

Case Study and Lessons Learned Emergency Lift Station Repairs

Anywhere, USA

April 30-May 6, 2015



Background to the Background

- **Union Negotiations Underway**
- **PM attending weekly MDEQ class (Friday) related to certification**
- **PM leaving for weekend to study for state exam (Wednesday) the following week**
- **Ops Supervisor new to position (Former SUEZ O&M Tech. promoted in February)**



12th Street Lift Station – Anywhere, USA

- Station pumps approximately 450,000 gallons of raw sewage per day
- Owned by neighboring township
- Client operates it as a T&M for the neighboring township
- It is part of SUEZ' Base Fee
- Three pumps pump to a common 20" header which is the force main
- Located west of US-131
- No bypass capabilities



TIMELINE OF EVENTS - 4/30/15 (Thursday)

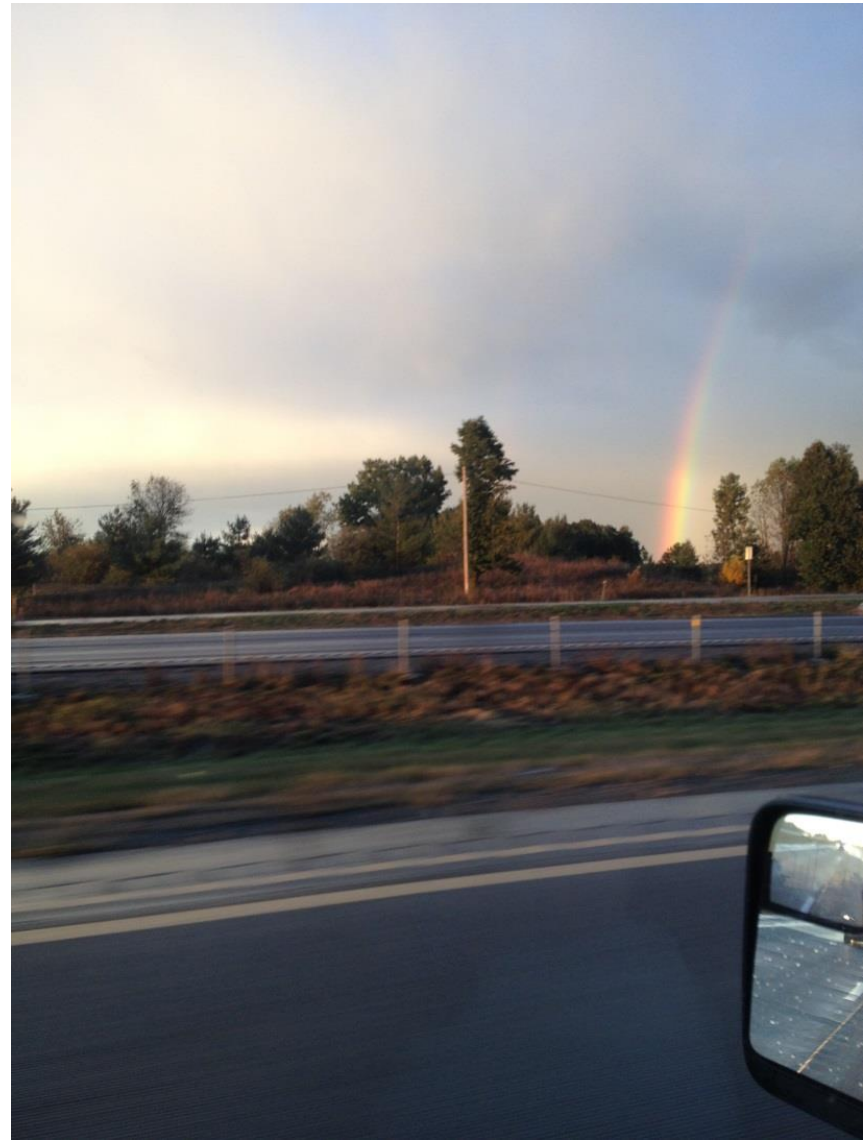
- 3:45 PM – SUEZ on-call personnel receive an alarm of the basement flooding at the 12th St. block station
- 4:00 PM - Gary Timmer, The Project Manager and Bob Nieuwenhuis respond to the station after being notified by the on-call person
- 4:20 PM – SUEZ inspected the leak and noticed that the 20”x10” reducing coupler has a circular fracture near the flange





