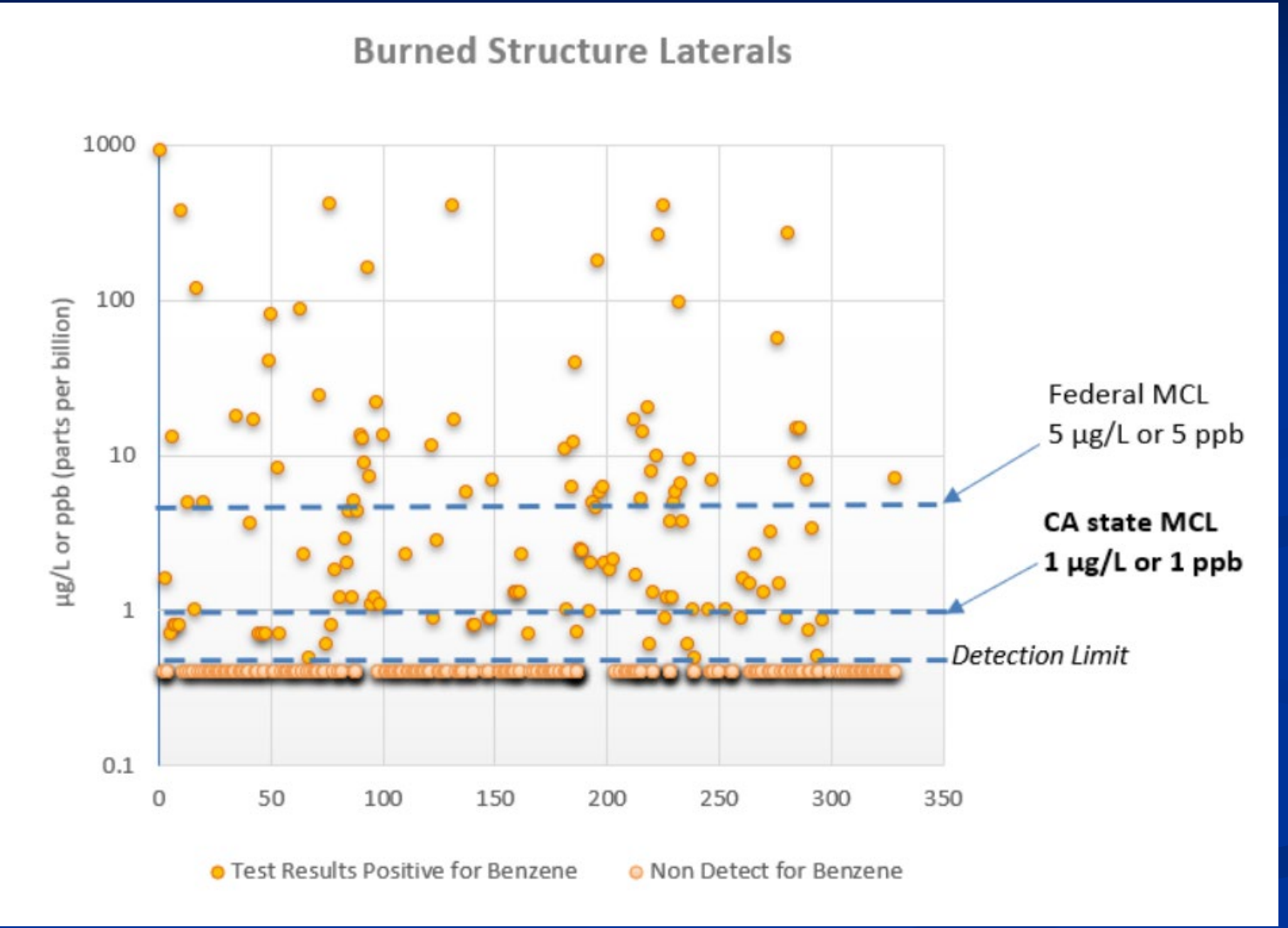
Where is the VOC contamination being observed?



