City of Grand Prairie

2025 Outfall Rehabilitation Study

November 11th, 2024
W.O.#: 02551503

Prepared by:
Plummer | 1320 S. University Drive | Fort Worth, TX 76107

PLUMMER

1 OUTFALL REHABILITATION

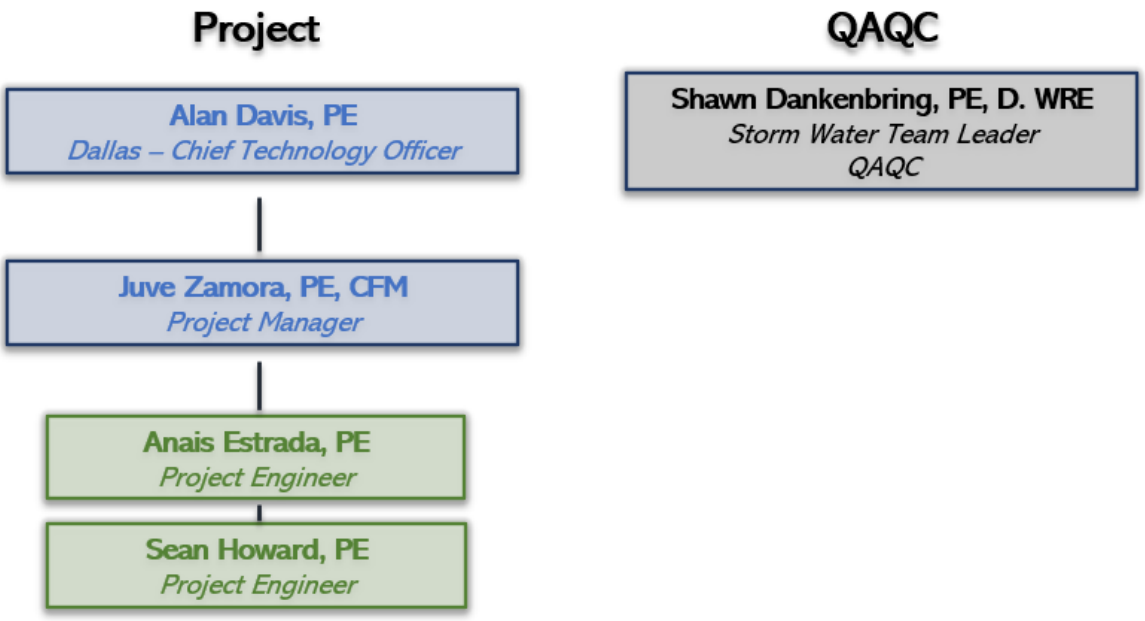
1.1 QUALIFICATIONS

Plummer Associates, Inc. (Plummer) has conducted business with quality and integrity for over 40 years. Founded in 1978, we operate eleven offices across Texas, Oklahoma, Colorado, and Florida. We are a firm of over 180 engineers and scientists dedicated to the planning and design of water-related infrastructure projects and facilities. Water is what we do every day. Because of our total focus on water conveyance and water treatment related services, our engineers and scientists have become recognized experts in their fields at local, state, and national levels.

Not only has Plummer completed hundreds of projects involving the planning and design of water related and wastewater infrastructure, but our firm also provides state-of-the-art tools, techniques, and proven processes to complete the job. Dedicated to water resources and environmental engineering, our firm balances sound engineering principles with innovative technology, tailored to our clients' needs. From initial project kick-of, through stringent QC review, to a completed project, our focus stays on developing cost-effective solutions for our clients. We are involved from project inception to implementation, and every step in between.

Plummer successfully developed and executed the eight previous Outfall Rehabilitation Studies. This experience qualifies us to continue to support the city with the Outfall Rehabilitation Program.

1.2 PROJECT TEAM



A brief resume of key individuals is included in Attachment A.1.

1.3 PROJECT SCHEDULE

The staff indicated in the organization chart is available to complete the proposed work. They will be assigned the tasks defined in the proposed scope of work to meet the proposed schedule.

Phase	Task	Feb '25	Mar '25	Apr '25	May '25	Jun '25	Jul '25	Aug '25
	Notice to Proceed	✖						
A	Desktop Analysis		✖	✖	✖	✖	✖	✖
B	Field Assessment		✖	✖	✖	✖	✖	✖
C	Office Work, GIS, QAQC		✖	✖	✖	✖	✖	✖

Goal to Complete Field Data Collection: 90 Days from Notice to Proceed
Goal to QC data, submit to City and respond to comments: 180 Days
Goal for Final Report and GIS Summary: September 2025

2 PROPOSED FEE

A maximum amount of $110,000 in accordance with billing rates found in Attachment A.2 and will be billed based upon the percentage of work completed. Inventory of maximum 310 outfall points (Zone 4) requested by the City. City will be invoiced for the work performed.

3 SCOPE OF SERVICES

3.1 TASK A – DESKTOP ANALYSIS

Perform cursory desktop analysis to identify potential outfalls that will require coordination for access. This will also serve to identify outfalls that may have relocated or that may be outside of the jurisdiction of the City. Zone 4 inventories consist of approximately 310 outfalls based on GIS data provided by the City (Reference Attachment A.3).

3.2 TASK B - FIELD ASSESSMENT

Advances in mobile GIS technologies and associated programming capability have streamlined the mobile data collection process. This task will utilize a data collection tool, specified below, to collect the data developed in Task A.

The data for this phase will be captured in accordance with Attachment A.6 for all inventory locations using an Android-based mobile phone or tablet. The data will be captured and sent to a Plummer server (with cloud back-up) at the end of each day of field inventories. Plummer server will maintain a full electronic database of all information specified in Task A of this Phase. The database will also provide a mapping functionality as front-end visualization of status and initial data results. The Plummer server will maintain single PDF collections of each site photograph. The project will utilize existing city outfall naming convention and existing GIS database schema to provide a link between existing data and data developed as part of this project. The sites to be evaluated will be agreed upon prior to Plummer data collection and approved list of Zone 4 outfalls that will be inventoried. Plummer will use proposed staff in Project Team section for all data collection and QA/QC process described in Attachment A.5 during this contract. Any changes shall be proposed in advance to the city in accordance with the contract.

3.3 TASK C - DATA FORMATTING AND QUALITY CONTROL

Quality control of the data uploaded as part of the project will be conducted throughout the assessment, with concentration on the initial 1-2 batches. At a minimum, the outfall location accuracy, data functionality and accuracy, photos, and short video clip will be reviewed by Plummer prior to submittal to the city.

Standard photos (6 total) to include:

- 1 area view of structure
- 1 side view of structure
- 1 downstream view of structure and apron
- 1 downstream view of channel that receives flow from structure
- 1 broad upstream view of structure (include headwall, side slopes, and apron)
- 1 focused upstream view of structure (close-up to show measured size and detail of structure opening).

Additional photos will be taken to document any defects that are observed and an example of these photos is included in Attachment A.8.

A short video clip (<1 minute) will provide an overview of the site and will contain verbal identification of the structure ID. Any required review changes will be provided to the City and the changes shall be made to the database by Plummer to comply with the City requirements. A brief summary of this process is included below. A step-by-step QC process is included as Attachment A.5.

- Plummer will provide the City with a Microsoft Excel spreadsheet showing all data entries made per the format defined as included in Attachment A.6. Plummer will separate submittals into approximately 25 outfalls per individual submittal. It is assumed the City will provide review comments within 7 days from the submittal and Plummer will respond to City comments within 7 days after receiving comments.
- Upon City approval of outfall entries, a geodatabase of the field data will be generated in strict accordance with the field definition schema and domain definition schema specified by the City GIS Department and provided in Attachment A.7. The geodatabase will be transmitted to the City via email. The submittal will include a formatted geodatabase of all data specified in Task A above, and a single PDF for each site that includes all photos collected at the site. The PDF will use the same GIS SDD identifier as on the inventory data sheet to assist with database linkage. Plummer shall coordinate assignment of number identifiers and PDF linkage with City GIS staff. Each photo will have the unique GIS number identifier, bearing (azimuth and direction), and date included on the photograph.
- A technical memorandum will be prepared upon completion and City approval of the outfall surveys that further documents the processes of data collection and QA/QC. The outfalls that presented environmental, structural, or other issues will be highlighted. An overview map of the completed 2025 outfall inventories will be included as an exhibit. This document will be signed and sealed by a registered professional engineer.

3.4 ASSUMPTIONS AND LIMITATIONS

- Outfalls impacted by environmental conditions such as high water or excessive vegetation will be visited a maximum of 2 times. High water is defined as greater than 1.5 feet of depth where stream flows are reasonably estimated to be greater than 5 feet per second. Excessive vegetation is defined as vegetation that is dead or alive and exceeds 3.5 feet in height. The City and Plummer shall come to an agreement on proper deferrals.
- Investigators shall maintain discretion on outfalls covered in harmful plants such as poison ivy, poison oak, greenbrier, and other similar vegetation.
- Tree branches exceeding 2" in diameter will not be removed. However, smaller branches or vegetation may be cut to gain better access for data. Trees and vegetation will be left onsite and become the City's responsibility to dispose of. Plummer will send photo of vegetation and/or trees to City.
- Investigators shall maintain discretion on outfalls located along steep areas. Steep areas are defined as areas where the slope approaches 50% and greater. Special equipment such as ropes will not be used.

APPENDIX A

SHAWN DANKENBRING, PE, DWRE, CFM

Stormwater Team Leader (QA/QC)

Shawn has over 26 years of experience in water resource engineering and roadway design. His experience includes storm drainage, detention and water quality facilities, stormwater management plans, outfall systems planning, Letter of Map Change through Federal Emergency Management Agency (FEMA), hydrology and hydraulics modeling, designed waterline and sanitary sewer lines. He has prepared plans for local agencies, CDOT and utility companies.

