



IDDE Source Tracking

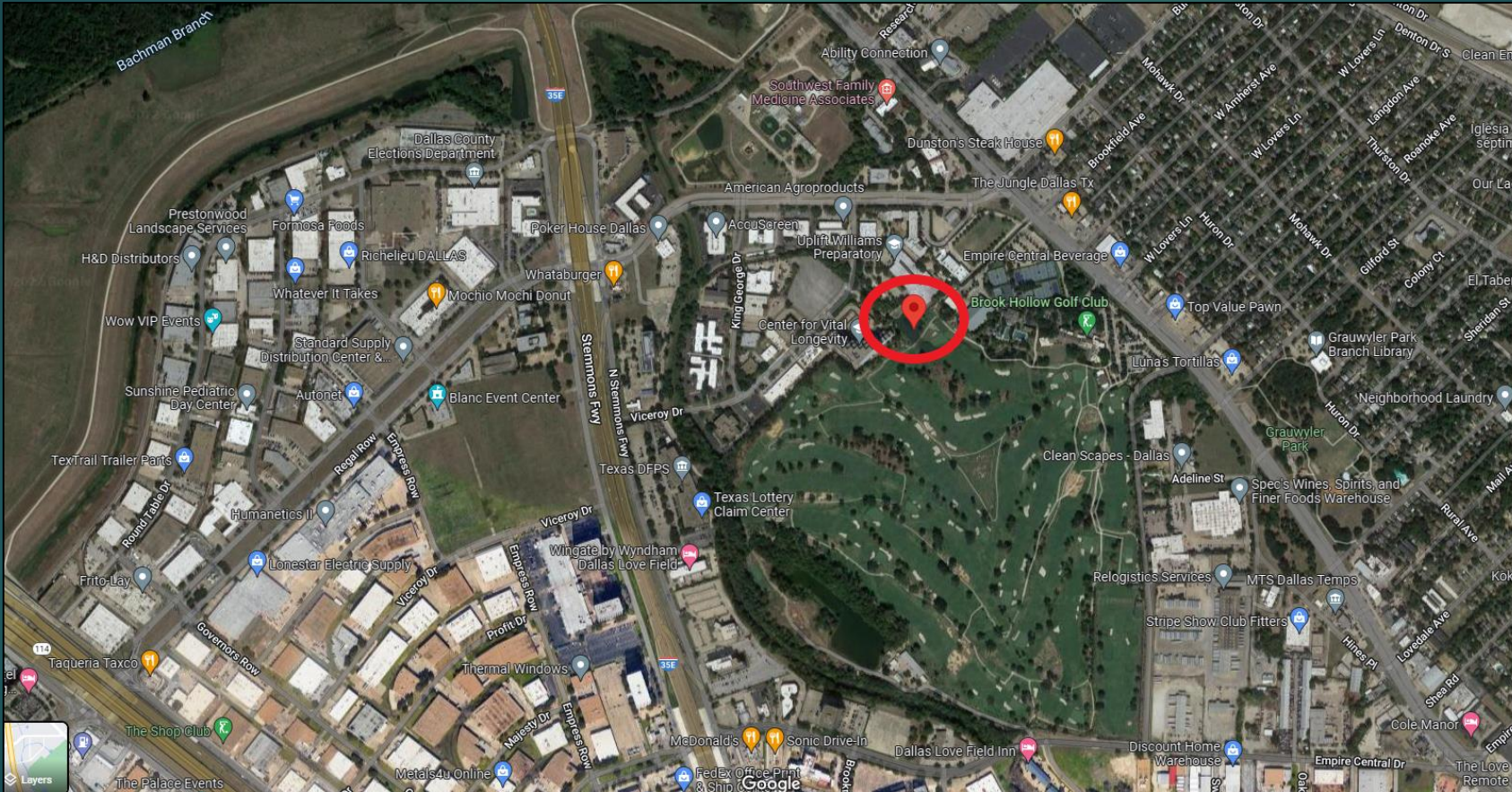
CITY OF DALLAS – LOVE FIELD AIRPORT

Notification of the Issue

- ▶ Dallas Water Utilities – Storm Water Operations received an email from Texas Parks & Wildlife on 3/8/22 requesting that the City investigate a fish kill reported to TP&W on 3/7/22.
- ▶ The report stated that dead fish were observed March 1-3 near Brook Hollow Golf Club downstream to King George Dr.
- ▶ DWU – SWO arrived on scene at approximately 11:30am on 3/8/22 to investigate the issue.