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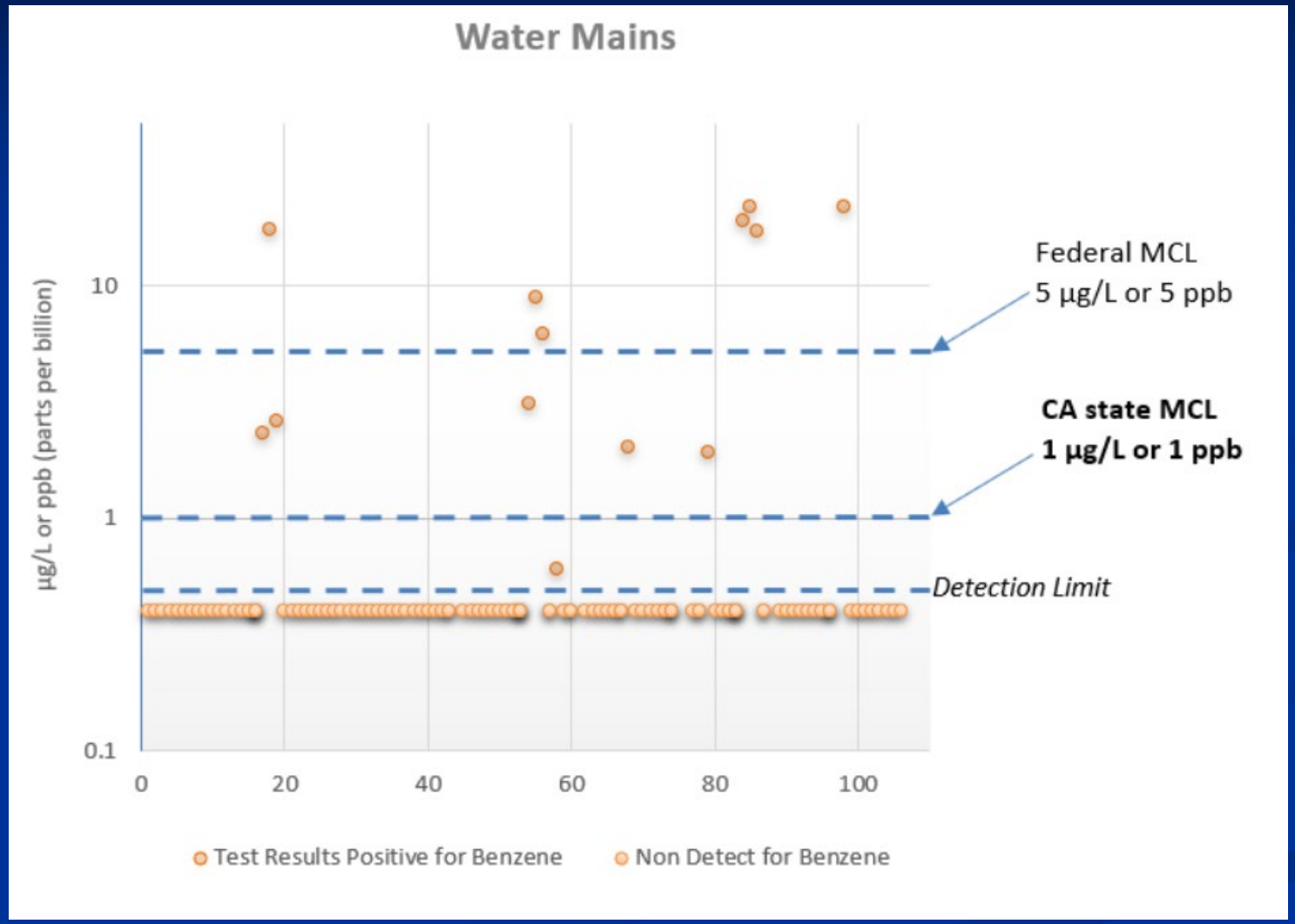