EXPERIENCE:

26 years

EDUCATION:

MS, Water Resource Engineering, University of Colorado

BS, Mechanical Engineering, University of Colorado

REGISTRATION:

Texas PE, #148102

Colorado PE, #0039737

Diplomate Water Resource Engineering

OFFICE LOCATION:

Denver, Colorado

REPRESENTATIVE PROJECT EXPERIENCE

2021 Highlands Ranch Outfall Inspection Project | Douglas County, CO | Design Team.
Responsible for setting up a program to inspect 852 outfalls and rate them to determine what repairs needed to be done and when throughout Highlands Ranch, Colorado. The program used GIS to locate the outfalls and pictures and documentation was directly uploaded into a web-based database. Project was completed in 2021.

2021 Highlands Ranch Outfall Maintenance Project | Douglas County, CO | Design Team.
Responsible for getting two contractors on board and using the Douglas County Public Works Operations forces to clean, repair and daylight 21 outfalls that were rated “needs immediate attention” and 122 outfalls that were in “poor condition” within four months. The second phase would start in fall of 2022. Project was completed in first quarter of 2022.

2021 Highlands Ranch Storm Sewer Repair Project | Douglas County, CO | Design Team.
Responsible for plans and specifications to repair over 2,983 linear feet of storm sewer that ranged from 15-inch to 48-inch corrugated metal pipes throughout Highlands Ranch, Colorado. The pipes were repaired with an ultraviolet cured in place pipe, which would extend the service life of these culverts by 50 years. Project was completed in 2022.

Broadway and Southpark Rd Emergency Repair Project | Douglas County, CO | Design Team.
Responsible for 30-inch pipe repair that was 240 feet long that was removed and replaced just west of Broadway at Southpark Rd. The pipe required a 32-foot cut a few feet away from the sidewalk that was connect to Broadway. There was a point repair at the manhole on the east side of Broadway. The pipe was then lined with a Ultraviolet Cured in Place Pipe for the 400-foot length to extend the service life of the pipe directly under Broadway. This work was done by two different contractors and then coordination was done to get the driveway pavement redone and opened within a month.

SHAWN DANKENBRING, PE, DWRE, CFM (CONTINUED)

Stormwater Team Leader (QA/QC)

Sundown Trail Culvert Rehabilitation | Douglas County, CO | Design Team.
Responsible for culvert repair design for an existing 120-inch corrugated metal pipe that was 120 feet long to be lined with a 108-inch HDPE pipe near Parker, Colorado. Created plans and specifications so project to be quoted by contractors, added headwall and wingwall on the upstream side to improve inlet condition and not impact the floodplain. Project was completed in early 2021.

Chambers Road Widening | Douglas County, CO | Design Team.
Responsible for storm sewer design, water quality ponds evaluations, and erosion control plans from Mainstreet to Lincoln. The storm sewer also included additional extensions from original design to new layout and placing inlets. The original design was done by me, so I knew the layout and what impacts the new design had to the original plans. There were 11 new inlets added that tied into the existing storm sewer system that was designed to handle this flow.

Highlands Ranch Parkway at Venneford Ranch Storm Sewer Repair Project | Douglas County, CO | Design Team.
Responsible for plans and specifications to repair two storm sewer systems that totaled over 2,084 linear feet of 36-inch corrugated metal pipes along Highlands Ranch Parkway near Venneford Ranch Road in Highlands Ranch, Colorado. The pipes were repaired with a steamed felt cured in place pipe, which would extend the service life of these pipes.

University Blvd at Highlands Heritage Park Storm Sewer Repair Project | Douglas County, CO | Design Team.
Responsible for plans and specifications to repair two locations of dual 60-inch pipes under University Blvd near Highland Heritage Park storm sewer systems that totaled over 1,430 linear feet of 60-inch corrugated metal pipes in Highlands Ranch, Colorado. Three of the pipes were repaired with an ultraviolet cured in place pipe and one was Acothane sprayed in place pipe, which would extend the service life of these pipes. Project was completed in 2019.

2020 Public Works Operations Rural Pipe Lining Project | Douglas County, CO | Design Team.
Responsible for plans and specifications to repair 20 culverts that ranged from 12-inch to 72-inch corrugated metal pipes throughout Douglas County, Colorado. The pipes were repaired with an ultraviolet cured in place pipe, which would extend the service life of these culverts by 50 years. Project was completed in early 2022.

2020 Highlands Ranch Storm Sewer Repair Project | Douglas County, CO | Design Team.
Responsible for plans and specifications to repair over 2,207 linear feet of storm sewer that ranged from 15-inch to 54-inch corrugated metal pipes throughout Highlands Ranch, Colorado. The pipes were repaired with an ultraviolet cured in place pipe, which would extend the service life of these culverts by 50 years. Project was completed in early 2022.

Highlands Ranch Culvert Rehabilitation | Douglas County, CO | Design Team.
Responsible for three culvert rehab designs for corrugated metal pipes in Highlands Ranch, Colorado. Worked with County staff to get a project that could be advertised for the budget (two culverts advertised), the third culvert lining was added back in when one of the culverts could be repaired. This project turned into a multiple phase project to accommodate some other drainage needs throughout the County and creating plans for drainage projects to be advertised.

Spruce Mountain Road Box Repair Project | Douglas County, CO | Design Team.
Responsible for plans and specifications to repair a box culvert that had rebar exposed and voids that needed to be filled south of Larkspur, Colorado. A spray on Geopolymer Concrete application was used to repair the box and create a new floor bottom which extends the service life of this box culvert that is nearly 100-years old.

JUVE ZAMORA, PE, CFM
Project Manager

EXPERIENCE:
8 years

EDUCATION:
Master of Engineering, Environmental Engineering, Texas Tech

REGISTRATION:
Texas PE, #133706
Texas CFM, #4318-22N

OFFICE LOCATION:
San Antonio, Texas

Juvencio Zamora (Juve) is a project engineer at Plummer with experience in civil design including H&H, stormwater design, water line design, sewer rehabilitation design, and lift station design and construction. He has managed design, field data collection including surveying, geotechnical, and permitting. Juve has worked on projects in San Antonio and the surrounding areas, including the City of San Marcos and New Braunfels. He has also worked with other municipalities throughout Texas such as Denton, McAllen, Laredo, and Corpus Christi. Juve has worked closely with these municipalities for platting, tree removal, and other general construction permits for site hydrology and drainage, soil erosion control, underground utilities, and right-of-way sitework.

REPRESENTATIVE PROJECT EXPERIENCE

Sunset Acres | City of San Marcos, TX | Design Team.
The project consists of over $3 million in proposed improvements to existing storm drainage system and drainage conditions at large in the subdivision. This includes sizing over 80 curb inlets on 14 residential streets for a watershed encompassing over 200 acres. Total project piping exceeds 9,000 linear feet of 18" -60" reinforced concrete pipe and boxes and includes redesign of a detention basin. In Phase 1 of the project, design includes expanding the basin to accommodate over 50 acres of runoff from the surrounding area.

River Road | City of San Marcos, TX | Design Team.
The project consists of providing stormwater runoff protection to a severely impacted portion of a public roadway adjacent to the San Marcos River. This project included reinforced concrete pipe flow line elevation and alignments recommendations for stormwater infrastructure within public right-of-way and abutting Union Pacific Railroad right-of-way. It also included recommendations for erosion protection measures on the banks of the river according to United States Army Corps of Engineers and Federal Highway Administration guidelines.

Seguin Interconnect | New Braunfels Utilities | Design Team.
The project consists of a waterline alignment and pumps station feasibility study for a 10-mile pipeline to deliver water from a proposed pump station facility in the City of Seguin to a ground storage tank in the NBU service area. This includes site development, drainage, utility relocates, lot access, permitting, and other considerations such as environmental impacts. It also includes a water quality blending assessment analyzing corrosivity potential utilizing the TCEQ's method for evaluation (Tetra Tech Model for Water Chemistry and Corrosion Control). Juve's direct involvement included coordination with the City of Seguin for various permits associated with the development of a parcel such; driveway access through TxDOT, building permit (structural), fence permit, building permit (sitework), and floodplain development.

ANAIS ESTRADA

Project Engineer

Anais Estrada is a project engineer with experience in Water Resource Engineering. She has performed stormwater hydrology and hydraulic calculations, analyzed floodplain models, prepared stormwater management plans (SWMP), designed best management practices (BMPs), and water quality ("green") stormwater infrastructure. Anais also has experience with "dry" utilities design, namely telecommunications systems; temporary traffic control plans; and permit submittals in multiples cities throughout the State of Texas.

EXPERIENCE:

10 years

EDUCATION:

BS, University of Texas Rio Grande Valley

REGISTRATION:

Texas PE, #147891

Colorado PE, #62355

OFFICE LOCATION:

San Antonio, Texas

REPRESENTATIVE PROJECT EXPERIENCE

Norman Disinfection Site | City of Norman, OK | Project Team. Anais prepared a preliminary design for a detention pond with optional water quality features for a 2-acre site. She performed H/H calculations, drafted required exhibits and quantified associated costs as summarized through an Opinion of Probable Construction Cost. The final design included a rain garden and bioswale designed to remove Nitrogen and Phosphorus, design of an outfall structure, and included miscellaneous site grading as shown in project documents.

Jacqueline Road Drainage Improvements | City of Forth Worth, TX | Project Team. Project consisted of repairs to existing infrastructure to mitigate nuisance flows in a residential area. Anais evaluated the existing conditions surface runoff flows and flooding issues by performing H/H calculations. She then made a recommendation based on her findings on the most cost-effective solution, leading to preliminary and then final construction plans. The final design included grade changes to existing concrete pavement to better maximize flow capacities, along with an earthen berm solution to better maintain 100-year water surface elevation within the right-of-way.

