



Palm Beach County Water Utilities Department



Eastern Hillsboro Canal - WTP #9
Aquifer Storage and Recovery Well
PBCWUD Project No. 98 – 66B

Well Construction Report and
Operational Testing Request

August 2003

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Casing Mill Certificates

ASR Well

10:29 #365 P.02/03

2001,05-16

853 519 8779

FROM : BARTOW STEEL



SAW Pipes USA, Inc.
P.O. Box 2349
Baylor, TX 77522-2349
(281) 383-3300

SAW FORM NO. 20
18155

METALLURGICAL AND PIPE TEST REPORT

CUSTOMER THOMAS PIPE & STEEL P.O. BOX 53187 BATON ROUGE, LA 70805	P.O. DATE 3/7/00	P.O. NUMBER TSL-752	This is to certify that the product described herein was manufactured, sampled, and tested in accordance with the specifications and requirements in such specifications. Approved: <u><i>Johnson</i></u> Date: <u>11/12/97</u>
	SHIP TO: THOMAS PIPE & STEEL CUSTOMER PICK-UP		

API 5L APRIL 1985 41ST EDITION

GUIDED BEND TEST:
 FACE BEND: SATISFACTORY
 ROOT BEND: SATISFACTORY
 FRACTURE LOCATION:
 WELD TENSILE: BASE METAL

WELD SEAM INSPECTED BY FLOUROSCOPIC RADIOLOGICAL METHOD

ITEM NO.	MATERIAL DESCRIPTION SPECIFICATION AND GRADE	MAT	HEAT/LOT	HYDRO	YIELD PSI	TENSILE PSI	ELON %	C WIDTH	CHARPY		DMTT	
									%SHEAR	ENERGY	%SHEAR	ENERGY
	48" X 0.375" SL GRADE B/X-2 A. LONGITUDINAL B. TRANSVERSE C. WELD	CSAW	SG3129	590 PSI 10 SECONDS (AW)	55,100 54,000 47,700	66,500 68,400 66,600	40.0 44.0	1.487 1.490 1.474				

HEAT NO.	C	Mn	P	S	SI	Cu	Ni	Cr	Mo	Al	Nb	V	YIELD STRENGTH DETERMINED AT 0.5% EXT.
SG3129	0.12	1.000	0.018	0.008	0.280					0.038			
PRODUCT	0.09	0.970	0.011	0.008	0.290					0.044			
PRODUCT	0.10	0.970	0.010	0.008	0.290					0.044			

THESE MILL TEST REPORTS APPLY TO
 YOUR P.O. # Palm Beach Job
 BARTOW STEEL REF. # 34479

CERTIFIED COPY

TELEPHONE: (416) 299-1113
 FAX: (416) 299-5951

CANADIAN PHOENIX STEEL PRODUCTS

DIVISION OF TORONTO ONTARIO LIMITED
 289 HORNER AVENUE
 ETOBICOKE, ONTARIO,
 CANADA
 M9Z 4Y4

LABORATORY REPORT AND MILL TEST CERTIFICATE

DATE Dec. 7/00 CUSTOMER Pipe & Piling Supplies
 SPECIFICATION A139B CUSTOMER'S P.O. BLK-1125
 DIA. & WALL 34" O.D. X .375 WT PHOENIX REF.# 00-3658
 HYDROTEST 620 PSI FOR 2 Min.

PHYSICAL PROPERTIES

HEAT NO.	PIPE NO.	LONGITUDINAL TEST		% ELONGATION	TRANSVERSE WELD TENSILE	BREAK LOCATION
		YIELD	TENSILE			
7950P	3	46700	73900	37.5	77300	PM
7955P	10	57800	81300	37.5	83900	PM
8064M	14	59400	83100	37.5	85800	PM
8163M	49	46200	67300	37.5	70500	PM
121581	54	49000	74300	37.5	77100	PM

LADLE ANALYSIS

CHEMICAL COMPOSITION

HEAT NO.	C	MN	S	P	SI	CR	NI	CU	MO	AL
7950P	.20	.84	.006	.009	.23	.02	.01	.03	.010	.034
7955P	.18	.83	.007	.009	.22	.01	.01	.01	---	.036
8064M	.18	.89	.005	.011	.23	.02	.01	.02	---	.038
8163M	.18	.86	.004	.011	.22	.02	.01	.01	.010	.042
121581	.21	.97	.003	.007	.04	.06	.04	.12	.013	.041

The material listed on this report has been tested in accordance with the specification shown above.

Authorized Approval

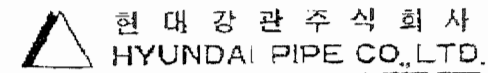
THESE MILL TEST REPORTS APPLY TO
 YOUR P.O. # D74-10499
 BARTOW STEEL REF.# BNC-225

검사증명서 (A)

MILL INSPECTION CERTIFICATE

THESE MILL TEST REPORTS APPLY TO
YOUR P.O.# D74-10499

수령 고객 (CUSTOMER) BARTOW STEEL REF # BNC-225



본사 : 울산광역시 동구 영포동 265번지 (울산광역시)
ULSAN PLANT : 425, YUNGPO-DONG, DONG-GU, ULSAN METROPOLITAN, KOREA
TEL: 052-287-2711-9 FAX: 052-287-2816
ULSAN OFFICE : K. 53708

* 서울사무소 서울특별시 중구 우동동 77번지 (영도구-0127호)
SEOUL OFFICE : #77, MUKYO-DONG, JUNG-GU, SEOUL, KOREA
TEL : 773-0422 FAX : 773-7095
TLX : HOPIPE K 24856, K 22956

검사증명서 번호 : E-6-04-269
PAGE : 1
발행 일자 : APR. 28, 1998. E6008490
계약 번호 :
제품명 : E.P.V. STEEL PIPE
규격 : API 5L X42/API 5L B/ASTM A53B

G: 6069

TYPE OF PIPE END	DIMENSION OUTDIA x THICK x LENGTH	QUANTITY	WEIGHT	HYDRO-STATIC TEST	VISUAL INSPECTION TEST	FLATTENING TEST	FOLDING TEST	COATINGS TEST	HEAT NO.	TENSILE TEST		CHEMICAL COMPOSITION (%)								REMARK					
										YIELD STRENGTH	TENSILE STRENGTH	C	S	Mn	P	S	CU	NI	O		Mo	Cr	Co		
BPEE 00:16"	x .500" x 42.000'	2	3.157	157	G	G	G		B57081	30.3	47.8	50.5	38	16	1	75	14	7	6	1	2	1	1		
	(406.4mm x 12.70mm x 12.802M)			2200						43100	68000	71800													
BPEE 00:24"	x .375" x 40.000'	160	309.024	83	G	G	G		A30385	28.5	48.9	51.6	40	18	1	76	15	9	5	2	1	1	1		
	(510.0mm x 9.53mm x 12.192M)			1120						40500	69600	73400													
									A30387	29.3	48.0	52.3	41	17	1	77	14	9	6	1	2	1	1		
										41700	69700	74400													
									A30424	29.5	48.2	51.2	40	18	1	75	18	0	6	1	2	1	1		
										42000	68600	72800													
									A31749	30.5	47.0	50.2	41	17	1	76	19	0	6	1	2	1	1		
										43400	66900	71400													
BPEE 00:24"	x .500" x 40.000'	131	254.261	110	G	G	G		A29489	32.9	49.5	52.4	35	17	1	78	17	8	0	2	1	1	1		
	(510.0mm x 12.70mm x 12.192M)			1560						45800	70400	74500													
									A31747	31.9	47.8	50.8	38	17	1	77	20	9	5	2	1	1	1		
										45400	67700	72000													
									A32421	30.1	48.3	51.4	38	17	1	73	15	7	6	1	2	1	1		
										42800	68700	73100													
TOTAL ->		313	610.442																						

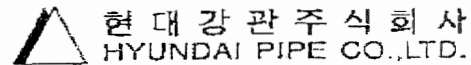
참고-NOTES [단위] Type of pipe End 관종
 BPE : Black Plain End Square-cut BPEE : Beveled Plain End Square-cut
 BPEB : Black Plain End Beveled BPEEB : Beveled Plain End Beveled
 BTC : Black Threaded & Coupled BTC : Beveled Threaded & Coupled
 BVT : Black Vertical Joint BVT : Beveled Vertical Joint
 ETC : Enamelled Threaded & Coupled

단위 : M: Meter, F: Feet, I: Inch
 G: Good
 M: Heat (Ladle) Analysis 결과 분석, P: Product Analysis 제품 분석

본 제품은 관련규격에 합격되었습니다.
 WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN
 MANUFACTURED IN ACCORDANCE WITH THE PRESCRIBED SPECIFICATION AND GRADE.
 SURVEYOR: _____ INSPECTION MANAGER: S. D. Kim

검사증명서(A)

MILL INSPECTION CERTIFICATE



현대강관주식회사
HYUNDAI PIPE CO., LTD.

본사·중앙 : 울산광역시 북구 영포동 285번지 (동명동-로코동)
HEAD OFFICE : 285, YUMPO-DONG, BUK-KU, ULSAN, KOREA
(ULSAN PLANT) TEL:280-8114 FAX:(052)287-8916
TUXHCP:PE K 53776

서울사무소 : 서울특별시 중구 무교동 77번지 (건국동-건국동)
SEOUL OFFICE : 77, MUGYO-DONG, JONGNO-KU, SEOUL, KOREA
TEL:3455-0500 FAX:775-7685

검사증명서 번호 : 800130
페이지 : 1
발행 일자 : FEB. 11. 2000
E4001007
계약명 :
COMMODITY : F.R.L. STEEL PIPE
SPECIFICATION : API 5L X42/API 5L B/ASTM A53B/ASME SA53B

수요자 :
CUSTOMER

번호	TYPE OF PIPE END	DIMENSION (OUTDIA. x THICK x LENGTH)	수량 QUANTITY (PCS)	중량 WEIGHT (KG)	수상시험 HYPO-STATIC TEST MPa PSI	외관검사 FLATTENING TEST WELD DUCTILITY TEST DRIFT TEST FLARING TEST CRUSH TEST RELATINING TEST HEAT TREATMENT TEST	코팅시험 COATING TEST WEIGHT OF ZINC COAT TEST DIP TEST	강도시험 TENSILE TEST YIELD STRENGTH TENSILE STRENGTH ELONGATION	화학 조성 (1991) CHEMICAL COMPOSITION											충격시험 IMPACT TEMPERATURE K J FT-LB		
									C	SI	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb		Al	CEQ
#1	PIPE	CD 24" x .500" x 42.000"	21	50.233	111	G	G	47622	51.9	50.1	53.2	38	19	2	79	10	8	1	1	Tr	Tr	
#2		(610.0mm x 12.70mm x 12.802X)		1580					4500	71300	75700											
#3	TOTAL ->		21	50.233																		

THESE MILL TEST REPORTS APPLY TO
YOUR P.O.# D14-10499
BARTOW STEEL REF.# BMC-225

비고
REMARK

참고
NOTES

- (1) Type of pipe End 관종
 - X B Black
 - G Galvanized
 - E Enamelled
 - Y Yellow
 - F Removal Varnish
 - O Oving Coating
 - P PE Coating
 - C Coater Coating
 - A Abrasil Coating
- XX PE Plain End
- BE Bevel End
- TE Thread End
- TC Thread Coupling
- SE Beel End
- SE Sleepy End
- VE Vehicle Joint
- (2) NE : Nominal Size 표기용, OD : Outside Diameter
- (3) G Good
- (4) W Weld Ductility Test 성공률 100% 이상
- (5) F Flaring Test 합격사양
- (6) H Heat Treatment 열처리
- (7) H : Heat/Lack Analysis 불결검사 P Product Analysis 제품분석
- (8) U Unit 인치 (M, mm, I, inch)
- (9) W Weld Dimension Test 용단 1, 2, 3, 4
- (10) N Non-destructive Test 비파괴검사
- (11) C Crush Test 충격시험
- (12) B Base Metal 오뚜막
- (13) U Unit 인치 (M, Meter, F, Feet, I, inch)
- (14) F Flaring or Banding Test 관종 또는 굽힘시험
- (15) C/C Test 인공파괴
- (16) R Reverse Flaring Test 관종시험
- (17) W Weld Part 용접부

SURVEYOR

본 제품은 관련규격에 합격되었음을 보증합니다.
WE CERTIFY THAT THE DESCRIBED MATERIAL HAS HEREIN BEEN
ACCEPTED IN ACCORDANCE WITH THE PRESCRIBED SPECIFICATION AND ORDER.

H. G. Lee
QUALITY ASSURANCE TEAM GENERAL MGR.

검사증명서 (A)

MILL INSPECTION CERTIFICATE

THESE MILL TEST REPORTS APPLY TO
YOUR P.O. # D74-10499

BARTOW STEEL REF # BXC-225

현대강관주식회사
HYUNDAI PIPE CO., LTD.

● 본사-공장: 울산광역시 중구 영포동 265번지 **울산-영포동**
ULSAN PLANT: 265, YONGPO-DONG, JUNG-GU, ULSAN METROPOULITAN, KOREA
TEL: 052-287-2101-8 FAX: 052-287-8915
ULS PIPE K2075

● 서울사무소: 서울특별시 중구 우교동 77번지 **050-3120**
SEOUL OFFICE: #77, MUKYO-DONG, JUNG-GU, SEOUL, KOREA
TEL: 773-0522 FAX: 773-7054
TEL: HDPIPE K 24656, K 22928

검사증명서 번호: E-8-04-269
CERIFICATE NO: E-8-04-269
발행 일자: APR. 28. 1993
DATE OF ISSUE: APR. 28. 1993
계약 번호: E4602400
CONTRACT NO: E4602400
품명: E.R.W. STEEL PIPE
COMMODITY: E.R.W. STEEL PIPE
규격: API 5L X42/R1 SLE/ASTM A53B
SPECIFICATION: API 5L X42/R1 SLE/ASTM A53B

TYPE OF PIPE END	DIMENSION OUTDIA. x THICK. x LENGTH	QUANTITY IPCS	WEIGHT (KGS)	HYDRO-STATIC TEST Mpa kg/cm ² PSI	VISUAL INSPECTION FLATNESS WELD BEAD WELD TOOTH WELD CRACK WELD SPATTER WELD DISCONTINUITIES WELD DEFECTS	COATING TEST DIP TEST DIP TEST	HEAT NO.	TENSILE TEST				CHEMICAL COMPOSITION (%)							REMARK			
								YIELD STRENGTH MPa kg/cm ² PSI	TENSILE STRENGTH MPa kg/cm ² PSI	ELONGATION %	REDUCTION OF AREA %	C	S	Mn	P	S	Si	N		O	Mo	V
BPEB 00	18" x .500" x 42,000' (406.4mm x 12.70mm x 12,802M)	2	3,157	157	G G G G G		B57081	30.3	47.8	50.5	38	16	1	75	14	7	6	1	2	1	1	
BPEB 00	24" x .375" x 40,000' (610.0mm x 9.53mm x 12,192M)	180	306,024	83	G G G G G		A30385	28.5	49.9	51.8	40	18	1	75	15	9	5	2	1	1	1	
							A30387	29.3	49.0	52.3	41	17	1	77	14	9	6	1	2	1	1	
							A30424	29.5	48.2	51.2	40	18	1	75	18	10	8	1	2	1	1	
							A31749	30.5	47.0	50.2	41	17	1	76	19	10	6	1	2	1	1	
BPEB 00	24" x .500" x 40,000' (610.0mm x 12.70mm x 12,192M)	131	298,261	110	G G G G G		A29589	32.9	49.5	52.4	35	17	1	78	17	8	6	2	1	1	1	
							A31747	31.9	47.6	50.6	38	17	1	77	20	9	5	2	1	1	1	
							A32421	30.1	48.3	51.4	38	17	1	73	15	7	6	1	2	1	1	
TOTAL ->		313	610,442					42800	68790	73300												

참고-NOTES (※) Type of pipe End 판종
 BPE : Black Plain End Square-cut GPE : Galvanized Plain End Square-cut
 BPEB : Black Plain End Beveled GPEB : Galvanized Plain End Beveled
 BTC : Black Threaded & Coupled GTC : Galvanized Threaded & Coupled
 BVJ : Black Vessel Joint GVJ : Galvanized Vessel Joint
 ETC : Enamelled Threaded & Coupled

① NB : Nominal Size/표명경, OD : Outside Diameter
 ② 단: 단차, M : Meter, F : Feet, I : Inch
 ③ Flattening or Bending Test 결과 또는 증명서함
 ④ Nondestructive Test 이라기만 함
 ⑤ Crush Test 증명서함
 ⑥ W : Weld Part 증명서함
 ⑦ G : Gaud
 ⑧ Dr : Test 증명서함
 ⑨ Reverse Flattening Test 증명서함
 ⑩ H : Heat (Ladle) Analysis 증명서함, P : Product Analysis 증명서함

⑪ 단: 단위, M : mm, I : inch
 ⑫ Yield & Dimension Test 결과 및 채주검사
 ⑬ Weld Ductility Test 증명서함
 ⑭ Flaring Test 증명서함
 ⑮ Base Metal 증명서함

SURVEYOR

본 제품과 관련된 규격과 합격치에 관한 모든 것을 제공합니다.
 WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN
 ACCEPTED IN ACCORDANCE WITH THE PRESCRIBED SPECIFICATION AND CODES.

S. D. Kim
INSPECTION MANAGER

검사 증명서 (A)

MILL INSPECTION CERTIFICATE

THESE MILL TEST REPORTS APPLY TO

YOUR P.O. # PO D74-10499

BARTOW STEEL REF. # bnc-225



현대강관주식회사
HYUNDAI PIPE CO., LTD.

* 본사 : 울산광역시 울주군 영도동 285번지 **80000-0000**
ULSAN PLANT : 800, YUKPO-DONG, DONGHAU ULSAN METROPOLITAN KOREA
TEL: (052) 245-7200 FAX: (052) 245-7296
TEL: 011-273-2576

* 부산시 부산시 북구 구포동 77번지 **81000-0000**
SEKOL OFFICE : 810, GUPPO-DONG, LUKHE-22, SEKOL, KOREA
TEL : 773-3922 FAX : 773-7094
TEL : HDPPE # 24434, K 22956

검사증서번호 CERTIFICATE NO	E-8-04-209	페이지 PAGE	1
발행일자 DATE OF ISSUE	APR. 28, 1999	제조번호 MANUFACTURE NO.	EA008400
제약조건 RESTRICTION			
COMMODITY	E.S.V. SEWER PIPE		
SPECIFICATION	API 5L X42/XP1 SL/ASTM A53B		

CUSTOMER

ITEM TYPE OF PIPE END	DIMENSION DIA. x THICK. x LENGTH	DIMENSION STY. (POS.)	WEIGHT (KG)	HYDRO-STATIC TEST (MPa)	QUATARY TEST	HEAT NO.	TENSILE TEST				CHEMICAL COMPOSITION										REMARKS																		
							YIELD STRENGTH (MPa)	TENSILE STRENGTH (MPa)	ELONGATION (%)	REDUCTION OF AREA (%)	C	Mn	P	S	Si	Al	Fe	Cr	Ni	Mo		Cu	Nb	REMARKS															
B792	Ø110" x .300" x 12.000'	1	3,157	157.0	G.G.G.G.	657081	30.3	47.8	50.5	38	0.025	0.035	0.0015	0.005	0.03	0.01	0.0005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001				
	(406.4mm x 12.70mm x 12.192m)						43706	59000	71800																														
S792	Ø124" x .375" x 6.000'	180	309,724	82.0	G.G.G.G.	A30384	28.5	48.9	51.8	40	0.018	0.025	0.0015	0.005	0.03	0.01	0.0005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001			
	(810.0mm x 9.53mm x 12.192m)						40200	62800	73400																														
							A30387	29.3	49.0	52.3	41	0.017	0.024	0.0015	0.005	0.03	0.01	0.0005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	
							41700	69700	79400																														
							A30424	28.5	48.2	51.2	40	0.018	0.025	0.0015	0.005	0.03	0.01	0.0005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	
							42800	62600	72600																														
							A31740	30.5	47.0	50.2	41	0.017	0.024	0.0015	0.005	0.03	0.01	0.0005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	
							43400	59800	71400																														
B798	Ø124" x .500" x 6.000'	131	254,261	115.0	G.G.G.G.	A30588	32.0	49.5	52.4	38	0.017	0.024	0.0015	0.005	0.03	0.01	0.0005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001		
	(810.0mm x 12.70mm x 12.192m)						43800	70400	74300																														
							A31729	31.0	47.8	50.8	38	0.017	0.024	0.0015	0.005	0.03	0.01	0.0005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	
							45400	67700	72000																														
							A31749	35.1	48.3	51.4	38	0.017	0.024	0.0015	0.005	0.03	0.01	0.0005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	
							42800	62700	71700																														
TRIAL	-)		393	510,442																																			

<p>설치 - NOTES [설치] Type of pipe End 설명</p> <p>BPE : Beveled Plain End Squared BPEB : Beveled Plain End Beveled BTE : Beveled Threaded & Coupled BTEC : Beveled Threaded & Coupled ETC : Beveled Threaded & Coupled</p>	<p>[설치] [설치] [설치] [설치] [설치] [설치]</p> <p>CEB : Chamfered Plain End Beveled CPEB : Chamfered Plain End Beveled DTC : Drilled Threaded & Coupled DTE : Drilled Threaded & Coupled</p>	<p>[설치] [설치] [설치] [설치] [설치] [설치]</p> <p>OT : Outside Diameter MOT : Mean, F : First, L : Last Non-destructive Test : 비파괴검사 Crack Test : 균열검사 Weld Test : 용접부 검사</p>	<p>[설치] [설치] [설치] [설치] [설치] [설치]</p> <p>UT : Ultrasonic Test : 초음파검사 RT : Radiographic Test : 방사선검사 PW : Penetrant Test : 침투액검사 HT : Heat Treatment : 열처리</p>
--	--	---	---

본 제품은 영민규격에 준하여 제조되었습니다.

WE PROMISE CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE BEST PRACTICE SPECIFICATIONS AND PROCEDURES.

SURVEYOR

INSPECTION MANAGER **J. H. Kim**

863 619 8779
 963 619 8779
 2001.10.05 09:26 H451 P.01/01

FAMW

TELEPHONE: (416) 298-1113
FAX: (416) 298-9991

CANADIAN PHOENIX STEEL PRODUCTS

DIVISION OF BARTOW ONTARIO LIMITED
298 HOFFMAN AVENUE
ETOBICOKE, ONTARIO,
CANADA
M9Z 4Y4

LABORATORY REPORT AND MILL TEST CERTIFICATE

DATE Dec. 7/00 CUSTOMER Pipe & Piping Supplies
 SPECIFICATION A1398 CUSTOMER'S P.O. BLK-1125
 DIA. & WALL 34" O.D. X .375 WT PHOENIX REF. # 00-3658
 HYDROTEST 620 PSI FOR 2 Min.


PHYSICAL PROPERTIES

HEAT NO.	PIPE NO.	LONGITUDINAL TEST		% ELONGATION	TRANSVERSE		BREAK LOCATION
		YIELD	TENSILE		YIELD	TENSILE	
7950P	3	48700	73900	37.5	77300		PM
7955P	10	57800	81300	37.5	83900		PM
8064M	14	59400	83100	37.5	85800		PM
8163M	49	46200	67300	37.5	70600		PM
121581	54	49000	74300	37.5	77100		PM

LADLE ANALYSIS CHEMICAL COMPOSITION

HEAT NO	C	MN	S	P	SI	CR	N	CU	MO	AL
7950P	.20	.84	.006	.009	.23	.02	.01	.03	.010	.034
7955P	.18	.83	.007	.009	.22	.01	.01	.01	---	.036
8064M	.18	.89	.005	.011	.23	.02	.01	.02	---	.038
8163M	.18	.86	.004	.011	.22	.02	.01	.01	.010	.042
121581	.21	.97	.003	.007	.04	.06	.04	.12	.013	.041

The material listed on this report has been tested in accordance with the specification shown above.


Authorized Approver

THESE MILL TEST REPORTS APPLY TO
YOUR P.O. # Peter Beach Job
BARTOW STEEL REF. # 34479



AMERICAN STEEL PIPE
 A DIVISION OF AMERICAN CAST IRON PIPE CO.,
 P. O. BOX 2727, BIRMINGHAM, AL 35202-2727
 QUALIFICATION REPORT OF SHIPMENT

DATE: 28/NOV/2000

CUSTOMER ADDRESS: CONSOLIDATED PIPE & SUPPLY COR
 P O BOX 2472
 BIRMINGHAM AL 35201

CUSTOMER ORDER NUMBER
 S13-01362

HEC ORDER NUMBER
 S104172

LINE	PIECES	FOOTAGE	SIZE	WALL	SHIPMENT DESCRIPTION											SPECIFICATIONS	GRADE
					SHIP. NO 1-9												
1	106	4271.1	24.00	.375	ERW API LINE PIPE											API 5L ASTM A53 ASME SA53	BX42 B B

HEAT	C	MN	P	S	CB	SI	TI	CU	NI	MO	CR	V	AL	B	N	C.R.
80982	LINE 1															
H=	0.050	0.660	0.013	0.005	0.017	0.210	0.017	0.010	0.000	0.001	0.020	0.004	0.031	0.000	0.007	0.166
P=	0.060	0.659	0.012	0.004	0.018	0.198	0.017	0.017	0.009	0.004	0.026	0.007	0.029	0.000	0.000	0.179
M=WELD TEN.	68.0 KSI		TEN.		65.0 KSI		YIELD		53.0 KSI		TEL 46.0 RB		84 HYDRO: 1180 PSI			
80985	LINE 1															
H=	0.050	0.710	0.012	0.005	0.016	0.240	0.018	0.020	0.010	0.003	0.030	0.003	0.039	0.000	0.005	0.178
P=	0.057	0.716	0.010	0.004	0.017	0.240	0.018	0.026	0.014	0.007	0.034	0.006	0.035	0.000	0.000	0.188
M=WELD TEN.	69.5 KSI		TEN.		67.0 KSI		YIELD		54.0 KSI		TEL 44.0 RB		87 HYDRO: 1180 PSI			
80986	LINE 1															
H=	0.060	0.660	0.013	0.004	0.017	0.230	0.012	0.010	0.010	0.002	0.030	0.005	0.034	0.000	0.006	0.179
P=	0.066	0.656	0.011	0.004	0.015	0.216	0.012	0.022	0.012	0.005	0.028	0.004	0.031	0.000	0.000	0.185
M=WELD TEN.	67.5 KSI		TEN.		67.0 KSI		YIELD		54.5 KSI		TEL 45.0 RB		85 HYDRO: 1180 PSI			

PAGE 1
CONTINUED

ISSUE NO. 4

MILL ECTS
24" CSQ, FAMW

ISSUE DATE: 01/17/1996

QD-AWJF055

[Handwritten signature]

F-309

P.02/05

T-118

205-251-7838

FROM-CONSOLIDATED PIPE

JAN-04-01 12:09



DATE: 28/NOV/2000

CUSTOMER ORDER NUMBER
S13-01362

MPG ORDER NUMBER
S104172

CUSTOMER NAME: CONSOLIDATED PIPE & SUPPLY COR

HEAT	C	MN	P	S	CB	SI	TI	CU	NI	MO	CR	V	AL	B	N	C.E.
AOP0541 LINE 1																
H=	0.170	0.860	0.011	0.009	0.002	0.040	0.002	0.080	0.040	0.006	0.030	0.004	0.033	0.000	0.011	0.329
P=	0.165	0.863	0.012	0.008	0.000	0.039	0.002	0.072	0.045	0.010	0.035	0.003	0.027	0.000	0.000	0.126
M=WELD	TEN.	75.5 KSI	TEN.	66.0 KSI	YIELD	46.5 KSI	%EL	40.5 RB	86	HYDRO.	1180	PSI				
BOP5823 LINE 1																
H=	0.180	0.870	0.010	0.003	0.002	0.070	0.002	0.090	0.040	0.006	0.040	0.004	0.024	0.000	0.009	0.344
P=	0.187	0.939	0.012	0.002	0.000	0.062	0.001	0.086	0.046	0.010	0.045	0.003	0.020	0.000	0.000	0.364
M=WELD	TEN.	76.5 KSI	TEN.	70.5 KSI	YIELD	52.5 KSI	%EL	38.5 RB	87	HYDRO.	1180	PSI				
BOP5831 LINE 1																
H=	0.190	0.840	0.012	0.007	0.003	0.050	0.002	0.090	0.050	0.006	0.040	0.004	0.028	0.000	0.011	0.349
P=	0.192	0.892	0.013	0.007	0.001	0.054	0.001	0.087	0.050	0.011	0.042	0.004	0.026	0.000	0.000	0.351
M=WELD	TEN.	74.5 KSI	TEN.	66.0 KSI	YIELD	49.5 KSI	%EL	43.0 RB	87	HYDRO.	1180	PSI				

LEGEND ANALYSES:

- A-Z - ADDITIONAL TESTING
- R - RETEST
- H - HEAT ANALYSIS
- L - LONGITUDINAL
- P - PRODUCT ANALYSIS
- T - TRANSITIONAL
- M - MECHANICAL PROPERTIES
- W - WELD LINE
- HYDROSTATIC TEST: OK
- FLATTENING TEST: OK
- ULTRASONIC CALIBRATION N-10 NOTCH

WE HEREBY CERTIFY THAT THE ABOVE FIGURES ARE CORRECT AS CONTAINED IN THE RECORDS OF THIS COMPANY, AND THAT THE PIPE WERE MANUFACTURED, TESTED AND INSPECTED IN COMPLIANCE WITH THE LATEST EDITION OF THE APPLICABLE SPECIFICATION, IN BIRMINGHAM, ALABAMA, U.S.A.