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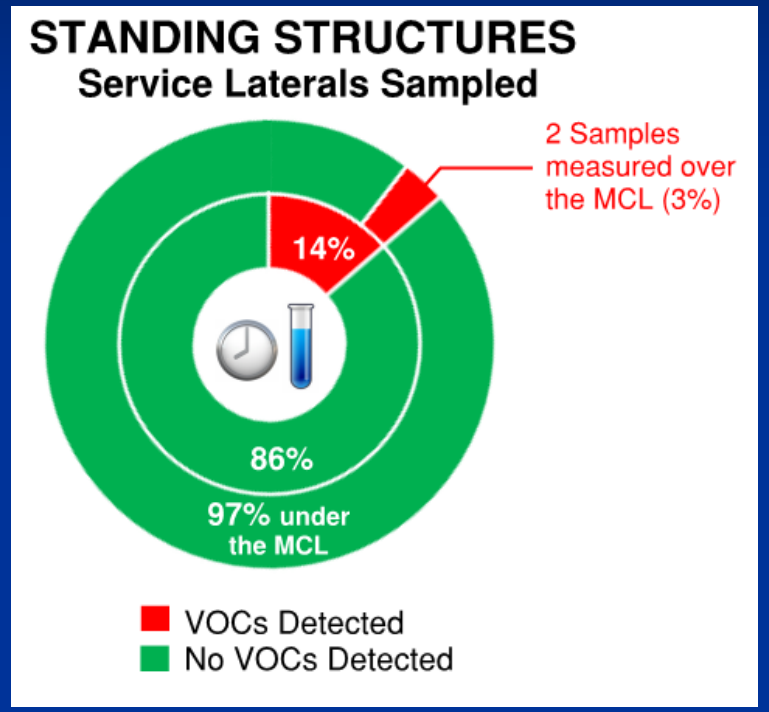