Grand Prairie Outfall Rehabilitation | City of Grand Prairie, TX | Project Team. The project consists of 5 phases of condition analysis of City of Grand Prairie stormwater infrastructure. Anais' role consisted of managing field collection activity and personnel as well as conducting QAQC on the data obtained for over 304 stormwater outfalls. The data included various condition analysis data such as structural and environmental defects. This data was then summarized via a geodatabase for the City.

American Airlines | Cresent Real Estate | Project Team. Anais prepared a Letter of Map Revision (LOMR) for two unnamed tributaries for the American Airlines expansion in the DFW Metroplex. The basis for the LOMR was submitted to the Federal Emergency Management Agency (FEMA) for consideration based on construction of new buildings and pedestrian bridge crossing. The LOMR included the updated analysis in HEC-RAS model based on the as-built conditions of the project site, the delineation of the 100-year floodplain and floodway, the 500-year floodplain delineation, and the floodplain work map and MT2 forms.

SEAN HOWARD, PE
Project Engineer

Sean Howard is a Professional Engineer on the Stormwater Team in Fort Worth. He had four and half years of experience in Land Development across North Texas. Prior to that he gained valuable experience in construction and large scale operations in the United States Air Force Civil Engineer squadrons. His experience includes design of both gravity flow and force main conveyance systems for water, stormwater, wastewater, and non-potable water, detention pond design, downstream assessments, site plan design, and pavement design.

EXPERIENCE:

10 years

EDUCATION:

BS, Civil Engineering, University of Nevada Las Vegas

REGISTRATION:

Texas PE, #152145

OFFICE LOCATION:

Fort Worth, Texas

REPRESENTATIVE PROJECT EXPERIENCE

Marathon Oil Refinery

Garyville, LA | Project Team. Sean performed a site drainage survey, and helped analyze the existing storm infrastructure. He also analyzed the drainage areas for the property, both on-site and off-site, allowing for a full analysis of rainfall events that had been previously flooding the property.

409 Cooks Lane | Fort Worth, TX | Project Team. Sean designed the erosion control measures that would be implemented to alleviate the existing channel erosion which had potential to undermine nearby private property and roadways.

Fort Worth Zoo Drainage Systems

Fort Worth, TX | Project Team. Sean helped create a set of construction plans for an existing storm infrastructure system that had collapsed due to age. He helped redesign the storm system to alleviate nearby flooding issues as well. The site posed some challenges due to the storm infrastructure connecting to nearby residential neighborhoods.

Tom Taylor Water Treatment Plant | City of Lewisville, TX | Project Team.
Sean was added to the Conveyance team that was tasked with a redesign of the treatment plant and alleviating flooding issues. Using Value Engineering, Sean evaluated the current conditions and found the most cost-effective solutions to solve the flooding issues.

PLUMMER ASSOCIATES, INC.
HOURLY FEE SCHEDULE
2025

Staff Description	Staff Code	Range of Billing Rates
Admin Staff	A1-A3	$ 90.00 - $ 120.00
Senior Admin Staff	A4	$ 105.00 - $ 130.00
Designer/Technician	C1-C2	$ 85.00 - $ 135.00
Designer/Technician III	C3	$ 115.00 - $ 145.00
Senior Designer/Technician	C4	$ 135.00 - $ 185.00
Engineer/Scientist Intern	ES0	$ 55.00 - $ 100.00
Engineer-in-Training/Scientist-in-Training	ES1-ES2	$ 100.00 - $ 155.00
Engineer-in-Training/Scientist-in-Training III	ES3	$ 105.00 - $ 175.00
Project Engineer/Scientist	ES4	$ 125.00 - $ 195.00
Senior Project Engineer/Scientist	ES5	$ 140.00 - $ 215.00
Project Manager	ES6	$ 185.00 - $ 295.00
Senior Project Manager	ES7	$ 225.00 - $ 305.00
Principal I	ES8	$ 280.00 - $ 355.00
Principal II	ES9	$ 330.00 - $ 435.00
Electrical Engineer in Training I	EE1	$ 100.00 - $ 145.00
Electrical Engineer in Training II	EE2	$ 115.00 - $ 155.00
Electrical Engineer in Training III	EE3	$ 135.00 - $ 185.00
Electrical Specialist	EE4	$ 155.00 - $ 215.00
Programmer	EE5	$ 170.00 - $ 245.00
Programmer II	EE6	$ 175.00 - $ 265.00
Senior Electrical Engineer	EE7	$ 265.00 - $ 335.00

Range of billing rates shown may be adjusted by up to 4 percent annually (at the beginning of each calendar year) during the term of this agreement. The multipliers shown will not be adjusted.

A multiplier of 1.15 will be applied to all direct expenses.

OBJECTID	ASSETID	STRUCTURE_	FUNCTIONS	WATERSHED	WIDTH_FT	HEIGHT_FT	X	Y
1	243	PIPE	OUTFALL	JOE POOL	3	3	2411847	6915006
2	141	PIPE	OUTFALL	JOE POOL	5.5	5.5	2409533	6913273
3	142	PIPE	OUTFALL	JOE POOL	2	2	2409592	6913239
4	143	PIPE	OUTFALL	JOE POOL	2	2	2409865	6912825
5	144	PIPE	OUTFALL	JOE POOL	6	6	2410018	6912839
6	150	BOX	OUTFALL	JOE POOL	7	4	2411096	6913206
7	153	BOX	OUTFALL	JOE POOL	6	3	2413229	6913787
8	1335	PIPE	OUTFALL	JOE POOL	2	2	2409452	6913105
9	1198	BOX	OUTFALL	JOE POOL	3	2	2413742	6914435
10	1199	PIPE	OUTFALL	JOE POOL	1.5	1.5	2414731	6914133
11	1340	PIPE	OUTFALL	JOE POOL	4	4	2412311	6916165
12	188	PIPE	OUTFALL	FISH CREEK	3.5	3.5	2411968	6928129
13	190	PIPE	OUTFALL	FISH CREEK	4	4	2412622	6928114
14	191	PIPE	OUTFALL	FISH CREEK	3	3	2412998	6928026
15	119	PIPE	OUTFALL	FISH CREEK	2.5	2.5	2412001	6927862
16	602	PIPE	OUTFALL	FISH CREEK	5	5	2411283	6926750
17	917	PIPE	OUTFALL	FISH CREEK	2	2	2411425	6927038
18	1043	PIPE	OUTFALL	FISH CREEK	1.5	1.5	2410600	6926455
19	1448	PIPE	OUTFALL	FISH CREEK	5	5	2411441	6927265
20	1469	PIPE	OUTFALL	FISH CREEK	2	2	2411800	6930848
21	219	PIPE	OUTFALL	FISH CREEK	4	4	2412743	6927863
22	245	PIPE	OUTFALL	JOE POOL	5	5	2412568	6914954
23	1359	PIPE	OUTFALL	FISH CREEK	4.5	4.5	2411997	6919760
24	1360	BOX	OUTFALL	FISH CREEK	10	5	2412001	6919722
25	1361	PIPE	OUTFALL	FISH CREEK	2.5	2.5	2411841	6919147
26	1362	PIPE	OUTFALL	FISH CREEK	2	2	2411869	6919412
27	120	PIPE	OUTFALL	FISH CREEK	4	4	2413079	6927572
28	136	PIPE	OUTFALL	JOE POOL	3	3	2412433	6917477
29	140	PIPE	OUTFALL	JOE POOL	3.29	3.29	2412526	6917447
30	612	PIPE	OUTFALL	CEDAR CREEK	6.5	6.5	2431194	6927498
31	1034	PIPE	OUTFALL	JOE POOL	2	2	2416440	6916388
32	145	BOX	OUTFALL	ALSPAUGH	5	6	2418992	6920028
33	130	PIPE	OUTFALL	ALSPAUGH	2.5	2.5	2414923	6918722
34	1282	PIPE	OUTFALL	ALSPAUGH	5	5	2416164	6919277
35	132	PIPE	OUTFALL	ALSPAUGH	2.29	2.29	2416357	6919265
36	137	PIPE	OUTFALL	ALSPAUGH	2	2	2416289	6919493
37	1514	BOX	OUTFALL	JOE POOL	4	3	2416370	6916866
38	133	PIPE	OUTFALL	ALSPAUGH	2	2	2416199	6919504
39	1830	BOX	OUTFALL	JOE POOL	5	4	2416330	6916856
40	1831	BOX	OUTFALL	JOE POOL	6	3	2415788	6916536
41	1832	BOX	OUTFALL	JOE POOL	6	4	2414231	6916299
42	1834	PIPE	OUTFALL	JOE POOL	4	4	2412961	6916844
43	1833	PIPE	OUTFALL	JOE POOL	3	3	2412317	6916858
44	1835	PIPE	OUTFALL	ALSPAUGH	2	2	2415699	6918568
45	930	PIPE	OUTFALL	JOE POOL	2	2	2416987	6916065
46	244	PIPE	OUTFALL	JOE POOL	4.5	4.5	2412564	6915136
47	454	PIPE	OUTFALL	ALSPAUGH	3	3	2418043	6919882
48	455	PIPE	OUTFALL	ALSPAUGH	2.79	2.79	2417299	6919582
49	456	PIPE	OUTFALL	ALSPAUGH	2	2	2416705	6919419
50	457	PIPE	OUTFALL	ALSPAUGH	2	2	2416917	6919457
51	467	PIPE	OUTFALL	ALSPAUGH	1.79	1.79	2418435	6919669
52	614	PIPE	OUTFALL	CEDAR CREEK	2	2	2431171	6925865
53	996	PIPE	OUTFALL	CEDAR CREEK	2	2	2431765	6925432
54	997	PIPE	OUTFALL	CEDAR CREEK	2.5	2.5	2429937	6925691
55	998	PIPE	OUTFALL	CEDAR CREEK	2	2	2429695	6925074
56	1000	PIPE	OUTFALL	CEDAR CREEK	2	2	2431045	6923963
57	1189	PIPE	OUTFALL	CEDAR CREEK	3.5	3.5	2431500	6924812
58	146	PIPE	OUTFALL	ALSPAUGH	2	2	2418731	6919894
59	1455	PIPE	OUTFALL	ALSPAUGH	2	2	2418329	6919978
60	510	PIPE	OUTFALL	CEDAR CREEK	2.79	2.79	2431684	6926099
61	726	PIPE	OUTFALL	FISH CREEK	3	3	2423502	6925526