Location

This the exact location provided by TP&W. Near 1600 Viceroy Dr.



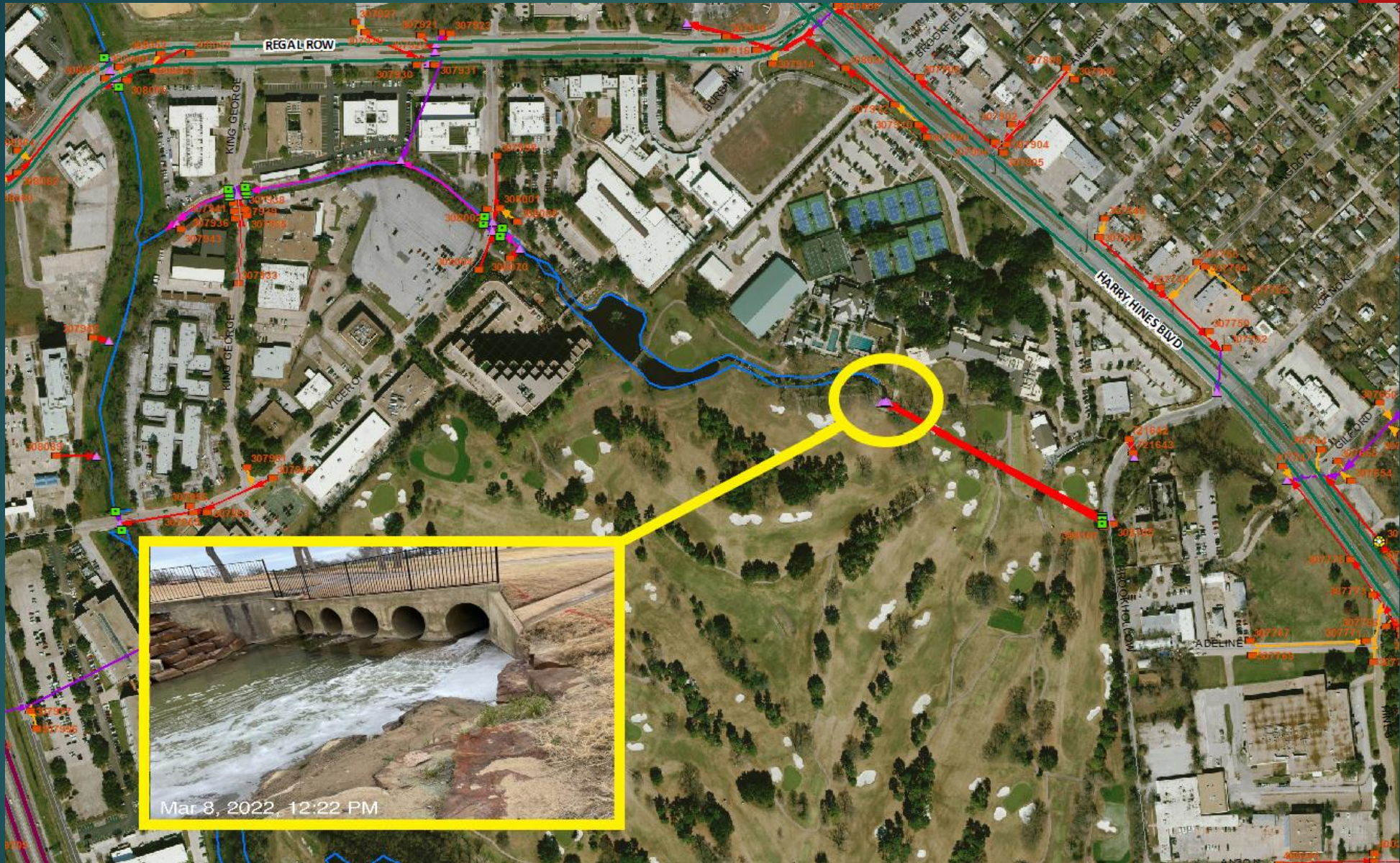
Tools and Equipment

- ▶ DWU – SWO staff was already in the field performing IDDE outfall inspections so basic field sampling equipment, sampling field sheets, computers for storm drain maps and camera were already in hand.
- ▶ DWU – SWO basic field sampling equipment includes HQ 4300 and DR900 (Hach) that tests for pH, dissolved oxygen, specific conductivity, temperature, chlorine, iron, copper, phosphorous, nitrates/nitrites, hardness and ammonia.
- ▶ DWU – SWO Fish kill sampling also consists of sampling for BOD, TDS, total coliforms/E.coli, COD, nitrate/nitrite, phosphorous and ammonia that are sent off to a NELAP certified lab.

Initial Observations

- ▶ The creek channel and pond area near 1600 Viceroy Dr was inspected after arrival. DWU – SWO staff observed 1000+ dead fish (mostly sun fish) along a couple of check dams in the channel.
- ▶ The water in the creek was murky and greenish colored. There was a very distinguishable odor throughout the creek. The odor was likened to vinegar, tomatoes and even play-doh.
- ▶ The cloudy water in the creek was tracked back up into Brook Hollow Golf Course to what was believed to be a series of 5 outfalls.
- ▶ One of the “outfalls” had a heavy flow of rushing water coming from it that was sure to lead us to the source.





Sample Collection

