

Fish Kill from Hyper-Chlorinated Line Flush

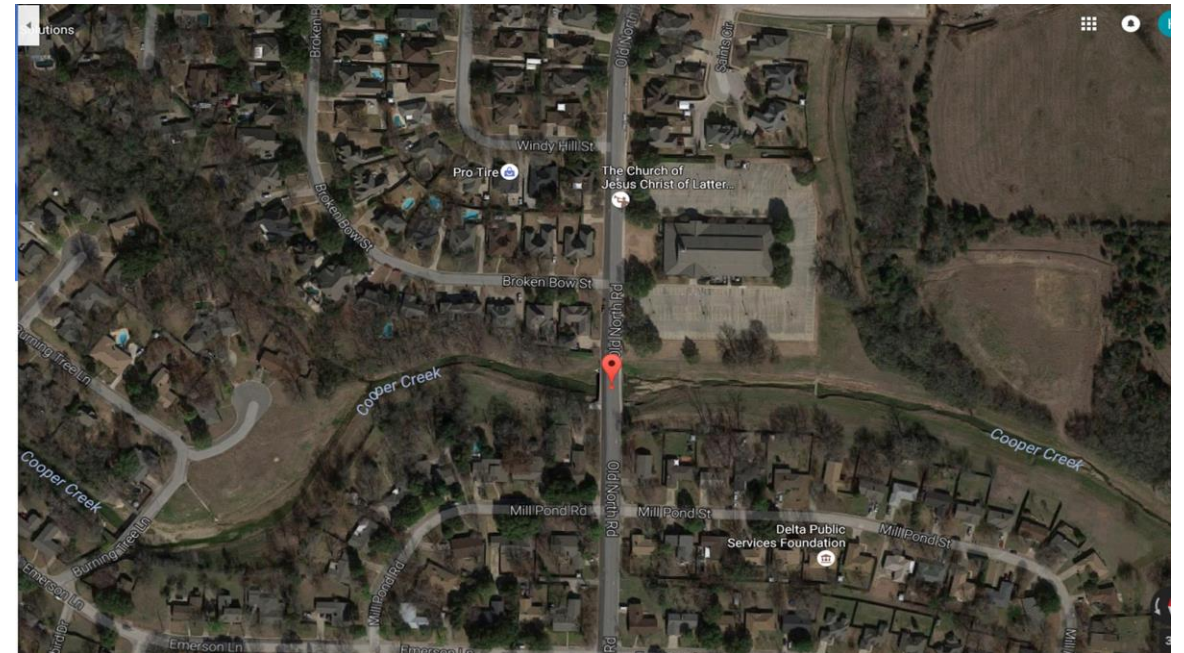
A Tale of Illicit Discharge Detection and Elimination!



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Stormwater Specialist
City of Denton – Watershed Protection




Timeline of Events

- Monday July 25, 2016 at 8:43pm Watershed Protection staff was notified of a possible fish kill and/or illicit discharge
 - Via a call from the City of Denton Spills hotline (940-484-SPIL).
- Staff returned call to the Citizen at 9:03pm and were on site 9:45pm.
 - Not me! David's an over-achiever.
 - KIDDING! I would have been "happy" to respond
- Reported location of incident was at the intersection of Old North Road and Cooper Creek in Denton, TX.
 - Near my house!!!!



Timeline (cont.)

- During the initial Investigation staff discovered slightly turbid or cloudy water, several dead fish and no appreciable flow over base flow.
- Dead fish were that were noted at the site:
 - 3 Bluegill 3-6" in Length
 - 1 Catfish (head only) medium sized
 - 1 Black Bass, 6" in length.
- Water Quality was taken at site with YSI ProDSS data sonde:
 - Temp: 26.4°C
 - pH: 7.01
 - Conductivity: 383 us
 - Turbidity: 70 NTU
 - Average at monitoring site just upstream of this event: 9.4NTU, Median: 3.5NTU, 75%ile 8.7NTU
 - Based on City of Denton long-term monitoring 2001-2016).
 - Staff walked some distance (approximately 50 meters) upstream and downstream of site but was unable to see any additional impacts.
- At this point it was not ascertained whether there was an illicit discharge and the decision was made to investigate further next morning.