OBJECTID	ASSETID	STRUCTURE_	FUNCTIONS	WATERSHED	WIDTH_FT	HEIGHT_FT	X	Y
62	738	PIPE	OUTFALL	FISH CREEK	2.79	2.79	2422423	6925235
63	882	PIPE	OUTFALL	FISH CREEK	3	3	2421597	6925020
64	883	PIPE	OUTFALL	FISH CREEK	3.5	3.5	2421595	6925013
65	884	PIPE	OUTFALL	FISH CREEK	3	3	2421597	6925013
66	885	PIPE	OUTFALL	FISH CREEK	4	4	2422878	6925370
67	1001	PIPE	OUTFALL	CEDAR CREEK	3.5	3.5	2430625	6923308
68	196	PIPE	OUTFALL	ALSPAUGH	4.5	4.5	2429910	6922594
69	1272	PIPE	OUTFALL	ALSPAUGH	2	2	2418558	6920009
70	1594	PIPE	OUTFALL	ALSPAUGH	3	3	2427964	6921089
71	1595	PIPE	OUTFALL	ALSPAUGH	3.5	3.5	2427947	6921078
72	197	PIPE	OUTFALL	ALSPAUGH	4	4	2429078	6921716
73	1716	BOX	OUTFALL	ALSPAUGH	8	5	2429103	6921708
74	1715	BOX	INTAKE	ALSPAUGH	8	5	2429112	6921662
75	1713	BOX	OUTFALL	ALSPAUGH	7	6	2431117	6922713
76	1714	BOX	INTAKE	ALSPAUGH	7	6	2431082	6922759
77	221	BOX	OUTFALL	FISH CREEK	6	6	2424314	6927047
78	122	PIPE	OUTFALL	FISH CREEK	2	2	2424242	6927341
79	1145	PIPE	OUTFALL	FISH CREEK	2	2	2423868	6925576
80	184	PIPE	OUTFALL	ALSPAUGH	2	2	2420563	6920546
81	185	PIPE	OUTFALL	ALSPAUGH	2	2	2419639	6920181
82	186	PIPE	OUTFALL	ALSPAUGH	2	2	2419243	6920113
83	239	PIPE	OUTFALL	ALSPAUGH	2	2	2417515	6919743
84	453	PIPE	OUTFALL	ALSPAUGH	2	2	2417748	6919799
85	1271	PIPE	OUTFALL	ALSPAUGH	2	2	2419996	6920255
86	148	PIPE	OUTFALL	ALSPAUGH	2	2	2419446	6920213
87	1273	PIPE	OUTFALL	ALSPAUGH	2	2	2419682	6920229
88	114	PIPE	OUTFALL	ALSPAUGH	2.29	2.29	2420241	6920287
89	115	PIPE	OUTFALL	ALSPAUGH	2	2	2419875	6920216
90	593	PIPE	OUTFALL	CEDAR CREEK	3.29	3.29	2429640	6925996
91	707	BOX	OUTFALL	CEDAR CREEK	7	5	2429007	6925860
92	999	PIPE	OUTFALL	CEDAR CREEK	2.29	2.29	2429331	6924685
93	1152	PIPE	OUTFALL	CEDAR CREEK	2.5	2.5	2428985	6924027
94	1153	PIPE	OUTFALL	CEDAR CREEK	2	2	2428465	6923875
95	147	PIPE	OUTFALL	ALSPAUGH	2	2	2419229	6920154
96	138	PIPE	OUTFALL	ALSPAUGH	4.5	4.5	2417259	6919699
97	1270	BOX	INTAKE	ALSPAUGH	4	0.8	2420750	6920935
98	468	BOX	INTAKE	ALSPAUGH	7	1.79	2420724	6920887
99	1593	FLUME	OUTFALL	ALSPAUGH	3	0.8	2420752	6920651
100	463	PIPE	OUTFALL	ALSPAUGH	3.5	3.5	2424672	6920020
101	1266	BOX	OUTFALL	FISH CREEK	7	5	2414563	6921584
102	1268	PIPE	OUTFALL	FISH CREEK	3.5	3.5	2414584	6921582
103	1269	PIPE	OUTFALL	FISH CREEK	5	5	2414592	6921581
104	116	BOX	OUTFALL	FISH CREEK	8	6	2414535	6921581
105	131	BOX	OUTFALL	FISH CREEK	6	4	2413815	6920994
106	139	PIPE	OUTFALL	FISH CREEK	4	4	2413911	6921220
107	1265	PIPE	OUTFALL	FISH CREEK	3.5	3.5	2414515	6921582
108	462	PIPE	OUTFALL	ALSPAUGH	4.5	4.5	2423745	6919791
109	460	PIPE	OUTFALL	ALSPAUGH	3.5	3.5	2424193	6920197
110	1275	BOX	OUTFALL	ALSPAUGH	9	5	2423591	6920298
111	1580	PIPE	OUTFALL	FISH CREEK	1.5	1.5	2412277	6921338
112	1581	PIPE	INTAKE	FISH CREEK	3	3	2412423	6921319
113	1582	PIPE	OUTFALL	FISH CREEK	3.5	3.5	2412244	6921323
114	1583	PIPE	OUTFALL	FISH CREEK	2	2	2412312	6921167
115	1669	PIPE	INTAKE	ALSPAUGH	1.5	1.5	2420836	6920420
116	1592	PIPE	OUTFALL	FISH CREEK	1.5	1.5	2412391	6921337
117	1721	BOX	OUTFALL	FISH CREEK	6	5	2414127	6921135
118	216	PIPE	OUTFALL	CEDAR CREEK	6	6	2425621	6923615
119	217	PIPE	OUTFALL	CEDAR CREEK	2.79	2.79	2425578	6924493
120	220	PIPE	OUTFALL	FISH CREEK	2	2	2424070	6927732
121	222	BOX	OUTFALL	FISH CREEK	6	6	2424162	6927938
122	448	BOX	OUTFALL	CEDAR CREEK	7	4	2419335	6922347

