

Lift Stations





Agenda

- Lift Station purpose
- Types of Lift Station pumps
- Components of Lift Stations
- Lift Station Redundancy
- Things to know about your Lift Station



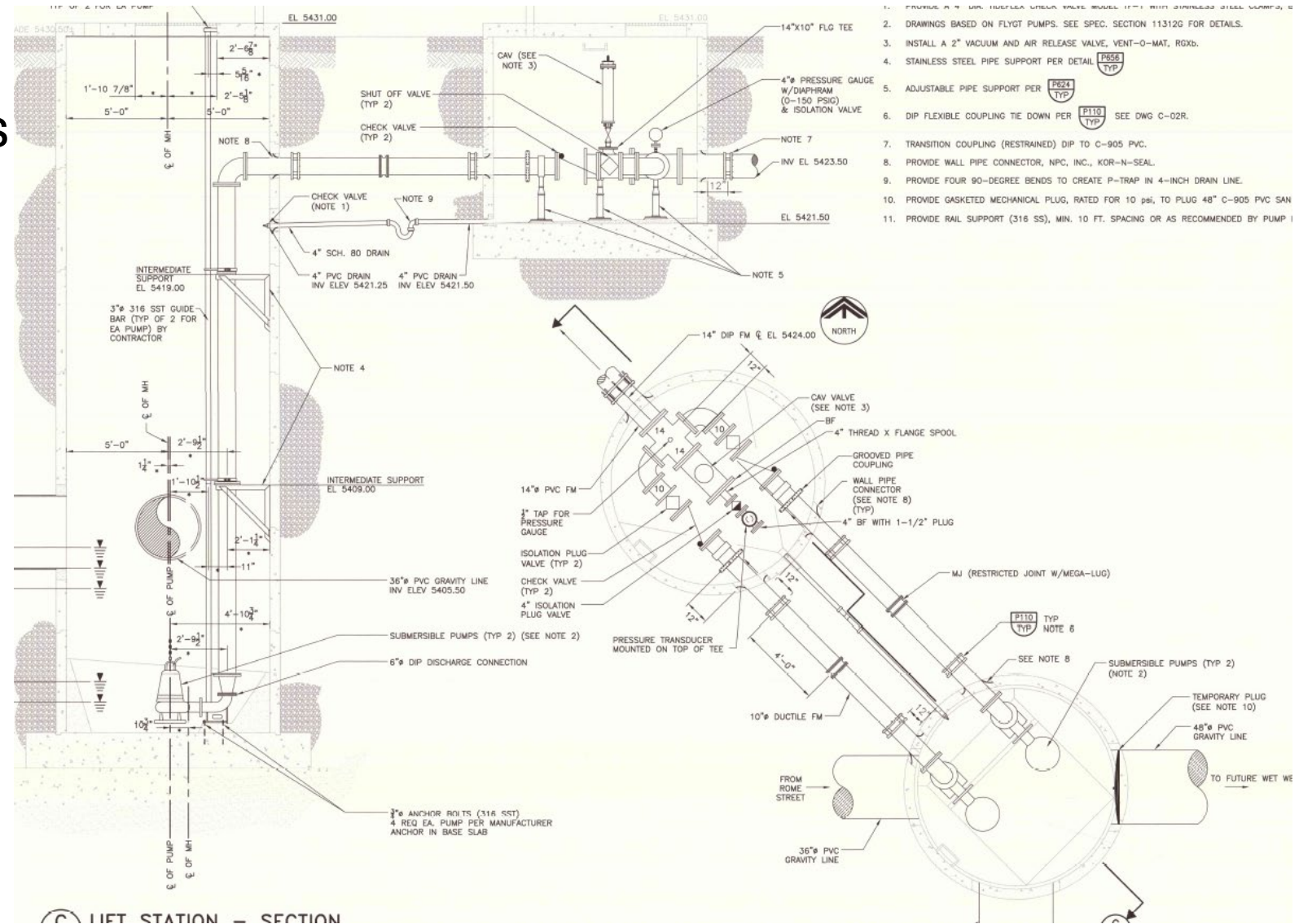
Purpose of Lift Stations

To move wastewater from a lower elevation to a higher elevation, particularly where the elevation from the source is not sufficient for gravity flow and/or when the use of gravity flow will result in excessive excavation depths.