- ▶ Once dead fish were observed the investigation turned into a fish kill that triggers additional sampling sites (upstream, downstream and kill site), the aforementioned sampling parameters, fish collection and identification and at least 3 days of sampling and investigation.
- ▶ Additional DWU – SWO staff were contacted and brought bottles for samples to be sent off to the lab. Additional staff began sampling at the kill site – 1600 Viceroy Dr. A downstream location was chosen at 3100 N Stemmons Fwy and an upstream location was chosen at 8301 Harry Hines Blvd (outfalls located within Brook Hollow Golf Club).
- ▶ Original staff on scene continued the investigation and tracking of the source of discharge.

Sample Collection

1600 Viceroy Sampling Results – Kill Site

	3/8/2022	3/9/2022	3/10/2022	3/11/2022
DISSOLVED OXYGEN	7.41	5.65	5.83	7.03
PH	7.11	7.49	6.92	7.48
SPECIFIC CONDUCTIVITY	1150	1148	1119	1075
SAMPLE TEMP (H ₂ O)	12	11.2	10.8	10.4
AMBIENT TEMP (AIR)	7	8	9	2
AMMONIA (Strip Test)	0.25	0	0	0
CHLORINE (11)	0.07	0.04	0.02	0
COPPER (20)	0.05	0	0	0
HARDNESS (Strip Test)	425	425	425	425
IRON (33)	0.44	0.45	0.42	0.42
NITRATE (53)	0.9	0.3	0.9	1.1
NITRITE (62)	0.008	0.007	0.006	0.007
PHOSPHORUS (79)	1.46	0.2	0.23	0.19
TSS (94)	40	34	33	33
TURBIDITY (95)	45	39	34	34
Nitrate+Nitrite as N	0.093			
Ammonia as N	<0.0345			
Total Phosphorus as P	0.215			
Chemical Oxygen Demand	1010			
Total Dissolved Solids	772			
Biochemical Oxygen Demand	25.9			

