

Technical Assistance  
Leak Detection

California  
Rural Water  
Association



Date

7/18/2017  
Abel Silva

Leak Detection Specialist/Resource Development Unit  
California Rural Water Association

Water System

Frazier Park Public Utility District  
Jonnie Allison  
4020 Park Drive 93225  
661-245-3734  
System #1510007/AR# 5406



# Water System Inventory



Water System	Frazier Park Public Utility District
Street	Park Drive
City	Frazier Park
MHI (< \$49,191)	36,156
Population	2,691
Connections	1,300
Year Est.	1939
Flat Rate/Tiered	Flat with consumption
Maps/As-builts/GIS	Yes
Dirt Roads/Paved	Both
Sewer/Septic	Septic
System Operator	Jonnie Allison D2/T2

Wells	Qty.	Avg. Depth	Surface Water				Treatment Plant			
	4	34								
Main Pipe	Size	Miles	Asbestos	Ductile Iron	Steel	Cast Iron	PVC (C-900)	CMLC		
	2 4 6 8 10 12	25	✓		✓		✓			
Service	Size	Poly	Copper	Galvanized	HDPE	PVC	Driscoll	Other		
	½ ¾ 1 1½ 2	✓		✓						
Valve	Size	Qty.	Gate	Butterfly	Globe	Check	Ball	Plug		
	2 4 6 8 10 12	200	✓							
Hydrant	Size	Qty.	Wharf-Head	Blow-Off	Commercial	Residential	Meter			
	2 4 6	60				✓				
Meter	Size	Qty.	AMR/AMI	P/D	Smart	Turbine	Compound	Mag		
	¾ 1 1½ 2 4 6	1,300		✓						
Air Relief & Vacuum	Size	Qty.	Booster Pump & Hydro Pneumatic		Qty.	Storage Tanks		Qty.		
	¾ 1 1½ 2	20			6			12		
Backflow Valve	Size	Qty.	Pressure Reducing Valve			Size	Qty.			
	¾ 1 1½ 2 4					2 4 6 8	4			

**Comments:** Frazier Park Public Utility District was established in 1939. The district is at about a 20% water loss to date. The district is mainly on steel pipes except for a section of PVC. Water Meters in district are old and outdated which is an water loss issue due to inaccurate reads. The district has Twelve Water Storage tanks in which two of them are leaking. Each of the two leaking tanks has Calcium deposits on outer tank. Both Harrison and Wolfe Booster pumps are outdated and leaking. Wolfe 2 tank shut off valve is inoperable. Wells 4-5 are leaking at packing, shaft is not online and causing issues.

- Recommendations:**
1. Infrastructure replacment of old outdated steel pipes and faulty valves.
  2. Replace old outdated Water Meters with Preferred Provider Program Kamstupp Smart Meters to insure accurate reads.
  3. Repair or replace leaking Water Storage Tanks Preferred Provider Program "Superior Tanks".
  4. Repair or replace old outdated Booster Pumps.
  5. Repair or replace inoperable shut off valve.
  6. Recommend additional TA for Wells, and Water storage tank issues.



# Leak Report

Date: 7/18/2017

System: Frazier Park Public Utility District

Leak Detection members: Abel Silva

Equipment Used: FCS Correlator and FCS Acoustic Ground Mic

Map Reference: Google Map/System Map

Street and/or Block Numbers: East End

Leak Number	Address of Suspected Leak	Utility or Customer (U or C)	Leak Pinpointed (Y or N)	Leak to be Rechecked (Y or N)	Leak Repaired (Y or N)	Not a Leak? (Date)

	Meters / Curb Stop	Hydrants	Valves	Test Rods	Other
Indicate Number of Manual Listening Points Used	8				
Indicate Number of Leak Noise Loggers Listening Points Used					

Miles of Mains Surveyed: .342 Survey Time: (Hours) 6

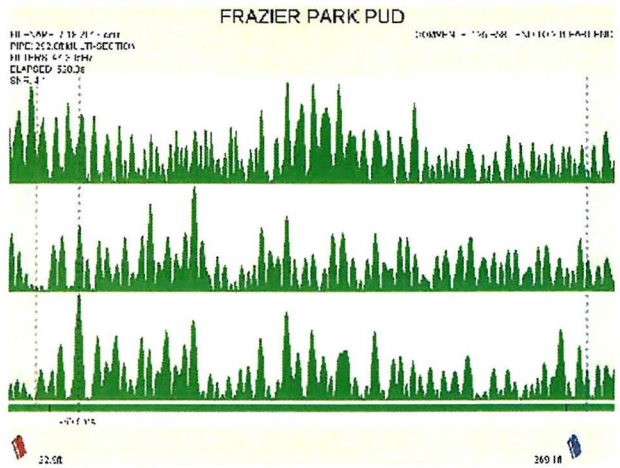
Number of Leaks Suspected: 0 Rechecked: (Numbers)

Number of Leaks Pinpointed: Pinpointing Time: (Hours)

Remarks: No leaks were found.

Please Note: This information is provided by "CRWA" as EDUCATIONAL and is NOT intended to replace the advice and direction given by your Regulator.

# Leak Detection Survey Results



## Survey Graph

The Correlator program allows for a "**Snapshot Option**". When the snapshot button is pressed during a correlation, the snapshot feature effectively enables the operator to compare noise levels at different points during the correlation process. When a leak is detected, the graph will have a peak in the same spot and will be located in the same spot on all snapshots. This will indicate the presence of a leak.

**The correlation has detected a "Leak(s)".**

The Correlator displays a peak in all snapshots graphs in the same spot but is not leak due to:

- Water passing through a meter.
- Running pumps.
- Electrical (Transformer).
- Illegal service.

**The correlation has detected "No leak(s)".**

X

The Correlator program snapshots are all differ in graph peaks, this indicates flow due to pumping, pressure surges or momentary use of water through meter(s).

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The Correlator program displays a "**Center Correlation**". The graph peak is in the center of the screen with equal footage on each side indicates the program sensor at a 50/50 point hears no sounds.

