

Valle Risco Water System Improvements

International Senior Design



12/9/2019

Team Introductions



Camille Carlson
Civil Engineering Student
Water Resources focus



Sam Kiluk
Civil Engineering Student
Structural focus



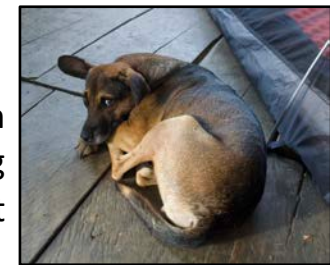
Ceily Fessel Doan
Environmental Engineering
Student



Tristan Odekirk
Peace Corps Volunteer
Valle Risco, Panama



Sultan
Tristan's Dog
Team Mascot



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Presentation Schedule

- Project Background
- Problem Description
- Data Collection & Analysis
- Design Proposal
- Cost and Scheduling
- Conclusion
- Questions



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Project Background



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Valle Risco

- Supplied by 2 water distribution systems
- Population: ~500
- 70 houses
- Average household: ~7 persons
- Ngäbe People



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Problem Description

- No current water storage
- Unreliable water supply
- No water treatment
- Breaks and leaks throughout system

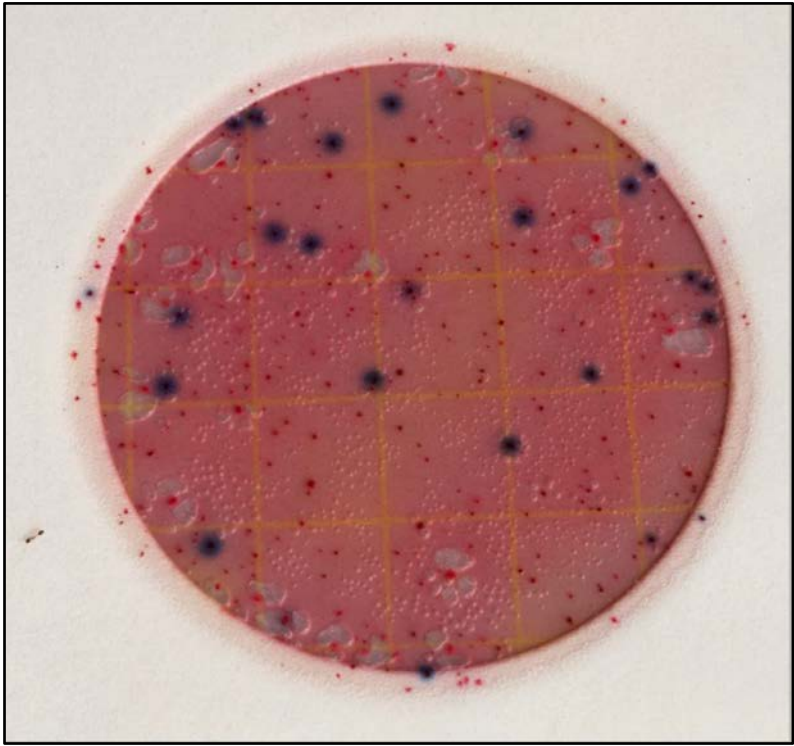


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Data Collection

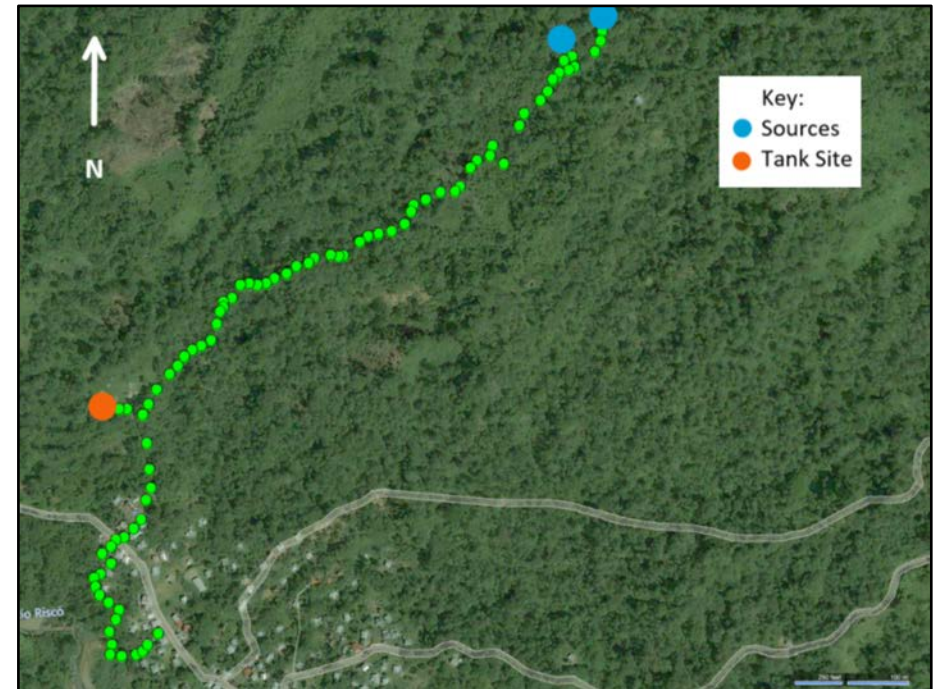
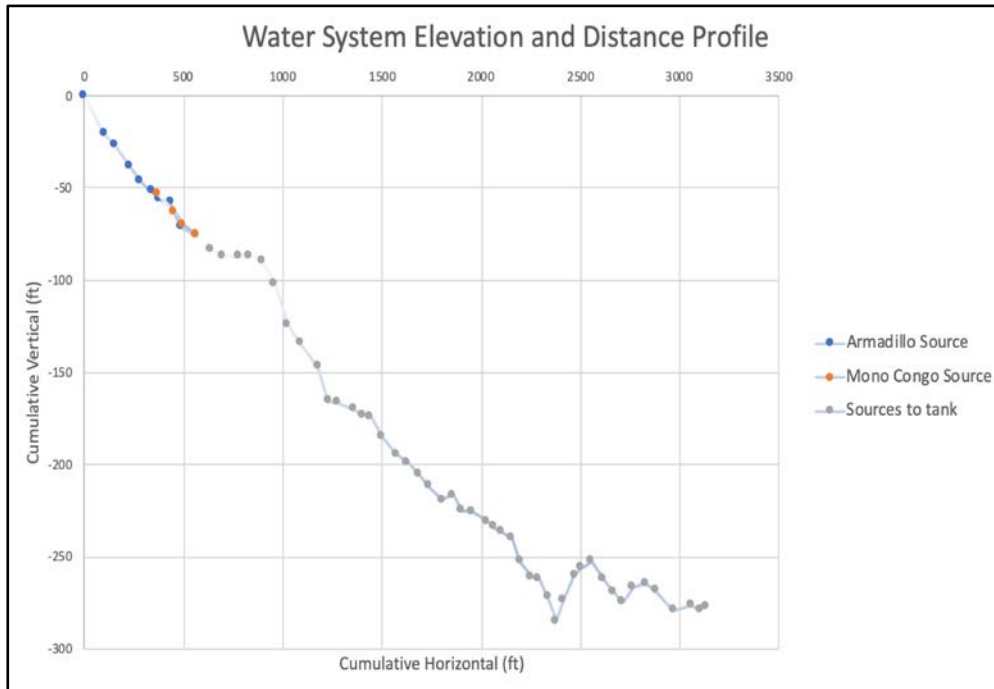


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Data Collection



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Proposed Designs

- Optimum:
 - Tank for future population
 - Replace all pipes
 - Sedimentation Tank & Sand Filter
 - Chlorine disinfection
- Mid Range:
 - Smaller tank
 - Fix pipe breaks
 - Chlorine disinfection
- Basic:
 - Fix pipe breaks
 - Solar disinfection
 - Boiling treatment



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Chosen Design

- Hydraulic Model
- Junction Box
- Storage Tank
- Filtration System
 - Sedimentation Tank
 - Sand Filter
- Pipe Crossings
- Valves