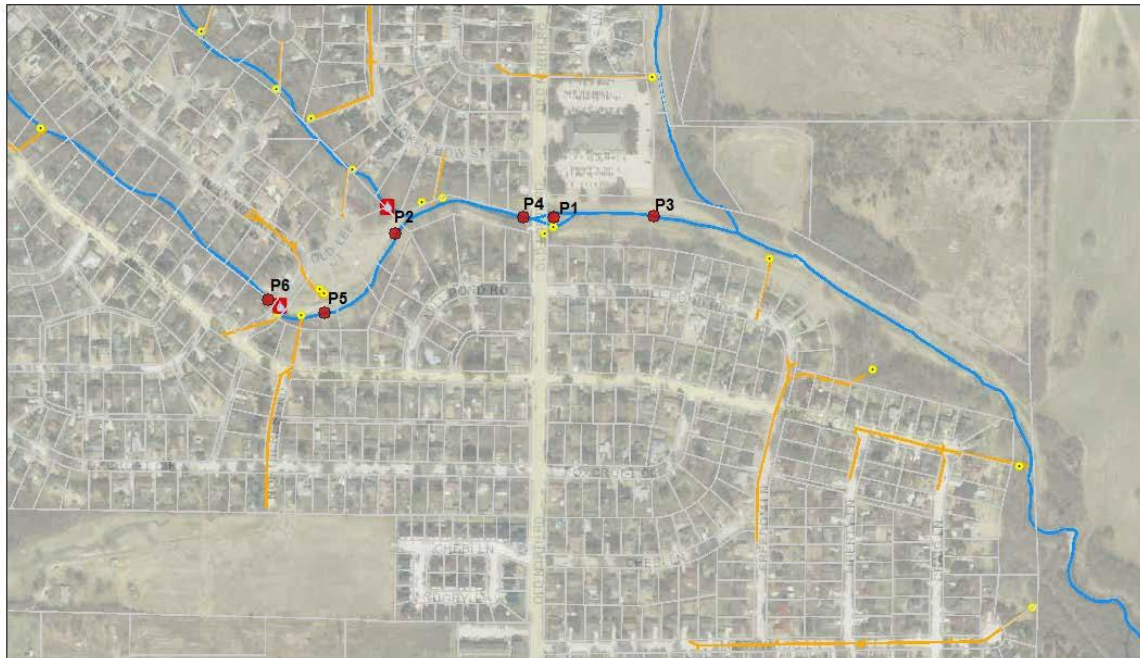


Run	
Log One Sample	
26.4	°C
745.4	mmHg
89	DO %L
7.1	DO mg/L
383.3	SPC $\frac{us}{cm}$
249.118	TDS $\frac{mg}{L}$
0.18	SAL-ppt
7.01	pH
-1.4	pH mV
70.0	NTU
0.000	DEP m
0.0000	°
0.0000	°

Timeline (cont.)

- Staff returned at 08:00 and walked stream again, this time noting turbid water and many more dead fish
- An outfall was found to be flowing near Emerson and Old Lee