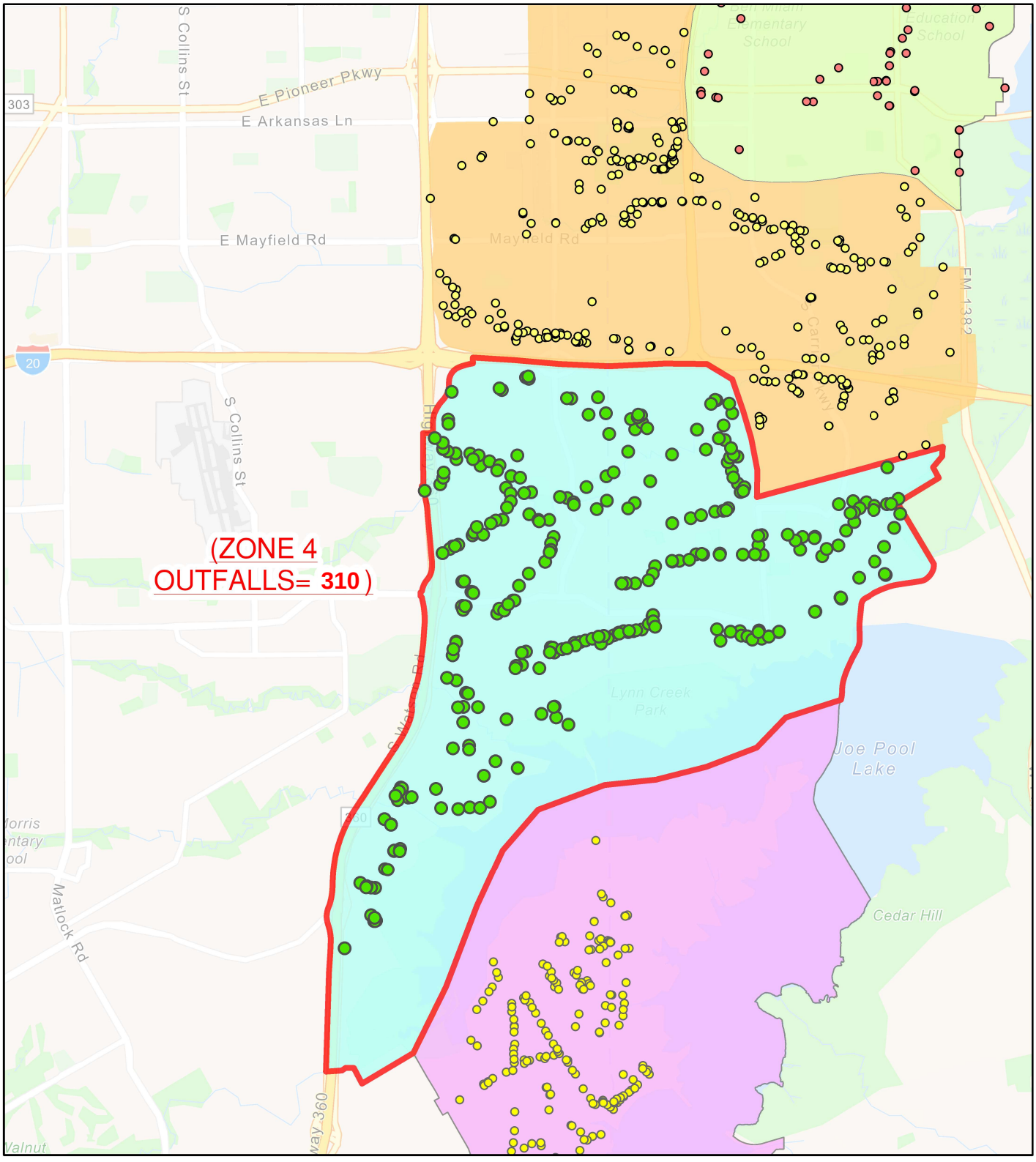
OBJECTID	ASSETID	STRUCTURE_	FUNCTIONS	WATERSHED	WIDTH_FT	HEIGHT_FT	X	Y
123	464	PIPE	OUTFALL	ALSPAUGH	2	2	2424945	6919984
124	465	PIPE	OUTFALL	ALSPAUGH	2	2	2425582	6919884
125	466	PIPE	OUTFALL	ALSPAUGH	2	2	2425163	6919840
126	108	BOX	OUTFALL	ALSPAUGH	5	4	2424615	6920213
127	118	PIPE	OUTFALL	FISH CREEK	4	4	2424520	6926782
128	121	PIPE	OUTFALL	FISH CREEK	3	3	2424491	6927975
129	594	PIPE	OUTFALL	CEDAR CREEK	3	3	2430239	6925946
130	727	PIPE	OUTFALL	CEDAR CREEK	3	3	2420842	6923102
131	728	PIPE	OUTFALL	CEDAR CREEK	2.79	2.79	2421909	6923345
132	729	PIPE	OUTFALL	CEDAR CREEK	2.79	2.79	2422658	6923632
133	730	PIPE	OUTFALL	CEDAR CREEK	2	2	2422976	6923622
134	737	PIPE	OUTFALL	CEDAR CREEK	3.5	3.5	2425424	6924458
135	215	PIPE	OUTFALL	ALSPAUGH	5	5	2425890	6919988
136	1277	PIPE	OUTFALL	ALSPAUGH	3.5	3.5	2425457	6920248
137	1512	PIPE	OUTFALL	ALSPAUGH	2	2	2425437	6920171
138	613	PIPE	OUTFALL	CEDAR CREEK	2.5	2.5	2430599	6925791
139	1154	PIPE	OUTFALL	ALSPAUGH	3	3	2426330	6920172
140	1902	BOX	OUTFALL	ALSPAUGH	7	6	2426352	6920199
141	214	PIPE	OUTFALL	FISH CREEK	4.5	4.5	2424637	6926410
142	518	PIPE	OUTFALL	FISH CREEK	4.5	4.5	2419763	6929642
143	519	PIPE	OUTFALL	FISH CREEK	5.5	5.5	2420261	6929490
144	1341	BOX	OUTFALL	CEDAR CREEK	7	4	2423718	6923616
145	731	PIPE	OUTFALL	CEDAR CREEK	3.5	3.5	2421599	6923315
146	732	PIPE	OUTFALL	CEDAR CREEK	2.29	2.29	2422355	6923393
147	733	PIPE	OUTFALL	CEDAR CREEK	2	2	2425437	6924044
148	735	PIPE	OUTFALL	CEDAR CREEK	3	3	2425274	6923632
149	736	PIPE	OUTFALL	CEDAR CREEK	3.29	3.29	2419949	6922339
150	739	PIPE	OUTFALL	CEDAR CREEK	2.29	2.29	2424738	6923628
151	740	PIPE	OUTFALL	CEDAR CREEK	2.5	2.5	2423722	6923663
152	741	PIPE	OUTFALL	CEDAR CREEK	1.5	1.5	2423716	6923662
153	1147	PIPE	OUTFALL	CEDAR CREEK	2	2	2419523	6922336
154	1148	PIPE	OUTFALL	CEDAR CREEK	2.29	2.29	2419533	6922354
155	1149	PIPE	OUTFALL	CEDAR CREEK	2.29	2.29	2420734	6922767
156	1150	PIPE	OUTFALL	CEDAR CREEK	3.5	3.5	2420543	6922475
157	1151	PIPE	OUTFALL	CEDAR CREEK	2.5	2.5	2421594	6923343
158	1263	PIPE	OUTFALL	CEDAR CREEK	2.5	2.5	2419362	6922335
159	1492	PIPE	OUTFALL	FISH CREEK	2.29	2.29	2424810	6926614
160	1500	PIPE	OUTFALL	CEDAR CREEK	4	4	2427927	6924348
161	1146	PIPE	OUTFALL	CEDAR CREEK	4	4	2427944	6924419
162	1903	PIPE	OUTFALL	FISH CREEK	2	2	2424759	6926442
163	1904	PIPE	OUTFALL	FISH CREEK	2.5	2.5	2424006	6925589
164	1905	PIPE	OUTFALL	CEDAR CREEK	1.79	1.79	2422910	6923652
165	189	PIPE	OUTFALL	FISH CREEK	2	2	2411617	6928211
166	192	PIPE	OUTFALL	FISH CREEK	6	6	2413479	6927769
167	193	PIPE	OUTFALL	FISH CREEK	2	2	2413920	6927592
168	194	PIPE	OUTFALL	FISH CREEK	3	3	2414439	6927111
169	200	PIPE	OUTFALL	FISH CREEK	5	5	2417883	6929838
170	201	PIPE	OUTFALL	FISH CREEK	3.79	3.79	2418650	6929909
171	202	PIPE	OUTFALL	FISH CREEK	4	4	2418794	6928987
172	203	PIPE	OUTFALL	FISH CREEK	3.79	3.79	2415311	6926397
173	204	PIPE	OUTFALL	FISH CREEK	4.5	4.5	2417783	6926621
174	205	PIPE	OUTFALL	FISH CREEK	3	3	2418672	6927098
175	206	PIPE	OUTFALL	FISH CREEK	3	3	2416937	6926132
176	207	PIPE	OUTFALL	FISH CREEK	2.5	2.5	2416610	6926190
177	208	PIPE	OUTFALL	FISH CREEK	2	2	2419957	6929190
178	209	PIPE	OUTFALL	FISH CREEK	2.29	2.29	2418993	6927276
179	210	PIPE	OUTFALL	FISH CREEK	3.79	3.79	2419646	6928192
180	1364	BOX	OUTFALL	FISH CREEK	7	4	2411412	6928311
181	1365	BOX	OUTFALL	FISH CREEK	7	4	2411415	6928317
182	1366	BOX	OUTFALL	FISH CREEK	7	4	2411419	6928323
183	611	PIPE	OUTFALL	FISH CREEK	3	3	2415324	6926398

OBJECTID	ASSETID	STRUCTURE_	FUNCTIONS	WATERSHED	WIDTH_FT	HEIGHT_FT	X	Y
184	1142	PIPE	OUTFALL	FISH CREEK	2.5	2.5	2420487	6929236
185	1143	PIPE	OUTFALL	FISH CREEK	6	6	2417216	6925950
186	165	PIPE	OUTFALL	FISH CREEK	3	3	2415246	6925418
187	587	BOX	OUTFALL	FISH CREEK	7	3	2417107	6930565
188	111	PIPE	OUTFALL	FISH CREEK	5	5	2418293	6930615
189	1846	BOX	OUTFALL	FISH CREEK	8	4	2416927	6930571
190	1144	PIPE	OUTFALL	FISH CREEK	5	5	2417226	6925841
191	1228	PIPE	OUTFALL	FISH CREEK	7.5	7.5	2414719	6928032
192	1232	PIPE	OUTFALL	FISH CREEK	2	2	2415019	6926348
193	1233	PIPE	OUTFALL	FISH CREEK	2.29	2.29	2414844	6927041
194	156	PIPE	OUTFALL	FISH CREEK	2.5	2.5	2411846	6923993
195	157	BOX	OUTFALL	FISH CREEK	8	8	2412092	6924057
196	159	PIPE	OUTFALL	FISH CREEK	5.5	5.5	2412724	6924479
197	162	PIPE	OUTFALL	FISH CREEK	2	2	2414786	6922240
198	164	PIPE	OUTFALL	FISH CREEK	2	2	2412786	6924607
199	166	PIPE	OUTFALL	FISH CREEK	2.5	2.5	2414063	6925177
200	170	PIPE	OUTFALL	FISH CREEK	4	4	2413192	6924513
201	172	PIPE	OUTFALL	FISH CREEK	3.5	3.5	2414209	6926595
202	1510	PIPE	OUTFALL	FISH CREEK	2	2	2415647	6925167
203	1511	PIPE	OUTFALL	FISH CREEK	2	2	2415684	6925103
204	1579	PIPE	INTAKE	FISH CREEK	4	4	2411649	6929440
205	1363	PIPE	OUTFALL	FISH CREEK	5	5	2411643	6929620
206	1506	BOX	OUTFALL	FISH CREEK	5	4	2416192	6923853
207	1757	BOX	OUTFALL	FISH CREEK	9	8	2416205	6923837
208	1758	BOX	INTAKE	FISH CREEK	9	8	2416155	6923732
209	1507	PIPE	OUTFALL	FISH CREEK	2.5	2.5	2416326	6924407
210	1508	PIPE	OUTFALL	FISH CREEK	2	2	2416213	6924126
211	1509	PIPE	OUTFALL	FISH CREEK	2	2	2416129	6925166
212	163	PIPE	OUTFALL	FISH CREEK	4.5	4.5	2415224	6922785
213	213	PIPE	OUTFALL	FISH CREEK	2.29	2.29	2413536	6925010
214	396	PIPE	OUTFALL	FISH CREEK	4	4	2414255	6925721
215	458	PIPE	OUTFALL	FISH CREEK	1.79	1.79	2411719	6923878
216	473	PIPE	OUTFALL	FISH CREEK	3.5	3.5	2411946	6924000
217	515	PIPE	OUTFALL	FISH CREEK	6	6	2415956	6923297
218	537	PIPE	OUTFALL	FISH CREEK	4	4	2420617	6926889
219	173	PIPE	OUTFALL	FISH CREEK	1.5	1.5	2414415	6926346
220	174	PIPE	OUTFALL	FISH CREEK	1.5	1.5	2414425	6925993
221	176	PIPE	OUTFALL	FISH CREEK	2	2	2418691	6926016
222	1496	PIPE	OUTFALL	FISH CREEK	2	2	2423934	6928721
223	1497	BOX	OUTFALL	FISH CREEK	7	4	2422693	6929175
224	1498	PIPE	OUTFALL	FISH CREEK	3.29	3.29	2423670	6928793
225	459	PIPE	OUTFALL	FISH CREEK	2.5	2.5	2411394	6923691
226	1668	PIPE	OUTFALL	FISH CREEK	2	2	2423884	6929368
227	1774	PIPE	OUTFALL	FISH CREEK	2	2	2412265	6922429
228	1775	PIPE	OUTFALL	FISH CREEK	2	2	2412308	6922423
229	395	PIPE	OUTFALL	FISH CREEK	1.5	1.5	2413817	6927368
230	1906	PIPE	OUTFALL	FISH CREEK	2.5	2.5	2422701	6929175
231	1776	PIPE	INTAKE	FISH CREEK	0.5	0.5	2412349	6922431
232	212	PIPE	OUTFALL	FISH CREEK	2.5	2.5	2421590	6928076
233	1278	BOX	OUTFALL	ALSPAUGH	6	6	2425890	6919974
234	1280	BOX	OUTFALL	ALSPAUGH	4	4	2414916	6919256
235	1257	BOX	OUTFALL	CEDAR CREEK	10	8	2429685	6925497
236	1258	BOX	OUTFALL	CEDAR CREEK	10	7	2431358	6925877
237	168	BOX	OUTFALL	FISH CREEK	10	8	2413759	6925130
238	175	PIPE	OUTFALL	FISH CREEK	4.5	4.5	2418245	6925643
239	129	PIPE	OUTFALL	ALSPAUGH	2	2	2415100	6919312
240	886	BOX	OUTFALL	FISH CREEK	8	4	2424093	6925688
241	218	BOX	INTAKE	CEDAR CREEK	8	5	2423708	6923644
242	1910	PIPE	OUTFALL	FISH CREEK	2	2	2412755	6921914
243	1909	BOX	INTAKE	FISH CREEK	1.2	1	2412740	6921921
244	1907	PIPE	OUTFALL	FISH CREEK	2.5	2.5	2412673	6921963