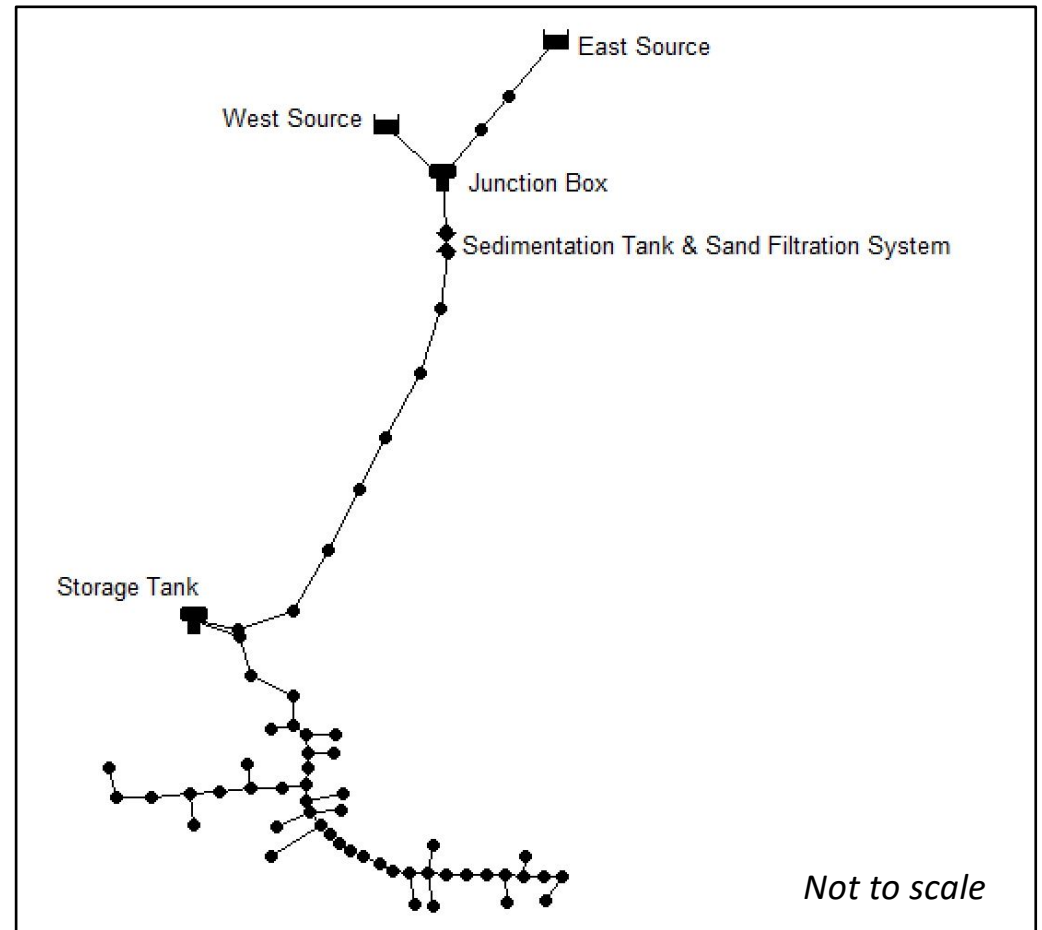
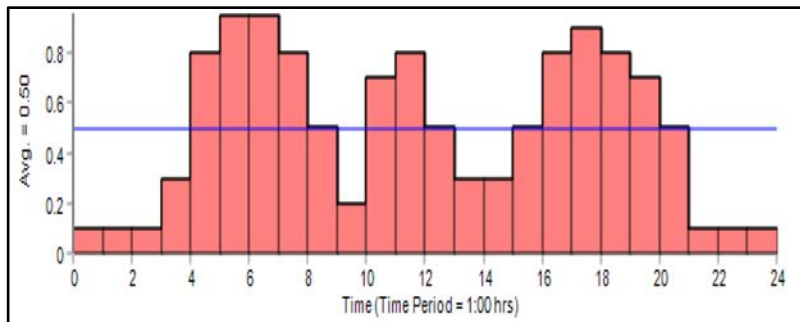