072616 Fish Kill



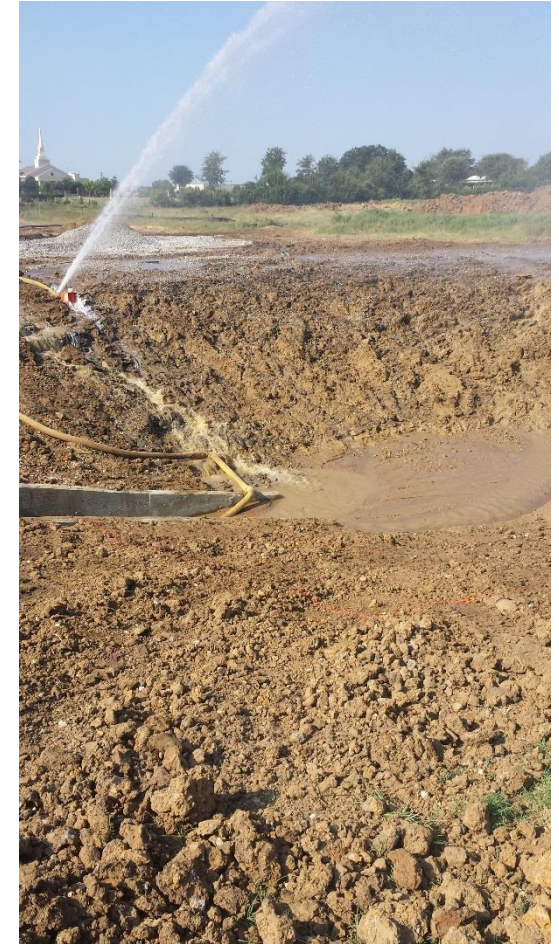
July 26, 2016

- | | | | |
|-------------------|----------------------|-------------------|----------|
| ● Override 1 | ■ Screening Stations | — Strmpipe_Master | □ County |
| □ Parcels | ★ Leaking UST | — DStreams | |
| ● Permanent Sites | ● Outfalls | ♻️ ETJ-Regulatory | |



Timeline (cont.)

- Flow was followed upstream from this outfall
 - Checked a couple of manholes and quickly assessed the likely location: TPDES Permitted Construction Site (>5 acres)
- On-site, staff noted
 - (1) Hose discharging water into an un-stabilized drainage channel (leading to the new inlet for storm sewer line)
 - (2) Two ripped sections of hose discharging into the air with great force
 - (3) De-chlorinating device at end of hose
- Staff inquired as to whether or not water was being tested during discharge
 - Operators were unaware if testing was being done



Timeline (cont.)

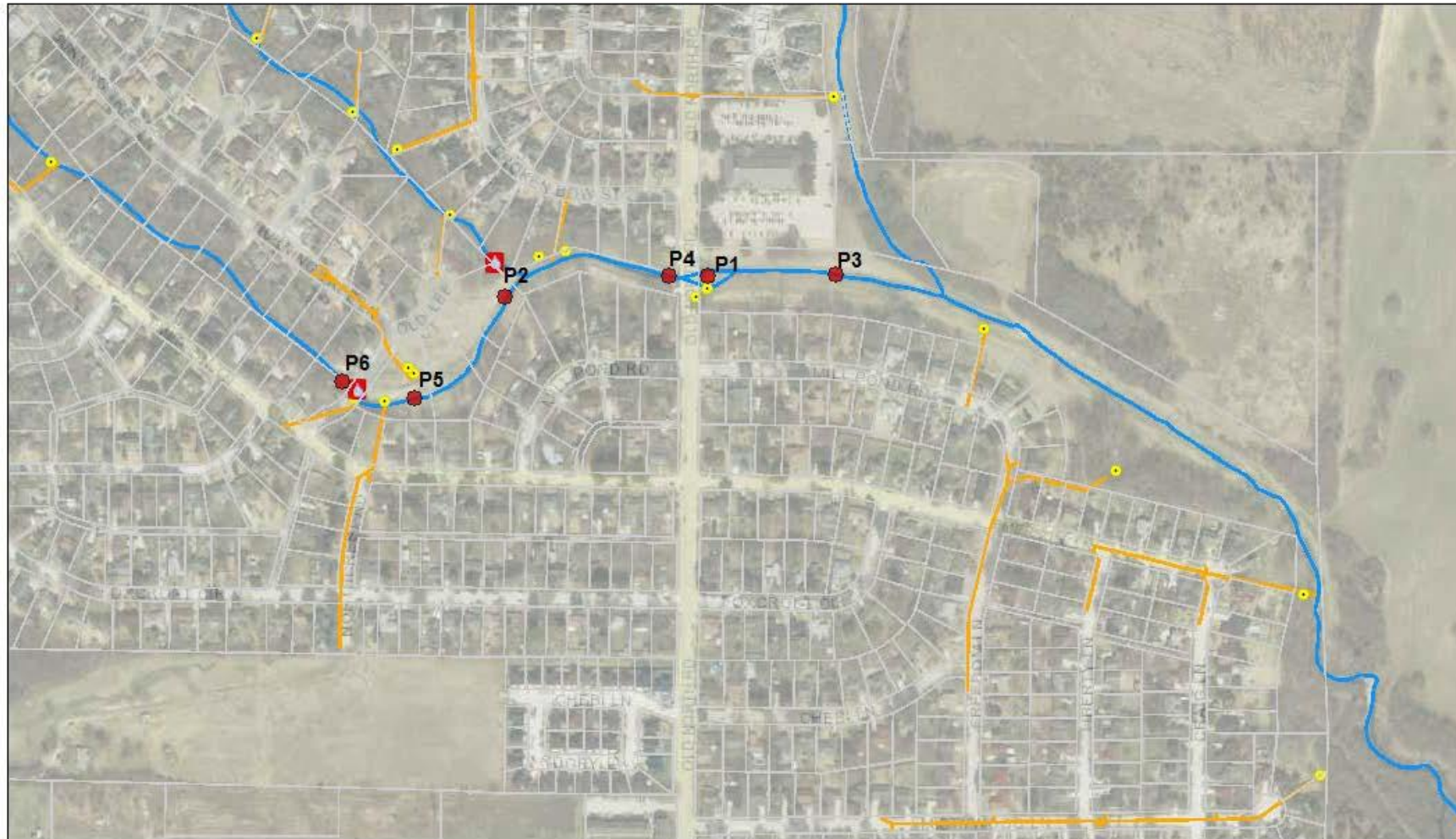
- The construction site had a waterline that had not been accepted by the water utility and was undergoing hyper-chlorination and subsequent bacteriological testing.
 - Site had been hyper-chlorinated and discharged on 7/25/2016 prior to initial Citizen call but the water line had not passed and had not been accepted by the inspector.
- Hyper-chlorinated line (>100ppm chlorine, which is more than twice what is necessary/normal) was being pumped out of line and through de-chlorinating box,
 - BUT no one was watching the sodium thiosulfate deoxidizers tablets to make sure they were still “there,” nor checking discharge for residuals;
 - And of course the hose was ripped in multiple places and a lot of still-hyperchlorinated water was discharging via surface flow into the open inlet
 - With BMPs pulled to allow water to pass through: TRIPLE WHAMMY!!
- Site Operator was immediately directed to shut down water discharge.
- Staff instructed site operator to verify discharge information (dechlorination) upon any restart of discharge and to monitor downstream.
- Chlorine tests by staff showed positive Chlorine (approximately 1.5mg/L)
- Additional WQ Testing and Assessment of fish mortality was conducted.