MANAGER OF QUALITY ASSURANCE - STEEL PIPE

PAGE 2

END OF REPORT

ISSUE DATE: 01/17/1996

ISSUE NO.: 4

QD-AW1F055

F-309

P. 03/05

T-118

205-251-7838

FROM CONSOLIDATED PIPE

JAN-04-01 12:09

PSI Information
To Build On
Engineering • Consulting • Testing

CLIENT: Mr. Jason Volk
CONSOLIDATED PIPE & SUPPLY
P.O. Box 2472
Birmingham, AL 35201

PROJECT: Tensile & Chemical Test
14" OD STD BARE SMLS

SALES ORDER NO.: 1311929-003

DATE: July 12, 2001 REPORT NO.: 470-16056-001

REMARKS: Sample was received from the client on July 11, 2001

TEST METHOD: ASTM A370 E8
ASTM E415-95

TEST EQUIPMENT: SATEC M400 HVL
ARI 5460 AES Spectrometer

SPECIFICATIONS: N/A

TENSILE RESULTS

SAMPLE ID	AREA in ²	YIELD LOAD lbs.	TENSILE LOAD lbs.	YIELD STRENGTH psi	TENSILE STRENGTH psi	% ELONGATION 2"	WIDTH	THICKNESS
1	0.3000	9484	12948	47669	69763	31.4	.020	.400

CHEMICAL ANALYSIS

SAMPLE ID	C	Mn	P	S	Si	Cu	Ni	Cr	V	Mo	Al	B	Nb
1	.13	1.01	.005	.012	.33	.03	.05	.06	.001	.02	.026	.000	.000

Respectfully Submitted,
PROFESSIONAL SERVICE INDUSTRIES, INC.



Jonathan E. Ycu
Project Manager

JEL:cyk



A subsidiary of AMERSON International Corp.



P.O. Box 400
Merrell Wells, Texas 75008
(840) 328-1341
FAX (840) 328-0801

CASING TECHNICAL CALCULATIONS 6 3/8DHC.500

940 325 1341

TUBING DESCRIPTION:

INSIDE DIAMETER = 6.10"	LENGTH = 29 1/2'
OUTSIDE DIAMETER = 7.10" Nominal	MADE-UP LENGTH = 29 1/8'
WALL THICKNESS = 0.500" Nominal	WEIGHT PER FOOT = 9.30 lbs
BOX DIAMETER = 9.00" Nominal	

PHYSICAL PROPERTIES:

AXIAL MODULUS = 1.85 x 10 ⁶ psi	POISSONS RATIO (AXIAL) = 0.45
HOOP MODULUS = 3.00 x 10 ⁶ psi	AXIAL TENSILE STRENGTH = 16,000 PSI
ULTIMATE TENSILE = 120,000lbs	ULTIMATE COLLAPSE = 1285 psi
SHORT TERM WEEP = 4500 psi	AXIAL THREAD LOAD(ULT) = 150,000lbs

TUBING RATING CALCULATIONS:

RATED INTERNAL PRESSURE = 2000psi

Design Hoop Stress = 13500 Psi $W_T = (P_i \times D_i) / (2S_H - P_i)$ where:
 W_T = Reinforced Wall Thickness
 P_i = Internal Pressure
 S_H = Design Hoop Stress

$W_T = (2000 \times 6.10) / (27000 - 2000) = 0.488$ inches

RATED AXIAL LOAD

*Maximum Allowable Strain = 2800 microinches $L_A = (E_A \times 0.0028) \times CSA$ where:
 L_A = Rated Axial Load
 E_A = Axial Modulus
 CSA = Cross Sectional Area of Tube Body

$L_A = 1.85 \times 10^6 \times .0028 \times 10.362in^2 = 53675$ lbs Allowable Load

TUBING TECHNICAL CALCULATIONS 6 5/8DHC500(Cont'd)RATED HYDRAULIC COLLAPSE PRESSURE

CENTRON's Rating Protocol for Operating Collapse is Ultimate X 0.46

$P_c = (T/D_o)^3 \times K$ where:

P_c = Ultimate Collapse Pressure (PSI)

D_o = Outside Diameter of Tube Body

K = Constant = 8×10^6

The "K" factor was derived through actual hydraulic collapse testing of many sizes of GRE tubes.

$$P_c = (0.500/7.10)^3 \times (8 \times 10^6) = 2793 \text{ psi} \times 0.46 = 1285 \text{ psi operating collapse.}$$

20 Sept 2001

file:6 5/8DHC500

Cementing Records

ASR Well

ASR CEMENTING RECORD

PROJECT: HILLSBORO ASR



WUD Project No.: 98-66B

CONTRACTOR: Haskel Corp.

BID ITEM: _____

CASING SIZE: 34-inch surface casing

ATTACH ALL CALCULATION SHEETS

A	B	C	D	E	F	G	H	I	J	K	L	M
DATE	STAGE NO.	CEMENT (ADDITIVES, BLENDS, MIXTURES)	YIELD (FT ³ /SK)	QUANTITY PUMPED (FT ³)	THEORETICAL FILL		TAG DEPTH PAD LEVEL	ACTUAL FILL		PERCENT FILLED J/G x 100	CUMULATIVE TOTAL (FT ³)	INSPECTOR'S INITIALS
					INTERVAL	FOOTAGE		INTERVAL	FOOTAGE			
10/19/2001	1	Neat	1.18	1323	250 - 0	250	0	250 - 0	250	100	1323	TGU

ASR CEMENTING RECORD

PROJECT: HILLSBORO ASR



WUD Project No.: 98-66B

CONTRACTOR: Haskel Corp.

BID ITEM: _____

CASING SIZE: 24-inch final casing

ATTACH ALL CALCULATION SHEETS

A	B	C	D	E	F	G	H	I	J	K	L	M	
DATE	STAGE NO.	CEMENT (ADDITIVES, BLENDS, MIXTURES)	YIELD (FT ³ /SK)	QUANTITY PUMPED (FT ³)	THEORETICAL FILL		TAG DEPTH PAD LEVEL	ACTUAL FILL		PERCENT FILLED J/G x 100	CUMULATIVE TOTAL (FT ³)	INSPECTOR'S INITIALS	
					INTERVAL	FOOTAGE		INTERVAL	FOOTAGE				
1/18/02	1	Neat	1.18	905	1010 --	636	374	901	1010-901	109	29	905	TGU
1/23/02	2	Neat	1.18	729	901-599		302	424	901-424	477	158	1634	TGU
1/29/02	3	Neat	1.18	621	424-204		220	128	424-128	296	135	2255	TGU
8/31/02	4	6%	1.18	176	128-67		61	36	128-36	92	151	2431	TGU
9/1/02	5	Neat	1.18	41	36-22		14	19.5	36-19.5	16.5	118	2472	TGU
9/2/02	6	Neat	1.18	41	19.5-5.5		14	3	19.5-3	16.5	118	2513	TGU

FAMW

FAMW CEMENTING RECORD

PROJECT: HILLSBORO ASR

WUD Project No.: 98-66B
 CONTRACTOR: Haskel Corp.
 BID ITEM: _____
 CASING SIZE: 24-inch surface casing



ATTACH ALL CALCULATION SHEETS

A	B	C	D	E	F	G	H	I	J	K	L	M
DATE	STAGE NO.	CEMENT <small>(ADDITIVES, BLENDS, MIXTURES)</small>	YIELD <small>(FT³/SK)</small>	QUANTITY PUMPED <small>(FT³)</small>	THEORETICAL FILL		TAG DEPTH	ACTUAL FILL		PERCENT FILLED <small>J/G x 100</small>	CUMULATIVE TOTAL <small>(FT³)</small>	INSPECTOR'S INITIALS
					INTERVAL	FOOTAGE	PAD LEVEL	INTERVAL	FOOTAGE			
6/1/01	1	Neat	2.1	810	245 -- 0	245	0.5	245 - 0.5	235.5	96	810	TGU

FAMW CEMENTING RECORD

PROJECT: HILLSBORO ASR

WUD Project No.: 98-66B

CONTRACTOR: Haskel Corp.

BID ITEM: _____

CASING SIZE: 14-inch intermediate casing



ATTACH ALL CALCULATION SHEETS

A	B	C	D	E	F	G	H	I	J	K	L	M
DATE	STAGE NO.	CEMENT (ADDITIVES, BLENDS, MIXTURES)	YIELD (FT ³ /SK)	QUANTITY PUMPED (FT ³)	THEORETICAL FILL		TAG DEPTH PAD LEVEL	ACTUAL FILL		PERCENT FILLED J/G x 100	CUMULATIVE TOTAL (FT ³)	INSPECTOR'S INITIALS
					INTERVAL	FOOTAGE		INTERVAL	FOOTAGE			
7/11/01	1	Neat	2.1	810	1014 - 590	424	464	1014 - 464	550	130	810	TGU
7/12/01	2	Neat	2.1	770	464	404	0	464 - 0	464	115	1580	TGU

FAMW CEMENTING RECORD

PROJECT: HILLSBORO ASR

WUD Project No.: 98-66B

CONTRACTOR: Haskel Corp.

BID ITEM: _____

CASING SIZE: 6 5/8-inch final casing



ATTACH ALL CALCULATION SHEETS

A	B	C	D	E	F	G	H	I	J	K	L	M
DATE	STAGE NO.	CEMENT (ADDITIVES, BLENDS, MIXTURES)	YIELD (FT ³ /SK)	QUANTITY PUMPED (FT ³)	THEORETICAL FILL		TAG DEPTH PAD LEVEL	ACTUAL FILL		PERCENT FILLED J/G x 100	CUMULATIVE TOTAL (FT ³)	INSPECTOR'S INITIALS
					INTERVAL	FOOTAGE		INTERVAL	FOOTAGE			
2/1/02	1	2% Bentonite	1.36	27	1007 - 968	39	997	1007 - 997	10	26	27	TGU
2/2/02	2	Neat	1.18	24	997 - 962	35	975	997 - 975	22	63	51	TGU
2/4/02	3	Neat	1.18	216	975 - 643	332	632	975 - 632	343	103	267	TGU
2/5/02	4	Neat	1.18	378	632 - 51	581	66	632 - 66	566	97	645	TGU
2/6/02	5	Neat	1.18	30	66 - 20	46	0	66 - 0	66	143	675	TGU

FAMW CEMENTING RECORD

PROJECT: HILLSBORO ASR

WUD Project No.: 98-66B

CONTRACTOR: Haskel Corp.

BID ITEM: _____

CASING SIZE: Plug Back of FAMW



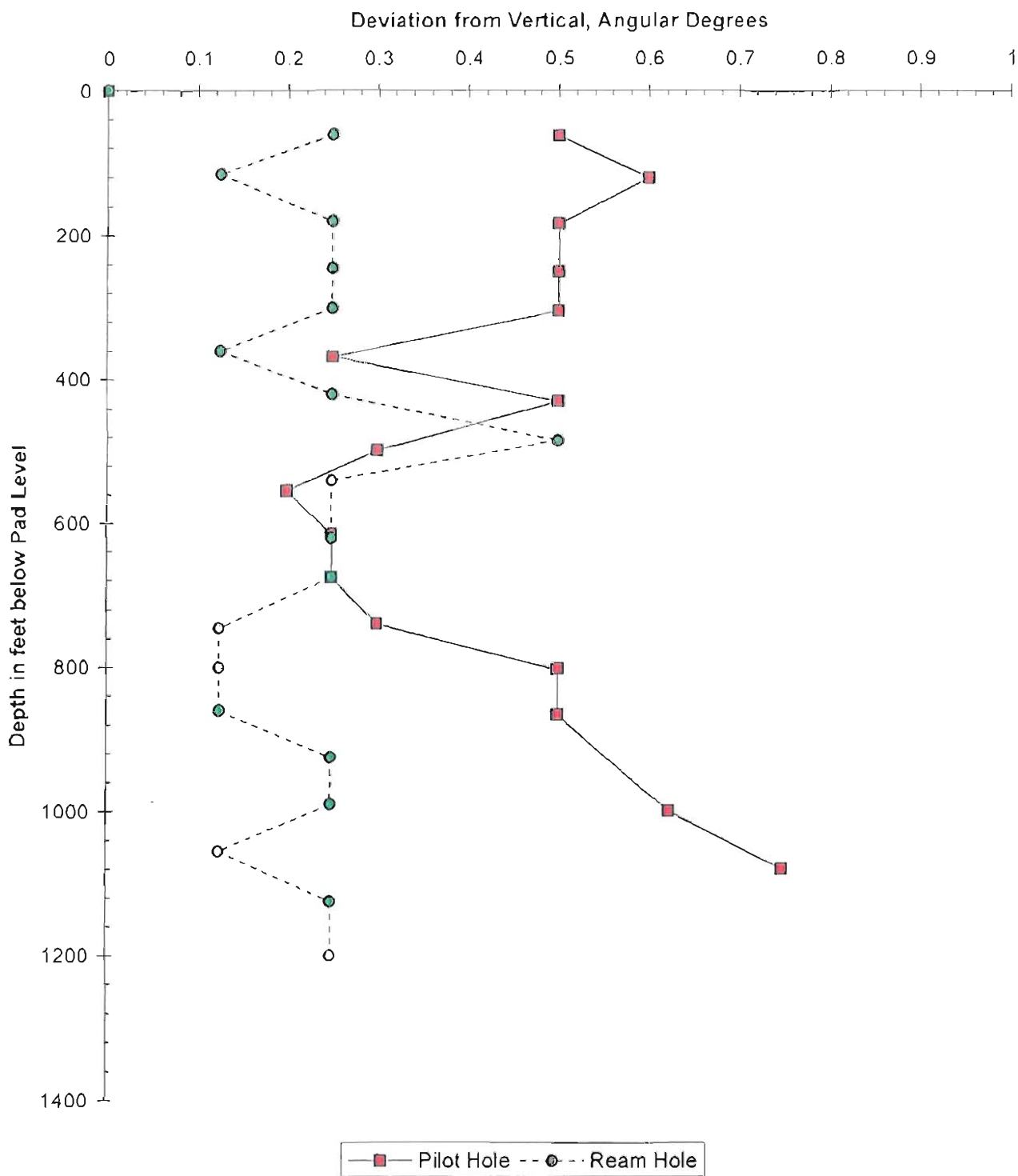
ATTACH ALL CALCULATION SHEETS

A	B	C	D	E	F	G	H	I	J	K	L	M
DATE	STAGE NO.	CEMENT (ADDITIVES, BLENDS, MIXTURES)	YIELD (FT ³ /SK)	QUANTITY PUMPED (FT ³)	THEORETICAL FILL		TAG DEPTH PAD LEVEL	ACTUAL FILL		PERCENT FILLED J/G x 100	CUMULATIVE TOTAL (FT ³)	INSPECTOR'S INITIALS
					INTERVAL	FOOTAGE		INTERVAL	FOOTAGE			
11/27/01	1	Neat	1.18	243	1629-1324	305	1372	1629-1372	257	84	243	TGU
11/28/01	2	Neat	1.18	81	1372-1270	102	1290	1372-1290	82	80	324	TGU
12/3/01	3	Neat	1.18	40	1290-1240	50	1256	1290-1256	34	68	364	TGU
12/8/01	4	Neat	1.18	35	1256-1212	44	1232	1256-1232	24	55	399	TGU

Deviation Surveys

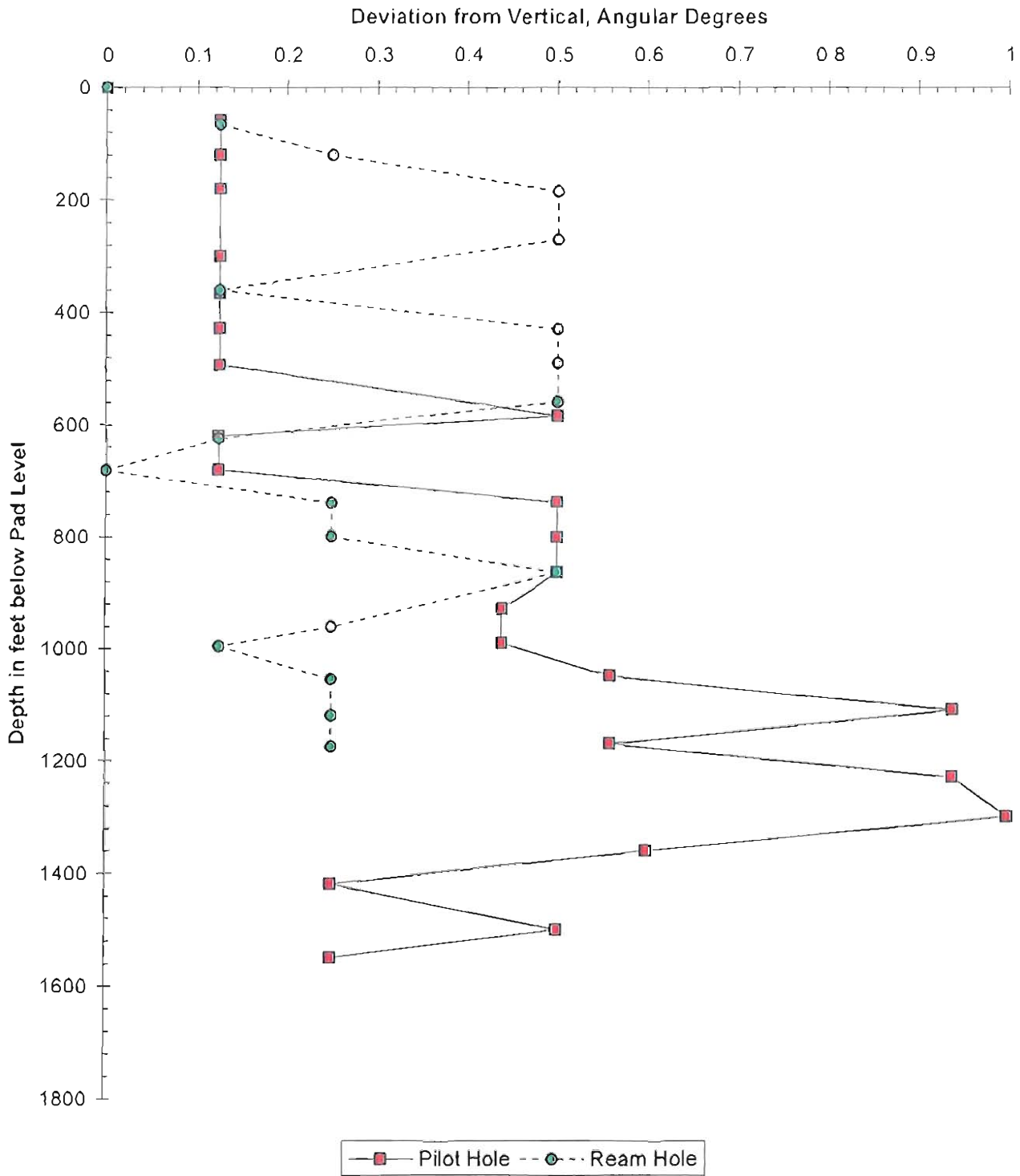
ASR Well

ASR Well Pilot & Ream Comparison of Deviation Surveys



FAMW

FAMW Well Pilot & Ream Comparison of Deviation Surveys



Core Descriptions

ASR Well



ASR CORE LOG

DATE(S): 11/2/01

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT HILLSBORO ASR WELL SYSTEM

WUD Project No.: 98 - 66B

CONTRACTOR: Haskel Corp.

Core Number 1

TOTAL DEPTH: 996 feet
 DRILLING METHOD: Diamond Drilling
 DRILLER(S): Festus
 DATUM POINT: Pad Level
 DATUM POINT ELEVATION: _____
 HYDROLOGIC UNITS: Hawthorn Group / Suwannee Limestone
 % RECOVERY: 20 %
 CORED INTERVAL: 971 - 996

DEPTH (feet below pad)			DEPTH INTERVAL	DESCRIPTION	DRILLING COMMENTS
971	to	976	5.0	LIMESTONE 100%: Color – olive gray (5Y 4/1) to light olive gray (5Y 5/2). Texture – phosphatic wackestone to packstone, moderate induration. Grains – siliciclastic, biogenic, micritic, phosphate, microcrystalline to very coarse sand sized. Cement/Matrix – carbonate. Porosity – high (35%), intergranular. Permeability – high. Hardness – hard. Fossils – pelecypods, gastropods, foraminifera, corals, some agatized mollusks.	

Observer's initials _____



ASR CORE LOG

DATE(S): 11/3/01

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT HILLSBORO ASR WELL SYSTEM

WUD Project No.: 98 - 66B

CONTRACTOR: Haskel Corp.

Core Number 2

TOTAL DEPTH: 1,021 feet
 DRILLING METHOD: Diamond Drilling
 DRILLER(S): Festus
 DATUM POINT: Pad Level
 DATUM POINT ELEVATION: _____
 HYDROLOGIC UNITS: Hawthorn Group / Suwannee Limestone
 % RECOVERY 14 %
 CORED INTERVAL 996 - 1,021

DEPTH (feet below pad)			DEPTH INTERVAL	DESCRIPTION	DRILLING COMMENTS
996	to	999.5	3.5	LIMESTONE 100%: Color - medium gray (N5) to light olive gray (5Y 6/1). Texture - phosphatic wackestone to packstone, moderate induration. Grains - siliciclastic, biogenic, micritic, phosphate, microcrystalline to very coarse sand sized. Cement/Matrix - micrite. Porosity - high (30%), intergranular and modic. Permeability - moderate. Hardness - hard. Fossils - pelecypods, gastropods, foraminifera, corals, mollusks, fossil recrystallization spary calcite.	

Observer's initials _____



ASR CORE LOG

DATE(S): 11/3/01

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT

HILLSBORO ASR WELL SYSTEM

WUD Project No.: 98 - 66B

CONTRACTOR: Haskel Corp.

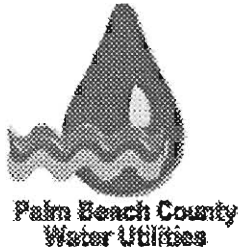
Core Number 3

TOTAL DEPTH: 1,046 feet
 DRILLING METHOD: Diamond Drilling
 DRILLER(S): Festus
 DATUM POINT: Pad Level
 DATUM POINT ELEVATION: _____
 HYDROLOGIC UNITS: Suwannee Limestone
 % RECOVERY 33.3 %
 CORED INTERVAL 1,021 - 1,046

DEPTH (feet below pad)			DEPTH INTERVAL	DESCRIPTION	DRILLING COMMENTS
1,021	to	1,028	7	LIMESTONE 100%: Color - light gray (N7). Texture - wackestone to packstone, well indurated, massive. Grains - micritic with fossil recrystallization, phosphate specs, microcrystalline to very fine sand sized. Cement/Matrix - micrite. Porosity - moderate (15%), modic. Permeability - low to moderate. Hardness - hard. Fossils - pelecypods, gastropods, mollusks.	

Observer's initials _____

FAMW



FAMW CORE LOG

DATE(S): 6/23/01

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT

HILLSBORO ASR WELL SYSTEM

WUD Project No.: 98 – 66B

CONTRACTOR: Haskel Corp.

Core Number 1

TOTAL DEPTH: 964 feet
 DRILLING METHOD: Diamond Drilling
 DRILLER(S): Festus
 DATUM POINT: Pad Level
 DATUM POINT ELEVATION: 16.33
 HYDROLOGIC UNITS: Hawthorn Group
 % RECOVERY: 2.1 %
 CORED INTERVAL: 940 - 964

DEPTH (feet below pad)			DEPTH INTERVAL	DESCRIPTION	DRILLING COMMENTS
940	to	940.5	0.5	LIMESTONE 100%: Color – light olive gray (5Y 5/2). Texture – packstone, moderate to well indurated. Grains – siliciclastic, biogenic, micritic, microcrystalline to pebble sized. Cement/Matrix – carbonate. Porosity – low to moderate (15%). Permeability – low. Hardness – hard. Fossils – mollusks, bryozoans.	Drilled relatively quickly – 25 minutes total coring time, approximately 1 foot per minute.

Observer's initials _____



FAMW CORE LOG

DATE(S): 6/27/01

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT

HILLSBORO ASR WELL SYSTEM

WUD Project No.: 98 - 668

CONTRACTOR: Haskel Corp.

Core Number 2

TOTAL DEPTH: 995 feet
 DRILLING METHOD: Diamond Drilling
 DRILLER(S): Festus
 DATUM POINT: Pad Level
 DATUM POINT ELEVATION: 16.33
 HYDROLOGIC UNITS: Hawthorn Group / Suwannee Limestone
 % RECOVERY: 26.7 %
 CORED INTERVAL: 980 - 995

DEPTH (feet below pad)			DEPTH INTERVAL	DESCRIPTION	DRILLING COMMENTS
980	to	984	4.0	LIMESTONE 100%: Color – dark gray (N3) to very pale orange (10YR 8/2). Texture – phosphatic wackestone to packstone, moderate induration. Grains – siliciclastic, biogenic, micritic, phosphate, microcrystalline to very coarse sand sized. Cement/Matrix – carbonate. Porosity – moderate to high (35%), intergranular. Permeability – high. Hardness – hard. Fossils – pelecypods, foraminifera, corals, some agerized mollusks.	Drilled quickly – 20 minutes total coring time.

Observer's initials _____



Palm Beach County
Water Utilities

FAMW CORE LOG

DATE(S): 6/27/01

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT

HILLSBORO ASR WELL SYSTEM

WUD Project No.: 98 - 66B

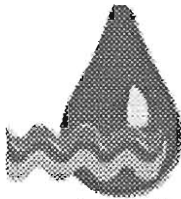
CONTRACTOR: Haskel Corp.

Core Number 3

TOTAL DEPTH: 1,005 feet
 DRILLING METHOD: Diamond Drilling
 DRILLER(S): Festus
 DATUM POINT: Pad Level
 DATUM POINT ELEVATION: 16.33
 HYDROLOGIC UNITS: Suwannee Limestone
 % RECOVERY: 40.0 %
 CORED INTERVAL: 995 - 1,005

DEPTH (feet below pad)			DEPTH INTERVAL	DESCRIPTION	DRILLING COMMENTS
995	to	999	4.0	LIMESTONE 100%: Color - very light gray (N8) to medium gray (N5). Texture - phosphatic packstone, moderate induration. Grains - siliciclastic, biogenic, micritic, phosphate, fossil recrystallization, sparry calcite. Cement/Matrix - micrite. Porosity - moderate to high (30%), intergranular and moldic. Permeability - moderate. Hardness - moderate, slightly friable. Fossils - pelecypods, gastropods, skeletal fragments, dugong rib.	Began drilling with 2000 pounds (WOB) and increased to 4000 pounds after coring 5 feet - formation very hard, bit jumping.

Observer's initials _____



Palm Beach County
Water Utilities

FAMW CORE LOG

DATE(S): 6/29/01

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT

HILLSBORO ASR WELL SYSTEM

WUD Project No.: 98 - 66B

CONTRACTOR: Haskel Corp.

Core Number 4

TOTAL DEPTH:	<u>1,026</u>	feet
DRILLING METHOD:	<u>Diamond Drilling</u>	
DRILLER(S):	<u>Festus</u>	
DATUM POINT:	<u>Pad Level</u>	
DATUM POINT ELEVATION:	<u>16.33</u>	
HYDROLOGIC UNITS:	<u>Suwannee Limestone</u>	
% RECOVERY	<u>20.0 %</u>	
CORED INTERVAL	<u>1,005 - 1,026</u>	

DEPTH (feet below pad)			DEPTH INTERVAL	DESCRIPTION	DRILLING COMMENTS
1,006	to	1,010	4.0	LIMESTONE 100%: Color - very light gray (N8). Texture - wackestone to packstone, well indurated. Grains - microcrystalline to very coarse sand sized, phosphate specs, some recrystallization. Cement/Matrix - micrite. Porosity - moderate (15%), moldic. Permeability - low to moderate. Hardness - hard. Fossils - pelecypods, gastropods, mollusks (turitella).	

Observer's initials _____



FAMW CORE LOG

DATE(S): 7/19/01

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT HILLSBORO ASR WELL SYSTEM

WUD Project No.: 98 - 66B

CONTRACTOR: Haskel Corp.

Core Number 5

TOTAL DEPTH: 1,065 feet
 DRILLING METHOD: Diamond Drilling
 DRILLER(S): Greg File
 DATUM POINT: Pad Level
 DATUM POINT ELEVATION: 16.33
 HYDROLOGIC UNITS: Suwannee Limestone
 % RECOVERY: 32.0 %
 CORED INTERVAL: 1,040 - 1,065

DEPTH (feet below pad)			DEPTH INTERVAL	DESCRIPTION	DRILLING COMMENTS
1,040	to	1,048	8.0	LIMESTONE 100%: Color -- light gray (N7). Texture -- wackestone to packstone, well indurated. Grains -- microcrystalline to very coarse sand sized, phosphate specs, some recrystalization. Cement/Matrix -- micrite. Porosity -- moderate (15%), moldic. Permeability -- low to moderate. Hardness -- hard. Fossils -- pelecypods, gastropods, mollusks (turitella).	First foot of core cut fast, then hard rock -- 50 minutes to cut 25 feet.

Observer's initials _____



Palm Beach County
Water Utilities

FAMW CORE LOG

DATE(S): 7/20/01

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT

HILLSBORO ASR WELL SYSTEM

WUD Project No.: 98 - 66B

CONTRACTOR: Haskel Corp.

Core Number 6

TOTAL DEPTH: 1,090 feet
 DRILLING METHOD: Diamond Drilling
 DRILLER(S): Greg File
 DATUM POINT: Pad Level
 DATUM POINT ELEVATION: 16.33
 HYDROLOGIC UNITS: Avon Park Limestone
 % RECOVERY: 0.0 %
 CORED INTERVAL: 1,065 - 1,090

DEPTH (feet below pad)			DEPTH INTERVAL	DESCRIPTION	DRILLING COMMENTS
1,065	to	1,065	0	<u>LIMESTONE 100%:</u> No recovery	15 minutes to cut 25 feet - very soft material.

Observer's initials _____



FAMW CORE LOG

DATE(S): 7/21/01

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT HILLSBORO ASR WELL SYSTEM

WUD Project No.: 98 - 66B

CONTRACTOR: Haskel Corp.

