SCALE: 1"=100'

THE SPRINGS OF WALNUT CREEK

WASTEWATER EXHIBIT

PAPE-DAWSON ENGINEERS
7800 SHOAL CREEK BLVD.
SUITE 220 WEST
AUSTIN , TEXAS 78757
512-454-8711
FAX 512-459-8867

I:\5067\00\00957 - Construction Plans - Phase 1\Support\5067-01 Wastewater Exhibit (10/06/2010).dwg, Layout1 (2)

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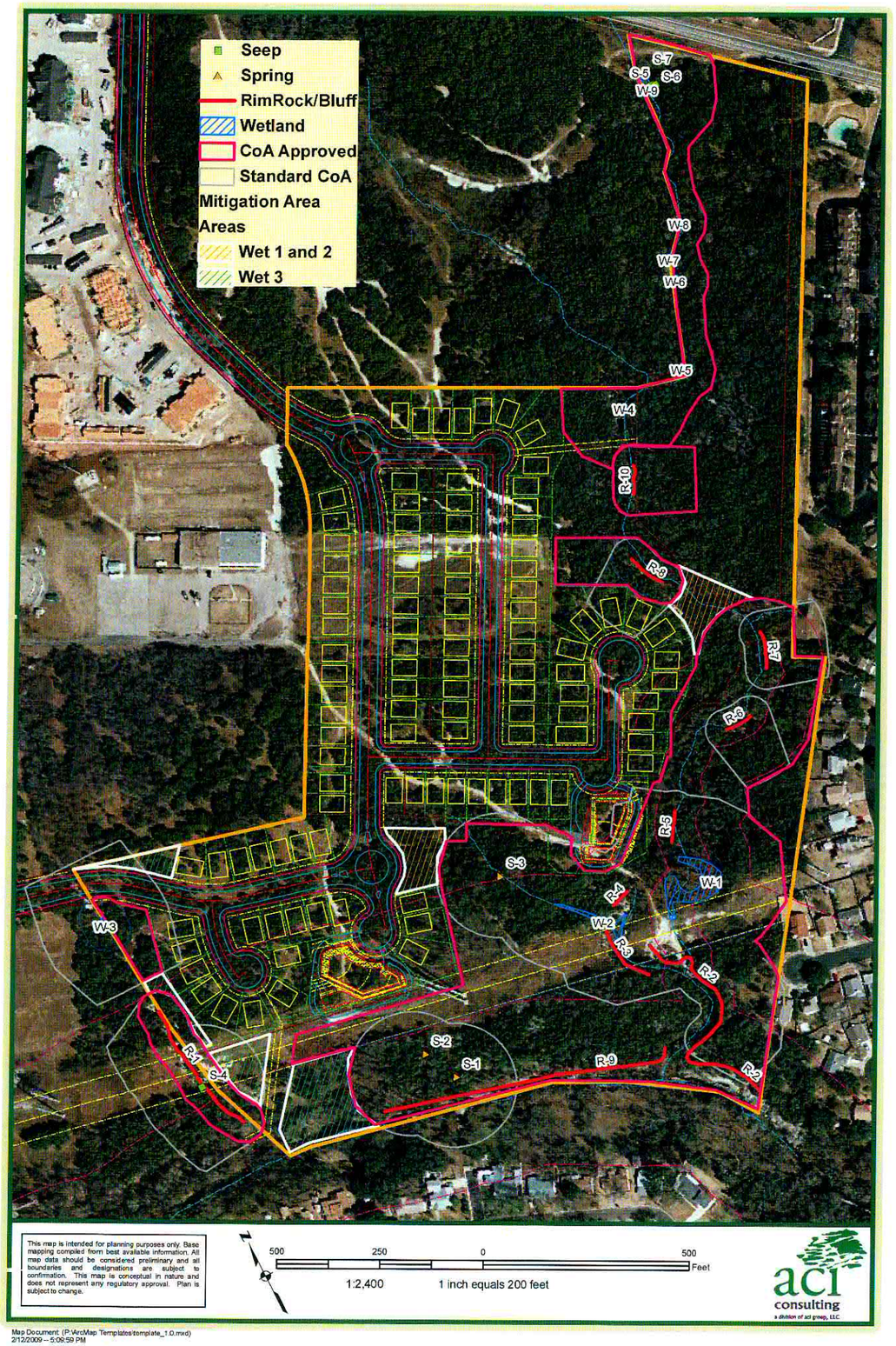