Tracking the Discharge

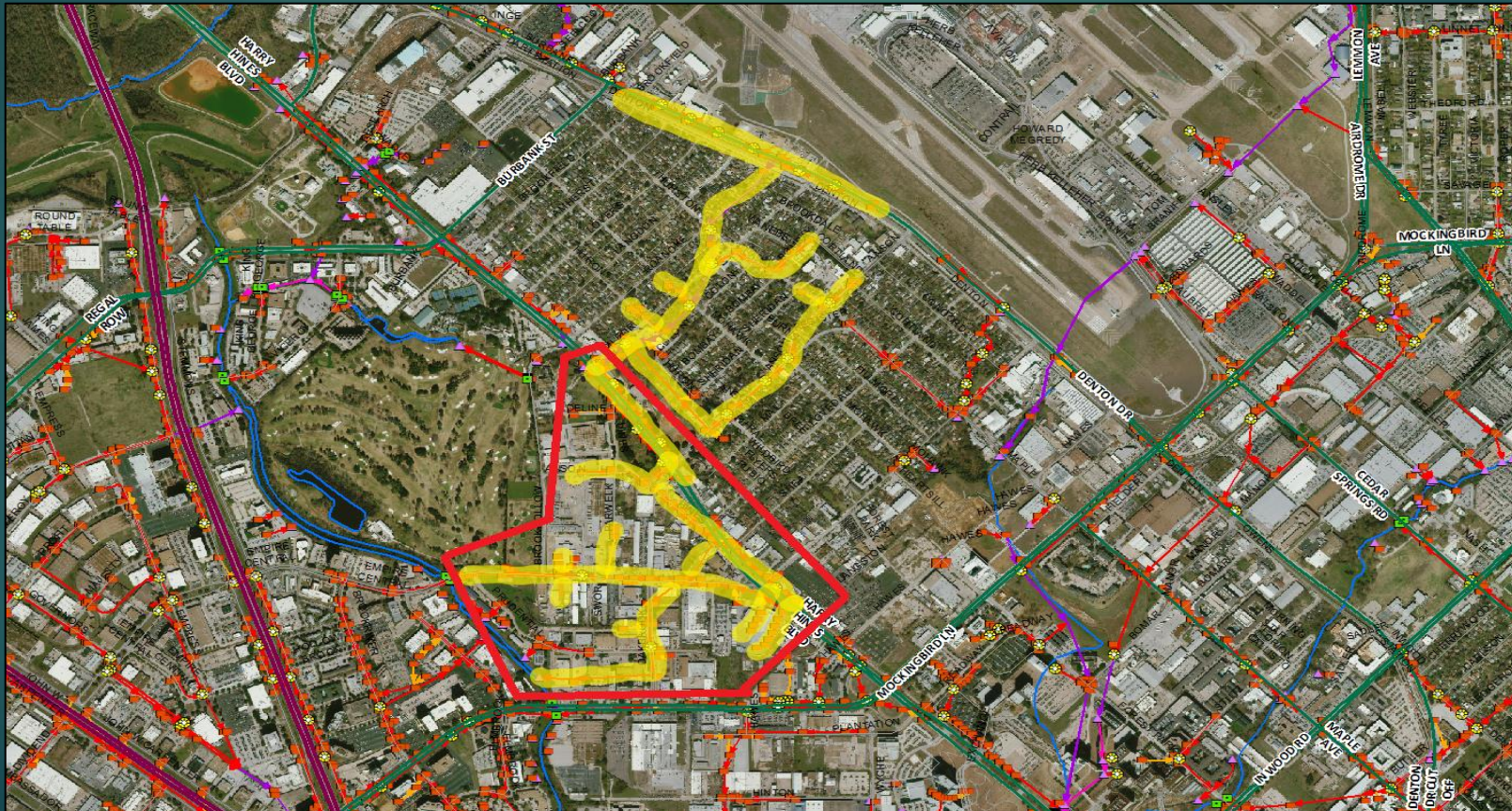
- ▶ City of Dallas storm water maps showed the outfalls coming from Brook Hollow Dr to be culverts instead but at the time it was believed there was an unmapped pipe that was connected to the outfall with the heavy flow coming from under the golf course.
- ▶ The upstream side of the culverts revealed that the discharge was still coming from further upstream as murky water with a strong odor was observed in the creek upstream of Brook Hollow Dr all the way to Harry Hines Blvd.
- ▶ It was later revealed that the heavy flow of water coming from the pipe in the golf course was part of a recirculation pump that fed water from the downstream pond back up to the pipes.