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**Comments:** No leak found

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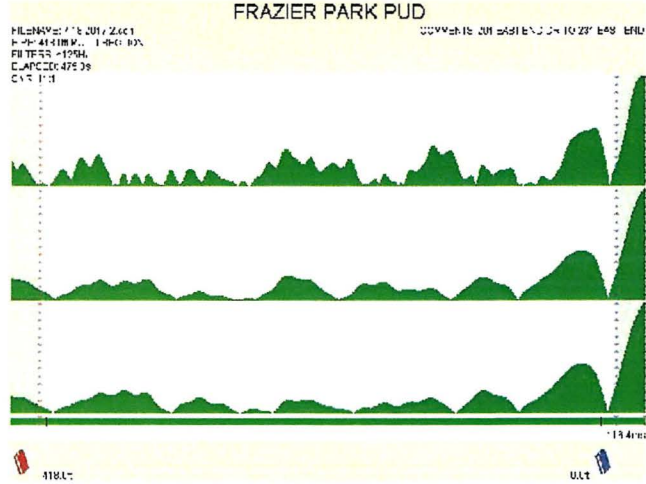


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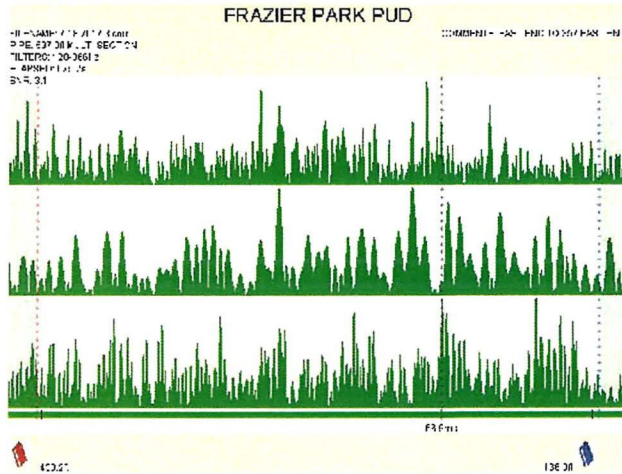


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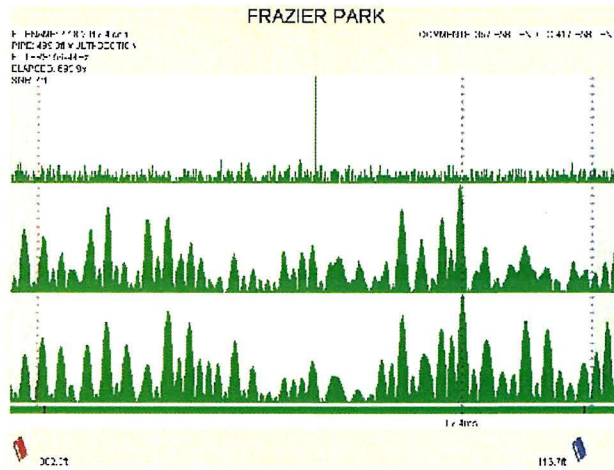


