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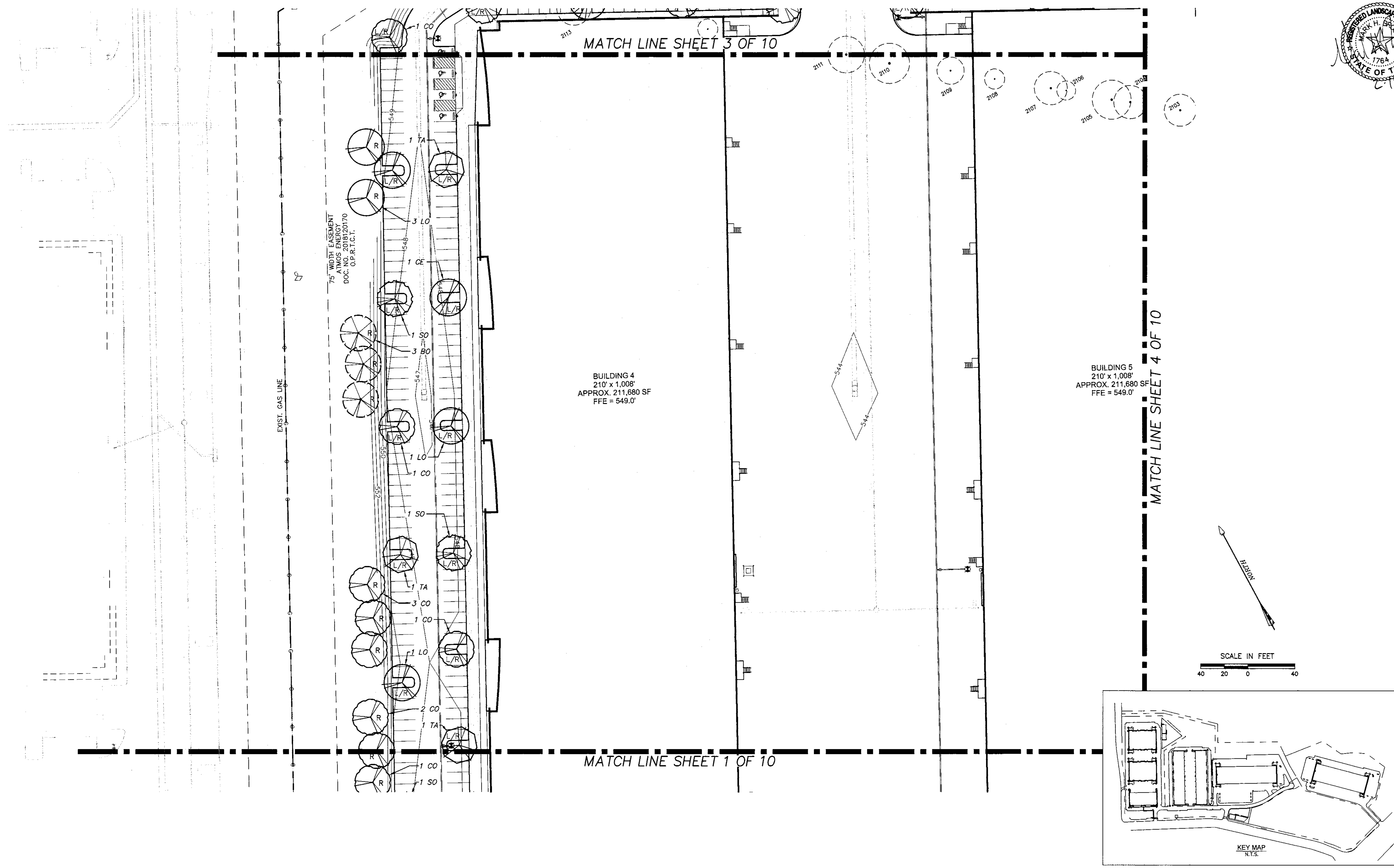

REGISTERED LANDSCAPE ARCHITECT
MARK H. BROOKS
1764
STATE OF TEXAS
2-14-22

JAMISON CIVIL ENGINEERING LLC
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CROSSROADS LOGISTICS CENTER ADDITIONS

LANDSCAPE PLAN - SHEET 2 OF 10

8500 E. PARMER LANE
AUSTIN, TEXAS 78653

CAUTION!!!
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CROSSROADS LOGISTICS CENTER ADDITIONS
LANDSCAPE PLAN - SHEET 3 OF 10
8500 E. PARMER LANE
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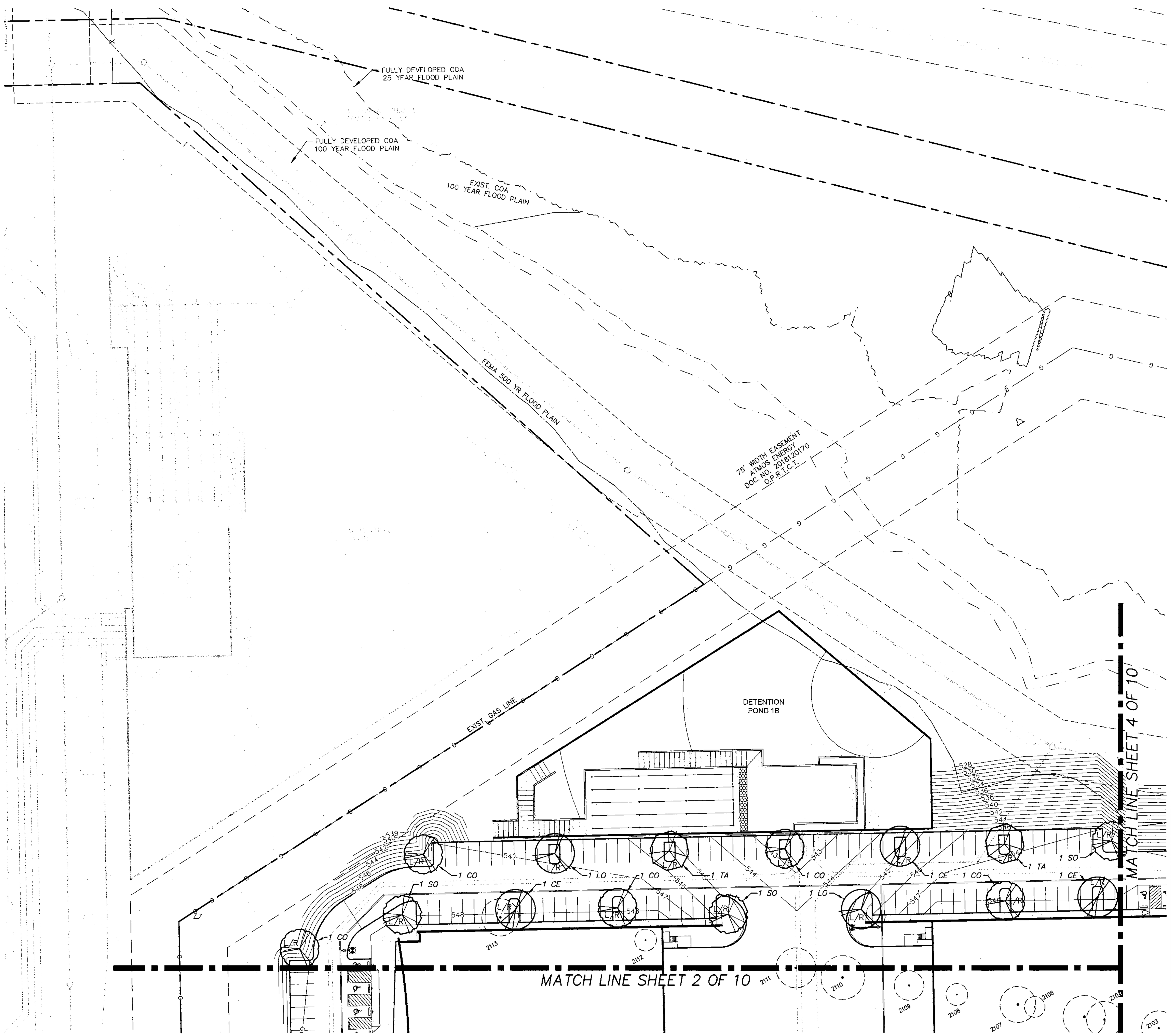

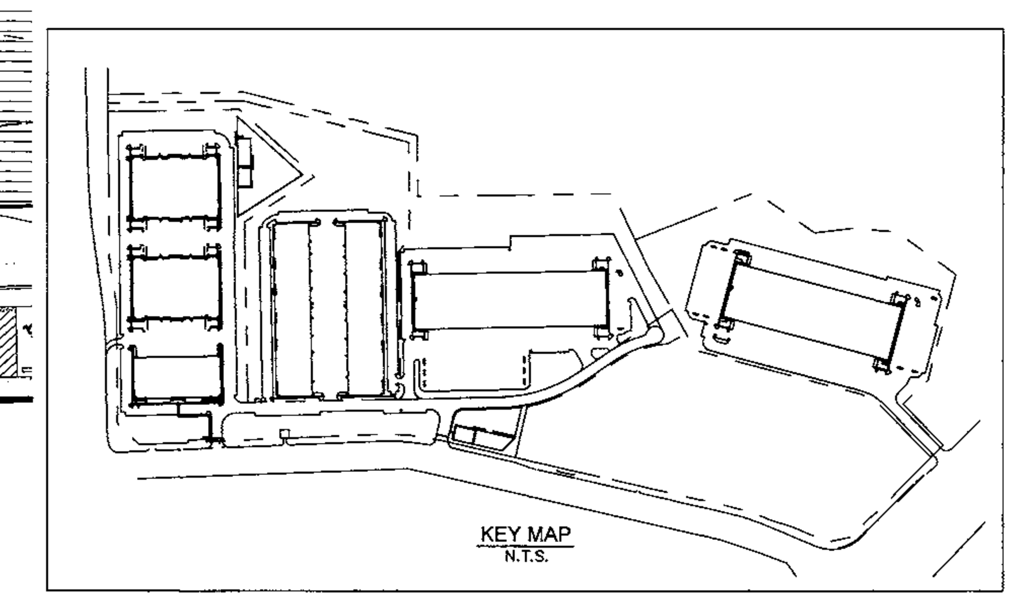
KEY MAP
N.T.S.

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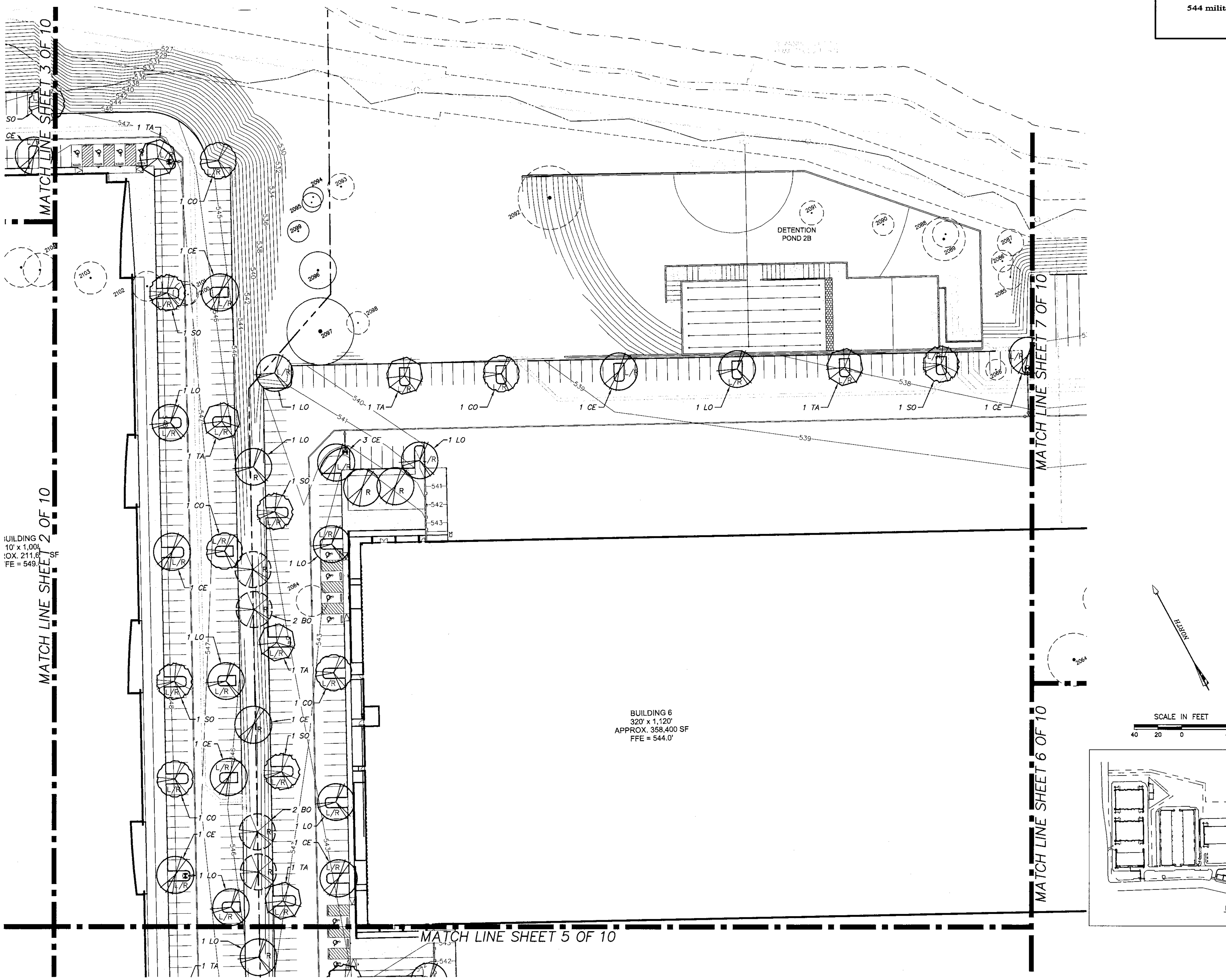

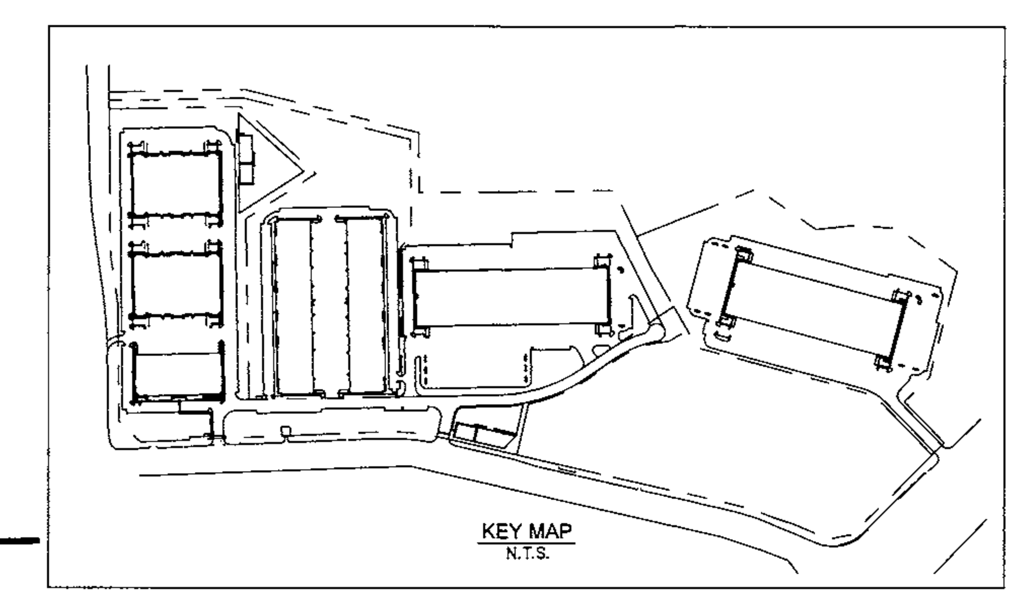

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CROSSROADS LOGISTICS CENTER ADDITIONS

LANDSCAPE PLAN - SHEET 4 OF 10

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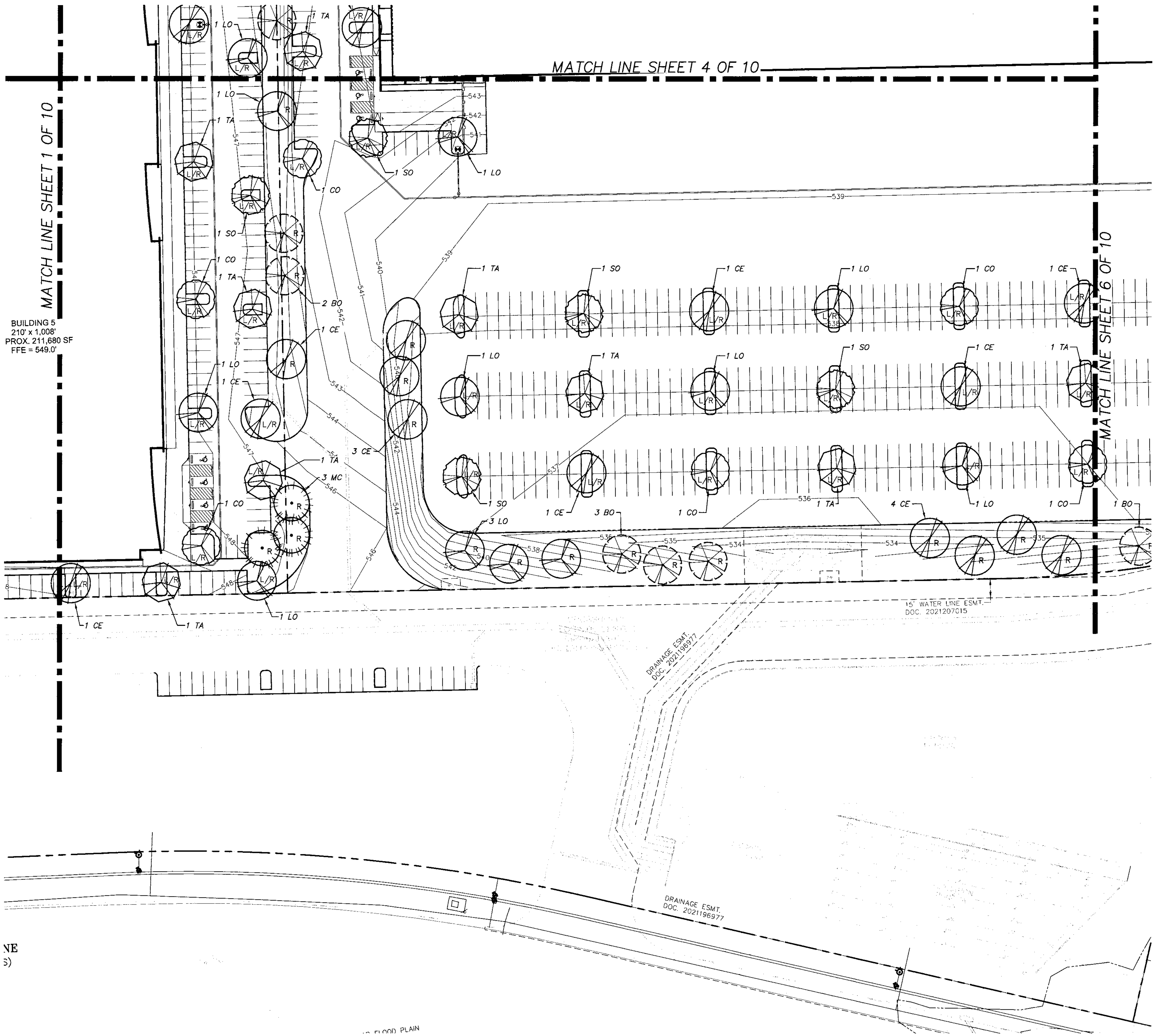

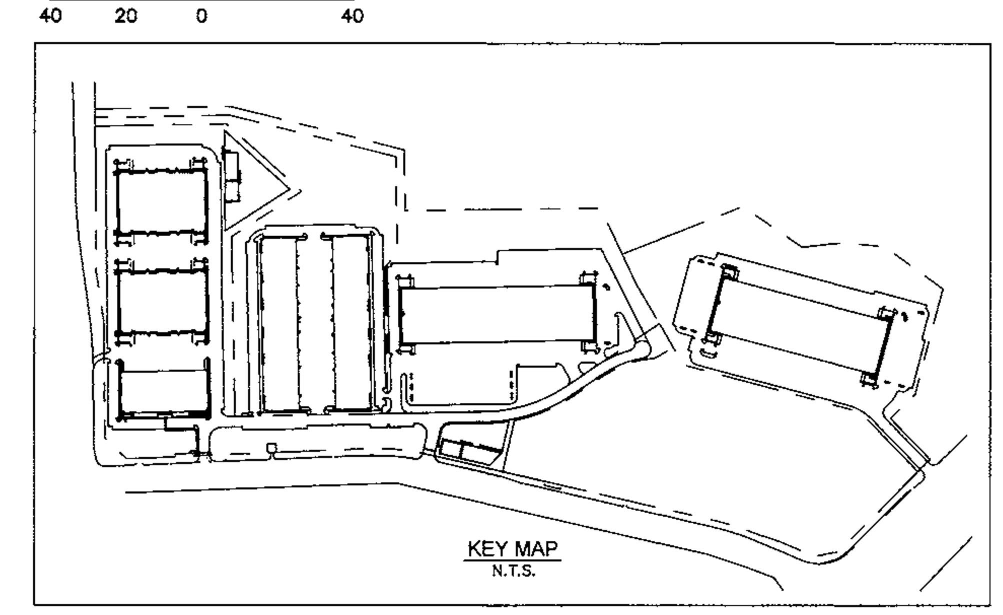

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LANDSCAPE PLAN - SHEET 5 OF 10

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SHEET
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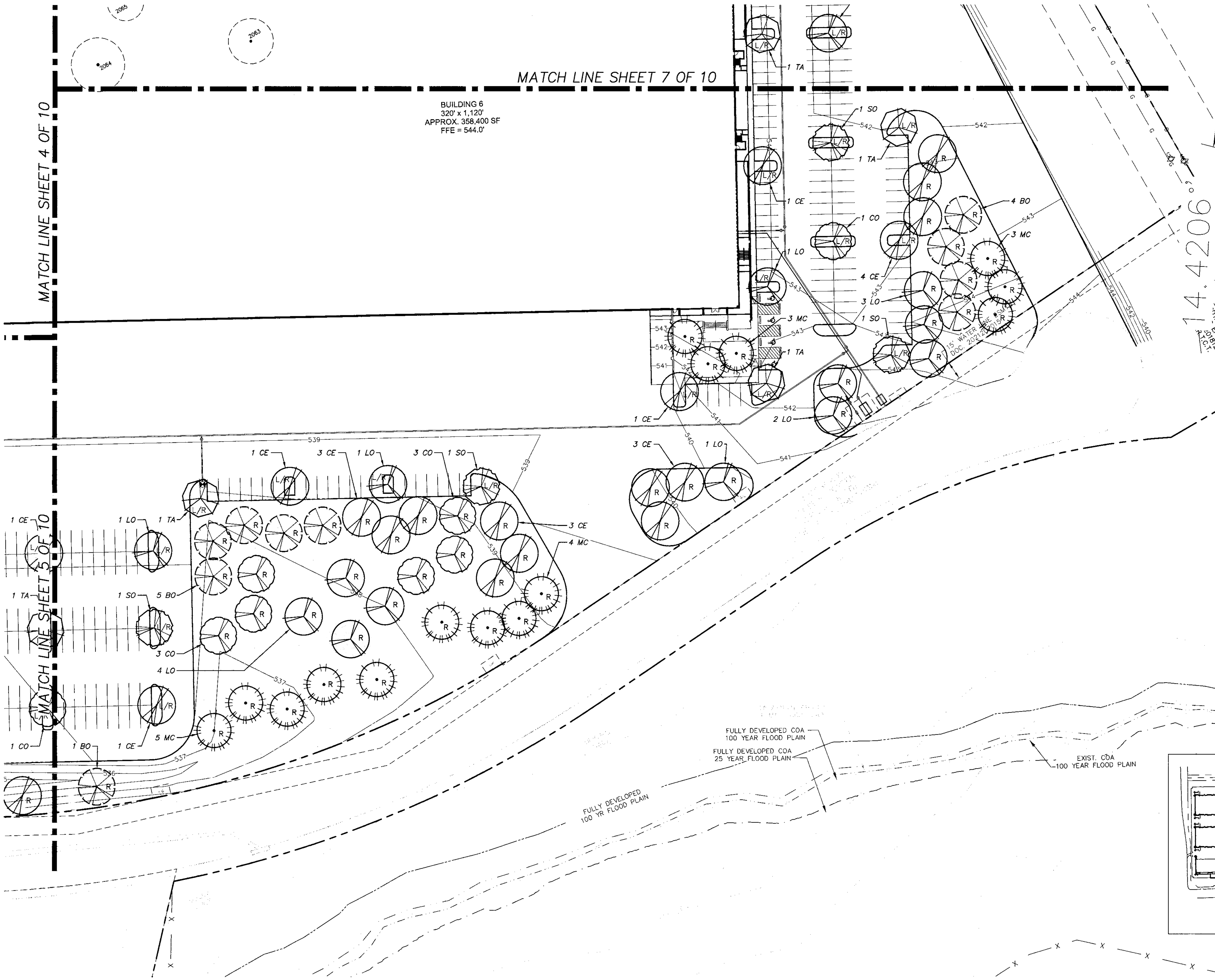

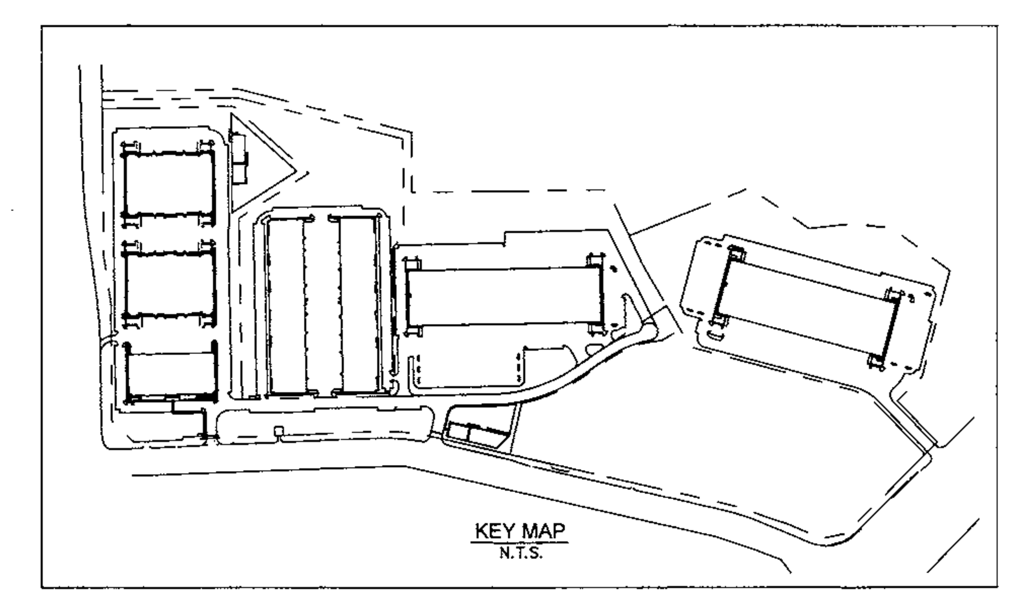

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LANDSCAPE PLAN - SHEET 6 OF 10

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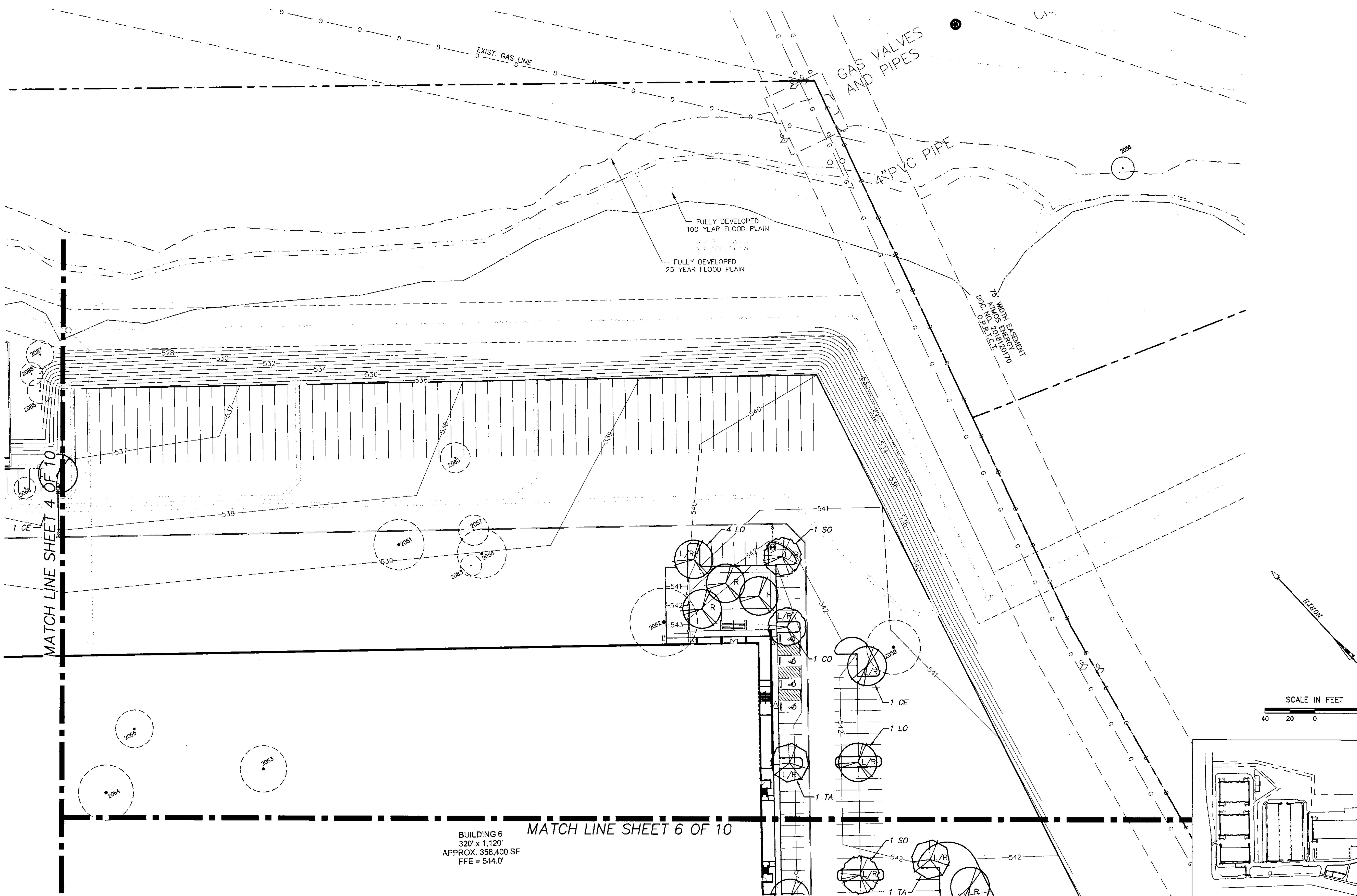

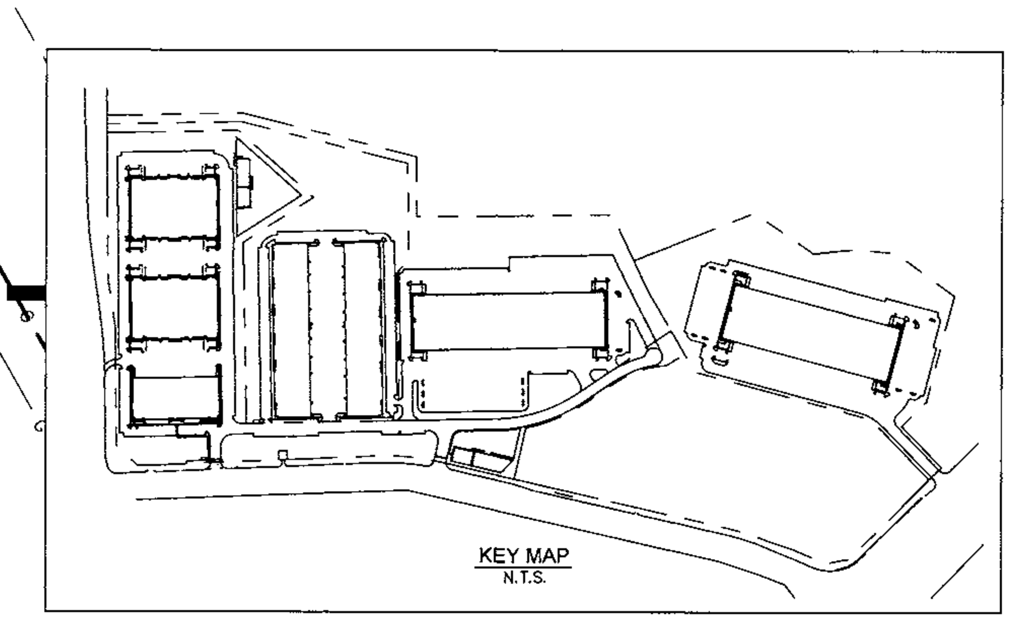

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CROSSROADS LOGISTICS CENTER ADDITIONS

