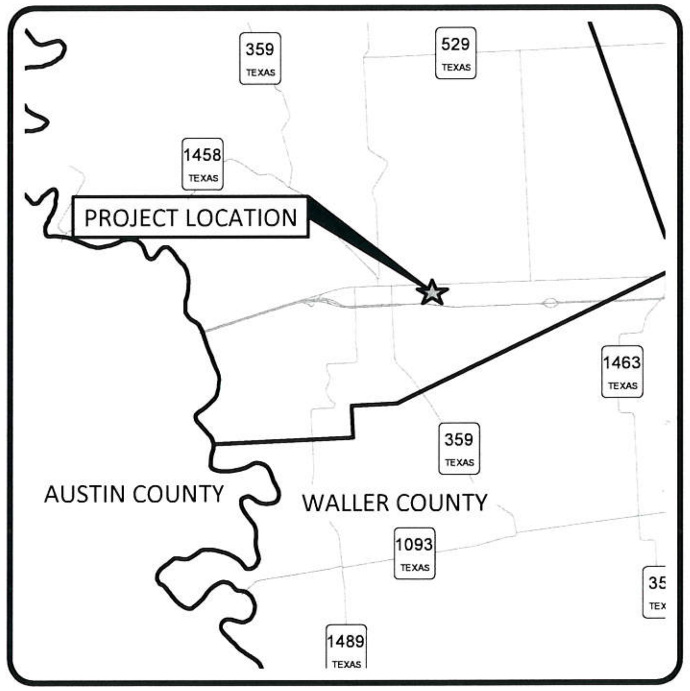
FORT BEND COUNTY
WESTPARK PARK & RIDE
ON-SITE SEWAGE FACILITY



LOCATION MAP
NTS

OWNER INFORMATION:

FORT BEND COUNTY
301 JACKSON ST, RM 101
RICHMOND, TEXAS 77469-3108

PROJECT LOCATION:

19820 FM 1093 RD.
KATY, TEXAS 77450

SHEET INDEX

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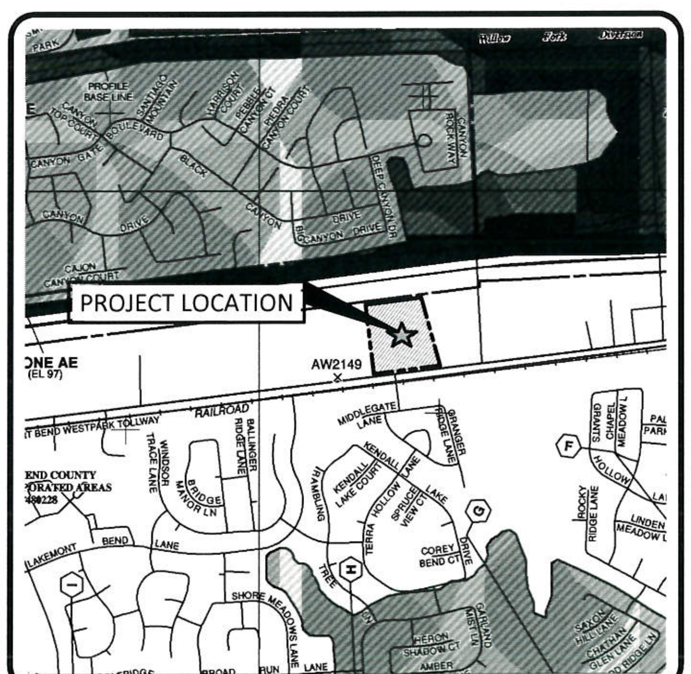

FLOOD PLAIN INFORMATION

0 1000 2000
SCALE:1" = 1000'-0" (24"x36")
1" = 2000'-0" (11"x17" 8.5"x11")

ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY
FLOOD INSURANCE RATE MAP COMMUNITY
PANEL No. 48157C0130L DATED: 4/2/2014
THIS TRACT LIES WITHIN ZONE X, AREAS OUTSIDE OF THE 500 YEAR FLOOD PLAIN
THE BASE FLOOD ELEVATION IS 97.00'