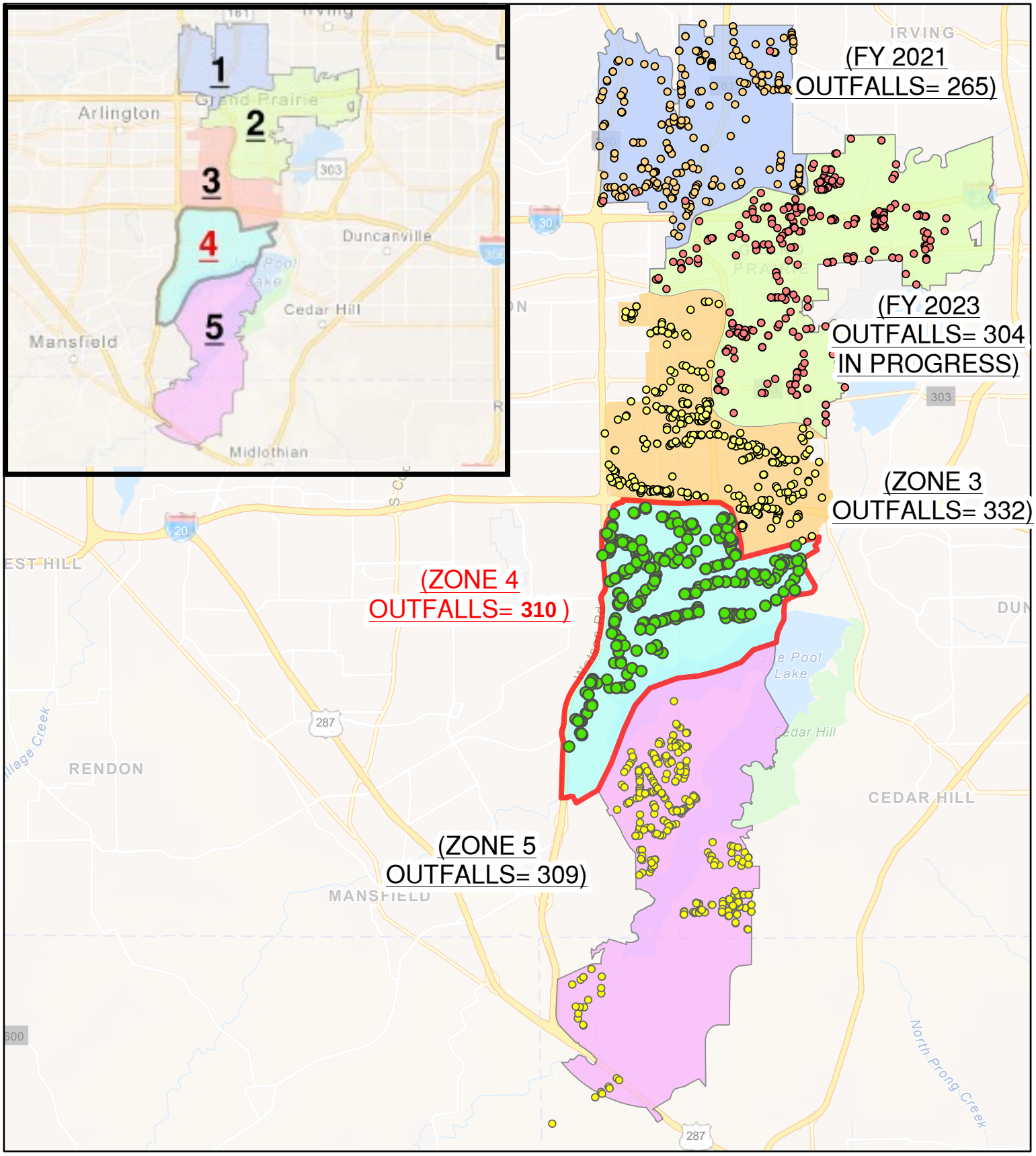
OBJECTID	ASSETID	STRUCTURE_	FUNCTIONS	WATERSHED	WIDTH_FT	HEIGHT_FT	X	Y
245	1908	PIPE	OUTFALL	FISH CREEK	2.5	2.5	2412724	6921956
246	1281	PIPE	OUTFALL	ALSPAUGH	3	3	2414661	6918672
247	102	PIPE	OUTFALL	FISH CREEK	3	3	2424265	6929909
248	179	PIPE	OUTFALL	FISH CREEK	3	3	2419930	6925912
249	198	PIPE	OUTFALL	CEDAR CREEK	5	5	2427287	6923843
250	211	PIPE	OUTFALL	CEDAR CREEK	7.5	7.5	2427389	6924405
251	117	PIPE	OUTFALL	FISH CREEK	3	3	2423101	6928295
252	881	PIPE	OUTFALL	FISH CREEK	3	3	2419643	6925674
253	1256	FLUME	OUTFALL	CEDAR CREEK	16	16	2427081	6924252
254	171	PIPE	OUTFALL	FISH CREEK	4.5	4.5	2412911	6924851
255	1911	BOX	OUTFALL	ALSPAUGH	6	3	2414633	6918567
256	1723	PIPE	OUTFALL	FISH CREEK	5	5	2424126	6930332
257	1773	WEIR	INTAKE	FISH CREEK	6	0	2423507	6930499
258	329	PIPE	OUTFALL	CEDAR CREEK	3.5	3.5	2428265	6923555
259	149	BOX	OUTFALL	JOE POOL	5	2	2411330	6912354
260	154	PIPE	OUTFALL	JOE POOL	3.5	3.5	2412087	6912316
261	517	PIPE	OUTFALL	JOE POOL	4	4	2409102	6911638
262	151	PIPE	OUTFALL	JOE POOL	2.29	2.29	2412604	6912382
263	1471	PIPE	OUTFALL	JOE POOL	2.29	2.29	2408809	6911860
264	1333	PIPE	OUTFALL	JOE POOL	2.5	2.5	2409399	6912712
265	1560	PIPE	INTAKE	JOE POOL	2.5	2.5	2409302	6912903
266	1802	PIPE	INTAKE	JOE POOL	1.79	1.79	2408832	6909635
267	1803	PIPE	OUTFALL	JOE POOL	1.79	1.79	2408954	6909601
268	641	BOX	OUTFALL	JOE POOL	0	0	2413496	6912631
269	152	BOX	OUTFALL	JOE POOL	0	0	2413055	6912368
270	1493	PIPE	OUTFALL	JOE POOL	0	0	2407036	6906088
271	1722	BOX	INTAKE	FISH CREEK	7	5	2414304	6921418
272	135	PIPE	OUTFALL	JOE POOL	3	3	2412011	6918025
273	1913	BOX	OUTFALL	JOE POOL	6	4	2411588	6918145
274	1972	PIPE	INTAKE	JOE POOL	2	2	2408215	6907566
275	1987	BOX	INTAKE	JOE POOL	1.5	1.5	2408014	6908855
276	1986	BOX	OUTFALL	JOE POOL	5	4	2407731	6908996
277	1985	PIPE	OUTFALL	JOE POOL	2.5	2.5	2408219	6908795
278	1984	PIPE	OUTFALL	JOE POOL	2.5	2.5	2408394	6908782
279	1989	PIPE	OUTFALL	JOE POOL	3	3	2408000	6908801
280	1943	PIPE	OUTFALL	FISH CREEK	1.8	1.8	2411053	6928797
281	1942	BOX	INTAKE	FISH CREEK	1	0.7	2411398	6928592
282	995	PIPE	OUTFALL	CEDAR CREEK	2	2	2430575	6925599
283	2064	PIPE	OUTFALL		0	0	2423335	6930325
284	2065	PIPE	OUTFALL		0	0	2420218	6929814
285	2066	PIPE	OUTFALL		0	0	2420071	6929732
286	2067	PIPE	OUTFALL		0	0	2420091	6929840
287	2073	PIPE	OUTFALL		0	0	2424327	6928061
288	2074	PIPE	OUTFALL		0	0	2424215	6928357
289	2075	PIPE	OUTFALL		0	0	2409230	6910451
290	2076	PIPE	OUTFALL		0	0	2409242	6910467
291	2077	PIPE	OUTFALL		0	0	2409507	6910545
292	2078	PIPE	OUTFALL		0	0	2409485	6910435
293	2079	PIPE	OUTFALL		0	0	2409102	6911614
294	2092	PIPE	OUTFALL		0	0	2426740	6924507
295	2004	BOX	OUTFALL	JOE POOL	6	4	2408435	6907319
296	2005	BOX	OUTFALL	JOE POOL	5	4	2408347	6907300
297	2061	PIPE	OUTFALL	FISH CREEK	4	4	2415104	6931500
298	2062	BOX	INTAKE	FISH CREEK	1.1	6.7	2415220	6931434
299	2063	PIPE	OUTFALL	FISH CREEK	2.5	2.5	2415204	6931536
300	2231	PIPE	OUTFALL	CEDAR CREEK	0	0	2429531	6925463
301	2290	PIPE	OUTFALL	FISH CREEK	0	0	2414027	6930933
302	2291	PIPE	OUTFALL	FISH CREEK	27	27	2413921	6931013
303	2302	PIPE	OUTFALL		0	0	2408366	6907446
304	2301	BOX	INTAKE		0	0	2408395	6907306
305	2314	PIPE	OUTFALL		60	60	2412077	6916836