LANDSCAPE PLAN - SHEET 7 OF 10

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SHEET
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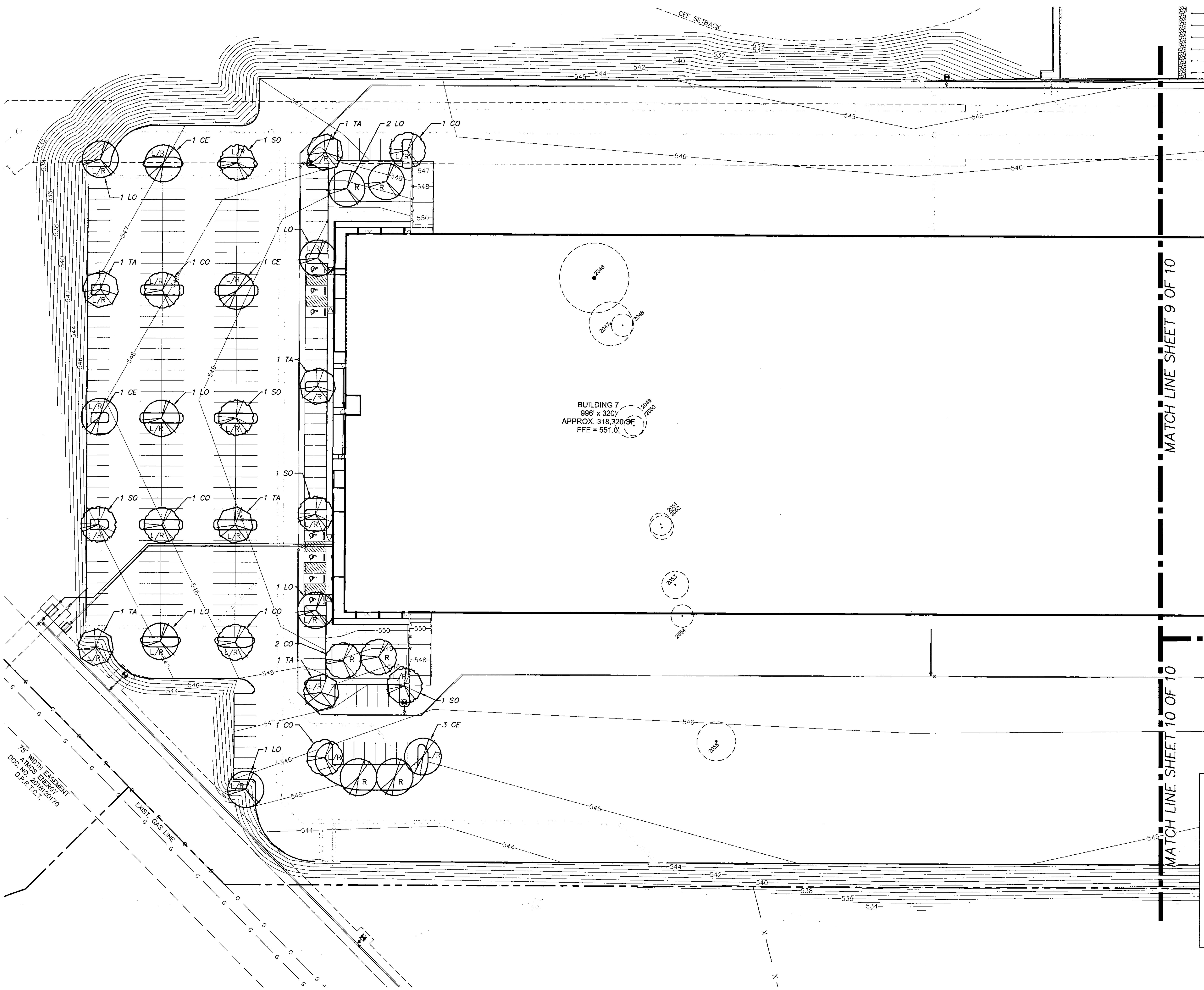

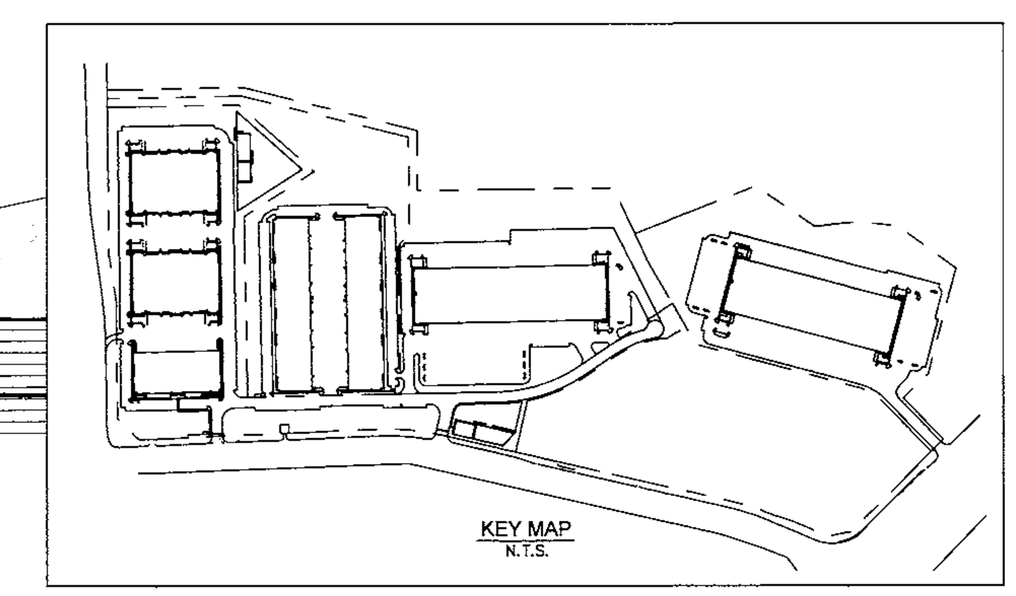

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LANDSCAPE PLAN - SHEET 8 OF 10

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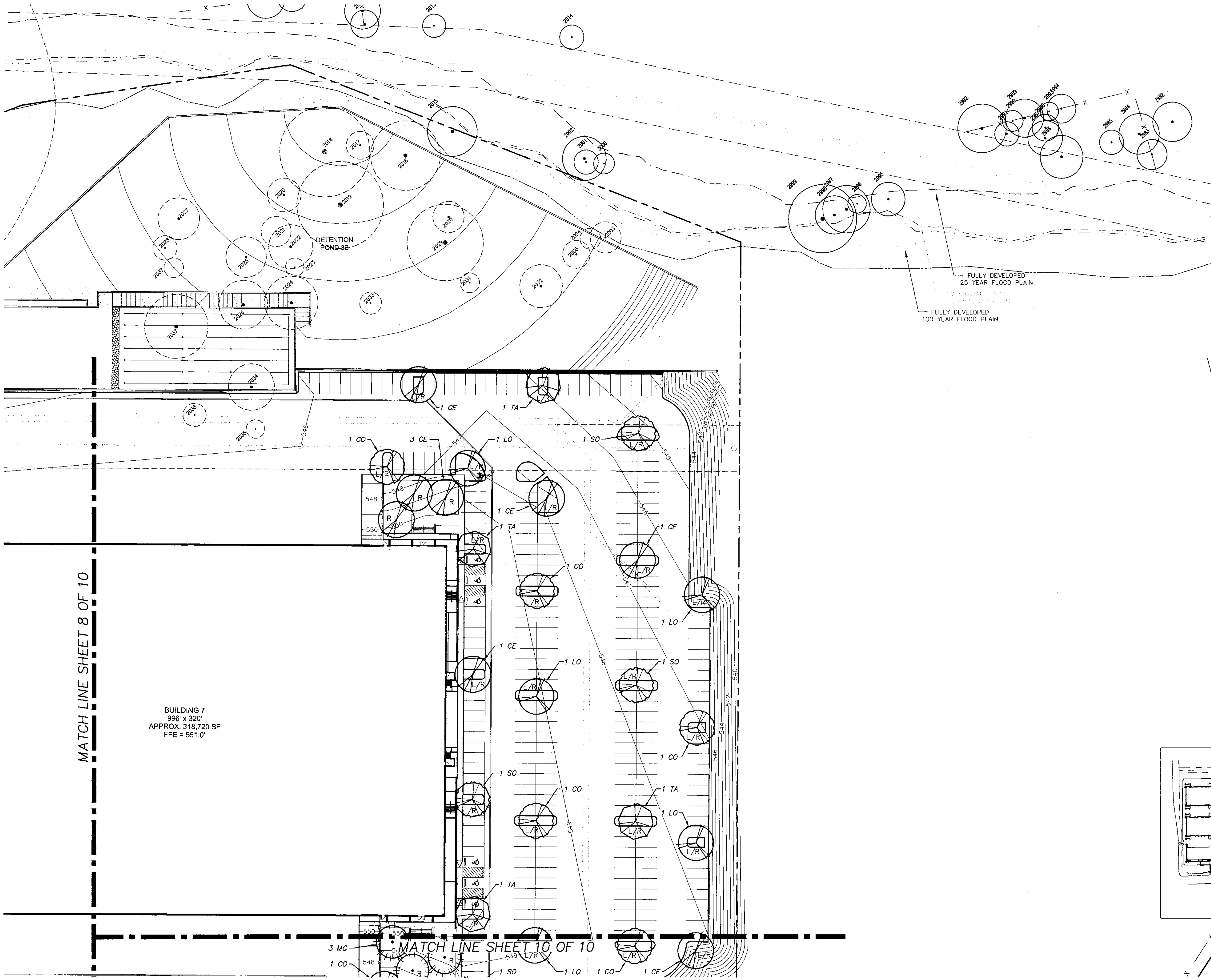

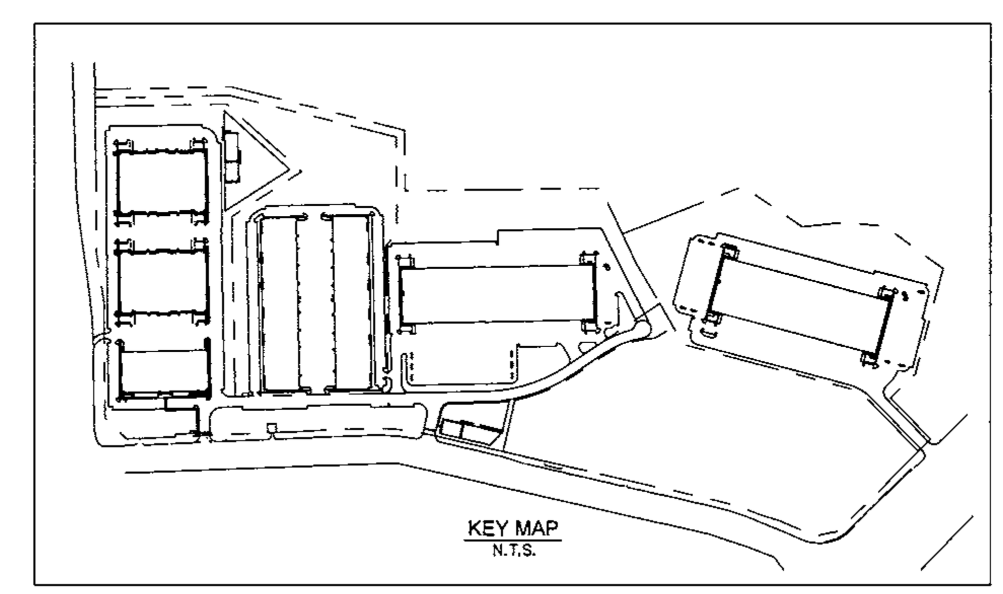

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CROSSROADS LOGISTICS CENTER ADDITIONS

LANDSCAPE PLAN - SHEET 9 OF 10

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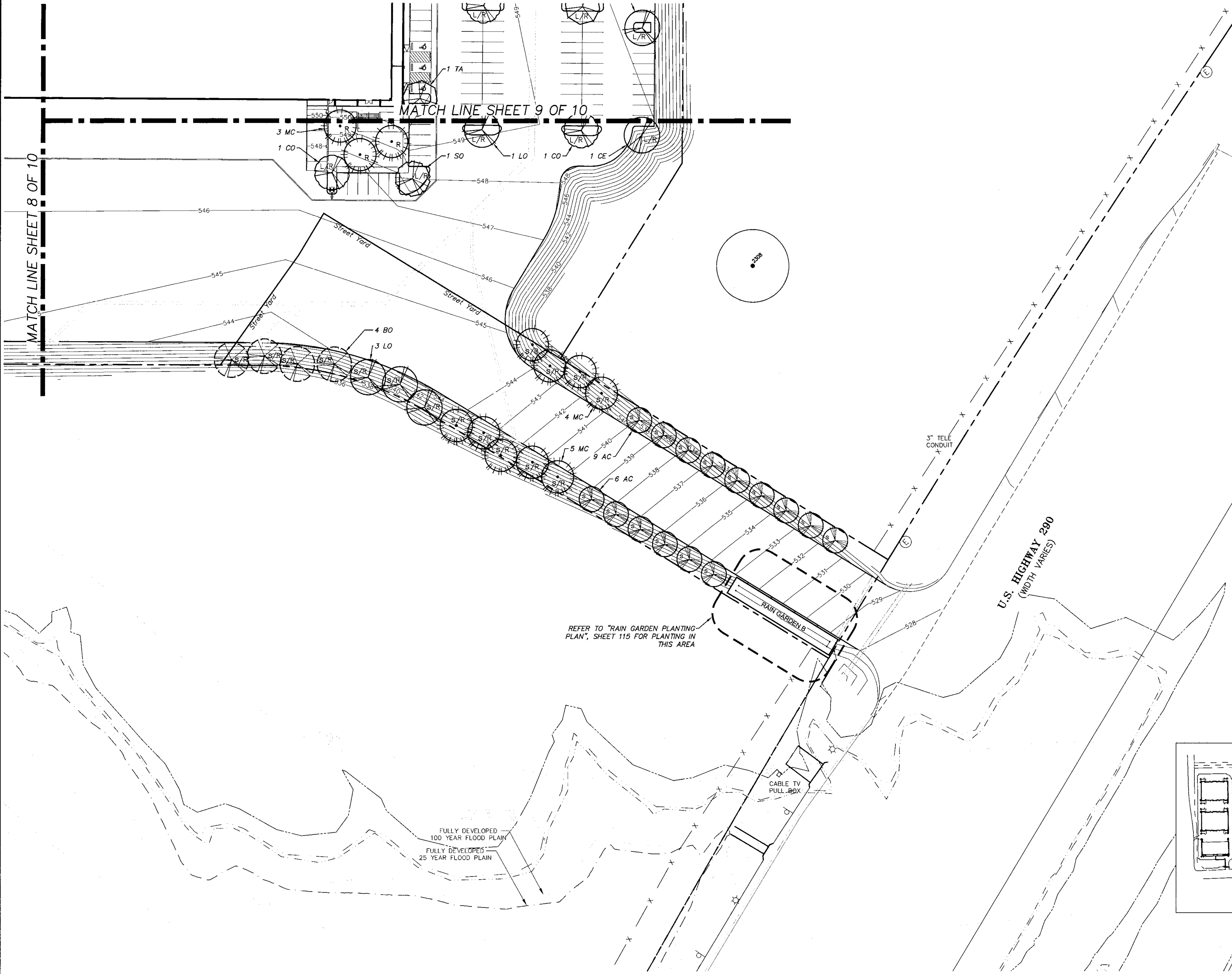

TREE KEY

S = Street yard tree (MIN. 2" CALIPER TREES)

S/R = 1-1/2" Street yard tree requirement and 2" replacement credit (MIN. 3.5" CALIPER TREES)

31 TOTAL STREET YARD TREES

L/R = 1-1/2" Landscape Ordinance requirement and 2" replacement credit (MIN. 3.5" CALIPER TREES)

NORTH

SCALE IN FEET

40 20 0 40

KEY MAP
N.T.S.

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LANDSCAPE PLAN - SHEET 10 OF 10

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LANDSCAPE ORDINANCE CALCULATIONS & NOTES

LANDSCAPE CALCULATIONS

STREET YARD

	Required	Provided
Total Site Area	N/A	–
Total Street Yard Area	N/A	61,043 S.F.
Street Yard Landscape Area	12,209 S.F.	16,831 S.F. (+ 20%)
Street Yard Trees		
Existing Credit		
2"–6" (0 x 1)	N/A	0
6" and UP (0 x 2)	N/A	0
Proposed	N/A	31
Total	31	31

BUFFER POINTS

NOTE: All plants listed are on the City of Austin preferred list

	Required	Provided
Elements x (pts.)	N/A	N/A

Buffer Points not required/provided due to no vehicular areas along street frontage.

ISLANDS,MEDIANS OR PENINSULAS

	Required	Provided
Street Yard	N/A.	N/A
Non–Street Yard	9,170 s.f.	34,245.5 s.f.

INNOVATIVE WATER MANAGEMENT

Required Landscape Area = 21,379 (12,209 + 0 + 9,170)
50% of Required Landscape Area = 10,689.5 s.f.

	Required	Provided
Landscape Receiving Stormwater Runoff	*N/A	*N/A
Undisturbed Natural Area	*N/A	*N/A
Undisturbed Existing Trees	*N/A	*N/A
Total	*N/A	*N/A

*Stormwater flows to a rain garden

AUTOMATIC IRRIGATION SYSTEM

Automatic irrigation systems shall comply with TCEQ Chapter 344, as well as the following requirements:

1. These requirements shall be noted on the Site Development Permit and shall be implemented as part of the landscape inspection:
   a. The system must provide a moisture level adequate to sustain growth of the plant materials;
   b. The system does not include spray irrigation on areas less than ten (10) feet wide (such as medians, buffer strips, and parking lot islands);
   c. Circuit remote control valves have adjustable flow controls;
   d. Serviceable in–head check valves area adjacent to paved areas where elevation differences may cause low head drainage;
   e. A master valve installed on the discharge side of the backflow preventer;
   f. Above–ground irrigation emission devices are set back at least six (6) inches from impervious surfaces;
   g. An automatic rain shut–off device shuts off the irrigation system automatically after more than a one–half inch (½") rainfall; and
   h. Newly planted trees shall have permanent irrigation consisting of drip or bubblers.
2. The irrigation installer shall develop and provide an as–built design plan to the City at the time the final irrigation inspection is performed;
   a. Unless fiscal security is provided to the City for the installation of the system, it must be operational at the time of the final landscape inspection.
3. The irrigation installer shall also provide exhibits to be permanently installed inside or attached to the irrigation controller, including:
   a. A laminated copy of the water budget containing zone numbers, precipitation rate, gallons per minute, and location of the isolation valve location; and an as built plan.
4. The irrigation installer shall provide a report to the City on a form provided by Austin Water certifying compliance with Subsection 1. When the final plumbing inspection is performed by the City.

PARKING LOT TREE CALCULATION

Provided parking lot trees = 175

URBAN FOREST ACCOUNTING

Total appendix F tree inches surveyed	1,183.5
Total appendix F tree inches removed	1,120.0
Total non–appendix F tree and invasive inches removed	41.5
Total mitigation inches planted on site	772.5
Total dead inches removed	0
Total non–mitigation inches planted on site	318.0

REGISTERED LANDSCAPE ARCHITECT
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REPLACEMENT TREES

HERITAGE	REMOVED	REPLACED
ECM Appendix F N/A	0.0"	0.00" (00%)
Non – ECM Appendix F N/A	0.0"	0.00" (00%)
19" & GREATER		
ECM Appendix F		
MESQUITE (#'s 2016,2018,2019,2024, 2026,2029,2034,2037,2046,2092, & 2097)	334.0"	334.0" (100%)
HACKBERRY (#'s 2058,2059,2061, & 2062)	88.0"	88.0" (120%)
Non – ECM Appendix F		
CHINESE TALLOW (#2064)	22.0"	0.00" (00%)
NON–PROTECTED (8" – 18.99")		
ECM Appendix F		
MESQUITE (#'s 2003,2017,2020,2021, 2025,2032,2088,2096,2098, & 2113)	146.5"	73.25" (50%)
HACKBERRY (#'s 2023,2027,2031,2033, 2035,2036,2038,2049,2050,2053,2054, 2055,2057,2060,2063,2065,2083,2084, 2085,2086,2087,2089,2090,2091,2100, 2101,2102,2103,2104,2105,2106,2107, 2108,2109,2110,2111. & 2112)	427.0"	213.50" (50%)
BOIS D' ARC (#'s 2004,2005,2030,2047, & 2048)	62.5"	31.25" (50%)
ELM (#'s 2066,2093,2094,2095, & 2099)	45.0"	22.50" (50%)
WILLOW (# 2309)	17.0"	8.50" (50%)
Non – ECM Appendix F		
CHINABERRY (#'s 2051 & 2052)	19.5"	~~0.00" (00%)~~
Total	1,161.5"	771.00"

PROPOSED REPLACEMENT TREES

29 Cedar Elm @ 3.5"	101.5"
25 Bur Oak @ 3.5"	87.5"
13 Chinquapin Oak @ 3.5"	45.5"
24 Live Oak @ 3.5"	84.0"
21 Montezuma Cypress @ 3.5"	73.5"
42 Live Oak @ 2.0"	84.0"
36 Texas Ash @ 2.0"	72.0"
31 Shumard Oak @ 2.0"	62.0"
34 Chinquapin Oak @ 2.0"	68.0"
36 Cedar Elm @ 2.0"	72.0"
9 Montezuma Cypress @ 2.0"	18.0"
4 Bur Oak @ 2.0"	8.0"
TOTAL	776.0"

303 replacement trees

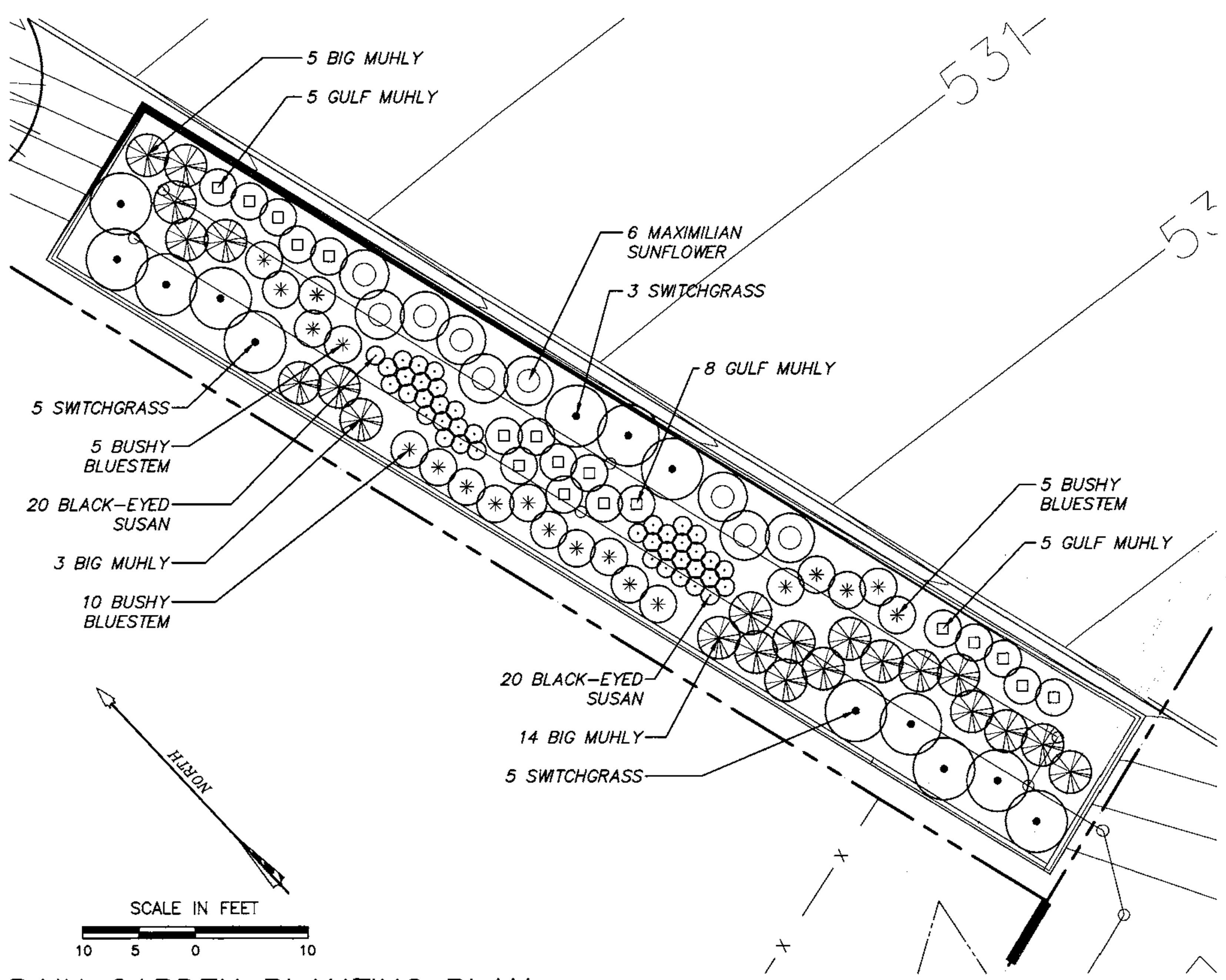
REPLACEMENT TREE KEY

R = Replacement tree (3.5" cal.)

L/R= 1–1/2" Landscape Ordinance requirement and 2" replacement credit

PLANT LIST

ABBREVIATION	QUANTITY	DESCRIPTION
AC	15	ARIZONA CYPRESS – Cupressus arizona 2" cal. container grown, 8'–9' ht., 3' sprd., full, single straight trunk
TA	36	TEXAS ASH – Fraxinus texensis 3.5" cal., container grown, 11–12' ht., 4' sprd., dark green, full, single straight trunk
BO	29	BUR OAK – Quercus macrocarpa 3.5" cal., container grown, 11'–12' ht., 5' sprd., dark green, full, single straight trunk
CO	47	CHINQUAPIN OAK – Quercus muhlenbergii 3.5" cal., container grown, 12'–13' ht., 5' sprd., dark green full, single straight trunk
SO	31	SHUMARD OAK – Quercus shumardii 3.5" cal., container grown, 12'–13' ht., 5' sprd., dark green, full, single straight trunk
LO	65	LIVE OAK – Quercus virginiana 3.5" cal., container grown, 11'–12' ht., 5' sprd., dark green, full, single straight trunk
MC	30	MONTEZUMA CYPRESS – Taxodium mucronatum 3.5" cal., container grown, 10'–11' ht., 5' sprd., dark green, full, single straight trunk
CE	65	CEDAR ELM – Ulmus crassifolia 3.5" cal., B & B, 12–13' ht., 5' sprd., dark green, full, single, straight trunk

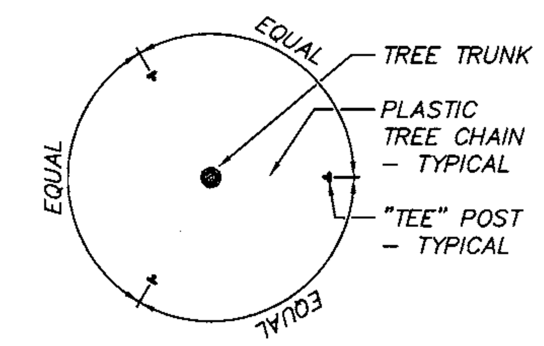


RAIN GARDEN PLANTING PLAN

SCALE: 1" = 10'–0"

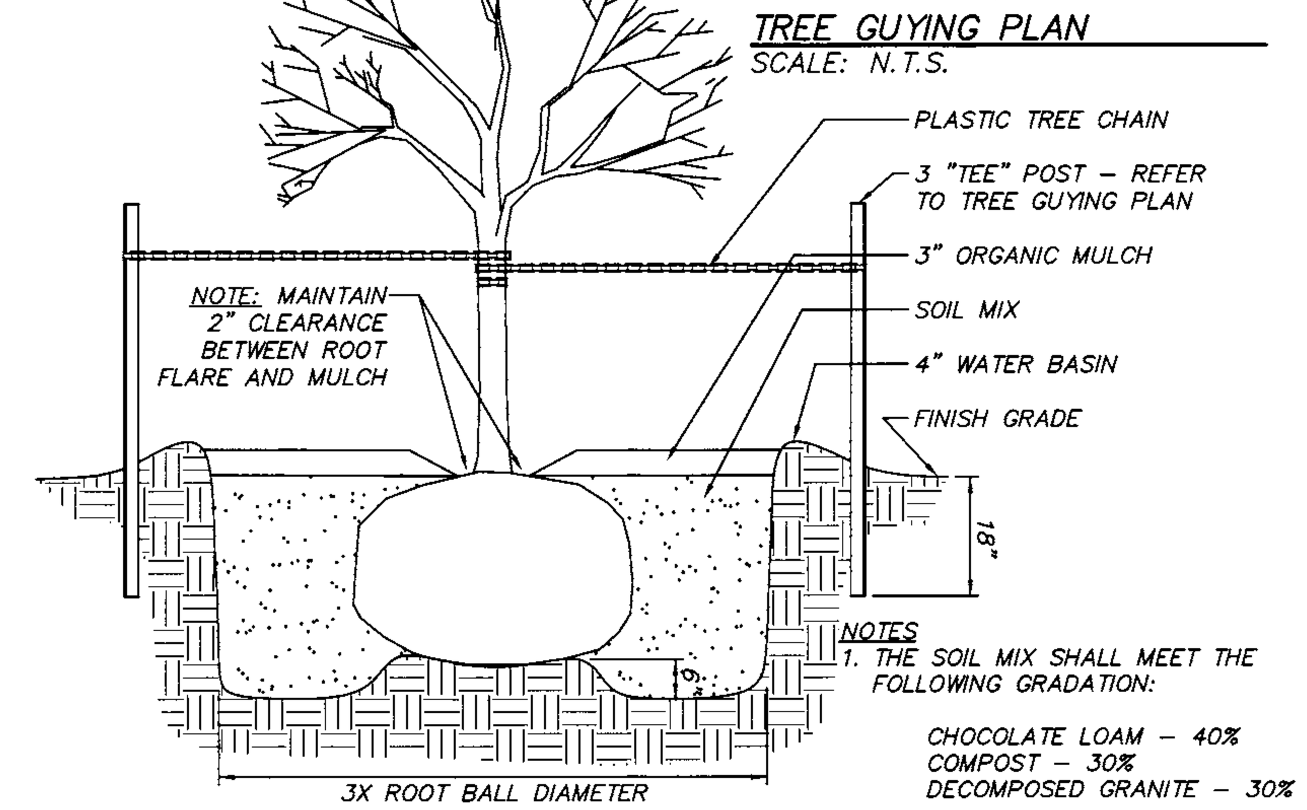
RAIN GARDEN PLANT LIST

QUANTITY	DESCRIPTION
20	BUSHY BLUESTEM – Andropogon glomeratus 3 gal., 3' o.c., 15" ht., 12" sprd., dark green, full
6	MAXIMILIAN SUNFLOWER – Helianthus maximiliani 3 gal., 4' o.c., 18" ht. 9" sprd., dark green, full,
18	GULF MUHLY – Muhlenbergia capillaris 3 gal., 2.5' o.c., 12" ht. 9" sprd., dark green, full,
22	BIG MUHLY – Muhlenbergia lindheimeri 5 gal., 3.5' o.c., 18" ht., 9" sprd., dark green, full
13	SWITCHGRASS – Panicum virgatum 3 gal., 5' o.c., 24" ht. 12" sprd., dark green, full,
40	BLACK–EYED SUSAN – Rudbeckia hirta 1 gal., 18" o.c., 12" ht. 9" sprd., dark green, full,



TREE GUYING PLAN

SCALE: N.T.S.



NOTES
1. THE SOIL MIX SHALL MEET THE FOLLOWING GRADATION:
   CHOCOLATE LOAM – 40%
   COMPOST – 30%
   DECOMPOSED GRANITE – 30%
2. FOR B & B TREES, REMOVE TOP 1/2 OF BURLAP PRIOR TO BACKFILL

TREE PLANTING DETAIL

SCALE: N.T.S.

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CROSSROADS LOGISTICS CENTER ADDITIONS

LANDSCAPE DETAILS

8500 E. PARMER LANE
AUSTIN, TEXAS 78653

SHEET
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CONSTRUCTION NOTES

1.0 MATERIALS

1.1 BACKFILL SOILS / DRAINAGE STONE

1.1.1 REINFORCED BACKFILL MATERIAL SPECIFIED BELOW SHALL BE FREE DRAINING. REINFORCED BACKFILL MATERIALS SHALL BE APPROVED BY THE OWNER OR OWNER'S REPRESENTATIVE AND SHALL MEET THE PHYSICAL PROPERTY REQUIREMENTS DEFINED IN SECTION 6.0. THE REINFORCED BACKFILL MATERIAL SHALL BE CRUSHED ANGULAR STONE MEETING THE FOLLOWING GRADATION:

SIEVE SIZE	PERCENT PASSING
2 inch	100
1 inch	30–100
3/4 inch	10–70
1/2 inch	0–40
No. 4	0–10

1.1.2 ON-SITE FILL

ON-SITE FILL MATERIAL SHALL BE ON-SITE OR IMPORTED COMPRESSIBLE SOIL CLASSIFIED PER THE UNIFIED SOIL CLASSIFICATION SYSTEM AS LOW PLASTICITY (MAX PI=25), COMPACTED TO 95% STD. PROCTOR DENSITY.