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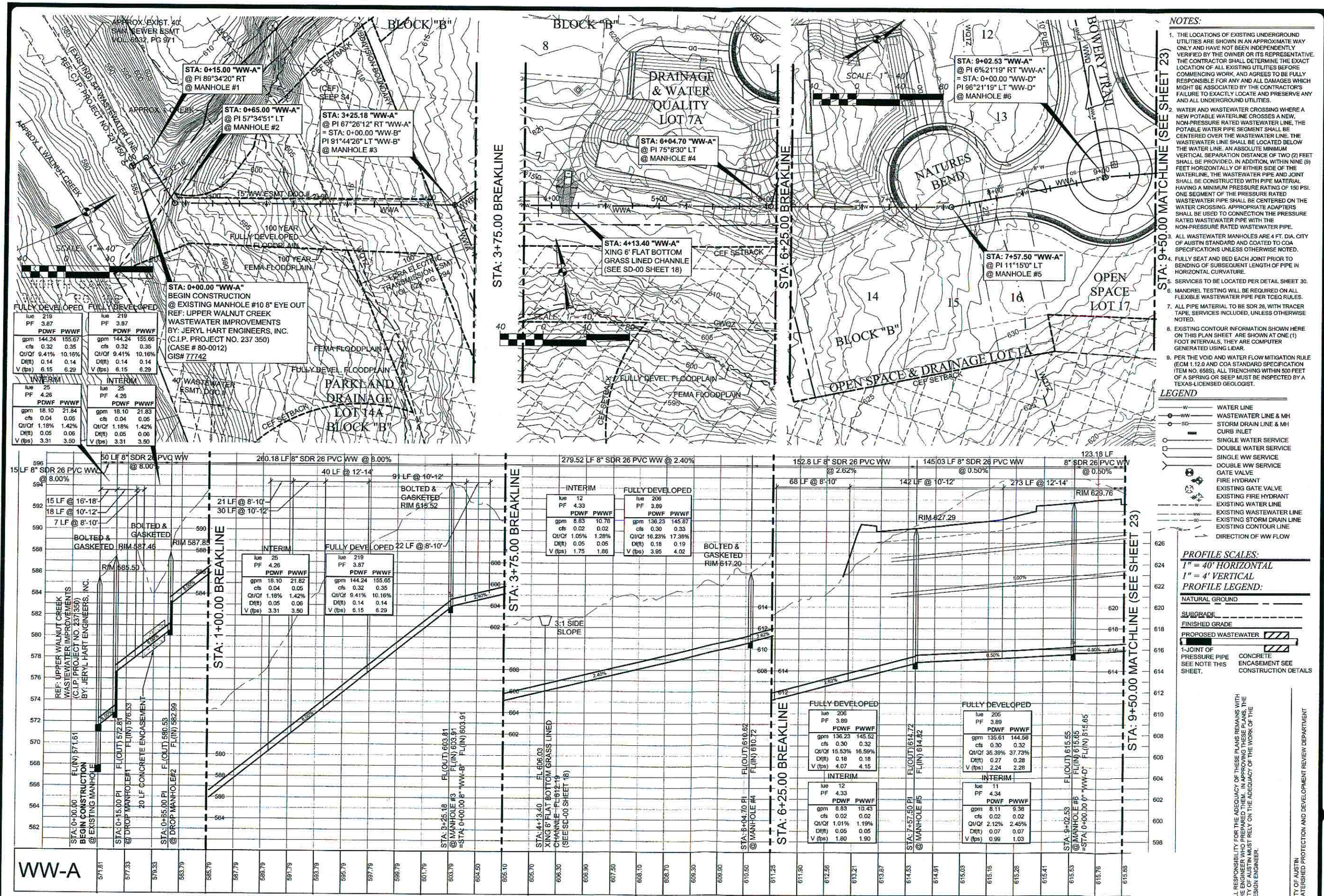
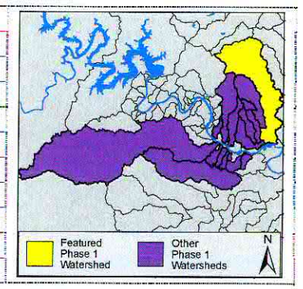