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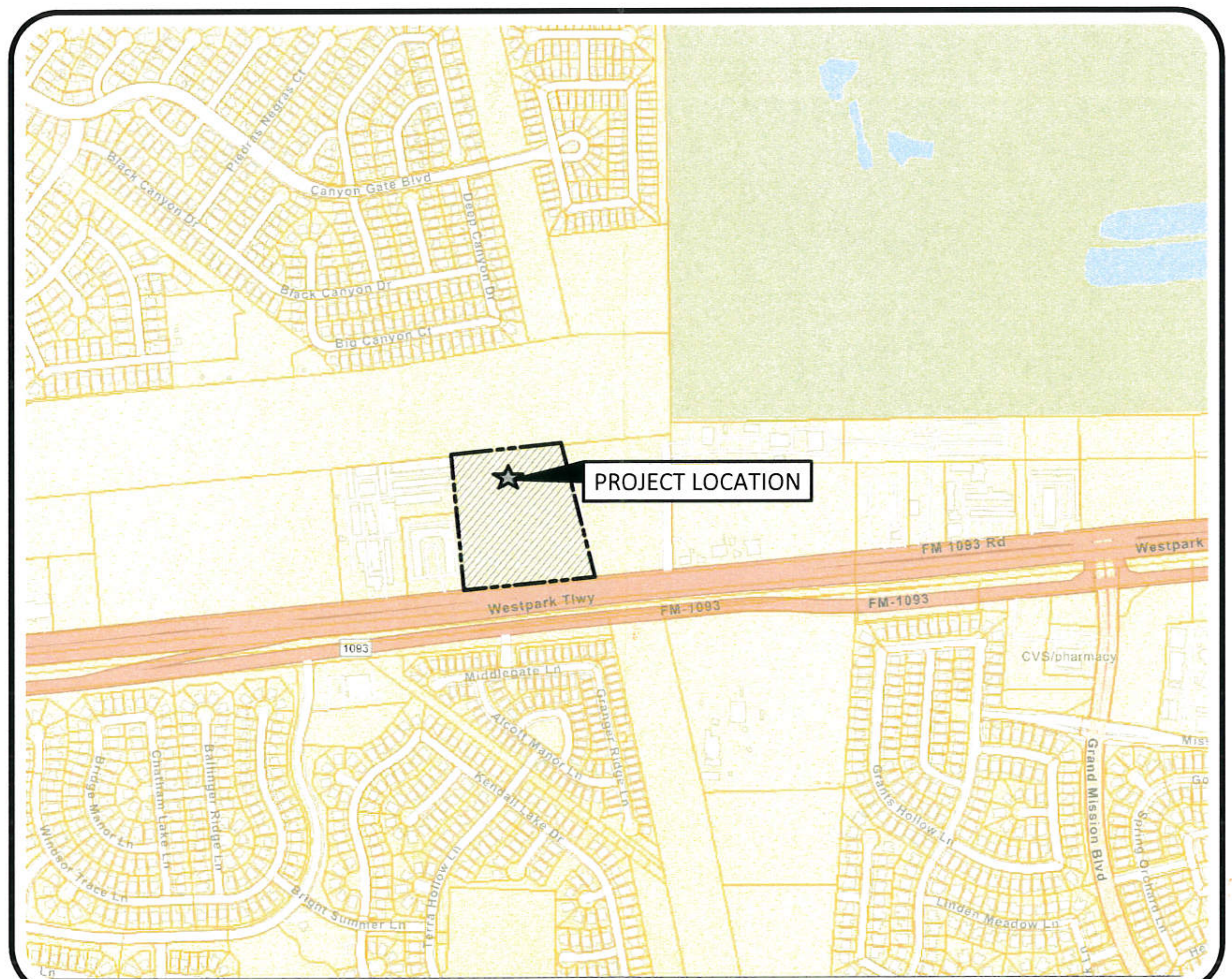

VICINITY MAP

FORT BEND COUNTY, TEXAS
KEY MAP PAGE No. 526 F

0 500 1000
SCALE:1" = 500'-0" (24"x36")
1" = 1000'-0" (11"x17" 8.5"x11")

STATE OF TEXAS
NATHANIEL C. LAIL
130720
LICENSED
PROFESSIONAL ENGINEER

10-02-24

REVISION	DATE
DESCRIPTION	M/D/YY

WATERENGINEERS, INC.
Water & Wastewater Treatment Consultants
TEXAS BOARD OF PROFESSIONAL ENGINEERS FIRM No. 2066
17230 HUFFMEISTER ROAD
CYPRESS, TEXAS 77429
TEL: 281-373-0500
FAX: 281-373-1113