Tracking the Discharge

- ▶ The discharge was tracked back to the outfalls located near 8000 Harry Hines Blvd. From there the system goes underground and branches off into different directions.
- ▶ Inlets in the surrounding industrial area were visually inspected to see if any spills, leaks or discharges could be found entering the storm drain system.
- ▶ Day 1 of the investigation concluded once the daylight began to run out. CCTV was contacted and a meeting was scheduled to camera the outfalls at 8000 Harry Hines for possible sources the next morning.

Tracking the Discharge

- ▶ The highlighted areas below are affected areas of storm water run off tied to the outfalls in question. The area in red is where the inlets were visually inspected.



Tracking the Discharge DAY 2

- ▶ Day 2 of source tracking begins with meeting with our CCTV crew to camera the storm drain lines located near 8000 Harry Hines Blvd.
- ▶ It's determined with the help of the CCTV crew that the odor is present in the left most (north most) storm drain line.
- ▶ That helps eliminate most of the industrial area that is tied to the right most storm drain line.
- ▶ Since the storm drain line remains underground Water Quality and CCTV crew begin inspecting manholes going upstream on the line looking for flows and odors.

Tracking the Discharge DAY 2

- ▶ While the original team continues tracking investigation, two other teams continue with day 2 sampling and begin fish collection and identification.
- ▶ Team 2 collects field samples from same upstream, downstream and kill site locations for tracking and reference purposes.
- ▶ Team 3 collects 2,370 dead fish, almost all of them sunfish. Most of the fish are picked up along check dams in the channel near 1600 Viceroy Dr.



Mar 9, 2022 11:48:00 AM
32.83502431N 96.868441W
1600 Viceroy Dr #500, Dallas, TX 75234, USA



Mar 9, 2022 1:46:56 PM
32.83520447N 96.86909499W
1685 Viceroy Dr, Dallas, TX 75235, USA



Mar 9, 2022 11:49:21 AM
32.83512141N 96.86838295W
1600 Viceroy Dr #800, Dallas, TX 75235, USA