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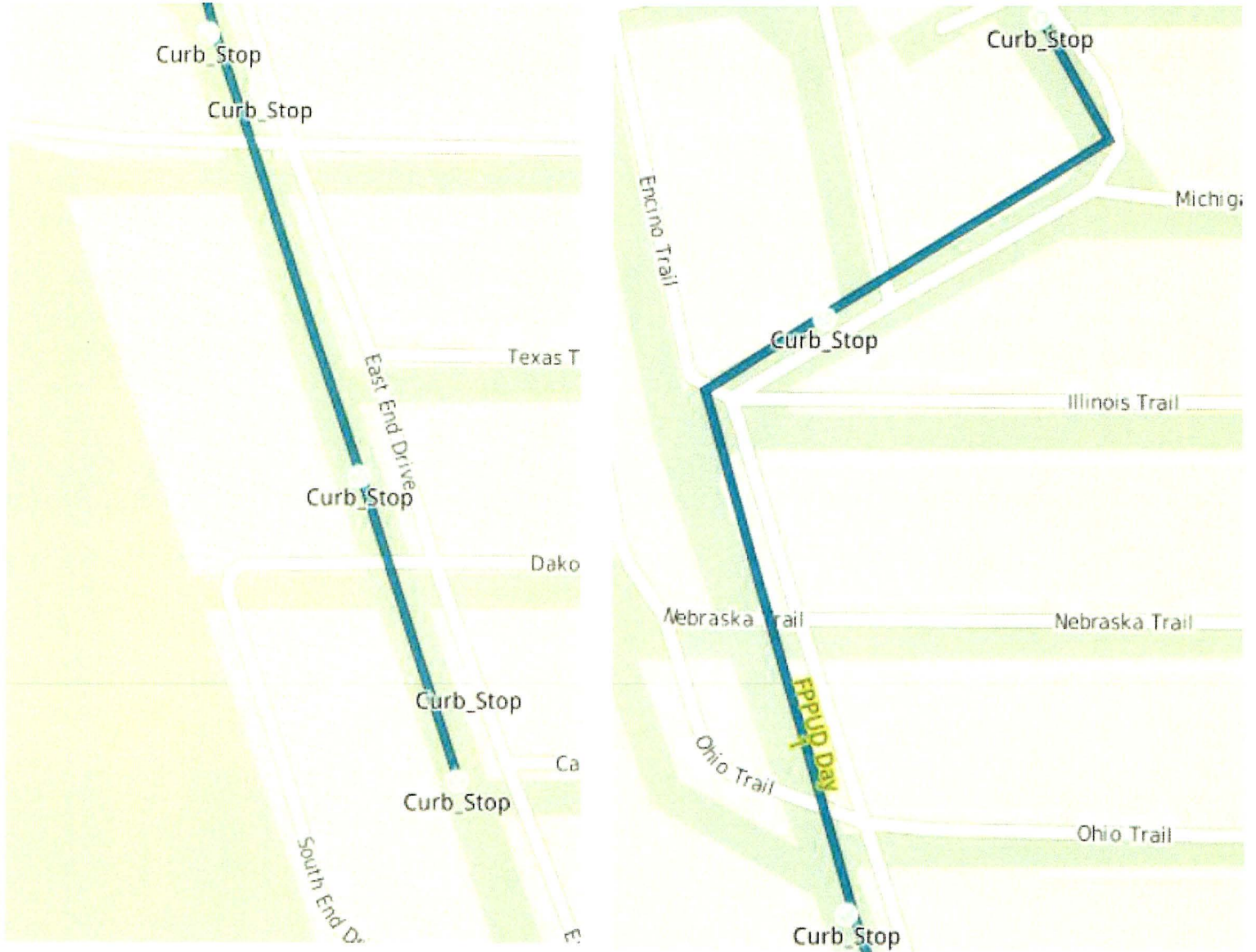
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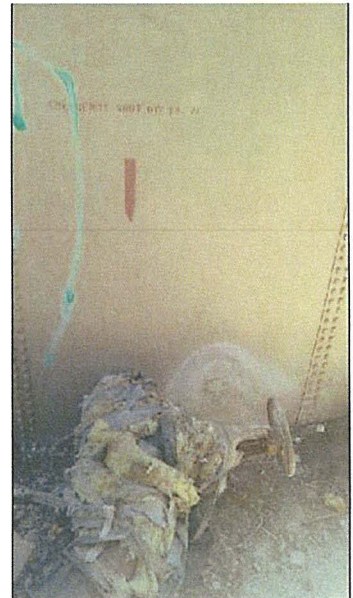
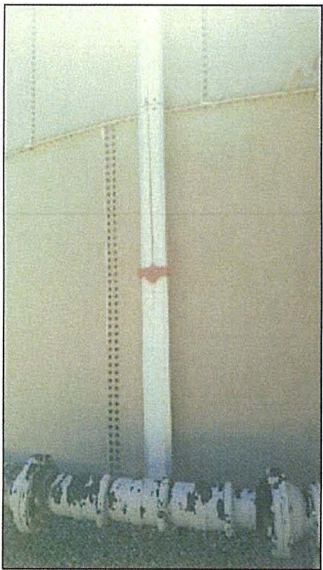
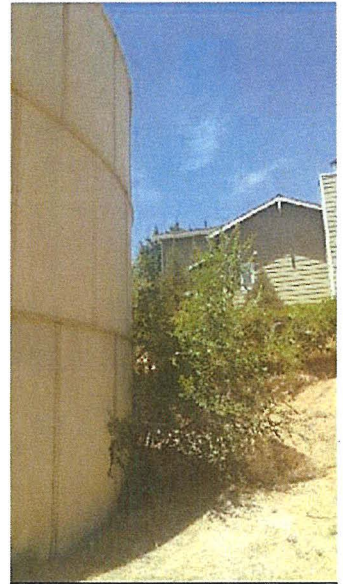
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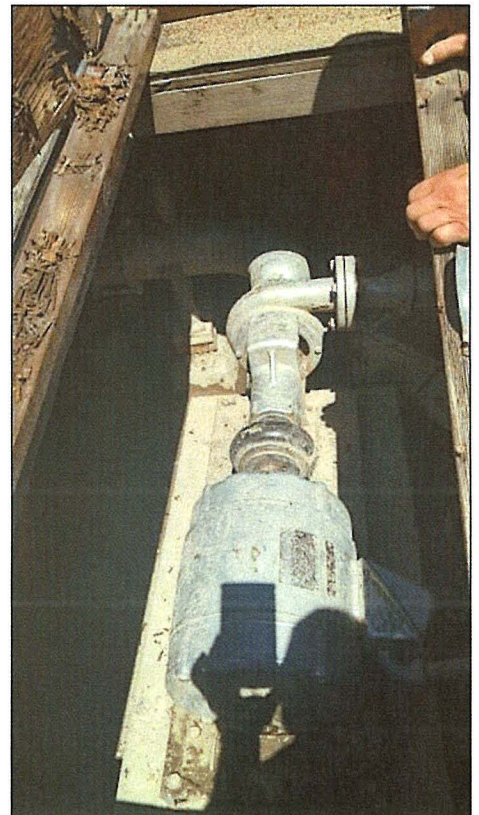
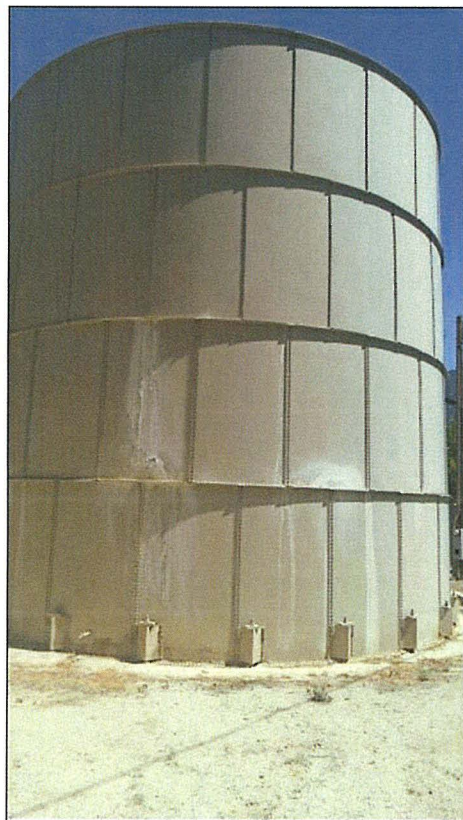
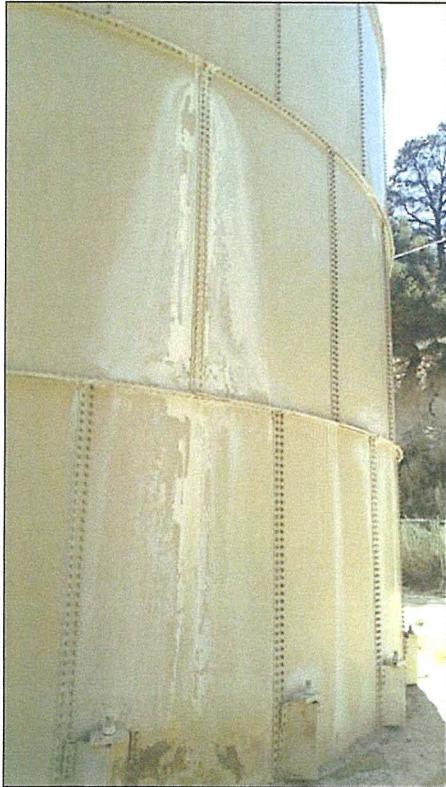
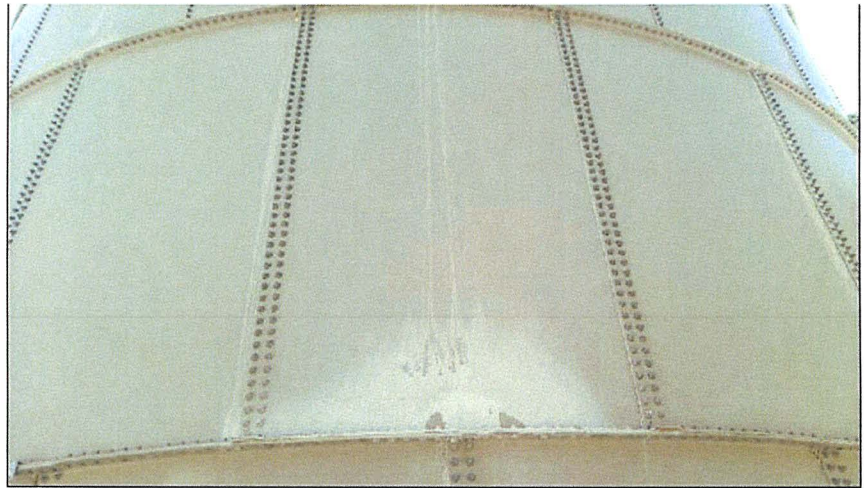
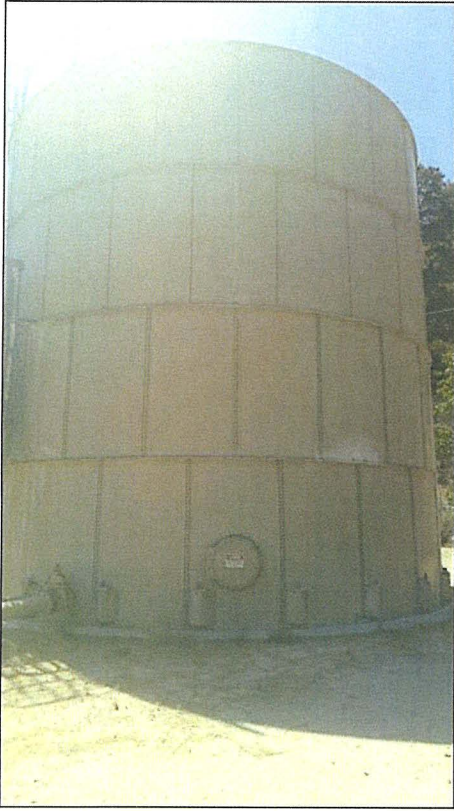
# Water System Map