FORT BEND COUNTY
WESTPARK PARK & RIDE
ON-SITE SEWAGE FACILITY
19820 FM 1093 RD.
KATY, TEXAS 77450

SHEET NAME:
COVERSHEET

DRAWN BY:	JLW
CHECKED BY:	NCL
PJT No.:	5772-21008
DATE:	06/27/2024
SHEET No.:	01 OF 06

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Fort Bend County
Westpark Park & Ride
On-Site Sewage Facility
Projected Sewage Flows

Daily Flows	TCEQ Chapter 285 (Modified)		BOD LOADING		NOTES
Bus Drivers	4	gal. / day	600	mg/l BOD	
Park & Ride Guests (292 Parking Spaces)	2	gal. / day	600	mg/l BOD	

DAILY OCCUPANCY	SUN	MON	TUES	WEDS	THURS	FRI	SAT
Population ~ Number of Persons							
Bus Drivers	12	12	12	12	12	12	12
Park & Ride Guests (292 Parking Spaces)	292	292	292	292	292	292	292

DAILY FLOW	SUN	MON	TUES	WEDS	THURS	FRI	SAT	Total
Flow ~ gallons per day								
Bus Drivers	48	48	48	48	48	48	48	336
Park & Ride Guests (292 Parking Spaces)	584	584	584	584	584	584	584	4,088
Total Flow Generated (gallons)	**632**	**632**	**632**	**632**	**632**	**632**	**632**	**4,424**
Plant Throughput	(632)	(632)	(632)	(632)	(632)	(632)	(632)	(4424)
Hydraulic Carryover To Be Stored	0	0	0	0	0	0	0	
Volume in Storage, gallons	0	0	0	0	0	0	0	

DESIGN FLOW			
Average Daily Flow	**632**	**gallons per day**	**Based on TCEQ Ch 285 low flow fixtures**
Max. Daily Flow	632	gallons per day	
Raw Wastewater BOD	3.16	lb BOD per day	Based on Assumed BOD's & Avg Flow
Average Wastewater BOD Conc.	600	mg/l	

PRETREATMENT TANK			
Required Pretreatment Tank Volume	**632**	**gallons**	**Minimum 1 Max Day Flow**
Proposed Pretreatment Tank Volume	**1,338**	**gallons**	**Provide (1) Gatco Model DZ-1250 SEP (1383 gal.)**
Pretreatment Tank Detention	51	hours	
BOD Reduction in Pretreatment Tanks, % Removal	0%	removal	
BOD Remaining for Treatment	3.2	lb BOD per day	
Duration of Flow into Pretreatment Tanks	24	hours per day	Based on 24 Hours of operation during an event per day
Duration of Flow into ATU" from Dosing Tanks	24	hours per day	Based on 24 Hours of operation, 7 days a week

HOLDING / DOSING TANK			
Required Holding / Dosing Tank Volume	**967**	**gallons**	**1.33 times max. Daily Flow + 20% Storage Volume Required**
Proposed Holding / Dosing Tank Volume	**1,383**	**gallons**	**Provide (1) Gatco DZ-1250 Pump Tank (1383 gal.)**
Flow Dosed to ATU's	6.58	gal. / dose	Provide (2) Hydromatic SHEF 30 - 0.33 hp Dosing Pumps
Dosing Duration	2.00	min. every 15 min.	
Feed Rate to each ATU	3.29	gpm	Adjust Ball Valve in ATU & Dosing Pump Recycle Valve accordingly
BOD Fed to ATU's	0.13	lb BOD per hour	Based on 24 Hours of operation per day

AEROBIC TREATMENT UNIT				
Hydraulic Capacity of ATU's (Each)	1,500	gallons per day		
BOD Capacity of ATU's (Each)	3.75	lb BOD per day		
Aerobic Treatment Units Proposed	**1**	**ea**	**Provide (1) Pro-Flo Model 1500 GPD Aerobic Treatment Units**	
Total ATC Hydraulic Capacity of ATU's	1,500	gallons per day		
Total BOD Treatment Capacity of ATU's (daily)	3.75	lb BOD per day		
Total BOD Treatment Capacity of ATU's (hourly)	0.16	lb BOD/hour	> 0.13	# BOD/hour = OK

EFFLUENT PUMP TANK			
Effluent Holding Tank Volume Required	**841**	**gallons**	**Based on 1.33 times Average Daily Flow**
Effluent Holding Tank Volume Provided	**1,383**	**gallons**	**Provide (1) Gatco DZ-1250 Pump Tank (1383 gal.)**