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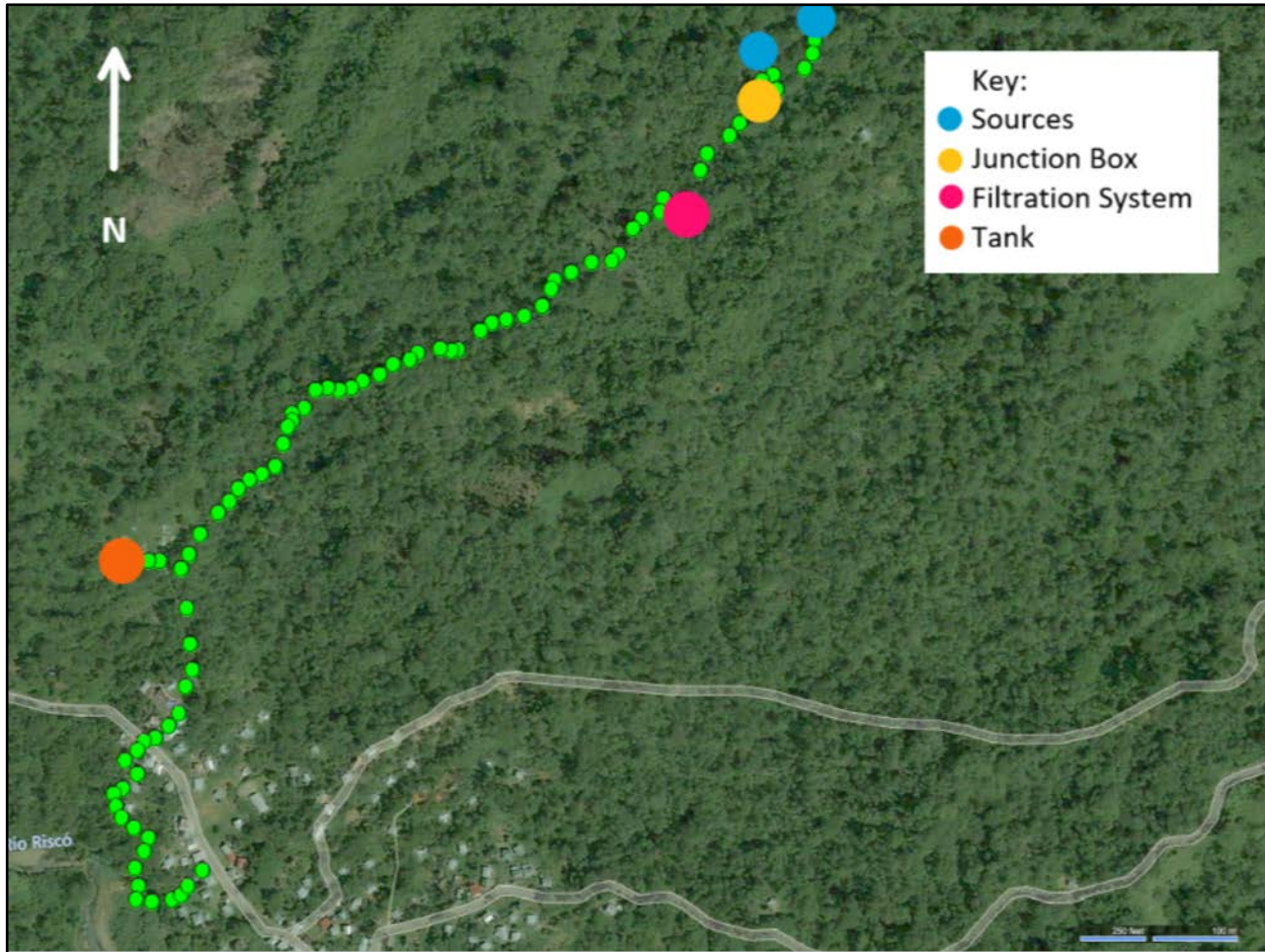
EPANET Model



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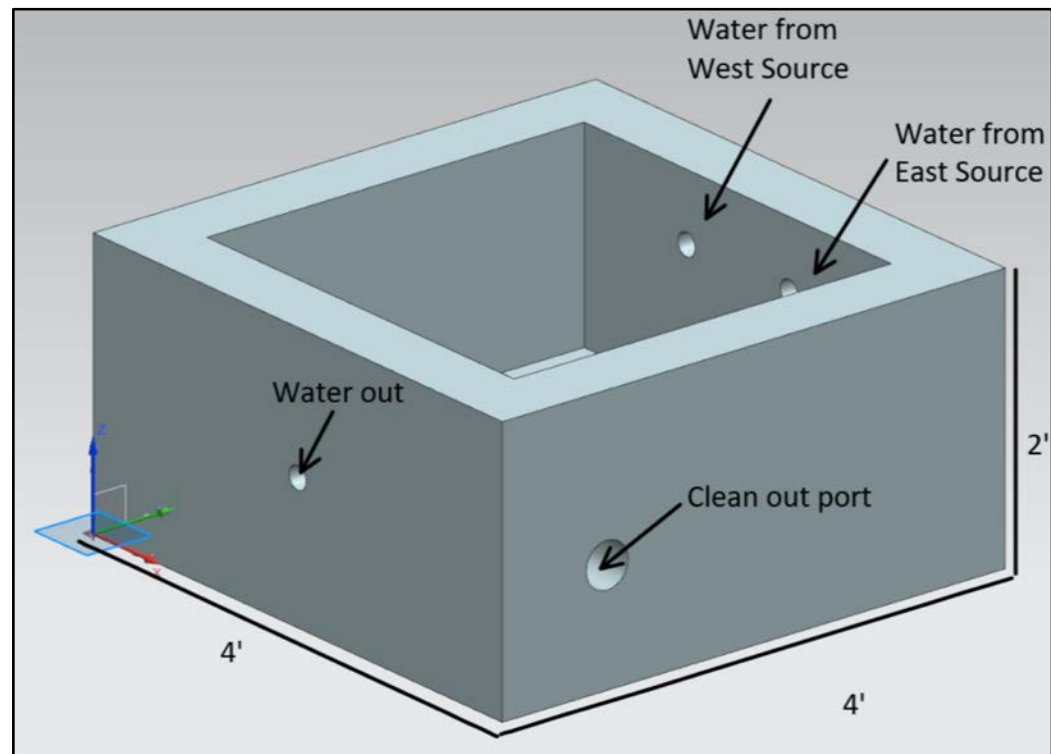