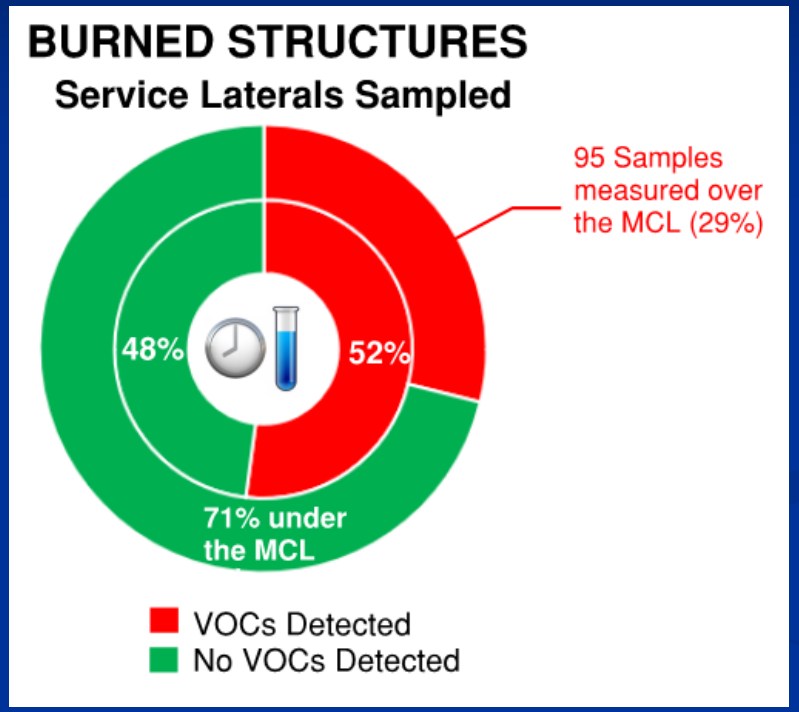

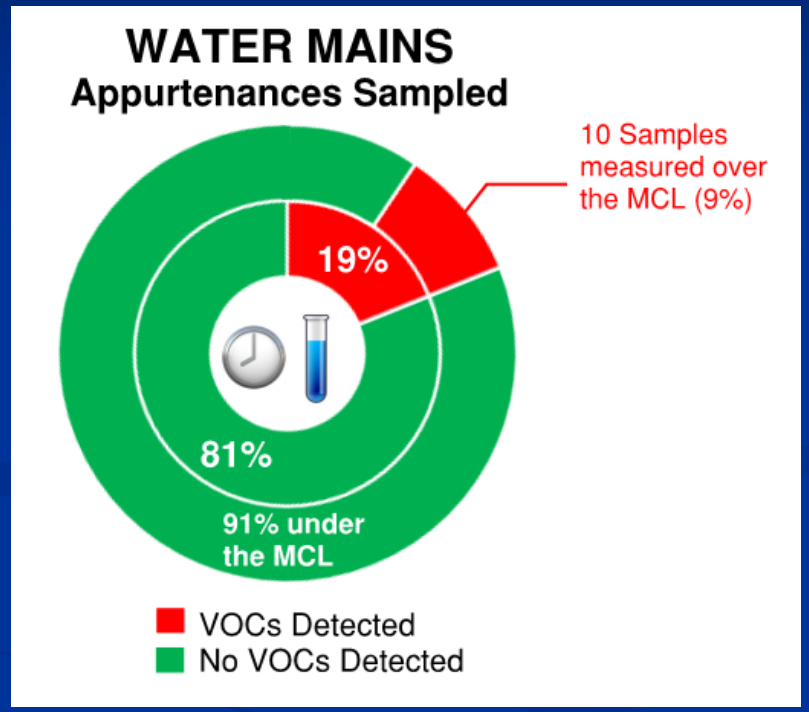

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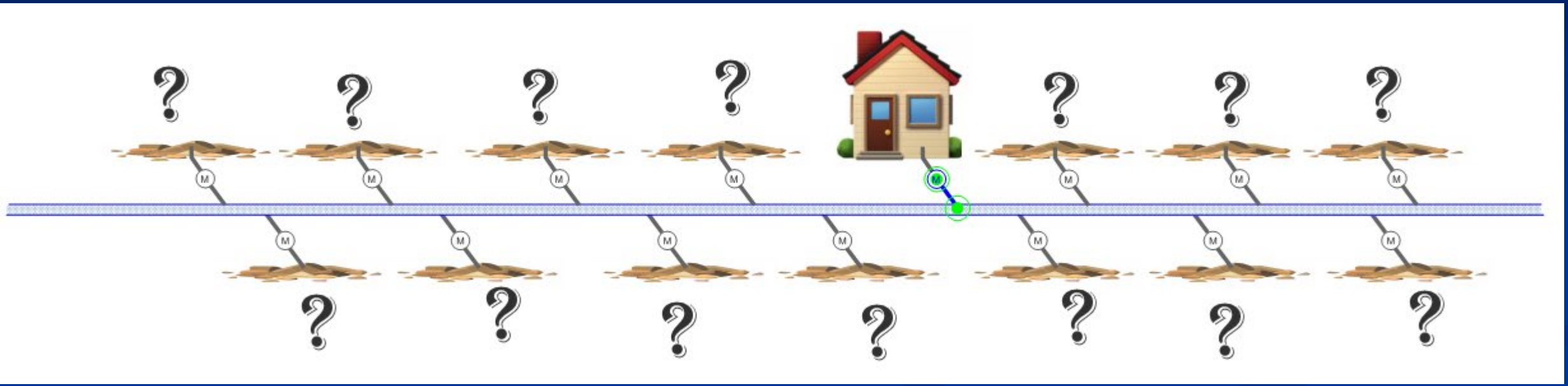
That is a lot of data

- What does this data mean?
  - Water in the majority of sampled laterals serving standing structures are non-detect for regulated VOCs
  - Contamination is focused on samples from laterals serving burned structures
  - Water in the majority of sampled mains are non-detect for regulated VOCs
- What are the limitations of this data?
  - Not all of the data is non-detect
  - It is one sample in time – will it change?

If a lateral is uncontaminated, then what?



- Will uncontaminated laterals become contaminated by neighboring laterals? Will contaminated laterals cause main contamination?