TIMELINE OF EVENTS - 4/30/15 (Thursday) - Continued

- **5:30 PM - Clean Earth Environmental Services is called in to pump sewage and haul to another location within the city**
- **5:45 PM - Hoffman Brothers Construction is contacted and agree to do the work as long as we can find the parts**
- **10:15 PM - After contacting numerous vendors and spending over four hours searching, a replacement coupler was located in Alabama**
- **Two SUEZ employees left to meet a vendor in Kentucky (halfway for both parties) to pick up the replacement fitting**



TIMELINE OF EVENTS - 5/1/15 (Friday)

- **10:30 AM - The two SUEZ employees return from Kentucky with the replacement coupler**
- **City issues passive water use restriction**
- **Clean Earth used multiple vector trucks to take the place of the lift station**
- **10:00 PM - Once the flow started to taper off, SUEZ started draining the 20" force main**



TIMELINE OF EVENTS - 5/2/15 (Saturday)

- **2:30 AM - The force main finishes draining (>100,000 gallons)**
- **Hoffman Brothers starts work replacing coupler (they slept from ~11 pm - 2:30 AM)**



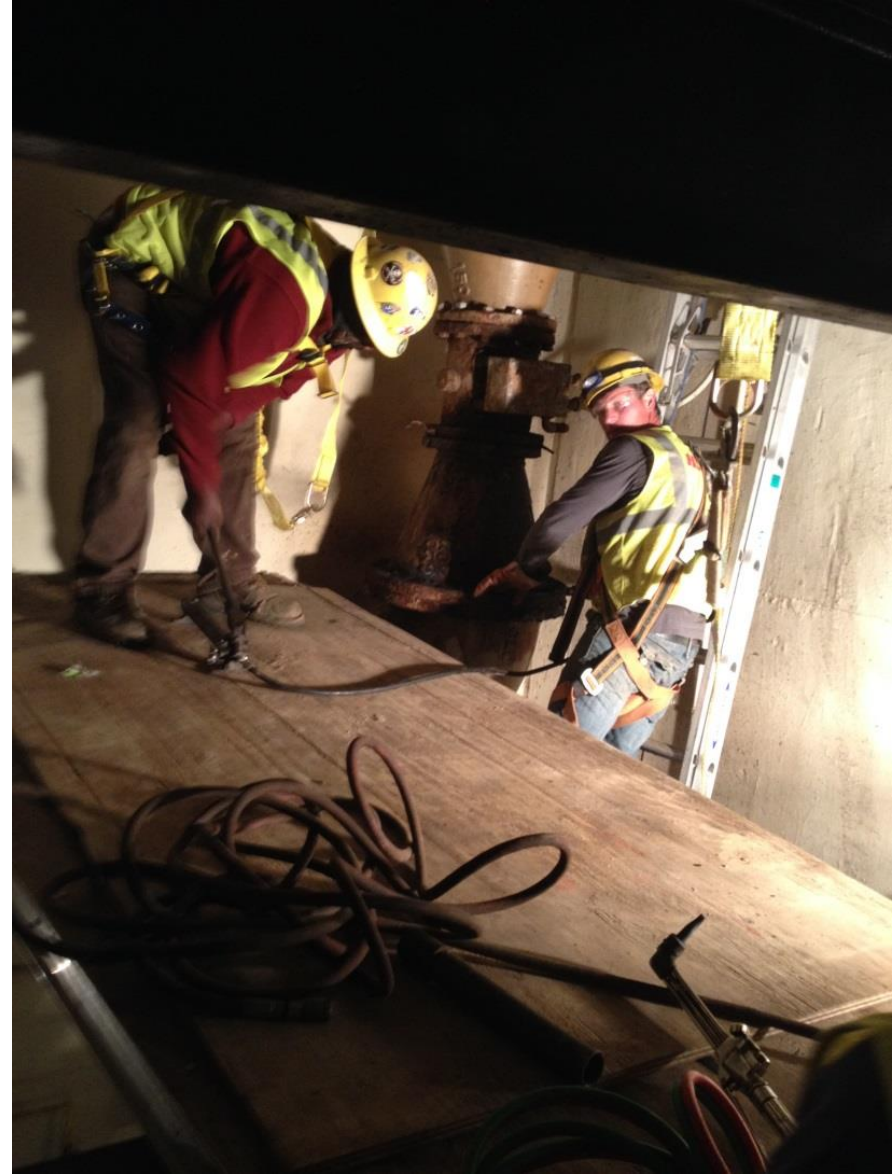
TIMELINE OF EVENTS - 5/2/15 (Saturday)