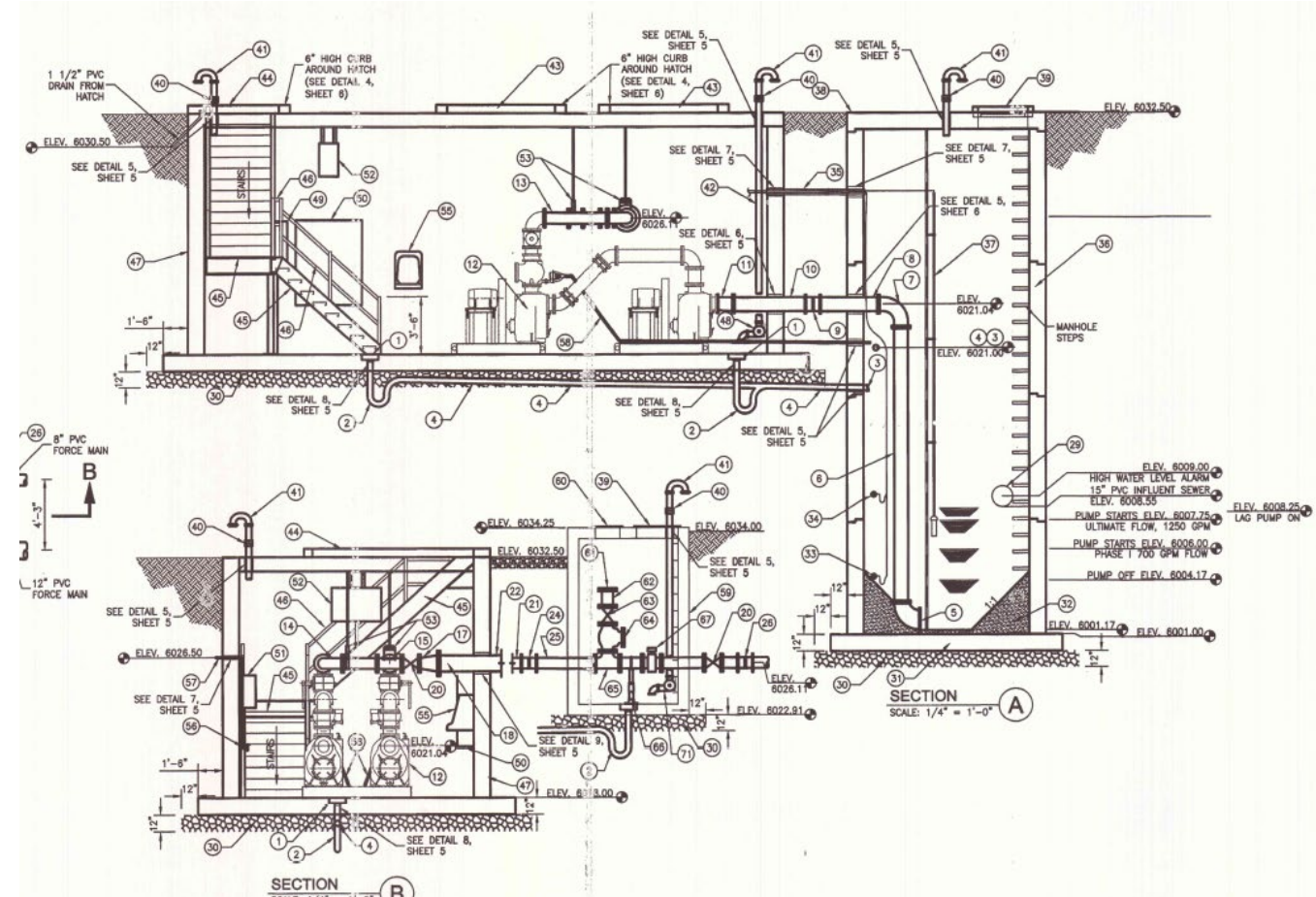
Types of Lift Stations

- Submersible pump lift station. These stations utilize pumps that are submerged in the pumping liquid.
- Suction lift pump lift station. These stations utilize suction lift pumps that sit above the pumping liquid in a dry well.
- Flooded suction lift station. These stations have a dry well as deep as the wet well and the water will be higher than the pump centerline. Similar to submersible without being in the pumping liquid.