Core Number 7

TOTAL DEPTH: 1,115 feet
 DRILLING METHOD: Diamond Drilling
 DRILLER(S): Greg File
 DATUM POINT: Pad Level
 DATUM POINT ELEVATION: 16.33
 HYDROLOGIC UNITS: Avon Park Limestone
 % RECOVERY: 24.0 %
 CORED INTERVAL: 1,090 - 1,115

DEPTH (feet below pad)			DEPTH INTERVAL	DESCRIPTION	DRILLING COMMENTS
1,090	to	1,096	6.0	<u>LIMESTONE 100%:</u> Color – very pale orange (10YR 8/2) to yellowish gray (5Y 8/1). Texture – packstone, poor to moderately indurated, friable. Grains – fine to very coarse sand sized, phosphate, some recrystallization. Cement/Matrix – micrite. Porosity – moderate (15%), intergranular and moldic. Permeability – low to moderate. Hardness – moderate. Fossils – echinoids, foraminifera, cones, spines, bryozoans.	

Observer's initials _____



Palm Beach County
Water Utilities

FAMW CORE LOG

DATE(S): 7/23/01

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT

HILLSBORO ASR WELL SYSTEM

WUD Project No.: 98 - 66B

CONTRACTOR: Haskel Corp.

Core Number 8

TOTAL DEPTH: 1,140 feet
 DRILLING METHOD: Diamond Drilling
 DRILLER(S): Greg File
 DATUM POINT: Pad Level
 DATUM POINT ELEVATION: 16.33
 HYDROLOGIC UNITS: Avon Park Limestone
 % RECOVERY: 24.0 %
 CORED INTERVAL: 1,115 - 1,140

DEPTH (feet below pad)			DEPTH INTERVAL	DESCRIPTION	DRILLING COMMENTS
1,115	to	1,121	6.0	LIMESTONE 100%: Color - very pale orange (10YR 8/2). Texture - packstone with well lithified mudstone interclasts, poor to moderately indurated. Grains - micrite, biogenic, fine to very coarse sand sized. Cement/Matrix - micrite. Porosity - high (30%), intergranular, vugs, and moldic. Permeability - high. Hardness - moderate. Fossils - echinoids, mollusks.	

Observer's initials _____



FAMW CORE LOG

DATE(S): 7/24/01

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT

HILLSBORO ASR WELL SYSTEM

WUD Project No.: 98 - 66B

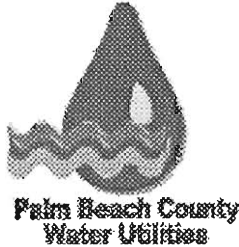
CONTRACTOR: Haskel Corp.

Core Number 9

TOTAL DEPTH: 1,165 feet
 DRILLING METHOD: Diamond Drilling
 DRILLER(S): Greg File
 DATUM POINT: Pad Level
 DATUM POINT ELEVATION: 16.33
 HYDROLOGIC UNITS: Avon Park Limestone
 % RECOVERY: 32.0 %
 CORED INTERVAL: 1,140 - 1,165

DEPTH (feet below pad)			DEPTH INTERVAL	DESCRIPTION	DRILLING COMMENTS
1,140	to	1,148	8.0	LIMESTONE 100%: Color - white (N9) to very pale orange (10YR 8/2). Texture - mudstone to wackestone (chalky) poorly lithified, poor to moderately indurated. Grains - clay to very fine sand sized. Cement/Matrix - micrite. Porosity - low (5%), intergranular and moldic. Permeability - low. Hardness - soft. Fossils - few foraminifera.	

Observer's initials _____



FAMW CORE LOG

DATE(S): 7/24/01

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT

HILLSBORO ASR WELL SYSTEM

WUD Project No.: 98 - 66B

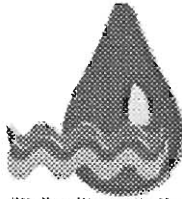
CONTRACTOR: Haskel Corp.

Core Number 10

TOTAL DEPTH: 1,190 feet
 DRILLING METHOD: Diamond Drilling
 DRILLER(S): Greg File
 DATUM POINT: Pad Level
 DATUM POINT ELEVATION: 16.33
 HYDROLOGIC UNITS: Avon Park Limestone
 % RECOVERY: 12.0 %
 CORED INTERVAL: 1,165 - 1,190

DEPTH (feet below pad)			DEPTH INTERVAL	DESCRIPTION	DRILLING COMMENTS
1,165	to	1,168	8.0	LIMESTONE 100%: Color - white (N9) to moderate yellowish brown (10YR 5/4). Texture - wackestone to packstone with mudstone interbeds, poor to moderately indurated. Grains - very fine to coarse sand sized. Cement/Matrix - micrite. Porosity - low to moderate (10%), intergranular, vuggy, and moldic. Permeability - low to moderate. Hardness - moderate. Fossils - foraminifera.	25 minutes to cut core - 1 minute per foot.

Observer's initials _____



Palm Beach County
Water Utilities

FAMW CORE LOG

DATE(S): 7/25/01

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT

HILLSBORO ASR WELL SYSTEM

WUD Project No.: 98 – 66B

CONTRACTOR: Haskel Corp.

Core Number 11

TOTAL DEPTH: 1,215 feet
 DRILLING METHOD: Diamond Drilling
 DRILLER(S): Greg File
 DATUM POINT: Pad Level
 DATUM POINT ELEVATION: 16.33
 HYDROLOGIC UNITS: Avon Park Limestone
 % RECOVERY: 4.0 %
 CORED INTERVAL: 1,190 – 1,215

DEPTH (feet below pad)			DEPTH INTERVAL	DESCRIPTION	DRILLING COMMENTS
1,190	to	1,191	1.0	LIMESTONE 100%: Color – white (N9) to very pale orange (10YR 8/2). Texture – wackestone (85%), carbonate mud (15%), well cemented. Grains – very fine to coarse sand sized. Cement/Matrix – micrite. Porosity – low. Permeability – low. Hardness – moderate. Fossils – pelecypods.	5 minutes to cut core – very soft formation.

Observer's initials _____



FAMW CORE LOG

DATE(S): 7/26/01

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT

HILLSBORO ASR WELL SYSTEM

WUD Project No.: 98 - 66B

CONTRACTOR: Haskel Corp.

Core Number 12

TOTAL DEPTH: 1,240 feet
 DRILLING METHOD: Diamond Drilling
 DRILLER(S): Greg File
 DATUM POINT: Pad Level
 DATUM POINT ELEVATION: 16.33
 HYDROLOGIC UNITS: Avon Park Limestone
 % RECOVERY: 2.0 %
 CORED INTERVAL: 1,215 - 1,240

DEPTH (feet below pad)			DEPTH INTERVAL	DESCRIPTION	DRILLING COMMENTS
1,215	to	1,215.5	0.5	LIMESTONE 100%: Color - white (N9) to very pale orange (10YR 8/2). Texture - wackestone with some recrystallization, moderately indurated. Grains - very fine to coarse sand sized. Cement/Matrix - micrite. Porosity - low (10%), vuggy. Permeability - low. Hardness - moderate. Fossils - pelecypods.	25 minutes to cut core.

Observer's initials _____



FAMW CORE LOG

DATE(S): 7/27/01

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT HILLSBORO ASR WELL SYSTEM

WUD Project No.: 98 - 66B

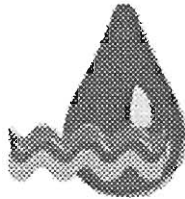
CONTRACTOR: Haskel Corp.

Core Number 13

TOTAL DEPTH:	<u>1,325</u>	feet
DRILLING METHOD:	<u>Diamond Drilling</u>	
DRILLER(S):	<u>Greg File</u>	
DATUM POINT:	<u>Pad Level</u>	
DATUM POINT ELEVATION:	<u>16.33</u>	
HYDROLOGIC UNITS:	<u>Avon Park Limestone</u>	
% RECOVERY	<u>76.0 %</u>	
CORED INTERVAL	<u>1,300 - 1,325</u>	

DEPTH (feet below pad)			DEPTH INTERVAL	DESCRIPTION	DRILLING COMMENTS
1,300	to	1,319	19.0	LIMESTONE 100%: Color - white (N9) to very pale orange (10YR 8/2). Texture - wackestone to packstone with some recrystallization and laminations, moderately indurated. Grains - crystal, micrite, biogenic, microcrystalline to coarse sand sized, minor sparry calcite infilling. Cement/Matrix - micrite. Porosity - moderate, intergranular, vuggy, and moldic. Permeability - moderate. Hardness - moderate. Fossils - foraminifera, mollusks, echinoids.	

Observer's initials _____



Palm Beach County
Water Utilities

FAMW CORE LOG

DATE(S): 7/28/01

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT

HILLSBORO ASR WELL SYSTEM

WUD Project No.: 98 - 66B

CONTRACTOR: Haskel Corp.

Core Number 14

TOTAL DEPTH: 1,351 feet
 DRILLING METHOD: Diamond Drilling
 DRILLER(S): Greg File
 DATUM POINT: Pad Level
 DATUM POINT ELEVATION: 16.33
 HYDROLOGIC UNITS: Avon Park Limestone
 % RECOVERY: 12.0 %
 CORED INTERVAL: 1,326 - 1,351

DEPTH (feet below pad)			DEPTH INTERVAL	DESCRIPTION	DRILLING COMMENTS
1,326	to	1,329	3.0	LIMESTONE 100%: Color - very pale orange (10YR 8/2). Texture - packstone, laminations, moderately indurated. Grains - micrite, biogenic, microcrystalline to coarse sand sized. Cement/Matrix - micrite. Porosity - low, intergranular, vuggy, and moldic. Permeability - moderate. Hardness - moderate. Fossils - foraminifera, mollusks, echinoids.	4000 pounds on bit - formation hard.

Observer's initials _____



Palm Beach County
Water Utilities

FAMW CORE LOG

DATE(S): 7/30/01

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT

HILLSBORO ASR WELL SYSTEM

WUD Project No.: 98 - 66B

CONTRACTOR: Haskel Corp.

Core Number 15

TOTAL DEPTH: 1,376 feet
 DRILLING METHOD: Diamond Drilling
 DRILLER(S): Greg File
 DATUM POINT: Pad Level
 DATUM POINT ELEVATION: 16.33
 HYDROLOGIC UNITS: Avon Park Limestone
 % RECOVERY: 56.0 %
 CORED INTERVAL: 1,351 - 1,376

DEPTH (feet below pad)			DEPTH INTERVAL	DESCRIPTION	DRILLING COMMENTS
1,351	to	1,365	14.0	LIMESTONE 100%: Color – very pale orange (10YR 8/2). Texture – packstone grading to wackestone with depth, laminations, moderately indurated. Grains – micrite, biogenic, microcrystalline to coarse sand sized. Cement/Matrix – carbonate mud increasing with depth. Porosity – moderate (20%), intergranular, increasing vugs with depth. Permeability – moderate. Hardness – moderate. Fossils – increasing number with depth, foraminifera, pelecypods.	

Observer's initials _____



Palm Beach County
Water Utilities

FAMW CORE LOG

DATE(S): 7/30/01

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT

HILLSBORO ASR WELL SYSTEM

WUD Project No.: 98 - 66B

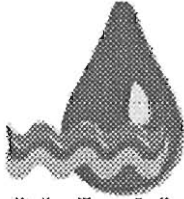
CONTRACTOR: Haskel Corp.

Core Number 16

TOTAL DEPTH:	<u>1,401</u>	feet
DRILLING METHOD:	<u>Diamond Drilling</u>	
DRILLER(S):	<u>Greg File</u>	
DATUM POINT:	<u>Pad Level</u>	
DATUM POINT ELEVATION:	<u>16.33</u>	
HYDROLOGIC UNITS:	<u>Avon Park Limestone</u>	
% RECOVERY	<u>40.0 %</u>	
CORED INTERVAL	<u>1,376 - 1,401</u>	

DEPTH (feet below pad)			DEPTH INTERVAL	DESCRIPTION	DRILLING COMMENTS
1,376	to	1,386	10.0	LIMESTONE 100%: Color - grayish orange (10YR 7/4). Texture - packstone, moderately cemented, well indurated. Grains - micrite, biogenic, microcrystalline to coarse sand sized. Cement/Matrix - micrite. Porosity - moderate (25%), intergranular. Permeability - moderate. Hardness - moderate. Fossils - foraminifera, coral interclasts.	

Observer's initials _____



Palm Beach County
Water Utilities

FAMW CORE LOG

DATE(S): 8/1/01

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT

HILLSBORO ASR WELL SYSTEM

WUD Project No.: 98 - 66B

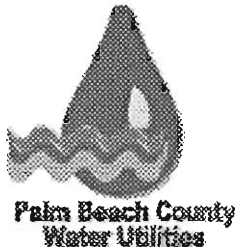
CONTRACTOR: Haskel Corp.

Core Number 17

TOTAL DEPTH: 1,520 feet
 DRILLING METHOD: Diamond Drilling
 DRILLER(S): Greg File
 DATUM POINT: Pad Level
 DATUM POINT ELEVATION: 16.33
 HYDROLOGIC UNITS: Avon Park Limestone
 % RECOVERY: 70.0 %
 CORED INTERVAL: 1,500 - 1,520

DEPTH (feet below pad)			DEPTH INTERVAL	DESCRIPTION	DRILLING COMMENTS
1,500	to	1,514	14.0	LIMESTONE 100%: Color – light gray (N7) to very pale orange (10YR 8/2). Texture – packstone to wackestone, poor to moderately cemented, poor to moderately indurated, friable, zones of laminations. Grains – micrite, biogenic, fine to coarse sand sized. Cement/Matrix – micrite. Porosity – high (25-30%), intergranular, minor vugs. Permeability – high. Hardness – moderate. Fossils – foraminifera, mollusks.	3000 pound on bit.

Observer's initials _____



FAMW CORE LOG

DATE(S): 8/6/01

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT

HILLSBORO ASR WELL SYSTEM

WUD Project No.: 98 - 66B

CONTRACTOR: Haskel Corp.

Core Number 18

TOTAL DEPTH: 1,625 feet
 DRILLING METHOD: Diamond Drilling
 DRILLER(S): Greg File
 DATUM POINT: Pad Level
 DATUM POINT ELEVATION: 16.33
 HYDROLOGIC UNITS: Avon Park Limestone
 % RECOVERY: 40.0 %
 CORED INTERVAL: 1,600 - 1,625

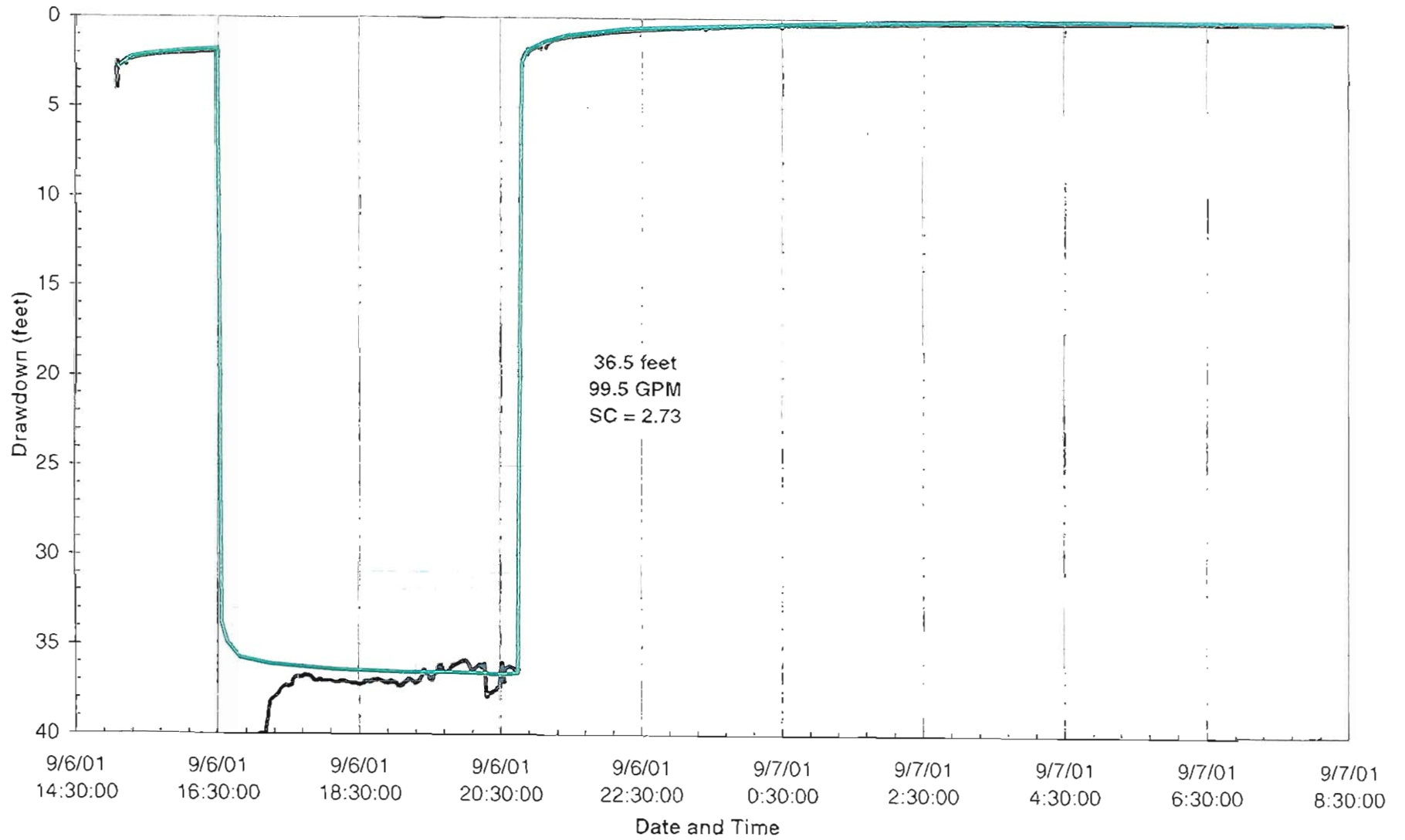
DEPTH (feet below pad)			DEPTH INTERVAL	DESCRIPTION	DRILLING COMMENTS
1,600	to	1,607	7.0	LIMESTONE 100%: Color – white (N9) to very pale orange (10YR 8/2). Texture – packstone to wackestone, poor to moderately cemented, poor to moderately indurated. Grains – sand sized. Cement/Matrix – carbonate. Porosity – high (25%), intergranular, vuggy, moldic. Permeability – high. Hardness – moderate. Fossils – foraminifera.	
1,607	to	1,610	3.0	LIMESTONE 100%: Color – medium bluish gray (5B 5/1) to yellowish gray (5Y 8/1). Texture – packstone to wackestone, well cemented, well indurated, moderately recrystallized. Grains – sand sized. Cement/Matrix – carbonate. Porosity – high (25%), intergranular, buggy, moldic. Permeability – high. Hardness – moderate. Fossils – foraminifera.	

Observer's initials _____

Packer Test Data and Water Quality

FAMW

Hillsboro ASR Well System
FAMW-1 Packer Test 1
1596.5 - 1626.5



Envirodyne Inc.

4805 N.W. 2nd Avenue
Boca Raton, FL 33431
561-989-5225
edyne@bellsouth.net

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

September 20, 2001
Report: 2001/09100
Sample No: 2001/09100- 1

Attention: Ken Conner

Project: 089-01 Hillsboro ASR Monitoring
Hillsboro Canal Boca Raton, FL


SAMPLE ID: FAMW-1 1600-1630

Collected by: Tom Uram

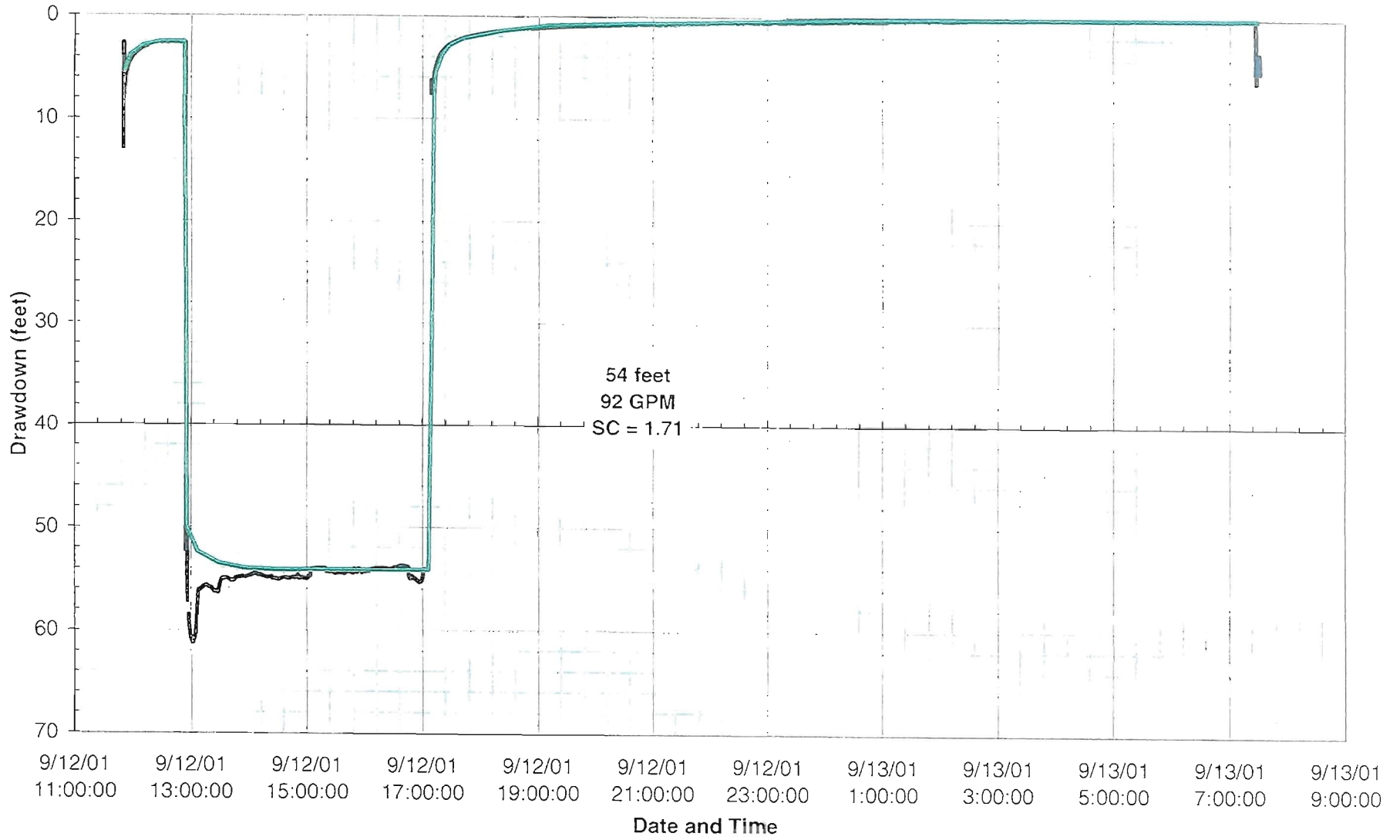
Collected on: 09/06/01
Received on: 09/10/01

PARAMETER	RESULT	METHOD	DL UNITS	DATE	ANALYST
Calcium	200	200.7	10 mg/L	09/11/01	YJC
Magnesium	140	200.7	0.50 mg/L	09/11/01	YJC
Potassium	47	200.7	5.0 mg/L	09/11/01	YJC
Sodium	700	200.7	100 mg/L	09/11/01	YJC
Bicarbonate	190	SM2320	0.01 mg/L	09/12/01	DNS
Chloride	2400	SM4500CL-B	20.0 mg/L	09/12/01	DNS
Specific Conductance	8300	120.1	μ mhos/cm	09/12/01	JCB
Ammonia, as N	0.39	350.1	0.020 mg/L	09/13/01	DNS
Nitrate, as Nitrogen	BDL	353.2	0.020 mg/L	09/10/01	DNS
pH (Laboratory)	7.7	150.1	pH Units	09/11/01	JMJ
Sulfate	870	375.4	125.0 mg/L	09/10/01	DNS
Total Dissolved Solids	4600	160.1	10 mg/L	09/11/01	JMJ
Total Kjeldahl Nitrogen	1.1	351.2	0.10 mg/L	09/17/01	JCB
Total Nitrogen	1.1	351 + 353	0.10 mg/L	09/17/01	JCB
Phosphorus, Total	0.017	365.4	0.010 mg/L	09/18/01	JCB

Analysis Performed in Accordance with E.P.A. Methods
Laboratory Certification No. E86188

QA/QC Review 
BDL = Below Detection Limit
DL = Detection Limit

Hillsboro ASR Well System
FAMW-1 Packer Test 2
1310 - 1340



Envirodyne Inc.

4805 N.W. 2nd Avenue
Boca Raton, FL 33431
561-989-5225
edyne@bellsouth.net

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

September 19, 2001
Report: 2001/09162
Sample No: 2001/09162- 1

Attention: Ken Conner

Project: 089-01 Hillsboro ASR Monitoring
Hillsboro Canal Boca Raton, FL


SAMPLE ID: FAMW-1 1310-1340

Collected by: Tom Uram

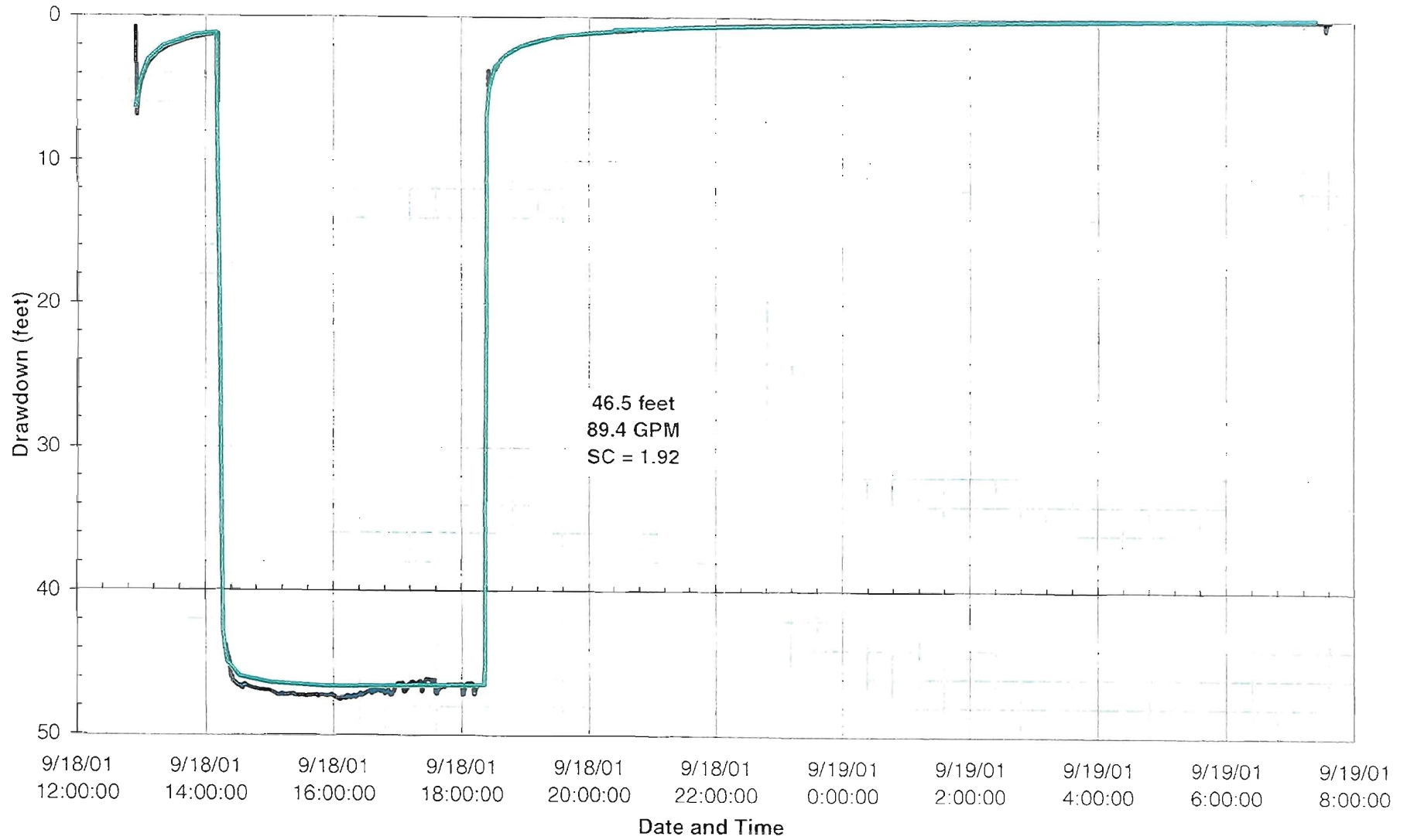
Collected on: 09/12/01
Received on: 09/13/01

PARAMETER	RESULT	METHOD	DL UNITS	DATE	ANALYST
Calcium	110	200.7	1.0 mg/L	09/14/01	YJC
Magnesium	110	200.7	0.50 mg/L	09/14/01	YJC
Potassium	33	200.7	0.50 mg/L	09/14/01	YJC
Sodium	1300	200.7	100 mg/L	09/14/01	YJC
Bicarbonate	160	SM2320	0.01 mg/L	09/14/01	DNS
Chloride	2100	SM4500CL-B	20.0 mg/L	09/14/01	DNS
Specific Conductance	7300	120.1	μ mhos/cm	09/14/01	JMJ
Ammonia, as N	0.33	350.1	0.020 mg/L	09/13/01	DNS
Nitrate, as Nitrogen	0.38	353.2	0.020 mg/L	09/14/01	DNS
pH (Laboratory)	7.7	150.1	pH Units	09/13/01	JMJ
Sulfate	660	375.4	100.0 mg/L	09/14/01	DNS
Total Dissolved Solids	4100	160.1	10 mg/L	09/17/01	DNS
Total Kjeldahl Nitrogen	1.1	351.2	0.10 mg/L	09/17/01	JCB
Total Nitrogen	1.48	351 + 353	0.10 mg/L	09/17/01	JCB
Phosphorus, Total	0.018	365.4	0.010 mg/L	09/18/01	JCB