# Water System Pictures



# Water System Pictures





# Leak Report

Date: 7/19/2017 Day 2

System: Frazier Park Public Utility District

Leak Detection members: Abel Silva

Equipment Used: FCS Correlator and FCS Acoustic Ground Mic

Map Reference: Google Map/System Map

Street and/or Block Numbers: East End/California Trail/Dakota/Pine Canyon

Leak Number	Address of Suspected Leak	Utility or Customer (U or C)	Leak Pinpointed (Y or N)	Leak to be Rechecked (Y or N)	Leak Repaired (Y or N)	Not a Leak? (Date)

	Meters / Curb Stop	Hydrants	Valves	Test Rods	Other
Indicate Number of Manual Listening Points Used	9	1			
Indicate Number of Leak Noise Loggers Listening Points Used					

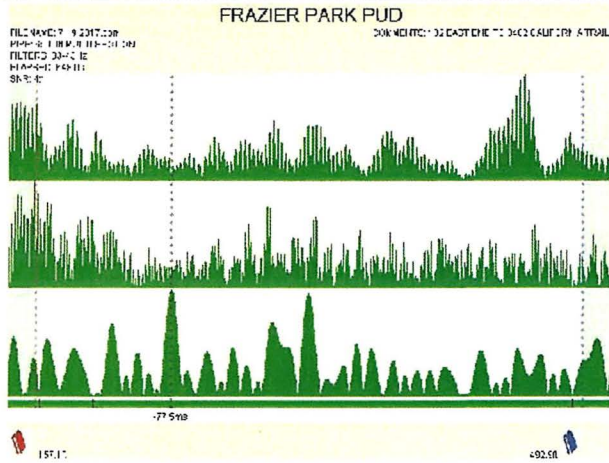
Miles of Mains Surveyed: .633      Survey Time: (Hours) 6

Number of Leaks Suspected: 0      Rechecked: (Numbers)

Number of Leaks Pinpointed: Pinpointing Time: (Hours)

Remarks: No leaks found

# Leak Detection Survey Results



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- Water passing through a meter.       Running pumps.
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**Comments:** No leak found