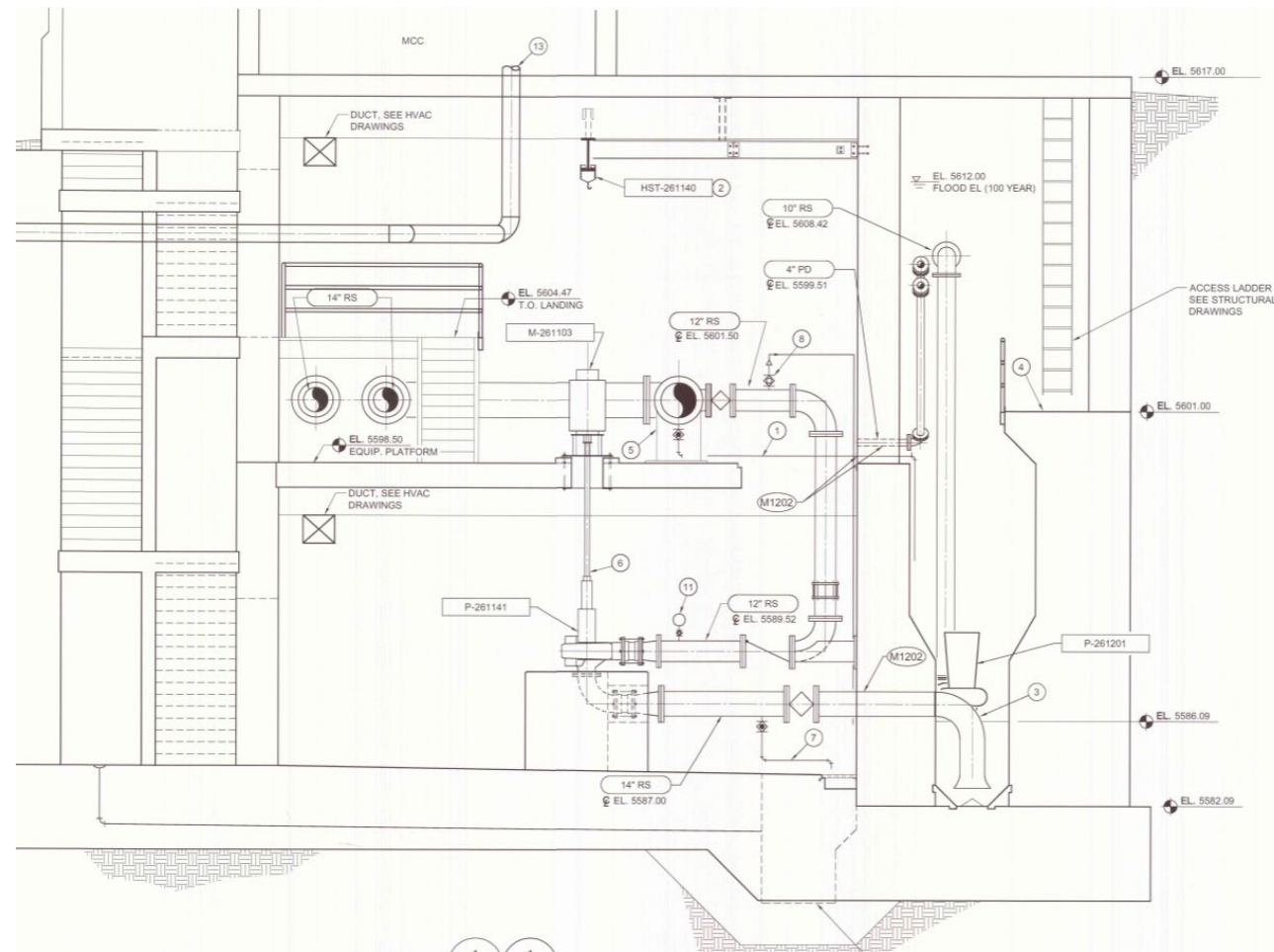