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Junction Box

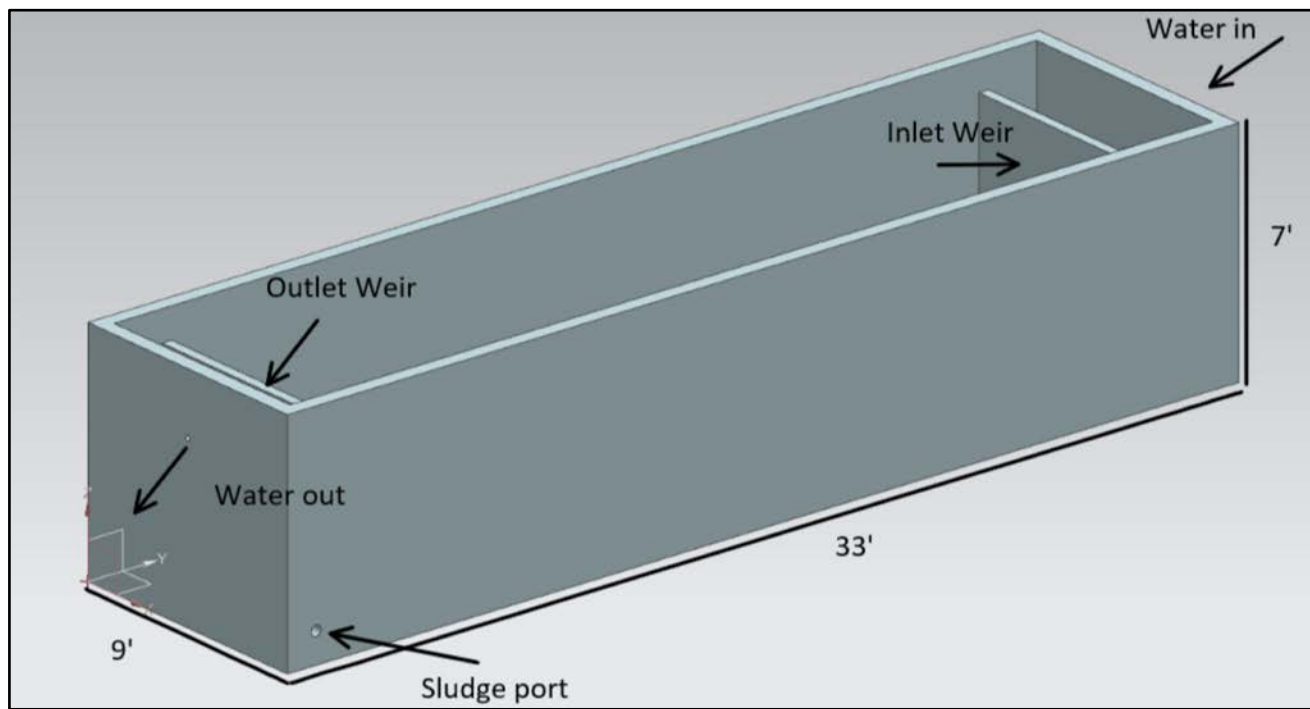