1.2 THE PORTION OF THE REINFORCED BACKFILL MATERIAL PASSING THE No. 40 SIEVE SHALL HAVE A LIQUID LIMIT OF LESS THAN 40 AND A PLASTICITY INDEX OF LESS THAN 20. REINFORCED BACKFILL MATERIAL SHALL BE CLASSIFIED PER THE UNIFIED SOIL CLASSIFICATION SYSTEM AS LOW PLASTICITY OR NON-PLASTIC SOILS.

1.3 GEOGRID REINFORCING SHALL BE TENSAR UX1400 UNIAXIAL GEOGRID AS MANUFACTURED BY THE TENSAR CORPORATION. DESIGNS PRESENTED HEREIN ARE VALID FOR TENSAR GEOGRIDS OR ENGINEER APPROVED EQUAL.

1.4 WALL FACING SHALL BE CHOPPED LIMESTONE BLOCK.

1.5 GEOTEXTILE FABRIC SHALL BE MIRAFI 140N OR APPROVED EQUAL.

1.6 REINFORCING BARS SHALL BE ASTM A615, GRADE 60.

1.7 MORTAR SHALL BE IN ACCORDANCE WITH THE CITY OF AUSTIN SPEC. 640S.3(G)

2.0 TECHNICAL REQUIREMENTS

2.1 PRIOR TO CONSTRUCTION OF THE GEOGRID REINFORCED WALL, THE CONTRACTOR SHALL CLEAR AND GRUB THE REINFORCED BACKFILL ZONE, REMOVING TOPSOILS, BRUSH, SOD OR OTHER ORGANIC OR DELETERIOUS MATERIALS. ANY UNSUITABLE SOILS SHALL BE OVER-EXCAVATED, REPLACED AND COMPACTED WITH REINFORCED BACKFILL MATERIAL TO PROJECT SPECIFICATIONS OR AS OTHERWISE DIRECTED BY THE OWNER'S GEOTECHNICAL ENGINEER.

2.2 BACKFILL MATERIALS SHALL BE PLACED FROM THE BACK OF THE BLOCK FACING UNITS TOWARDS THE TAIL OF THE GEOGRID TO ENSURE FURTHER TENSIONING.

2.3 REINFORCED BACKFILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT EXCEEDING 8 INCHES IN UNCOMPACTED THICKNESS.

2.4 ONLY HAND-OPERATED EQUIPMENT SHALL BE ALLOWED WITHIN THREE FEET OF THE BACK FACE OF WALL. COMPACTION SHALL BE ACHIEVED BY A LIGHTWEIGHT MECHANICAL TAMPER, ROLLER OR VIBRATORY SYSTEM. CARE SHALL BE EXERCISED DURING THE COMPACTION PROCESS TO AVOID MISALIGNMENT OF THE BLOCK UNITS.

2.5 REINFORCED BACKFILL MATERIAL DOES NOT REQUIRE DENSITY TESTING. COMPACTION FOR THIS TYPE OF MATERIAL SHALL CONTINUE UNTIL THERE IS NO EVIDENCE OF FURTHER COMPACTION, OR AS DIRECTED BY THE OWNER'S GEOTECHNICAL ENGINEER. SHOULD THE SUBGRADE, FOR ANY REASON OR CAUSE, LOSE THE REQUIRED STABILITY OR FINISH, IT SHALL BE RECOMPACTED AND REFINISHED AT THE CONTRACTOR'S EXPENSE.

2.6 THE CONTRACTOR SHALL HAVE AN APPROVED SET OF CONSTRUCTION DRAWINGS AND CONTRACT SPECIFICATIONS ON-SITE AT ALL TIMES DURING CONSTRUCTION OF THE RETAINING WALL.

3.0 GEOGRID PLACEMENT

3.1 GEOGRID SHALL BE PLACED AT THE LOCATIONS AND ELEVATIONS SHOWN ON THE CONSTRUCTION DRAWINGS.

3.2 GEOGRID EMBEDMENT LENGTH (GEL) SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS. REINFORCED BACKFILL ZONE LENGTH IS MEASURED FROM THE FRONT FACE OF THE WALL EXTENDING TO THE TAIL OF THE GEOGRIDS.

3.3 GEOGRID REINFORCEMENT SHALL BE CONTINUOUS THROUGHOUT THE DESIGNATED EMBEDMENT LENGTH(S).

3.4 THE CONNECTION OF THE GEOGRID TO THE BLOCK SHALL BE A POSITIVE-MECHANICAL CONNECTION.

3.5 TRACKED CONSTRUCTION EQUIPMENT SHALL NOT BE OPERATED DIRECTLY ON THE GEOGRID. A MINIMUM FILL THICKNESS OF SIX INCHES IS REQUIRED FOR OPERATION OF TRACKED VEHICLES OVER THE GEOGRID. TURNING OF TRACKED VEHICLES SHOULD BE KEPT TO A MINIMUM TO PREVENT TRACKS FROM DISPLACING THE FILL AND/OR THE GEOGRID.

3.6 RUBBER-TIRED VEHICLES MAY PASS OVER THE GEOGRID REINFORCEMENT AT SLOW SPEEDS, LESS THAN 10 MPH. SUDDEN BRAKING AND SHARP TURNING SHALL BE AVOIDED.

3.7 UNIAXIAL GEOGRID SHALL BE ROLLED OUT WITH THE LONG AXIS OF THE APERTURES (MACHINE DIRECTION) PERPENDICULAR TO THE WALL FACE.

3.8 UNIAXIAL GEOGRIDS SHALL BE CUT NEXT TO THE CROSS-MACHINE DIRECTION BAR. THE CROSS-MACHINE DIRECTION BAR SHALL BE PLACED AND PULLED TAUT PRIOR TO FILL PLACEMENT.

3.9 A MINIMUM OF 3 INCHES OF FILL MATERIAL SHALL BE REQUIRED BETWEEN LAYERS OF UNIAXIAL GEOGRID AND FILTER FABRIC UNLESS OTHERWISE SHOWN.

3.10 NO CHANGES TO THE GEOGRID LAYOUT INCLUDING, BUT NOT LIMITED TO LENGTH, GEOGRID TYPE OR ELEVATION SHALL BE MADE WITHOUT THE EXPRESSED PRIOR WRITTEN CONSENT OF GEOSOLUTIONS INC.

4.0 BLOCK PLACEMENT

4.1 THE ALLOWABLE HORIZONTAL AND VERTICAL TOLERANCE FOR THE ERECTION OF THE WALLS SHALL BE LIMITED TO 1.5 inch IN 10.0 FEET OF LENGTH OR HEIGHT.

5.0 DRAINAGE

5.1 FOR WALLS NOT INCORPORATING FREE-DRAINING CRUSHED STONE BACKFILL, THE BACKFILL SURFACE SHALL BE GRADED AWAY FROM THE WALL FACE A MINIMUM OF 2 PERCENT SLOPE AND A TEMPORARY SOIL BERM SHALL BE CONSTRUCTED NEAR THE WALL CREST TO PREVENT SURFACE WATER RUNOFF FROM OVERTOPPING THE WALL. GRADING SHALL BE PERFORMED AT THE END OF EACH WORK DAY.

5.2 AT THE END OF EACH WORKDAY, BACKFILL SURFACE SHALL BE COMPACTED WITH A SMOOTH WHEEL ROLLER TO MINIMIZE PONDING OF WATER AND SATURATION OF THE BACKFILL.

5.3 PERMANENT SURFACE WATER DIVERSION AND/OR COLLECTION SHALL BE AS REQUIRED AND PROVIDED BY THE OWNER OR OWNER'S REPRESENTATIVE.

5.4 THE RETAINING WALL HAS BEEN DESIGNED ON THE ASSUMPTION THAT THE REINFORCED BACKFILL MATERIAL SHALL BE FREE OF SUBSURFACE DRAINAGE OF WATER (SEEPAGE). IF GROUND WATER IS ENCOUNTERED, GEOSOLUTIONS INC. SHALL BE CONTACTED IMMEDIATELY.

5.5 CARE SHALL BE TAKEN NOT TO CONTAMINATE THE GEOTEXTILE FABRIC AND/OR DRAINAGE STONE WITH FINE-GRAINED SOILS OR OTHER DELETERIOUS MATERIALS.

6.0 DESIGN PARAMETERS

6.1 DESIGN OF THE RETAINING WALLS IS BASED ON THE FOLLOWING PARAMETERS:

	EFFECTIVE FRICTION ANGLE	EFFECTIVE COHESION	MOIST UNIT WT
REINFORCED BACKFILL	34°	0 psf	125 pcf
RETAINED SOILS	28°	0 psf	125 pcf
FOUNDATION SOILS	28°	0 psf	125 pcf

6.2 FACTORS OF SAFETY:

6.2.1 INTERNAL STABILITY:

	REQUIRED	PROVIDED
MINIMUM FACTOR OF SAFETY FOR OVERSTRESS	= 1.5	= 1.5
MINIMUM FACTOR OF SAFETY FOR GEOGRID PULLOUT	= 1.5	= 1.5
MINIMUM FACTOR OF SAFETY FOR SLIDING AT LOWEST GEOGRID	= 1.5	= 1.5
PERCENT COVERAGE OF GEOGRID	= 100	= 100

6.2.2 EXTERNAL STABILITY:

MINIMUM FACTOR OF SAFETY FOR SLIDING AT BASE	= 1.5	= 1.5
MINIMUM FACTOR OF SAFETY FOR OVERTURNING	= 2.0	= 2.0

6.3 SURCHARGE LOADING = 250 psf

7.0 SPECIAL PROVISIONS

7.1 THE DESIGN PRESENTED HEREIN IS BASED ON SOIL PARAMETERS, FOUNDATION CONDITIONS, GROUNDWATER CONDITIONS, AND LOADINGS STATED IN SECTION 6.0.

7.2 LOCATIONS AND GEOMETRY OF EXISTING STRUCTURES AND GRADE ABOVE AND BELOW THE WALLS MUST BE VERIFIED BY THE OWNER OR OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.

7.3 THE OWNER OR OWNER'S REPRESENTATIVE IS RESPONSIBLE FOR REVIEWING AND VERIFYING THAT THE ACTUAL SITE CONDITIONS ARE AS DESCRIBED IN SECTION 6.0 PRIOR TO AND DURING CONSTRUCTION. THE OWNER OR OWNER'S REPRESENTATIVE SHALL BE ON-SITE TO ASSURE THE PROVISIONS IN THE CONSTRUCTION NOTES ARE FOLLOWED.

7.4 THE OWNER OR OWNER'S REPRESENTATIVE SHALL CONTACT GEOSOLUTIONS INC. IF THE SOILS ENCOUNTERED APPEAR TO VARY FROM THOSE ENCOUNTERED AT THE BEGINNING OF CONSTRUCTION.

7.5 IF ANY ROCK FORMATIONS AND/OR GROUNDWATER ARE ENCOUNTERED DURING THE CONSTRUCTION OF THIS WALL, IMMEDIATELY CONTACT THE OWNER OR OWNER'S REPRESENTATIVE.

7.6 ANY REVISIONS TO DESIGN PARAMETERS STATED IN SECTION 6.0 OR STRUCTURE GEOMETRY SHALL REQUIRE DESIGN MODIFICATIONS PRIOR TO PROCEEDING WITH CONSTRUCTION.

7.7 THIS DESIGN IS VALID ONLY FOR THE CROSSROADS LOGISTICS CENTER PROJECT, AUSTIN, TEXAS.

8.0 OWNER'S RESPONSIBILITIES

8.1 OWNER SHALL BE RESPONSIBLE FOR CONFIRMING THAT ALL REQUIREMENTS SET FORTH ON THESE DRAWINGS ARE MET. ASSIGNMENT OR DELEGATION OF RESPONSIBILITIES BY OWNER TO OWNER'S REPRESENTATIVE SHALL NOT RELIEVE OWNER OF RESPONSIBILITY OF CONFIRMING THAT ALL REQUIREMENTS SET FORTH HEREIN ARE MET.

8.2 OWNER (OR OWNER-DESIGNATED REPRESENTATIVES) RESPONSIBILITIES, AS DESCRIBED IN PREVIOUS SECTIONS OF THESE NOTES, SHALL INCLUDE:

8.2.1 PERMANENT SURFACE WATER DIVERSION (SECTION 5.0).

8.2.2 CONFIRMATION OF GEOMETRY AND LOADING CONDITIONS FOR AREAS ADJACENT TO WALL (SECTION 7.0).

8.2.3 ASSURING CONFORMITY WITH CONSTRUCTION DRAWINGS AND NOTES DURING CONSTRUCTION BY ON-SITE INSPECTION (SECTION 7.0).

REVISIONS

STATE OF TEXAS
CAREY M. WITT
77259
REGISTERED
PROFESSIONAL ENGINEER
11/05/21

CROSSROADS LOGISTICS CENTER
RETAINING WALLS
AUSTIN, TEXAS
CONSTRUCTION NOTES

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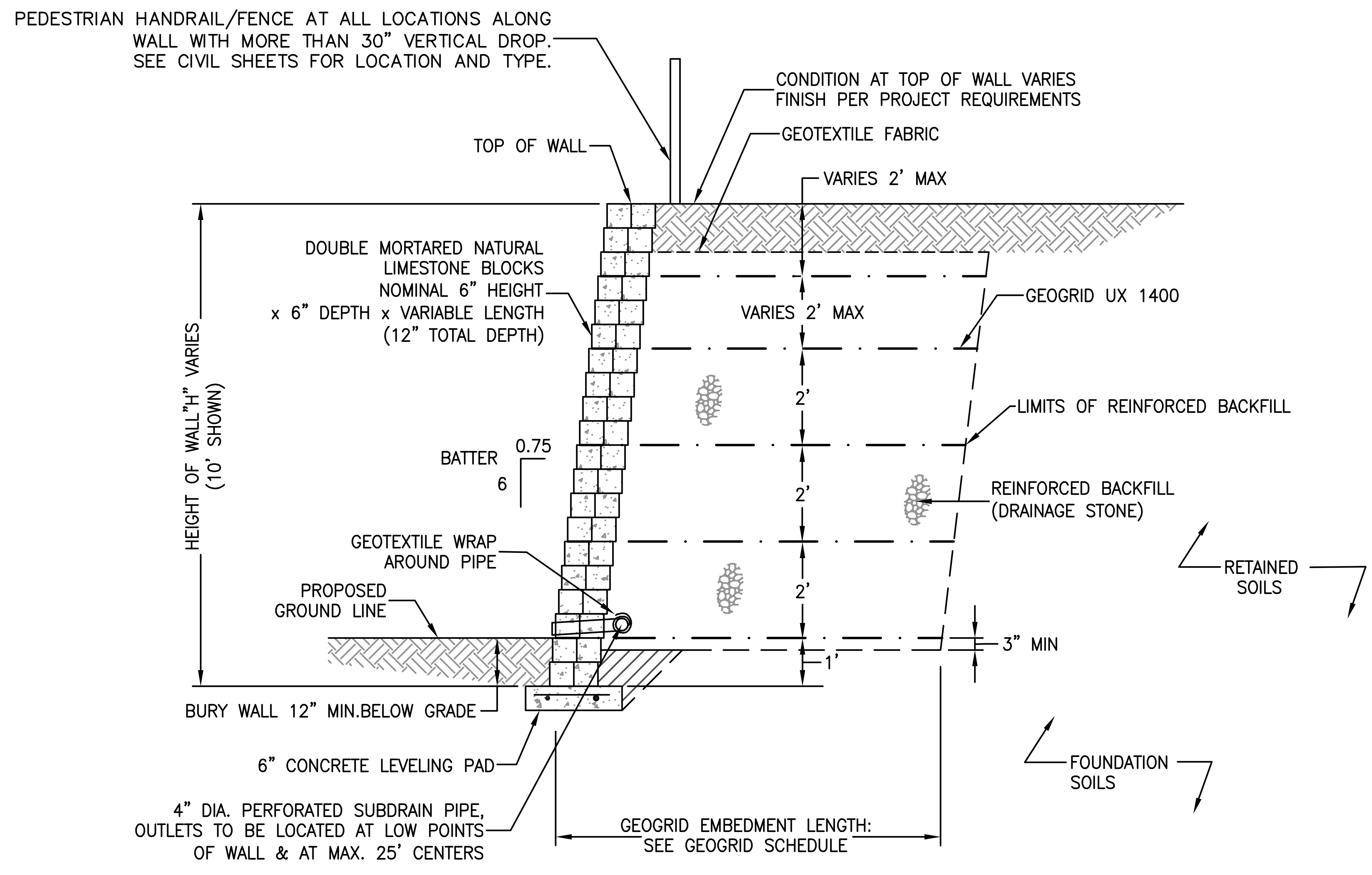
Drawn by: JY
Project No.: GS21117

SHEET 1 OF 5



TYPICAL CROSS-SECTION
LIMESTONE BLOCK WALL FILL CONDITION
N.T.S.

GEOGRID SCHEDULE

HEIGHT OF WALL "H"	NO. OF LAYERS	GEOGRID EMBEDMENT LENGTH	GEOGRID TYPE
4.0'	2	5.0'	UX1400
5.0'	2	5.0'	UX1400
6.0'	3	5.0'	UX1400
7.0'	3	5.5'	UX1400
8.0'	4	6.0'	UX1400
9.0'	4	6.5'	UX1400
10.0'	5	7.0'	UX1400

NOTES:
1) STEP TOP OF WALL TO CORRESPOND WITH SLOPE BEHIND WALL
2) MINIMUM 5' GEOGRID LENGTH
3) WALLS WITH "H"< 3.0' DO NOT REQUIRE GEOGRID

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STATE OF TEXAS
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11/05/21

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FILL WALL CROSS-SECTION

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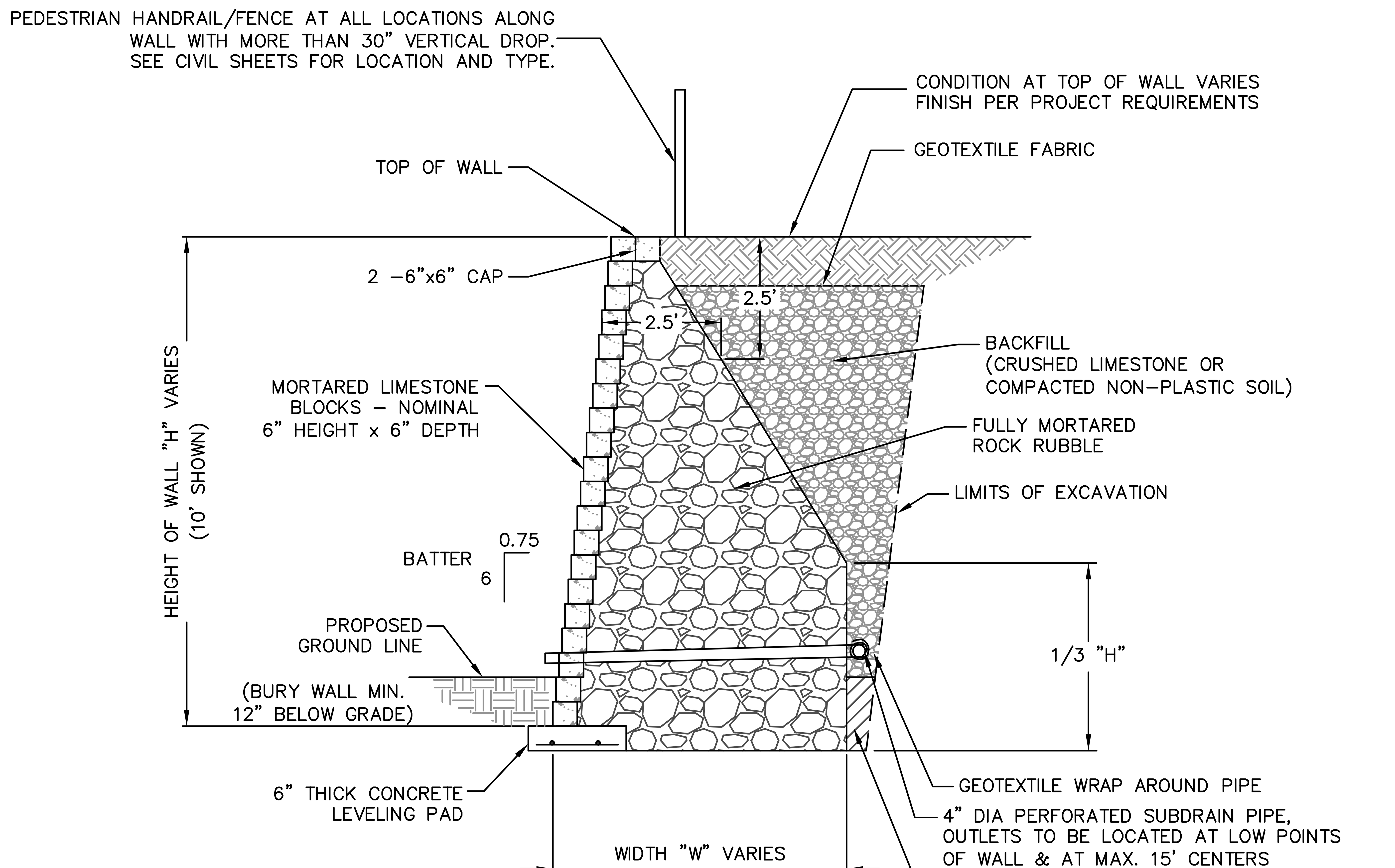
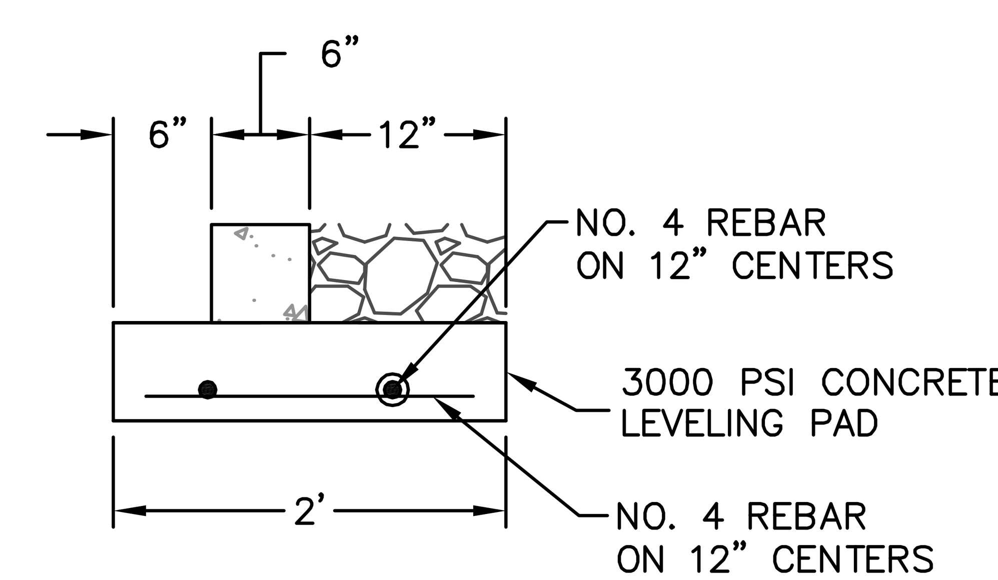
SHEET 2 OF 5



TYPICAL CROSS–SECTION GRAVITY WALL
N.T.S.

WALL WIDTH CHART (GRAVITY WALLS)

HEIGHT OF WALL "H"	"W" WIDTH OF WALL
1'	2'
2'	2'
3'	2'
4'	2.5'
5'	3'
6'	3.5'
7'	4.5'
8'	5'
9'	5.5'
10'	6'



GRAVITY WALL FOOTING DETAIL
N.T.S.

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STATE OF TEXAS
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11/05/21

CROSSROADS LOGISTICS CENTER
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AUSTIN, TEXAS
GRAVITY WALL CROSS–SECTION

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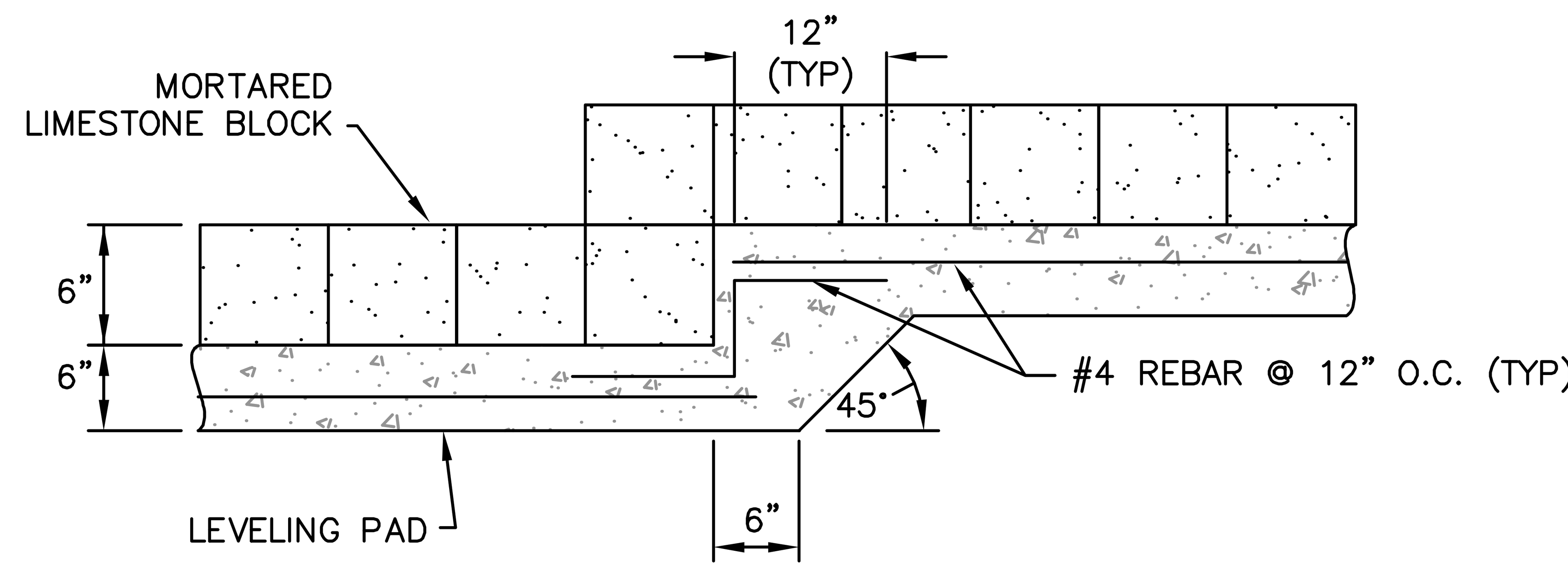
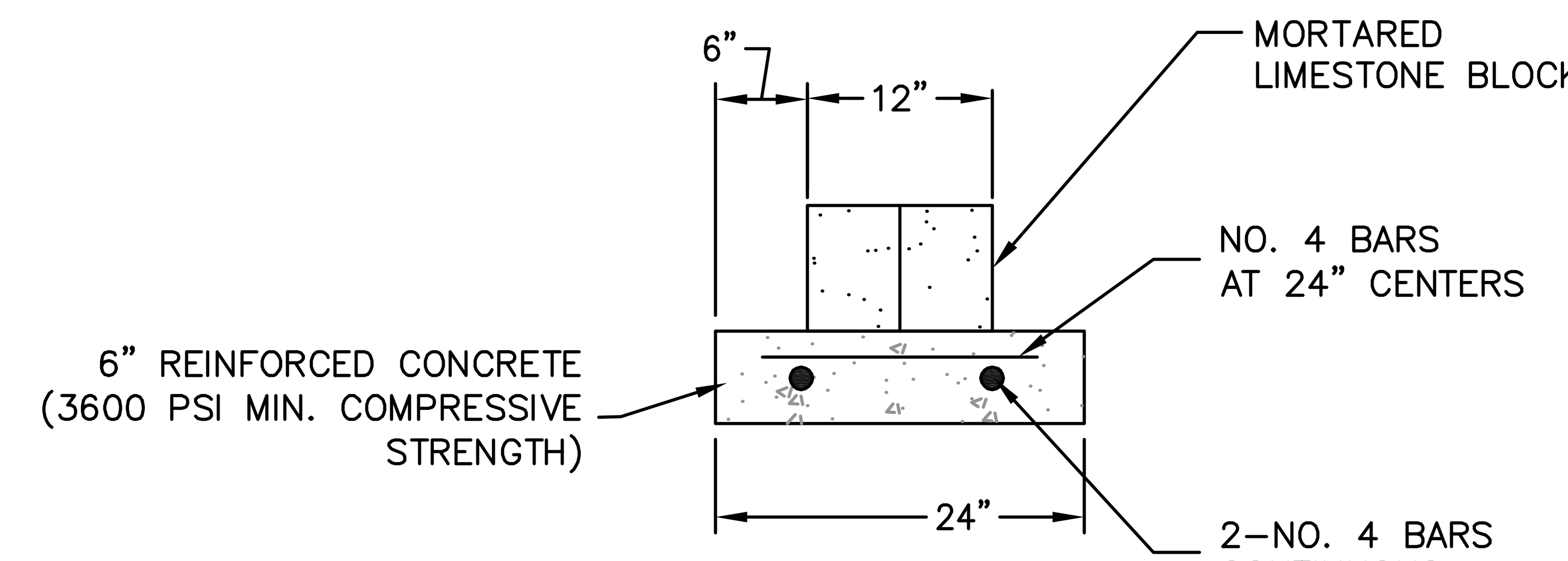
SHEET 3 OF 5



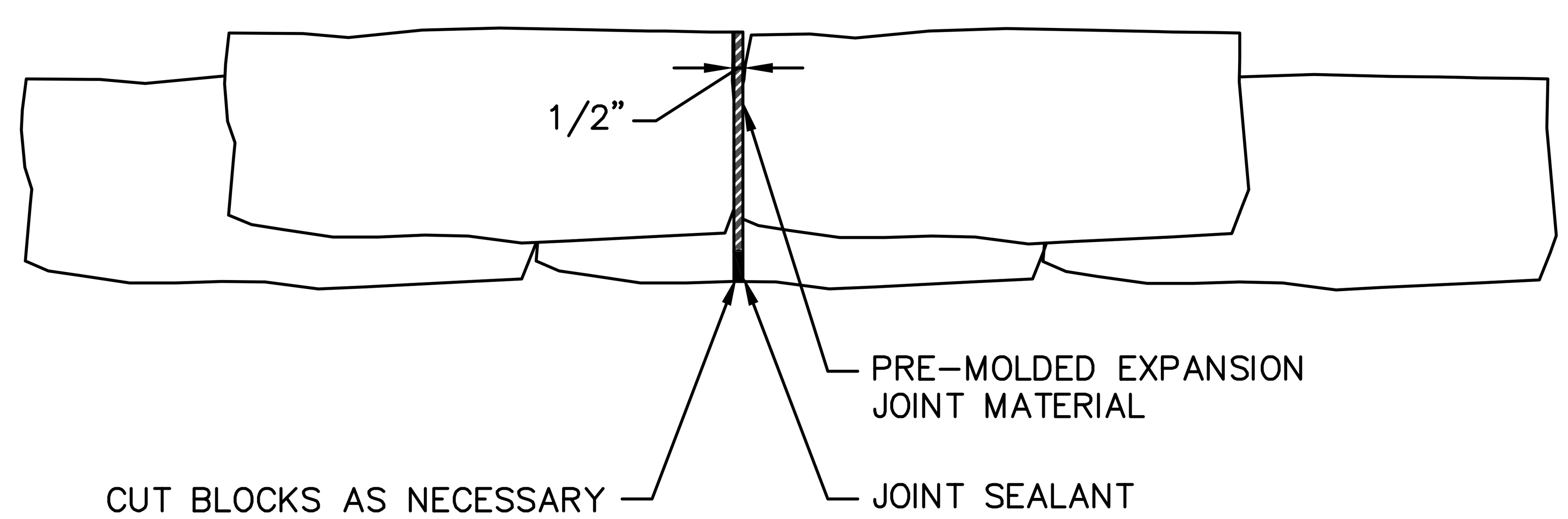
TYPICAL SMALL LIMESTONE BLOCK MSE WALL LEVELING PAD STEP DETAIL

N.T.S.



TYPICAL SMALL LIMESTONE BLOCK MSE WALL LEVELING PAD DETAIL

N.T.S.