OBJECTID	ASSETID	STRUCTURE_	FUNCTIONS	WATERSHED	WIDTH_FT	HEIGHT_FT	X	Y
306	2321	PIPE	OUTFALL		0	0	2423428	6930548
307	2351	PIPE	OUTFALL		0	0	2411581	6927696
308	2352	PIPE	OUTFALL		0	0	2411762	6928045
309	2346	PIPE	OUTFALL		0	0	2418907	6929855
310	2337	PIPE	OUTFALL	CEDAR CREEK	0	0	2431215	6930108

Attachment 4.1 - Outfall Points Data



Attachment 4.2 - Outfall Points Data



QA/QC Process

The following QA/QC will be performed on each batch of 2025 outfall data, prior to submittal to the City for review:

Phase	QA/QC	Explanation	Individual Responsible
Field	Verify size	Compare documented size of structure (height/width) with measured size of structure. Measure structure with tape measure and document measurement with an image.	Anais Estrada
Field	Document existing conditions and issues	Collect all required information on the existing condition of the structure per the inventory form. Besides the typical photo documentation (upstream, downstream, transverse, and area photos), document any issues found with additional detail photos. Document all stream-crossing/retention/detention pond outfalls/intakes (added 2015).	Anais Estrada
Field	Verify bearing	Confirm that photo direction bearing represents the facing direction of each photo. Update bearing as needed.	Anais Estrada
Field/Office	Notify Failing Score	If an outfall scores as a failure (structural or environ-mental condition), notify City within 72 hours of field visit.	Juve Zamora / Anais Estrada
Office	Verify location	Plot each City SDD coordinate in ArcGis Pro, compare this against the mobile data coordinate. If the mobile data coordinate is more accurate, replace City coordinates for GIS export.	Juve Zamora / Anais Estrada
Office	Check blanks	Check all blank data cells – confirm that all required inputs or descriptors are completed.	Juve Zamora
Office	Verify size	Double check - compare documented size of structure (height/width) with measured size of structure. Re-survey/re-document discrepancies as needed.	Juve Zamora
Office	Grammar check	Check comments for errors in entry and/or grammar and complete as needed. Run spell-check on file.	Juve Zamora / Anais Estrada
Office	Verify photos	Verify that photo-stamped time, date, and bearing are correct and match the data fields as marked in spread-sheet. For multiple visits, image date should be the date on which the majority of photos were taken. Inspect date should be the last date on which the outfall was surveyed for new data or updates.	Juve Zamora / Anais Estrada
Office	Verify PDFs	Verify that all photos shown on the outfall PDF correspond to the outfall SDD_ID.	Shawn Dankenbring
Office	Overall QA	Review submittal for general consistency and logic and for overall completeness	Shawn Dankenbring
Office	Overall QA	Review location of inventory points with aerial layer and adjust to aerial structure shown. Notify on all points adjusted in the transmittal.	Juve Zamora/ Anais Estrada

#	Field Label	Field Definition	Unit of Measure	Precision	Acceptable Selections
1	SDD_ID_N	The unique GIS outfall identifier number assigned by GIS Section.	Integer	Exact	Assigned by GIS Section
2	IMAGE_LINK	The computer system location path ending with the SDD_ID_N number for any files linked to discharge point.	Text	Exact	Provided by consultant to link pictures
3	DATE	Date that GIS staff updated the layer	Month/Day/Year	Month in 2 digits, day in 2 digits, year in 4 digits	Month/Day/Year
4	WATERSHED	The official watershed name as provided by City GIS layer.	Text	Exact	Provided by City GIS. Leave blank if new outfall or not in City GIS.
5	CREEK_NAME	The official creek name as provided by City GIS layer.	Text	Exact	Provided by City Eng. Leave blank if new outfall or not in City GIS.
6	SILTATION_LEVEL	The field is the measured average depth of silt, dirt, and/or debris observed in the conveyance end section.	Numeric	Average to nearest inch	Numeric as field measured. "Unknown" if can't be measured
7	EROSION_LEVEL	None means no erosion is observed; Minor means some erosion is present but not significant; erosion depth below the conveyance flow line is less than 6 inches with no undermining of any structural element observed; Severe means erosion has reached an extent to begin to undermine the structure and create slope failure potential with eroded slopes steeper than 2 to 1 and eroded depths exceeding 6 inches at the conveyance end but significant structure displacement or failure is not observed and structure is functioning as intended without significant impairment. Severe is also used to inventory an outfall without a headwall regardless of the erosion condition; Failed means erosion has reached a point that the conveyance structure or existing city facilities are undermined and failure or significant displacement is threatened or observed or earth slopes have failed with slide evidence observed in the channel bottom or top of channel slope near the conveyance point; Unknown means can not be determined in the field. Entry required in Issues field	Text	Exact	None, Minor, Severe, Failed, and Unknown
8	VEG_LEVEL	None means that no unusual vegetation growth present. Slight means that some overgrowth present but not yet compromising structure. Moderate means that that growth present to point that conveyance may be compromised, or that structural or erosion damage eventually possible. Severe means that growth to point that conveyance is hindered, or that structural or erosion damage imminent. Unknown means cannot be determined: document in notes.	Text	Exact	None, Slight, Moderate, Severe, Unknown
9	COMMENTS	This field allows the inspector to record additional observed features or conditions observed at the conveyance point not included in the inventory items. Structural condition in poor or failed condition, erosion level in Severe or failed levels, any issues or action inventoried or any Environmental issues inventoried requires qualifying comments justifying the inventory selection. Limit comments to no more than 254 characters.	Text	Exact	Observed features and conditions. Comments should always be provided when the issue or action fields are inventoried other than inventoried none to clarify and justify the assessment.
10	MAP_NUMBER	Map number assigned by Engineering staff based on a map breakdown of the watersheds and determined by Halff Associates.	Numeric	Exact	Populated by consultant per the City GIS data.
11	STATUS	Outfall status classification as active for existing system, Under Const for system under construction or Propose for proposed systems not built or under construction	Text	Exact	Assigned by GIS
12	SUBMITTED_TO_ENV	Date that GIS staff submits to the Enviromental Services Department the surveyed outfall point	Month/Day/Year	Month in 2 digits, day in 2 d	Populated by Plummer
13	STRUCTURE_TYPE	Defines the cross section shape of the end of the conveyance at outfall where Flume is a paved Channel Conveyance, Pipe is a circular shape conduit conveyance, Box is a rectangular shape conduit, and Weir is an overflow structure that has a vertical plate with a crest mounted perpendicular to the direction of conveyance.	Text	Exact	BOX: BOX, FLUME: FLUME, OTHER: OTHER, WEIR: WEIR, PIPE: PIPE

#	Field Label	Field Definition	Unit of Measure	Precision	Acceptable Selections
14	OWNER	Documents the official owner and maintainer of the structure, as provided and verified by the City.	Text	Exact	CITY: CITY, MANSFIELD: MANSFIELD, HOA: HOA, FEDERAL:FEDERAL, ARLINGTON:ARLINGTON, IRVING: IRVING,PRIVATE: PRIVATE, COUNTY: COUNTY, TXDOT: TXDOT, DALLAS: DALLAS,ISD:ISD, RAILROAD: RAILROAD
15	FUNCTIONS	Defines the function of the point being inventoried as to whether it is the conveyance entrance or the conveyance discharge point.	Text	Exact	OUTFALL: OUTFALL, INTAKE: INTAKE
16	ISSUES	This field is only for cases when a complete inventory of condition and conduit fields can't be made due to certain situations. Acceptable entries are Submerged means the conveyance point is submerged under water sufficiently to not be able to inventory the point; Buried means the conveyance point is buried in earth or debris sufficiently to not be able to inventory the point but field features observed indicates the point exists; Unlocated means the conveyance poitn cannot be located in the field but field features observed indicates the point exists.	Text	Exact	Submerged, Buried, No Access, or Unlocated
17	INSP_WIDTH_FT	The flume, pipe or box inside end section width	Numeric in decimal of	To nearest tenth of a foot	Numeric as field measured
18	INSP_HEIGHT_FT	Height of flume, pipe or box section measured from invert of opening to top of flume paved slope or curb or inside top of pipe or box opening structure.	Numeric in decimal of	To nearest tenth of a foot	Numeric as field measured
19	IMAGE DATE	Date that the picture was taken; should be stamped on the picture along with the unique outfall ID number.	Month/Day/Year	Month in 2 digits, day in 2 digits, year in 4 digits	Month/Day/Year
20	CONSULTANT	This field documents the name of the consultant preforming the condition assessment of the conveyance point.	Text	Exact	Legal Name of Consultant contracted for this inventory required.
21	STRC_COND	Good means structure in fully functioning condition as intended to line and grade with no significant defects such as cracking with seperatio nexceeding 1/4 inch, displacement or separation exceeding 1/2 inch or structural failure present; Fair means structure functioning as intended, but some cracks exceeding 1/4 inch and displacement and/or separation exceeding 1/2 inch; Poor means system function has not been significantly impaired as intended as to line and grade and structural integrity and is still functioning but with significant distresses present such as cracking with separation exceeding 1/4 inch, displacement or separation exceeding 1/2 inch. No structural failure observed; Failed means structure impaired; Unknown means can't be determined in teh field. Entry required in issues field.	Text	Exact	Good, Fair, Poor, Failed or Unknown
22	NO_OF_COND	For pipe or box conveyances only, states the number of pipe or box conduits at the outfall point. For flumes enter 1.	Small integer	Exact	Integer