APPROX. EXIST. 40' SAN. SEWER ESMT VOL. 6832, PG 971
(EXISTING) SER. WASTEWATER LINE REF: C.I.P. PROJECT NO. 237-350
APPROX. CREEK
APPROX. WALNUT CREEK
STA: 0+15.00 "WW-A" @ PI 89°34'20" RT @ MANHOLE #1
STA: 0+65.00 "WW-A" @ PI 57°34'51" LT @ MANHOLE #2
STA: 3+25.18 "WW-A" @ PI 67°26'12" RT "WW-A" = STA: 0+00.00 "WW-B" PI 91°44'26" LT "WW-B" @ MANHOLE #3
15' WW ESMT DOC # 21-06
100 YEAR FULLY DEVELOPED FLOODPLAIN
100 YEAR FEMA FLOODPLAIN
LCRA ELECTRIC TRANSMISSION ESMT VOL. 624, PG. 594
STA: 0+00.00 "WW-A" BEGIN CONSTRUCTION @ EXISTING MANHOLE #10 8" EYE OUT REF: UPPER WALNUT CREEK WASTEWATER IMPROVEMENTS BY: JERYL HART ENGINEERS, INC. (C.I.P. PROJECT NO. 237 350) (CASE # 80-0012) GIS# 77742
FULLY DEVELOPED
INTERIM
40' WASTEWATER ESMT. DOC #
PARK AND DRAINAGE LOT 14A BLOCK "B"
CEF SETBACK
(CEF) SEEP S4
BLOCK "B"
DRAINAGE & WATER QUALITY LOT 7A
STA: 4+13.40 "WW-A" XING 6' FLAT BOTTOM GRASS LINED CHANNLE (SEE SD-00 SHEET 18)
STA: 6+04.70 "WW-A" @ PI 75°8'30" LT @ MANHOLE #4
STA: 3+75.00 BREAKLINE
STA: 6+25.00 BREAKLINE
STA: 9+50.00 MATCHLINE (SEE SHEET 23)
NATURES BEND
BOWERY TRAIL
STA: 9+02.53 "WW-A" @ PI 6°21'19" RT "WW-A" = STA: 0+00.00 "WW-D" PI 96°21'19" LT "WW-D" @ MANHOLE #6
STA: 7+57.50 "WW-A" @ PI 11°15'0" LT @ MANHOLE #5
OPEN SPACE LOT 17
OPEN SPACE & DRAINAGE LOT 11A
SCALE: 1" = 40'
WW-A
50 LF 8" SDR 26 PVC WW @ 8.00%
15 LF 8" SDR 26 PVC WW @ 8.00%
260.18 LF 8" SDR 26 PVC WW @ 8.00%
279.52 LF 8" SDR 26 PVC WW @ 2.40%
152.8 LF 8" SDR 26 PVC WW @ 2.62%
145.03 LF 8" SDR 26 PVC WW @ 0.50%
123.18 LF 8" SDR 26 PVC WW @ 0.50%
15 LF @ 16'-18'
18 LF @ 10'-12'
7 LF @ 8'-10'
40 LF @ 12'-14'
91 LF @ 10'-12'
21 LF @ 8'-10'
30 LF @ 10'-12'
22 LF @ 8'-10'
68 LF @ 8'-10'
142 LF @ 10'-12'
273 LF @ 12'-14'
BOLTED & GASKETED RIM 587.46
BOLTED & GASKETED RIM 587.85
RIM 585.50
BOLTED & GASKETED RIM 615.52
BOLTED & GASKETED RIM 617.20
RIM 627.29
RIM 629.76
3:1 SIDE SLOPE
REF: UPPER WALNUT CREEK WASTEWATER IMPROVEMENTS (C.I.P. PROJECT NO. 237 350) BY: JERYL HART ENGINEERS, INC.
STA: 0+00.00 BEGIN CONSTRUCTION @ EXISTING MANHOLE FL(IN) 571.61
STA: 0+15.00 PI @ DROP MANHOLE #1 FL(OUT) 572.86 FL(IN) 576.53
20 LF CONCRETE ENCASEMENT
STA: 0+65.00 PI @ DROP MANHOLE #2 FL(OUT) 580.53 FL(IN) 582.99
STA: 3+25.18 @ MANHOLE #3 =STA: 0+00.00 "WW-B" FL(OUT) 603.81 FL(IN) 603.91
STA: 4+13.40 XING 6' FLAT BOTTOM GRASS LINED CHANNEL FL 606.03 (SEE SD-00 SHEET 18)
STA: 6+04.70 @ MANHOLE #4 FL(OUT) 610.62 FL(IN) 610.72
STA: 7+57.50 PI @ MANHOLE #5 FL(OUT) 614.72 FL(IN) 614.82
STA: 9+02.53 @ MANHOLE #6 =STA: 0+00.00 "WW-D" FL(OUT) 615.55 FL(IN) 615.65
INTERIM
FULLY DEVELOPED
NOTES:
1. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE ASSOCIATED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