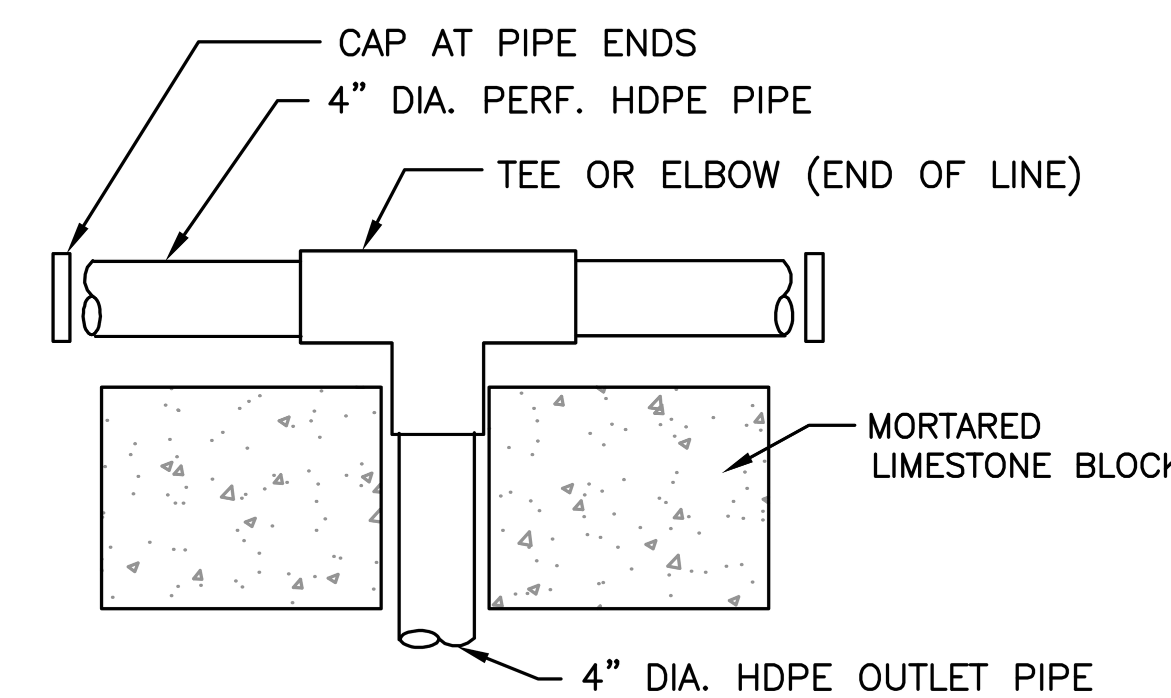


PLAN VIEW

EXPANSION JOINT DETAIL

N.T.S.

NOTE: CONSTRUCT VERTICAL 1/2" EXPANSION JOINT A DISTANCE FROM ALL 90 DEGREE OR LESS CORNERS, EQUAL TO THE WALL HEIGHT AT THE CORNER.



SUBDRAIN PIPE OUTLET DETAIL

N.T.S.

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CROSSROADS LOGISTICS CENTER
RETAINING WALLS
AUSTIN, TEXAS
TYPICAL DETAILS – 1

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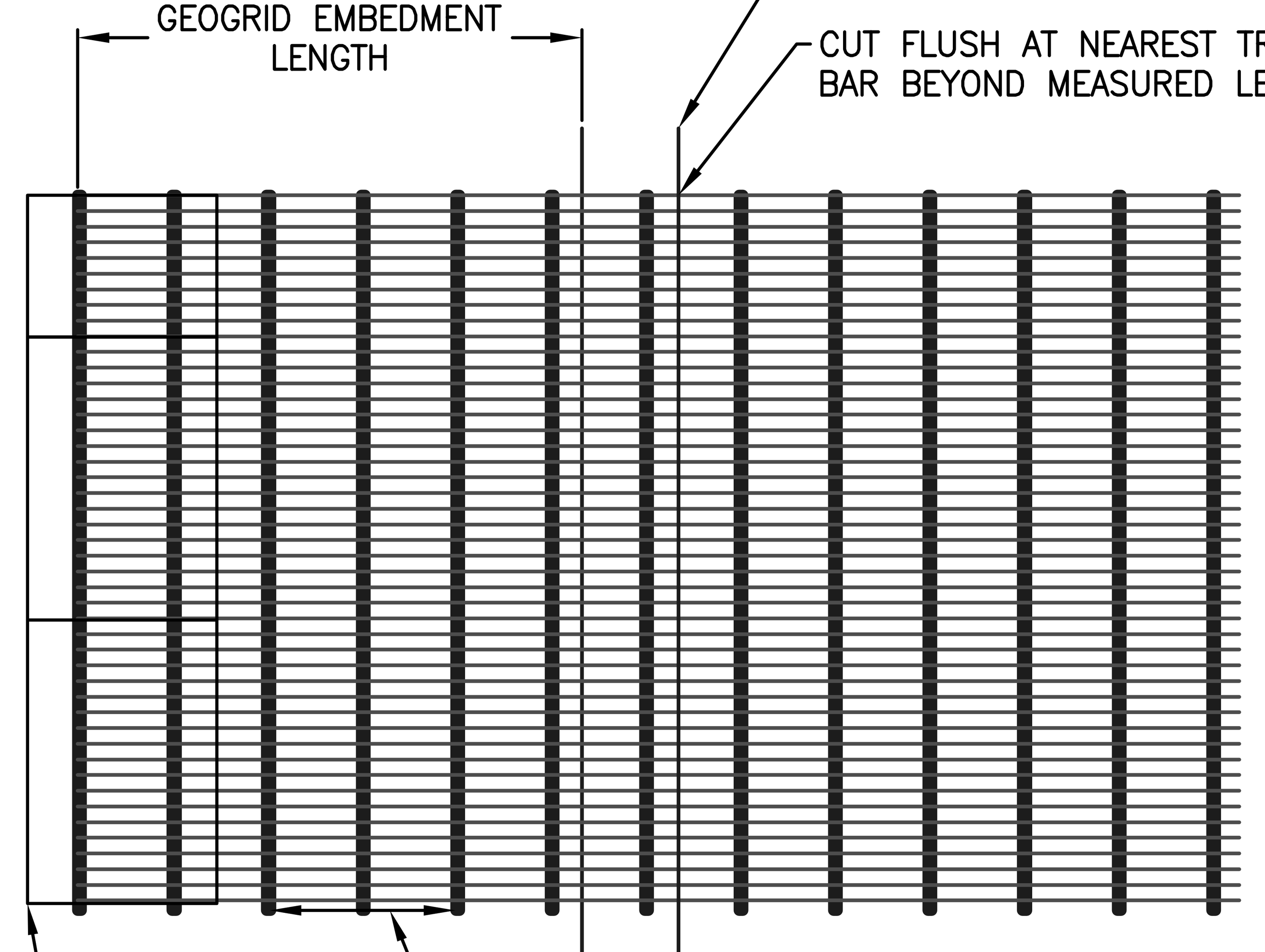
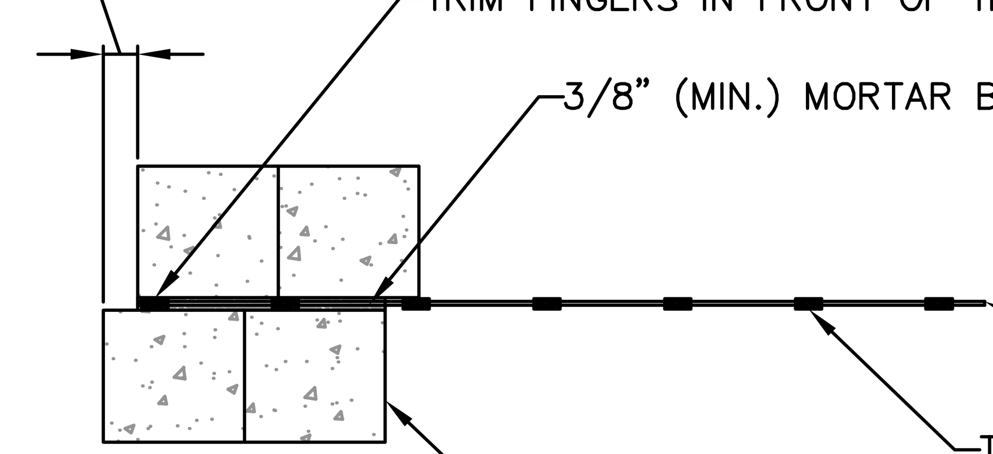
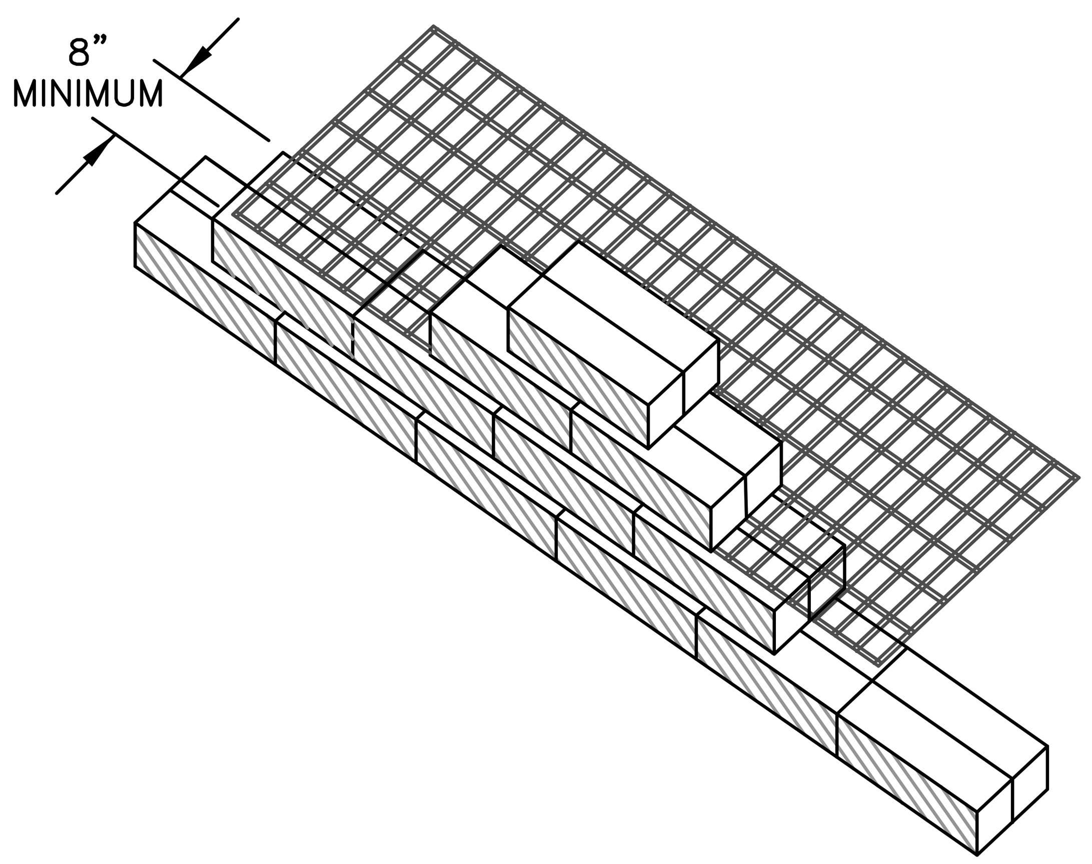
SHEET 4 OF 5



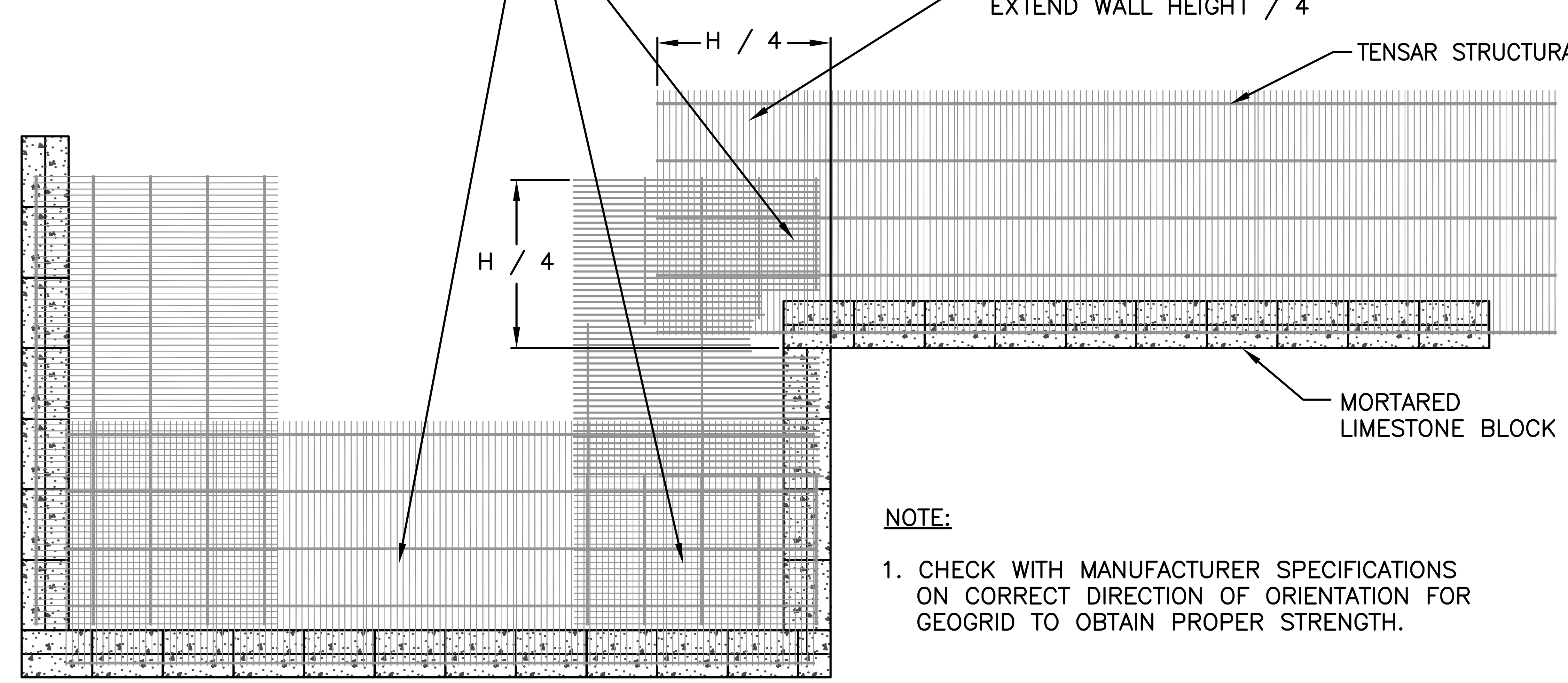
GEOGRID ORIENTATION DETAIL
N.T.S.



NATURAL LIMESTONE BLOCK TO GEOGRID CONNECTION DETAIL
N.T.S.



LIMESTONE BLOCK UNIT AND GEOGRID CONNECTION DETAIL
N.T.S.



NOTE:

1. CHECK WITH MANUFACTURER SPECIFICATIONS ON CORRECT DIRECTION OF ORIENTATION FOR GEOGRID TO OBTAIN PROPER STRENGTH.

GEOGRID INSTALLATION AT CORNERS
N.T.S.

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REGISTERED PROFESSIONAL ENGINEER
11/05/21

CROSSROADS LOGISTICS CENTER
RETAINING WALLS
AUSTIN, TEXAS
TYPICAL DETAILS – 2

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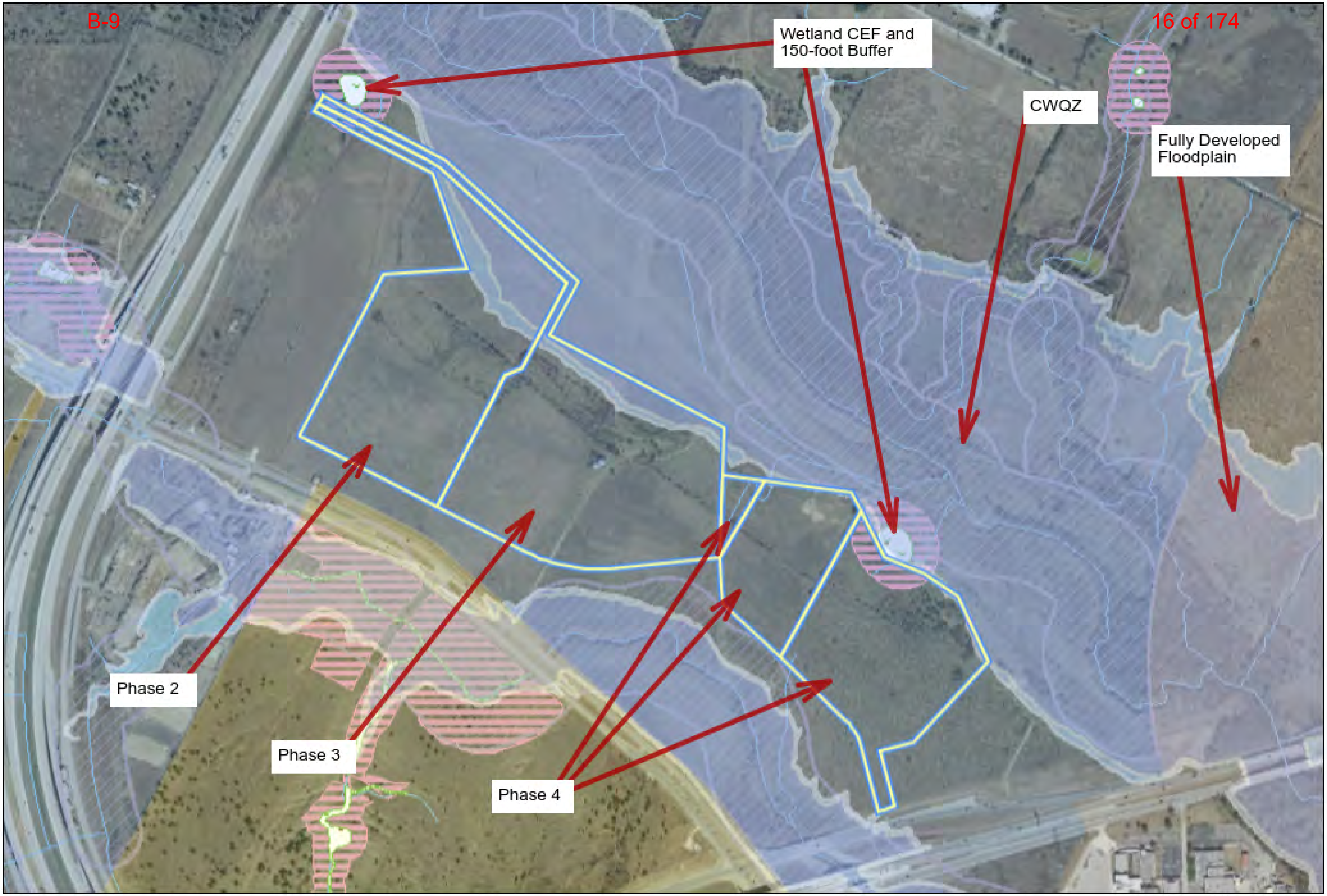
SHEET 5 OF 5

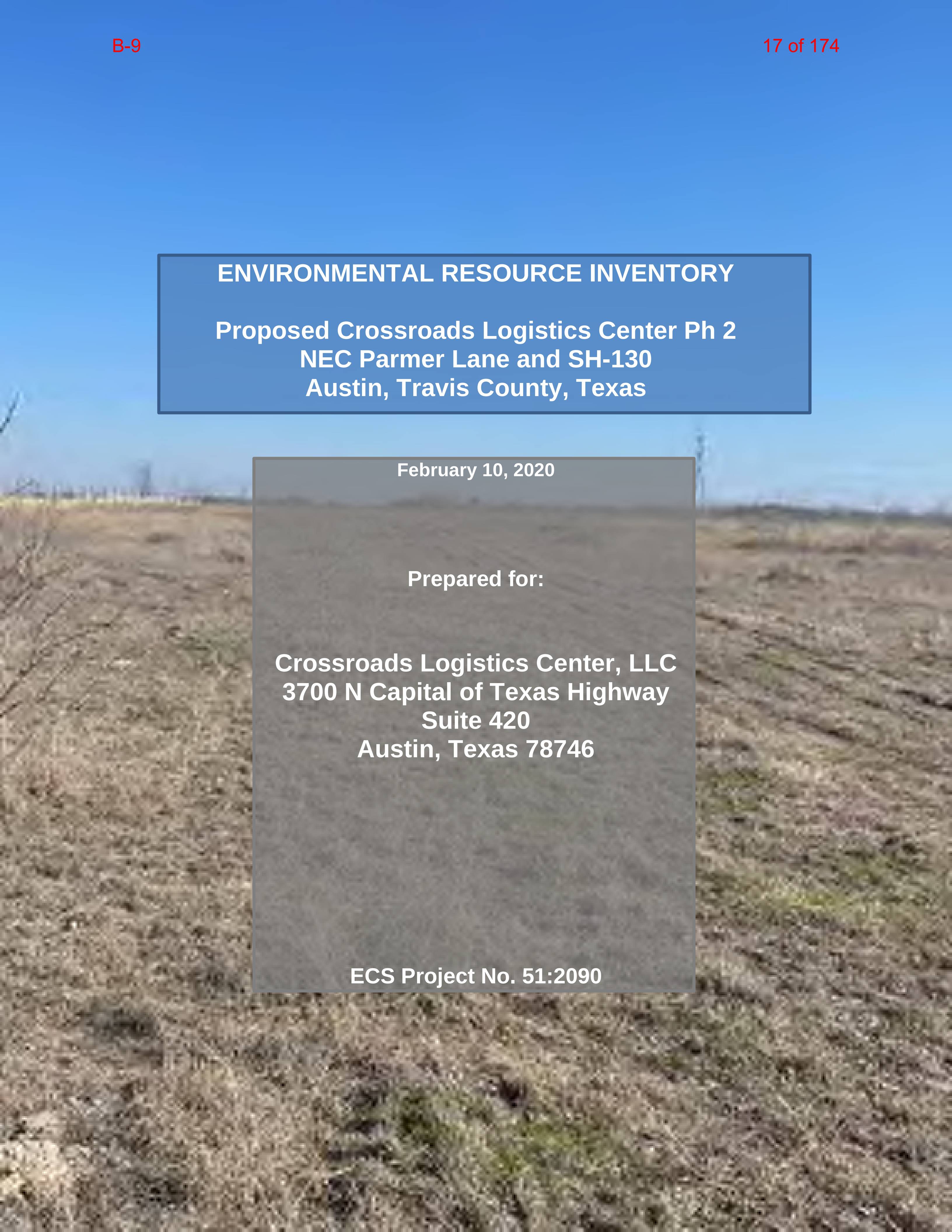


Crossroads Phases 2-4 Floodplain, CEF, and CWQZ

Crossroads Logistics Center Phase 2-4

NEC E Parmer Lane and SH 130

Austin, Travis County, Texas



ENVIRONMENTAL RESOURCE INVENTORY

Proposed Crossroads Logistics Center Ph 2
NEC Parmer Lane and SH-130
Austin, Travis County, Texas

February 10, 2020

Prepared for:

Crossroads Logistics Center, LLC
3700 N Capital of Texas Highway
Suite 420
Austin, Texas 78746

ECS Project No. 51:2090

ECS SOUTHWEST, LLP
"Setting the Standard for Service"
Geotechnical • Construction Materials • Environmental • Facilities
TX Registered Engineering Firm F-8461

February 10, 2021

Ms. Runi Duvall
Crossroads Logistics Center, LLC
3700 N. Capital of Texas Highway
Suite 420
Austin, Texas 78746

ECS Project: 51-2090

Subject: Environmental Resource Inventory (ERI), Proposed Crossroads Logistics Center Phase 2, NEC Parmer Lane and SH-130, Austin, Travis County, Texas

Dear Ms. Duvall:

We are pleased to provide Crossroads Logistics Center, LLC with this Environmental Resource Inventory (ERI) for the above referenced property. ECS' services were conducted in accordance with the services outlined in ECS Proposal 51-2123 dated and authorized on January 20, 2021.

ECS did observe critical environmental features (CEFs) on the site, and as such, the site may be subject to protection under applicable regulations.

If there are questions regarding this report, or a need for further information, please contact the undersigned at (512) 837-8005.

Respectfully submitted,

Roger S. Willis, M.S.
Senior Environmental Project Manager

Craig Hiatt, M.S.
Director of Environmental Services

ENVIRONMENTAL RESOURCE INVENTORY

Proposed Crossroads Logistics Center Phase 2
NEC Parmer Lane and SH-130
Austin, Travis County, Texas

TABLE OF CONTENTS

1.0 Introduction

The Environmental Resource Inventory (ERI) provided here, as part of the applicant's plan, addresses the required items as cited in City of Austin Land Development Code (LDC) 25-8-121, City Code 30-5-121, and Environmental Criteria Manual (ECM) 1.3.0 & 1.10.0. This report identifies observed potential critical environmental features (CEFs), Critical Water Quality Zones (CWQZ), floodplains, and other environmental features described in LDC 25-8-121, City Code 30-5-121, ECM 1.3.0 & 1.10.0.

The subject property is located along Parmer Lane, adjacent to the east of State Highway 130 in Austin, Travis County, Texas. According to the Travis County Online GIS website, the subject property is identified as portions of Parcel Identification Numbers (PIN) 247979, 247980, 236745, and 236754, consists of approximately 32.32 acres, and is owned by Charles Alff, et al. and Butler Family Partnership LTD (Figure 1). Based on the available information, the subject property is undeveloped / agricultural land. The subject property is not located over the Edwards Aquifer Transition Zone (Figure 2).

The purpose of this ERI is to fulfill the requirements for the applicant's plan for site improvements on the property. This report will describe critical environmental features (CEFs), surficial geologic units and identify the locations and extent of significant features that may be impacted by the proposed project.

2.0 Soil Units

According to the United States Department of Agriculture (USDA) Soil Survey of Travis County, Texas, there are four (4) soil units mapped on the site (Figure 3). The soils on site consist of Ferris-Heiden complex, 8 to 20 percent slopes, severely eroded (FhF3), Heiden clay, 3 to 5 percent slopes, eroded (HeC2), Heiden clay, 5 to 8 percent slopes, eroded (HeD2), and Houston Black clay, 1 to 3 percent slopes (HnB).

Ferris-Heiden complex, 8 to 20 percent slopes, severely eroded (FhF3) is formed on backslopes and sideslopes derived from residuum weathered from calcareous shale in eagleford shale and taylor marl formations of cretaceous age (USDA, 2021). The Hydrologic Soil Group is listed as D, and the soil is well drained. Flooding or ponding is reported as "none." The depth to a restrictive layer is reported to be 36 to 60 inches to densic bedrock, and the available water storage (in profile) is listed as low.

Heiden clay, 3 to 5 percent slopes, eroded (HeC2) is formed on backslopes and sideslopes derived from clayey residuum weathered from mudstone (USDA, 2021). The Hydrologic Soil Group is listed as D, and the soil is well drained. Flooding or ponding is reported as “none.” The depth to a restrictive layer is reported to be 40 to 65 inches to densic material, and the available water storage (in profile) is listed as high.

Heiden clay, 5 to 8 percent slopes, eroded (HeD2) is formed on backslopes and sideslopes derived from clayey residuum weathered from mudstone (USDA, 2021). The Hydrologic Soil Group is listed as D, and the soil is well drained. Flooding or ponding is reported as “none.” The depth to a restrictive layer is reported to be 40 to 65 inches to densic material, and the available water storage (in profile) is listed as high.

Houston Black clay, 1 to 3 percent slopes (HnB) is formed on shoulders and summits derived from clayey residuum weathered from calcareous mudstone of upper cretaceous age (USDA, 2021). The Hydrologic Soil Group is listed as D, and the soil is well drained. Flooding or ponding is reported as “none.” The depth to a restrictive layer is reported to be greater than 80 inches, and the available water storage (in profile) is listed as high.

3.0 Regional Geology

Ranging from east to west, two primary physiographic provinces are present in Travis County, the Gulf Coastal Plain and the Great Plain. The Gulf Coastal Plain is comprised mainly of Blackland prairie. The Great plain is comprised chiefly of limestone plains, which merges with the Edwards Plateau in the vicinity of the Colorado River.

Groundwater recharge and flow are controlled by faulted Edwards Aquifer and adjacent strata. Water enters the aquifer by means of solution features controlled by faults, fractures and solution conduits. Solution features are created by the dissolution of limestone primarily from rainwater and groundwater. Deformation of the Balcones fault system controls both the large and small scale flow barriers and pathways present in the Edwards Aquifer.

4.0 Site Geology

Geological information pertaining to the area was obtained from the Geologic Atlas of Texas, Austin Sheet, published by University of Texas at Austin, Bureau of Economic Geology (BEG) (Figure 4), 1997. The subject property is situated on Navarro and Taylor Groups undivided (Knt). The Bureau of Economic Geology defines Knt as "On Austin Sheet (1974) in areas where Pecan Gap Chalk is not present because of gradation to marl similar to that of the Marlbrook and Ozan Formations. Upper 250 ft, mostly silty, calcar. clay with sandst beds and concretionary masses near top, some interbeds of sandst. near base. Lower 200+- ft, quartz sand, fine grained, silty, locally calcar. concretions in discontin. beds, lt. gray; marine megafossils. Mapped on Sherman Sheet (1967) east of Sabine River. Taylor Group includes claystones of the Sprinkle Formation at base, chalk or marly limestones of the Pecan Gap Fm, and overlain by claystones of the Bergstrom Formation."

5.0 Site Hydrology

Based upon interpretation of the United States Geological Survey 7.5 Minute Series topographic quadrangle map, Manor, Texas, and the onsite reconnaissance, the estimated regional shallow groundwater flow direction is northeast towards Gilleland Creek. The subject property slopes from a high point of approximately 550 feet above mean sea level (amsl) in the southwest corner to a low point of approximately 523 amsl in the northeast corner. It should be noted that shallow groundwater flow direction is estimated based on a review of published maps, surface topography, and site reconnaissance. Local conditions that may influence the subsurface hydrology would be local topography (hills and valleys), geologic anomalies, utilities, and nearby wells or sumps. The subject property is located within the Gilliland Creek watershed (Figure 5).

The project site is not located within a critical water quality zone (CWQZ). However, a wetland CEF buffer is located within the northwestern portion of the subject property. Additionally, City of Austin Fully Developed Floodplain is mapped on the northeast portion of the subject property (Figure 6 and Figure 7).

5.1 Surface Water Hydrology

Site drainage slopes to the northeast towards Gilleland Creek. Field observations and analysis are supported from the Manor, Texas USGS Topographic Quadrangle map (USGS, 2019). There were no observed groundwater seeps or discharges of any type from bedrock observed on the subject site.

6.0 Site Investigation

The site reconnaissance was performed on February 3, 2021. The site investigation was performed by traversing the subject property in meandering transects, spaced 10 to 15 meters apart. Photographs were taken to document any features observed during the reconnaissance. The subject property slopes from a high point of approximately 550 feet above mean sea level (amsl) in the southwest corner to a low point of approximately 523 feet amsl in the northeast corner. The subject property appears to be in use for livestock grazing. One (1) wetland CEF buffer is located on the northwest portion of the subject property. The wetland CEF appears to consist of a stock tank excavated in upland soils. The stock tank does not have a significant nexus to Gilleland Creek or other traditionally navigable waters or relatively permanent waters. The stock tank appears to receive water from direct rainfall or via sheet flow.

Vegetation on the site consists of native and non-native grasses, herbs and forbs. Willow (Salix sp.) was noted on the property. Potential natural recharge features such as caves, sinkholes, closed depressions, solution cavities, fractured rock outcrops, faults or lineaments were not observed on the subject property.

7.0 Summary

The subject property is located along Parmer Lane, adjacent to the east of State Highway 130 in Austin, Travis County, Texas. According to the Travis County Online GIS website, the subject property is identified as Parcel Identification Numbers (PIN) 247979, 247980, 236745, and 236754, consists of approximately 32.32 acres. Based on the available information, the subject property is predominantly undeveloped / agricultural land. The subject property is not located over the Edwards Aquifer Transition Zone (Figure 2). The subject property is agricultural / undeveloped land with naturalized grasses, herbs, and forbs.

One (1) wetland CEF buffer is located on the northwest portion of the property and City of Austin Fully Developed Floodplain is located on the northeast portion of the subject property. Karst features were not identified on the site. No caves or cavities were observed on the subject property at the time of the site reconnaissance with the potential for contaminant movement into the Edwards Aquifer.

It appears that the property drains to the northeast towards Gilleland Creek. No improved drainage features were observed on the subject property.

8.0 References

(BEG) The University of Texas at Austin Bureau of Economic Geology, Geologic Map of Texas, Austin Sheet, 1997.

(COA) City of Austin, Property Profile. Accessed at https://www.austintexas.gov/gis/propertyprofile/, 1997. November 12, 2020.

(USDA) United States Department of Agriculture (USDA) Custom Soil Survey of Travis County, 2020.

(USGS) United States Geologic Survey (USGS), 7.5- Minute Topographic Quadrangle, Manor, Texas. 2019.