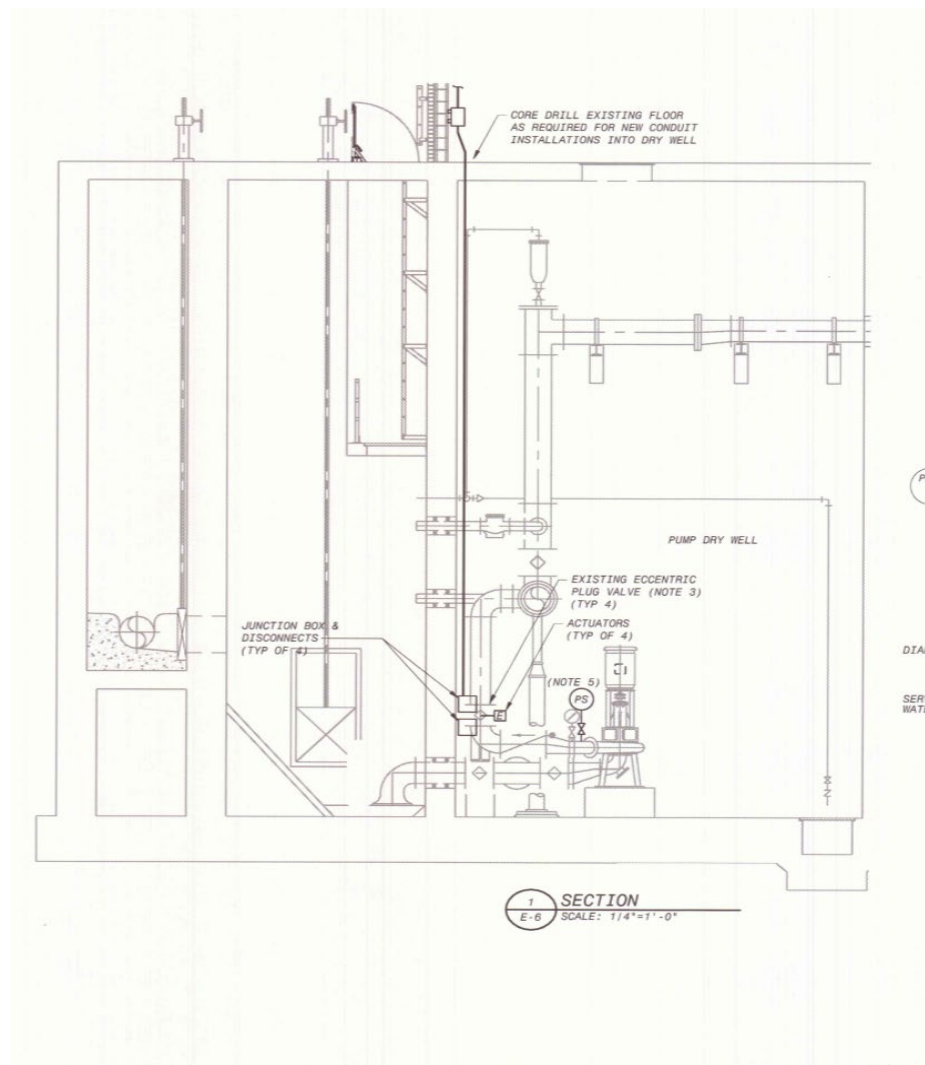
Suction lift pump Lift Station