Analysis Performed in Accordance with E.P.A. Methods
Laboratory Certification No. E86188

QA/QC Review 
BDL = Below Detection Limit
DL = Detection Limit

Hillsboro ASR Well System
FAMW-1 Packer Test 3
1310 - 1340 - Post Acid



CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

September 25, 2001
Report: 2001/09250
Sample No: 2001/09250- 1

Attention: Ken Conner

Project: 089-01 Hillsboro ASR Monitoring PT3
Hillsboro Canal Boca Raton, FL


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Collected by: Your Representative

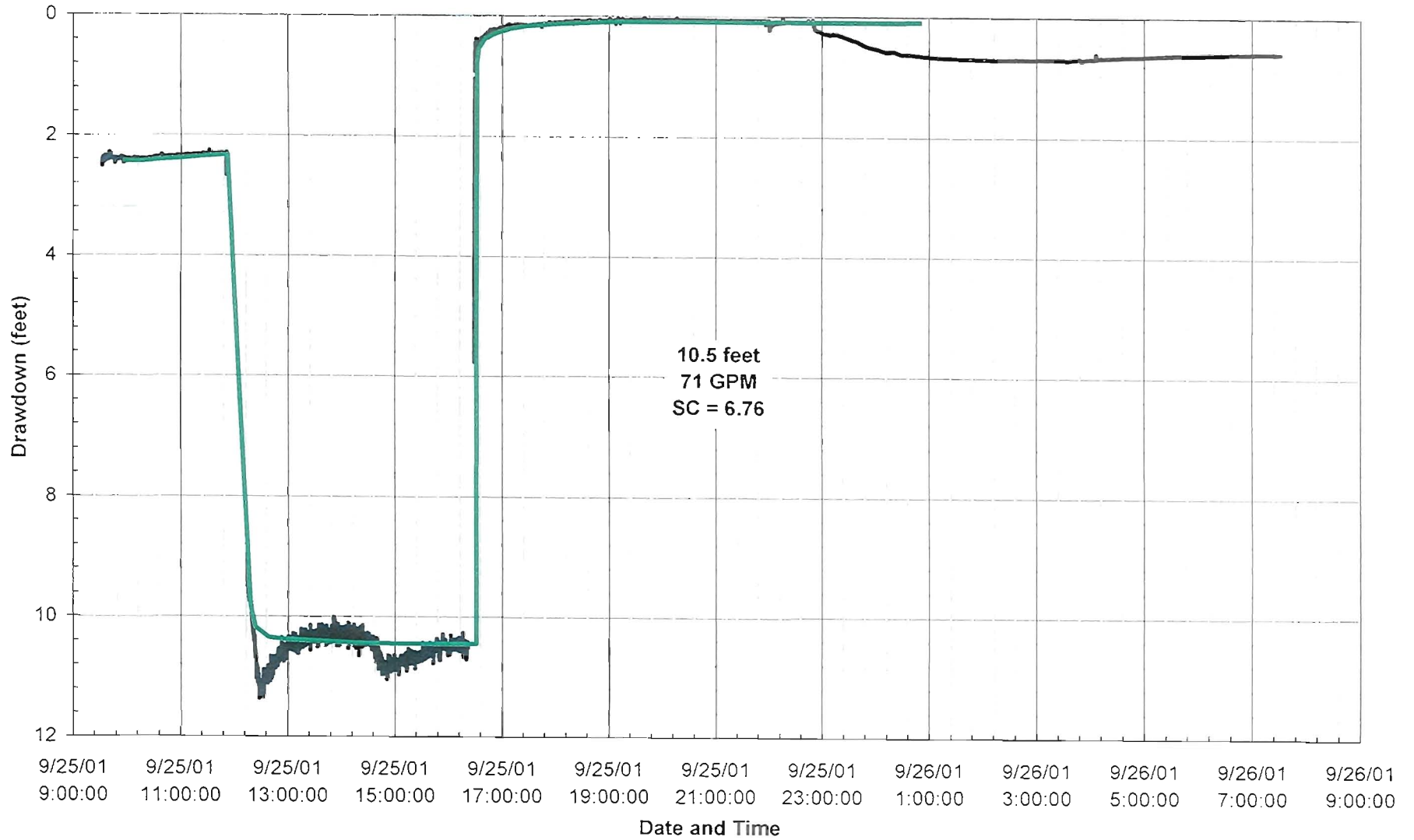
Collected on: 09/18/01
Received on: 09/19/01

PARAMETER	RESULT	METHOD	DL UNITS	DATE	ANALYST
Calcium	150	200.7	10 mg/L	09/19/01	MHA
Magnesium	120	200.7	5.0 mg/L	09/19/01	MHA
Potassium	34	200.7	5.0 mg/L	09/19/01	MHA
Sodium	660	200.7	100 mg/L	09/19/01	MHA
Bicarbonate	160	SM2320	0.01 mg/L	09/20/01	DNS
Chloride	2300	SM4500CL-B	2.0 mg/L	09/20/01	JMJ
Specific Conductance	6800	120.1	μ mhos/cm	09/20/01	JMJ
Ammonia, as N	BDL	350.1	0.020 mg/L	09/20/01	DNS
Nitrate, as Nitrogen	0.55	353.2	0.020 mg/L	09/20/01	DNS
pH (Laboratory)	7.5	150.1	pH Units	09/19/01	JMJ
Sulfate	660	375.4	100.0 mg/L	09/20/01	DNS
Total Dissolved Solids	4200	160.1	10 mg/L	09/19/01	JCB
Total Kjeldahl Nitrogen	1.1	351.2	0.10 mg/L	09/21/01	JCB
Total Nitrogen	1.65	351 + 353	0.10 mg/L	09/21/01	JCB
Phosphorus, Total	BDL	365.4	0.010 mg/L	09/21/01	JCB

Analysis Performed in Accordance with E.P.A. Methods
Laboratory Certification No. E86188

QA/QC Review 
BDL = Below Detection Limit
DL = Detection Limit

Hillsboro ASR Well System
FAMW-1 Packer Test 4
1005 - 1198



Envirodyne Inc.

4805 N.W. 2nd Avenue
Boca Raton, FL 33431
561-989-5225
edyne@bellsouth.net

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

October 3, 2001
Report: 2001/09391
Sample No: 2001/09391- 1

Attention: Ken Conner

Project: 089-01 Hillsboro ASR Monitoring PT4
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW-1 1005-1198

Collected by: Tom Uram

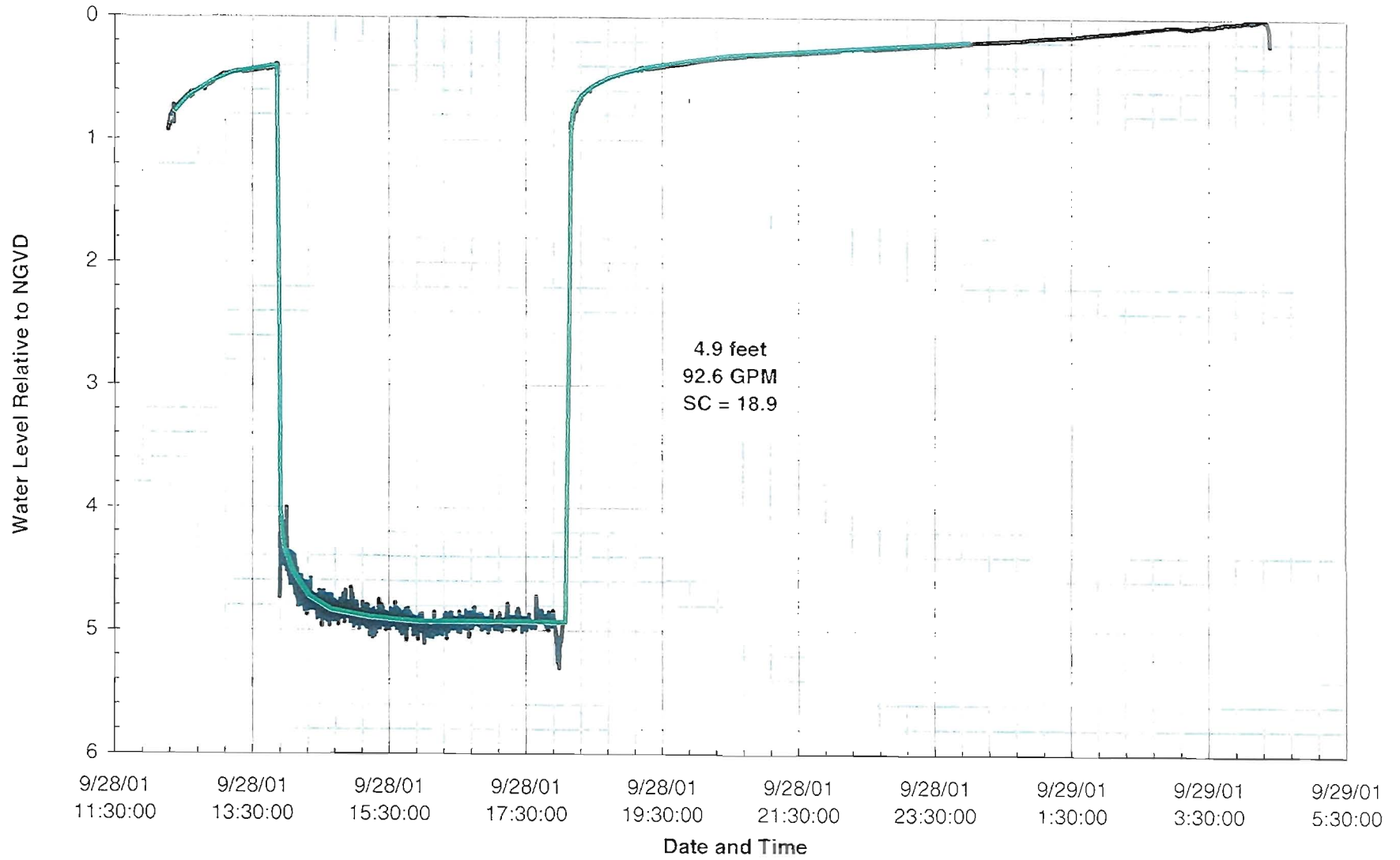
Collected on: 09/25/01
Received on: 09/28/01

PARAMETER	RESULT	METHOD	DL UNITS	DATE	ANALYST
Calcium	310	200.7	10 mg/L	09/28/01	YJC
Magnesium	160	200.7	5.0 mg/L	09/28/01	YJC
Potassium	40	200.7	0.50 mg/L	09/28/01	YJC
Sodium	1200	200.7	100 mg/L	09/28/01	YJC
Bicarbonate	410	SM2320	0.01 mg/L	10/03/01	DNS
Chloride	2200	SM4500CL-B	20.0 mg/L	09/28/01	DNS
Specific Conductance	6800	120.1	μ mhos/cm	10/01/01	JMJ
Ammonia, as N	0.51	350.1	0.020 mg/L	10/02/01	JCB
Nitrate, as Nitrogen	BDL	353.2	0.020 mg/L	09/28/01	JCB
pH (Laboratory)	7.7	150.1	pH Units	09/29/01	JMJ
Sulfate	830	375.4	125.0 mg/L	10/02/01	JCB
Total Dissolved Solids	4300	160.1	10 mg/L	10/03/01	DNS
Total Kjeldahl Nitrogen	1.1	351.2	0.10 mg/L	10/02/01	DNS
Total Nitrogen	1.1	351 + 353	0.10 mg/L	10/02/01	DNS
Phosphorus, Total	0.15	365.4	0.010 mg/L	10/03/01	DNS

Analysis Performed in Accordance with E.P.A. Methods
Laboratory Certification No. E26168

QA/QC Review
BDL = Below Detection Limit
DL = Detection Limit

Hillsboro ASR Well System
FAMW-1 Packer Test 5
1005 - 1041



Envirodyne Inc.

4805 N.W. 2nd Avenue
Boca Raton, FL 33431
561-989-5225
edyne@bellsouth.net

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

October 9, 2001
Report: 2001/10003
Sample No: 2001/10003- 1

Attention: Ken Conner

Project: 089-01 Hillsboro ASR Monitoring PT 5
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW-1 843-1041

Collected by: Festus Underwood

Collected on: 09/28/01

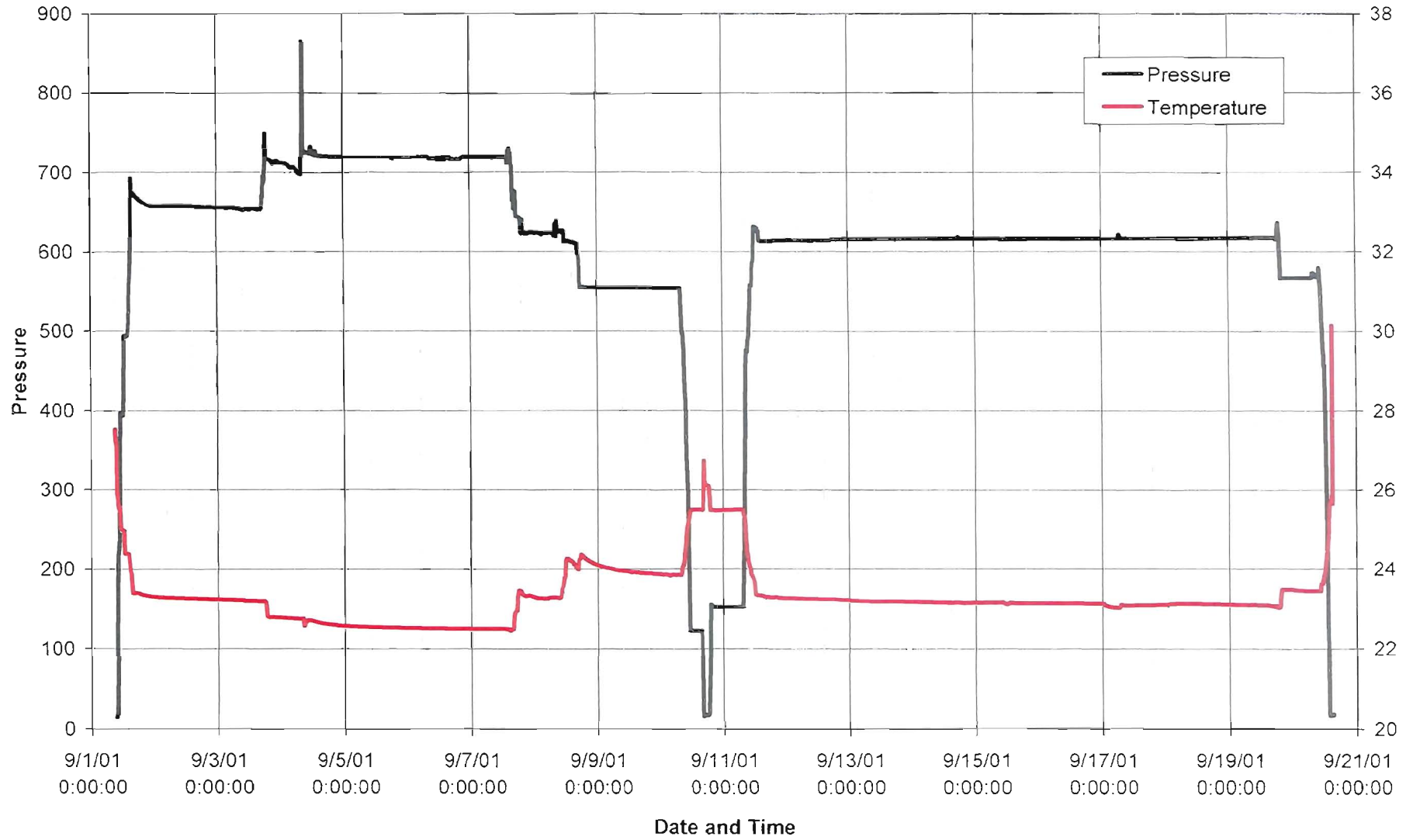
Received on: 10/01/01

PARAMETER	RESULT	METHOD	DL UNITS	DATE	ANALYST
Calcium	170	200.7	10 mg/L	10/01/01	YJC
Magnesium	140	200.7	5.0 mg/L	10/01/01	YJC
Potassium	39	200.7	0.50 mg/L	10/01/01	YJC
Sodium	1100	200.7	1000 mg/L	10/01/01	YJC
Bicarbonate	160	SM2320	0.01 mg/L	10/03/01	DNS
Chloride	2200	SM4500CL-B	10.0 mg/L	10/02/01	JMJ
Specific Conductance	7300	120.1	μ mhos/cm	10/02/01	JMJ
Ammonia, as N	0.50	350.1	0.020 mg/L	10/02/01	JCB
Nitrate, as Nitrogen	1.8	353.2	0.020 mg/L	10/01/01	DNS
pH (Laboratory)	7.8	150.1	pH Units	10/02/01	JMJ
Sulfate	830	375.4	5.0 mg/L	10/03/01	JCB
Total Dissolved Solids	4200	160.1	10 mg/L	10/03/01	DNS
Total Kjeldahl Nitrogen	1.3	351.2	0.10 mg/L	10/08/01	DNS
Total Nitrogen	3.1	351+353	0.10 mg/L	10/08/01	DNS
Phosphorus, Total	BDL	365.4	0.010 mg/L	10/05/01	DNS

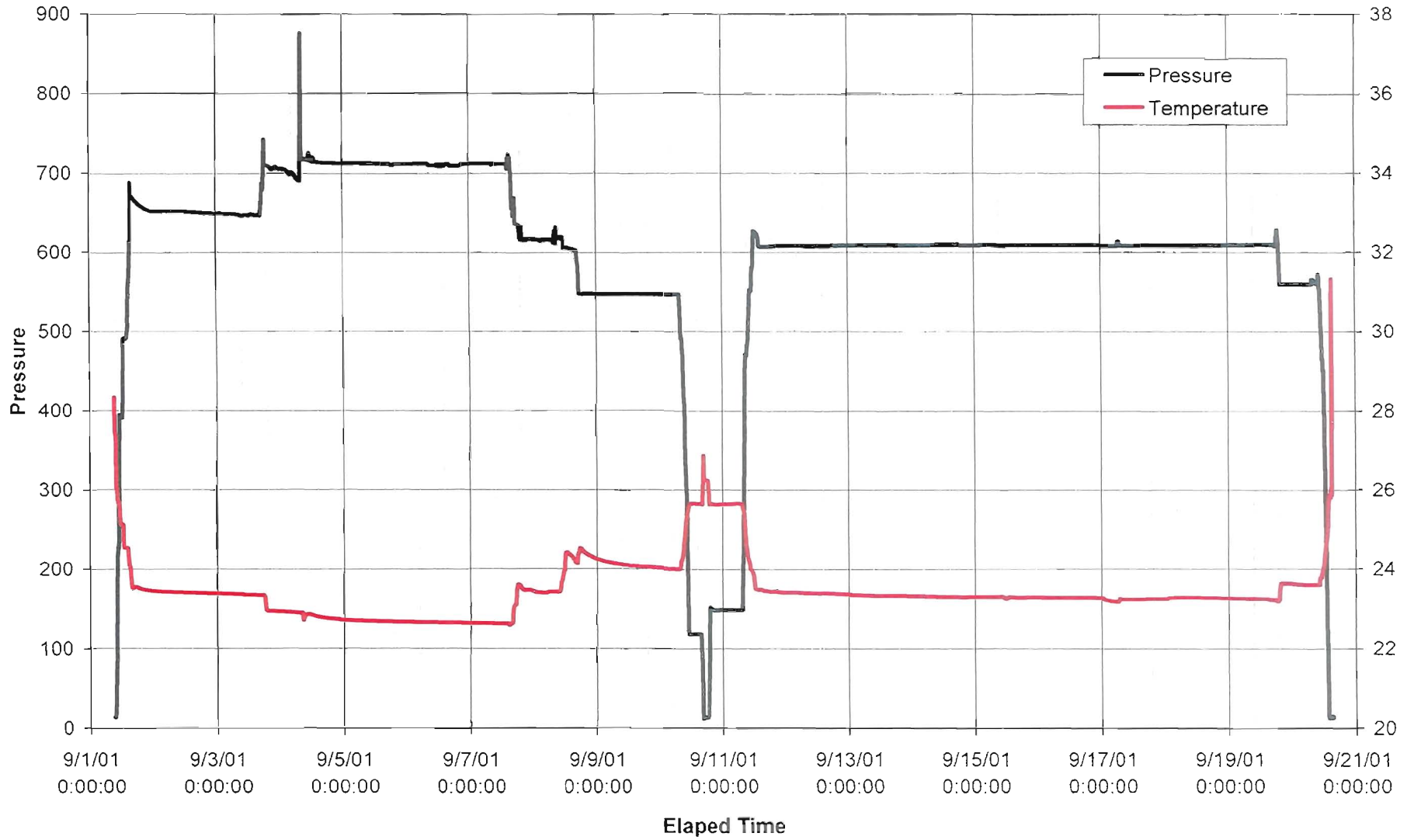
Analysis Performed in Accordance with E.P.A. Methods
Laboratory Certification No. B86188

QA/QC Review *lmj*
BDL = Below Detection Limit
DL = Detection Limit

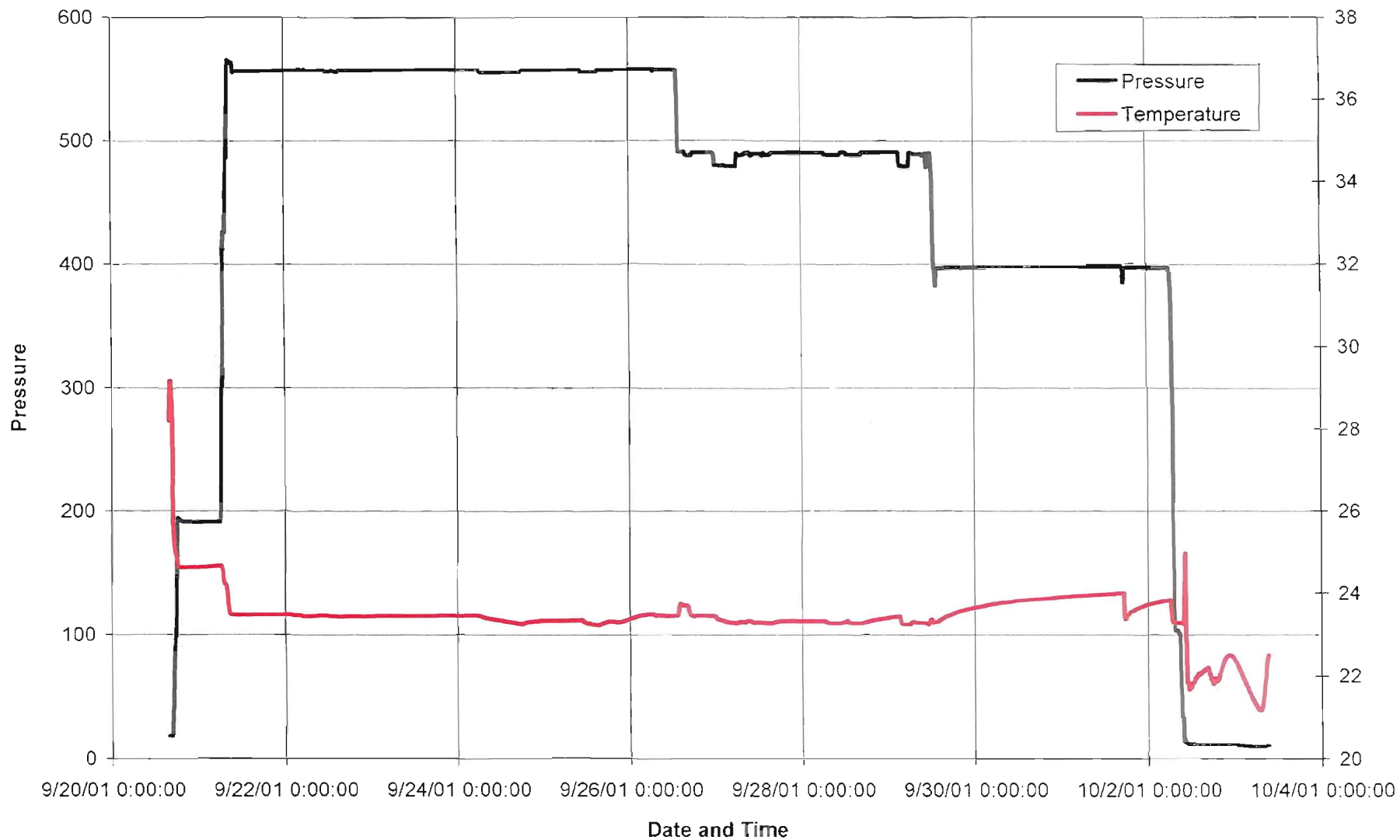
Hillsboro Canal ASR
FAMW-1 - Packer Test 1, 2 & 3
(1597-1627 & 1310-1340) Transducer 4124



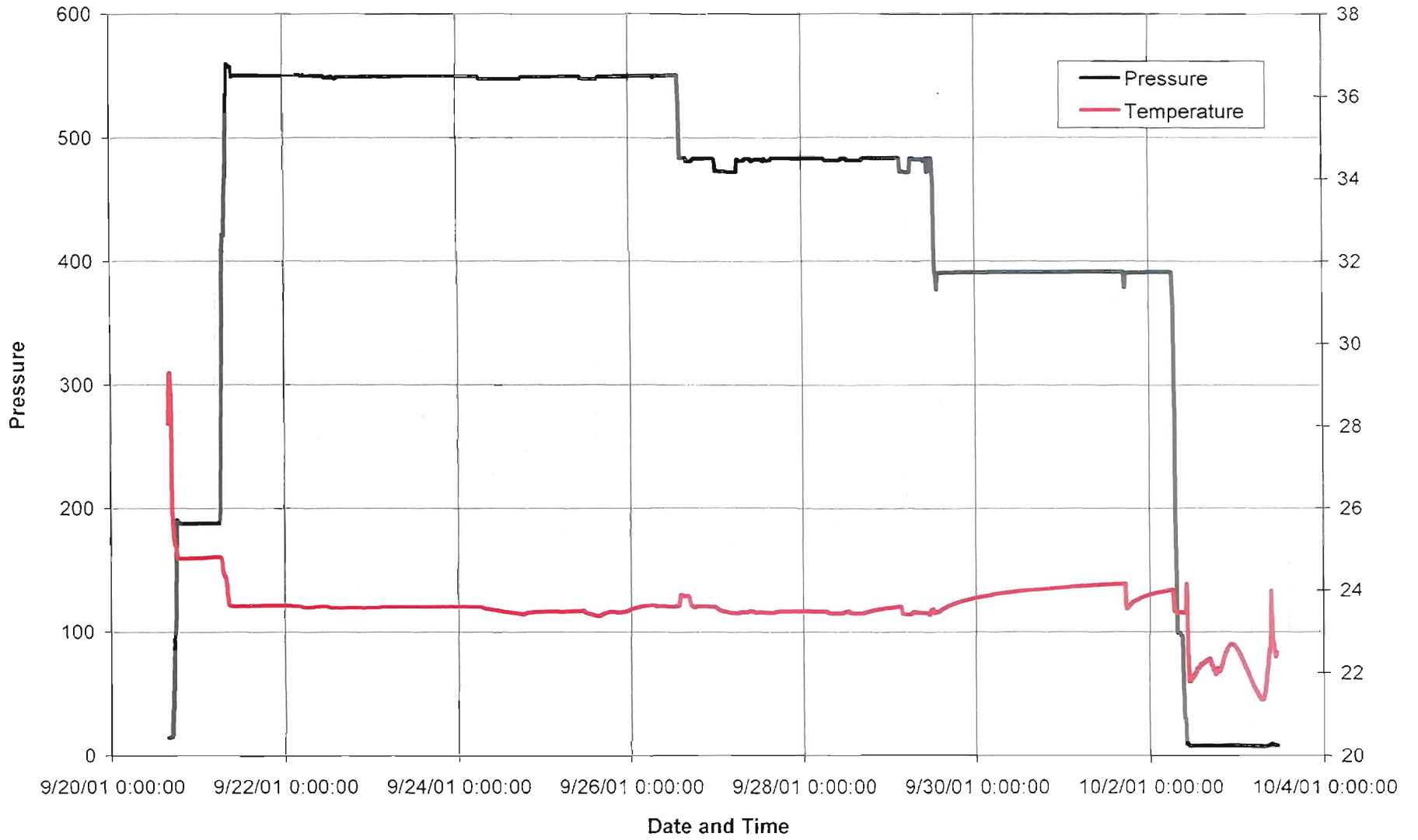
Hillsboro Canal ASR
FAMW-1 - Packer Test 1, 2 & 3
(1597-1627 & 1310-1340) Transducer 4144



Hillsboro Canal ASR
FAMW-1 - Packer Test 4 & 5
(1005-1198 & 1005-1041) Transducer 4124