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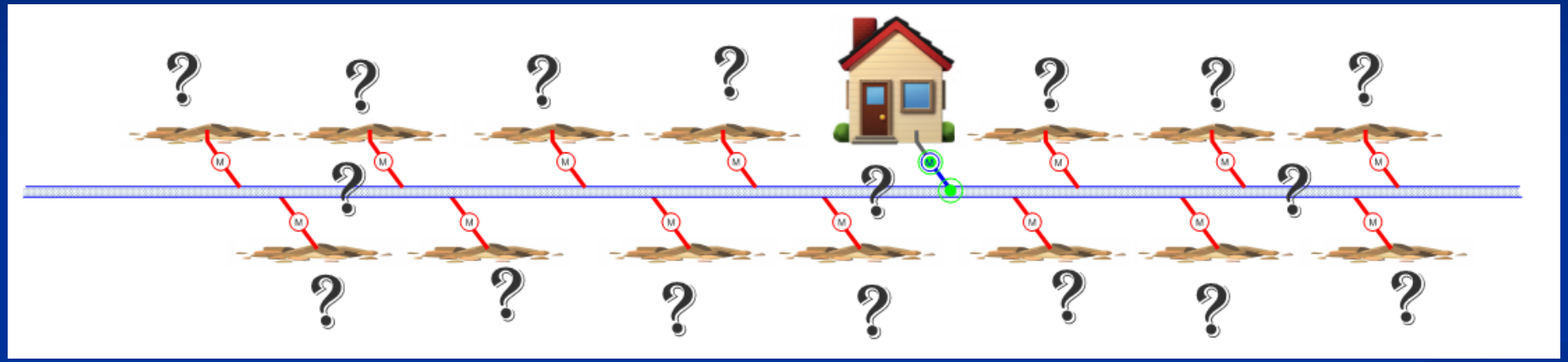
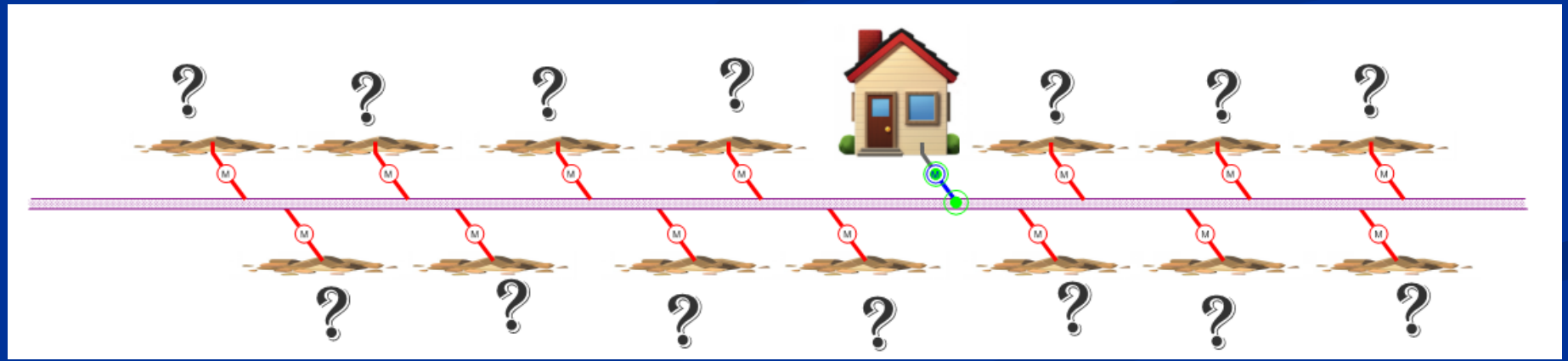
Contaminant Dispersion