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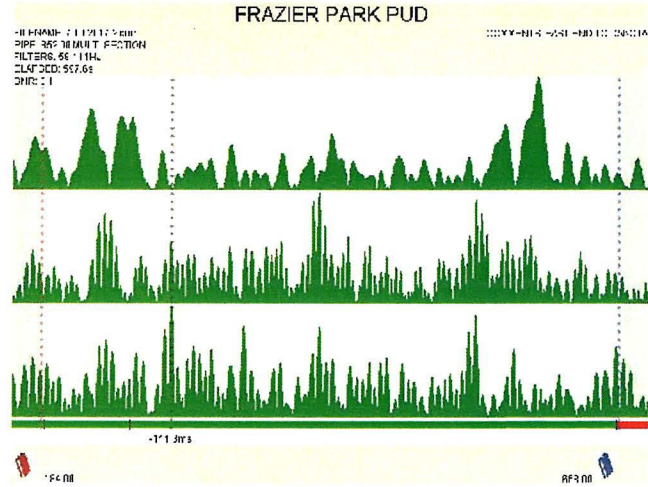


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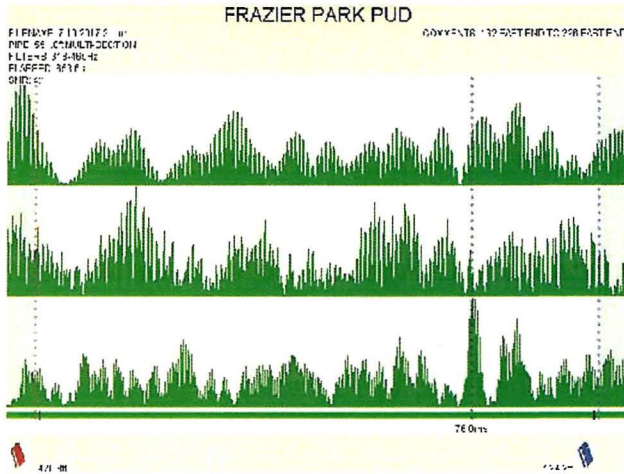


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**Comments:** No leak found

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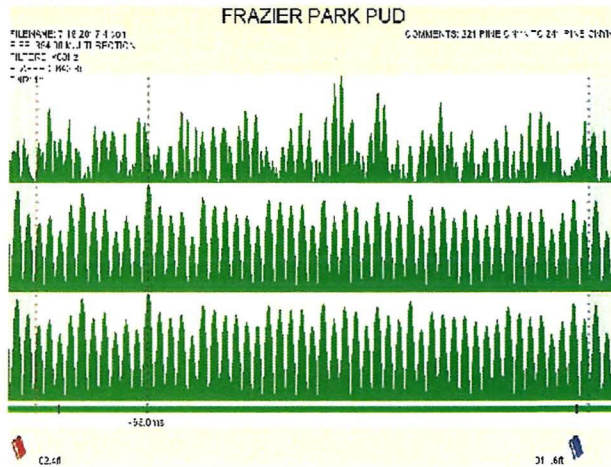
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**Comments:** No leak found

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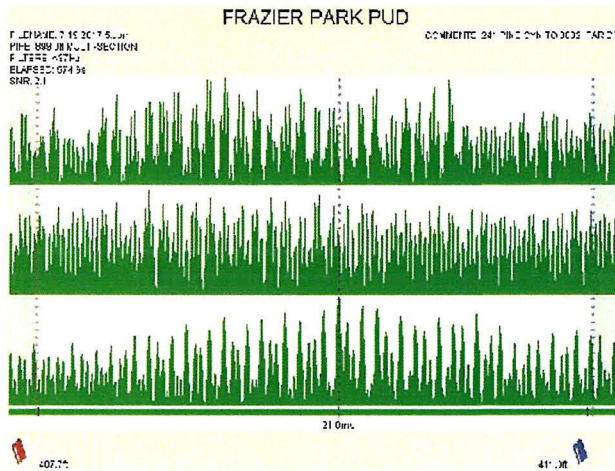