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Sedimentation Tank

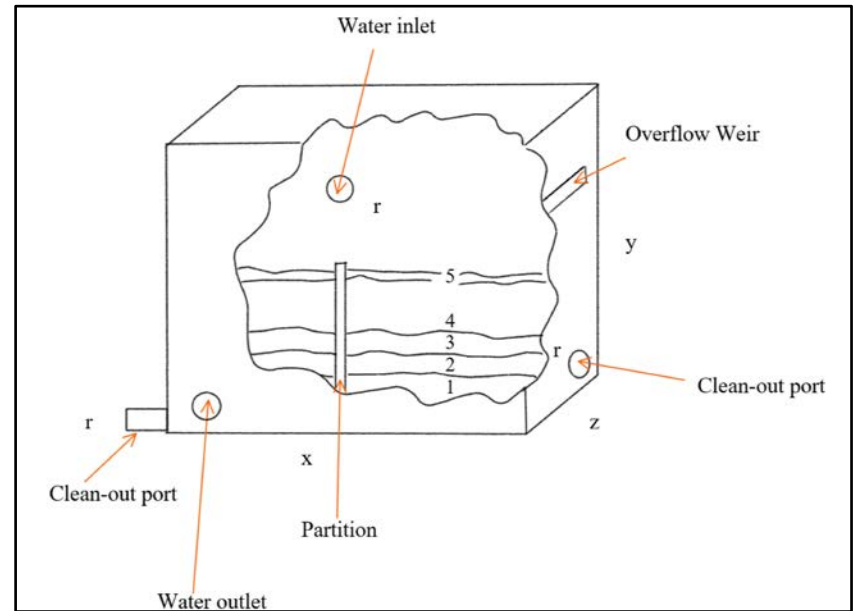
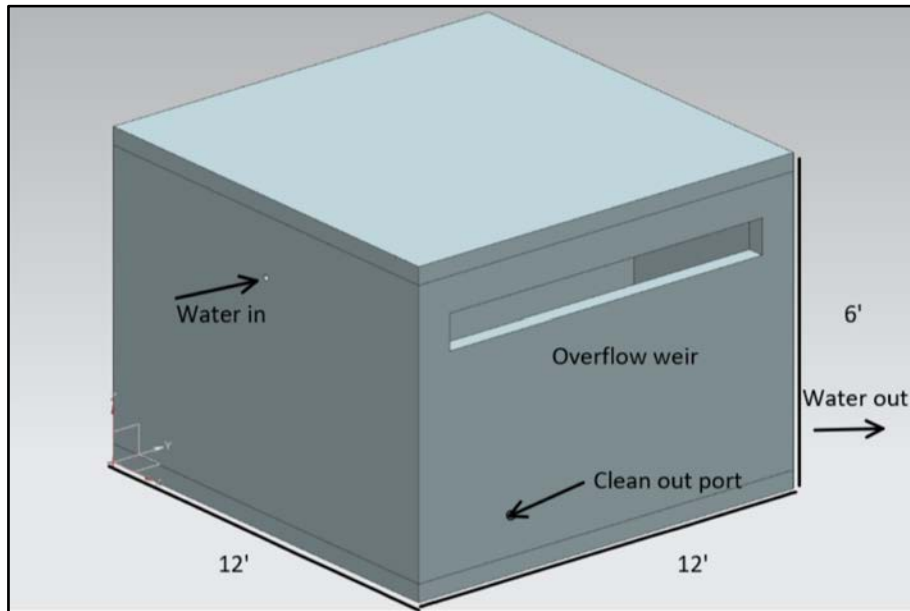