2. WATER AND WASTEWATER CROSSING WHERE A NEW POTABLE WATERLINE CROSSES A NEW, NON-PRESSURE RATED WASTEWATER LINE, THE POTABLE WATER PIPE SEGMENT SHALL BE CENTERED OVER THE WASTEWATER LINE. THE WASTEWATER LINE SHALL BE LOCATED BELOW THE WATER LINE. AN ABSOLUTE MINIMUM VERTICAL SEPARATION DISTANCE OF TWO (2) FEET SHALL BE PROVIDED. IN ADDITION, WITHIN NINE (9) FEET HORIZONTALLY OF EITHER SIDE OF THE WATERLINE, THE WASTEWATER PIPE AND JOINT SHALL BE CONSTRUCTED WITH PIPE MATERIAL HAVING A MINIMUM PRESSURE RATING OF 150 PSI. ONE SEGMENT OF THE PRESSURE RATED WASTEWATER PIPE SHALL BE CENTERED ON THE WATER CROSSING. APPROPRIATE ADAPTERS SHALL BE USED TO CONNECTION THE PRESSURE RATED WASTEWATER PIPE WITH THE NON-PRESSURE RATED WASTEWATER PIPE.
3. ALL WASTEWATER MANHOLES ARE 4 FT. DIA. CITY OF AUSTIN STANDARD AND COATED TO COA SPECIFICATIONS UNLESS OTHERWISE NOTED.
4. FULLY SEAT AND BED EACH JOINT PRIOR TO BENDING OF SUBSEQUENT LENGTH OF PIPE IN HORIZONTAL CURVATURE.
5. SERVICES TO BE LOCATED PER DETAIL SHEET 30.
6. MANDREL TESTING WILL BE REQUIRED ON ALL FLEXIBLE WASTEWATER PIPE PER TCEQ RULES.
7. ALL PIPE MATERIAL TO BE SDR 26, WITH TRACER TAPE, SERVICES INCLUDED, UNLESS OTHERWISE NOTED.
8. EXISTING CONTOUR INFORMATION SHOWN HERE ON THIS PLAN SHEET ARE SHOWN AT ONE (1) FOOT INTERVALS, THEY ARE COMPUTER GENERATED USING LIDAR.
9. PER THE VOID AND WATER FLOW MITIGATION RULE (ECM 1.12.0 AND COA STANDARD SPECIFICATION ITEM NO. 658S), ALL TRENCHING WITHIN 500 FEET OF A SPRING OR SEEP MUST BE INSPECTED BY A TEXAS-LICENSED GEOLOGIST.
LEGEND
WATER LINE
WASTEWATER LINE & MH
STORM DRAIN LINE & MH
CURB INLET
SINGLE WATER SERVICE
DOUBLE WATER SERVICE
SINGLE WW SERVICE
DOUBLE WW SERVICE
GATE VALVE
FIRE HYDRANT
EXISTING GATE VALVE
EXISTING FIRE HYDRANT
EXISTING WATER LINE
EXISTING WASTEWATER LINE
EXISTING STORM DRAIN LINE
EXISTING CONTOUR LINE
DIRECTION OF WW FLOW
PROFILE SCALES:
1" = 40' HORIZONTAL
1" = 4' VERTICAL
PROFILE LEGEND:
NATURAL GROUND
SUBGRADE
FINISHED GRADE
PROPOSED WASTEWATER
1-JOINT OF PRESSURE PIPE SEE NOTE THIS SHEET.
CONCRETE ENCASEMENT SEE CONSTRUCTION DETAILS
REVISIONS:
THIS DOCUMENT IS RELEASED FOR INTERIM REVIEW PURPOSES ONLY UNDER THE AUTHORITY OF JAMES A. HUFFCUT JR., P.E. 55353 DATE: April 28, 2010 IT IS NOT TO BE USED FOR BIDDING, PERMITTING OR CONSTRUCTION PURPOSES. PER 137.33(c)
PAPE-DAWSON ENGINEERS
7800 SHOAL CREEK BLVD | AUSTIN, TEXAS 78757 | PHONE: 512.454.8711 SUITE 220 WEST | FAX: 512.459.8867
TEXAS BOARD OF PROFESSIONAL ENGINEERS, FIRM REGISTRATION # 470
THE SPRINGS OF WALNUT CREEK
PHASE 1
WASTEWATER PLAN & PROFILE
LINE A STA 0+00-9+50
C8-2010-0051.1B
JOB NO. 50670-01
DATE APRIL, 2010
DESIGNER RBB
CHECKED DRAWN RBB
SHEET 22 OF 41
ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER WHO PREPARED THEM. IN APPROVING THESE PLANS, THE CITY OF AUSTIN MUST RELY ON THE ADEQUACY OF THE WORK OF THE DESIGN ENGINEER.
CITY OF AUSTIN WATERSHED PROTECTION AND DEVELOPMENT REVIEW DEPARTMENT
DATE: Apr 28, 2010, 2:02PM USER ID: BBARRON
File: H:\50670\20\20\951 - CONSTRUCTION PLANS - PHASE 1\PRODUCTION DRAWINGS\50670-01 WASTEWATER.DWG
H:\50670\00\951 - Construction Plans - Phase 1\Production Drawings\50670-01 Wastewater.dwg, WW-A STA 0+00-9+50
THIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. RELY ONLY ON FINAL HARDCOPY MATERIALS BEARING THE CONSULTANT'S SIGNATURE AND SEAL