Pics/drawings





Flooded Suction Lift Station





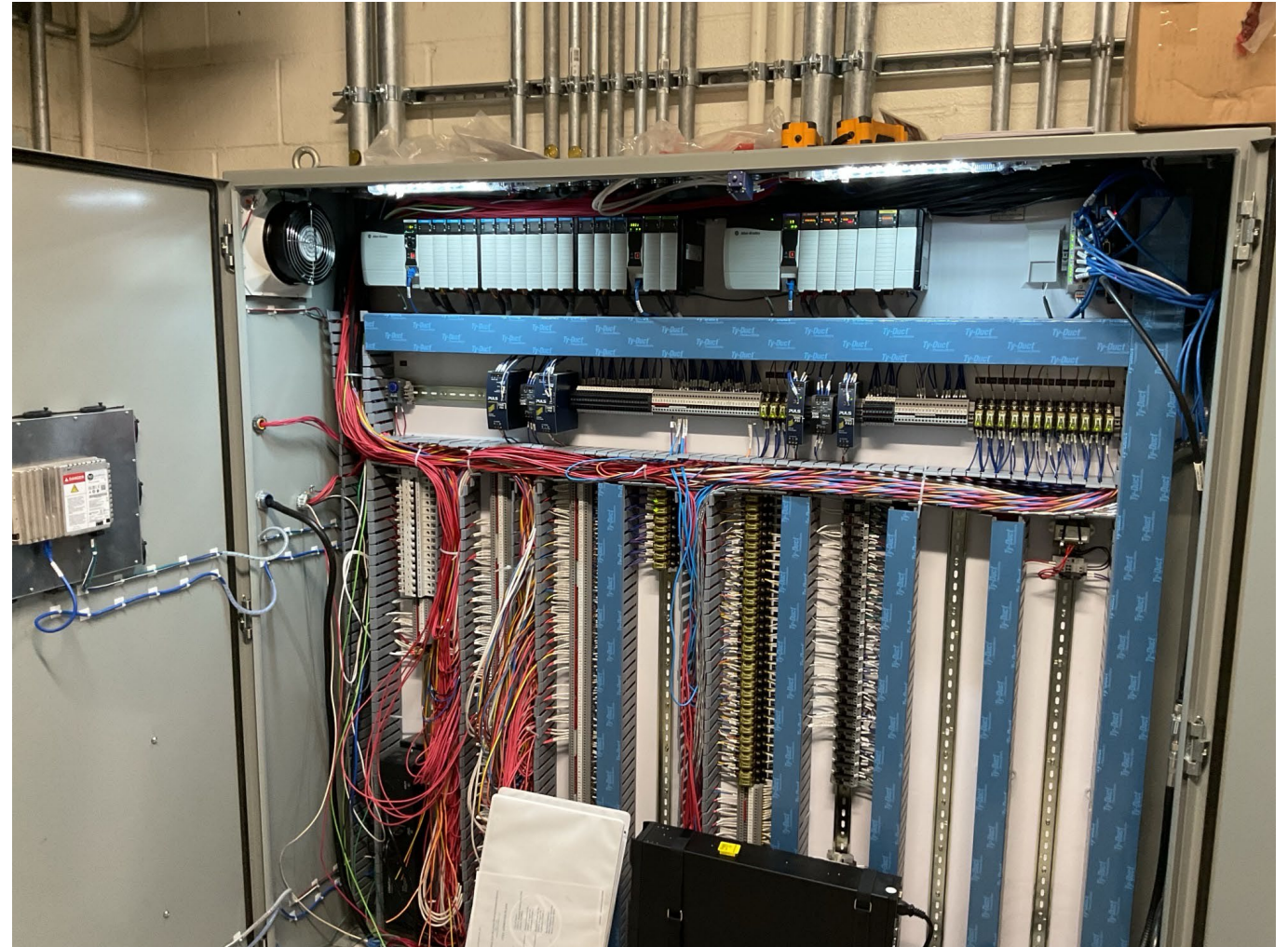
Lift Station Components

- Pumps and motors
- Isolation valves, check valves
- PLC, OIT
- VFDs, Soft Starter
- Flow meters, pressure transmitters
- Force Mains, air-vacs
- Carbon filters, blowers
- Generators