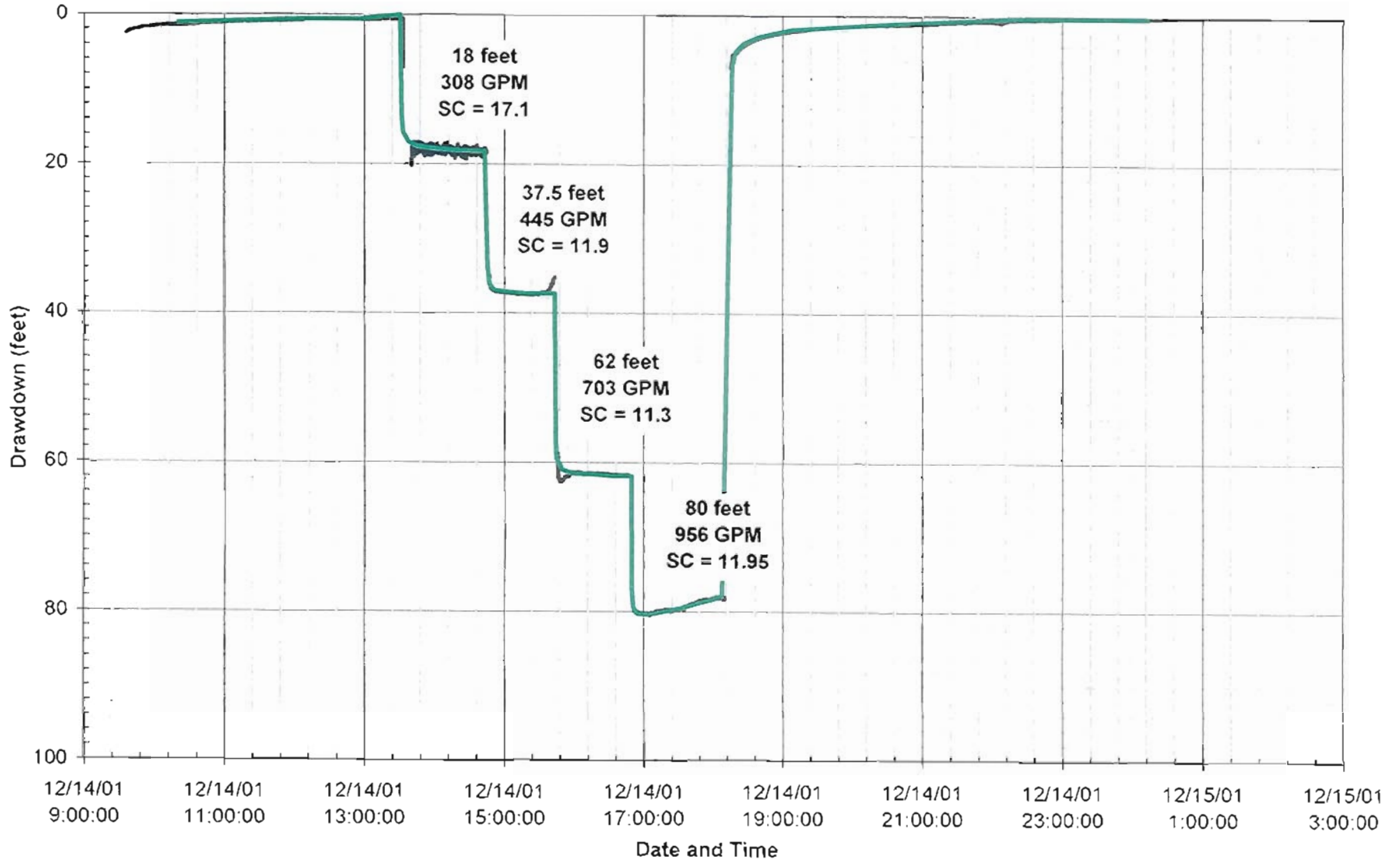
Hillsboro Canal ASR
FAMW-1 - Packer Test 4 & 5
(1005-1198 & 1005-1041) Transducer 4144



**Step-Rate
Pumping Test Data**

FAMW

Hillsboro ASR Well System FAMW-1 Step Rate Test



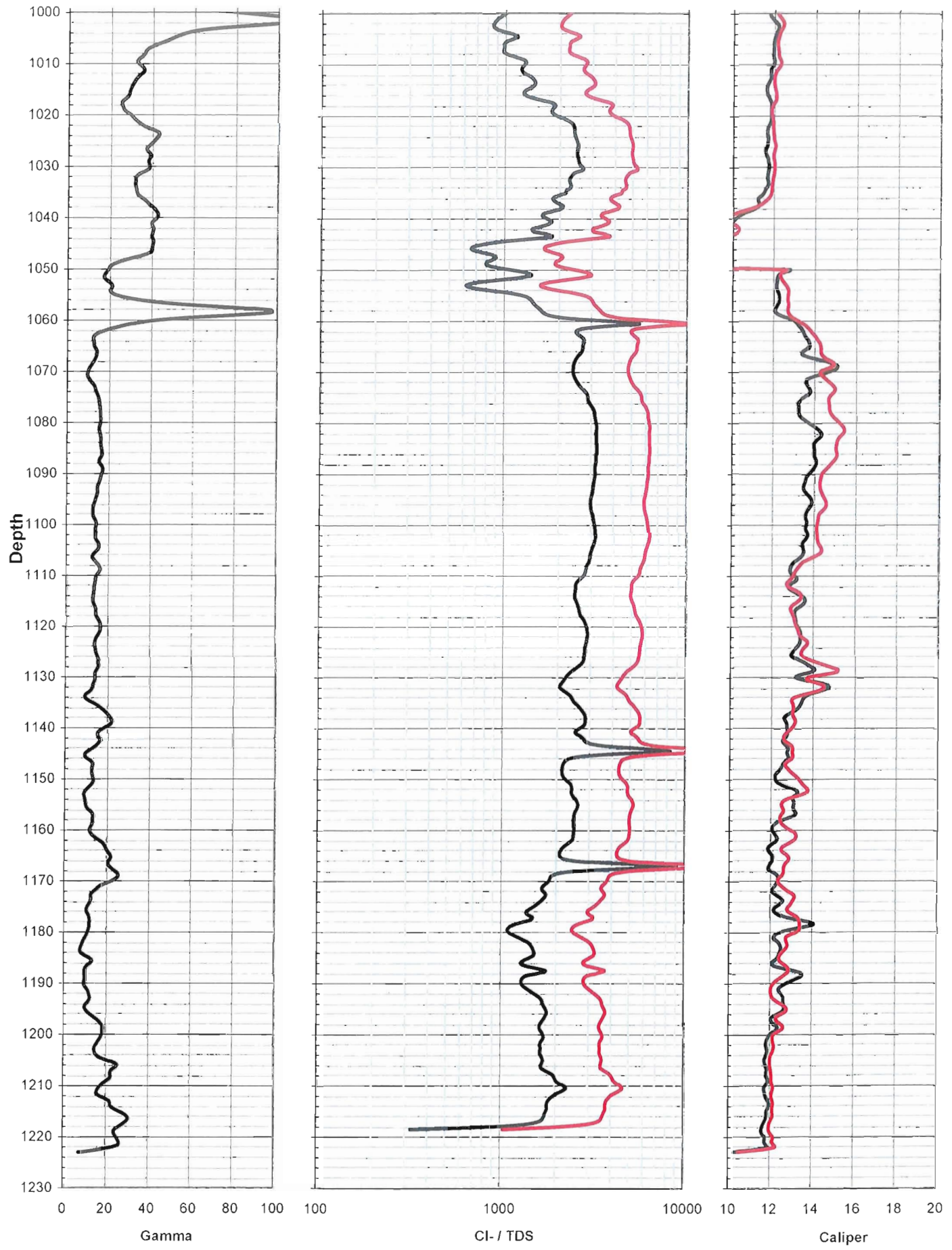
**Injection / Monitor Zone
Water Quality**

**ASR Well
(Injection Zone)**

April 30, 2002

Palm Beach County Hillsboro ASR Well System - ASR-1

Log Derived Water Quality



Emperically derived (R-H, m=2.0, a=1.0) Non-Corrected RILD

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

June 24, 2002
Report: 2002/04602
Sample No: 2002/04602- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Howard Ray Ledbetter

Collected on: 04/30/02

Received on: 04/30/02

PARAMETER	RESULT	METHOD	DL	UNITS	DATE	ANALYST
2,3,7,8-TCDD (Dioxin)	BDL	1613B	0.00003	µg/L	06/19/02	E87769
Aluminum	BDL	200.7	0.10	mg/L	05/01/02	MHA
Arsenic	BDL	200.7	0.010	mg/L	04/30/02	YJC
Barium	0.011	200.7	0.010	mg/L	04/30/02	YJC
Beryllium	BDL	200.7	0.0030	mg/L	04/30/02	YJC
Cadmium	BDL	200.7	0.0040	mg/L	04/30/02	YJC
Calcium	140	200.7	1.0	mg/L	05/01/02	MHA
Chromium	BDL	200.7	0.010	mg/L	04/30/02	YJC
Copper	BDL	200.7	0.010	mg/L	04/30/02	YJC
Iron	0.077	200.7	0.010	mg/L	05/01/02	MHA
Lead	BDL	200.7	0.0050	mg/L	04/30/02	YJC
Manganese	BDL	200.7	0.010	mg/L	04/30/02	YJC
Nickel	BDL	200.7	0.010	mg/L	04/30/02	YJC
Potassium	46	200.7	0.50	mg/L	05/01/02	MHA
Selenium	BDL	200.7	0.010	mg/L	04/30/02	YJC
Silver	BDL	200.7	0.010	mg/L	04/30/02	YJC
Sodium	1500	200.7	100	mg/L	05/01/02	MHA
Thallium	BDL	200.7	0.0020	mg/L	04/30/02	YJC

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

June 24, 2002
Report: 2002/04602
Sample No: 2002/04602- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Howard Ray Ledbetter

Collected on: 04/30/02

Received on: 04/30/02

PARAMETER	RESULT	METHOD	DL UNITS	DATE	ANALYST
Zinc	0.030	200.7	0.010 mg/L	05/01/02	MHA
Mercury	BDL	245.1	0.00020 mg/L	05/01/02	MHA
Dibromochloropropane (DBCP)	BDL	EPA 504.1	0.020 µg/L	05/02/02	CMM
1,2-Dibromoethane (EDB)	BDL	EPA 504.1	0.020 µg/L	05/02/02	CMM
Benzo(a)pyrene	BDL	EPA 525.2	0.2 µg/L	05/05/02	SPH
Di(2-ethylhexyl)adipate	BDL	EPA 525.2	1.0 µg/L	05/05/02	SPH
Di(2-ethylhexyl)phthalate	BDL	EPA 525.2	1.0 µg/L	05/05/02	SPH
Carbofuran	BDL	EPA 531.1	0.50 µg/L	05/03/02	E84129
Oxamyl (Vydate)	BDL	EPA 531.1	0.50 µg/L	05/03/02	E84129
Glyphosate	BDL	EPA 547	10 µg/L	05/14/02	E84129
Endothall	BDL	EPA 548.1	20 µg/L	05/08/02	E84129
Diquat	BDL	EPA 549.2	1.0 µg/L	05/09/02	E84129
Antimony	BDL	6010B	0.0050 mg/L	04/30/02	YJC
Alkalinity, Total	150	310.1	1.0 mg/L	05/07/02	DNS
Bicarbonate	150	SM2320	0.01 mg/L	05/07/02	DNS
Biochemical Oxygen Demand	4.3	405.1	2.0 mg/L	05/01/02	JMJ
Carbon Dioxide	140	SM4500CO2D	mg/L	05/07/02	DNS
Chloride	2100	SM4500CL-B	10.0 mg/L	05/07/02	JMJ

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

June 24, 2002
Report: 2002/04602
Sample No: 2002/04602- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Howard Ray Ledbetter

Collected on: 04/30/02

Received on: 04/30/02

PARAMETER	RESULT	METHOD	DL UNITS	DATE	ANALYST
Chemical Oxygen Demand	610	410.4	5.0 mg/L	05/07/02	DNS
Color	5	110.2	5 CU	05/01/02	JMJ
Specific Conductance	8300	120.1	μ mhos/cm	05/02/02	JMJ
Corrosivity, L.S.I.	0.7445	SM2330B	L.I.	05/07/02	DNS
Cyanide, Total	BDL	335.2	0.0040 mg/L	05/03/02	JCB
Fluoride	0.96	SM4500F-C	0.10 mg/L	05/02/02	DNS
Gross Alpha	47 \pm 53	900.0	1.0 pCi/L	05/13/02	E84088
Hardness, Calcium as CaCO ₃	350	SM2340B	5.0 mg/L	05/01/02	MHA
Hardness, Magnesium	450	SM2340B	5.0 mg/L	05/01/02	MHA
Hardness, Total	803	SM2340B	10 mg/L	05/01/02	MHA
Hydrogen Sulfide	1.2	9030/376.2	0.08 mg/L	05/02/02	DNS
Surfactants	0.12	SM5540C	0.010 mg/L	05/02/02	DNS
Ammonia, as N	0.60	350.1	0.020 mg/L	05/02/02	JCB
Nitrite, as Nitrogen	BDL	353.2	0.020 mg/L	04/30/02	DNS
Nitrate, as Nitrogen	BDL	353.2	0.020 mg/L	04/30/02	DNS
Nitrate-Nitrite, as Nitrogen	BDL	353.2	0.020 mg/L	04/30/02	DNS
Odor	16	140.1	1 T.O.N.	05/01/02	JMJ
Orthophosphate, as P	0.038	365.1	0.010 mg/L	05/01/02	JMJ

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

June 24, 2002
Report: 2002/04602
Sample No: 2002/04602- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Howard Ray Ledbetter

Collected on: 04/30/02

Received on: 04/30/02

PARAMETER	RESULT	METHOD	DL	UNITS	DATE	ANALYST
pH (Laboratory)	7.6	150.1		pH Units	04/30/02	JFT
Radium 226	1.7±0.2	903.1	0.1	pCi/L	05/13/02	E84088
Radium 228	0.5±0.5	RA-05	0.5	pCi/L	05/13/02	E84088
Sulfate	470	375.4	100.0	mg/L	05/02/02	DNS
Total Coliform Bacteria	<1	SM9222B	1	cfu/100 ml	04/30/02	DNS
Total Dissolved Solids	4400	160.1	10	mg/L	05/07/02	JCB
Total Kjeldahl Nitrogen	0.60	351.2	0.10	mg/L	05/06/02	DNS
Organic Nitrogen	BDL	351-350	0.50	mg/L	05/06/02	DNS
Phosphorus, Total	0.039	365.4	0.010	mg/L	05/06/02	DNS
Turbidity	6.7	180.1	0.10	ntu	05/01/02	JMJ

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

June 24, 2002
Report: 2002/04602
Sample No: 2002/04602- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Howard Ray Ledbetter

Collected on: 04/30/02

Received on: 04/30/02

Date of Analysis: 05/02/02

Date of Extraction: 05/01/02

508 GROUP I UNREGULATED ORGANIC CONTAMINANTS

PARAMETER	RESULT	DL UNITS	ANALYST
Aldrin	BDL	0.10 µg/L	CMM
Dieldrin	BDL	0.10 µg/L	CMM

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

June 24, 2002
Report: 2002/04602
Sample No: 2002/04602- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Howard Ray Ledbetter

Collected on: 04/30/02

Received on: 04/30/02

Date of Analysis: 05/02/02

Date of Extraction: 05/01/02

508 ORGANOHALIDE PESTICIDES 62-550.310(2)(c) FAC

PARAMETER	RESULT	DL UNITS	ANALYST
Chlordane	BDL	0.50 µg/L	CMM
Endrin	BDL	0.10 µg/L	CMM
Heptachlor	BDL	0.10 µg/L	CMM
Heptachlor epoxide	BDL	0.10 µg/L	CMM
Hexachlorobenzene	BDL	0.10 µg/L	CMM
Lindane	BDL	0.10 µg/L	CMM
Methoxychlor	BDL	0.20 µg/L	CMM
Toxaphene	BDL	3.0 µg/L	CMM
PCB 1016	BDL	0.50 µg/L	CMM
PCB-1221	BDL	0.50 µg/L	CMM
PCB 1240	BDL	0.50 µg/L	CMM
PCB 1242	BDL	0.50 µg/L	CMM
PCB 1248	BDL	0.50 µg/L	CMM
PCB 1254	BDL	0.50 µg/L	CMM
PCB 1260	BDL	0.50 µg/L	CMM

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

June 24, 2002
Report: 2002/04602
Sample No: 2002/04602- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Howard Ray Ledbetter

Collected on: 04/30/02
Received on: 04/30/02

Date of Analysis: 05/03/02
Date of Extraction: 05/01/02

508.1 CHLORINATED PESTICIDES (62-550 FAC)

PARAMETER	RESULT	DL UNITS	ANALYST
Alachlor	BDL	0.10 $\mu\text{g}/\text{L}$	CMM
Atrazine	BDL	3.0 $\mu\text{g}/\text{L}$	CMM
Hexachlorocyclopentadiene	BDL	0.10 $\mu\text{g}/\text{L}$	CMM
Simazine	BDL	3.0 $\mu\text{g}/\text{L}$	CMM

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

June 24, 2002
Report: 2002/04602
Sample No: 2002/04602- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Howard Ray Ledbetter

Collected on: 04/30/02

Received on: 04/30/02

Date of Analysis: 05/05/02

Date of Extraction: 05/02/02

515.1 HERBICIDES (62-550 FAC)

PARAMETER	RESULT	DL	UNITS	ANALYST
Dalapon	BDL	0.50	µg/L	CMM
Dinoseb	BDL	0.50	µg/L	CMM
Pentachlorophenol	BDL	0.50	µg/L	CMM
Picloram	BDL	0.50	µg/L	CMM
2,4-D	BDL	0.50	µg/L	CMM
2,4,5-TP (Silvex)	BDL	0.10	µg/L	CMM

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

June 24, 2002
Report: 2002/04602
Sample No: 2002/04602- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Howard Ray Ledbetter

Collected on: 04/30/02

Received on: 04/30/02

Date of Analysis: 05/02/02

524.2 GROUP II UNREGULATED ORGANIC CONTAMINANTS

PARAMETER	RESULT	DL UNITS	ANALYST
Bromobenzene	BDL	1.0 µg/L	EMH
Bromodichloromethane	BDL	1.0 µg/L	EMH
Bromoform	BDL	1.0 µg/L	EMH
Bromomethane	BDL	1.0 µg/L	EMH
Chloroethane	BDL	1.0 µg/L	EMH
Chloroform	BDL	1.0 µg/L	EMH
Chloromethane	BDL	1.0 µg/L	EMH
o-Chlorotoluene	BDL	1.0 µg/L	EMH
p-Chlorotoluene	BDL	1.0 µg/L	EMH
Dibromochloromethane	BDL	1.0 µg/L	EMH
Dibromomethane	BDL	1.0 µg/L	EMH
m-Dichlorobenzene	BDL	1.0 µg/L	EMH
Dichlorodifluoromethane	BDL	1.0 µg/L	EMH
1,1-Dichloroethane	BDL	1.0 µg/L	EMH
2,2-Dichloropropane	BDL	1.0 µg/L	EMH
1,1-Dichloropropylene	BDL	1.0 µg/L	EMH
1,3-Dichloropropane	BDL	1.0 µg/L	EMH
1,3-Dichloropropene	BDL	1.0 µg/L	EMH
Methyl tert-butyl-ether (MTBE)	BDL	1.0 µg/L	EMH
1,1,1,2-Tetrachloroethane	BDL	1.0 µg/L	EMH
1,1,2,2-Tetrachloroethane	BDL	1.0 µg/L	EMH
Trichlorofluoromethane	BDL	1.0 µg/L	EMH
1,2,3-Trichloropropane	BDL	1.0 µg/L	EMH

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

June 24, 2002
Report: 2002/04602
Sample No: 2002/04602- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Howard Ray Ledbetter

Collected on: 04/30/02

Received on: 04/30/02

Date of Analysis: 05/02/02

524.2 TRIHALOMETHANES (THM'S)

PARAMETER	RESULT	DL UNITS	ANALYST
Bromodichloromethane	BDL	0.5 µg/L	EMH
Bromoform	BDL	0.5 µg/L	EMH
Chloroform	BDL	0.5 µg/L	EMH
Dibromochloromethane	BDL	0.5 µg/L	EMH
Total Trihalomethanes	BDL	µg/L	EMH

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

June 24, 2002
Report: 2002/04602
Sample No: 2002/04602- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Howard Ray Ledbetter

Collected on: 04/30/02

Received on: 04/30/02

Date of Analysis: 05/02/02

524.2 VOLATILE ORGANIC COMPOUNDS (62-550)

PARAMETER	RESULT	DL	UNITS	ANALYST
Benzene	BDL	1.0	µg/L	EMH
Carbon tetrachloride	BDL	1.0	µg/L	EMH
Chlorobenzene	BDL	1.0	µg/L	EMH
1,2-Dichlorobenzene	BDL	1.0	µg/L	EMH
1,4-Dichlorobenzene	BDL	1.0	µg/L	EMH
1,2-Dichloroethane	BDL	1.0	µg/L	EMH
1,1-Dichloroethene	BDL	1.0	µg/L	EMH
cis-1,2-Dichloroethene	BDL	1.0	µg/L	EMH
trans-1,2-Dichloroethene	BDL	1.0	µg/L	EMH
Dichloromethane	BDL	1.0	µg/L	EMH
1,2-Dichloropropane	BDL	1.0	µg/L	EMH
Ethylbenzene	BDL	1.0	µg/L	EMH
Styrene	BDL	1.0	µg/L	EMH
Tetrachloroethylene	BDL	1.0	µg/L	EMH
Toluene	BDL	1.0	µg/L	EMH
1,2,4-Trichlorobenzene	BDL	1.0	µg/L	EMH
1,1,1-Trichloroethane	BDL	1.0	µg/L	EMH
1,1,2-Trichloroethane	BDL	1.0	µg/L	EMH
Trichloroethylene	BDL	1.0	µg/L	EMH
Vinyl chloride	BDL	1.0	µg/L	EMH
Xylenes, Total	BDL	1.0	µg/L	EMH

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

June 24, 2002
Report: 2002/04602
Sample No: 2002/04602- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Howard Ray Ledbetter

Collected on: 04/30/02

Received on: 04/30/02

Date of Analysis: 05/03/02

531.1 GROUP I UNREGULATED ORGANIC PESTICIDES

PARAMETER	RESULT	DL UNITS	ANALYST
Aldicarb	BDL	0.50 µg/L	E84129
Aldicarb sulfone	BDL	0.50 µg/L	E84129
Aldicarb sulfoxide	BDL	0.50 µg/L	E84129
Carbaryl	BDL	0.50 µg/L	E84129
3-Hydroxycarbofuran	BDL	0.50 µg/L	E84129
Methomyl	BDL	0.50 µg/L	E84129

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
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Sample No: 2002/04602- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Howard Ray Ledbetter

Collected on: 04/30/02

Received on: 04/30/02

Date of Analysis: 05/04/02

Date of Extraction: 05/03/02

625 GROUP III UNREGULATED ORGANIC CONTAMINANTS

PARAMETER	RESULT	DL UNITS	ANALYST
Butyl benzyl phthalate	BDL	1.0 µg/L	SPH
2-Chlorophenol	BDL	1.0 µg/L	SPH
Di-n-butylphthalate	BDL	1.0 µg/L	SPH
Diethylphthalate	BDL	1.0 µg/L	SPH
Dimethylphthalate	BDL	1.0 µg/L	SPH
Di-n-octyl phthalate	BDL	1.0 µg/L	SPH
2,4-Dinitrotoluene	BDL	1.0 µg/L	SPH
Isophorone	BDL	1.0 µg/L	SPH
2-Methyl-4,6-dinitrophenol	BDL	1.0 µg/L	SPH
Phenol	BDL	1.0 µg/L	SPH
2,4,6-Trichlorophenol	BDL	1.0 µg/L	SPH

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

June 24, 2002
Report: 2002/04602
Sample No: 2002/04602- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Howard Ray Ledbetter

Collected on: 04/30/02

Received on: 04/30/02

Date of Analysis: 05/04/02

Date of Extraction: 05/03/02

625 MUNICIPAL WASTEWATER MINIMUM CRITERIA

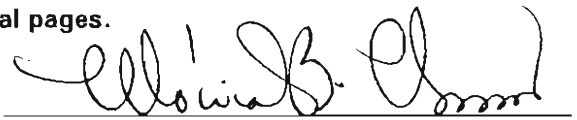
PARAMETER	RESULT	DL UNITS	ANALYST
Anthracene	BDL	1.0 µg/L	SPH
Naphthalene	BDL	1.0 µg/L	SPH
Phenanthrene	BDL	1.0 µg/L	SPH

Analysis contained herein conform to EPA, Standard Methods and DEP approved methods per Envirodyne Comprehensive Quality Assurance Plan No. 890041. Subcontracted analyses are denoted by certification number in the analyst column. All relevant quality assurance samples were within specified control limits unless otherwise stated. Uncertainties for test results are available upon request. Envirodyne certifies its test results meet all requirements of the NELAC Standards, where applicable. For questions, please call the project manager at the number listed above.

This is the last page of the report. See bottom of page for total pages.



Project Manager



Quality Assurance Director

**ASR Well
(Injection Zone)**

June 23, 2003



Palm Beach County Water Utilities Department

Water \ Wastewater Testing Laboratory

13026 Jog Rd., Bldg. K
Delray Beach, FL 33446
(561) 638-5000



System 9

WATER QUALITY ANALYSIS

Sample Number: AI08567

Sample Location: ASR-1(E.Hillsboro Canal)

Analysis	Analysis Result(mg/L)	Qual.	Analytical Method	Det. Lt. (MDL)	Analysis Date	Analyst
Turbidity	0.19		SM 2130-B	0.05	6/23/2003	NF/RMS
Temp	24.0		SM 2550-B	0.1	6/23/2003	NF/RMS
Conduct.	6490		SM 2510-B	0.5	6/23/2003	NF/RMS
pH	7.64		EPA 150.1	0.01	6/23/2003	NF/RMS
Dissolved Oxygen	1.07		EPA 360.1	0.1	6/23/2003	NF/RMS



Palm Beach County Water Utilities Department

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(561) 638-5000



System 9

WATER QUALITY ANALYSIS

** Analysis contained herein conform to EPA, Standard Methods and DEP approved methods. Subcontracted analyses are denoted by certification number in the analyst column. All relevant quality assurance samples were within specified control limits unless otherwise stated. Uncertainties for test results are available upon request. Palm Beach County Water Utilities certifies its test results meets all requirements of the NELAC Standards, where applicable. For questions, please call the QA Officer or the Lab Manager at the phone number listed above.

Contact: Jaya Navani (561) 638-5000

I do HEREBY CERTIFY that all attached analytical data are correct.

QA Officer, Shree Kundalkar

Shree Kundalkar
Jaya Navani

Date:

8/27/03

Laboratory Manager, Jaya Navani

Date:

8-27-03

COMPLIANCE INFORMATION

Sample Collection Satisfactory: _____

Sample Analysis Satisfactory: _____

Resample Requested for: _____

Reason: _____

Person notified to resample: _____

Date Notified: _____

DEP/ACPHU Reviewing Official: _____

Notice: The information contained in this report is confidential and is intended only for the use of the individual or entity named above. If the reader of this communication is not the recipient, you are hereby notified that any dissemination, distribution or copying of this information is prohibited. If you have received this communication in error, please immediately notify us at (561) 638-5000. Thank you.



Palm Beach County Water Utilities Department

Water \ Wastewater Testing Laboratory

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 Delray Beach, FL 33446
 (561) 638-5000



System 9

WATER QUALITY ANALYSIS

Qualifier Codes

QUALIFIER	EXPLANATION
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J	Estimated value; value may not be accurate. This code shall be used in the following instances:
J1	Surrogate recovery limits have been exceeded;
J2	No known quality control criteria exists for the component;
J3	The reported value failed to meet the established quality control criteria for either precision or accuracy;
J4	The sample matrix interfered with the ability to make any accurate determination
J5	The data are questionable because of improper laboratory or field protocols (e.g. composite sample was collected instead of a grab sample).
O	Sampled, but analysis lost or not performed.
Q	Sample held beyond the accepted holding time. This code shall be used if the value is derived from a sample that was prepared or analyzed after the approved holding time restrictions for sample preparation or analysis.
T	Value reported is less than the laboratory method detection limit. The value is reported for informational purposes only – and shall not be used in statistical analysis.
U	Indicates that the compound was analyzed for but not detected, this symbol shall be used to indicate that the specified component was not detected. The value associated with the qualifier shall be the laboratory method detection limit. Unless requested by the client, less than the method detection limit values shall not be reported (see “T” above).
V	Indicates that the analyte was detected in both the sample and the associated method blank. Note: the value in the blank shall not be subtracted from associated samples.
Y	The laboratory analysis was from an improperly preserved sample. The data may not be accurate.
Z	Too many colonies were present (TNTC): the numeric value represent the filtration volume.
?	Data are rejected and should not be used. Some or all of the quality control data for the analyte were outside criteria, and the presence or absence of the analyte cannot be determined from the data.
D	Measurement was made in the field (i.e., in situ). This applies to any value (except pH, specific conductance, dissolved oxygen, temperature, total residual chlorine, transparency, or salinity) that was obtained under field conditions using approved analytical methods. If the parameter code specifies a field measurement e.g., “Field pH”, this code is not required.