- Hoffman finds it is very difficult to:
 - Get the old fitting out
 - Put gaskets in
- 9 AM - Hoffman notes to SUEZ that the pipe coming into the block station is twisted and torqued in such a way that they could not get the bolt holes to line up easily
- Vactors are starting to overheat and residents are starting to use water



TIMELINE OF EVENTS - 5/2/15 (Saturday)

- 9:30 AM – Levels are climbing quickly in the sewer
- 11:00 AM – SUEZ goes to get city vactors to supplement Clean Earth



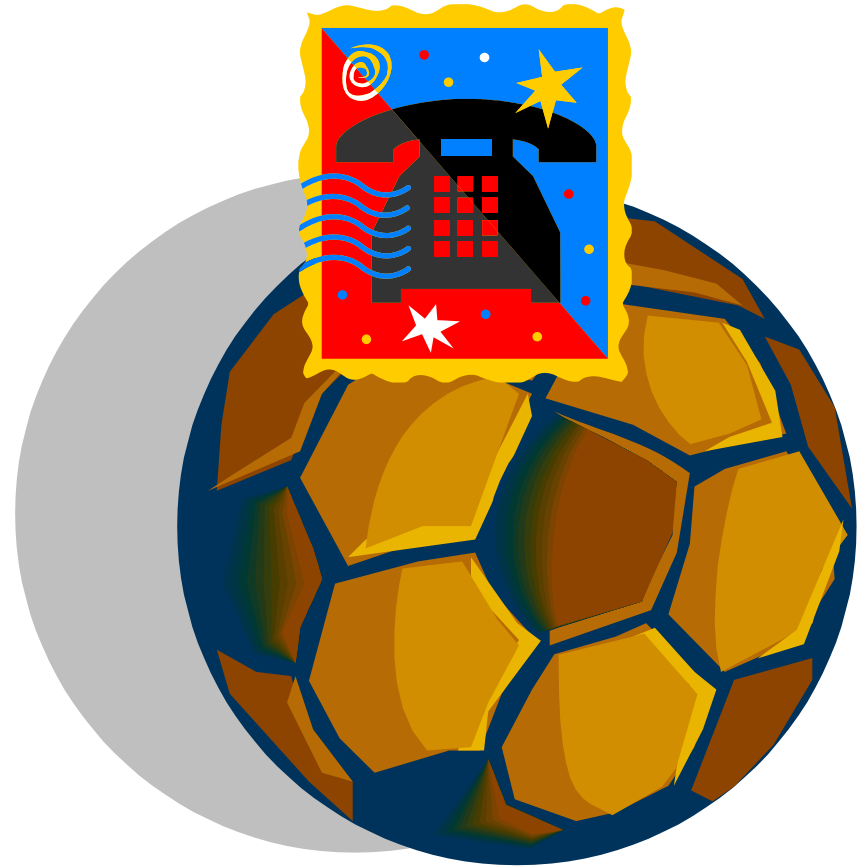
TIMELINE OF EVENTS - 5/2/15 (Saturday)

- 12:30 PM - Station turned on to prevent sewage backups/overflows
- 12:35 PM - Repairs to the first 20"x10" reducing coupler is finished (used smaller bolts) with no leaks
- We know it is only temporary



TIMELINE OF EVENTS - 5/2/15 Cont. (Saturday)

- **12:40 PM - Phone rings; the soccer complex shook**
 - Gary asks Bob - Where is the soccer complex?
 - Bob says “Kind of in the direction of the force main”
 - We asked the contractors if they felt an earthquake – they say “No, but his son called and there was one in in a town about 20 minutes away”
- **2:30 PM - Wrap up and go home**



TIMELINE OF EVENTS - 5/3/15 (Sunday)

- **5:00 PM – The Project Manager is notified again by the on-call person that he is getting another flood alarm at the same 12th St. block station. Upon arrival, a second 20”x10” reducing coupler had failed**
- **5:30PM - Clean Earth Environmental is again contacted and vector trucks are on the way**
- **5:45 PM - Due to expected increased flow on Monday morning, Terra Contracting is also contacted to bring in “whalers” to handle more flow than the smaller pump trucks**