Appendix I: Figures

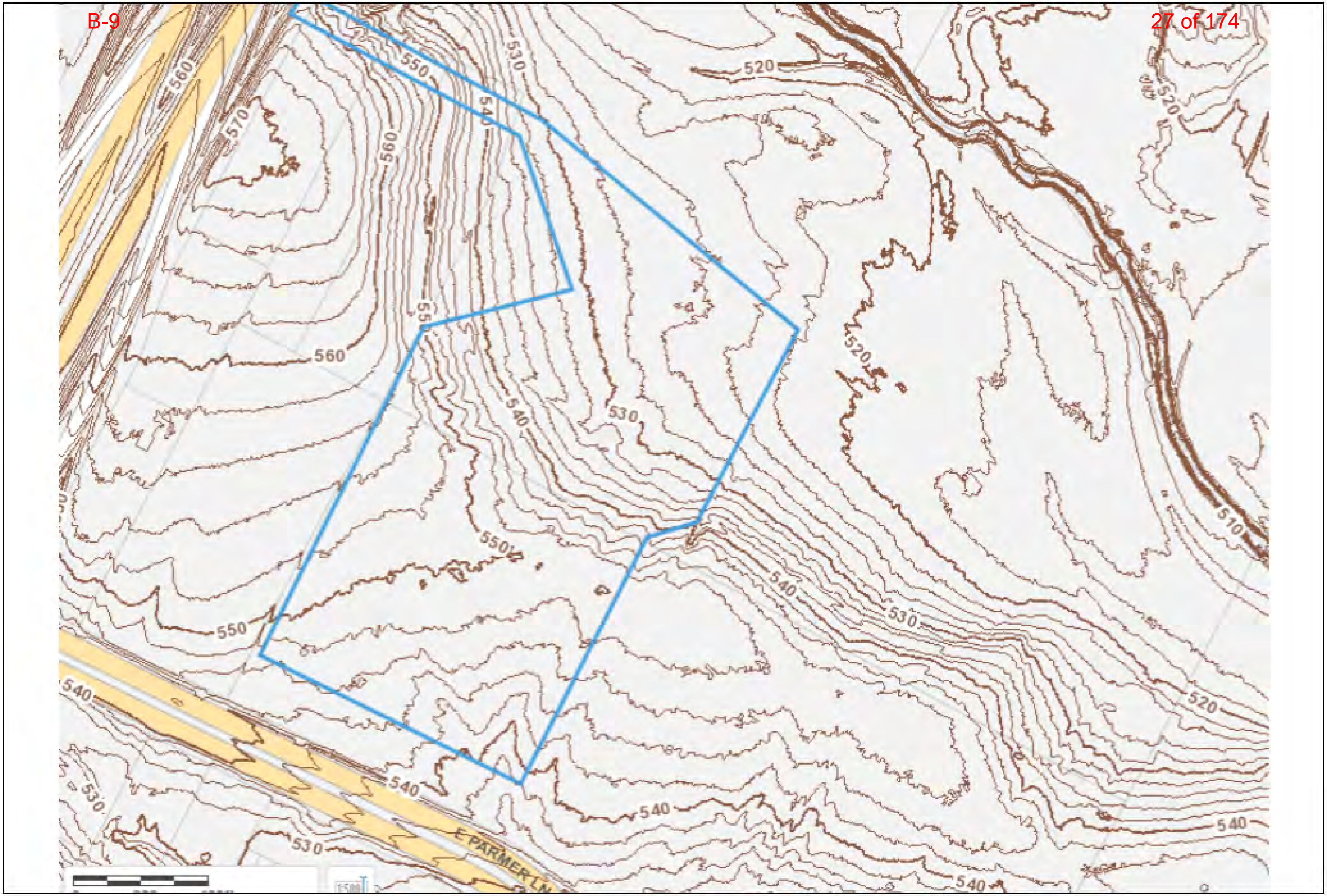


Figure 1 -- Topographic Map

Crossroads Logistics Center Phase 2

NEC E Parmer Lane and SH 130

Austin, Texas

ECS Project 51-2190

Figure 2 -- Site Map

Crossroads Logistics Center Phase 2
NEC E Parmer Lane and SH 130
Austin, Texas
ECS Project 51-2190

Figure 3 -- NRCS Soils Map

Crossroads Logistics Center Phase 2

NEC E Parmer Lane and SH 130

Austin, Texas

ECS Project 51-2190

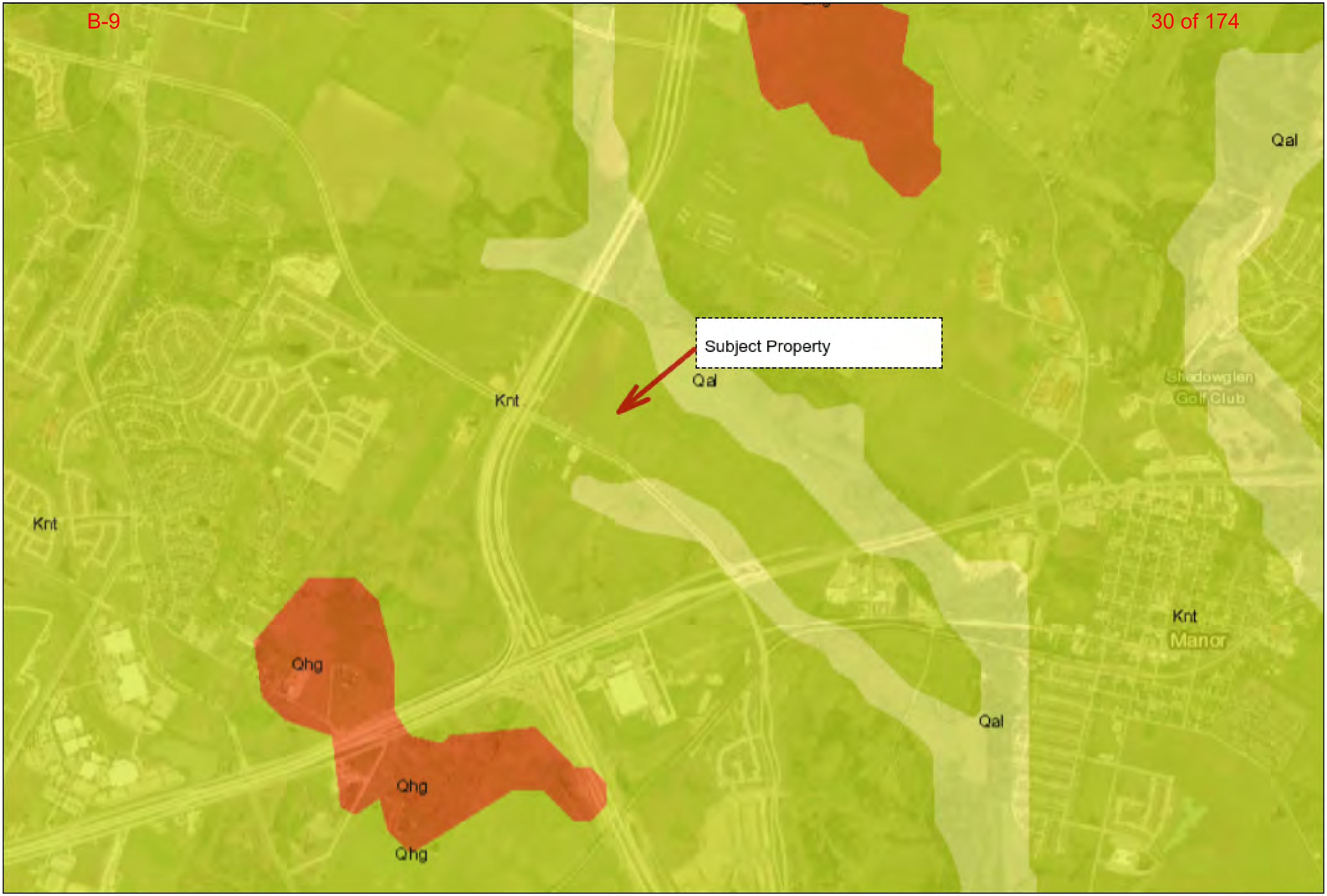


Figure 4 -- Geologic Map

Crossroads Logistics Center Phase 2
NEC E Parmer Lane and SH 130
Austin, Texas
ECS Project 51-2190

Figure 5 -- Watershed Map

Crossroads Logistics Center Phase 2
NEC E Parmer Lane and SH 130
Austin, Texas
ECS Project 51-2190

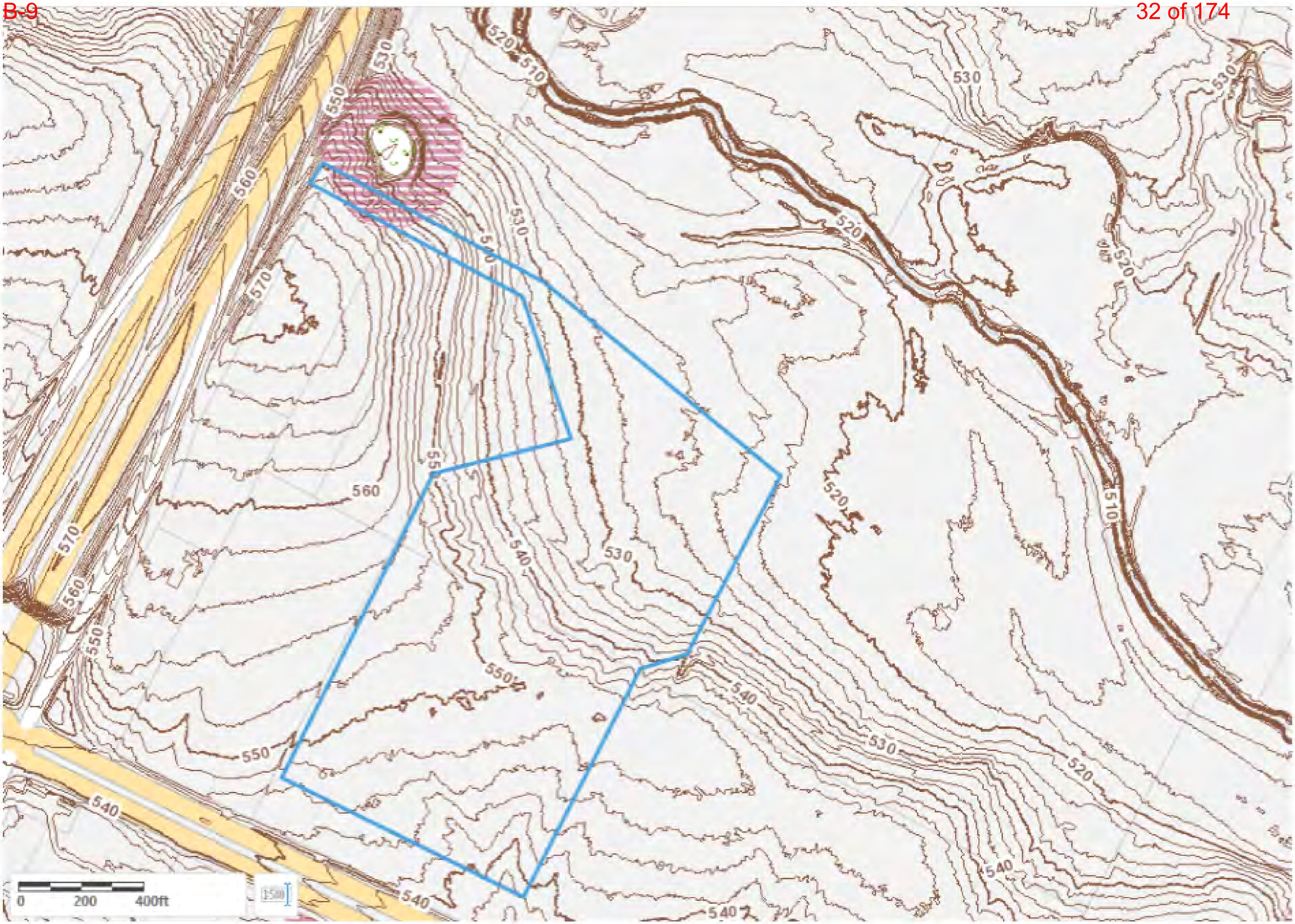


Figure 6 -- CEF Buffer and 2-foot Countours

Crossroads Logistics Center Phase 2

NEC E Parmer Lane and SH 130

Austin, Texas

ECS Project 51-2190

Figure 7 -- Floodplain, CEF and CWQZ
Crossroads Logistics Center Phase 2
NEC E Parmer Lane and SH 130
Austin, Texas
ECS Project 51-2190

Figure 8 -- Field Results

Crossroads Logistics Center Phase 2
NEC E Parmer Lane and SH 130
Austin, Texas
ECS Project 51-2190

Appendix II: Site Photographs

1 - North-facing view of subject property

2 - East-facing view of subject property

3 - South-facing view of subject property

4 - View of wetland CEF located within 150 feet form northern property boundary

5 - Northern portion of subject property

6 - View of western portion of subject property

Appendix III: Soil Survey

United States Department of Agriculture

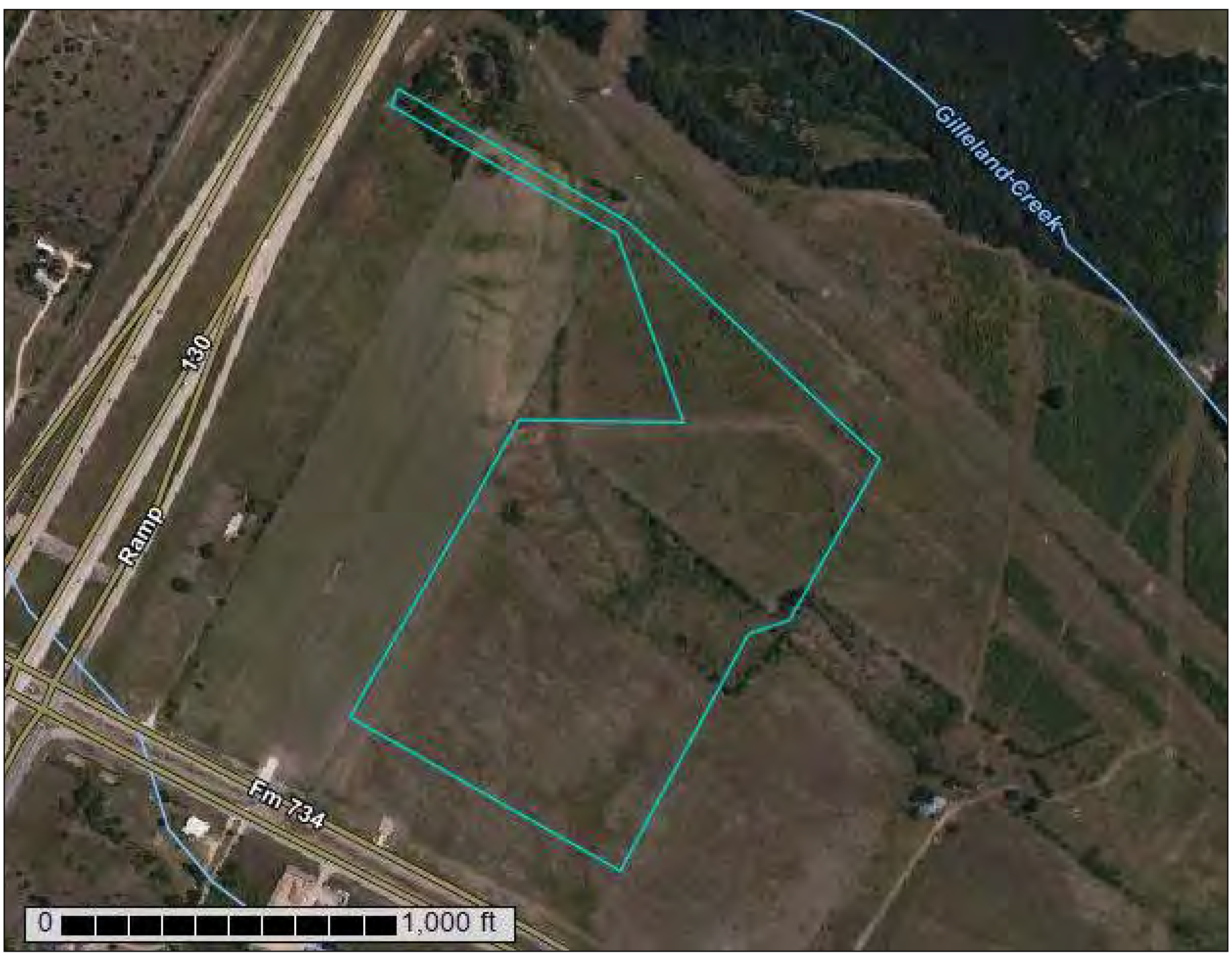
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Travis County, Texas

Crossroads Logistics Center Phase 2



February 2, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map

Map Scale: 1:4,170 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 50, 100, 200, 300

Feet: 0, 200, 400, 800, 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Travis County, Texas
Survey Area Data: Version 22, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 27, 2018—Nov 20, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
FhF3	Ferris-Heiden complex, 8 to 20 percent slopes, severely eroded	6.4	19.6%
HeC2	Heiden clay, 3 to 5 percent slopes, eroded	9.8	30.2%
HeD2	Heiden clay, 5 to 8 percent slopes, eroded	0.0	0.1%
HnB	Houston Black clay, 1 to 3 percent slopes	16.3	50.1%
Totals for Area of Interest		**32.5**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Travis County, Texas

FhF3—Ferris-Heiden complex, 8 to 20 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: f551
Elevation: 400 to 1,000 feet
Mean annual precipitation: 28 to 42 inches
Mean annual air temperature: 64 to 70 degrees F
Frost-free period: 225 to 275 days
Farmland classification: Not prime farmland

Map Unit Composition

Ferris, severely eroded, and similar soils: 60 percent
Heiden, severely eroded, and similar soils: 35 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ferris, Severely Eroded

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Linear gilgai
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from calcareous shale in eagleford shale and taylor marl formations of cretaceous age

Typical profile

H1 - 0 to 6 inches: clay
H2 - 6 to 36 inches: clay
H3 - 36 to 60 inches: silty clay

Properties and qualities

Slope: 8 to 20 percent
Depth to restrictive feature: 36 to 60 inches to densic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D

Ecological site: R086AY009TX - Southern Eroded Blackland
Hydric soil rating: No

Description of Heiden, Severely Eroded

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Linear gilgai
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from clayey shale of eagleford shale or taylor marl

Typical profile

H1 - 0 to 6 inches: clay
H2 - 6 to 15 inches: clay
H3 - 15 to 50 inches: clay
H4 - 50 to 80 inches: clay

Properties and qualities

Slope: 8 to 20 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 55 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 12.0
Available water capacity: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R086AY009TX - Southern Eroded Blackland
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 5 percent
Hydric soil rating: No

HeC2—Heiden clay, 3 to 5 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2v1vb
Elevation: 300 to 1,390 feet
Mean annual precipitation: 33 to 48 inches
Mean annual air temperature: 64 to 68 degrees F
Frost-free period: 233 to 278 days
Farmland classification: Not prime farmland

Map Unit Composition

Heiden, moderately eroded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Heiden, Moderately Eroded

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Linear gilgai
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from mudstone

Typical profile

A - 0 to 13 inches: clay
Bss - 13 to 22 inches: clay
Bkss - 22 to 58 inches: clay
CBdk - 58 to 80 inches: clay

Properties and qualities

Slope: 3 to 5 percent
Depth to restrictive feature: 40 to 65 inches to densic material
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 12.0
Available water capacity: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: R086AY009TX - Southern Eroded Blackland
Hydric soil rating: No

Minor Components

Houston black

Percent of map unit: 10 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Circular gilgai
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R086AY011TX - Southern Blackland
Hydric soil rating: No

Ferris, severely eroded

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Linear gilgai
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R086AY009TX - Southern Eroded Blackland
Hydric soil rating: No

HeD2—Heiden clay, 5 to 8 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2v1vd
Elevation: 250 to 940 feet
Mean annual precipitation: 33 to 40 inches
Mean annual air temperature: 64 to 68 degrees F
Frost-free period: 245 to 278 days
Farmland classification: Not prime farmland

Map Unit Composition

Heiden, moderately eroded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Heiden, Moderately Eroded

Setting

Landform: Ridges

Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Linear gilgai
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from mudstone

Typical profile

A1 - 0 to 8 inches: clay
A2 - 8 to 22 inches: clay
Bss - 22 to 44 inches: clay
CBd - 44 to 80 inches: clay

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: 40 to 65 inches to densic material
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 12.0
Available water capacity: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R086AY009TX - Southern Eroded Blackland
Hydric soil rating: No

Minor Components

Ferris, moderately eroded

Percent of map unit: 10 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Linear gilgai
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R086AY009TX - Southern Eroded Blackland
Hydric soil rating: No

Heiden, severely eroded

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Linear gilgai
Down-slope shape: Convex
Across-slope shape: Concave

Ecological site: R086AY009TX - Southern Eroded Blackland
Hydric soil rating: No

HnB—Houston Black clay, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2ssh0
Elevation: 270 to 1,040 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 62 to 63 degrees F
Frost-free period: 217 to 244 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Houston black and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Houston Black

Setting

Landform: Ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Microfeatures of landform position: Linear gilgai
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Clayey residuum weathered from calcareous mudstone of upper cretaceous age

Typical profile

Ap - 0 to 6 inches: clay
Bkss - 6 to 70 inches: clay
BCkss - 70 to 80 inches: clay

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water capacity: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: D
Ecological site: R086AY011TX - Southern Blackland
Hydric soil rating: No

Minor Components

Heiden

Percent of map unit: 15 percent
Landform: Plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Microfeatures of landform position: Linear gilgai
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R086AY011TX - Southern Blackland
Hydric soil rating: No

Fairlie

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R086AY011TX - Southern Blackland
Hydric soil rating: No

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United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

ATTACHMENTS

COA Environmental Resource Inventory

Environmental Resource Inventory

For the City of Austin
Related to LDC 25-8-121, City Code 30-5-121, ECM 1.3.0 & 1.10.0

The ERI is required for projects that meet one or more of the criteria listed in LDC 25-8-121(A), City Code 30-5-121(A).

1. SITE/PROJECT NAME: Crossroads Logistics Center Phase 2
2. COUNTY APPRAISAL DISTRICT PROPERTY ID (#'s): See attached sheet
3. ADDRESS/LOCATION OF PROJECT: NEC Parmer Lane and SH 130
4. WATERSHED: Gilleland Creek
5. THIS SITE IS WITHIN THE *(Check all that apply)*
   Edwards Aquifer Recharge Zone* *(See note below)* .... ☐YES ☑No
   Edwards Aquifer Contributing Zone*.................................. ☐YES ☑No
   Edwards Aquifer 1500 ft Verification Zone* .... ☐YES ☑No
   Barton Spring Zone* .... ☐YES ☑No
   **(as defined by the City of Austin – LDC 25-8-2 or City Code 30-5-2)*

   Note: If the property is over the Edwards Aquifer Recharge zone, the Hydrogeologic Report and karst surveys must be completed and signed by a Professional Geoscientist Licensed in the State of Texas.

6. DOES THIS PROJECT PROPOSE FLOODPLAIN MODIFICATION?.......☐YES** ☑NO
   If yes, then check all that apply:
   ☐ *(1) The floodplain modifications proposed are necessary to protect the public health and safety;*
   ☐ *(2) The floodplain modifications proposed would provide a significant, demonstrable environmental benefit, as determined by a **functional assessment** of floodplain health as prescribed by the Environmental Criteria Manual (ECM), or*
   ☐ *(3) The floodplain modifications proposed are necessary for development allowed in the critical water **quality zone under LDC 25-8-261 or 25-8-262, City Code 30-5-261 or 30-5-262.***
   ☐ *(4) The floodplain modifications proposed are outside of the Critical Water Quality Zone in an area determined to be in poor or fair condition by a **functional assessment** of floodplain health.*

   **** If yes, then a functional assessment must be completed and attached to the ERI (see ECM 1.7 and Appendix X for forms and guidance) unless conditions 1 or 3 above apply.**

7. IF THE SITE IS WITHIN AN URBAN OR SUBURBAN WATERSHED, DOES THIS PROJECT PROPOSE A UTILITY LINE PARALLEL TO AND WITHIN THE CRITICAL WATER QUALITY ZONE? .... ☐YES*** ☑NO

   *****If yes, then riparian restoration is required by LDC 25-8-261(E) or City Code 30-5-261(E) and a functional assessment must be completed and attached to the ERI (see ECM1.5 and Appendix X for forms and guidance).**

8. There is a total of 1 (#'s) Critical Environmental Feature(s)(CEFs) on or within150 feet of the project site. If CEF(s) are present, attach a detailed **DESCRIPTION** of the CEF(s), color **PHOTOGRAPHS**, the **CEF WORKSHEET** and provide **DESCRIPTIONS** of the proposed CEF buffer(s) and/or wetland mitigation. Provide the number of each type of CEFs on or within 150 feet of the site (*Please provide the number of CEFs*):

0 (#'s) Spring(s)/Seep(s) 0 (#'s) Point Recharge Feature(s) 0 (#'s) Bluff(s)
0 (#'s) Canyon Rimrock(s) 1 (#'s) Wetland(s)

9. The following site maps are attached at the end of this report *(Check all that apply and provide):*

All ERI reports must include:

- ☑ **Site Specific Geologic Map with 2-ft Topography**
- ☑ **Historic Aerial Photo of the Site**
- ☑ **Site Soil Map**
- ☑ **Critical Environmental Features and Well Location Map on current Aerial Photo with 2-ft Topography**

Only if present on site *(Maps can be combined):*

- ☐ **Edwards Aquifer Recharge Zone with the 1500-ft Verification Zone** *(Only if site is over or within 1500 feet the recharge zone)*
- ☐ **Edwards Aquifer Contributing Zone**
- ☐ **Water Quality Transition Zone (WQTZ)**
- ☐ **Critical Water Quality Zone (CWQZ)**
- ☐ **City of Austin Fully Developed Floodplains for all water courses with up to 64-acres of drainage**

10. **HYDROGEOLOGIC REPORT** – Provide a description of site soils, topography, and site specific geology below *(Attach additional sheets if needed):*

Surface Soils on the project site is summarized in the table below and uses the SCS Hydrologic Soil Groups*. If there is more than one soil unit on the project site, show each soil unit on the site soils map.

Soil Series Unit Names, Infiltration Characteristics & Thickness		
Soil Series Unit Name & Subgroup**	Group*	Thickness (feet)
Please see attached sheet		

Soil Hydrologic Groups Definitions *(Abbreviated)

A. Soils having a high infiltration rate when thoroughly wetted.

B. Soils having a moderate *infiltration* rate when thoroughly wetted.

C. Soils having a slow infiltration rate when thoroughly wetted.

D. Soils having a very slow infiltration rate when thoroughly wetted.

**Subgroup Classification – See Classification of Soil Series Table in County Soil Survey.

Description of Site Topography and Drainage *(Attach additional sheets if needed)*:

The project site generally slopes to the southeast. Localized high spots and ridges are located on the north-central portions of the site.

List surface geologic units below:

Geologic Units Exposed at Surface		
Group	Formation	Member
Navarro	Navarro and Taylor Groups (Knt)	undivided

Brief description of site geology *(Attach additional sheets if needed)*:

The Bureau of Economic Geology defines Knt as "On Austin Sheet (1974) in areas where Pecan Gap Chalk is not present because of gradation to marl similar to that of the Marlbrook and Ozan Formations. Upper 250 ft, mostly silty, calcar. clay with sandst beds and concretionary masses near top, some interbeds of sandst. near base. Lower 200+- ft, quartz sand, fine grained, silty, locally calcar. concretions in discontin. beds, lt. gray; marine megafossils. Mapped on Sherman Sheet (1967) east of Sabine River. Taylor Group includes claystones of the Sprinkle Formation at base, chalk or marly limestones of the Pecan Gap Fm, and overlain by claystones of the Bergstrom Formation."

ECS did not identify wells on the property at the time of the site reconnaissance

No geologic CEFs were observed on the subject property.

Wells – Identify all recorded and unrecorded wells on site (test holes, monitoring, water, oil, unplugged, capped and/or abandoned wells, etc.):

There are 0 (#) wells present on the project site and the locations are shown and labeled

0 (#'s)The wells are not in use and have been properly abandoned.

0 (#'s)The wells are not in use and will be properly abandoned.

0 (#'s)The wells are in use and comply with 16 TAC Chapter 76.

There are 0 (#'s) wells that are off-site and within 150 feet of this site.

11. **THE VEGETATION REPORT** – Provide the information requested below:

Brief description of site plant communities *(Attach additional sheets if needed)*:

The tree community consisted of willow and camphor. The forb and herb community consisted of broom snakeweed, ragweed, greenbriar, prickly pear, sunflower, and spreading hedge parsely. Wetland plant species consisted of iva annua.Grassland species consisted of Bermuda grass, barley and purple top.

There is woodland community on site ……………………☐YES ☑ NO *(Check one).*
If yes, list the dominant species below:

Woodland species	
Common Name	Scientific Name
Willow	Salix sp.

There is grassland/prairie/savanna on site……………..☑YES ☐ NO *(Check one).*
If yes, list the dominant species below:

Grassland/prairie/savanna species	
Common Name	Scientific Name
Bermuda grass	Cynodon dactylon
purple top	Tridens flavus
Barley	Hordeum sp.
Camphorweed	Heterotheca subaxillaris

There is hydrophytic vegetation on site ……………….☐YES ☑ NO *(Check one).*
If yes, list the dominant species in table below *(next page):*

Hydrophytic plant species		
Common Name	Scientific Name	Wetland Indicator Status
None observed		

A tree survey of all trees with a diameter of at least eight inches measured four and one-half feet above natural grade level has been completed on the site.
☐YES ☑ NO *(Check one).*

12. **WASTEWATER REPORT –** Provide the information requested below.

Wastewater for the site will be treated by *(Check of that Apply)*:

☐ On-site system(s)
☑ City of Austin Centralized sewage collection system
☐ Other Centralized collection system

Note: All sites that receive water or wastewater service from the Austin Water Utility must comply with City Code Chapter 15-12 and wells must be registered with the City of Austin

The site sewage collection system is designed and will be constructed to in accordance to all State, County and City standard specifications.
☑YES ☐ NO *(Check one).*

Calculations of the size of the drainfield or wastewater irrigation area(s) are attached at the end of this report or shown on the site plan.
☐YES ☐ NO ☑ Not Applicable *(Check one).*

Wastewater lines are proposed within the Critical Water Quality Zone?
☐YES ☑ NO *(Check one)*. If yes, then provide justification below:

N/A

Is the project site is over the Edwards Aquifer?
☐YES ☑ NO *(Check one).*

If yes, then describe the wastewater disposal systems proposed for the site, its treatment level and effects on receiving watercourses or the Edwards Aquifer.

N/A

13. One (1) hard copy and one (1) electronic copy of the completed assessment have been provided.

Date(s) ERI Field Assessment was performed: February 3, 2021
Date(s)

My signature certifies that to the best of my knowledge, the responses on this form accurately reflect all information requested.

Craig Hiatt	(512) 837-8005
Print Name	Telephone
	chiatt@ecslimited.com
Signature	Email Address
ECS Southwest, LLP	February 10, 2021
Name of Company	Date

For project sites within the Edwards Aquifer Recharge Zone, my signature and seal also certifies that I am a licensed Professional Geoscientist in the State of Texas as defined by ECM 1.12.3(A).

Environmental Resource Inventory - Critical Environmental Feature Worksheet

1	Project Name:	Proposed Crossroads Logistics Center Ph 2
2	Project Address:	NEC Parmer Lane and SH 130, Austin, TX
3	Site Visit Date:	February 3, 2021
4	Environmental Resource Inventory Date:	February 10, 2021

5	Primary Contact Name:	Craig Hiatt
6	Phone Number:	(512) 837-8005
7	Prepared By:	Craig Hiatt
8	Email Address:	chiatt@ecslimited.com

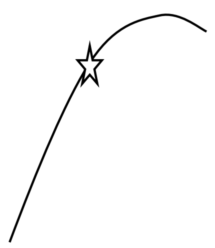
9	FEATURE TYPE {Wetland,Rimrock, Bluffs,Recharge Feature,Spring}	FEATURE ID (eg S-1)	FEATURE LONGITUDE (WGS 1984 in Meters)		FEATURE LATITUDE (WGS 1984 in Meters)		WETLAND DIMENSIONS (ft)		RIMROCK/BLUFF DIMENSIONS (ft)		RECHARGE FEATURE DIMENSIONS				Springs Est. Discharge
			coordinate	notation	coordinate	notation	X	Y	Length	Avg Height	X	Y	Z	Trend	cfs
	Wetland	W-1	-97.587622		30.357303		158	119							

Please state the method of coordinate data collection and the approximate precision and accuracy of the points and the unit of measurement.

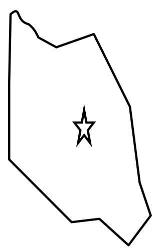
Method		Accuracy	
GPS	☒	sub-meter	☒
Surveyed	☐	meter	☐
Other	☐	> 1 meter	☐

Professional Geologists apply seal below

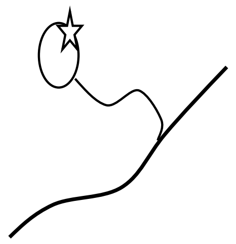
For rimrock, locate the midpoint of the segment that describes the feature.