- Dispersion is the movement of contamination through the water





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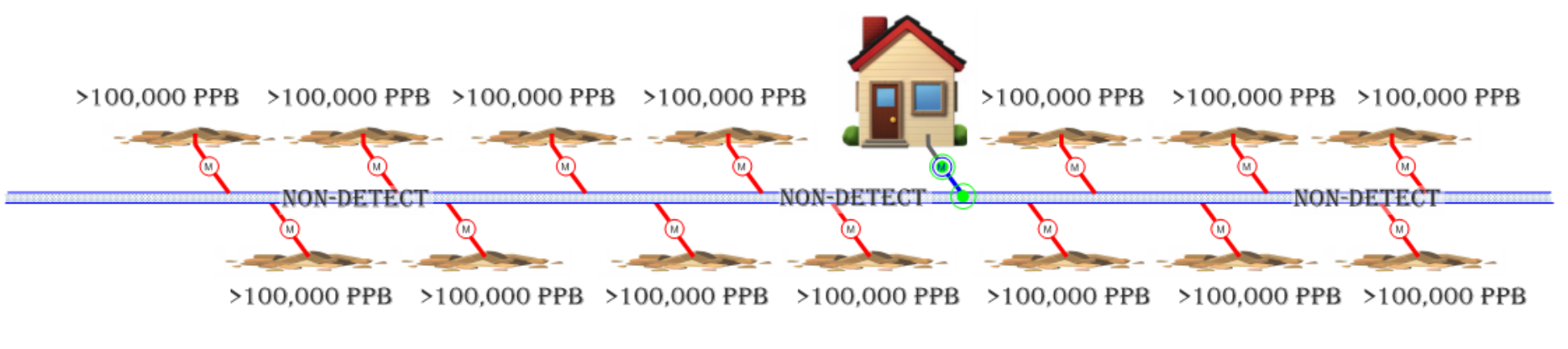
Does modeling of contaminant dispersion show that uncontaminated laterals will become contaminated?

- Dispersion modeling, using Division of Drinking Water methodology, shows that even with heavy contamination of service laterals (>100,000 ppb) mains will not become contaminated via dispersion



- Experts agree that dispersion not a contamination threat

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Dilution

- Dilution is another possible source of contamination
- If a system which has contaminated laterals depressurizes, the water in the laterals drains, mixes, and is re-distributed, dilution modeling shows that under some conditions (especially with smaller mains and highly contaminated laterals), a lateral previously served clean water could have contaminated water supplied to it.
- This could occur during main breaks with significant water loss or times of significant local water use events (e.g. fire fighting)
- This is a remaining concern

Two choices for Recovery

Original Plan: Test all services and mains before returning any to potable service

- Most conservative
- Will take several years to complete
- Still does not result in 100% certainty

Current Thinking: Once a service and main have tested non-detect, return that service to potable

- Allows for the water utility to better support rebuilding efforts
- Mathematical modeling and real data substantiate this approach
- Requires vigilance and communication of ongoing test results to the entire community

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Conditions for returning a lateral to potable service

- Lateral and main test at the lateral are non-detect for VOC
- Main which serves the lateral is flowing
- Water utility professionals' judgement indicate that the distribution system in the area that serves that lateral supports return to potability

Steps in the return of a lateral to potable service

- Once a service lateral has been determined to be potable, the property owner will be notified in writing
- Ongoing retesting of mains will be done in order to maintain vigilance of water quality in the mains

Possible conditions for rescinding renewed potable service

- Main break or other depressurization event
  - Main will be flushed and disinfected following main repair, per current standard operating procedures
  - The main will be resampled for VOCs following main repair
  - If resampling shows VOC contamination, potable service will be rescinded
- Ongoing testing shows change in the character/behavior of the contamination
  - If we find that ongoing testing points to a different character to the contamination, we will share that with the public and take appropriate action

Planned next steps

- Sample all standing structures and return to potable service as appropriate, as quickly as we can
- Develop plan for supplying potable water service to customers moving back to properties with burned structures
  - Temporary housing
  - Permanent re-build (accounting for fire sprinklers in new construction)
  - New customers
- Develop plan for long-term replacement of all contaminated laterals
- Working with FEMA and CalOES to secure funding for the Recovery

Questions

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