TIMELINE OF EVENTS - 5/3/15 (Sunday) Continued

- **6:00 PM** - Hoffman Brothers is contacted again to perform the repairs
- **6:15 PM** - Underground Pipe is contacted to track down replacement parts



TIMELINE OF EVENTS - 5/3/15 (Sunday) Continued



- **7:30 PM-8:00 PM - Clean Earth trucks start arriving to pump out dry well. We continued to run the station**
- **10:00 PM – The Project Manager is contacted by Underground Pipe noting that replacement parts will not arrive on the job site until around noon on 5/4/15**

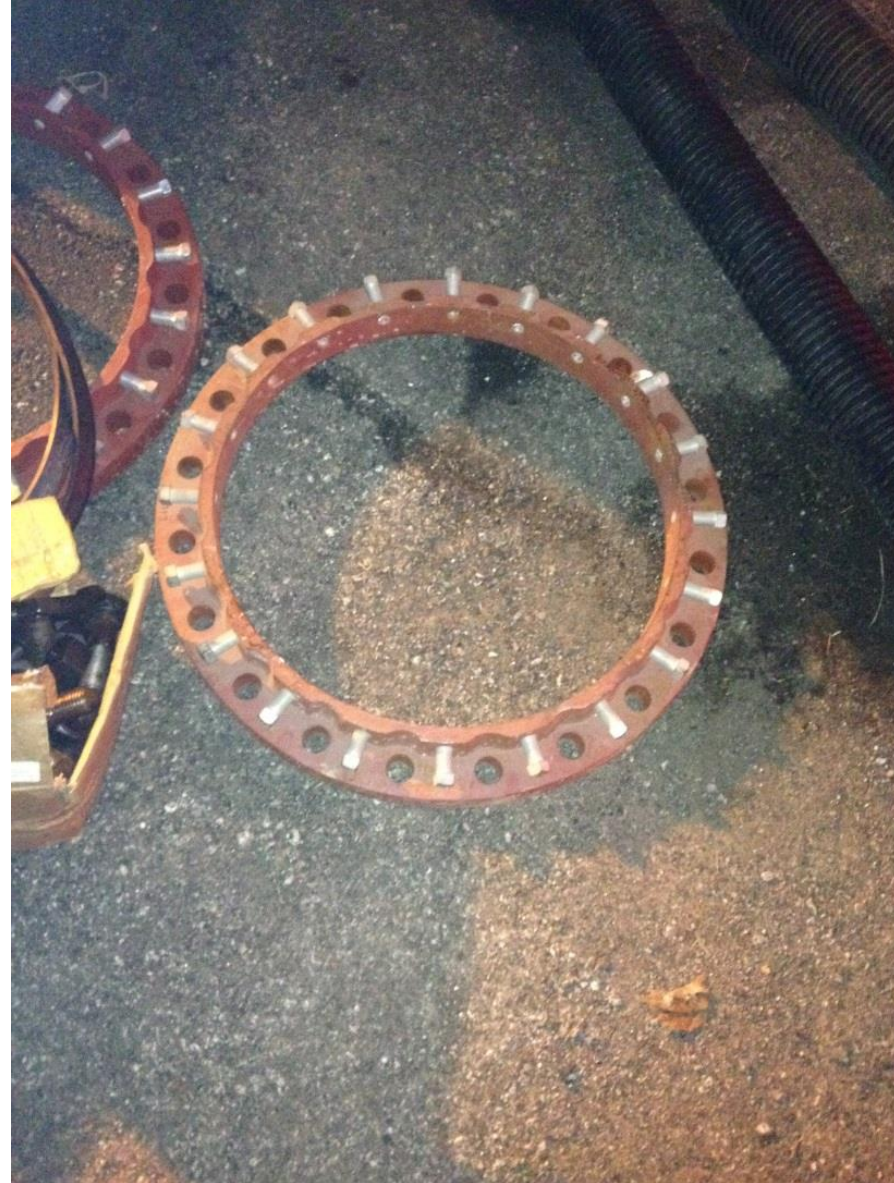
TIMELINE OF EVENTS - 5/4/15 (Monday)

- 2:30 AM - The first of two Terra “Whalers” arrive onsite
- 5:00 AM - The second of two Terra “Whalers” arrive onsite
- 5:45 AM - Clean Earth and Terra are working together pumping and hauling sewage



TIMELINE OF EVENTS - 5/4/15 (Monday) Cont.