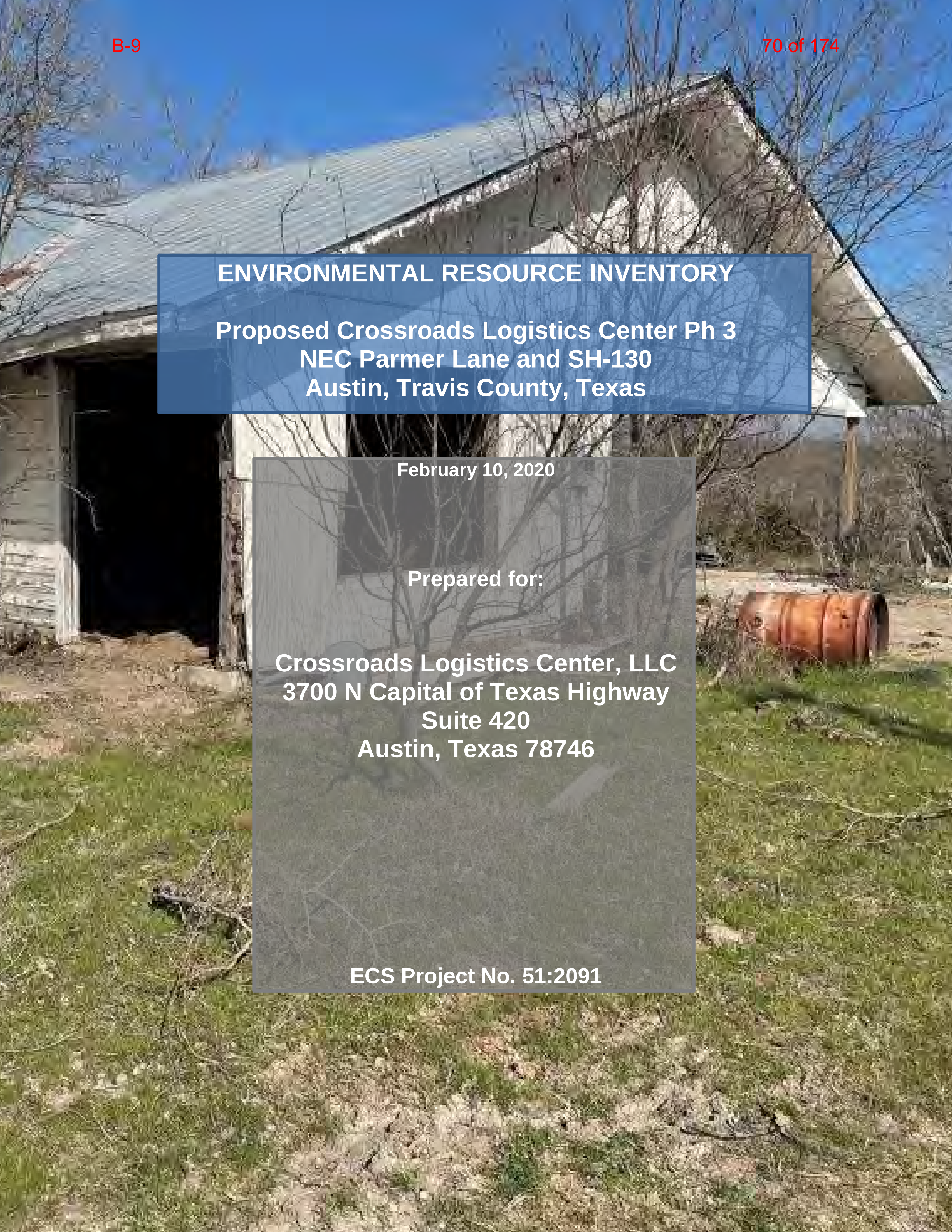


For wetlands, locate the approximate centroid of the feature and the estimated area.



For a spring or seep, locate the source of groundwater that feeds a pool or stream.





ENVIRONMENTAL RESOURCE INVENTORY

Proposed Crossroads Logistics Center Ph 3
NEC Parmer Lane and SH-130
Austin, Travis County, Texas

February 10, 2020

Prepared for:

Crossroads Logistics Center, LLC
3700 N Capital of Texas Highway
Suite 420
Austin, Texas 78746

ECS Project No. 51:2091

ECS SOUTHWEST, LLP

"Setting the Standard for Service"

Geotechnical • Construction Materials • Environmental • Facilities

TX Registered Engineering Firm F-8461

February 10, 2021

Ms. Runi Duvall
Crossroads Logistics Center, LLC
3700 N. Capital of Texas Highway
Suite 420
Austin, Texas 78746

ECS Project: 51-2091

Subject: Environmental Resource Inventory (ERI), Proposed Crossroads Logistics Center Phase 3, NEC Parmer Lane and SH-130, Austin, Travis County, Texas

Dear Ms. Duvall:

We are pleased to provide Crossroads Logistics Center, LLC with this Environmental Resource Inventory (ERI) for the above referenced property. ECS' services were conducted in accordance with the services outlined in ECS Proposal 51-2123 dated and authorized on January 20, 2021.

ECS did observe critical environmental features (CEFs) on the site, and as such, the site may be subject to protection under applicable regulations.

If there are questions regarding this report, or a need for further information, please contact the undersigned at (512) 837-8005.

Respectfully submitted,

Roger S. Willis, M.S.
Senior Environmental Project Manager

Craig Hiatt, M.S.
Director of Environmental Services

ENVIRONMENTAL RESOURCE INVENTORY

Proposed Crossroads Logistics Center Phase 3
NEC Parmer Lane and SH-130
Austin, Travis County, Texas

TABLE OF CONTENTS

1.0 Introduction

The Environmental Resource Inventory (ERI) provided here, as part of the applicant's plan, addresses the required items as cited in City of Austin Land Development Code (LDC) 25-8-121, City Code 30-5-121, and Environmental Criteria Manual (ECM) 1.3.0 & 1.10.0. This report identifies observed potential critical environmental features (CEFs), Critical Water Quality Zones (CWQZ), floodplains, and other environmental features described in LDC 25-8-121, City Code 30-5-121, ECM 1.3.0 & 1.10.0.

The subject property is located along Parmer Lane, adjacent to the east of State Highway 130 in Austin, Travis County, Texas. According to the Travis County Online GIS website, the subject property is identified as portions of Parcel Identification Numbers (PIN) 247979, 247980, 236745, and 236754, consists of approximately 37.74 acres, and is owned by Charles Alff, et al. and Butler Family Partnership LTD (Figure 1). Based on the available information, the subject property is undeveloped / agricultural land. The subject property is not located over the Edwards Aquifer Transition Zone (Figure 2).

The purpose of this ERI is to fulfill the requirements for the applicant's plan for site improvements on the property. This report will describe critical environmental features (CEFs), surficial geologic units and identify the locations and extent of significant features that may be impacted by the proposed project.

2.0 Soil Units

According to the United States Department of Agriculture (USDA) Soil Survey of Travis County, Texas, there are five (5) soil units mapped on the site (Figure 3). The soils on site consist of Ferris-Heiden complex, 8 to 20 percent slopes, severely eroded (FhF3), Heiden clay, 3 to 5 percent slopes, eroded (HeC2), Heiden clay, 5 to 8 percent slopes, eroded (HeD2), Houston Black clay, 1 to 3 percent slopes (HnB), and Tinn clay, 0 to 1 percent slopes, occasionally flooded (Tv).

Ferris-Heiden complex, 8 to 20 percent slopes, severely eroded (FhF3) is formed on backslopes and sideslopes derived from residuum weathered from calcareous shale in eagleford shale and taylor marl formations of cretaceous age (USDA, 2021). The Hydrologic Soil Group is listed as D, and the soil is well drained. Flooding or ponding is reported as "none." The depth to a restrictive layer is reported to be 36 to 60 inches to densic bedrock, and the available water storage (in profile) is listed as low.

Heiden clay, 3 to 5 percent slopes, eroded (HeC2) is formed on backslopes and sideslopes derived from clayey residuum weathered from mudstone (USDA, 2021). The Hydrologic Soil Group is listed as D, and the soil is well drained. Flooding or ponding is reported as “none.” The depth to a restrictive layer is reported to be 40 to 65 inches to densic material, and the available water storage (in profile) is listed as high.

Heiden clay, 5 to 8 percent slopes, eroded (HeD2) is formed on backslopes and sideslopes derived from clayey residuum weathered from mudstone (USDA, 2021). The Hydrologic Soil Group is listed as D, and the soil is well drained. Flooding or ponding is reported as “none.” The depth to a restrictive layer is reported to be 40 to 65 inches to densic material, and the available water storage (in profile) is listed as high.

Houston Black clay, 1 to 3 percent slopes (HnB) is formed on shoulders and summits derived from clayey residuum weathered from calcareous mudstone of upper cretaceous age (USDA, 2021). The Hydrologic Soil Group is listed as D, and the soil is well drained. Flooding or ponding is reported as “none.” The depth to a restrictive layer is reported to be greater than 80 inches, and the available water storage (in profile) is listed as high.

Houston Black clay, 1 to 3 percent slopes (HnB), and Tinn clay, 0 to 1 percent slopes, occasionally flooded (Tv) is formed in floodplains (USDA, 2021). The Hydrologic Soil Group is listed as D, and the soil is moderately well drained. Flooding or ponding is reported as “none/occasional.” The depth to a restrictive layer is reported to be greater than 80 inches, and the available water capacity is listed as high.

3.0 Regional Geology

Ranging from east to west, two primary physiographic provinces are present in Travis County, the Gulf Coastal Plain and the Great Plain. The Gulf Coastal Plain is comprised mainly of Blackland prairie. The Great plain is comprised chiefly of limestone plains, which merges with the Edwards Plateau in the vicinity of the Colorado River.

Groundwater recharge and flow are controlled by faulted Edwards Aquifer and adjacent strata. Water enters the aquifer by means of solution features controlled by faults, fractures and solution conduits. Solution features are created by the dissolution of limestone primarily from rainwater and groundwater.

Deformation of the Balcones fault system controls both the large- and small-scale flow barriers and pathways present in the Edwards Aquifer.

4.0 Site Geology

Geological information pertaining to the area was obtained from the Geologic Atlas of Texas, Austin Sheet, published by University of Texas at Austin, Bureau of Economic Geology (BEG) (Figure 4), 1997. The subject property is situated on Navarro and Taylor Groups undivided (Knt). The Bureau of Economic Geology defines Knt as "On Austin Sheet (1974) in areas where Pecan Gap Chalk is not present because of gradation to marl similar to that of the Marlbrook and Ozan Formations. Upper 250 ft, mostly silty, calcar. clay with sandst beds and concretionary masses near top, some interbeds of sandst. near base. Lower 200+- ft, quartz sand, fine grained, silty, locally calcar. concretions in discontin. beds, lt. gray; marine megafossils. Mapped on Sherman Sheet (1967) east of Sabine River. Taylor Group includes claystones of the Sprinkle Formation at base, chalk or marly limestones of the Pecan Gap Fm, and overlain by claystones of the Bergstrom Formation."

5.0 Site Hydrology

Based upon interpretation of the United States Geological Survey 7.5 Minute Series topographic quadrangle map, Manor, Texas, and the onsite reconnaissance, the estimated regional shallow groundwater flow direction is northeast towards Gilleland Creek. The subject property slopes from a high point of approximately 542 feet above mean sea level (amsl) in the southwest corner to a low point of approximately 525 amsl in the northeast corner. It should be noted that shallow groundwater flow direction is estimated based on a review of published maps, surface topography, and site reconnaissance. Local conditions that may influence the subsurface hydrology would be local topography (hills and valleys), geologic anomalies, utilities, and nearby wells or sumps. The subject property is located within the Gilliland Creek watershed (Figure 5).

The project site is not located within a critical water quality zone (CWQZ). However, a wetland CEF buffer is located within the northwestern portion of the subject property. Additionally, City of Austin Fully Developed Floodplain is mapped on the northeast portion of the subject property (Figure 6 and Figure 7).

5.1 Surface Water Hydrology

Site drainage slopes to the northeast towards Gilleland Creek. Field observations and analysis are supported from the Manor, Texas USGS Topographic Quadrangle map (USGS, 2019). There were no observed groundwater seeps or discharges of any type from bedrock observed on the subject site.

6.0 Site Investigation

The site reconnaissance was performed on February 3, 2021. The site investigation was performed by traversing the subject property in meandering transects, spaced 10 to 15 meters apart. Photographs were taken to document any features observed during the reconnaissance. The subject property slopes from a high point of approximately 542 feet above mean sea level (amsl) in the southwest corner to a low point of approximately 525 feet amsl in the northeast corner. The subject property appears to be in use for livestock grazing and former residential use. An abandoned, dilapidated residential structure and associated livestock corral and feed structures are located on the central portion of the subject property.

One (1) wetland CEF buffer is located on the northwest portion of the subject property. The wetland CEF appears to consist of a stock tank excavated in upland soils. The stock tank does not have a significant nexus to Gilleland Creek or other traditionally navigable waters or relatively permanent waters. The stock tank appears to receive water from direct rainfall or via sheet flow.

Vegetation on the site consists of native and non-native grasses, herbs and forbs. Willow (Salix sp.) was noted on the property. Potential natural recharge features such as caves, sinkholes, closed depressions, solution cavities, fractured rock outcrops, faults or lineaments were not observed on the subject property.

7.0 Summary

The subject property is located along Parmer Lane, adjacent to the east of State Highway 130 in Austin, Travis County, Texas. According to the Travis County Online GIS website, the subject property is identified as Parcel Identification Numbers (PIN) 247979, 247980, 236745, and 236754, consists of approximately 37.74 acres. The subject property appears to be in use for livestock grazing and former residential use. An abandoned, dilapidated residential structure and associated livestock corral and feed structures are located on the central portion of the subject property. The subject property is not located over the Edwards Aquifer Transition Zone (Figure 2). The subject property is agricultural / undeveloped land with naturalized grasses, herbs, and forbs.

One (1) wetland CEF buffer is located on the northwest portion of the property and City of Austin Fully Developed Floodplain is located on the northeast portion of the subject property. Karst features were not identified on the site. No caves or cavities were observed on the subject property at the time of the site reconnaissance with the potential for contaminant movement into the Edwards Aquifer.

It appears that the property drains to the northeast towards Gilleland Creek. No improved drainage features were observed on the subject property.

8.0 References

(BEG) The University of Texas at Austin Bureau of Economic Geology, Geologic Map of Texas, Austin Sheet, 1997.

(COA) City of Austin, Property Profile. Accessed at https://www.austintexas.gov/gis/propertyprofile/, 1997. November 12, 2020.

(USDA) United States Department of Agriculture (USDA) Custom Soil Survey of Travis County, 2020.

(USGS) United States Geologic Survey (USGS), 7.5- Minute Topographic Quadrangle, Manor, Texas. 2019.

ATTACHMENTS

Appendix I: Figures

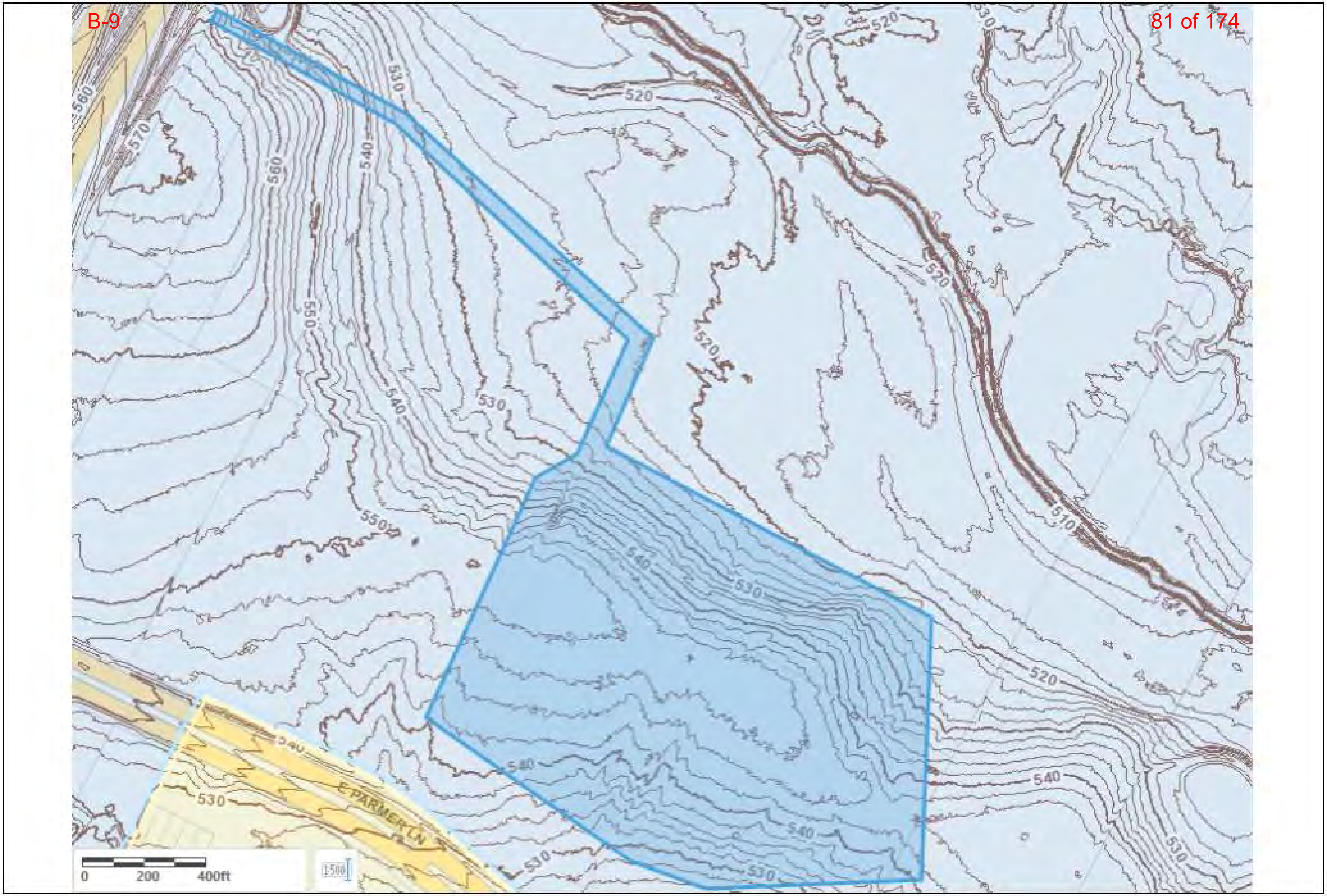


Figure 1 -- Topographic Map
Crossroads Logistics Center Phase 3
NEC E Parmer Lane and SH 130
Austin, Travis County, Texas
ECS Project 51:2091

Figure 2 -- Site Map

Crossroads Logistics Center Phase 3
NEC E Parmer Lane and SH 130
Austin, Travis County, Texas
ECS Project 51:2091

Figure 3 -- NRCS Soils

Crossroads Logistics Center Phase 3
NEC E Parmer Lane and SH 130
Austin, Travis County, Texas
ECS Project 51:2091

Figure 4 -- Geologic Map

Crossroads Logistics Center Phase 3
NEC E Parmer Lane and SH 130
Austin, Travis County, Texas
ECS Project 51:2091

Figure 5 -- Watershed Map

Crossroads Logistics Center Phase 3
NEC E Parmer Lane and SH 130
Austin, Travis County, Texas
ECS Project 51:2091

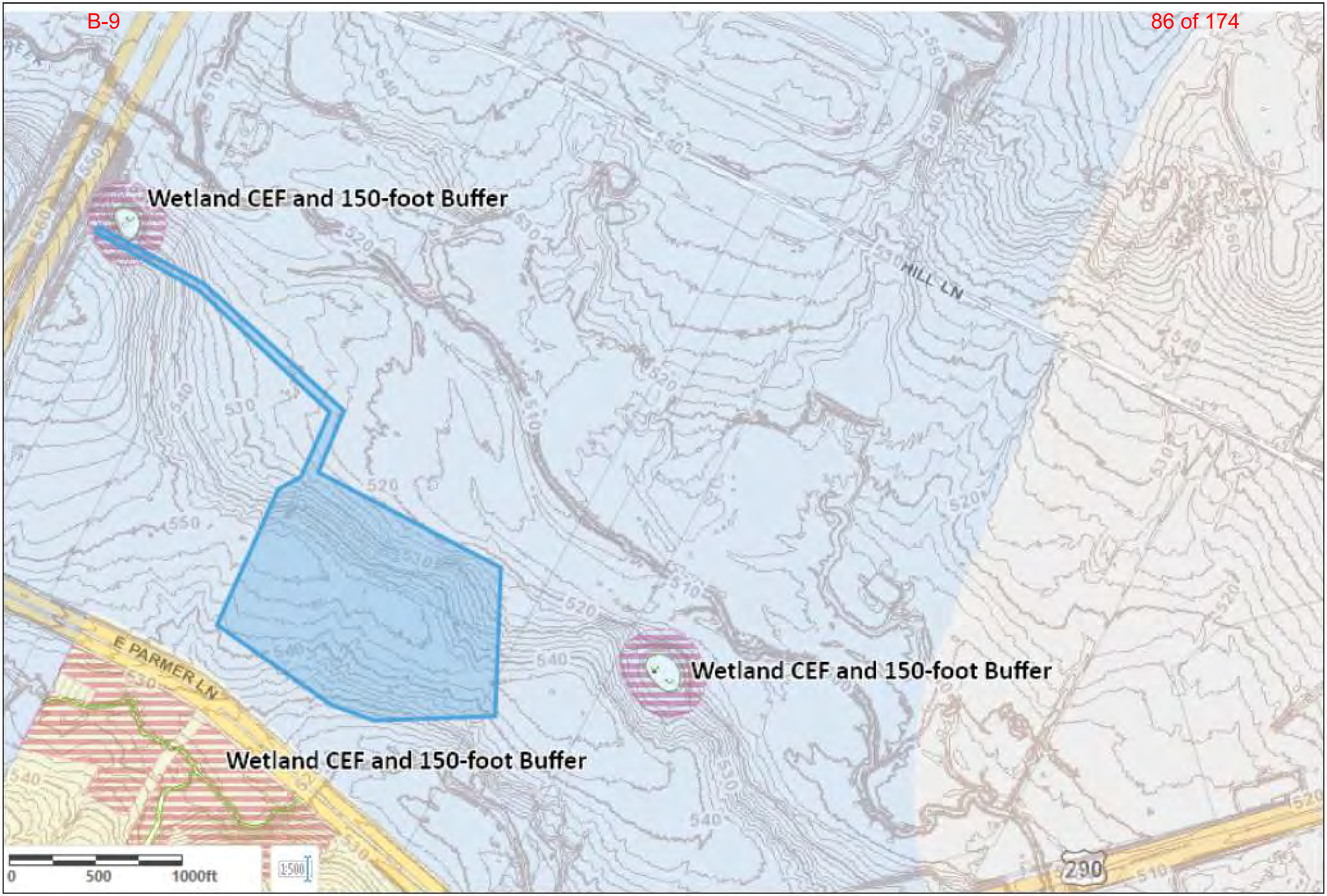


Figure 6 -- CEF Buffer and 2-foot Contours

Crossroads Logistics Center Phase 3

NEC E Parmer Lane and SH 130

Austin, Travis County, Texas

ECS Project 51:2091

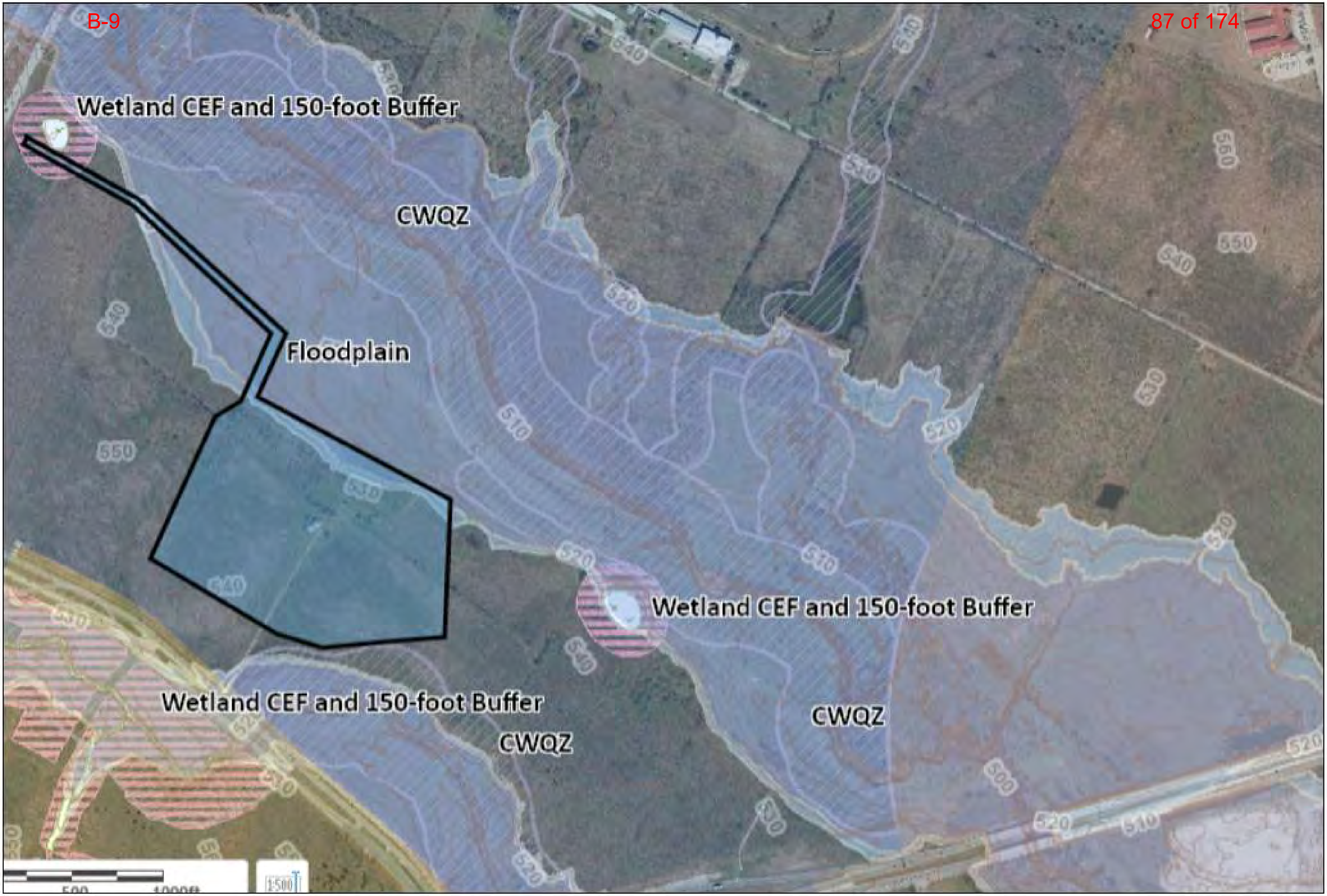


Figure 7 -- Floodplainn CEFs and CWQZ

Crossroads Logistics Center Phase 3
NEC E Parmer Lane and SH 130
Austin, Travis County, Texas
ECS Project 51:2091

Figure 8 -- Field Results

Crossroads Logistics Center Phase 3

NEC E Parmer Lane and SH 130

Aysting, Travis County, Texas

ECS Project 51:2091

Appendix II: Site Photographs

1 - East-facing view of subject property

2 - West-facing view of subject property

3 - South-west facing view of subject property

4 - View of dilapidated residence on the subject property

5 - View of corrals and agricultural structures on the subject property

6 - View of wetland CEF located within 150 feet of northern property boundary

Appendix III: NRCS Soil Survey

United States Department of Agriculture

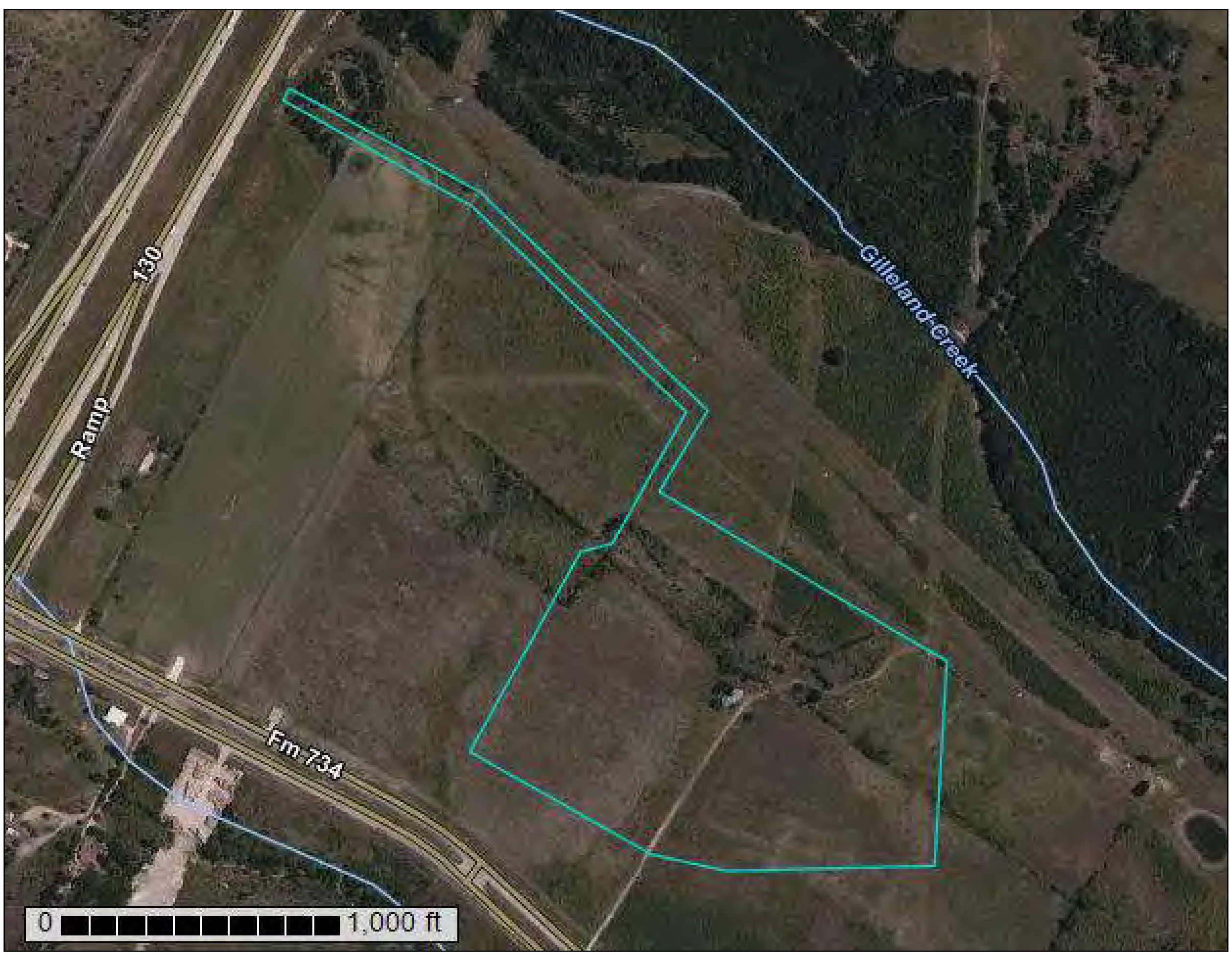
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Travis County, Texas

Crossroads Logistics Center Phase 3



February 2, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

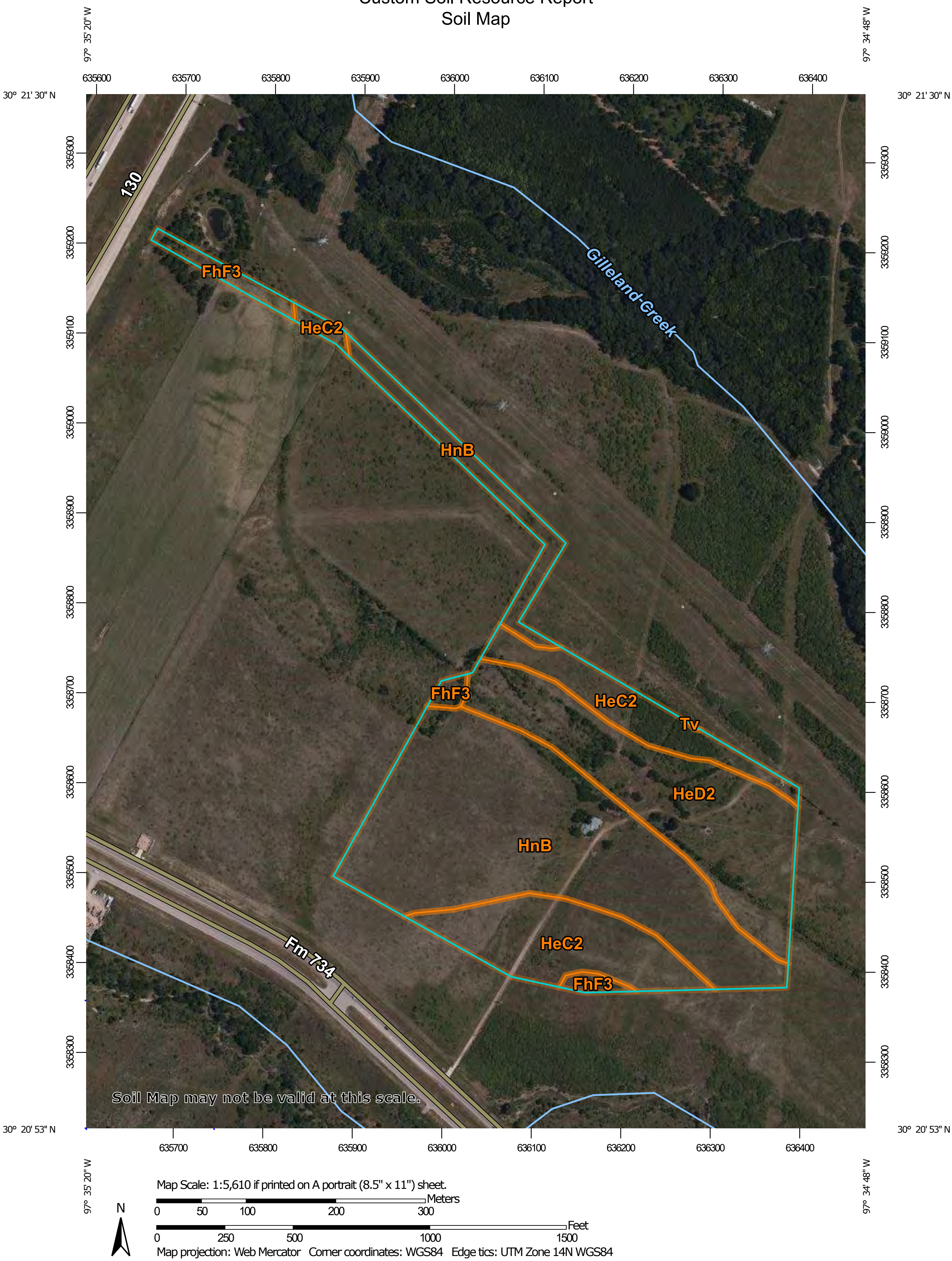
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map



Map Scale: 1:5,610 if printed on A portrait (8.5" x 11") sheet.