Exhibit #4

Walnut Creek Watershed

Summary Sheet

Catchment	Total area	43.5 square miles	
	Area in recharge	11.9 square miles	
	Creek length	22.3 miles	
	Receiving water	Colorado River	
Demographics	2000 population	93,934	
	2030 projected population	133,387	
	30 year projected % increase	42 %	
Land Use	Impervious cover ('97 crwr data)	24.1 %	
Overall EII Scores	2000	76	
	2003	71	
	2006	72	



Flow Regime* for Sample Sites on Walnut Creek Upstream to Downstream

Site #	Site Name	2003 Feb 19 WQ	2003 Mar 10-17 Bio	2003 May 14 WQ	2003 Sep 23 WQ	2003 Dec 3 WQ	2006 Feb 22 WQ	2006 May 18 WQ	2006 Jul 5-12 Bio	2006 Aug 23 WQ	2006 Nov 29 WQ
463	Wells Branch at Wln Metro Park						B	B	B	B	B
895	Walnut at Metric	B	B	B	B	B	B	B	B	B	B
464	Walnut below IH 35	B	B	B	B	B	B	B	B	B	B
502	Walnut at Old Manor Rd	B	B	B	B	B	B	B	B	B	B
465	Walnut at Loyola Lane	B	B	B	B	B					
503	Walnut at SP Railroad Bridge	B	B	B	B	B	B	B	B	n	B

* B = baseflow conditions n = no flow was present Storm = storm flow was present
Blue = Samples were taken Grey = Samples were not taken Blank = site not visited

	Parameter		Mean	Max	Min	Relative concentrations compared to other 2006 Phase 1 watersheds
Physicochemical	**D.O.**	mg/l	9.2	12.1	6.6	Average[1] or above average at all sites
	pH	st.units	8.06	9.47	7.67	Most values average[1], 464 slightly above average, Site 503 with one high value
	Cond	uS/cm	607	802	492	Most values average[1], potentially a decreasing trend downstream
	SO_4	mg/l	48.0	68.5	29.0	Average[1]
Nutrients	**NH_3**	mg/l	0.03	0.14	0.01	One high reading at Site 464 in August, average[1] at all other sites
	NO_3	mg/l	0.42	1.45	0.02	Most sites high or above average in May, but average for other samples
	Ortho P	mg/l	0.04	0.12	0.02	Average[1], with one above average concentration at Site 503 in February
Sediment Load	**TSS**	mg/l	1.1	6.0	0.1	One high reading at Site 503 in May, average[1] at all other sites
	Turbidity	ntu	1.7	5.8	0.8	Consistently above average at Site 503, average[1] at all other sites
Biology	**E.Coli**	/100ml	700	4,839	17	Site 895 with very high concentrations, other sites average[1]
	Benthic Macs		Good diversity and community structure, consistently above average to high rating for most parameters			
	Diatoms		High quality. Consistent good scores for *Cymbella* richness, pollution tolerance and % similarity to reference			

[1] values for this parameter are similar to the median scores for the other 2006 Phase 1 watersheds

Discussion: Overall, Walnut maintains high integrity of aquatic life despite the below average physical integrity scores. Bacteria levels are typically good at most sites, with the exception of Site 895, which appears to be chronically elevated. The nutrient concentrations were high in May and sporadically high during other months

Sub-index scores for Walnut Creek Sites (upstream to downstream) 2000, 2003, 2006

Site Number	Site 463			Site 895			Site 464			Site 502			Site 465			Site 503		
Year of Sampling	2000	2003	2006	2000	2003	2006	2000	2003	2006	2000	2003	2006	2000	2003	2006	2000	2003	2006
Water Quality			66		64	60	67	59	67		61	72	62	56		51	64	58
Sediment			82		75	82	95	75	82		75	82	95	75		95	75	82
Contact Recreation			43		51	28	90	72	56		88	59	97	88		91	86	54
Non-Contact Rec.			87		78	81	72	82	78		73	58	92	71		68	78	70
Physical Integrity			71		74	73	50	75	69		64	69	49	63		35	48	63
Aquatic Life			80		76	94	72	79	95		66	97	88	69		67	56	100
Benthic Mac.			78		88	95	87	97	93		84	100	100	87		75	69	100
Diatom			81		63	92	57	60	97		47	93	75	51		58	42	99
Total EII Score			72		70	70	74	74	75		71	73	81	70		68	68	71