Valves



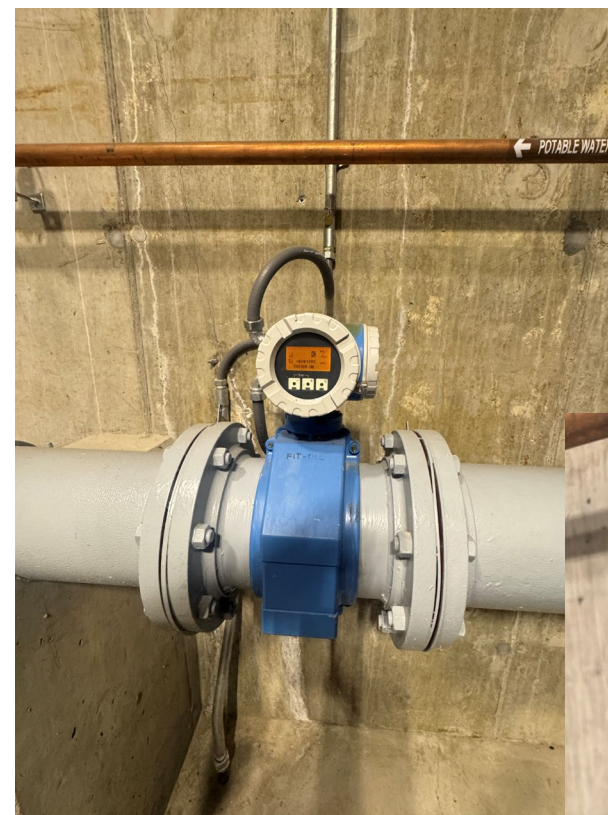
PLC-Programmable Logic Control and OIT-Operator Interface Terminal



VFDs and Soft Starters



Flow meters, pressure transmitters



Carbon filters, blowers, filter beds

Pics



Force Mains, Air-vacs



Things to know about your FMs

- Length and location
- Isolation valves and possible cross over valves location and type
- Material it is made of, PVC, Ductile Iron, HDPE
- Does it have air-vacs, how many, location and leak monitoring
- Discharge point, where are we pumping this to?
- Drain back valves
- Creeks, streams, rivers, storm ponds that may be affected if a leak occurs



Lift Station Redundancy

Dual Force Mains

Dual Wet Wells

By-pass vaults

Spare pumps and motors

Spare pump parts – impellers, mechanical seals, packing, flapper valves, spare level floats

Emergency flow storage – vault, wet well, diversion vault, overflow pond

Back up station monitoring if SCADA goes down – Mission Units

Spare Parts Pics





Lift Station Security

Station door intrusion and motion detection.

Intrusion on wet well hatches, diversion structure hatches.

Intrusion on gates

Lighting on or around the wet well, lighting in the wet well

Security

Pics of door and hatch security

Pics of wet well lights, yard lights





Other things to worry about at Lift Stations

Wet well ventilation problems leading to corrosion of electrical conduit and ventilation equipment. Concrete corrosion.

Floor drains - Friend or Foe?

Valve exercising – Will they work when needed?

Sump pumps – Testing make sure they have check valves.