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**Comments:** No leak found

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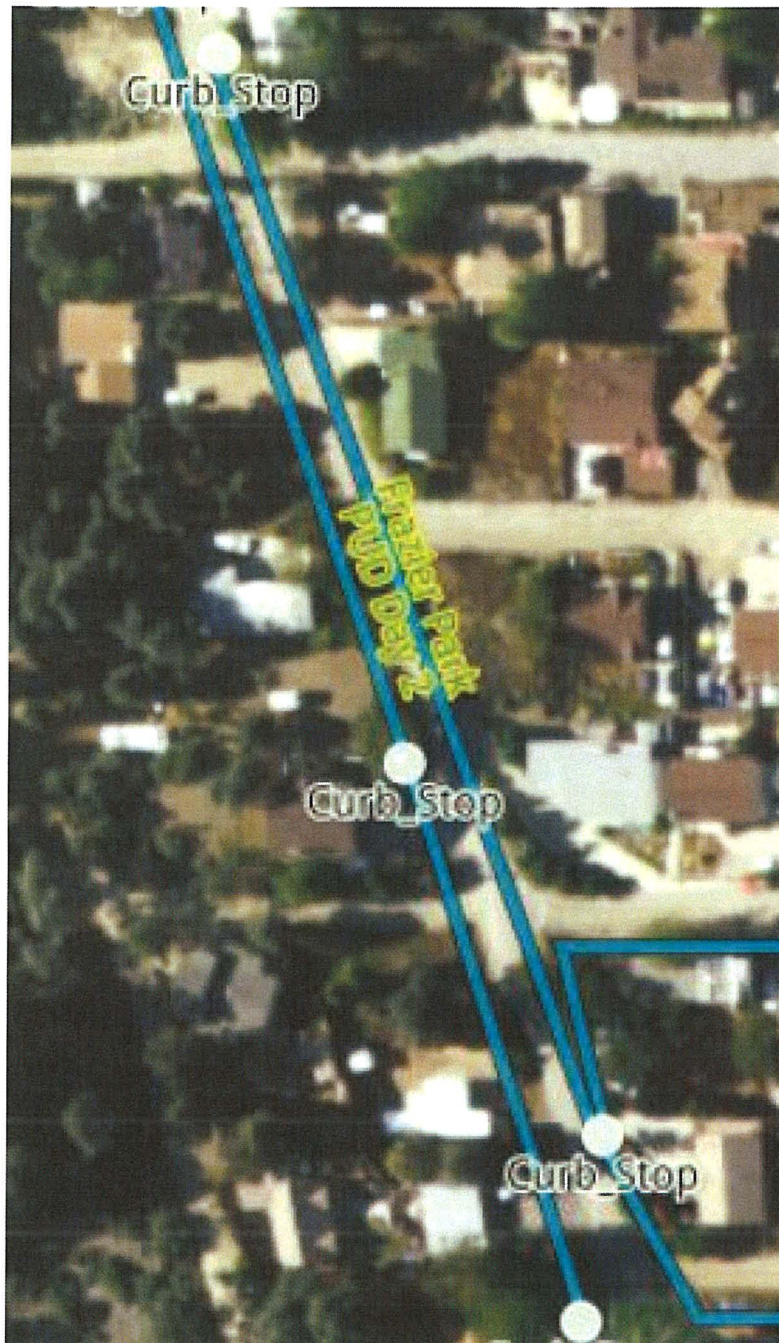
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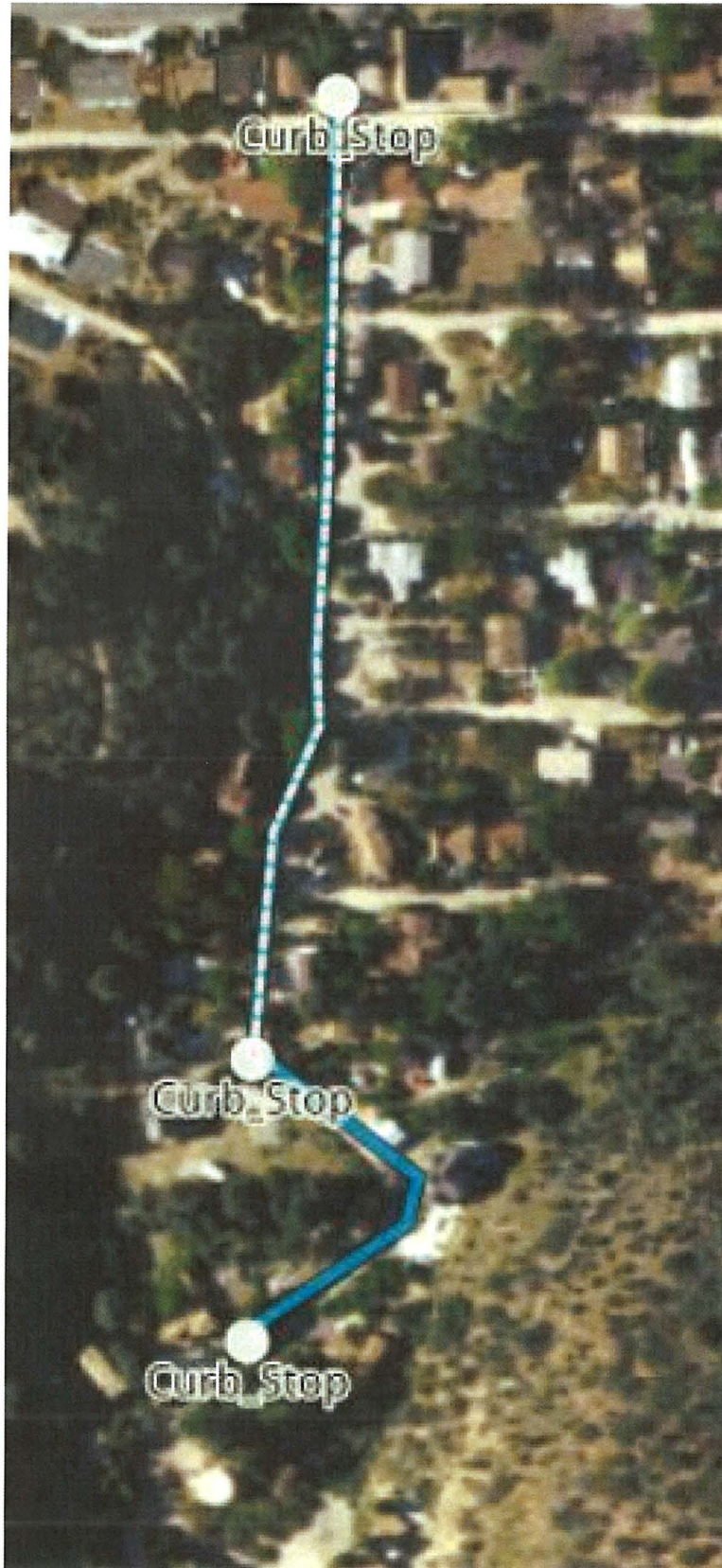
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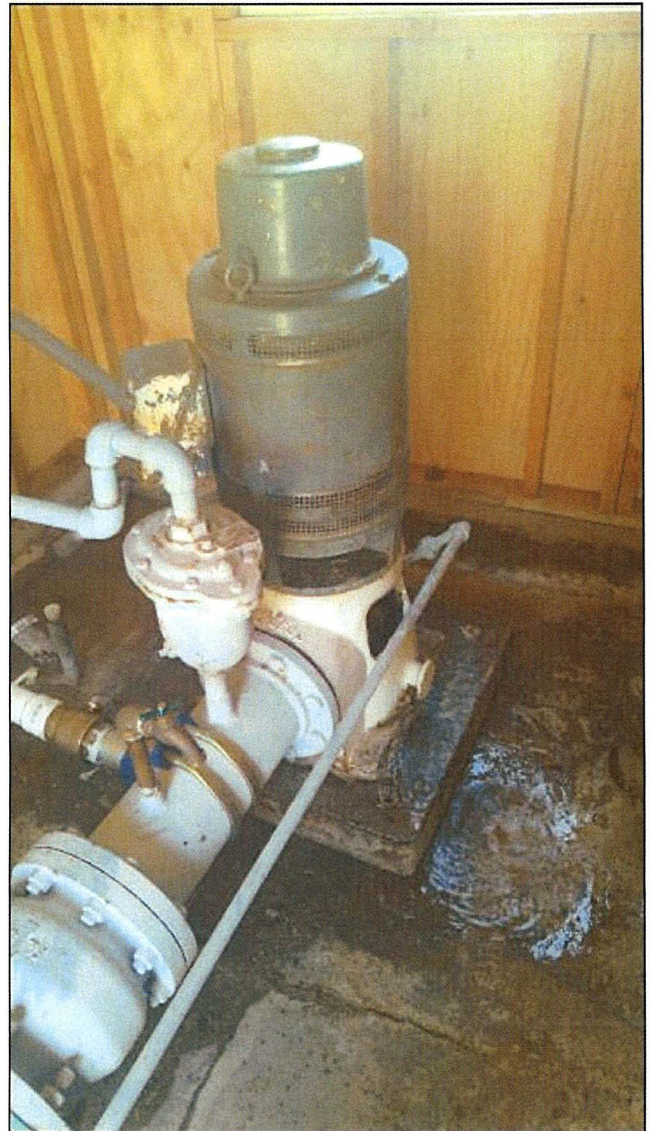
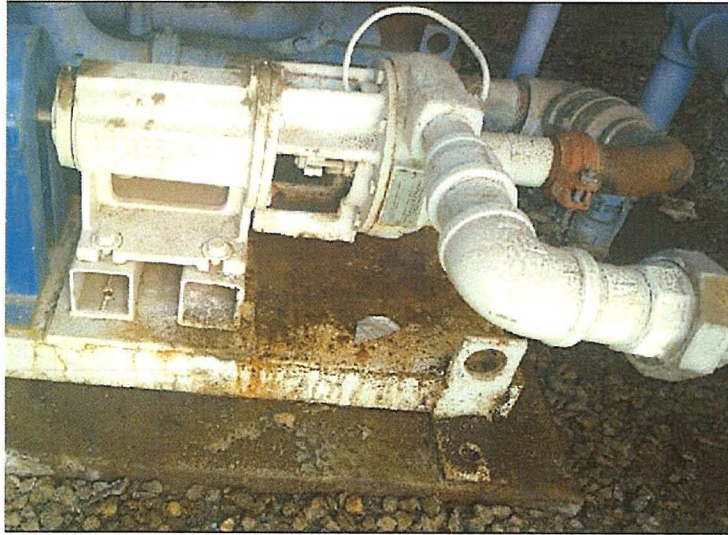
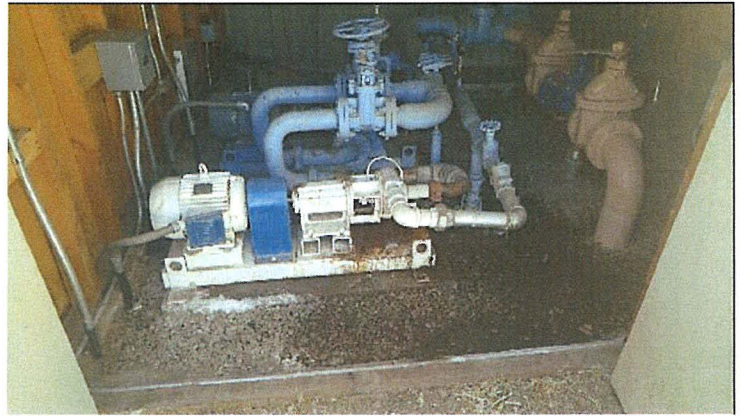
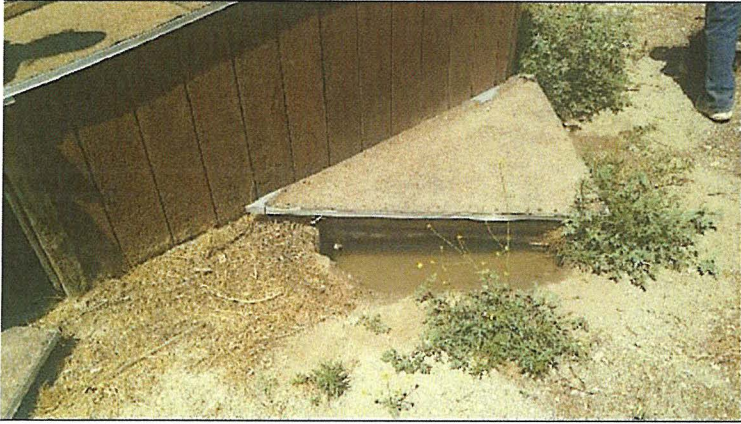
# Water System Map