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 15, 2003
Report: 2003/06404
Sample No: 2003/06404- 1

Attention: Jaya Navani

Project: System 9 WTP ASR Project
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: ASR Well-1 AI08567

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

PARAMETER	RESULT	METHOD	DL	UNITS	DATE	ANALYST
Aluminum	0.86	200.7	0.10	mg/L	06/27/03	KYT
Arsenic	U	200.7	0.010	mg/L	06/24/03	APR
Barium	0.015	200.7	0.010	mg/L	06/24/03	APR
Beryllium	U	200.7	0.0030	mg/L	06/24/03	APR
Cadmium	U	200.7	0.0040	mg/L	06/24/03	APR
Chromium	U	200.7	0.010	mg/L	06/24/03	APR
Copper	U	200.7	0.010	mg/L	06/24/03	APR
Iron	1.5	200.7	0.010	mg/L	06/27/03	KYT
Manganese	U	200.7	0.010	mg/L	06/24/03	APR
Nickel	U	200.7	0.010	mg/L	06/24/03	APR
Silver	U	200.7	0.010	mg/L	06/24/03	APR
Sodium	1300	200.7	100	mg/L	07/10/03	APR
Zinc	0.016	200.7	0.010	mg/L	06/24/03	APR
Antimony	U	200.8	0.0010	mg/L	07/01/03	APR
Lead	U	200.8	0.00020	mg/L	07/01/03	APR
Selenium	0.010	200.8	0.0010	mg/L	07/01/03	APR
Thallium	U	200.8	0.00030	mg/L	07/01/03	APR
Mercury	U	245.1	0.00003	mg/L	06/24/03	KYT

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 15, 2003
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Attention: Jaya Navani ✓

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22438 SW 7th Street Boca Raton, FL

SAMPLE ID: ASR Well-1 AI08567

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

PARAMETER	RESULT	METHOD	DL	UNITS	DATE	ANALYST
Dibromochloropropane (DBCP)	U	504.1	0.020	µg/L	06/27/03	CMM
1,2-Dibromoethane (EDB)	U	504.1	0.020	µg/L	06/27/03	CMM
Benzo(a)pyrene	U	525.2	0.20	µg/L	06/25/03	SPH
Di(2-ethylhexyl)adipate	U	525.2	1.0	µg/L	06/25/03	SPH
Di(2-ethylhexyl)phthalate	U	525.2	1.0	µg/L	06/25/03	SPH
Carbofuran	U	531.1	1.0	µg/L	06/24/03	MLD
Oxamyl (Vydate)	U	531.1	1.0	µg/L	06/24/03	MLD
Glyphosate	U	547	40	µg/L	06/27/03	E86515
Endothall	U	548.1	50	µg/L	07/02/03	E86515
Diquat	U	549	1.44	µg/L	07/08/03	E86515
Biochemical Oxygen Demand	70	405.1	2.0	mg/L	06/23/03	JGT
Chloride	1900	SM4500CL-B	20	mg/L	06/24/03	DNS
Chemical Oxygen Demand	49	410.4	5.0	mg/L	06/24/03	DNS
Color	U	110.2	5	CU	06/24/03	JGT
Specific Conductance	5800	120.1		µmhos/cm	06/25/03	JNM
Cyanide, Total	U	335.4	0.0040	mg/L	06/26/03	JNM
Fluoride	0.92	SM4500F-C	0.10	mg/L	06/24/03	JMJ
Gross Alpha	5±3	900.0	1.0	pCi/L	06/30/03	E84088
Surfactants (as LAS, MW = 340)	0.24	425.1	0.010	mg/L	06/24/03	JGT

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
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Delray Beach, FL 33446

July 15, 2003
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Attention: **Jaya Navani**

Project: **System 9 WTP ASR Project**
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: ASR Well-1 AI08567

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

PARAMETER	RESULT	METHOD	DL	UNITS	DATE	ANALYST
Ammonia, as N	0.73	350.1	0.020	mg/L	06/25/03	JGT
Nitrite, as Nitrogen	U	353.2	0.020	mg/L	06/25/03	JGT
Nitrate, as Nitrogen	U	353.2	0.020	mg/L	06/25/03	JGT
Nitrate-Nitrite, as Nitrogen	U	353.2	0.020	mg/L	06/25/03	JGT
Odor	50	SM2150B	1	T.O.N.	06/24/03	JGT
pH (Laboratory)	7.6	150.1		pH Units	06/24/03	MM
Radium 226	0.7±0.1	903.1	0.1	pCi/L	07/08/03	E84088
Radium 228	0.5±0.5 U	RA-05	0.5	pCi/L	07/08/03	E84088
Sulfate	440	375.4	100	mg/L	06/24/03	JNM
Total Coliform Bacteria	<1	SM9222B	1	cfu/100 ml	06/23/03	JGT
Total Coliform Date & Time Sampled: 06/23/03 14:30						
Total Coliform Date & Time Analyzed: 06/23/03 17:36						
Total Dissolved Solids	4100	160.1	10	mg/L	06/27/03	DNS
Total Kjeldahl Nitrogen	1.2	351.2	0.10	mg/L	06/30/03	JMJ
Organic Nitrogen	U	351-350	0.50	mg/L	06/30/03	JMJ
Phosphorus, Total	0.12	365.4	0.010	mg/L	06/30/03	JMJ

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446



July 15, 2003
Report: 2003/06404
Sample No: 2003/06404- 1

Attention: **Jaya Navani**

Project: **System 9 WTP ASR Project**
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: **ASR Well-1 AI08567**

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/28/03
Date of Extraction: 06/25/03

508 GROUP I UNREGULATED ORGANIC CONTAMINANTS

PARAMETER	RESULT	DL	UNITS	ANALYST
Aldrin	U	0.10	µg/L	CMM
Dieldrin	U	0.10	µg/L	CMM

CERTIFICATE OF ANALYSIS

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July 15, 2003
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22438 SW 7th Street Boca Raton, FL

SAMPLE ID: ASR Well-1 AI08567

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/28/03
Date of Extraction: 06/25/03

508 ORGANOHALIDE PESTICIDES 62-550.310(2)(c) FAC

PARAMETER	RESULT	DL	UNITS	ANALYST
Chlordane	U	0.50	µg/L	CMM
Endrin	U	0.10	µg/L	CMM
Heptachlor	U	0.10	µg/L	CMM
Heptachlor epoxide	U	0.10	µg/L	CMM
Hexachlorobenzene	U	0.10	µg/L	CMM
Lindane	U	0.10	µg/L	CMM
Methoxychlor	U	0.20	µg/L	CMM
Toxaphene	U	1.0	µg/L	CMM
PCB 1016	U	0.20	µg/L	CMM
PCB 1221	U	0.20	µg/L	CMM
PCB 1240	U	0.20	µg/L	CMM
PCB 1242	U	0.20	µg/L	CMM
PCB 1248	U	0.20	µg/L	CMM
PCB 1254	U	0.20	µg/L	CMM
PCB 1260	U	0.20	µg/L	CMM

CERTIFICATE OF ANALYSIS

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July 15, 2003
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Attention: Jaya Navani

Project: System 9 WTP ASR Project
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: ASR Well-1 AI08567

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/29/03
Date of Extraction: 06/25/03

508.1 CHLORINATED PESTICIDES (62-550 FAC)

PARAMETER	RESULT	DL	UNITS	ANALYST
Alachlor	U	0.10	µg/L	CMM
Atrazine	U	1.0	µg/L	CMM
Hexachlorocyclopentadiene	U	0.10	µg/L	CMM
Simazine	U	1.0	µg/L	CMM

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 15, 2003
Report: 2003/06404
Sample No: 2003/06404- 1

Attention: Jaya Navani

Project: System 9 WTP ASR Project
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: ASR Well-1 AI08567

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/30/03
Date of Extraction: 06/27/03

515.1 HERBICIDES (62-550 FAC)

PARAMETER	RESULT	DL	UNITS	ANALYST
Dalapon	U	0.50	µg/L	CMM
Dinoseb	U	0.50	µg/L	CMM
Pentachlorophenol	U	0.50	µg/L	CMM
Picloram	U	0.50	µg/L	CMM
2,4-D	U	0.50	µg/L	CMM
2,4,5-TP (Silvex)	U	0.10	µg/L	CMM

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 15, 2003
Report: 2003/06404
Sample No: 2003/06404- 1

Attention: Jaya Navani

Project: System 9 WTP ASR Project
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: ASR Well-1 AI08567

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/25/03

524.2 GROUP II UNREGULATED ORGANIC CONTAMINANTS

PARAMETER	RESULT	DL	UNITS	ANALYST
Bromobenzene	U	0.5	µg/L	JCB
Bromodichloromethane	U	0.5	µg/L	JCB
Bromoform	U	0.5	µg/L	JCB
Bromomethane	U	0.5	µg/L	JCB
Chloroethane	U	0.5	µg/L	JCB
Chloroform	U	0.5	µg/L	JCB
Chloromethane	U	0.5	µg/L	JCB
o-Chlorotoluene	U	0.5	µg/L	JCB
p-Chlorotoluene	U	0.5	µg/L	JCB
Dibromochloromethane	U	0.5	µg/L	JCB
Dibromomethane	U	0.5	µg/L	JCB
m-Dichlorobenzene	U	0.5	µg/L	JCB
Dichlorodifluoromethane	U	0.5	µg/L	JCB
1,1-Dichloroethane	U	0.5	µg/L	JCB
2,2-Dichloropropane	U	0.5	µg/L	JCB
1,1-Dichloropropylene	U	0.5	µg/L	JCB
1,3-Dichloropropane	U	0.5	µg/L	JCB
1,3-Dichloropropene	U	0.5	µg/L	JCB
Methyl tert-butyl-ether (MTBE)	U	0.5	µg/L	JCB
1,1,1,2-Tetrachloroethane	U	0.5	µg/L	JCB
1,1,2,2-Tetrachloroethane	U	0.5	µg/L	JCB
Trichlorofluoromethane	U	0.5	µg/L	JCB
1,2,3-Trichloropropane	U	0.5	µg/L	JCB

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 15, 2003
Report: 2003/06404
Sample No: 2003/06404- 1

Attention: **Jaya Navani**

Project: **System 9 WTP ASR Project**
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: **ASR Well-1 AI08567**

Collected by: **Ricky Sadarangani**
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/25/03

524.2 TRIHALOMETHANES (THM'S)

PARAMETER	RESULT	DL	UNITS	ANALYST
Bromodichloromethane	U	0.5	µg/L	JCB
Bromoform	U	0.5	µg/L	JCB
Chloroform	U	0.5	µg/L	JCB
Dibromochloromethane	U	0.5	µg/L	JCB
Total Trihalomethanes	U	0.5	µg/L	JCB

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 15, 2003
Report: 2003/06404
Sample No: 2003/06404- 1

Attention: Jaya Navani

Project: System 9 WTP ASR Project
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: ASR Well-1 AI08567

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/25/03

524.2 VOLATILE ORGANIC COMPOUNDS (62-550)

PARAMETER	RESULT	DL	UNITS	ANALYST
Benzene	U	0.5	µg/L	JCB
Carbon tetrachloride	U	0.5	µg/L	JCB
Chlorobenzene	U	0.5	µg/L	JCB
1,2-Dichlorobenzene	U	0.5	µg/L	JCB
1,4-Dichlorobenzene	U	0.5	µg/L	JCB
1,2-Dichloroethane	U	0.5	µg/L	JCB
1,1-Dichloroethene	U	0.5	µg/L	JCB
cis-1,2-Dichloroethene	U	0.5	µg/L	JCB
trans-1,2-Dichloroethene	U	0.5	µg/L	JCB
Dichloromethane	U	0.5	µg/L	JCB
1,2-Dichloropropane	U	0.5	µg/L	JCB
Ethylbenzene	U	0.5	µg/L	JCB
Styrene	U	0.5	µg/L	JCB
Tetrachloroethylene	U	0.5	µg/L	JCB
Toluene	U	0.5	µg/L	JCB
1,2,4-Trichlorobenzene	U	0.5	µg/L	JCB
1,1,1-Trichloroethane	U	0.5	µg/L	JCB
1,1,2-Trichloroethane	U	0.5	µg/L	JCB
Trichloroethylene	U	0.5	µg/L	JCB
Vinyl chloride	U	0.5	µg/L	JCB
Xylenes, Total	U	0.5	µg/L	JCB

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 15, 2003
Report: 2003/06404
Sample No: 2003/06404- 1

Attention: Jaya Navani

Project: System 9 WTP ASR Project
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: ASR Well-1 AI08567

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/24/03

531.1 GROUP I UNREGULATED ORGANIC PESTICIDES

PARAMETER	RESULT	DL	UNITS	ANALYST
Aldicarb	U	1.0	µg/L	MLD
Aldicarb sulfone	U	1.0	µg/L	MLD
Aldicarb sulfoxide	U	1.0	µg/L	MLD
Carbaryl	U	1.0	µg/L	MLD
3-Hydroxycarbofuran	U	1.0	µg/L	MLD
Methomyl	U	1.0	µg/L	MLD

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 15, 2003
Report: 2003/06404
Sample No: 2003/06404- 1

Attention: Jaya Navani

Project: System 9 WTP ASR Project
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: ASR Well-1 AI08567

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/29/03
Date of Extraction: 06/27/03

625 GROUP III UNREGULATED ORGANIC CONTAMINANTS

PARAMETER	RESULT	DL	UNITS	ANALYST
Butyl benzyl phthalate	U	1.0	µg/L	SPH
2-Chlorophenol	U	1.0	µg/L	SPH
Di-n-butylphthalate	U	1.0	µg/L	SPH
Diethylphthalate	U	1.0	µg/L	SPH
Dimethylphthalate	U	1.0	µg/L	SPH
Di-n-octyl phthalate	U	1.0	µg/L	SPH
2,4-Dinitrotoluene	U	1.0	µg/L	SPH
Isophorone	U	1.0	µg/L	SPH
2-Methyl-4,6-dinitrophenol	U	1.0	µg/L	SPH
Phenol	U	1.0	µg/L	SPH
2,4,6-Trichlorophenol	U	1.0	µg/L	SPH

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 15, 2003
Report: 2003/06404
Sample No: 2003/06404- 1

Attention: **Jaya Navani**

Project: **System 9 WTP ASR Project**
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: ASR Well-1 AI08567

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/29/03
Date of Extraction: 06/27/03

625 MUNICIPAL WASTEWATER MINIMUM CRITERIA

PARAMETER	RESULT	DL	UNITS	ANALYST
Anthracene	U	1.0	µg/L	SPH
Naphthalene	U	1.0	µg/L	SPH
Phenanthrene	U	1.0	µg/L	SPH

ENVIRODYNE INC.

Quality Control Report

EPA 525.2

Matrix Spike and Duplicate Analysis

Date: June 24, 2003
Batch No.: GC/MS052403k
Matrix: Water



Compound	R P D	Percent Recovery
Butachlor	18.74%	104%
Atrazine	5.80%	76%
Hexachlorobenzene	10.69%	79%
Di(2-ethylhexyl)adipate	4.86%	70%
Di(2-ethylhexyl)phthalate	11.25%	73%
Benzo(a)pyrene	3.22%	124%

ENVIRODYNE INC.

Quality Control Report

EPA 625

Matrix Spike and Duplicate Analysis

Date: June 29, 2003
Batch No.: GC/MS062403b
Matrix: water



Compound	R P D	Percent Recovery	
Acenaphthene	7.35%	119%	
N-Nitroso-di-n-propylamine	1.89%	120%	
Pentachlorophenol	5.81%	161%	*
Phenol	0.44%	142%	
Pyrene	2.45%	135%	*
1,4-Dichlorobenzene	2.50%	111%	
1,2,4-Trichlorobenzene	2.43%	111%	
2-Chlorophenol	1.83%	142%	*
2,4-Dinitrotoluene	5.26%	126%	
4-Chloro-3-Methylphenol	8.17%	167%	*
4-Nitrophenol	18.82%	150%	

* Recoveries above established limits; possibly due to matrix interference. Samples did not show positive hits for these analytes

ENVIRODYNE INC.

Quality Control Report

EPA 625

Matrix Spike and Duplicate Analysis

Date: June 29, 2003
Batch No.: GC/MS062403b
Matrix: water



Compound	R P D	Percent Recovery
Acenaphthene	7.35%	119%
N-Nitroso-di-n-propylamine	1.89%	120%
Pentachlorophenol	5.81%	161%
Phenol	0.44%	142%
Pyrene	2.45%	135%
1,4-Dichlorobenzene	2.50%	111%
1,2,4-Trichlorobenzene	2.43%	111%
2-Chlorophenol	1.83%	142%
2,4-Dinitrotoluene	5.26%	126%
4-Chloro-3-Methylphenol	8.17%	167%
4-Nitrophenol	18.82%	150%

ENVIRODYNE INC.

Quality Control Report

EPA 524.2

Matrix Spike and Duplicate

Date: June 24, 2003
Batch No.: GCMS1062403W
Matrix: WATER



Compound	R P D	Percent Recovery
Benzene	0.71%	105%
Chlorobenzene	2.04%	98%
1,1-Dichloroethene	5.63%	98%
Toluene	2.14%	105%
Trichloroethene	5.98%	113%
1,2-Dichloroethane Surr*	4.77%	92%
4-Bromofluorobenzene Surr*	4.90%	106%
1,2-Dichlorobenzene-d4 Surr*	2.00%	110%

Blank < 1.0 PPB Pass/Fail: PASS

ENVIRODYNE INC.

Quality Control Report

EPA 531.1

Matrix Spike and Duplicate Analysis

Date: 6/26/2003
Batch No.: L531.1062603
Matrix: LIQUID



Compound	R P D	Percent Recovery
Aldicarb Sulfoxide	1.59%	101%
Aldicarb Sulfone	0.10%	99%
Oxamyl	0.00%	101%
Methomyl	0.76%	105%
3-Hydroxycarbofuran	1.35%	96%
Aldicarb	2.06%	102%
Propoxur (Baygon)	1.55%	97%
Carbofuran	2.17%	97%
Carbaryl	1.48%	95%
Methiocarb	1.93%	93%

ENVIRODYNE INC.

Quality Control Report

EPA 504.1

Matrix Spike and Duplicate Analysis

Date: JUNE 27, 2003
Batch No.: EDB062603A
Matrix: WATER



Compound	R P D	Percent Recovery
EDB	4.26%	94%
DBCP	4.08%	98%

ENVIRODYNE INC.

Quality Control Report

EPA 515.1

Matrix Spike and Duplicate Analysis

Date: JULY 1, 2003
Batch No.: HERB062703A
Matrix: WATER



Compound	R P D	Percent Recovery
Dalapon	0.00%	85%
Dinoseb	5.61%	89%
Pentachlorophenol	0.00%	110%
Picloram	23.01%	94%
2,4-D	5.83%	86%
2,4,5-TP (Silvex)	0.00%	108%
DCPA (Dactal)	4.65%	110%

ENVIRODYNE INC.

Quality Control Report

EPA 508.1

Matrix Spike and Duplicate Analysis

Date: JUNE 30, 2003
Batch No.: LPEST062503B
Matrix: WATER

Compound	R P D	Percent Recovery
Alachlor	2.67%	125%
Atrazine	0.85%	117%
Hexachlorocyclopentadiene	0.00%	120%
Simazine	7.37%	122%

ENVIRODYNE INC.

Quality Control Report

EPA 508

Matrix Spike and Duplicate Analysis

Date: JUNE 29, 2003
Batch No.: LPEST062503A
Matrix: WATER

✓ BAR
7/23

Compound	R P D	Percent Recovery
Chlordane	3.23%	103%
Endrin	0.00%	97%
Heptachlor	3.51%	95%
Heptachlor epoxide	3.08%	108%
Hexachlorobenzene	3.17%	105%
Lindane	3.08%	108%
Methoxychlor	3.17%	105%

CHAIN OF CUSTODY RECORD
AND
ANALYSIS REQUEST

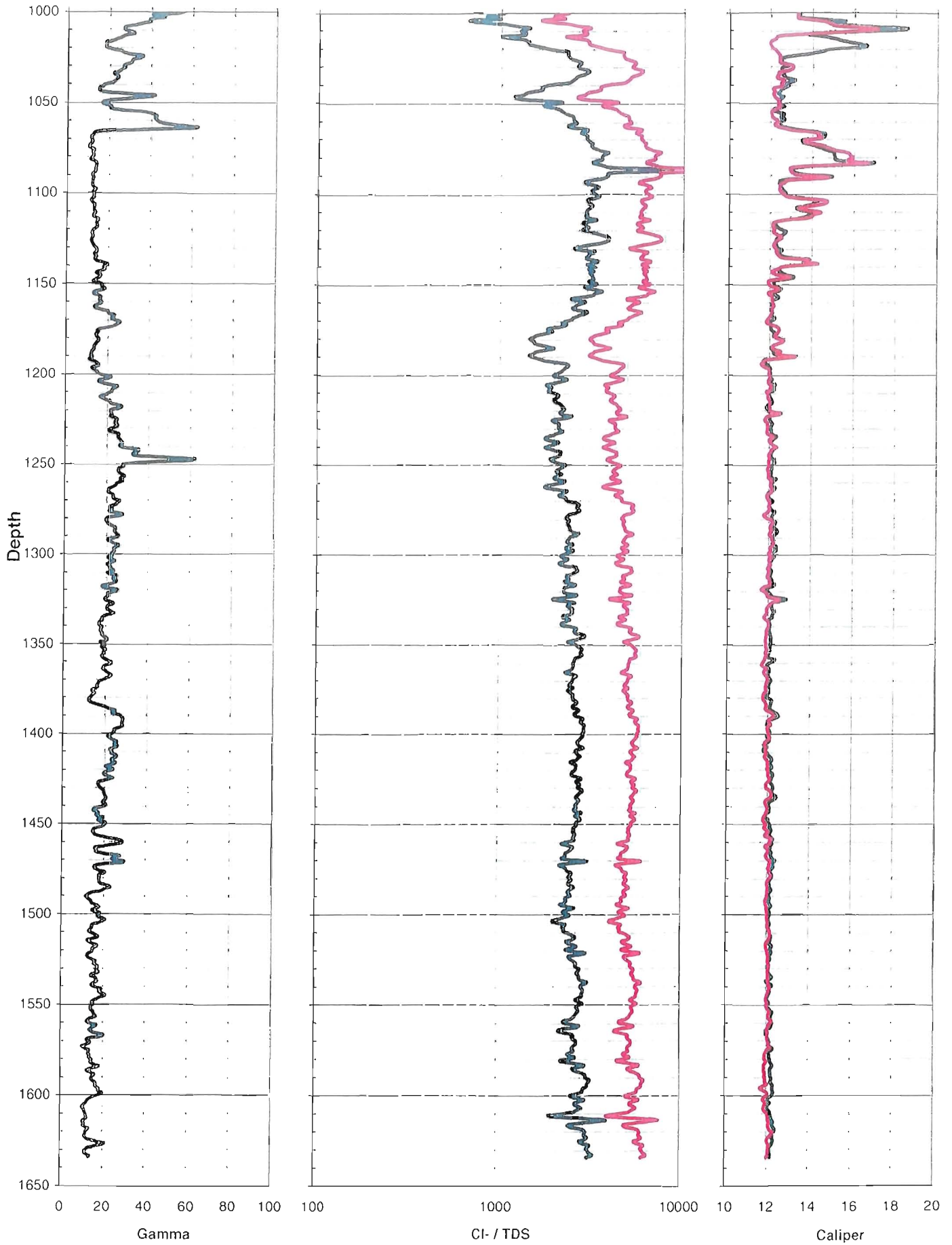
4805 NW 2nd Avenue • Boca Raton, FL 33431
(800) 713-7737 • Fax (561) 989-5204
edyne@bellsouth.net

PROJECT NUMBER	PROJECT NAME <i>Sys 9</i> <i>ASR Project (Permit)</i> <i>FOR Compliance</i>	P.O. NUMBER	SAMPLE TYPE	PRESERVATIVE		
PROJECT LOCATION	CLIENT NAME	CLIENT ADDRESS	ANALYSES REQUESTED	RUSH TAT (SURCHARGE)		
CLIENT NAME	CLIENT ADDRESS	PHONE	NO. OF CONTAINERS	DUE DATE:		
PALM BEACH COUNTY WATER UTILITIES LABORATORY 13026 JOG ROAD, BLDG "K" DELRAY BEACH, FLORIDA 33446 FAX		SOLID LIQUID AIR NON-AQUEOUS LIQUID <i>TABLE 61</i>				
SAMPLE INFORMATION						
NUMBER	DATE	TIME	IDENTIFICATION	REMARKS		
1	6/23/03	1430	<i>Sys 9</i> ASR Well # 1	<i>23?</i> AIO 85667		
2	"	1300	Florida Aquifer Mon. Well (FAMW-1)	<i>23?</i> AIO 85676		
3						
4						
5						
6						
7						
8						
9						
10						
SAMPLE COLLECTED BY <i>Picky Sackarangan,</i> <i>Noel Fleites</i>		ARE THESE SAMPLES LISTED OR CHARACTERISTIC HAZARDOUS WASTE? <input type="checkbox"/> YES <input type="checkbox"/> NO ARE THESE SAMPLES FROM <input type="checkbox"/> PETROLEUM <input type="checkbox"/> DRY CLEANER OR <input type="checkbox"/> OTHER SITE?			54 TOTAL OF ALL CONTAINERS	
SEND REPORT TO (PERSON)	REINQUISHED BY	DATE	TIME	RECEIVED BY	DATE	TIME
<i>JAVA NAVANI</i>	<i>R. Flow</i>	6/23/03	16:40	<i>D. R. S.</i>	6-23-03	16:40
SAMPLES CONDITION						
INTACT 40C	<i>D. R. S.</i>	6-23-03	17:09	<i>Michelle Mercado</i>	6-23-03	17:09
LOG NUMBER						
2003 06404						

**FAMW
(Monitor Zone)**

December 18, 2001

Palm Beach County Hillsboro ASR Well System - FAMW-1 Log Derived Water Quality



Empirically derived (R-H, m=2.0, a=1.0) Non-Corrected RILD

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

January 10, 2002
Report: 2001/12345
Sample No: 2001/12345- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Festus Underwood

Collected on: 12/18/01
Received on: 12/19/01

PARAMETER	RESULT	METHOD	DL UNITS	DATE	ANALYST
Aluminum	BDL	200.7	0.10 mg/L	12/20/01	MHA
Arsenic	BDL	200.7	0.010 mg/L	12/20/01	MHA
Barium	0.013	200.7	0.010 mg/L	12/20/01	MHA
Beryllium	BDL	200.7	0.0030 mg/L	12/20/01	MHA
Cadmium	BDL	200.7	0.0040 mg/L	12/20/01	MHA
Chromium	BDL	200.7	0.010 mg/L	12/20/01	MHA
Copper	BDL	200.7	0.010 mg/L	12/20/01	MHA
Iron	0.10	200.7	0.010 mg/L	12/20/01	MHA
Lead	BDL	200.7	0.0050 mg/L	12/20/01	MHA
Manganese	BDL	200.7	0.010 mg/L	12/20/01	MHA
Nickel	0.095	200.7	0.010 mg/L	12/20/01	MHA
Potassium	46	200.7	0.50 mg/L	12/20/01	MHA
Selenium	BDL	200.7	0.010 mg/L	12/20/01	MHA
Silver	BDL	200.7	0.010 mg/L	12/20/01	MHA
Sodium	1300	200.7	100 mg/L	12/20/01	MHA
Thallium	BDL	200.7	0.0020 mg/L	12/20/01	MHA
Zinc	0.087	200.7	0.010 mg/L	12/20/01	MHA
Mercury	BDL	245.1	0.00020 mg/L	12/24/01	MHA

Analysis Performed in Accordance with E.P.A. Methods
Laboratory Certification No. E86188

QA/QC Review *[Signature]*
BDL=Below Detection Limit
DL=Detection Limit

1 #018-02633-0

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

January 10, 2002
Report: 2001/12345
Sample No: 2001/12345- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Festus Underwood

Collected on: 12/18/01

Received on: 12/19/01

PARAMETER	RESULT	METHOD	DL	UNITS	DATE	ANALYST
Dibromochloropropane (DBCP)	BDL	EPA 504.1	0.020	µg/L	12/21/01	CMM
1,2-Dibromoethane (EDB)	BDL	EPA 504.1	0.020	µg/L	12/21/01	CMM
Benzo(a)pyrene	BDL	EPA 525.2	0.2	µg/L	12/23/01	SPH
Di(2-ethylhexyl)adipate	BDL	EPA 525.2	1.0	µg/L	12/23/01	SPH
Di(2-ethylhexyl)phthalate	BDL	EPA 525.2	1.0	µg/L	12/23/01	SPH
Carbofuran	BDL	EPA 531.1	0.50	µg/L	12/22/01	E84129
Oxamyl (Vydate)	BDL	EPA 531.1	0.50	µg/L	12/22/01	E84129
Glyphosate	BDL	EPA 547	10	µg/L	12/26/01	E84129
Endothall	BDL	EPA 548.1	20	µg/L	01/03/02	E84129
Diquat	BDL	EPA 549.2	1.0	µg/L	01/02/02	E84129
Antimony	BDL	6010B	0.0050	mg/L	12/20/01	MHA
Alkalinity, Total	140	310.1	1.0	mg/L	12/20/01	DNS
Bicarbonate	140	SM2320	0.01	mg/L	12/20/01	DNS
Biochemical Oxygen Demand	5.8	405.1	2.0	mg/L	12/20/01	JCB
Carbon Dioxide	0.51	SM4500CO2D		mg/L	12/20/01	DNS
Chloride	2300	SM4500CL-B	20.0	mg/L	12/20/01	JCB
Chemical Oxygen Demand	81	410.4	5.0	mg/L	12/26/01	JCB
Color	BDL	110.2	5	CU	12/20/01	JMJ

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
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January 10, 2002
Report: 2001/12345
Sample No: 2001/12345- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Festus Underwood

Collected on: 12/18/01

Received on: 12/19/01

PARAMETER	RESULT	METHOD	DL UNITS	DATE	ANALYST
Specific Conductance	8200	120.1	μ mhos/cm	12/21/01	DNS
Corrosivity, L.S.I.	0.5136	SM2330B	L.I.	12/26/01	DNS
Cyanide, Total	BDL	335.2	0.0040 mg/L	12/20/01	JCB
Fluoride	1.1	SM4500F-C	0.10 mg/L	12/21/01	DNS
Gross Alpha	853 \pm 93	900.0	1.0 pCi/L	01/07/02	E84088
Hardness, Calcium as CaCO3	320	SM2340B	5.0 mg/L	12/20/01	MHA
Hardness, Magnesium	490	SM2340B	5.0 mg/L	12/23/01	MHA
Hardness, Total	819	SM2340B	1 mg/L	12/20/01	MHA
Hydrogen Sulfide	0.87	9030/376.2	0.04 mg/L	12/21/01	DNS
Surfactants (as LAS, MW = 340)	0.14	425.1	0.010 mg/L	12/20/01	JMJ
Ammonia, as N	0.61	350.1	0.020 mg/L	12/26/01	JCB
Nitrite, as Nitrogen	BDL	353.2	0.020 mg/L	12/20/01	JCB
Nitrate, as Nitrogen	BDL	353.2	0.020 mg/L	12/20/01	JCB
Nitrate-Nitrite, as Nitrogen	BDL	353.2	0.020 mg/L	12/20/01	JCB
Odor	16	140.1	1 T.O.N.	12/19/01	JMJ
Orthophosphate, as P	BDL	365.1	0.010 mg/L	12/20/01	DNS
pH (Laboratory)	7.6	150.1	pH Units	12/20/01	JMJ
Radium 226	4.6 \pm 0.2	903.1	0.1 pCi/L	01/03/02	E84088