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Travis County, Texas
Survey Area Data: Version 22, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 27, 2018—Nov 20, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
FhF3	Ferris-Heiden complex, 8 to 20 percent slopes, severely eroded	1.3	3.4%
HeC2	Heiden clay, 3 to 5 percent slopes, eroded	8.5	22.1%
HeD2	Heiden clay, 5 to 8 percent slopes, eroded	9.6	24.9%
HnB	Houston Black clay, 1 to 3 percent slopes	19.1	49.6%
Tv	Tinn clay, 0 to 1 percent slopes, occasionally flooded	0.0	0.0%
Totals for Area of Interest		**38.5**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Travis County, Texas

FhF3—Ferris-Heiden complex, 8 to 20 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: f551
Elevation: 400 to 1,000 feet
Mean annual precipitation: 28 to 42 inches
Mean annual air temperature: 64 to 70 degrees F
Frost-free period: 225 to 275 days
Farmland classification: Not prime farmland

Map Unit Composition

Ferris, severely eroded, and similar soils: 60 percent
Heiden, severely eroded, and similar soils: 35 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ferris, Severely Eroded

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Linear gilgai
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from calcareous shale in eagleford shale and taylor marl formations of cretaceous age

Typical profile

H1 - 0 to 6 inches: clay
H2 - 6 to 36 inches: clay
H3 - 36 to 60 inches: silty clay

Properties and qualities

Slope: 8 to 20 percent
Depth to restrictive feature: 36 to 60 inches to densic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D

Ecological site: R086AY009TX - Southern Eroded Blackland
Hydric soil rating: No

Description of Heiden, Severely Eroded

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Linear gilgai
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from clayey shale of eagleford shale or taylor marl

Typical profile

H1 - 0 to 6 inches: clay
H2 - 6 to 15 inches: clay
H3 - 15 to 50 inches: clay
H4 - 50 to 80 inches: clay

Properties and qualities

Slope: 8 to 20 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 55 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 12.0
Available water capacity: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R086AY009TX - Southern Eroded Blackland
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 5 percent
Hydric soil rating: No

HeC2—Heiden clay, 3 to 5 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2v1vb
Elevation: 300 to 1,390 feet
Mean annual precipitation: 33 to 48 inches
Mean annual air temperature: 64 to 68 degrees F
Frost-free period: 233 to 278 days
Farmland classification: Not prime farmland

Map Unit Composition

Heiden, moderately eroded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Heiden, Moderately Eroded

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Linear gilgai
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from mudstone

Typical profile

A - 0 to 13 inches: clay
Bss - 13 to 22 inches: clay
Bkss - 22 to 58 inches: clay
CBdk - 58 to 80 inches: clay

Properties and qualities

Slope: 3 to 5 percent
Depth to restrictive feature: 40 to 65 inches to densic material
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 12.0
Available water capacity: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: R086AY009TX - Southern Eroded Blackland
Hydric soil rating: No

Minor Components

Houston black

Percent of map unit: 10 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Circular gilgai
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R086AY011TX - Southern Blackland
Hydric soil rating: No

Ferris, severely eroded

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Linear gilgai
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R086AY009TX - Southern Eroded Blackland
Hydric soil rating: No

HeD2—Heiden clay, 5 to 8 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2v1vd
Elevation: 250 to 940 feet
Mean annual precipitation: 33 to 40 inches
Mean annual air temperature: 64 to 68 degrees F
Frost-free period: 245 to 278 days
Farmland classification: Not prime farmland

Map Unit Composition

Heiden, moderately eroded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Heiden, Moderately Eroded

Setting

Landform: Ridges

Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Linear gilgai
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from mudstone

Typical profile

A1 - 0 to 8 inches: clay
A2 - 8 to 22 inches: clay
Bss - 22 to 44 inches: clay
CBd - 44 to 80 inches: clay

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: 40 to 65 inches to densic material
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 12.0
Available water capacity: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R086AY009TX - Southern Eroded Blackland
Hydric soil rating: No

Minor Components

Ferris, moderately eroded

Percent of map unit: 10 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Linear gilgai
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R086AY009TX - Southern Eroded Blackland
Hydric soil rating: No

Heiden, severely eroded

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Linear gilgai
Down-slope shape: Convex
Across-slope shape: Concave

Ecological site: R086AY009TX - Southern Eroded Blackland
Hydric soil rating: No

HnB—Houston Black clay, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2ssh0
Elevation: 270 to 1,040 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 62 to 63 degrees F
Frost-free period: 217 to 244 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Houston black and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Houston Black

Setting

Landform: Ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Microfeatures of landform position: Linear gilgai
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Clayey residuum weathered from calcareous mudstone of upper cretaceous age

Typical profile

Ap - 0 to 6 inches: clay
Bkss - 6 to 70 inches: clay
BCkss - 70 to 80 inches: clay

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water capacity: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: D
Ecological site: R086AY011TX - Southern Blackland
Hydric soil rating: No

Minor Components

Heiden

Percent of map unit: 15 percent
Landform: Plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Microfeatures of landform position: Linear gilgai
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R086AY011TX - Southern Blackland
Hydric soil rating: No

Fairlie

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R086AY011TX - Southern Blackland
Hydric soil rating: No

Tv—Tinn clay, 0 to 1 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2sshf
Elevation: 260 to 1,310 feet
Mean annual precipitation: 27 to 47 inches
Mean annual air temperature: 63 to 71 degrees F
Frost-free period: 224 to 279 days
Farmland classification: Not prime farmland

Map Unit Composition

Tinn and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tinn

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread

Microfeatures of landform position: Circular gilgai
Down-slope shape: Linear
Across-slope shape: Concave, linear
Parent material: Calcareous clayey alluvium

Typical profile

Ap - 0 to 28 inches: clay
Bss - 28 to 60 inches: clay
Bkssy - 60 to 80 inches: clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: NoneOccasional
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water capacity: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: D
Ecological site: R086AY013TX - Clayey Bottomland
Hydric soil rating: No

Minor Components

Whitesboro

Percent of map unit: 10 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R086AY012TX - Loamy Bottomland
Hydric soil rating: No

Gladewater

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R086AY013TX - Clayey Bottomland
Hydric soil rating: Yes

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United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

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United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

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COA Environmental Resource Inventory

Environmental Resource Inventory

For the City of Austin
Related to LDC 25-8-121, City Code 30-5-121, ECM 1.3.0 & 1.10.0

The ERI is required for projects that meet one or more of the criteria listed in LDC 25-8-121(A), City Code 30-5-121(A).

1. SITE/PROJECT NAME: Crossroads Logistics Center Phase 3
2. COUNTY APPRAISAL DISTRICT PROPERTY ID (#'s): See attached sheet
3. ADDRESS/LOCATION OF PROJECT: NEC Parmer Lane and SH 130
4. WATERSHED: Gilleland Creek
5. THIS SITE IS WITHIN THE *(Check all that apply)*

   Edwards Aquifer Recharge Zone* *(See note below)* .... ☐YES ☑No
   Edwards Aquifer Contributing Zone*................................. ☐YES ☑No
   Edwards Aquifer 1500 ft Verification Zone* .... ☐YES ☑No
   Barton Spring Zone* .... ☐YES ☑No
   **(as defined by the City of Austin – LDC 25-8-2 or City Code 30-5-2)*

   Note: If the property is over the Edwards Aquifer Recharge zone, the Hydrogeologic Report and karst surveys must be completed and signed by a Professional Geoscientist Licensed in the State of Texas.

6. DOES THIS PROJECT PROPOSE FLOODPLAIN MODIFICATION?.......☐YES** ☑NO

   If yes, then check all that apply:

   ☐ *(1) The floodplain modifications proposed are necessary to protect the public health and safety;*

   ☐ *(2) The floodplain modifications proposed would provide a significant, demonstrable environmental benefit, as determined by a **functional assessment** of floodplain health as prescribed by the Environmental Criteria Manual (ECM), or*

   ☐ *(3) The floodplain modifications proposed are necessary for development allowed in the critical water **quality zone under LDC 25-8-261 or 25-8-262, City Code 30-5-261 or 30-5-262.***

   ☐ *(4) The floodplain modifications proposed are outside of the Critical Water Quality Zone in an area determined to be in poor or fair condition by a **functional assessment** of floodplain health.*

   **** If yes, then a functional assessment must be completed and attached to the ERI (see ECM 1.7 and Appendix X for forms and guidance) unless conditions 1 or 3 above apply.**

7. IF THE SITE IS WITHIN AN URBAN OR SUBURBAN WATERSHED, DOES THIS PROJECT PROPOSE A UTILITY LINE PARALLEL TO AND WITHIN THE CRITICAL WATER QUALITY ZONE? .... ☐YES*** ☑NO

   *****If yes, then riparian restoration is required by LDC 25-8-261(E) or City Code 30-5-261(E) and a functional assessment must be completed and attached to the ERI (see ECM1.5 and Appendix X for forms and guidance).**

8. There is a total of 1 (#'s) Critical Environmental Feature(s)(CEFs) on or within150 feet of the project site. If CEF(s) are present, attach a detailed **DESCRIPTION** of the CEF(s), color **PHOTOGRAPHS**, the **CEF WORKSHEET** and provide **DESCRIPTIONS** of the proposed CEF buffer(s) and/or wetland mitigation. Provide the number of each type of CEFs on or within 150 feet of the site (*Please provide the number of CEFs*):

0 (#'s) Spring(s)/Seep(s) 0 (#'s) Point Recharge Feature(s) 0 (#'s) Bluff(s)
0 (#'s) Canyon Rimrock(s) 1 (#'s) Wetland(s)

9. The following site maps are attached at the end of this report *(Check all that apply and provide):*

All ERI reports must include:

- ☑ **Site Specific Geologic Map with 2-ft Topography**
- ☑ **Historic Aerial Photo of the Site**
- ☑ **Site Soil Map**
- ☑ **Critical Environmental Features and Well Location Map on current Aerial Photo with 2-ft Topography**

Only if present on site *(Maps can be combined):*

- ☑ **Edwards Aquifer Recharge Zone with the 1500-ft Verification Zone** *(Only if site is over or within 1500 feet the recharge zone)*
- ☐ **Edwards Aquifer Contributing Zone**
- ☐ **Water Quality Transition Zone (WQTZ)**
- ☑ **Critical Water Quality Zone (CWQZ)**
- ☑ **City of Austin Fully Developed Floodplains for all water courses with up to 64-acres of drainage**

10. **HYDROGEOLOGIC REPORT** – Provide a description of site soils, topography, and site specific geology below *(Attach additional sheets if needed):*

Surface Soils on the project site is summarized in the table below and uses the SCS Hydrologic Soil Groups*. If there is more than one soil unit on the project site, show each soil unit on the site soils map.

Soil Series Unit Names, Infiltration Characteristics & Thickness		
Soil Series Unit Name & Subgroup**	Group*	Thickness (feet)
Please see attached sheet		

Soil Hydrologic Groups Definitions *(Abbreviated)

A. Soils having a high infiltration rate when thoroughly wetted.

B. Soils having a moderate *infiltration* rate when thoroughly wetted.

C. Soils having a slow infiltration rate when thoroughly wetted.

D. Soils having a very slow infiltration rate when thoroughly wetted.

**Subgroup Classification – See Classification of Soil Series Table in County Soil Survey.

Description of Site Topography and Drainage *(Attach additional sheets if needed)*:

The project site generally slopes to the northeast. Localized high spots and ridges are located on the north-central portions of the site.

List surface geologic units below:

Geologic Units Exposed at Surface		
Group	Formation	Member
Navarro	Navarro and Taylor Groups (Knt)	undivided

Brief description of site geology *(Attach additional sheets if needed)*:

The Bureau of Economic Geology defines Knt as "On Austin Sheet (1974) in areas where Pecan Gap Chalk is not present because of gradation to marl similar to that of the Marlbrook and Ozan Formations. Upper 250 ft, mostly silty, calcar. clay with sandst beds and concretionary masses near top, some interbeds of sandst. near base. Lower 200+- ft, quartz sand, fine grained, silty, locally calcar. concretions in discontin. beds, lt. gray; marine megafossils. Mapped on Sherman Sheet (1967) east of Sabine River. Taylor Group includes claystones of the Sprinkle Formation at base, chalk or marly limestones of the Pecan Gap Fm, and overlain by claystones of the Bergstrom Formation."

ECS did not identify wells on the property at the time of the site reconnaissance

No geologic CEFs were observed on the subject property.

Wells – Identify all recorded and unrecorded wells on site (test holes, monitoring, water, oil, unplugged, capped and/or abandoned wells, etc.):

There are 0 (#) wells present on the project site and the locations are shown and labeled

0 (#'s) The wells are not in use and have been properly abandoned.

0 (#'s) The wells are not in use and will be properly abandoned.

0 (#'s) The wells are in use and comply with 16 TAC Chapter 76.

There are 0 (#'s) wells that are off-site and within 150 feet of this site.

11. **THE VEGETATION REPORT** – Provide the information requested below:

Brief description of site plant communities *(Attach additional sheets if needed)*:

The tree community consisted of willow and camphor. The forb and herb community consisted of broom snakeweed, ragweed, greenbriar, prickly pear, sunflower, and spreading hedge parsely. Wetland plant species consisted of iva annua.Grassland species consisted of Bermuda grass, barley and purple top.

There is woodland community on site ....☐YES ☑ NO *(Check one).*
If yes, list the dominant species below:

Woodland species	
Common Name	Scientific Name
Willow	Salix sp.

There is grassland/prairie/savanna on site................☑YES ☐ NO *(Check one).*
If yes, list the dominant species below:

Grassland/prairie/savanna species	
Common Name	Scientific Name
Bermuda grass	Cynodon dactylon
purple top	Tridens flavus
Barley	Hordeum sp.
Camphorweed	Heterotheca subaxillaris

There is hydrophytic vegetation on site ....☐YES ☑ NO *(Check one).*
If yes, list the dominant species in table below *(next page):*

Hydrophytic plant species		
Common Name	Scientific Name	Wetland Indicator Status
None observed		

A tree survey of all trees with a diameter of at least eight inches measured four and one-half feet above natural grade level has been completed on the site.
☐YES ☑ NO *(Check one).*

12. **WASTEWATER REPORT –** Provide the information requested below.

Wastewater for the site will be treated by *(Check of that Apply)*:

☐ On-site system(s)
☑ City of Austin Centralized sewage collection system
☐ Other Centralized collection system

Note: All sites that receive water or wastewater service from the Austin Water Utility must comply with City Code Chapter 15-12 and wells must be registered with the City of Austin

The site sewage collection system is designed and will be constructed to in accordance to all State, County and City standard specifications.
☑YES ☐ NO *(Check one).*

Calculations of the size of the drainfield or wastewater irrigation area(s) are attached at the end of this report or shown on the site plan.
☐YES ☐ NO ☑ Not Applicable *(Check one).*

Wastewater lines are proposed within the Critical Water Quality Zone?
☐YES ☑ NO *(Check one)*. If yes, then provide justification below:

N/A

Is the project site is over the Edwards Aquifer?
☐YES ☑ NO *(Check one).*

If yes, then describe the wastewater disposal systems proposed for the site, its treatment level and effects on receiving watercourses or the Edwards Aquifer.

N/A

13. One (1) hard copy and one (1) electronic copy of the completed assessment have been provided.

Date(s) ERI Field Assessment was performed: February 3, 2021
Date(s)

My signature certifies that to the best of my knowledge, the responses on this form accurately reflect all information requested.

Craig Hiatt	(512) 837-8005
Print Name	Telephone
	chiatt@ecslimited.com
Signature	Email Address
ECS Southwest, LLP	February 10, 2021
Name of Company	Date

For project sites within the Edwards Aquifer Recharge Zone, my signature and seal also certifies that I am a licensed Professional Geoscientist in the State of Texas as defined by ECM 1.12.3(A).

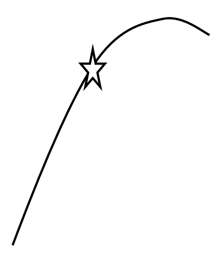
Environmental Resource Inventory - Critical Environmental Feature Worksheet

1	Project Name:	Proposed Crossroads Logistics Center Ph 3
2	Project Address:	NEC Parmer Lane and SH 130, Austin, TX
3	Site Visit Date:	February 3, 2021
4	Environmental Resource Inventory Date:	February 10, 2021

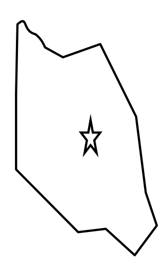
5	Primary Contact Name:	Craig Hiatt
6	Phone Number:	(512) 837-8005
7	Prepared By:	Craig Hiatt
8	Email Address:	chiatt@ecslimited.com

9	FEATURE TYPE {Wetland,Rimrock, Bluffs,Recharge Feature,Spring}	FEATURE ID (eg S-1)	FEATURE LONGITUDE (WGS 1984 in Meters)		FEATURE LATITUDE (WGS 1984 in Meters)		WETLAND DIMENSIONS (ft)		RIMROCK/BLUFF DIMENSIONS (ft)		RECHARGE FEATURE DIMENSIONS				Springs Est. Discharge
			coordinate	notation	coordinate	notation	X	Y	Length	Avg Height	X	Y	Z	Trend	cfs
	Wetland	W-1	-97.587622		30.357303		158	119							

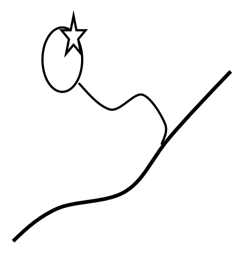
For rimrock, locate the midpoint of the segment that describes the feature.



For wetlands, locate the approximate centroid of the feature and the estimated area.



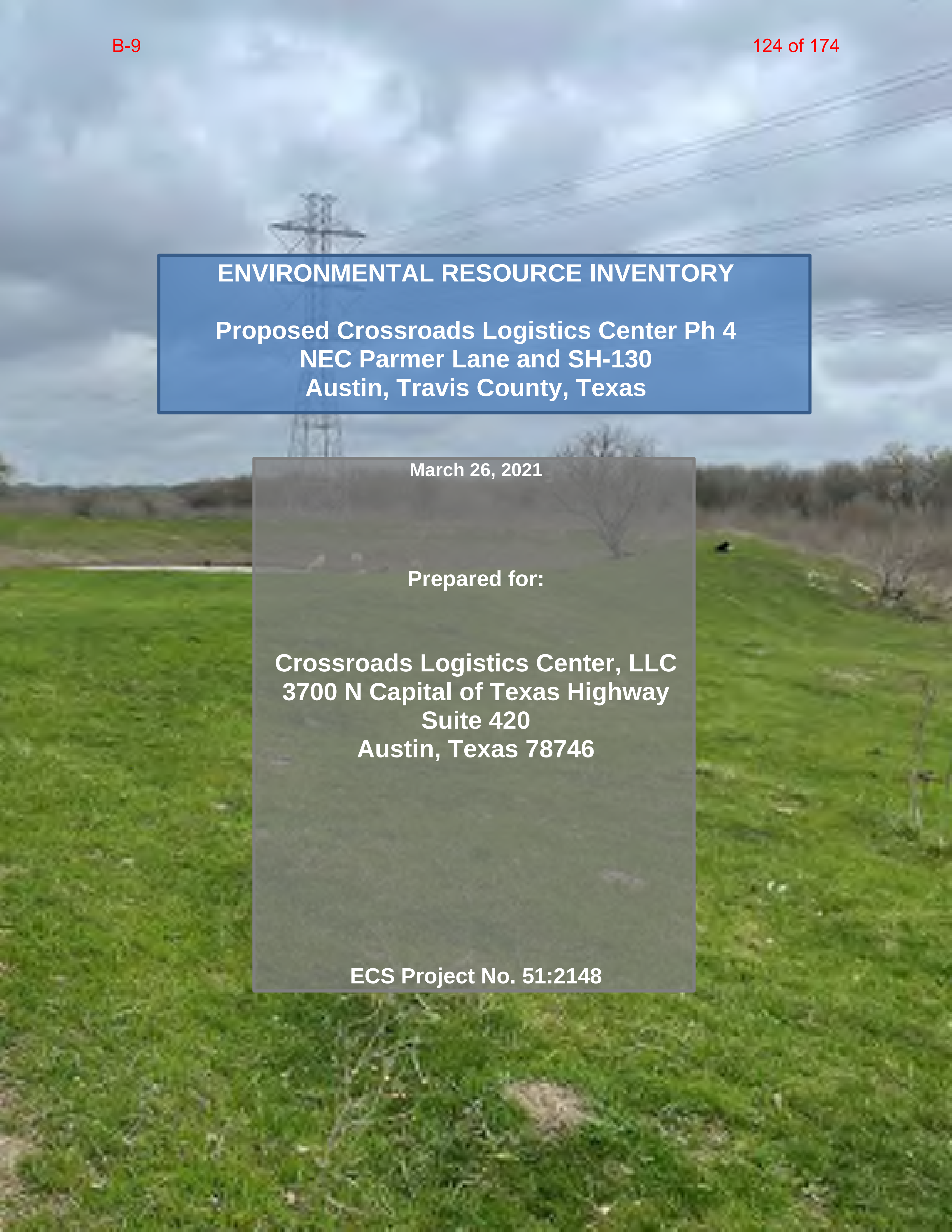
For a spring or seep, locate the source of groundwater that feeds a pool or stream.



Please state the method of coordinate data collection and the approximate precision and accuracy of the points and the unit of measurement.

Method		Accuracy	
GPS	☒	sub-meter	☒
Surveyed	☐	meter	☐
Other	☐	> 1 meter	☐

Professional Geologists apply seal below



ENVIRONMENTAL RESOURCE INVENTORY

Proposed Crossroads Logistics Center Ph 4
NEC Parmer Lane and SH-130
Austin, Travis County, Texas

March 26, 2021

Prepared for:

Crossroads Logistics Center, LLC
3700 N Capital of Texas Highway
Suite 420
Austin, Texas 78746

ECS Project No. 51:2148

ECS SOUTHWEST, LLP
"Setting the Standard for Service"
Geotechnical • Construction Materials • Environmental • Facilities
TX Registered Engineering Firm F-8461

March 26, 2021

Ms. Runi Duvall
Crossroads Logistics Center, LLC
3700 N. Capital of Texas Highway
Suite 420
Austin, Texas 78746

ECS Project: 51-2148

Subject: Environmental Resource Inventory (ERI), Proposed Crossroads Logistics Center Phase 4, NEC Parmer Lane and SH-130, Austin, Travis County, Texas

Dear Ms. Duvall:

We are pleased to provide Crossroads Logistics Center, LLC with this Environmental Resource Inventory (ERI) for the above referenced property. ECS' services were conducted in accordance with the services outlined in ECS Proposal 51-2221 dated and authorized on March 8, 2021.

ECS did observe critical environmental features (CEFs) on the site. However, one (1) wetland CEF was observed within 150 feet of the subject property and the wetland CEF buffer extends onto the subject property. As such, the site may be subject to protection under applicable regulations.

If there are questions regarding this report, or a need for further information, please contact the undersigned at (512) 837-8005.

Respectfully submitted,

Roger S. Willis, M.S.
Senior Environmental Project Manager

Craig Hiatt, M.S.
Director of Environmental Services

ENVIRONMENTAL RESOURCE INVENTORY

Proposed Crossroads Logistics Center Phase 4
NEC Parmer Lane and SH-130
Austin, Travis County, Texas

TABLE OF CONTENTS

1.0 Introduction

The Environmental Resource Inventory (ERI) provided here, as part of the applicant's plan, addresses the required items as cited in City of Austin Land Development Code (LDC) 25-8-121, City Code 30-5-121, and Environmental Criteria Manual (ECM) 1.3.0 & 1.10.0. This report identifies observed potential critical environmental features (CEFs), Critical Water Quality Zones (CWQZ), floodplains, and other environmental features described in LDC 25-8-121, City Code 30-5-121, ECM 1.3.0 & 1.10.0.

The subject property is located along Parmer Lane, adjacent to the east of State Highway 130 in Austin, Travis County, Texas. According to the Travis County Online GIS website, the subject property is identified as portions of Parcel Identification Numbers (PIN) 236745, 236748, and 236753, consists of approximately 34.9 acres, and is owned by Butler Family Partnership LTD (Figure 1). Based on the available information, the subject property is undeveloped / agricultural land. The subject property is not located over the Edwards Aquifer Transition Zone (Figure 2).

The purpose of this ERI is to fulfill the requirements for the applicant's plan for site improvements on the property. This report will describe critical environmental features (CEFs), surficial geologic units and identify the locations and extent of significant features that may be impacted by the proposed project.

2.0 Soil Units

According to the United States Department of Agriculture (USDA) Soil Survey of Travis County, Texas, there are three (3) soil units mapped on the site (Figure 3). The soils on site consist of Heiden clay, 3 to 5 percent slopes, eroded (HeC2), Heiden clay, 5 to 8 percent slopes, eroded (HeD2), and Houston Black clay, 1 to 3 percent slopes (HnB).

Heiden clay, 3 to 5 percent slopes, eroded (HeC2) is formed on backslopes and sideslopes derived from clayey residuum weathered from mudstone (USDA, 2021). The Hydrologic Soil Group is listed as D, and the soil is well drained. Flooding or ponding is reported as "none." The depth to a restrictive layer is reported to be 40 to 65 inches to densic material, and the available water storage (in profile) is listed as high.

Heiden clay, 5 to 8 percent slopes, eroded (HeD2) is formed on backslopes and sideslopes derived from clayey residuum weathered from mudstone (USDA, 2021). The Hydrologic Soil Group is listed as D, and the soil is well drained. Flooding or ponding is reported as “none.” The depth to a restrictive layer is reported to be 40 to 65 inches to densic material, and the available water storage (in profile) is listed as high.

Houston Black clay, 1 to 3 percent slopes (HnB) is formed on shoulders and summits derived from clayey residuum weathered from calcareous mudstone of upper cretaceous age (USDA, 2021). The Hydrologic Soil Group is listed as D, and the soil is well drained. Flooding or ponding is reported as “none.” The depth to a restrictive layer is reported to be greater than 80 inches, and the available water storage (in profile) is listed as high.

3.0 Regional Geology

Ranging from east to west, two primary physiographic provinces are present in Travis County, the Gulf Coastal Plain and the Great Plain. The Gulf Coastal Plain is comprised mainly of Blackland prairie. The Great plain is comprised chiefly of limestone plains, which merges with the Edwards Plateau in the vicinity of the Colorado River.

Groundwater recharge and flow are controlled by faulted Edwards Aquifer and adjacent strata. Water enters the aquifer by means of solution features controlled by faults, fractures and solution conduits. Solution features are created by the dissolution of limestone primarily from rainwater and groundwater. Deformation of the Balcones fault system controls both the large- and small-scale flow barriers and pathways present in the Edwards Aquifer.

4.0 Site Geology

Geological information pertaining to the area was obtained from the Geologic Atlas of Texas, Austin Sheet, published by University of Texas at Austin, Bureau of Economic Geology (BEG) (Figure 4), 1997. The subject property is situated on Navarro and Taylor Groups undivided (Knt). The Bureau of Economic Geology defines Knt as "On Austin Sheet (1974) in areas where Pecan Gap Chalk is not present because of gradation to marl similar to that of the Marlbrook and Ozan Formations. Upper 250 ft, mostly silty, calcar. clay with sandst beds and concretionary masses near top, some interbeds of sandst. near base. Lower 200+- ft, quartz sand, fine grained, silty, locally calcar. concretions in discontin. beds, lt. gray; marine megafossils. Mapped on Sherman Sheet (1967) east of Sabine River. Taylor Group includes claystones of the Sprinkle Formation at base, chalk or marly limestones of the Pecan Gap Fm, and overlain by claystones of the Bergstrom Formation."

5.0 Site Hydrology

Based upon interpretation of the United States Geological Survey 7.5 Minute Series topographic quadrangle map, Manor, Texas, and the onsite reconnaissance, the estimated regional shallow groundwater flow direction for the northeast portion of the subject property is northeast towards Gilleland Creek. The southwest portion of the subject property appears to drain to the southwest towards an unnamed creek. The subject property slopes from a high point of approximately 548 feet above mean sea level (amsl) in the west-central portion of the subject property to a low point of approximately 520 amsl in the northwest corner. It should be noted that shallow groundwater flow direction is estimated based on a review of published maps, surface topography, and site reconnaissance. Local conditions that may influence the subsurface hydrology would be local topography (hills and valleys), geologic anomalies, utilities, and nearby wells or sumps. The subject property is located within the Gilliland Creek watershed (Figure 5).

Portions of the subject property are located within critical water quality zones (CWQZ) associated with Gilleland Creek and an unnamed creek to the south. However, a wetland CEF buffer is located within the northwestern portion of the subject property. Additionally, City of Austin Fully Developed Floodplain is mapped on the northeast portion of the subject property (Figure 6 and Figure 7).

5.1 Surface Water Hydrology

Site drainage slopes to the northeast towards Gilleland Creek. Field observations and analysis are supported from the Manor, Texas USGS Topographic Quadrangle map (USGS, 2019). There were no observed groundwater seeps or discharges of any type from bedrock observed on the subject site.

6.0 Site Investigation

The site reconnaissance was performed on March 18, 2021. The site investigation was performed by traversing the subject property in meandering transects, spaced 10 to 15 meters apart. Photographs were taken to document any features observed during the reconnaissance. The subject property appears to be in use for livestock grazing.

One (1) wetland CEF buffer is located on the northern portion of the subject property. The wetland CEF appears to consist of a stock tank excavated in upland soils. The stock tank does not have a significant nexus to Gilleland Creek or other traditionally navigable waters or relatively permanent waters. The stock tank appears to receive water from direct rainfall or via sheet flow.

Vegetation on the site consists of native and non-native grasses, herbs and forbs. Willow (Salix sp.) was noted on the property. Potential natural recharge features such as caves, sinkholes, closed depressions, solution cavities, fractured rock outcrops, faults or lineaments were not observed on the subject property.

7.0 Summary

The subject property is located along Parmer Lane, adjacent to the east of State Highway 130 in Austin, Travis County, Texas. According to the Travis County Online GIS website, the subject property is identified as Parcel Identification Numbers (PIN) 236745, 236748, and 236753, consists of approximately 34.9 acres. The subject property appears to be in use for livestock grazing.The subject property is not located over the Edwards Aquifer Transition Zone (Figure 2). The subject property is agricultural / undeveloped land with naturalized grasses, herbs, and forbs.

One (1) wetland CEF buffer is located on the northeast portion of the property and City of Austin Fully Developed Floodplain is located on the northeast portion of the subject property. CWQZ associated with Gilleland Creek and an unnamed creek are located on the subject property. Karst features were not identified on the site. No caves or cavities were observed on the subject property at the time of the site reconnaissance with the potential for contaminant movement into the Edwards Aquifer.