Timeline (cont.)

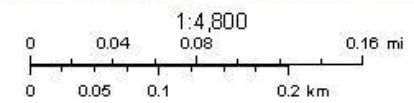
- Stream was evaluated for approximately 1 mile downstream of discharge and 400m upstream of discharge.
- Construction Site operator was instructed to put additional dechlorination chemicals (Sodium Thiosulfate into stream discharge area).
- Estimates of discharge volume based on observations and discussions with Water distribution staff:
 - **7/25/2016: 250,000-500,000 gallons**
 - **7/26/2016: 85,000-125,000 gallons**
 - Calculations based on 65 psi and 2.5 inch hydrant opening (C factor 0.9) and duration of discharge.

072616 Fish Kill



July 26, 2016

- | | | | |
|-----------------|--------------------|-----------------|--------|
| Override 1 | Screening Stations | Strmpipe_Master | County |
| Parcels | Leaking UST | DStreams | |
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Sonde Data

sonde number Y9 YSI ProDSS

event 07-26-16 Fish Kill

date / time sampled 7/26/2016 9:00

samplers KJL/AL

date/time analyzed 7/26/2016 9:00

Sample ID	Visual	Odor	Time Sampled	Temp. (°C)	D.O. (mg/L)	Cond. (µs)	Salinity (ppt)	TDS (mg/l)	Turb. (NTU)	pH
Blank	C	N	8:45	23.2	7.7	5.6	0	3.69	0	7.75
Old North Bridge (P1)	Gray 3	Dead Fish	9:00	28.7	3.7	389.4	0.18	253	80	7.65
Burning Tree (P2)	Brown 3	N	9:30	26.7	5.7	664	0.32	427	550	7.1
Downstream Dam (P3)	Gray 2	N	10:30	29.7	6.2	511	0.24	332	46	7.57
Old North Bridge Post (P4)	Gray 2	N	11:00	29.7	5.8	466.1	0.23	306.5	59	7.46
Burning Tree Downstream Post (P5)	Brown 2	N	11:15	33.4	5.2	356	0.17	244	330	8.04
Burning Tree Up Stream Post (P6)	Gray 1	N	11:30	30.9	7.9	451	0.21	293.7	33	8.32