- 11:45 AM - Replacement parts arrive onsite. After consulting Underground Pipe and Hoffman Brothers, we decided it was best to replace the two 20"x10" reducing couplers



TIMELINE OF EVENTS - 5/4/15 (Monday) Cont.



- 10:00 PM - After flow has slowed down, SUEZ started draining the force main again to prep for repairs

TIMELINE OF EVENTS - 5/5/15 (Tuesday)



- **2:45 AM - Force main is finished draining and Hoffman Brothers starts repairs and Clean Earth and Terra are still pumping sewage and manually hauling it and dumping in a manhole downstream**

TIMELINE OF EVENTS - 5/5/15 (Tuesday) Cont.



- 7:45 AM - Hoffman Brothers finishes the repairs
- The station is put back online and the drivers thought they were done and started to leave
- After the station runs for half an hour, we sent everyone home

TIMELINE OF EVENTS - 5/5/15 (Tuesday) Cont.



- **3:45 PM - A resident is walking behind the Wendy's restaurant on Centre Ave. and notices water running down the hill**
- **4:00 PM – SUEZ responds and notes that the 20" sewer force main is leaking**

TIMELINE OF EVENTS - 5/5/15 (Tuesday) Cont.



- **4:15 PM - MDEQ, the Health Department, and local media were notified per state regulations. The health department was the only agency to show up onsite and signed off on all cleanup and repair techniques**
- **4:00 PM – Suez dispatches a Vactor truck to start the cleanup of the spilled sewage**
- **4:30 PM - Peter's Construction is called in to dig up and fix the force main**
- **5:30 PM - Peter's Construction shows up onsite to start performing the repairs**

TIMELINE OF EVENTS -5/6/15 (Wednesday)

- **12:00 AM - Leak is dug up and located. Main clamp is applied; but due to the pitting on the outside of the pipe, the clamp would not seal all the way down**
- **2:30 AM - Peter's Construction and most of SUEZ personnel head home to rest**
- **Two SUEZ employees stay on site with the Vactor truck to constantly remove any spilled sewage**
- **7:00 AM - Peter's and SUEZ show back up to job site**



TIMELINE OF EVENTS - 5/6/15 (Wednesday) Continued

- **12:00 PM - Clamp is tightened down as much as physically possible. Very small stream of sewage still leaking out. Peterman Concrete is dispatched to encase the clamp in concrete to completely stop the leak**
 - The force main clamp was wrapped in landscaping cloth
 - Approximately 15 yards of concrete (High Early) was poured to completely seal the leak. It was inspected and signed off by the Health Department.
- **Several people said it wouldn't work**
- **The client bought in to it and said give it a try**
- **4:00 PM - Their excavation was filled in and all equipment and personnel are sent home**



SUMMARY

- **Between April 30 at 3:15 PM and May 6 at 4:00 PM, Suez employees worked approximately 285 hours at this station (rotating workers in and out)**
- **Successfully coordinated almost a week of work with seven different contractors, regulatory departments, and media**
- **Worked around the clock to ensure that all flows were handled and no sewer backups were reported**
- **Manually hauled and pumped approximately 450,000 to 475,000 gallons of raw sewage per day when needed**
- **Performed all work safely with no injuries**
- **Cost for contractors and materials ~\$80,000**
- **Finished union negotiations**
- **The Project Manager passed his Michigan D1 Certification**

What Went Well

- **Safety remained a focus from start to finish:**
 - SWPs
 - Tailgates
 - An abundance of PPE
 - Holding each other accountable
 - Workers being changed out regularly
- **Communication:**
 - City
 - Contractors
 - Regulators
 - Media
 - Internal
- **Drive to NOT GIVE UP!**
- **Having a good combination of experience and luck!**

Lessons Learned

- Really didn't have a plan to use "what if" scenario
- Be more aggressive with the water conservation order
- Bring more equipment than you need, in anticipation of breakdowns
- Bring food/drink to the site so employees don't want to stop at gas stations/restaurants
- Bring in sanitation (port-a-potty)
- Hire a traffic control contractor
- Have better lighting at night
- Schedule time to sleep!

First 20"x10" Reducing Coupler Fail



Broken 20"x10" Reducing Coupler



Second 20"x10" Reducing Coupler Fail



Before And After



Finished Installation



QUESTIONS?