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

January 10, 2002
Report: 2001/12345
Sample No: 2001/12345- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Festus Underwood

Collected on: 12/18/01
Received on: 12/19/01

PARAMETER	RESULT	METHOD	DL UNITS	DATE	ANALYST
Radium 228	0.5±0.5	RA-05	0.5 pCi/L	01/04/02	E84088
Sulfate	1000	375.4	125.0 mg/L	12/20/01	JCB
Total Coliform by MMO-MUG	Present	SM9223	1 cfu/100 ml	12/19/02	JMJ
Total Dissolved Solids	4400	160.1	10 mg/L	12/24/01	DNS
Total Kjeldahl Nitrogen	1.4	351.2	0.10 mg/L	12/24/01	JCB
Organic Nitrogen	0.79	351-350	0.50 mg/L	12/26/01	JCB
Phosphorus, Total	BDL	365.4	0.010 mg/L	12/24/01	JCB
Turbidity	0.90	180.1	0.10 ntu	12/20/01	DNS

CERTIFICATE OF ANALYSIS

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Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Festus Underwood

Collected on: 12/18/01

Received on: 12/19/01

Date of Analysis: 12/22/01

Date of Extraction: 12/20/01

508 GROUP I UNREGULATED ORGANIC CONTAMINANTS

PARAMETER	RESULT	DL UNITS	ANALYST
Aldrin	BDL	0.10 µg/L	CMM
Dieldrin	BDL	0.10 µg/L	CMM

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
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January 10, 2002
Report: 2001/12345
Sample No: 2001/12345- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Festus Underwood

Collected on: 12/18/01

Received on: 12/19/01

Date of Analysis: 12/22/01

Date of Extraction: 12/20/01

508 ORGANOHALIDE PESTICIDES 62-550.310(2)(c) FAC

PARAMETER	RESULT	DL UNITS	ANALYST
Chlordane	BDL	0.50 µg/L	CMM
Endrin	BDL	0.10 µg/L	CMM
Heptachlor	BDL	0.10 µg/L	CMM
Heptachlor epoxide	BDL	0.10 µg/L	CMM
Hexachlorobenzene	BDL	0.10 µg/L	CMM
Lindane	BDL	0.10 µg/L	CMM
Methoxychlor	BDL	0.20 µg/L	CMM
Toxaphene	BDL	3.0 µg/L	CMM
PCB 1016	BDL	0.50 µg/L	CMM
PCB-1221	BDL	0.50 µg/L	CMM
PCB 1240	BDL	0.50 µg/L	CMM
PCB 1242	BDL	0.50 µg/L	CMM
PCB 1248	BDL	0.50 µg/L	CMM
PCB 1254	BDL	0.50 µg/L	CMM
PCB 1260	BDL	0.50 µg/L	CMM

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

January 10, 2002
Report: 2001/12345
Sample No: 2001/12345- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Festus Underwood

Collected on: 12/18/01
Received on: 12/19/01

Date of Analysis: 12/22/01
Date of Extraction: 12/20/01

508.1 CHLORINATED PESTICIDES (62-550 FAC)

PARAMETER	RESULT	DL UNITS	ANALYST
Alachlor	BDL	0.10 µg/L	CMM
Atrazine	BDL	3.0 µg/L	CMM
Hexachlorocyclopentadiene	BDL	0.10 µg/L	CMM
Simazine	BDL	3.0 µg/L	CMM

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

January 10, 2002
Report: 2001/12345
Sample No: 2001/12345- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Festus Underwood

Collected on: 12/18/01
Received on: 12/19/01

Date of Analysis: 12/24/01
Date of Extraction: 12/21/01

515.1 HERBICIDES (62-550 FAC)

PARAMETER	RESULT	DL UNITS	ANALYST
Dalapon	BDL	0.50 µg/L	CMM
Dinoseb	BDL	0.50 µg/L	CMM
Pentachlorophenol	BDL	0.50 µg/L	CMM
Picloram	BDL	0.50 µg/L	CMM
2,4-D	BDL	0.50 µg/L	CMM
2,4,5-TP (Silvex)	BDL	0.10 µg/L	CMM

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

January 10, 2002
Report: 2001/12345
Sample No: 2001/12345- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Festus Underwood

Collected on: 12/18/01

Received on: 12/19/01

Date of Analysis: 12/20/01

524.2 GROUP II UNREGULATED ORGANIC CONTAMINANTS

PARAMETER	RESULT	DL	UNITS	ANALYST
Bromobenzene	BDL	1.0	µg/L	EMH
Bromodichloromethane	BDL	1.0	µg/L	EMH
Bromoform	BDL	1.0	µg/L	EMH
Bromomethane	BDL	1.0	µg/L	EMH
Chloroethane	BDL	1.0	µg/L	EMH
Chloroform	BDL	1.0	µg/L	EMH
Chloromethane	BDL	1.0	µg/L	EMH
o-Chlorotoluene	BDL	1.0	µg/L	EMH
p-Chlorotoluene	BDL	1.0	µg/L	EMH
Dibromochloromethane	BDL	1.0	µg/L	EMH
Dibromomethane	BDL	1.0	µg/L	EMH
m-Dichlorobenzene	BDL	1.0	µg/L	EMH
Dichlorodifluoromethane	BDL	1.0	µg/L	EMH
1,1-Dichloroethane	BDL	1.0	µg/L	EMH
2,2-Dichloropropane	BDL	1.0	µg/L	EMH
1,1-Dichloropropylene	BDL	1.0	µg/L	EMH
1,3-Dichloropropane	BDL	1.0	µg/L	EMH
1,3-Dichloropropene	BDL	1.0	µg/L	EMH
Methyl tert-butyl-ether (MTBE)	BDL	1.0	µg/L	EMH
1,1,1,2-Tetrachloroethane	BDL	1.0	µg/L	EMH
1,1,2,2-Tetrachloroethane	BDL	1.0	µg/L	EMH
Trichlorofluoromethane	BDL	1.0	µg/L	EMH
1,2,3-Trichloropropane	BDL	1.0	µg/L	EMH

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

January 10, 2002
Report: 2001/12345
Sample No: 2001/12345- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Festus Underwood

Collected on: 12/18/01

Received on: 12/19/01

Date of Analysis: 12/20/01

524.2 TRIHALOMETHANES (THM'S)

PARAMETER	RESULT	DL UNITS	ANALYST
Bromodichloromethane	BDL	0.5 µg/L	EMH
Bromoform	BDL	0.5 µg/L	EMH
Chloroform	BDL	0.5 µg/L	EMH
Dibromochloromethane	BDL	0.5 µg/L	EMH
Total Trihalomethanes	BDL	µg/L	EMH

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

January 10, 2002
Report: 2001/12345
Sample No: 2001/12345- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Festus Underwood

Collected on: 12/18/01

Received on: 12/19/01

Date of Analysis: 12/20/01

524.2 VOLATILE ORGANIC COMPOUNDS (62-550)

PARAMETER	RESULT	DL	UNITS	ANALYST
Benzene	BDL	1.0	µg/L	EMH
Carbon tetrachloride	BDL	1.0	µg/L	EMH
Chlorobenzene	BDL	1.0	µg/L	EMH
1,2-Dichlorobenzene	BDL	1.0	µg/L	EMH
1,4-Dichlorobenzene	BDL	1.0	µg/L	EMH
1,2-Dichloroethane	BDL	1.0	µg/L	EMH
1,1-Dichloroethene	BDL	1.0	µg/L	EMH
cis-1,2-Dichloroethene	BDL	1.0	µg/L	EMH
trans-1,2-Dichloroethene	BDL	1.0	µg/L	EMH
Dichloromethane	BDL	1.0	µg/L	EMH
1,2-Dichloropropane	BDL	1.0	µg/L	EMH
Ethylbenzene	BDL	1.0	µg/L	EMH
Styrene	BDL	1.0	µg/L	EMH
Tetrachloroethylene	BDL	1.0	µg/L	EMH
Toluene	BDL	1.0	µg/L	EMH
1,2,4-Trichlorobenzene	BDL	1.0	µg/L	EMH
1,1,1-Trichloroethane	BDL	1.0	µg/L	EMH
1,1,2-Trichloroethane	BDL	1.0	µg/L	EMH
Trichloroethylene	BDL	1.0	µg/L	EMH
Vinyl chloride	BDL	1.0	µg/L	EMH
Xylenes, Total	BDL	1.0	µg/L	EMH

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

January 10, 2002
Report: 2001/12345
Sample No: 2001/12345- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Festus Underwood

Collected on: 12/18/01

Received on: 12/19/01

Date of Analysis: 12/22/01

531.1 GROUP I UNREGULATED ORGANIC PESTICIDES

PARAMETER	RESULT	DL UNITS	ANALYST
Aldicarb	BDL	0.50 $\mu\text{g}/\text{L}$	E84129
Aldicarb sulfone	BDL	0.50 $\mu\text{g}/\text{L}$	E84129
Aldicarb sulfoxide	BDL	0.50 $\mu\text{g}/\text{L}$	E84129
Carbaryl	BDL	0.50 $\mu\text{g}/\text{L}$	E84129
3-Hydroxycarbofuran	BDL	0.50 $\mu\text{g}/\text{L}$	E84129
Methomyl	BDL	0.50 $\mu\text{g}/\text{L}$	E84129

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

January 10, 2002
Report: 2001/12345
Sample No: 2001/12345- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Festus Underwood

Collected on: 12/18/01

Received on: 12/19/01

Date of Analysis: 12/21/01

Date of Extraction: 12/20/01

625 GROUP III UNREGULATED ORGANIC CONTAMINANTS

PARAMETER	RESULT	DL UNITS	ANALYST
Butyl benzyl phthalate	BDL	1.0 µg/L	SPH
2-Chlorophenol	BDL	1.0 µg/L	SPH
Di-n-butylphthalate	BDL	1.0 µg/L	SPH
Diethylphthalate	BDL	1.0 µg/L	SPH
Dimethylphthalate	BDL	1.0 µg/L	SPH
Di-n-octyl phthalate	BDL	1.0 µg/L	SPH
2,4-Dinitrotoluene	BDL	1.0 µg/L	SPH
Isophorone	BDL	1.0 µg/L	SPH
2-Methyl-4,6-dinitrophenol	BDL	1.0 µg/L	SPH
Phenol	BDL	1.0 µg/L	SPH
2,4,6-Trichlorophenol	BDL	1.0 µg/L	SPH

CERTIFICATE OF ANALYSIS

Integrity Well & Pump
159 Wind Hill Lane
Winchester, VA 22602

January 10, 2002
Report: 2001/12345
Sample No: 2001/12345- 1

Attention: Ken Conner

Project: Eastern Hillsboro ASR Well Monitoring
Hillsboro Canal Boca Raton, FL

SAMPLE ID: FAMW

Collected by: Festus Underwood

Collected on: 12/18/01
Received on: 12/19/01

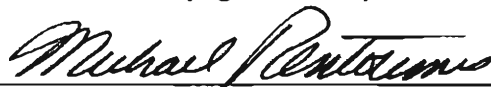
Date of Analysis: 12/21/01
Date of Extraction: 12/20/01

625 MUNICIPAL WASTEWATER MINIMUM CRITERIA

PARAMETER	RESULT	DL UNITS	ANALYST
Anthracene	BDL	1.0 µg/L	SPH
Naphthalene	BDL	1.0 µg/L	SPH
Phenanthrene	BDL	1.0 µg/L	SPH

Analysis contained herein conform to EPA, Standard Methods and DEP approved methods per Envirodyne Comprehensive Quality Assurance Plan No. 890041. Subcontracted analyses are denoted by certification number in the analyst column. All relevant quality assurance samples were within specified control limits unless otherwise stated. Uncertainties for test results are available upon request. Envirodyne certifies its test results meet all requirements of the NELAC Standards, where applicable. For questions, please call the project manager at the number listed above.

This is the last page of the report. See bottom of page for total pages.



Project Manager



Quality Assurance Director

**FAMW
(Monitor Zone)**

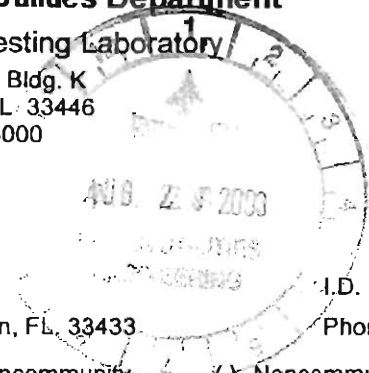
June 23, 2003



Palm Beach County Water Utilities Department

Water \ Wastewater Testing Laboratory

13026 Jog Rd., Bldg. K
Delray Beach, FL 33446
(561) 638-5000



Report Date: 8-25-2003

Report ID: 388 -2003

System Name: Palm Beach County Water Utility

System 9

I.D. 4501332

Address: 22438 S.W. 7th Street

Boca Raton, FL 33433

Phone: (561) 470-9788

Type (check one): Community Nontransient Noncommunity Noncommunity

SAMPLE INFORMATION

Sample Date: 6/23/2003 Sample Time: 1:00:00 PM

Sample Location: FAMW-1(E.Hillsboro Canal)

Sampler Name and Phone #: ~~NR/RMS~~ (561) 638-5000

Sampler's Signature: *Ramesh Sadarayan* Title: Laboratory Assistant \ Tech.

- Check Type(s) Distribution Recheck of MCL Resample of Lab Invalidated Sample(s)
- Clearance Thm Max Res Time Plant Tap
- Distrib entry pt Raw Composite of Multiple Sites

LABORATORY CERTIFICATION INFORMATION

Lab Name: Palm Beach County Water Utilities Department

Address: 13026 Jog Road, Bldg. K Delray Beach, FL 33446

Phone #: (561) 638-5000

DOH#: E56090 Expiration Date: 6/30/2004

ANALYSIS INFORMATION SAMPLE NUMBER AI08566

Date Sample(s) Received: 6/23/2003

Group(s) Analyzed Results attached for compliance with 62-550, F.A.C.:

- | | | | |
|---|--|--|---|
| <input type="checkbox"/> Nitrate Only | <input type="checkbox"/> Nitrite Only | <input type="checkbox"/> Asbestos Only | <input checked="" type="checkbox"/> Trihalomethanes |
| Inorganics-- | Volatile Organics-- | Secondaries-- | Pesticides / PCBs |
| <input checked="" type="checkbox"/> All 17 | <input checked="" type="checkbox"/> All 21 | <input checked="" type="checkbox"/> All 14 | <input type="checkbox"/> All 30 |
| <input type="checkbox"/> Partial | <input type="checkbox"/> Partial | <input type="checkbox"/> Partial | <input checked="" type="checkbox"/> Partial |
| Group I | Group II | Group III | Radiochemicals-- |
| Unregulateds-- | Unregulateds-- | Unregulateds-- | <input checked="" type="checkbox"/> Single Sample |
| <input type="checkbox"/> All 13 | <input checked="" type="checkbox"/> All 23 | <input checked="" type="checkbox"/> All 11 | <input type="checkbox"/> Qtrly Composite |
| <input checked="" type="checkbox"/> Partial | <input type="checkbox"/> Partial | <input type="checkbox"/> Partial | |



Palm Beach County Water Utilities Department

Water \ Wastewater Testing Laboratory

13026 Jog Rd., Bldg. K
Delray Beach, FL 33446
(561) 638-5000



System 9

WATER QUALITY ANALYSIS

Sample Number: AI08566

Sample Location: FAMW-1(E.Hillsboro Canal)

Analysis	Analysis Result(mg/L)	Qual.	Analytical Method	Det. Lt. (MDL)	Analysis Date	Analyst
Turbidity	0.60		SM 2130-B	0.05	6/23/2003	NF/RMS
Temp	24.2		SM 2550-B	0.1	6/23/2003	NF/RMS
Conduct.	7690		SM 2510-B	0.5	6/23/2003	NF/RMS
pH	7.79		EPA 150.1	0.01	6/23/2003	NF/RMS
Dissolved Oxygen	1.12		EPA 360.1	0.1	6/23/2003	NF/RMS

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 15, 2003
Report: 2003/06404
Sample No: 2003/06404- 2

Attention: Jaya Navani

Project: System 9 WTP ASR Project
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: FAMW-1 AI08566

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

PARAMETER	RESULT	METHOD	DL	UNITS	DATE	ANALYST
Aluminum	1.1	200.7	0.10	mg/L	06/27/03	KYT
Arsenic	U	200.7	0.010	mg/L	06/24/03	APR
Barium	0.031	200.7	0.010	mg/L	06/24/03	APR
Beryllium	U	200.7	0.0030	mg/L	06/24/03	APR
Cadmium	U	200.7	0.0040	mg/L	06/24/03	APR
Chromium	U	200.7	0.010	mg/L	06/24/03	APR
Copper	U	200.7	0.010	mg/L	06/24/03	APR
Iron	1.1	200.7	0.010	mg/L	06/27/03	KYT
Manganese	U	200.7	0.010	mg/L	06/24/03	APR
Nickel	U	200.7	0.010	mg/L	06/24/03	APR
Silver	U	200.7	0.010	mg/L	06/24/03	APR
Sodium	1300	200.7	100	mg/L	07/02/03	KYT
Zinc	0.015	200.7	0.010	mg/L	06/24/03	APR
Antimony	U	200.8	0.0010	mg/L	07/01/03	APR
Lead	U	200.8	0.00020	mg/L	07/01/03	APR
Selenium	0.012	200.8	0.0010	mg/L	07/01/03	APR
Thallium	U	200.8	0.00030	mg/L	07/01/03	APR
Mercury	U	245.1	0.00003	mg/L	06/24/03	KYT

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 15, 2003
Report: 2003/06404
Sample No: 2003/06404- 2

Attention: **Jaya Navani**

Project: **System 9 WTP ASR Project**
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: FAMW-1 AI08566

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

PARAMETER	RESULT	METHOD	DL	UNITS	DATE	ANALYST
Dibromochloropropane (DBCP)	U	504.1	0.020	µg/L	06/27/03	CMM
1,2-Dibromoethane (EDB)	U	504.1	0.020	µg/L	06/27/03	CMM
Benzo(a)pyrene	U	525.2	0.20	µg/L	06/25/03	SPH
Di(2-ethylhexyl)adipate	U	525.2	1.0	µg/L	06/25/03	SPH
Di(2-ethylhexyl)phthalate	U	525.2	1.0	µg/L	06/25/03	SPH
Carbofuran	U	531.1	1.0	µg/L	06/24/03	MLD
Oxamyl (Vydate)	U	531.1	1.0	µg/L	06/24/03	MLD
Glyphosate	U	547	40	µg/L	06/27/03	E86515
Endothall	U	548.1	50	µg/L	07/02/03	E86515
Diquat	U	549	1.44	µg/L	07/08/03	E86515
Biochemical Oxygen Demand	46	405.1	2.0	mg/L	06/23/03	JGT
Chloride	2400	SM4500CL-B	20	mg/L	06/24/03	DNS
Chemical Oxygen Demand	160	410.4	5.0	mg/L	06/24/03	DNS
Color	U	110.2	5	CU	06/24/03	JGT
Specific Conductance	6800	120.1		µmhos/cm	06/25/03	JNM
Cyanide, Total	U	335.4	0.0040	mg/L	06/26/03	JNM
Fluoride	0.84	SM4500F-C	0.10	mg/L	06/24/03	JMJ
Gross Alpha	1±3 U	900.0	1.0	pCi/L	06/30/03	E84088
Surfactants (as LAS, MW = 340)	0.22	425.1	0.010	mg/L	06/24/03	JGT

Analysis Performed in Accordance with E.P.A. Methods
Laboratory Certification No. E86188

QA/QC Review
U = Analyte Not Detected
DL = Detection Limit

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 15, 2003
Report: 2003/06404
Sample No: 2003/06404- 2

Attention: Jaya Navani

Project: System 9 WTP ASR Project
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: FAMW-1 AI08566

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

PARAMETER	RESULT	METHOD	DL	UNITS	DATE	ANALYST
Ammonia, as N	0.89	350.1	0.020	mg/L	06/25/03	JGT
Nitrite, as Nitrogen	U	353.2	0.020	mg/L	06/25/03	JGT
Nitrate, as Nitrogen	U	353.2	0.020	mg/L	06/25/03	JGT
Nitrate-Nitrite, as Nitrogen	U	353.2	0.020	mg/L	06/25/03	JGT
Odor	400	SM2150B	1	T.O.N.	06/24/03	JGT
pH (Laboratory)	7.6	150.1		pH Units	06/24/03	MM
Radium 226	4.1±0.3	903.1	0.1	pCi/L	07/08/03	E84088
Radium 228	0.5±0.5 U	RA-05	0.5	pCi/L	07/08/03	E84088
Sulfate	510	375.4	100	mg/L	06/24/03	JNM
Total Coliform Bacteria	<1	SM9222B	1	cfu/100 ml	06/23/03	JGT
Total Coliform Date & Time Sampled: 06/23/03 13:00						
Total Coliform Date & Time Analyzed: 06/23/03 17:37						
Total Dissolved Solids	5000	160.1	10	mg/L	06/27/03	DNS
Total Kjeldahl Nitrogen	1.5	351.2	0.10	mg/L	06/30/03	JMJ
Organic Nitrogen	0.61	351-350	0.50	mg/L	06/30/03	JMJ
Phosphorus, Total	0.016	365.4	0.010	mg/L	06/30/03	JMJ

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 15, 2003
Report: 2003/06404
Sample No: 2003/06404- 2

Attention: Jaya Navani

Project: System 9 WTP ASR Project
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: FAMW-1 AI08566

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/28/03
Date of Extraction: 06/25/03

508 GROUP I UNREGULATED ORGANIC CONTAMINANTS

PARAMETER	RESULT	DL	UNITS	ANALYST
Aldrin	U	0.10	µg/L	CMM
Dieldrin	U	0.10	µg/L	CMM

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
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Delray Beach, FL 33446

July 15, 2003
Report: 2003/06404
Sample No: 2003/06404- 2

Attention: Jaya Navani

Project: System 9 WTP ASR Project
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: FAMW-1 AI08566

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/28/03
Date of Extraction: 06/25/03

508 ORGANOHALIDE PESTICIDES 62-550.310(2)(c) FAC

PARAMETER	RESULT	DL	UNITS	ANALYST
Chlordane	U	0.50	µg/L	CMM
Endrin	U	0.10	µg/L	CMM
Heptachlor	U	0.10	µg/L	CMM
Heptachlor epoxide	U	0.10	µg/L	CMM
Hexachlorobenzene	U	0.10	µg/L	CMM
Lindane	U	0.10	µg/L	CMM
Methoxychlor	U	0.20	µg/L	CMM
Toxaphene	U	1.0	µg/L	CMM
PCB 1016	U	0.20	µg/L	CMM
PCB 1221	U	0.20	µg/L	CMM
PCB 1240	U	0.20	µg/L	CMM
PCB 1242	U	0.20	µg/L	CMM
PCB 1248	U	0.20	µg/L	CMM
PCB 1254	U	0.20	µg/L	CMM
PCB 1260	U	0.20	µg/L	CMM

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 15, 2003
Report: 2003/06404
Sample No: 2003/06404- 2

Attention: Jaya Navani

Project: System 9 WTP ASR Project
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: FAMW-1 AI08566

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/29/03
Date of Extraction: 06/25/03

508.1 CHLORINATED PESTICIDES (62-550 FAC)

PARAMETER	RESULT	DL	UNITS	ANALYST
Alachlor	U	0.10	µg/L	CMM
Atrazine	U	1.0	µg/L	CMM
Hexachlorocyclopentadiene	U	0.10	µg/L	CMM
Simazine	U	1.0	µg/L	CMM

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 15, 2003
Report: 2003/06404
Sample No: 2003/06404- 2

Attention: Jaya Navani

Project: System 9 WTP ASR Project
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: FAMW-1 AI08566

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/30/03
Date of Extraction: 06/27/03

515.1 HERBICIDES (62-550 FAC)

PARAMETER	RESULT	DL	UNITS	ANALYST
Dalapon	U	0.50	µg/L	CMM
Dinoseb	U	0.50	µg/L	CMM
Pentachlorophenol	U	0.50	µg/L	CMM
Picloram	U	0.50	µg/L	CMM
2,4-D	U	0.50	µg/L	CMM
2,4,5-TP (Silvex)	U	0.10	µg/L	CMM

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 15, 2003
Report: 2003/06404
Sample No: 2003/06404- 2

Attention: Jaya Navani

Project: System 9 WTP ASR Project
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: FAMW-1 AI08566

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/25/03

524.2 GROUP II UNREGULATED ORGANIC CONTAMINANTS

PARAMETER	RESULT	DL	UNITS	ANALYST
Bromobenzene	U	0.5	µg/L	JCB
Bromodichloromethane	U	0.5	µg/L	JCB
Bromoform	U	0.5	µg/L	JCB
Bromomethane	U	0.5	µg/L	JCB
Chloroethane	U	0.5	µg/L	JCB
Chloroform	U	0.5	µg/L	JCB
Chloromethane	U	0.5	µg/L	JCB
o-Chlorotoluene	U	0.5	µg/L	JCB
p-Chlorotoluene	U	0.5	µg/L	JCB
Dibromochloromethane	U	0.5	µg/L	JCB
Dibromomethane	U	0.5	µg/L	JCB
m-Dichlorobenzene	U	0.5	µg/L	JCB
Dichlorodifluoromethane	U	0.5	µg/L	JCB
1,1-Dichloroethane	U	0.5	µg/L	JCB
2,2-Dichloropropane	U	0.5	µg/L	JCB
1,1-Dichloropropylene	U	0.5	µg/L	JCB
1,3-Dichloropropane	U	0.5	µg/L	JCB
1,3-Dichloropropene	U	0.5	µg/L	JCB
Methyl tert-butyl-ether (MTBE)	U	0.5	µg/L	JCB
1,1,1,2-Tetrachloroethane	U	0.5	µg/L	JCB
1,1,2,2-Tetrachloroethane	U	0.5	µg/L	JCB
Trichlorofluoromethane	U	0.5	µg/L	JCB
1,2,3-Trichloropropane	U	0.5	µg/L	JCB

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

✓

July 15, 2003
Report: 2003/06404
Sample No: 2003/06404- 2

Attention: Jaya Navani

Project: System 9 WTP ASR Project
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: FAMW-1 AI08566

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/25/03

524.2 TRIHALOMETHANES (THM'S)

PARAMETER	RESULT	DL	UNITS	ANALYST
Bromodichloromethane	U	0.5	µg/L	JCB
Bromoform	U	0.5	µg/L	JCB
Chloroform	U	0.5	µg/L	JCB
Dibromochloromethane	U	0.5	µg/L	JCB
Total Trihalomethanes	U	0.5	µg/L	JCB

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

✓

July 15, 2003
Report: 2003/06404
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Attention: Jaya Navani

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22438 SW 7th Street Boca Raton, FL

SAMPLE ID: FAMW-1 AI08566

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/25/03

524.2 VOLATILE ORGANIC COMPOUNDS (62-550)

PARAMETER	RESULT	DL	UNITS	ANALYST
Benzene	U	0.5	µg/L	JCB
Carbon tetrachloride	U	0.5	µg/L	JCB
Chlorobenzene	U	0.5	µg/L	JCB
1,2-Dichlorobenzene	U	0.5	µg/L	JCB
1,4-Dichlorobenzene	U	0.5	µg/L	JCB
1,2-Dichloroethane	U	0.5	µg/L	JCB
1,1-Dichloroethene	U	0.5	µg/L	JCB
cis-1,2-Dichloroethene	U	0.5	µg/L	JCB
trans-1,2-Dichloroethene	U	0.5	µg/L	JCB
Dichloromethane	U	0.5	µg/L	JCB
1,2-Dichloropropane	U	0.5	µg/L	JCB
Ethylbenzene	U	0.5	µg/L	JCB
Styrene	U	0.5	µg/L	JCB
Tetrachloroethylene	U	0.5	µg/L	JCB
Toluene	U	0.5	µg/L	JCB
1,2,4-Trichlorobenzene	U	0.5	µg/L	JCB
1,1,1-Trichloroethane	U	0.5	µg/L	JCB
1,1,2-Trichloroethane	U	0.5	µg/L	JCB
Trichloroethylene	U	0.5	µg/L	JCB
Vinyl chloride	U	0.5	µg/L	JCB
Xylenes, Total	U	0.5	µg/L	JCB

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 15, 2003
Report: 2003/06404
Sample No: 2003/06404- 2

Attention: Jaya Navani

Project: System 9 WTP ASR Project
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: FAMW-1 AI08566

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/24/03

531.1 GROUP I UNREGULATED ORGANIC PESTICIDES

PARAMETER	RESULT	DL	UNITS	ANALYST
Aldicarb	U	1.0	µg/L	MLD
Aldicarb sulfone	U	1.0	µg/L	MLD
Aldicarb sulfoxide	U	1.0	µg/L	MLD
Carbaryl	U	1.0	µg/L	MLD
3-Hydroxycarbofuran	U	1.0	µg/L	MLD
Methomyl	U	1.0	µg/L	MLD

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 15, 2003
Report: 2003/06404
Sample No: 2003/06404- 2

Attention: Jaya Navani

Project: System 9 WTP ASR Project
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: FAMW-1 AI08566

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/29/03
Date of Extraction: 06/27/03

625 GROUP III UNREGULATED ORGANIC CONTAMINANTS

PARAMETER	RESULT	DL	UNITS	ANALYST
Butyl benzyl phthalate	U	1.0	µg/L	SPH
2-Chlorophenol	U	1.0	µg/L	SPH
Di-n-butylphthalate	U	1.0	µg/L	SPH
Diethylphthalate	U	1.0	µg/L	SPH
Dimethylphthalate	U	1.0	µg/L	SPH
Di-n-octyl phthalate	U	1.0	µg/L	SPH
2,4-Dinitrotoluene	U	1.0	µg/L	SPH
Isophorone	U	1.0	µg/L	SPH
2-Methyl-4,6-dinitrophenol	U	1.0	µg/L	SPH
Phenol	U	1.0	µg/L	SPH
2,4,6-Trichlorophenol	U	1.0	µg/L	SPH

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 15, 2003
Report: 2003/06404
Sample No: 2003/06404- 2

Attention: **Jaya Navani**

Project: **System 9 WTP ASR Project**
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: FAMW-1 AI08566

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/29/03
Date of Extraction: 06/27/03


625 MUNICIPAL WASTEWATER MINIMUM CRITERIA

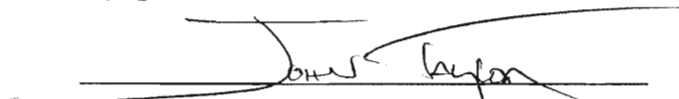
PARAMETER	RESULT	DL	UNITS	ANALYST
Anthracene	U	1.0	µg/L	SPH
Naphthalene	U	1.0	µg/L	SPH
Phenanthrene	U	1.0	µg/L	SPH

cfu = Colony forming units

Analysis contained herein conform to EPA, Standard Methods and DEP approved methods. Subcontracted analyses are denoted by certification number in the analyst column. All relevant quality assurance samples were within specified control limits unless otherwise stated. Uncertainties for test results are available upon request. Envirodyne certifies that its test results meet all requirements of the NELAC standards, where applicable. For questions, please call the project manager at the number listed above.