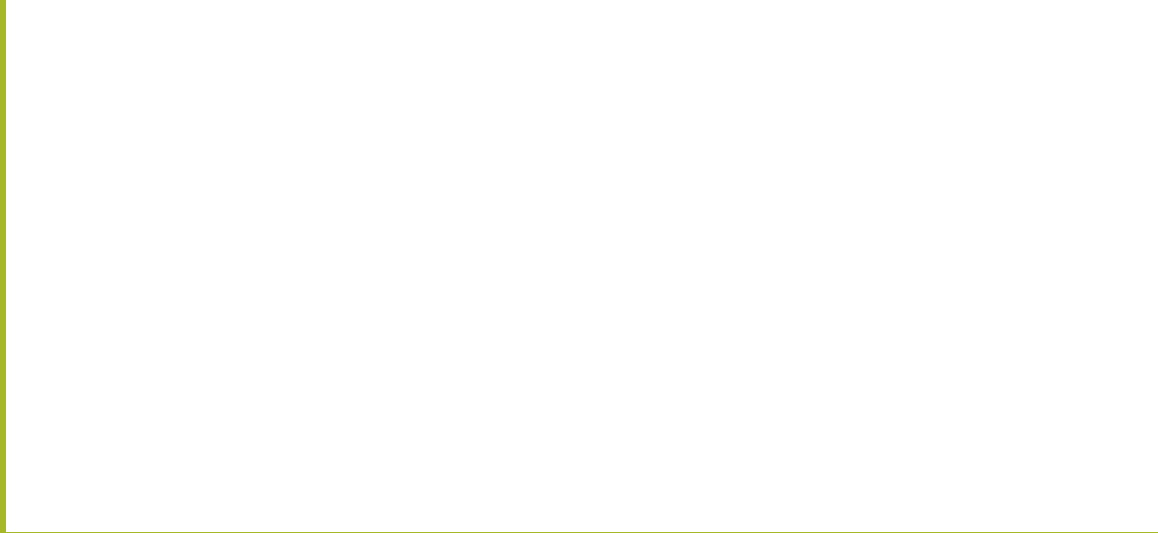
Sample ID	Chlorine
Discharge hose	1.50
Old North Bridge (P1)	Not sampled
Burning Tree (P2)	Not sampled
Downstream Dam (P3)	0.20
Old North Bridge Post (P4)	0.50
Burning Tree Downstream Post (P5)	0.60
Burning Tree Up Stream Post (P6)	0.00