EFFLUENT DISPOSAL AREA			
Spray Irrigation Application Rate	0.045	gallons/day/sq ft	Based on Class II Soil
Disposal Area Required	**14,044**	**square feet**	
Disposal Area Provided	**14,138**	**square feet**	
Diameter of Spray Heads	60	feet	30 foot radius
Area of Coverage for each spray Head	**2,828**	square feet	Non-overlapping areas
Minimum No of Spray Heads Req'd	5.0	ea	
Proposed No. of Sprayheads	**5.0**	ea	**Install 30 foot radius Sprayheads**
Flow Per Spray Head	3.1	gpm	
No. of Proposed Zones	1	ea	
No. of Spray Heads Per Zone	5	ea	
Flow Per Zone	15.50	gpm	**Provide Franklin Series V - 3/4 hp 15.5 gpm @ 150' TDH**
Pumping Duration Per Zone	40.8	minutes/day	Start pump at 1:00 am, run for 40.8 Minutes per zone

GENERAL ON-SITE SEWAGE FACILITY NOTES:

1. AN ON-SITE SEWERAGE FACILITY LICENSE MUST BE OBTAINED FROM THE LOCAL REGULATORY AUTHORITY PRIOR TO CONSTRUCTION OF THIS SYSTEM.
2. ALL CONSTRUCTION METHODS AND MATERIALS SHALL BE IN ACCORDANCE WITH MUNICIPAL, COUNTY AND STATE RULES AND POLICIES UNLESS SPECIFICALLY NOTED ON THIS DRAWING AND APPROVED BY THE LOCAL LICENSING AUTHORITY.
3. SYSTEM INSTALLATION SHALL BE BY A REGISTERED INSTALLER II OF ON-SITE SEWAGE FACILITIES, AS REQUIRED BY ARTICLE 4477-7E, VERNON'S TEXAS CIVIL STATUTES, OR BY THE OWNER OF THE PROPERTY UNDER LICENSE.
4. THIS SYSTEM, IF INSTALLED AND OPERATED IN ACCORDANCE WITH THIS PLAN AND STATE, COUNTY OR LOCAL RULES AND REGULATIONS, SHOULD NOT PRESENT A HAZARD TO PUBLIC HEALTH, OR THREATEN ADJACENT WATER WELLS.
5. IT IS THE INSTALLER'S RESPONSIBILITY TO INSURE THAT SAFE DISTANCES FROM ANY WATER WELLS MEET OR EXCEED STATE AND LOCAL CRITERIA, AND ARE IN ACCORDANCE WITH THE LICENSE ISSUED.
6. IT IS THE INSTALLER'S RESPONSIBILITY TO REVIEW THE DESIGN CRITERIA WHICH ACCOMPANIES OR IS SHOWN ON THIS DRAWING. THE CRITERIA IS AN IMPORTANT PART OF THE CONSTRUCTION DOCUMENTATION PACKAGE.
7. STORM OR SITE DRAINAGE IMPROVEMENTS SHOWN ON THIS PLAN SHALL BE CONSTRUCTED PRIOR TO COMMENCEMENT OF CONSTRUCTION OF THE ON-SITE SEWAGE FACILITY.
8. SITE SHALL BE CAREFULLY FINISH GRADED AFTER COMPLETION OF SYSTEM INSTALLATION TO PROVIDE POSITIVE STORM WATER RUNOFF. ABSORPTION AREAS SHALL BE CROWNED. DRAINAGE SWALES SHALL BE CONSTRUCTED TO ADEQUATELY CONVEY STORM WATER AWAY FROM THE ABSORPTION AREA.
9. IF PROPERTY IS LOCATED WITHIN THE 100-YEAR FLOOD PLAIN, ALL MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE ELEVATED AT LEAST 18 INCHES ABOVE THE 100 YEAR FLOOD ELEVATION, OR WATERPROOFED.
10. IF ANY DISCREPANCIES EXIST BETWEEN THIS PLAN AND ACTUAL SITE CONDITIONS, IT IS THE RESPONSIBILITY OF THE INSTALLER TO NOTIFY THE ENGINEER AND LICENSING AUTHORITY PRIOR TO CONSTRUCTION.