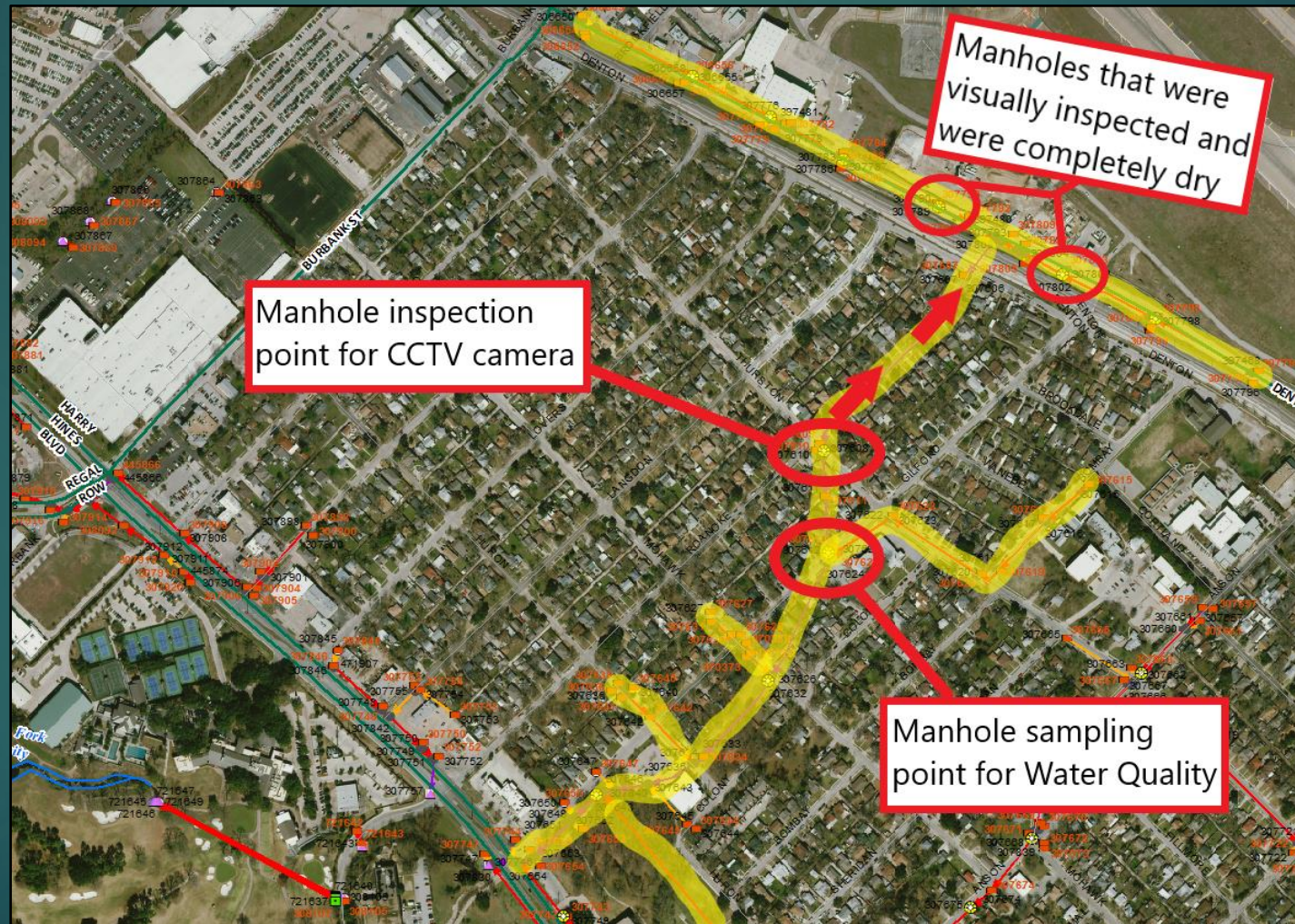
Tracking the Discharge DAY 2

- ▶ OEQS staff joins DWU-SWO Water Quality and CCTV crews in tracking the storm drain lines.
- ▶ CCTV crew pops a few manholes along the storm drain system to visually inspect the lines. There is still a light flow of water in the line and the same distinct odor present.
- ▶ Water Quality team samples one of the manholes at 2403 Gilford St and the results show elevated levels of Conductivity, pH, Iron, Nitrates and Phosphorous.
- ▶ CCTV continues to camera the line upstream as far as their camera line allows from the access point and makes it about 50 yards short of Denton Dr.

Tracking the Discharge DAY 2

- ▶ Two tie in lines along Denton Drive are visually inspected via manholes and observed to be completely dry.
- ▶ That leaves only the main line with a flow that seems to be coming from Love Field Airport.
- ▶ CCTV camera cannot reach access point from airport due to inaccessibility within the pipes.