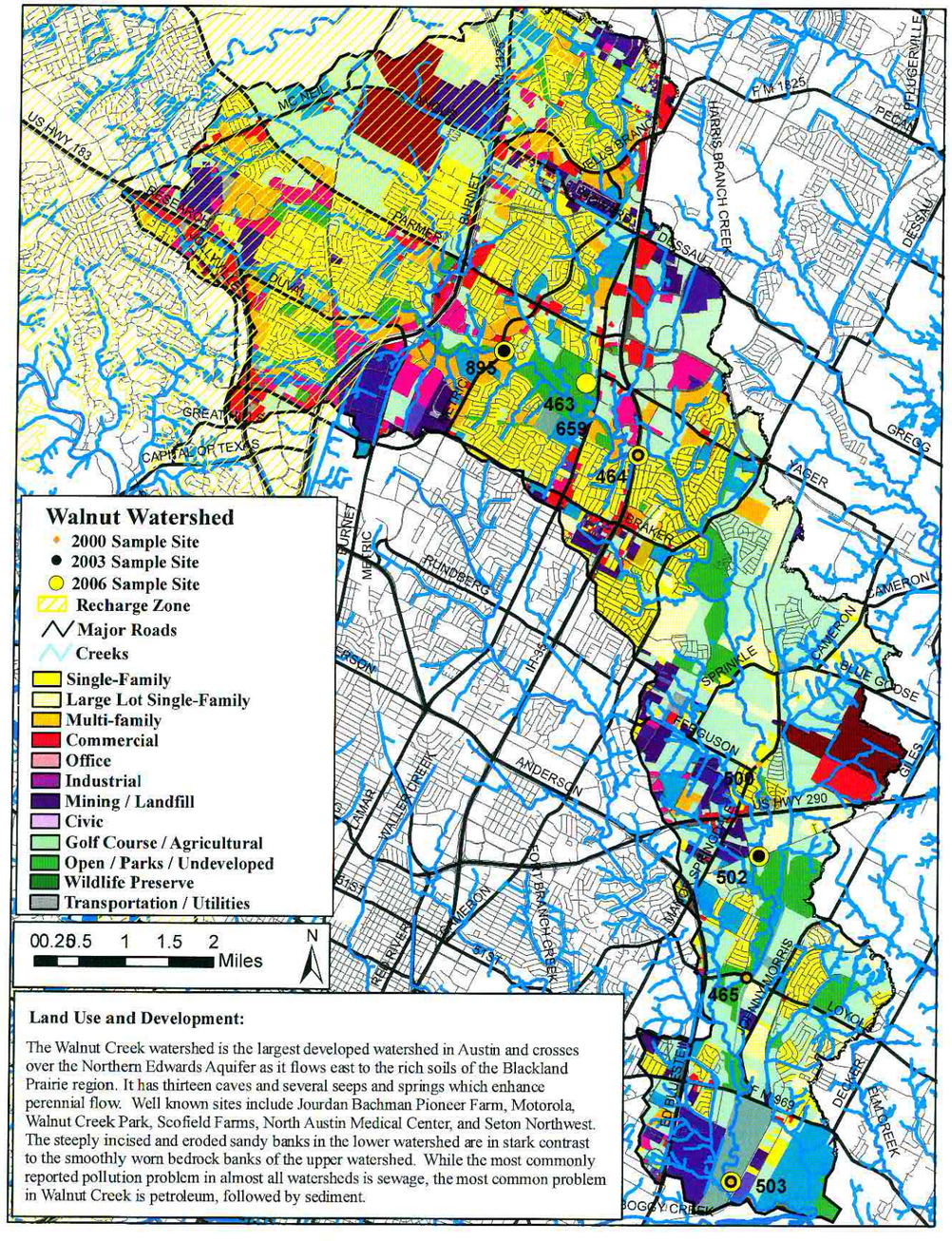
* sediment samples only collected at the downstream site, blank cells indicate parameter was not collected, blank columns indicate site was dropped

100-87.5 Excellent 87.5-75 V. Good 75-62.5 Good 62.5-50 Fair 50-37.5 Marginal 37.5-25 Poor 25-12.5 Bad 12.5-0 V. Bad