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Sand Filter

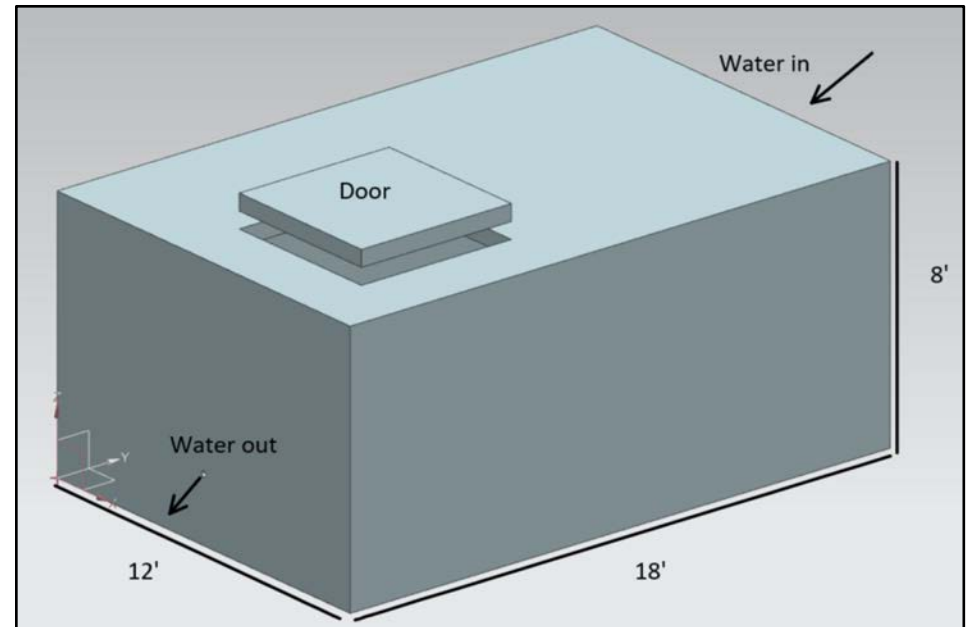


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Storage Tank

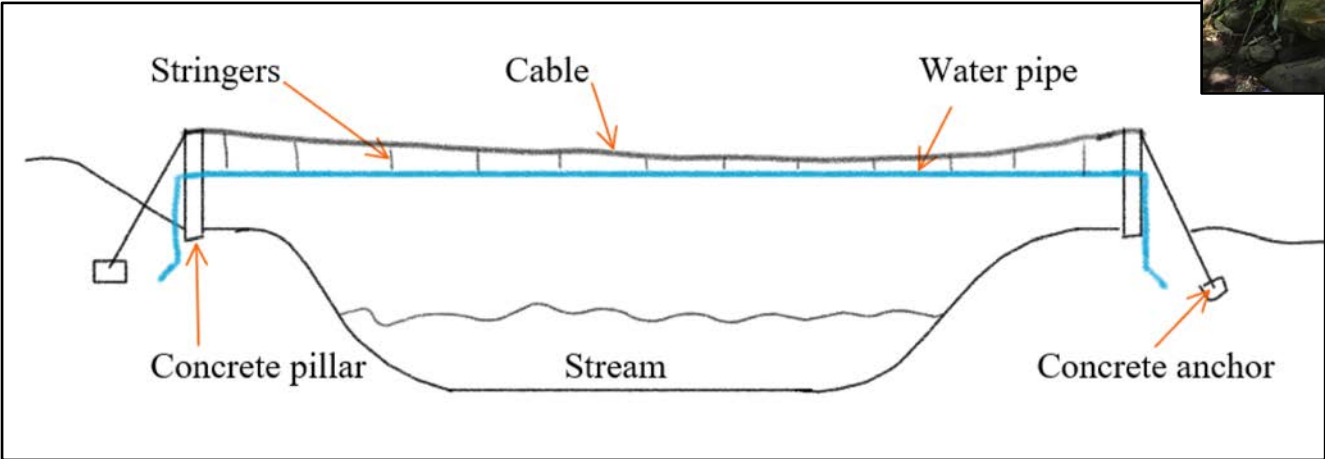


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Pipe Crossings

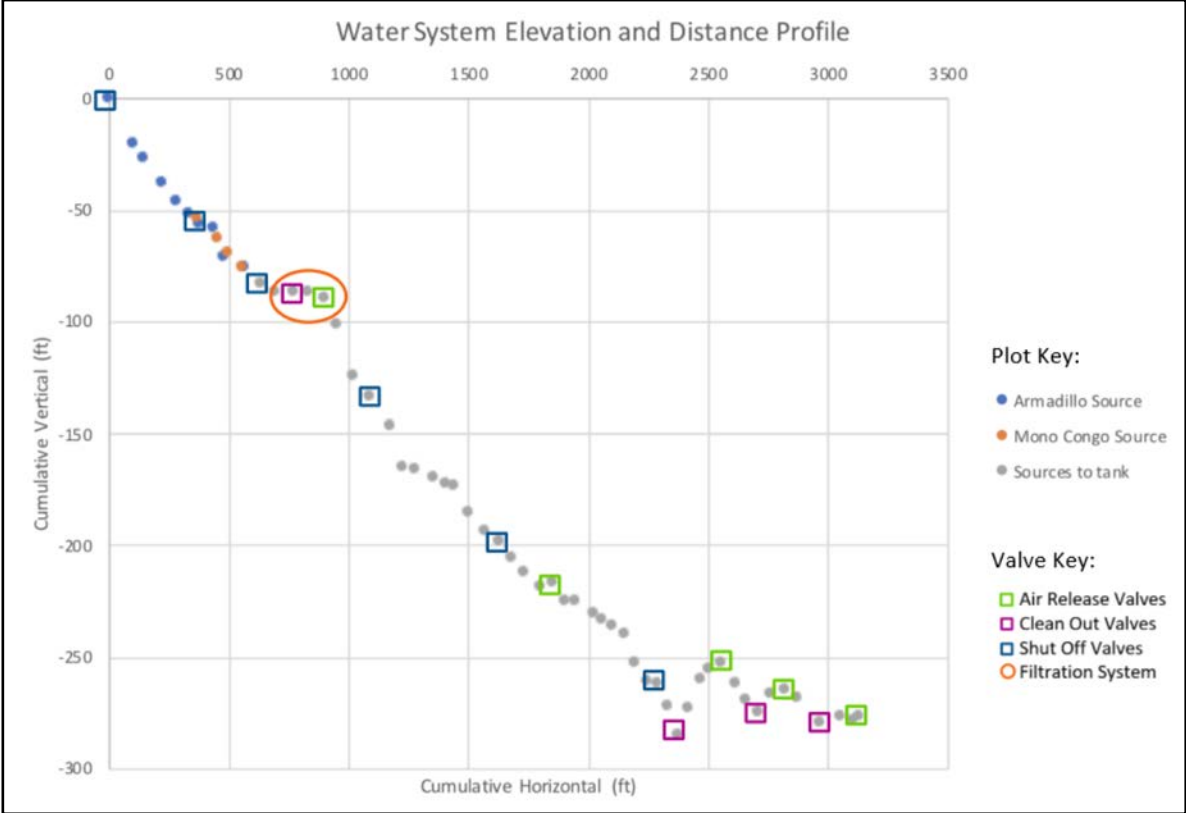


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Valves