Tracking the Discharge DAY 2



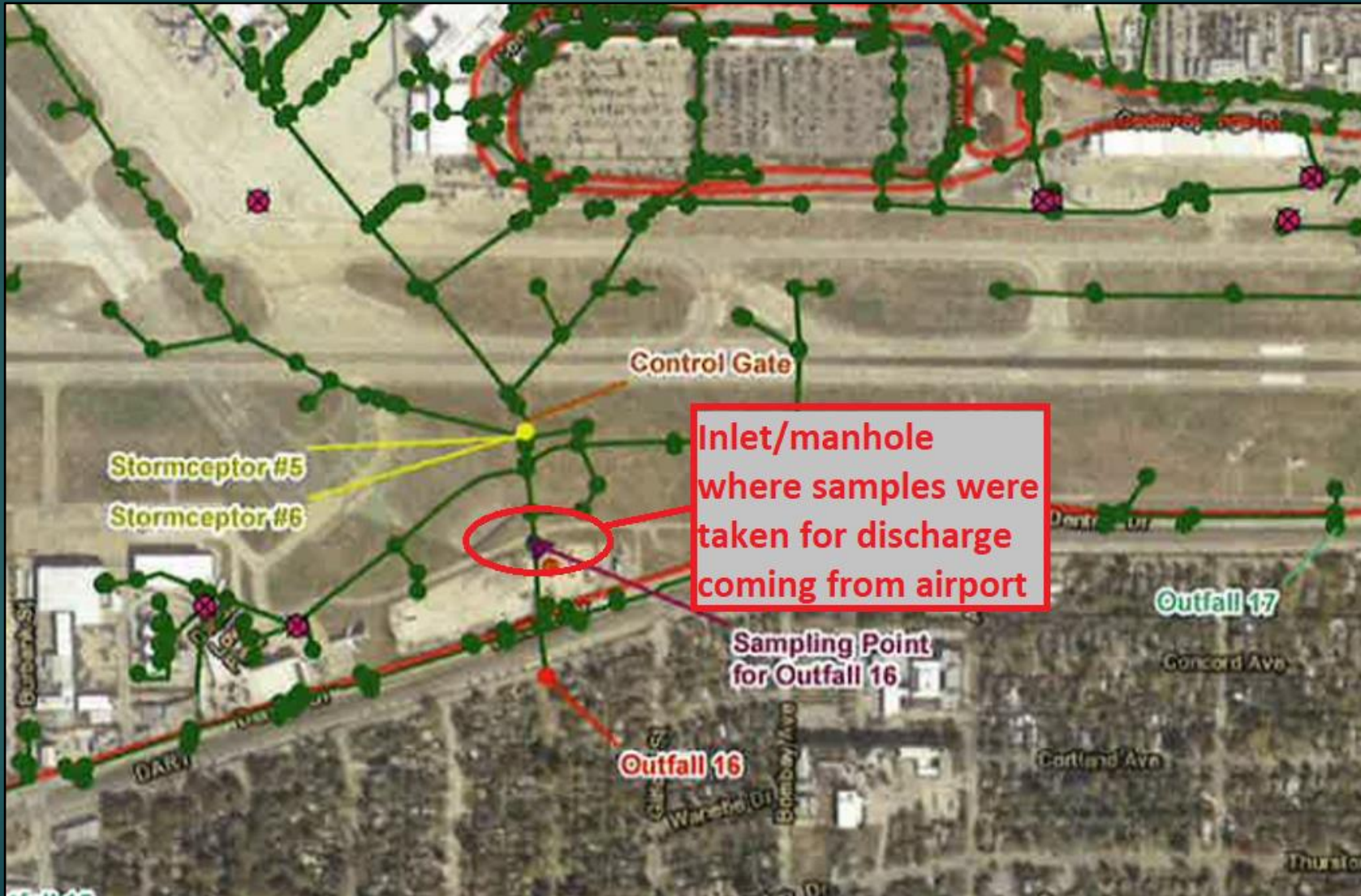
Tracking the Discharge Day 2

- ▶ It was determined that the discharge was coming from Love Field Airport.
- ▶ Access to Love field Airport proved difficult and lengthy due to tight security and restrictions.
- ▶ Eventually Water Quality is escorted to the control gate near outfall 16 within airport property.
- ▶ The manhole used for sampling was located within another locked storage yard, so an appointment was scheduled with City of Dallas Aviation Department to gain access to that lot the next morning.

Dallas Love Field MS4 Map



Dallas Love Field MS4 Map



Dallas Love Field Manhole/Inlet



Field Sampling and Fish Collection

DAY 3

- ▶ Teams 2 and 3 continue day 3 field sampling from all three locations and fish collection and identification.
- ▶ Dead fish were collected from the kill site at 1600 Viceroy Dr all the way downstream to Mockingbird Ln.
- ▶ 1150 more dead fish (mostly sunfish) were collected on day 3.