Pump clogging from rags/non flushable wipes, backpacks

Sump pump and Wet Well Corrosion



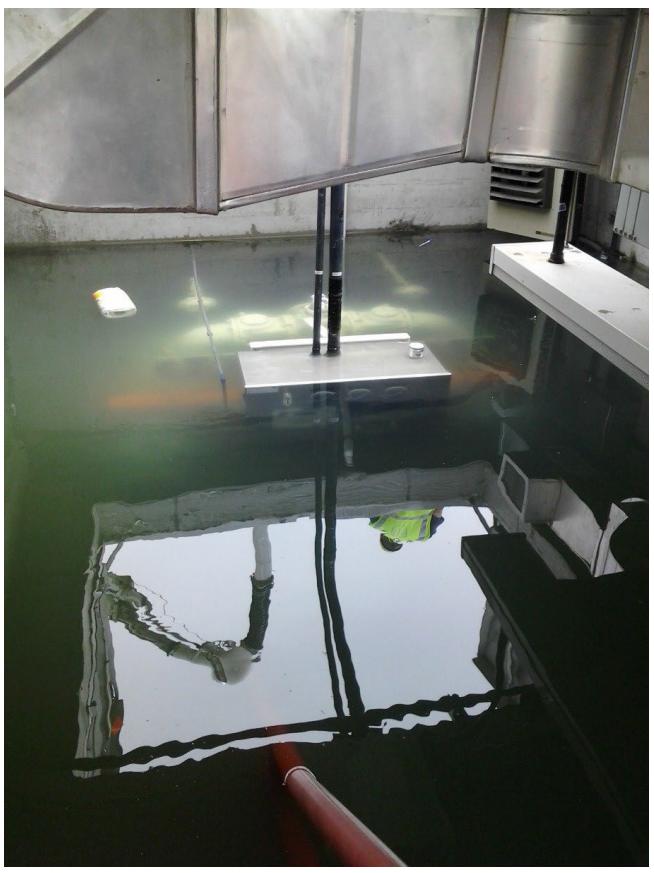
Lift Station Bypass Options

Pics of bypass pumps/hoses and connections





Flooded LS



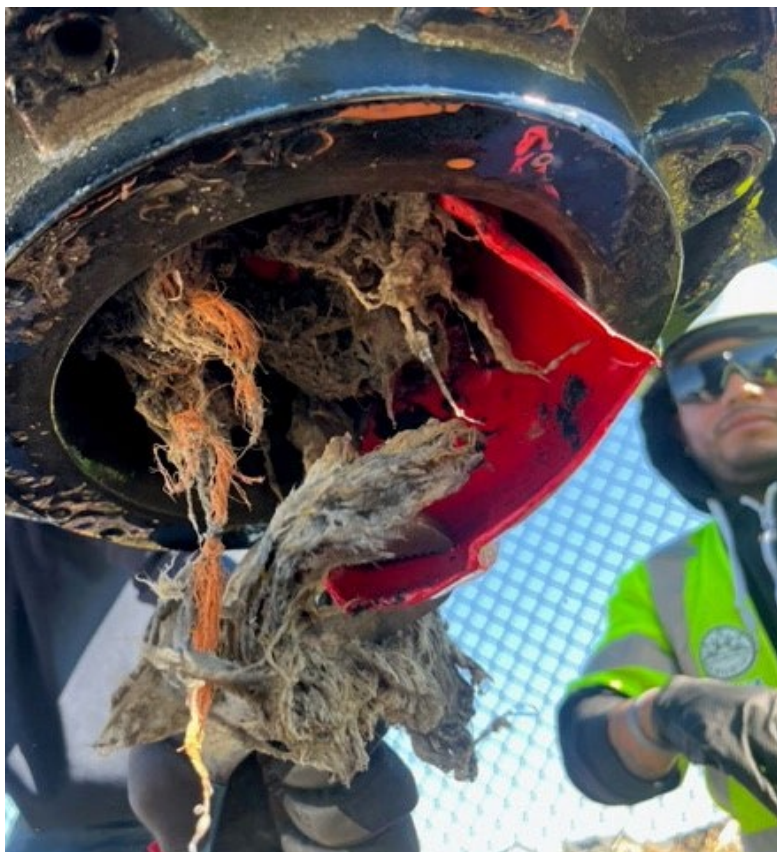
By-pass of Flooded LS



By-Pass Options



Cleaning out rags





Questions ???