Exhibit #5

Walnut Creek Watershed

Land Use Map

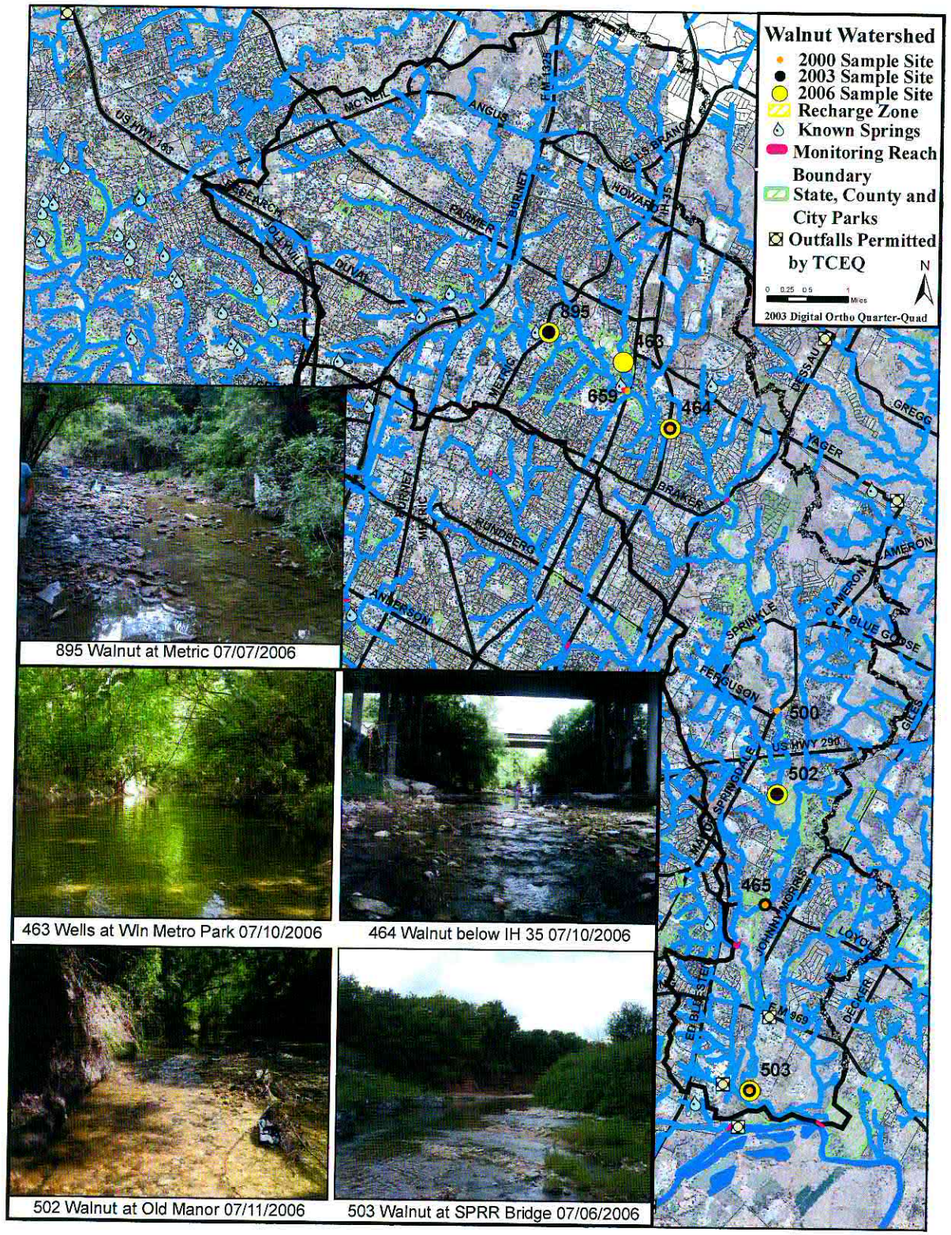


Land Use and Development:

The Walnut Creek watershed is the largest developed watershed in Austin and crosses over the Northern Edwards Aquifer as it flows east to the rich soils of the Blackland Prairie region. It has thirteen caves and several seeps and springs which enhance perennial flow. Well known sites include Jourdan Bachman Pioneer Farm, Motorola, Walnut Creek Park, Scofield Farms, North Austin Medical Center, and Seton Northwest. The steeply incised and eroded sandy banks in the lower watershed are in stark contrast to the smoothly worn bedrock banks of the upper watershed. While the most commonly reported pollution problem in almost all watersheds is sewage, the most common problem in Walnut Creek is petroleum, followed by sediment.