11. ELECTRICAL WORK SHALL BE IN CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE, CURRENT EDITION.
12. CONDENSATE FROM AIR CONDITIONING, ICE MACHINES OR OTHER REFRIGERATION EQUIPMENT SHALL NOT BE DISCHARGED INTO THE ON-SITE SEWAGE SYSTEM UNLESS SYSTEM HAS BEEN OVERSIZED TO ACCOMMODATE SUCH DISCHARGE. WATER SOFTENER BACKWASH SHALL NOT BE INTRODUCED INTO THE ON-SITE SEWAGE SYSTEM. POOL/SPA DRAINS OR BACKWASH SHALL NOT BE INTRODUCED INTO SEWERAGE SYSTEM.
13. PLUMBING STUBOUTS SHALL BE CONSTRUCTED AS SHALLOW AS POSSIBLE. MAXIMUM DEPTH BELOW NATURAL GROUND TO FLOWLINE: 12 INCHES.
14. THE LICENSING AUTHORITY SHALL BE NOTIFIED FOR INSPECTION PRIOR TO COVERING OF ANY SYSTEM COMPONENTS.
15. CONTRACTOR SHALL NOTIFY UTILITY COORDINATING COMMITTEE, 800-669-8344 AND/OR TEXAS ONE CALL SYSTEM, 800-245-4545, WELL IN ADVANCE OF CONSTRUCTION FOR THE PURPOSE OF LOCATING UNDERGROUND LINES. AUTHORITY: OSHA RULE 1926.651.
16. WHERE A NEW POTABLE WATERLINE CROSSES A NEW PRESSURE RATED WASTEWATER MAIN OR LATERAL, ONE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER THE WASTEWATER LINE SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTER LINE OF THE WASTEWATER LINE OR LATERAL. THE POTABLE WATER LINE SHALL BE AT LEAST SIX INCHES ABOVE THE WASTEWATER LINE OR LATERAL. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. THE WASTEWATER PIPE SHALL HAVE A MINIMUM RATING OF AT LEAST 150 psi. THE WASTEWATER MAIN OR LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END.
17. IT IS THE INSTALLER'S RESPONSIBILITY TO BE FAMILIAR WITH AND COMPLY WITH OSHA TRENCH SAFETY PROVISIONS.
18. ALL WASTEWATER CLEAN OUTS AND RISER COVERS SHALL BE A MINIMUM OF 12" BELOW FINISHED FLOOR ELEVATION, INCLUDING ANY SUNKEN SLAB AREAS THAT HAVE PLUMBING FIXTURES. PURPOSE: TO PROVIDE OVERFLOW RELIEF IN CASE OF PUMP FAILURE OR WASTEWATER SYSTEM LINE CLOGGING.
19. DISTRIBUTION PIPING FOR TREATED EFFLUENT FOR SURFACE APPLICATION OR EMITTER SYSTEMS SHALL BE SCH 40 PVC, MADE OF PURPLE COLOR MATERIAL. ALL IRRIGATION SPRAY HEADS SHALL HAVE PURPLE COLORED COVERS OR TOPS. CONVENTIONAL WHITE COLOR PVC FITTINGS MAY BE USED.
20. UNLESS OTHERWISE SPECIFIED, THE MINIMUM DEPTH OF COVER OVER PIPELINES AND CONDUITS SHALL BE AS FOLLOWS:
    A. ELECTRICAL CONDUIT - 24 INCHES (36 INCHED UNDER ROADWAYS)
    B. SANITARY SEWER FORCE MAINS - 24 INCHES (35 INCHES UNDER ROADWAYS)
    C. LATERAL SPRINKLER LINES - 12 INCHES
20. LOW VOLTAGE CONTROL CONDUCTORS SHALL BE UL APPROVED, DIRECT BURIAL TYPE UF, NO. 12 AWG, SOLID COPPER, UNLESS OTHERWISE REQUIRED, IN ACCORDANCE WITH THE CONTROL EQUIPMENT MANUFACTURERS RECOMMENDATION.