# Water System Map



# Water System Pictures





# Leak Report

Date: 7/20/2017

System: Frazier Park Public Utility District

Leak Detection members: Abel Silva

Equipment Used: FCS Correlator and FCS Acoustic Ground Mic

Map Reference: Google Map/System Map

Street and/or Block Numbers: Los Padres/Elm

Leak Number	Address of Suspected Leak	Utility or Customer (U or C)	Leak Pinpointed (Y or N)	Leak to be Rechecked (Y or N)	Leak Repaired (Y or N)	Not a Leak? (Date)

	Meters / Curb Stop	Hydrants	Valves	Test Rods	Other
Indicate Number of Manual Listening Points Used	6		4		
Indicate Number of Leak Noise Loggers Listening Points Used					

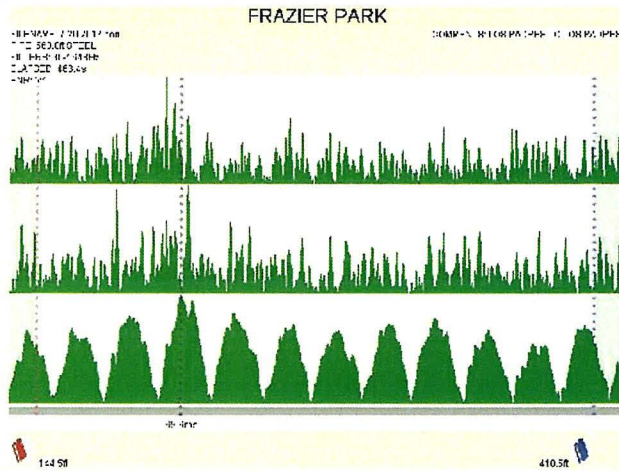
Miles of Mains Surveyed: .616      Survey Time: (Hours) 6

Number of Leaks Suspected: 0      Rechecked: (Numbers)

Number of Leaks Pinpointed:        Pinpointing Time: (Hours)

Remarks: No leaks were found during survey.