Walnut Creek Watershed

Aerial Map



895 Walnut at Metric 07/07/2006

463 Wells at Win Metro Park 07/10/2006

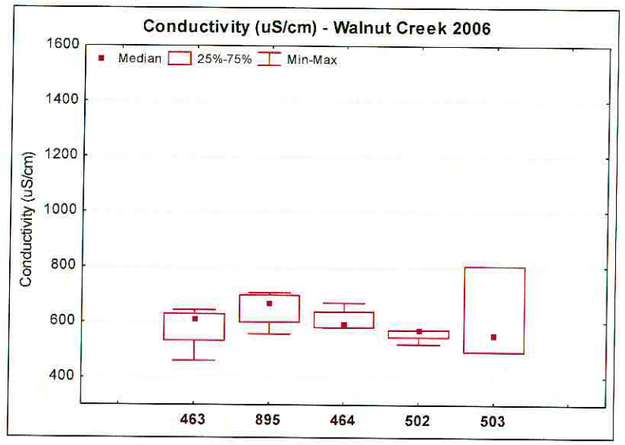
464 Walnut below IH 35 07/10/2006

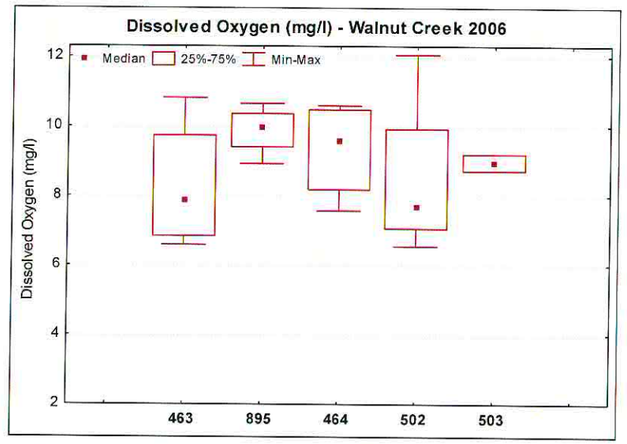
502 Walnut at Old Manor 07/11/2006

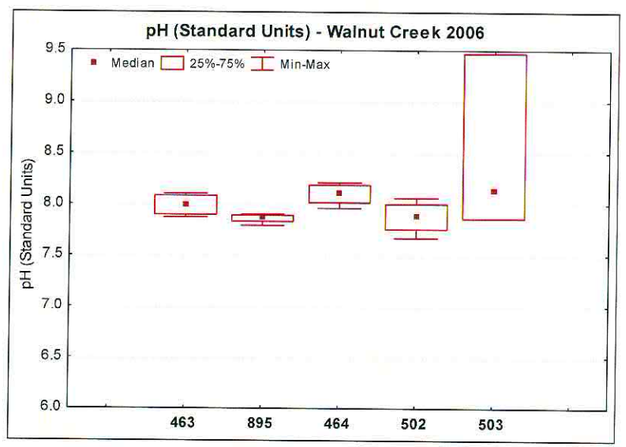
503 Walnut at SPRR Bridge 07/06/2006

Walnut Creek Watershed

Data Summary Graphs – Field Parameters

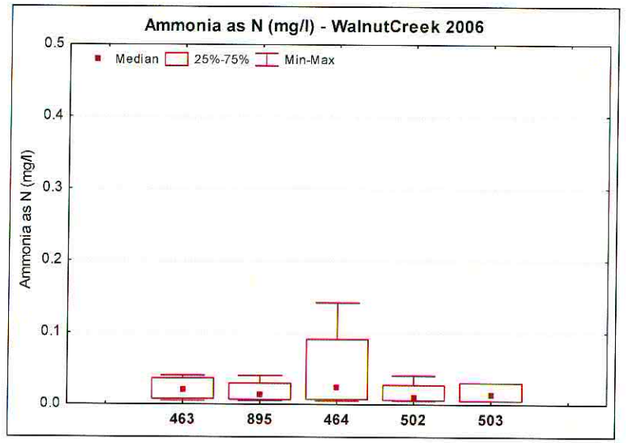


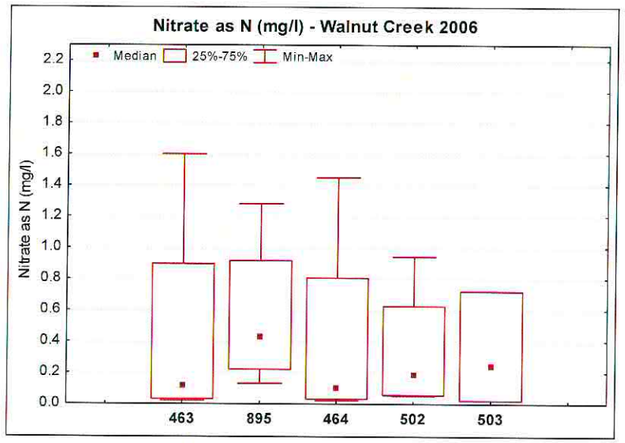


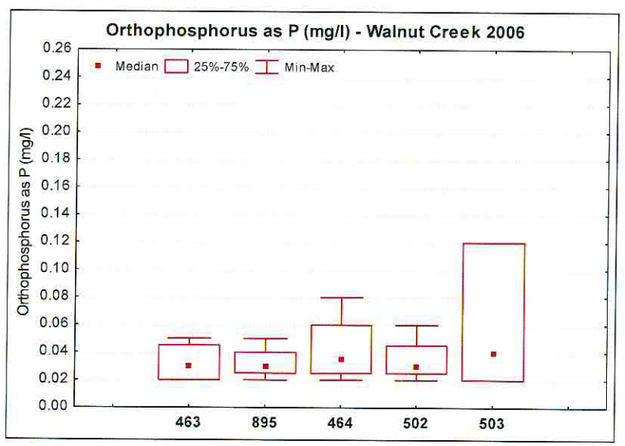


Walnut Creek Watershed

Data Summary Graphs – Nutrients







Walnut Creek Watershed

Data Summary Graphs – Physical Parameters