STATE OF TEXAS
NATHANIEL C. LAIL
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10-02-24

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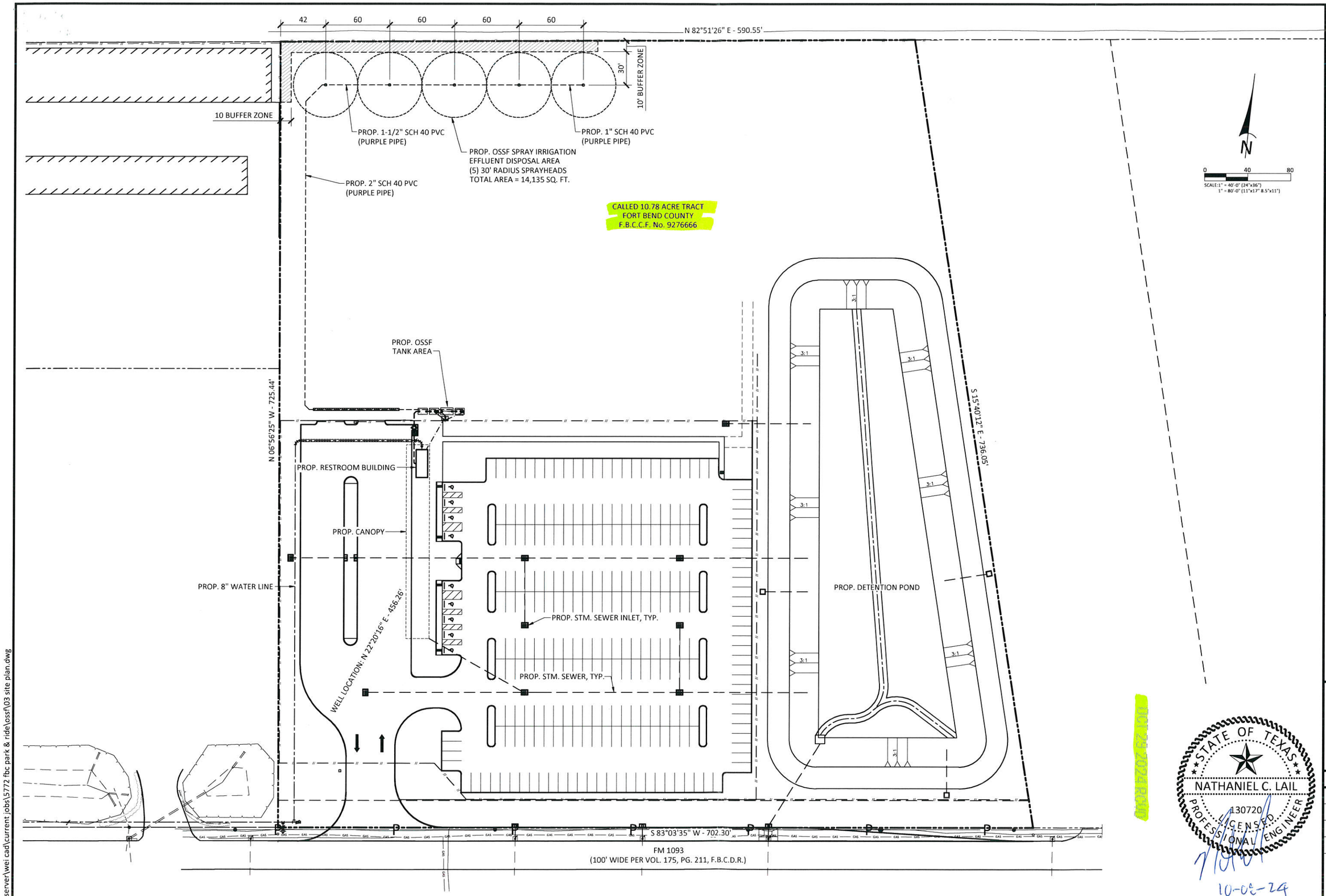
WESTPARK PARK & RIDE
ON-SITE SEWAGE FACILITY
19820 FM 1093 RD.
KATY, TEXAS 77450

SHEET NAME:
DESIGN CRITERIA & GENERAL NOTES

DRAWN BY:	JLW
CHECKED BY:	NCL
PJT No.:	5772-21008
DATE:	06/27/2024
SHEET No.:	02 OF 06



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FORT BEND COUNTY
WESTPARK PARK & RIDE
ON-SITE SEWAGE FACILITY
19820 FM 1093 RD.
KATY, TEXAS 77450

SHEET NAME:

SITE PLAN

JUL 23 2024 RECD

STATE OF TEXAS
NATHANIEL C. LAIL
130720
LICENSED
PROFESSIONAL ENGINEER
7/19/24
10-02-24

DRAWN BY:	JLW
CHECKED BY:	NCL
PJT No.:	5772-21008
DATE:	06/27/2024
SHEET No.:	

03 OF **06**

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