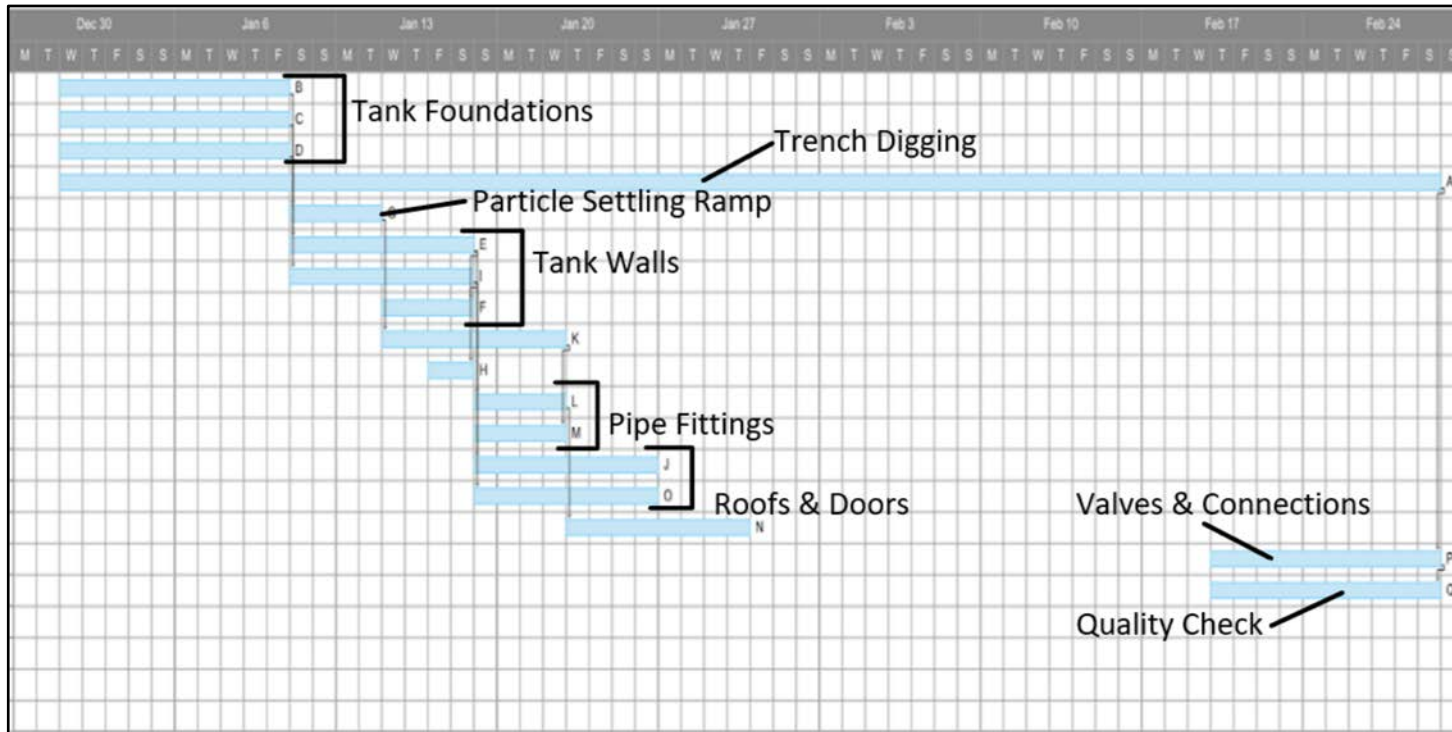


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Cost & Scheduling



Item	Cost
Piping	\$6,300
Valves	\$100
Tank Materials	\$3,800
Chlorine Pucks and Screens	\$150
Total Cost	\$10,350



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Conclusion



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