072616 Fish Kill





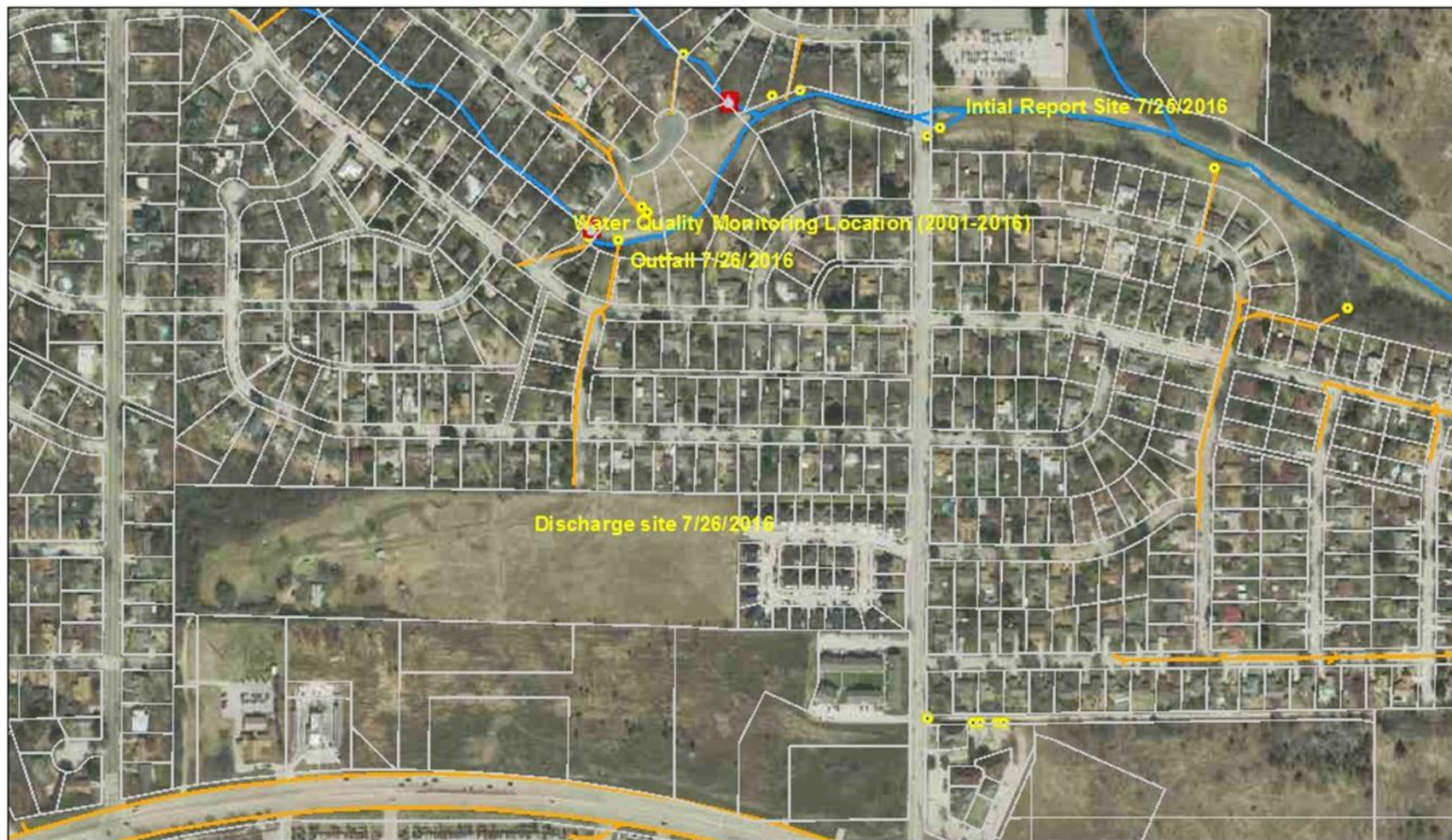






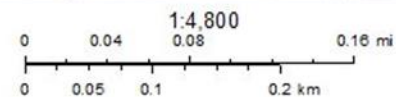
Species	Counts
Carp	3
Blue Gill	36
Catfish	11
Sunfish	16
Bass	21
TOTAL	87

Reported Discharge Fish Kill --2016Jul25



July 26, 2016

- Parcels
- ★ Leaking UST
- DStreams
- Permanent Sites
- Outfalls
- ⊞ ETJ-Regulatory
- 🔥 Screening Stations
- Strmpipe_Master
- County



Results were Shared with TCEQ and TPWD Kills and Spills

- Didn't meet threshold for TPWD to intervene (not sure about this but that's what I was told)
- TCEQ is still in the process of building their case for enforcement and WILL be fining them. We hear from them once every couple of weeks
- BMPs were reinstalled within 48 hours
- Operator blamed the City, but Public Works was not at fault, pure operator error (TCEQ agreed)
- NOTES:
 - I was not involved with the investigation (was out of the office a lot that summer)
 - I was not made aware of any requirements to provide information beyond what I've shared here
 - The counts seemed to be sufficient, with relative sizes assessed through pictures and staff knowledge
 - Stream rebounded well in terms of visible diversity; will conduct habitat and community-ecological assessments in July of 2017!

Any
Questions?

Thanks for your time!