#	Field Label	Field Definition	Unit of Measure	Precision	Acceptable Selections
23	IA_ACTION	This field records the need for immediate attention due to Structural Conditions, Erosion level or Vegetation Level. If the structural condition field is inventoried Failed, STR for Structure IA should be inventoried here; if the Erosion level field is inventoried failed or if the siltation level field inventoried exceeds one fourth of the height of the conveyance opening and the erosion level field is inventoried severe, EROS for erosion IA should be inventoried here. If vegetation level is inventories as severe, VEG for Vegetation IA should be inventoried here. Mutliple entries are allowed.	Text	Exact	STR , EROS , VEG , STR EROS , EROS VEG , STR VEG , STR EROS VEG
24	O_ACTION	This field records the need for future attention due to Structural Conditions, Erosion level or Vegetation Level. If the structural condition field is inventoried Poor, STR for Structure O should be inventoried here; if the Erosion level field is inventoried severe or if the siltation level field inventoried exceeds one tenth of the height of the conveyance opening and the erosion level field is inventoried severe, EROS for erosion O should be inventoried here. If vegetation level is inventories as moderate VEG for Vegetation O should be inventoried here. Mutliple entries are allowed.	Text	Exact	STR , EROS , VEG , STR EROS , EROS VEG , STR VEG , STR EROS VEG
25	ENV_COND	This field records any observed discharges from the conveyance during prolonged dry conditions when conditions at the outfall should be dry.	Text	Exact	Dry or Wet
26	ENV_ISSUE	This field documents presence at the outfall point of excessive algae growth observed beyong what is normally present in the creek, discoloration of conveyance structural elements or water (pooled or flowing at conveyance point) observed indicating discharge of fluids other than water with sediment, strange or unusual odorsat the conveyance point observed beyond what was normally present in the creek, oil or chemical sheen or surface reflection at the conveyance point observed beyond what is normally present in the creek or trash or garbage at the conveyance point beyond what is normally present in the creek observed	Text	Exact	Algae, Discoloration, Odor, Oil, or Trash
27	INSPECTOR	This field documents the full name of the inspector preforming the condition assessment of the conveyance point.	Text	Exact	Full name of inspector required
28	INSPECT_DATE	Date that the listed inspector observed and inventoried the outfall point conditions	Month/Day/Year	Month in 2 digits, day in 2 digits, year in 4 digits	Month/Day/Year
29	Plummer_Image_Link	Server location of all images taken during field observation.	Text	Review field only - not included in GIS schema	Network Path
30	BATCH	Batch by inventory year	Text	Review field only - not included in GIS schema	
31	STRUCTURE_MAT	Material observed during inventory	Text	Review field only - not included in GIS schema	
32	Date Received	Date that the draft inventory was received by the City	Month/Day/Year	Review field only - not included in GIS schema	
33	Date Approved	Date that the draft inventory was approved by the City	Month/Day/Year	Review field only - not included in GIS schema	
34	City Comments	Review comments/questions by the City	Text	Review field only - not included in GIS schema	
35	Plummer Response	Review comments/questions by Plummer	Text	Review field only - not included in GIS schema	

FIELDS - GIS SCHEMA

Name	Type	Alias	Domain	Editable	Nullable	Length	Precision	Required	Scale
OBJECTID	OID	OBJECTID		FALSE	FALSE		10	TRUE	0
ASSETID	String	Asset ID		TRUE	FALSE	25	0	FALSE	0
STRUCTURE_TYPE	String	Structure Type	DISCHARGE_STRUCTURE_TYPE	TRUE	FALSE	10	0	FALSE	0
FUNCTIONS	String	Functions	DISCHARGE_FUNCTION	TRUE	FALSE	10	0	FALSE	0
WATERSHED	String	Watershed	SD_WATERSHED	TRUE	TRUE	30	0	FALSE	0
STATUS	String	Status	GENERIC_STATUS	TRUE	FALSE	20	0	FALSE	0
OWNER	String	Owner	DISCHARGE_OWNER	TRUE	TRUE	15	0	FALSE	0
WIDTH_FT	Double	Width_ft		TRUE	TRUE		10	FALSE	2
HEIGHT_FT	Double	Height_ft		TRUE	TRUE		10	FALSE	2
DOC_LINK	String	Document Link		TRUE	TRUE	50	0	FALSE	0
SHAPE	Geometry	SHAPE		TRUE	TRUE		0	FALSE	0
LAST_UPDATE	Date	Last Update		TRUE	TRUE		0	FALSE	0
INSP_DATE	Date	Date Inspected		TRUE	TRUE		0	FALSE	0
CREEK_NAME	String	Creek Name		TRUE	TRUE	30	0	FALSE	0
SILTATION_LEVEL	Double	Siltation Level		TRUE	TRUE		8	FALSE	2
EROSION_LEVEL	String	Erosion Level		TRUE	TRUE	30	0	FALSE	0
VEG_LEVEL	String	Vegetation Level		TRUE	TRUE	15	0	FALSE	0
COMMENTS	String	Comments		TRUE	TRUE	255	0	FALSE	0
MAP_NUMBER	Long	MAP_NUMBER		TRUE	TRUE		10	FALSE	0
SUBMITTED_TO_ENV	Date	Date Submitted to Envir		TRUE	TRUE		0	FALSE	0
ISSUES	String	Issues		TRUE	TRUE	30	0	FALSE	0
IMAGE_DATE	Date	Image Date		TRUE	TRUE		0	FALSE	0
CONSULTANT	String	Consultant		TRUE	TRUE	50	0	FALSE	0
STRC_COND	String	Structure Condition		TRUE	TRUE	50	0	FALSE	0
NO_OF_CONDUITS	Short	Number of Conduits		TRUE	TRUE		5	FALSE	0
ENV_COND	String	Environmental Condition		TRUE	TRUE	10	0	FALSE	0
ENV_ISSUE	String	Environmental Issue		TRUE	TRUE	20	0	FALSE	0
INSPECTOR	String	Inspector		TRUE	TRUE	20	0	FALSE	0
IA_ACTION	String	IA Action		TRUE	TRUE	25	0	FALSE	0
O_ACTION	String	O Actions		TRUE	TRUE	25	0	FALSE	0

DOMAINS - GIS SCHEMA

Domain	Domain Type	Range	Field Type	Coded Values	Merge Policy	Split Policy
DISCHARGE_STRUCTURE_TYPE	CodedValue	None	Text	BOX: BOX, FLUME: FLUME, OTHER: OTHER, WEIR: WEIR, PIPE: PIPE	DefaultValue	DefaultValue
DISCHARGE_FUNCTION	CodedValue	None	Text	OUTFALL: OUTFALL, UNKNOWN: UNKNOWN, INTAKE: INTAKE	DefaultValue	DefaultValue
SD_WATERSHED	CodedValue	None	Text	DALWORTH: DALWORTH, CEDAR CREEK: CEDAR CREEK, JOHNSON: JOHNSON, GOPHER TURNER: GOPHER TURNER, MOUNTAIN CREEK LAKE AREA: MOUNTAIN CREEK LAKE AREA, BEAR CREEK DRY BRANCH: BEAR CREEK DRY BRANCH, WEST FORK TRINITY: WEST FORK TRINITY, FISH CREEK: FISH CREEK, COTTONWOOD: COTTONWOOD, UNKNOWN: UNKNOWN, JOE POOL: JOE POOL, ALSPAUGH: ALSPAUGH, MOUNTAIN CREEK: MOUNTAIN CREEK	DefaultValue	DefaultValue
GENERIC_STATUS	CodedValue	None	Text	ACTIVE: ACTIVE, REMOVED: REMOVED, ABANDONED: ABANDONED,UNDER CONSTRUCTION: UNDER CONSTRUCTION	DefaultValue	DefaultValue
DISCHARGE_OWNER	CodedValue	None	Text	MANSFIELD: MANSFIELD, HOA: HOA, FEDERAL:FEDERAL, ARLINGTON:ARLINGTON,GRAND PRAIRIE: GRAND PRAIRIE ,IRVING: IRVING,PRIVATE: PRIVATE, COUNTY: COUNTY, TXDOT: TXDOT, UNKNOWN: UNKNOWN, DALLAS: DALLAS,ISD:ISD	DefaultValue	DefaultValue

Example Photos

Photo 1: Area view of the structure

Photo 2: Side view of the structure

Photo 3: Downstream view of the structure and apron

Photo 4: Downstream view of the channel that receives flow from structure

Photo 5: Upstream view of structure (include headwall, side slopes and apron)

Photo 6: Focused upstream view of structure

Photo 7: Any additional photos to support inspection (example, loose baffle block)