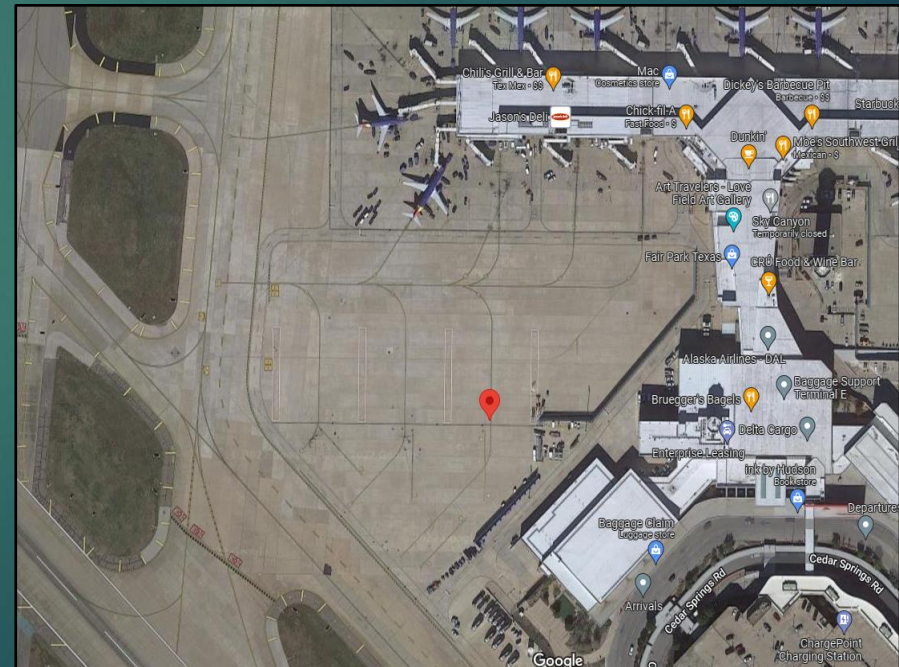


Tracking the Discharge DAY 3

- ▶ WQ Team 1 conducts basic field sampling near Outfall 16 at Love Field Airport and elevated levels of Phosphorous (1.03mg/L), Nitrates (5.1mg/L), Chlorine (1.68mg/L), DO (9.13mg/L) are present.
- ▶ An NOV was issued to the Airport (City of Dallas Aviation) for violation of Dallas City ordinance SEC.19-118.2. PROHIBITED DISCHARGES (a) "A person commits an offense if he discharges or causes to be discharged any water that does not consist entirely of stormwater into the stormwater drainage system, waters of the United States, or state water."
- ▶ De-icing materials were believed to be the cause of the fish kill but at this time sample tests had not been performed to prove that to be the case.

Tracking the Discharge DAY 3

- ▶ WQ Team 1 along with OEQS was escorted to the Southwest Airlines main De-icing pad and the same distinct odor that had been present throughout the creek was also present within their grate inlets.



Tracking the Discharge DAY 4

- ▶ WQ team 2 returned to outfall 16 at love field airport to collect samples for the following parameters to be tested at a NELAP certified lab... Propylene Glycol, Propylene Acetate, TPH BTEX and E.coli.
- ▶ Test results later showed elevated levels of Propylene Glycol (chemical used in de-icing materials) for sampling performed on 3/11 and 3/28 (160 and 117 mg/L). It was noted that two rain events occurred between those two sampling dates.
- ▶ Biochemical Oxygen Demand was tested for at the outfall on 3/11 and at the kill site on 3/8 and both locations showed elevated levels of BOD which is common amongst PG degradation.

Fish Collection DAY 4

- ▶ WQ Team 3 collected 160 more dead fish most of which were sun fish.
- ▶ A total of 3,610 dead fish were collected over a three-day span.



Total Affected Area



Where it Stands Today

- ▶ City of Dallas Aviation Department has hired a third-party environmental agency to conduct their own investigation and report regarding the fish kill.
- ▶ City of Dallas Office of Environmental Quality and Sustainability issued an Outside Complaint for violation of Dallas City Ordinance SEC. 19-118.2. PROHIBITED DISCHARGES (a).
- ▶ TCEQ and TP&W have also been in contact with City of Dallas Aviation Department regarding the incident.