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**Survey Graph**

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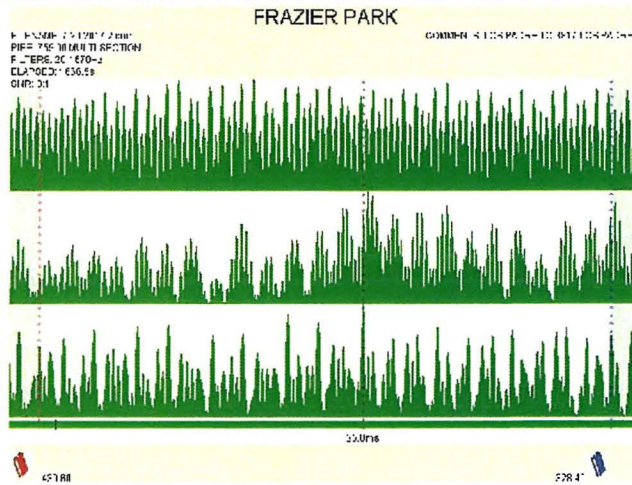
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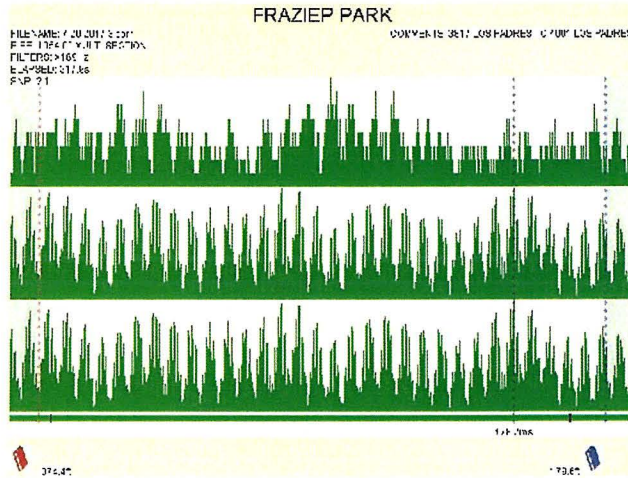


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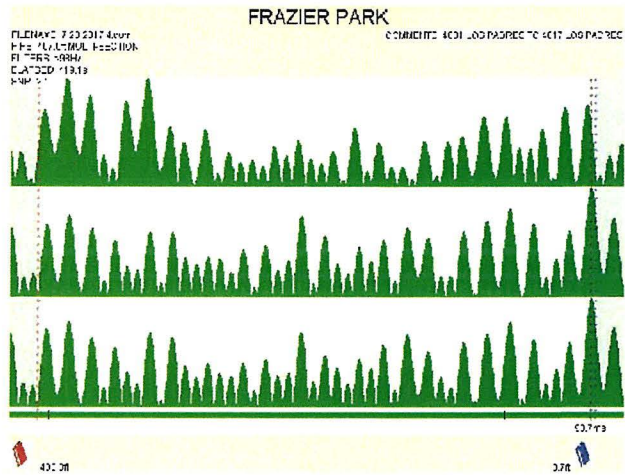


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***The correlation has detected "No leak(s)".***

The Correlator program displays a "**Center Correlation**". The graph peak is in the center of the screen with equal footage on each side indicates the program sensor at a 50/50 point hears no sounds.

***The correlation has detected "No leaks".***

**Comments:** No leak found

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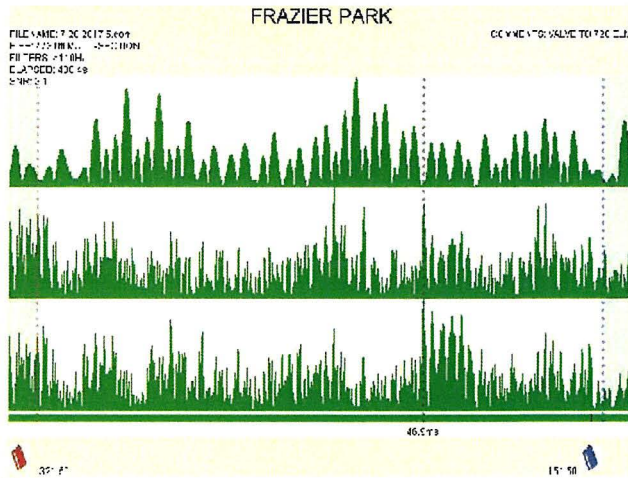


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# Leak Detection Survey Results



### Survey Graph

The Correlator program allows for a "**Snapshot Option**". When the snapshot button is pressed during a correlation, the snapshot feature effectively enables the operator to compare noise levels at different points during the correlation process. When a leak is detected, the graph will have a peak in the same spot and will be located in the same spot on all snapshots. This will indicate the presence of a leak.

**The correlation has detected a "Leak(s)".**

The Correlator displays a peak in all snapshots graphs in the same spot but is not leak due too:

- Water passing through a meter.
- Running pumps.
- Electrical (Transformer).
- Illegal service.

**The correlation has detected "No leak(s)".**

X

The Correlator program snapshots all differ in graph peaks, this indicates flow due to pumping, pressure surges or momentary use of water through meter(s).

**The correlation has detected "No leak(s)".**

The Correlator program displays a "**Center Correlation**". The graph peak is in the center of the screen with equal footage on each side indicates the program sensor at a 50/50 point hears no sounds.

**The correlation has detected "No leaks".**

**Comments:** No leak found

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# Water System Map