The northeast portion of the subject property appears to drain to the northeast towards Gilleland Creek. The southwest portion of the subject property appears to drain to the southwest towards an unnamed creek.

8.0 References

(BEG) The University of Texas at Austin Bureau of Economic Geology, Geologic Map of Texas, Austin Sheet, 1997.

(COA) City of Austin, Property Profile. Accessed at https://www.austintexas.gov/gis/propertyprofile/,. March 18, 2021.

(USDA) United States Department of Agriculture (USDA) Custom Soil Survey of Travis County, 2021.

(USGS) United States Geologic Survey (USGS), 7.5- Minute Topographic Quadrangle, Manor, Texas. 2019.

ATTACHMENTS

Appendix I: Figures

Figure 1 -- Topographic Map

Crossroads Logistics Center Phase 4
NEC E Parmer Lane and US 290
Austin, Travis County, Texas
ECS Project 51-2148

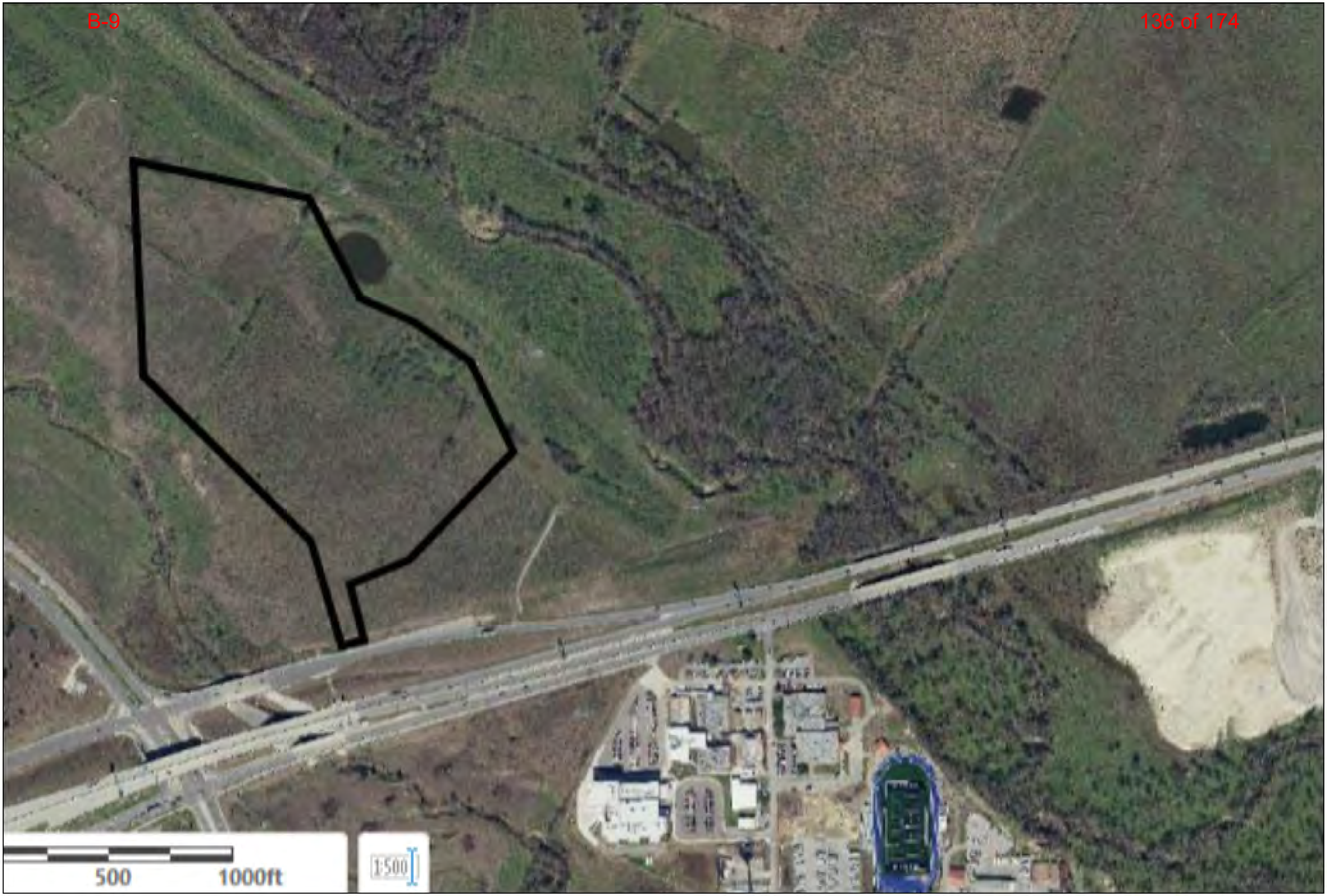


Figure 2 -- Site Map

Crossroads Logistics Center Phase 4
NEC E Parmer Lane and US 290
Austin, Travis County, Texas
ECS Project 51-2148

Figure 3 -- NRCS Soils

Crossroads Logistics Center Phase 4
NEC E Parmer Lane and US 290
Austin, Travis County, Texas
ECS Project 51-2148

Figure 4 -- Geologic Map

Crossroads Logistics Center Phase 4
NEC E Parmer Lane and SH 130
Austin, Travis County, Texas
ECS Project 51:2148

Figure 5 -- Watershed Map

Crossroads Logistics Center Phase 4
NEC E parmer Lane and SH 130
Austin, Travis County, Texas
ECS Project 51:2148

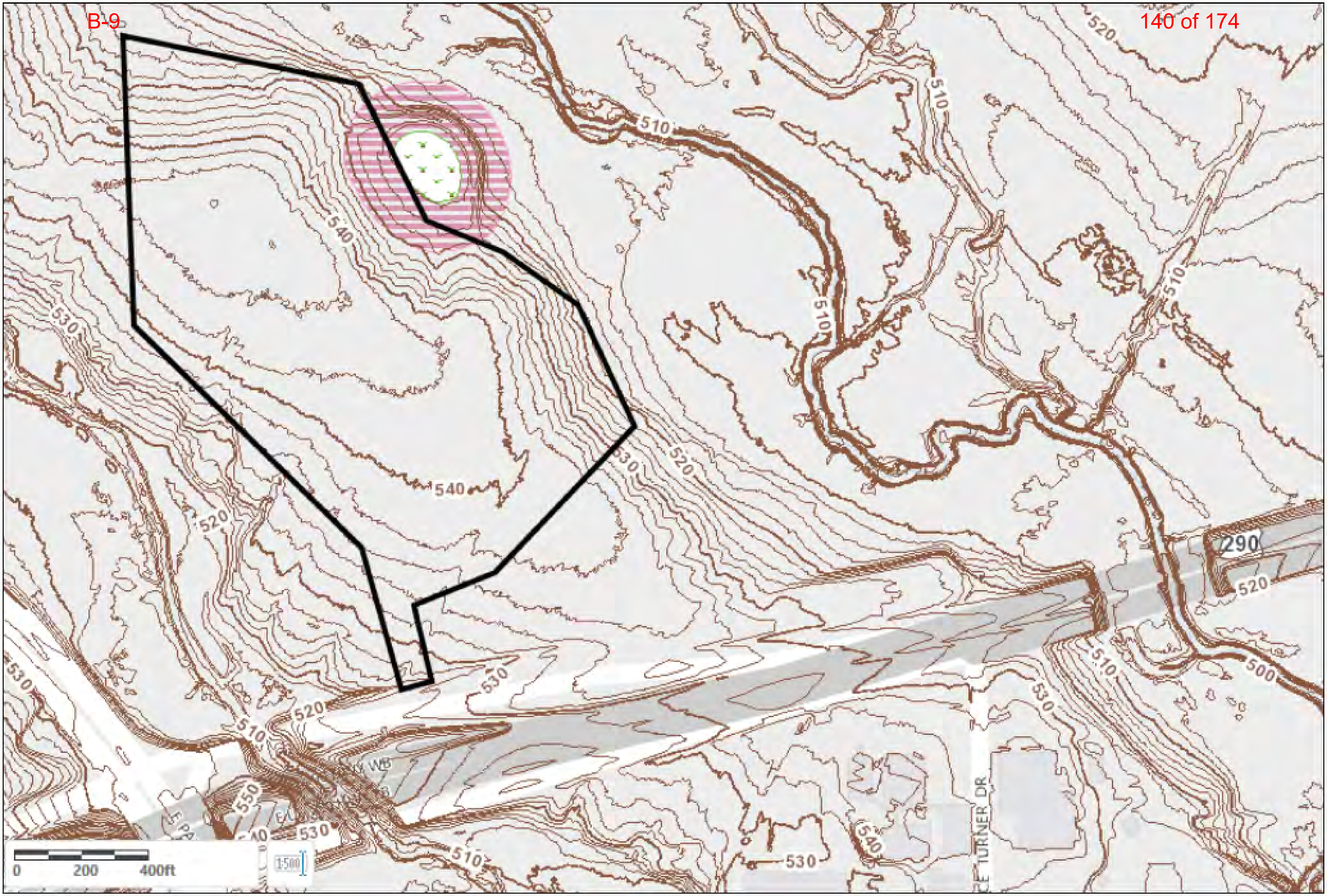


Figure 6 -- CEF Buffer and 2-foot Contours

Crossroads Logistics Center Phase 4

NEC E Parmer Lane and SH 130

Austin, Travis County, Texas

ECS Project 51:2148

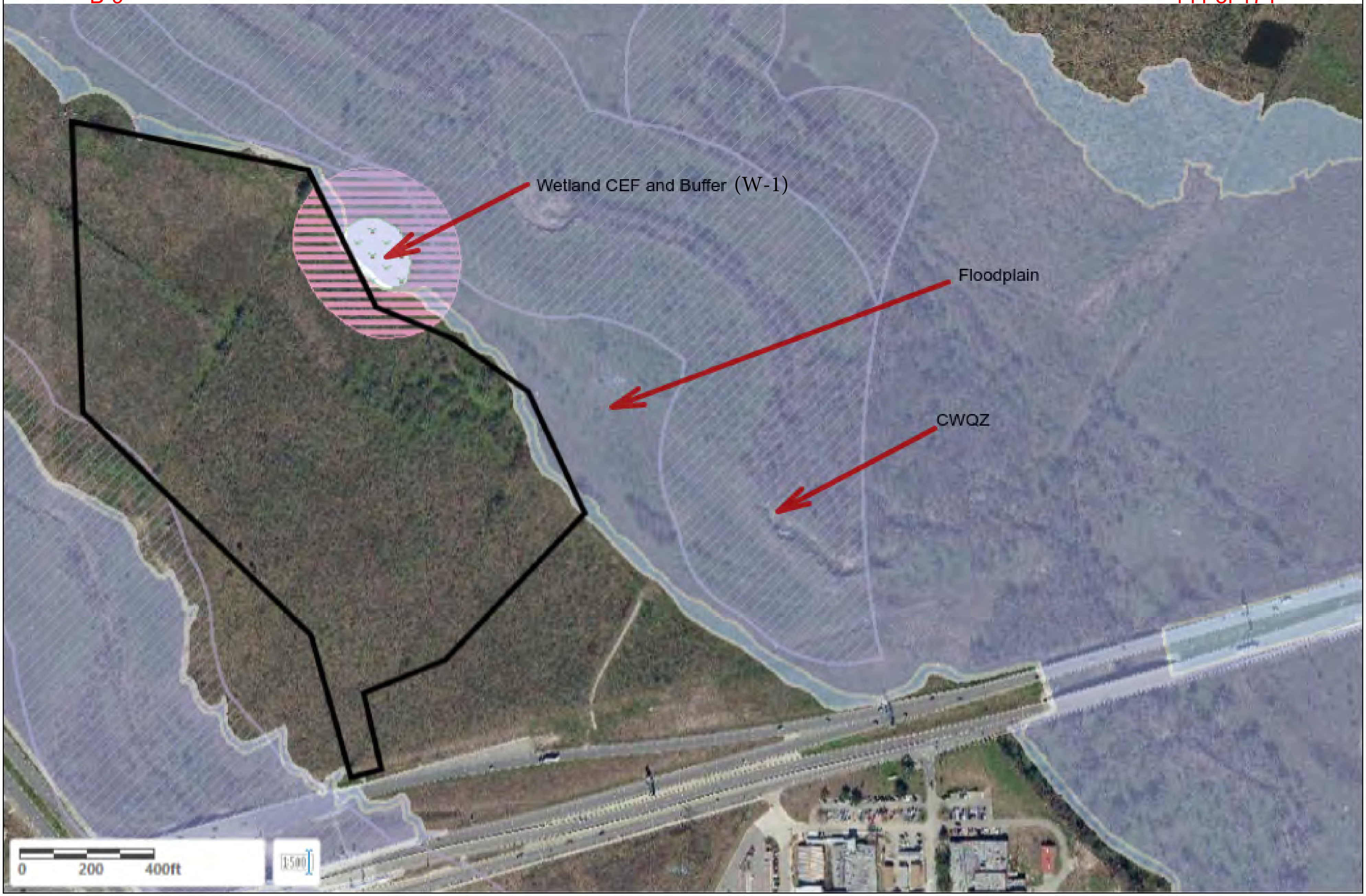


Figure 7 -- Floodplain CEF and CWQZ

Crossroads Logistics Center Phase 4

NEC E Parmer Lane and SH 130

Austin, Travis County, Texas

ECS Project 51:2148

Figure 8 -- Field Results

Crossroads Logistics Center Phase 4
NEC E Parmer Lane and SH 130
Austin, Travis County, Texas
ECS Project 51-2148

Appendix II: Site Photographs

1 - View of northern portion of subject property

2 - View of eastern portion of subject property

3 - West-facing view of subject property

4 - South-facing view of subject property

5 - Northwest-facing view of wetland CEF located adjacent to northern property boundary

6 - Wetland CEF located adjacent to northern property boundary

Appendix III: NRCS Soil Survey

United States Department of Agriculture

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Travis County, Texas

Crossroads Logistics Center Phase 4

March 23, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

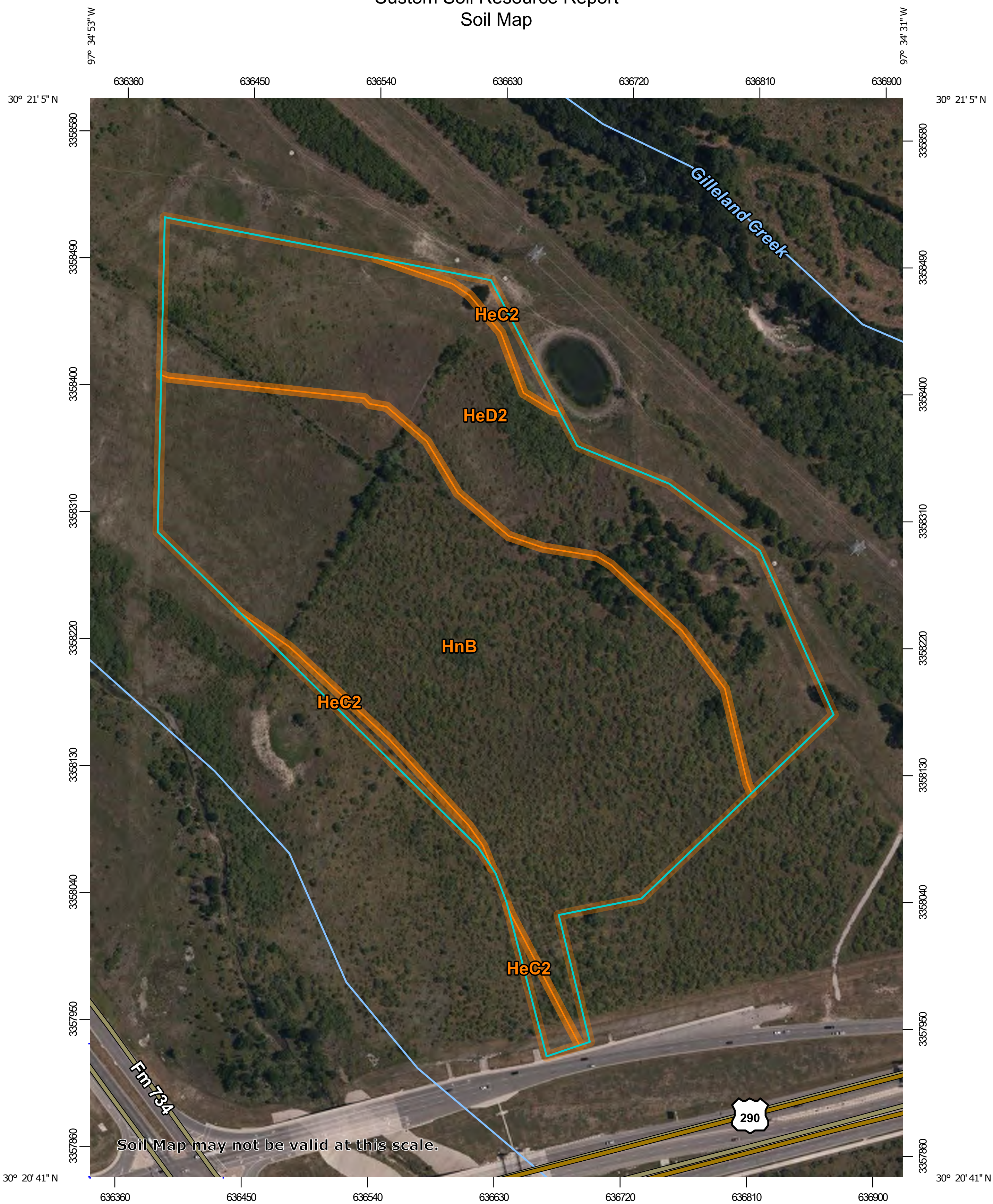
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map



Map Scale: 1:3,730 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 50, 100, 200, 300

Feet: 0, 150, 300, 600, 900

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Travis County, Texas
Survey Area Data: Version 22, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 27, 2018—Nov 20, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
HeC2	Heiden clay, 3 to 5 percent slopes, eroded	1.2	3.5%
HeD2	Heiden clay, 5 to 8 percent slopes, eroded	12.6	36.2%
HnB	Houston Black clay, 1 to 3 percent slopes	21.0	60.3%
Totals for Area of Interest		**34.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Travis County, Texas

HeC2—Heiden clay, 3 to 5 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2v1vb
Elevation: 300 to 1,390 feet
Mean annual precipitation: 33 to 48 inches
Mean annual air temperature: 64 to 68 degrees F
Frost-free period: 233 to 278 days
Farmland classification: Not prime farmland

Map Unit Composition

Heiden, moderately eroded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Heiden, Moderately Eroded

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Linear gilgai
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from mudstone

Typical profile

A - 0 to 13 inches: clay
Bss - 13 to 22 inches: clay
Bkss - 22 to 58 inches: clay
CBdk - 58 to 80 inches: clay

Properties and qualities

Slope: 3 to 5 percent
Depth to restrictive feature: 40 to 65 inches to densic material
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 12.0
Available water capacity: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: R086AY009TX - Southern Eroded Blackland

Hydric soil rating: No

Minor Components

Houston black

Percent of map unit: 10 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Circular gilgai
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R086AY011TX - Southern Blackland
Hydric soil rating: No

Ferris, severely eroded

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Linear gilgai
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R086AY009TX - Southern Eroded Blackland
Hydric soil rating: No

HeD2—Heiden clay, 5 to 8 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2v1vd
Elevation: 250 to 940 feet
Mean annual precipitation: 33 to 40 inches
Mean annual air temperature: 64 to 68 degrees F
Frost-free period: 245 to 278 days
Farmland classification: Not prime farmland

Map Unit Composition

Heiden, moderately eroded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Heiden, Moderately Eroded

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Linear gilgai
Down-slope shape: Convex
Across-slope shape: Convex

Parent material: Clayey residuum weathered from mudstone

Typical profile

A1 - 0 to 8 inches: clay
A2 - 8 to 22 inches: clay
Bss - 22 to 44 inches: clay
CBd - 44 to 80 inches: clay

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: 40 to 65 inches to densic material
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 12.0
Available water capacity: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R086AY009TX - Southern Eroded Blackland
Hydric soil rating: No

Minor Components

Ferris, moderately eroded

Percent of map unit: 10 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Linear gilgai
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R086AY009TX - Southern Eroded Blackland
Hydric soil rating: No

Heiden, severely eroded

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Linear gilgai
Down-slope shape: Convex
Across-slope shape: Concave
Ecological site: R086AY009TX - Southern Eroded Blackland
Hydric soil rating: No

HnB—Houston Black clay, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2ssh0
Elevation: 270 to 1,040 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 62 to 63 degrees F
Frost-free period: 217 to 244 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Houston black and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Houston Black

Setting

Landform: Ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Microfeatures of landform position: Linear gilgai
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Clayey residuum weathered from calcareous mudstone of upper cretaceous age

Typical profile

Ap - 0 to 6 inches: clay
Bkss - 6 to 70 inches: clay
BCkss - 70 to 80 inches: clay

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water capacity: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: D
Ecological site: R086AY011TX - Southern Blackland
Hydric soil rating: No

Minor Components

Heiden

Percent of map unit: 15 percent
Landform: Plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Microfeatures of landform position: Linear gilgai
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R086AY011TX - Southern Blackland
Hydric soil rating: No

Fairlie

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R086AY011TX - Southern Blackland
Hydric soil rating: No

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COA Environmental Resource Inventory

Environmental Resource Inventory

For the City of Austin
Related to LDC 25-8-121, City Code 30-5-121, ECM 1.3.0 & 1.10.0

The ERI is required for projects that meet one or more of the criteria listed in LDC 25-8-121(A), City Code 30-5-121(A).

1. SITE/PROJECT NAME: Crossroads Logistics Center Phase 4
2. COUNTY APPRAISAL DISTRICT PROPERTY ID (#'s): See attached sheet
3. ADDRESS/LOCATION OF PROJECT: NEC Parmer Lane and SH 130
4. WATERSHED: Gilleland Creek
5. THIS SITE IS WITHIN THE *(Check all that apply)*
   - Edwards Aquifer Recharge Zone* *(See note below)* .... ☐YES ☑No
   - Edwards Aquifer Contributing Zone*.................................. ☐YES ☑No
   - Edwards Aquifer 1500 ft Verification Zone* .... ☐YES ☑No
   - Barton Spring Zone* .... ☐YES ☑No

   **(as defined by the City of Austin – LDC 25-8-2 or City Code 30-5-2)*

   Note: If the property is over the Edwards Aquifer Recharge zone, the Hydrogeologic Report and karst surveys must be completed and signed by a Professional Geoscientist Licensed in the State of Texas.

6. DOES THIS PROJECT PROPOSE FLOODPLAIN MODIFICATION?.......☐YES** ☑NO
   If yes, then check all that apply:
   - ☐ *(1) The floodplain modifications proposed are necessary to protect the public health and safety;*
   - ☐ *(2) The floodplain modifications proposed would provide a significant, demonstrable environmental benefit, as determined by a* ***functional assessment*** *of floodplain health as prescribed by the Environmental Criteria Manual (ECM), or*
   - ☐ *(3) The floodplain modifications proposed are necessary for development allowed in the critical water* ***quality zone under LDC 25-8-261 or 25-8-262, City Code 30-5-261 or 30-5-262.***
   - ☐ *(4) The floodplain modifications proposed are outside of the Critical Water Quality Zone in an area determined to be in poor or fair condition by a* ***functional assessment*** *of floodplain health.*

   **** If yes, then a functional assessment must be completed and attached to the ERI (see ECM 1.7 and Appendix X for forms and guidance) unless conditions 1 or 3 above apply.**

7. IF THE SITE IS WITHIN AN URBAN OR SUBURBAN WATERSHED, DOES THIS PROJECT PROPOSE A UTILITY LINE PARALLEL TO AND WITHIN THE CRITICAL WATER QUALITY ZONE? .... ☐YES*** ☑NO

   *****If yes, then riparian restoration is required by LDC 25-8-261(E) or City Code 30-5-261(E) and a functional assessment must be completed and attached to the ERI (see ECM1.5 and Appendix X for forms and guidance).**

8. There is a total of 1 (#'s) Critical Environmental Feature(s)(CEFs) on or within150 feet of the project site. If CEF(s) are present, attach a detailed **DESCRIPTION** of the CEF(s), color **PHOTOGRAPHS**, the **CEF WORKSHEET** and provide **DESCRIPTIONS** of the proposed CEF buffer(s) and/or wetland mitigation. Provide the number of each type of CEFs on or within 150 feet of the site (*Please provide the number of CEFs*):

0 (#'s) Spring(s)/Seep(s) 0 (#'s) Point Recharge Feature(s) 0 (#'s) Bluff(s)
0 (#'s) Canyon Rimrock(s) 1 (#'s) Wetland(s)

9. The following site maps are attached at the end of this report *(Check all that apply and provide):*

All ERI reports must include:

- ☑ **Site Specific Geologic Map with 2-ft Topography**
- ☑ **Historic Aerial Photo of the Site**
- ☑ **Site Soil Map**
- ☑ **Critical Environmental Features and Well Location Map on current Aerial Photo with 2-ft Topography**

Only if present on site *(Maps can be combined):*

- ☑ **Edwards Aquifer Recharge Zone with the 1500-ft Verification Zone** *(Only if site is over or within 1500 feet the recharge zone)*
- ☐ **Edwards Aquifer Contributing Zone**
- ☐ **Water Quality Transition Zone (WQTZ)**
- ☑ **Critical Water Quality Zone (CWQZ)**
- ☑ **City of Austin Fully Developed Floodplains for all water courses with up to 64-acres of drainage**

10. **HYDROGEOLOGIC REPORT** – Provide a description of site soils, topography, and site specific geology below *(Attach additional sheets if needed):*

Surface Soils on the project site is summarized in the table below and uses the SCS Hydrologic Soil Groups*. If there is more than one soil unit on the project site, show each soil unit on the site soils map.

Soil Series Unit Names, Infiltration Characteristics & Thickness		
Soil Series Unit Name & Subgroup**	Group*	Thickness (feet)
Please see attached sheet		

Soil Hydrologic Groups Definitions *(Abbreviated)

A. Soils having a high infiltration rate when thoroughly wetted.

B. Soils having a moderate *infiltration* rate when thoroughly wetted.

C. Soils having a slow infiltration rate when thoroughly wetted.

D. Soils having a very slow infiltration rate when thoroughly wetted.

**Subgroup Classification – See Classification of Soil Series Table in County Soil Survey.

Description of Site Topography and Drainage *(Attach additional sheets if needed)*:

The project site generally slopes to the northeast. Localized high spots and ridges are located on the north-central portions of the site.

List surface geologic units below:

Geologic Units Exposed at Surface		
Group	Formation	Member
Navarro	Navarro and Taylor Groups (Knt)	undivided

Brief description of site geology *(Attach additional sheets if needed)*:

The Bureau of Economic Geology defines Knt as "On Austin Sheet (1974) in areas where Pecan Gap Chalk is not present because of gradation to marl similar to that of the Marlbrook and Ozan Formations. Upper 250 ft, mostly silty, calcar. clay with sandst beds and concretionary masses near top, some interbeds of sandst. near base. Lower 200+- ft, quartz sand, fine grained, silty, locally calcar. concretions in discontin. beds, lt. gray; marine megafossils. Mapped on Sherman Sheet (1967) east of Sabine River. Taylor Group includes claystones of the Sprinkle Formation at base, chalk or marly limestones of the Pecan Gap Fm, and overlain by claystones of the Bergstrom Formation."

ECS did not identify wells on the property at the time of the site reconnaissance

No geologic CEFs were observed on the subject property.

Wells – Identify all recorded and unrecorded wells on site (test holes, monitoring, water, oil, unplugged, capped and/or abandoned wells, etc.):

There are 0 (#) wells present on the project site and the locations are shown and labeled

0 (#'s)The wells are not in use and have been properly abandoned.

0 (#'s)The wells are not in use and will be properly abandoned.

0 (#'s)The wells are in use and comply with 16 TAC Chapter 76.

There are 0 (#'s) wells that are off-site and within 150 feet of this site.

11. **THE VEGETATION REPORT** – Provide the information requested below:

Brief description of site plant communities *(Attach additional sheets if needed)*:

The tree community consisted of willow and camphor. The forb and herb community consisted of broom snakeweed, ragweed, greenbriar, prickly pear, sunflower, and spreading hedge parsely. Wetland plant species consisted of iva annua.Grassland species consisted of Bermuda grass, barley and purple top.

There is woodland community on site ……………………☐YES ☑ NO *(Check one).*
If yes, list the dominant species below:

Woodland species	
Common Name	Scientific Name
Willow	Salix sp.

There is grassland/prairie/savanna on site…………….☑YES ☐ NO *(Check one).*
If yes, list the dominant species below:

Grassland/prairie/savanna species	
Common Name	Scientific Name
Bermuda grass	Cynodon dactylon
purple top	Tridens flavus
Barley	Hordeum sp.
Camphorweed	Heterotheca subaxillaris

There is hydrophytic vegetation on site ……………….☐YES ☑ NO *(Check one).*
If yes, list the dominant species in table below *(next page):*

Hydrophytic plant species		
Common Name	Scientific Name	Wetland Indicator Status
None observed		

A tree survey of all trees with a diameter of at least eight inches measured four and one-half feet above natural grade level has been completed on the site.
☐YES ☑ NO *(Check one).*

12. **WASTEWATER REPORT –** Provide the information requested below.

Wastewater for the site will be treated by *(Check of that Apply)*:

☐ On-site system(s)
☑ City of Austin Centralized sewage collection system
☐ Other Centralized collection system

Note: All sites that receive water or wastewater service from the Austin Water Utility must comply with City Code Chapter 15-12 and wells must be registered with the City of Austin

The site sewage collection system is designed and will be constructed to in accordance to all State, County and City standard specifications.
☑YES ☐ NO *(Check one).*

Calculations of the size of the drainfield or wastewater irrigation area(s) are attached at the end of this report or shown on the site plan.
☐YES ☐ NO ☑ Not Applicable *(Check one).*

Wastewater lines are proposed within the Critical Water Quality Zone?
☐YES ☑ NO *(Check one)*. If yes, then provide justification below:

N/A

Is the project site is over the Edwards Aquifer?
☐YES ☑ NO *(Check one).*

If yes, then describe the wastewater disposal systems proposed for the site, its treatment level and effects on receiving watercourses or the Edwards Aquifer.

N/A

13. One (1) hard copy and one (1) electronic copy of the completed assessment have been provided.

Date(s) ERI Field Assessment was performed: March 18, 2021
Date(s)

My signature certifies that to the best of my knowledge, the responses on this form accurately reflect all information requested.

Craig Hiatt	(512) 837-8005
Print Name	Telephone
Craig W. Hiatt	chiatt@ecslimited.com
Signature	Email Address
ECS Southwest, LLP	March 26, 2021
Name of Company	Date

For project sites within the Edwards Aquifer Recharge Zone, my signature and seal also certifies that I am a licensed Professional Geoscientist in the State of Texas as defined by ECM 1.12.3(A).

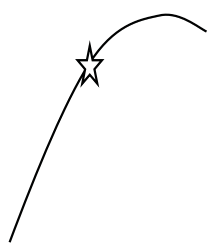
Environmental Resource Inventory - Critical Environmental Feature Worksheet

1	Project Name:	Proposed Crossroads Logistics Center Ph 3
2	Project Address:	NEC Parmer Lane and SH 130, Austin, TX
3	Site Visit Date:	February 3, 2021
4	Environmental Resource Inventory Date:	February 10, 2021

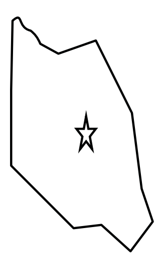
5	Primary Contact Name:	Craig Hiatt
6	Phone Number:	(512) 837-8005
7	Prepared By:	Craig Hiatt
8	Email Address:	chiatt@ecslimited.com

9	FEATURE TYPE {Wetland,Rimrock, Bluffs,Recharge Feature,Spring}	FEATURE ID (eg S-1)	FEATURE LONGITUDE (WGS 1984 in Meters)		FEATURE LATITUDE (WGS 1984 in Meters)		WETLAND DIMENSIONS (ft)		RIMROCK/BLUFF DIMENSIONS (ft)		RECHARGE FEATURE DIMENSIONS				Springs Est. Discharge
			coordinate	*notation*	*coordinate*	*notation*	X	Y	Length	Avg Height	X	Y	Z	Trend	cfs
	Wetland	W-1	-97.577907		30.349822		178	120							

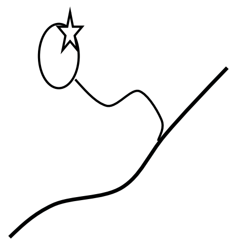
For rimrock, locate the midpoint of the segment that describes the feature.



For wetlands, locate the approximate centroid of the feature and the estimated area.



For a spring or seep, locate the source of groundwater that feeds a pool or stream.



Please state the method of coordinate data collection and the approximate precision and accuracy of the points and the unit of measurement.

Method		Accuracy	
GPS	☒	sub-meter	☒
Surveyed	☐	meter	☐
Other	☐	> 1 meter	☐

Professional Geologists apply seal below