This is the last page of the report. See bottom of page for total pages.


Project Manager


Quality Assurance Officer

ENVIRODYNE INC.

Quality Control Report

EPA 525.2

Matrix Spike and Duplicate Analysis

Date: June 24, 2003
Batch No.: GC/MS052403k
Matrix: Water



Compound	R P D	Percent Recovery
Butachlor	18.74%	104%
Atrazine	5.80%	76%
Hexachlorobenzene	10.69%	79%
Di(2-ethylhexyl)adipate	4.86%	70%
Di(2-ethylhexyl)phthalate	11.25%	73%
Benzo(a)pyrene	3.22%	124%

ENVIRODYNE INC.

Quality Control Report

EPA 625

Matrix Spike and Duplicate Analysis

Date: June 29, 2003
Batch No.: GC/MS062403b
Matrix: water



Compound	R P D	Percent Recovery	
Acenaphthene	7.35%	119%	
N-Nitroso-di-n-propylamine	1.89%	120%	
Pentachlorophenol	5.81%	161%	*
Phenol	0.44%	142%	
Pyrene	2.45%	135%	*
1,4-Dichlorobenzene	2.50%	111%	
1,2,4-Trichlorobenzene	2.43%	111%	
2-Chlorophenol	1.83%	142%	*
2,4-Dinitrotoluene	5.26%	126%	
4-Chloro-3-Methylphenol	8.17%	167%	*
4-Nitrophenol	18.82%	150%	

* Recoveries above established limits; possibly due to matrix interference. Samples did not show positive hits for these analytes

ENVIRODYNE INC.

Quality Control Report

EPA 625

Matrix Spike and Duplicate Analysis

Date: June 29, 2003
Batch No.: GC/MS062403b
Matrix: water



Compound	R P D	Percent Recovery
Acenaphthene	7.35%	119%
N-Nitroso-di-n-propylamine	1.89%	120%
Pentachlorophenol	5.81%	161%
Phenol	0.44%	142%
Pyrene	2.45%	135%
1,4-Dichlorobenzene	2.50%	111%
1,2,4-Trichlorobenzene	2.43%	111%
2-Chlorophenol	1.83%	142%
2,4-Dinitrotoluene	5.26%	126%
4-Chloro-3-Methylphenol	8.17%	167%
4-Nitrophenol	18.82%	150%

ENVIRODYNE INC.

Quality Control Report

EPA 524.2

Matrix Spike and Duplicate

Date: June 24, 2003
Batch No.: GCMS1062403W
Matrix: WATER



Compound	R P D	Percent Recovery
Benzene	0.71%	105%
Chlorobenzene	2.04%	98%
1,1-Dichloroethene	5.63%	98%
Toluene	2.14%	105%
Trichloroethene	5.98%	113%
1,2-Dichloroethane Surr*	4.77%	92%
4-Bromofluorobenzene Surr*	4.90%	106%
1,2-Dichlorobenzene-d4 Surr*	2.00%	110%

Blank < 1.0 PPB Pass/Fail: PASS

ENVIRODYNE INC.

Quality Control Report

EPA 531.1

Matrix Spike and Duplicate Analysis

Date: 6/26/2003
Batch No.: L531.1062603
Matrix: LIQUID



Compound	R P D	Percent Recovery
Aldicarb Sulfoxide	1.59%	101%
Aldicarb Sulfone	0.10%	99%
Oxamyl	0.00%	101%
Methomyl	0.76%	105%
3-Hydroxycarbofuran	1.35%	96%
Aldicarb	2.06%	102%
Propoxur (Baygon)	1.55%	97%
Carbofuran	2.17%	97%
Carbaryl	1.48%	95%
Methiocarb	1.93%	93%

ENVIRODYNE INC.

Quality Control Report

EPA 504.1

Matrix Spike and Duplicate Analysis

Date: JUNE 27, 2003
Batch No.: EDB062603A
Matrix: WATER



Compound	R P D	Percent Recovery
EDB	4.26%	94%
DBCP	4.08%	98%

ENVIRODYNE INC.

Quality Control Report

EPA 515.1

Matrix Spike and Duplicate Analysis

Date: JULY 1, 2003
Batch No.: HERB062703A
Matrix: WATER



Compound	R P D	Percent Recovery
Dalapon	0.00%	85%
Dinoseb	5.61%	89%
Pentachlorophenol	0.00%	110%
Picloram	23.01%	94%
2,4-D	5.83%	86%
2,4,5-TP (Silvex)	0.00%	108%
DCPA (Dactal)	4.65%	110%

ENVIRODYNE INC.

Quality Control Report

EPA 508.1

Matrix Spike and Duplicate Analysis

Date: JUNE 30, 2003
Batch No.: LPEST062503B
Matrix: WATER



Compound	R P D	Percent Recovery
Alachlor	2.67%	125%
Atrazine	0.85%	117%
Hexachlorocyclopentadiene	0.00%	120%
Simazine	7.37%	122%

ENVIRODYNE INC.

Quality Control Report

EPA 508

Matrix Spike and Duplicate Analysis

Date: JUNE 29, 2003
Batch No.: LPEST062503A
Matrix: WATER

✓ DR ✓
7/23

Compound	R P D	Percent Recovery
Chlordane	3.23%	103%
Endrin	0.00%	97%
Heptachlor	3.51%	95%
Heptachlor epoxide	3.08%	108%
Hexachlorobenzene	3.17%	105%
Lindane	3.08%	108%
Methoxychlor	3.17%	105%

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

4805 NW 2nd Avenue • Boca Raton, FL 33431
(800) 713-7737 • Fax (561) 989-5204
edyne@bellsouth.net

PROJECT NUMBER	PROJECT NAME <i>Systa 9</i> <i>ASR Project (Permit)</i> <small>FOR COMPLIANCE</small>	P.O. NUMBER	SAMPLE TYPE	VARIABLES	PRESERVATIVE
PROJECT LOCATION	CLIENT NAME		CLIENT ADDRESS		ANALYSES REQUESTED
	Palm Beach County Water Utilities Laboratory 13026 Jog Road, Bldg "K" Delray Beach, Florida 33446		PHONE		
NO. OF CONTAINERS					
RUSH TAT (SURCHARGE) <input type="checkbox"/>					
DUE DATE: _____					

SAMPLE INFORMATION				SOLID	LIQUID	AIR	NON-AQUEOUS LIQUID	TABLET	VARIABLES	PRESERVATIVE	ANALYSES REQUESTED	NO. OF CONTAINERS	REMARKS
1	6/23/03	1430	<i>Sys 9 ASR Well # 1</i>	✓	✓		✓						<i>25? AIO 85667</i>
2	"	1300	<i>Floridan Aquifer Mon. Well (FAMW-1)</i>	✓			✓						<i>25? AIO 85676</i>
3													
4													
5													
6													
7													
8													
9													
10													

SAMPLE COLLECTED BY <i>Picky Sackrangan, Noel Fleites</i>	ARE THESE SAMPLES LISTED OR CHARACTERISTIC HAZARDOUS WASTE? <input type="checkbox"/> YES <input type="checkbox"/> NO	54	TOTAL OF ALL CONTAINERS
SEND REPORT TO (PERSON) <i>JAVA NAVANI</i>	ARE THESE SAMPLES FROM <input type="checkbox"/> PETROLEUM <input type="checkbox"/> DRY CLEANER OR <input type="checkbox"/> OTHER SITE?		
SAMPLES CONDITION <i>INTACT 4°C</i>	REINQUISHED BY	DATE	TIME
LOG NUMBER <i>2003 : 404</i>	1 <i>R Floco</i>	6/23/03	16:40
	3 <i>D P S</i>	6-23-03	17:09
	2 <i>D P S</i>		
	4 <i>Michelle Mercado</i>	6-23-03	17:09
	5		
	6		

9W-0069
(Shallow Monitor Zone)

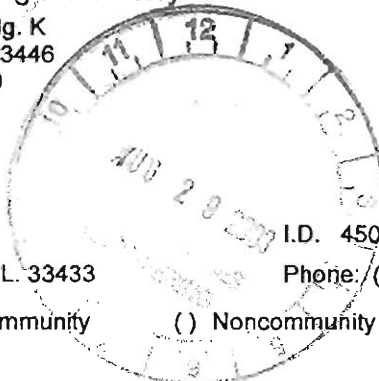
June 26, 2003



Palm Beach County Water Utilities Department

Water \ Wastewater Testing Laboratory

13026 Jog Rd., Bldg. K
Delray Beach, FL 33446
(561) 638-5000



Report Date: 8-25-2003

Report ID: 388 -2003

System Name: Palm Beach County Water Utility

System 9

Address: 22438 S. W. 7th Street

Boca Raton, FL 33433

I.D. 4501332

Phone: (561) 470-9788

Type (check one): Community Nontransient Noncommunity Noncommunity

SAMPLE INFORMATION

Sample Date: 6/26/2003 Sample Time: 1:30:00 PM

Sample Location: 9W-0069 (E.Hillsboro Canal)

Sampler Name and Phone #: N.F. FITEZ (561) 638-5000

Sampler's Signature: [Signature] Title: Laboratory Assistant \ Tech.

- Check Type(s)
- Distribution
 - Recheck of MCL
 - Resample of Lab Invalidated Sample(s)
 - Clearance
 - Thm Max Res Time
 - Plant Tap
 - Distrib entry pt
 - Raw
 - Composite of Multiple Sites

LABORATORY CERTIFICATION INFORMATION

Lab Name: Palm Beach County Water Utilities Department

Address: 13026 Jog Road, Bldg. K Delray Beach, FL 33446

Phone #: (561) 638-5000

DOH#: E56090 Expiration Date: 6/30/2004

ANALYSIS INFORMATION SAMPLE NUMBER A108806

Date Sample(s) Received: 6/26/2003

Group(s) Analyzed Results attached for compliance with 62-550, F.A.C.:

- | | | | |
|---|--|--|---|
| <input type="checkbox"/> Nitrate Only | <input type="checkbox"/> Nitrite Only | <input type="checkbox"/> Asbestos Only | <input checked="" type="checkbox"/> Trihalomethanes |
| Inorganics-- | Volatile Organics-- | Secondaries-- | Pesticides / PCBs |
| <input checked="" type="checkbox"/> All 17 | <input checked="" type="checkbox"/> All 21 | <input checked="" type="checkbox"/> All 14 | <input type="checkbox"/> All 30 |
| <input type="checkbox"/> Partial | <input type="checkbox"/> Partial | <input type="checkbox"/> Partial | <input checked="" type="checkbox"/> Partial |
| Group I | Group II | Group III | Radiochemicals-- |
| Unregulateds-- | Unregulateds-- | Unregulateds-- | <input checked="" type="checkbox"/> Single Sample |
| <input type="checkbox"/> All 13 | <input checked="" type="checkbox"/> All 23 | <input checked="" type="checkbox"/> All 11 | <input type="checkbox"/> Qtrly Composite |
| <input checked="" type="checkbox"/> Partial | <input type="checkbox"/> Partial | <input type="checkbox"/> Partial | |



Palm Beach County Water Utilities Department

Water \ Wastewater Testing Laboratory

13026 Jog Rd., Bldg. K
Delray Beach, FL 33446
(561) 638-5000



System 9

WATER QUALITY ANALYSIS

Sample Number: AI08806

Sample Location: 9W-0069 (E.Hillsboro Canal)

Analysis	Analysis Result(mg/L)	Qual.	Analytical Method	Det. Lt. (MDL)	Analysis Date	Analyst
Water Table Elevation	12.4		DEP SOP		6/26/2003	NF
Well Purged Volume	276		DEP SOP		6/26/2003	NF
Turbidity	2.12		SM 2130-B	0.05	6/26/2003	NF
Dissolved Oxygen	3.40		EPA 360.1	0.1	6/26/2003	NF
Conduct.	733		SM 2510-B	0.5	6/26/2003	NF
Temp	25.4		SM 2550-B	0.1	6/26/2003	NF
pH	6.84		EPA 150.1	0.01	6/26/2003	NF



Palm Beach County Water Utilities Department

Water \ Wastewater Testing Laboratory

13026 Jog Rd., Bldg. K
Delray Beach, FL 33446
(561) 638-5000



System 9

WATER QUALITY ANALYSIS

** Analysis contained herein conform to EPA, Standard Methods and DEP approved methods. Subcontracted analyses are denoted by certification number in the analyst column. All relevant quality assurance samples were within specified control limits unless otherwise stated. Uncertainties for test results are available upon request. Palm Beach County Water Utilities certifies its test results meets all requirements of the NELAC Standards, where applicable. For questions, please call the QA Officer or the Lab Manager at the phone number listed above.

Contact: Jaya Navani (561) 638-5000

I do HEREBY CERTIFY that all attached analytical data are correct.

QA Officer, Shree Kundalkar

Shree Kundalkar
Jaya Navani

Date:

8/27/03

Laboratory Manager, Jaya Navani

Date:

8.27.03

COMPLIANCE INFORMATION

Sample Collection Satisfactory: _____

Sample Analysis Satisfactory: _____

Resample Requested for: _____

Reason: _____

Person notified to resample: _____

Date Notified: _____

DEP/ACPHU Reviewing Official: _____

Notice: The information contained in this report is confidential and is intended only for the use of the individual or entity named above. If the reader of this communication is not the recipient, you are hereby notified that any dissemination, distribution or copying of this information is prohibited. If you have received this communication in error, please immediately notify us at (561) 638-5000. Thank you.



Palm Beach County Water Utilities Department

Water \ Wastewater Testing Laboratory

13026 Jog Rd., Bldg. K
Delray Beach, FL 33446
(561) 638-5000



System 9

WATER QUALITY ANALYSIS

Qualifier Codes

QUALIFIER	EXPLANATION
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J	Estimated value; value may not be accurate. This code shall be used in the following instances:
J1	Surrogate recovery limits have been exceeded;
J2	No known quality control criteria exists for the component;
J3	The reported value failed to meet the established quality control criteria for either precision or accuracy;
J4	The sample matrix interfered with the ability to make any accurate determination
J5	The data are questionable because of improper laboratory or field protocols (e.g. composite sample was collected instead of a grab sample).
O	Sampled, but analysis lost or not performed.
Q	Sample held beyond the accepted holding time. This code shall be used if the value is derived from a sample that was prepared or analyzed after the approved holding time restrictions for sample preparation or analysis.
T	Value reported is less than the laboratory method detection limit. The value is reported for informational purposes only – and shall not be used in statistical analysis.
U	Indicates that the compound was analyzed for but not detected, this symbol shall be used to indicate that the specified component was not detected. The value associated with the qualifier shall be the laboratory method detection limit. Unless requested by the client, less than the method detection limit values shall not be reported (see “T” above).
V	Indicates that the analyte was detected in both the sample and the associated method blank. Note: the value in the blank shall not be subtracted from associated samples.
Y	The laboratory analysis was from an improperly preserved sample. The data may not be accurate.
Z	Too many colonies were present (TNTC): the numeric value represent the filtration volume.
?	Data are rejected and should not be used. Some or all of the quality control data for the analyte were outside criteria, and the presence or absence of the analyte cannot be determined from the data.
D	Measurement was made in the field (i.e., in situ). This applies to any value (except pH, specific conductance, dissolved oxygen, temperature, total residual chlorine, transparency, or salinity) that was obtained under field conditions using approved analytical methods. If the parameter code specifies a field measurement e.g., “Field pH”, this code is not required.

Envirodyne Inc.

4805 NW 2nd Avenue
Boca Raton, FL 33431

Phone 561-989-5225
Fax 561-989-5204
edyne@bellsouth.net

August 27, 2003

Shree Kundalkar
Palm Beach County Utilities
13026 Jog Road Bldg. K
Delray Beach, FL 33446

RE: Envirodyne Report: 2003/06495.

Dear Shree,

Per your request Total Coliform data reported for Palm Beach County Sample AI08806 (Envirodyne Inc. report number 2003/06495) was reviewed August 27, 2003. Raw data records and calculations performed were verified, no anomalies were found. The data reported is true and accurate.

Please feel free to call me at (800) 713-7737 with questions or comments. Thank you for your continuing business.

Regards,



John Taylor
QA Officer

Cc: Michael Rentournis
Encl

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 24, 2003
Report: 2003/06495
Sample No: 2003/06495- 1

Attention: Jaya Navani

Project: System 9 ASR Permit
22438 SW 7th Street Boca Raton, FL

✓ DR-7/28/03

SAMPLE ID: Monitoring Well AI08806 Collected by: Noel Fleites Jr.

Collected on: 06/26/03
Received on: 06/26/03

PARAMETER	RESULT	METHOD	DL	UNITS	DATE	ANALYST
Aluminum	U	200.7	0.10	mg/L	07/02/03	KYT
Arsenic	U	200.7	0.010	mg/L	06/28/03	APR
Barium	0.024	200.7	0.010	mg/L	06/28/03	APR
Beryllium	U	200.7	0.0030	mg/L	06/28/03	APR
Cadmium	U	200.7	0.0040	mg/L	06/28/03	APR
Chromium	U	200.7	0.010	mg/L	06/28/03	APR
Copper	U	200.7	0.010	mg/L	06/28/03	APR
Iron	0.029	200.7	0.010	mg/L	07/02/03	KYT
Manganese	U	200.7	0.010	mg/L	06/28/03	APR
Nickel	U	200.7	0.010	mg/L	06/28/03	APR
Silver	U	200.7	0.010	mg/L	06/28/03	APR
Sodium	16	200.7	1.0	mg/L	07/02/03	KYT
Zinc	0.012	200.7	0.010	mg/L	06/28/03	APR
Antimony	U	200.8	0.0010	mg/L	07/01/03	APR
Lead	U	200.8	0.00020	mg/L	07/01/03	APR
Selenium	U	200.8	0.0010	mg/L	07/01/03	APR
Thallium	U	200.8	0.00030	mg/L	07/01/03	APR
Mercury	U	245.1	0.00003	mg/L	06/30/03	KYT

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 24, 2003
Report: 2003/06495
Sample No: 2003/06495- 1

Attention: Jaya Navani

Project: System 9 ASR Permit
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: Monitoring Well AI08806 Collected by: Noel Fleites Jr.

Collected on: 06/26/03
Received on: 06/26/03

PARAMETER	RESULT	METHOD	DL	UNITS	DATE	ANALYST
Dibromochloropropane (DBCP)	U	504.1	0.020	µg/L	07/03/03	CMM
1,2-Dibromoethane (EDB)	U	504.1	0.020	µg/L	07/03/03	CMM
Benzo(a)pyrene	U	525.2	0.20	µg/L	07/02/03	SPH
Di(2-ethylhexyl)adipate	U	525.2	1.0	µg/L	07/02/03	SPH
Di(2-ethylhexyl)phthalate	U	525.2	1.0	µg/L	07/02/03	SPH
Carbofuran	U	531.1	1.0	µg/L	06/27/03	MLD
Oxamyl (Vydate)	U	531.1	1.0	µg/L	06/27/03	MLD
Glyphosate	U	547	40	µg/L	06/28/03	E86515
Endothall	U	548.1	50	µg/L	07/07/03	E86515
Diquat	U	549	1.44	µg/L	07/08/03	E86515
Biochemical Oxygen Demand	U	405.1	2.0	mg/L	06/27/03	JGT
Chloride	34	SM4500CL-B	2.0	mg/L	06/27/03	JNM
Chemical Oxygen Demand	24	410.4	5.0	mg/L	06/27/03	JMJ
Color	30	110.2	5	CU	06/27/03	DNS
Specific Conductance	800	120.1		µmhos/cm	06/30/03	JNM
Cyanide, Total	U	335.4	0.0040	mg/L	06/27/03	DNS
Fluoride	0.46	SM4500F-C	0.10	mg/L	06/27/03	JMJ
Gross Alpha	1±3 U	900.0	1.0	pCi/L	07/08/03	E84088
Surfactants (as LAS, MW = 340)	0.16	425.1	0.010	mg/L	06/27/03	JGT

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 24, 2003
Report: 2003/06495
Sample No: 2003/06495- 1

Attention: **Jaya Navani**

Project: **System 9 ASR Permit**
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: Monitoring Well AI08806 Collected by: Noel Fleites Jr.

Collected on: 06/26/03
Received on: 06/26/03

PARAMETER	RESULT	METHOD	DL	UNITS	DATE	ANALYST
Ammonia, as N	0.48	350.1	0.020 mg/L		06/27/03	JGT
Nitrite, as Nitrogen	U	353.2	0.020 mg/L		06/27/03	JGT
Nitrate, as Nitrogen	U	353.2	0.020 mg/L		06/27/03	JGT
Nitrate-Nitrite, as Nitrogen	U	353.2	0.020 mg/L		06/27/03	JGT
Odor	1	SM2150B	1 T.O.N.		06/27/03	DNS
pH (Laboratory)	7.0	150.1	pH Units		06/27/03	MM
Radium 226	0.3±0.1	903.1	0.1 pCi/L		07/15/03	E84088
Radium 228	0.5±0.5 U	RA-05	0.5 pCi/L		07/03/03	E84088
Sulfate	U	375.4	5.0 mg/L		06/30/03	JNM
Total Coliform Bacteria	540	SM9222B	1 cfu/100 ml		06/26/03	JGT
Total Coliform Date & Time Sampled: 06/26/03 13:30 Total Coliform Date & Time Analyzed: 06/26/03 17:10						
Total Dissolved Solids	540	160.1	10 mg/L		06/30/03	DNS
Total Kjeldahl Nitrogen	0.73	351.2	0.10 mg/L		06/30/03	JMJ
Organic Nitrogen	U	351-350	0.50 mg/L		06/30/03	JMJ
Phosphorus, Total	0.25	365.4	0.010 mg/L		06/30/03	JMJ

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
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Delray Beach, FL 33446

July 24, 2003
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Attention: Jaya Navani

Project: System 9 ASR Permit
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: Monitoring Well AI08806 Collected by: Noel Fleites Jr.

Collected on: 06/26/03
Received on: 06/26/03

Date of Analysis: 07/01/03
Date of Extraction: 07/01/03

508 GROUP I UNREGULATED ORGANIC CONTAMINANTS

PARAMETER	RESULT	DL	UNITS	ANALYST
Aldrin	U	0.10	µg/L	CMM
Dieldrin	U	0.10	µg/L	CMM

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
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July 24, 2003
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Project: System 9 ASR Permit
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: Monitoring Well AI08806 Collected by: Noel Fleites Jr.

Collected on: 06/26/03
Received on: 06/26/03

Date of Analysis: 07/01/03
Date of Extraction: 07/01/03

508 ORGANOHALIDE PESTICIDES 62-550.310(2)(c) FAC

PARAMETER	RESULT	DL	UNITS	ANALYST
Chlordane	U	0.50	µg/L	CMM
Endrin	U	0.10	µg/L	CMM
Heptachlor	U	0.10	µg/L	CMM
Heptachlor epoxide	U	0.10	µg/L	CMM
Hexachlorobenzene	U	0.10	µg/L	CMM
Lindane	U	0.10	µg/L	CMM
Methoxychlor	U	0.20	µg/L	CMM
Toxaphene	U	1.0	µg/L	CMM
PCB 1016	U	0.20	µg/L	CMM
PCB 1221	U	0.20	µg/L	CMM
PCB 1240	U	0.20	µg/L	CMM
PCB 1242	U	0.20	µg/L	CMM
PCB 1248	U	0.20	µg/L	CMM
PCB 1254	U	0.20	µg/L	CMM
PCB 1260	U	0.20	µg/L	CMM

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
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July 24, 2003
Report: 2003/06495
Sample No: 2003/06495- 1

Attention: **Jaya Navani**

Project: **System 9 ASR Permit**
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: Monitoring Well AI08806 Collected by: Noel Fleites Jr.

Collected on: 06/26/03
Received on: 06/26/03

Date of Analysis: 07/02/03
Date of Extraction: 07/01/03

508.1 CHLORINATED PESTICIDES (62-550 FAC)

PARAMETER	RESULT	DL	UNITS	ANALYST
Alachlor	U	0.10	µg/L	CMM
Atrazine	U	1.0	µg/L	CMM
Hexachlorocyclopentadiene	U	0.10	µg/L	CMM
Simazine	U	1.0	µg/L	CMM

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 24, 2003
Report: 2003/06495
Sample No: 2003/06495- 1

Attention: **Jaya Navani**

Project: **System 9 ASR Permit**
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: Monitoring Well AI08806 Collected by: Noel Fleites Jr.

Collected on: 06/26/03

Received on: 06/26/03

Date of Analysis: 07/01/03

Date of Extraction: 06/27/03

515.1 HERBICIDES (62-550 FAC)

PARAMETER	RESULT	DL	UNITS	ANALYST
Dalapon	U	0.50	µg/L	CMM
Dinoseb	U	0.50	µg/L	CMM
Pentachlorophenol	U	0.50	µg/L	CMM
Picloram	U	0.50	µg/L	CMM
2,4-D	U	0.50	µg/L	CMM
2,4,5-TP (Silvex)	U	0.10	µg/L	CMM

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 24, 2003
Report: 2003/06495
Sample No: 2003/06495- 1

Attention: **Jaya Navani**

Project: **System 9 ASR Permit**
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: Monitoring Well AI08806 Collected by: Noel Fleites Jr.

Collected on: 06/26/03

Received on: 06/26/03

Date of Analysis: 06/27/03

524.2 GROUP II UNREGULATED ORGANIC CONTAMINANTS

PARAMETER	RESULT	DL	UNITS	ANALYST
Bromobenzene	U	0.5	µg/L	EMH
Bromodichloromethane	U	0.5	µg/L	EMH
Bromoform	U	0.5	µg/L	EMH
Bromomethane	U	0.5	µg/L	EMH
Chloroethane	U	0.5	µg/L	EMH
Chloroform	U	0.5	µg/L	EMH
Chloromethane	U	0.5	µg/L	EMH
o-Chlorotoluene	U	0.5	µg/L	EMH
p-Chlorotoluene	U	0.5	µg/L	EMH
Dibromochloromethane	U	0.5	µg/L	EMH
Dibromomethane	U	0.5	µg/L	EMH
m-Dichlorobenzene	U	0.5	µg/L	EMH
Dichlorodifluoromethane	U	0.5	µg/L	EMH
1,1-Dichloroethane	U	0.5	µg/L	EMH
2,2-Dichloropropane	U	0.5	µg/L	EMH
1,1-Dichloropropylene	U	0.5	µg/L	EMH
1,3-Dichloropropane	U	0.5	µg/L	EMH
1,3-Dichloropropene	U	0.5	µg/L	EMH
Methyl tert-butyl-ether (MTBE)	U	0.5	µg/L	EMH
1,1,1,2-Tetrachloroethane	U	0.5	µg/L	EMH
1,1,2,2-Tetrachloroethane	U	0.5	µg/L	EMH
Trichlorofluoromethane	U	0.5	µg/L	EMH
1,2,3-Trichloropropane	U	0.5	µg/L	EMH

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 24, 2003
Report: 2003/06495
Sample No: 2003/06495- 1

Attention: Jaya Navani

Project: System 9 ASR Permit
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: Monitoring Well AI08806 Collected by: Noel Fleites Jr.

Collected on: 06/26/03
Received on: 06/26/03

Date of Analysis: 06/27/03

524.2 TRIHALOMETHANES (THM'S)

PARAMETER	RESULT	DL	UNITS	ANALYST
Bromodichloromethane	U	0.5	µg/L	EMH
Bromoform	U	0.5	µg/L	EMH
Chloroform	U	0.5	µg/L	EMH
Dibromochloromethane	U	0.5	µg/L	EMH
Total Trihalomethanes	U	0.5	µg/L	EMH

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 24, 2003
Report: 2003/06495
Sample No: 2003/06495- 1

Attention: Jaya Navani

Project: System 9 ASR Permit
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: Monitoring Well AI08806 Collected by: Noel Fleites Jr.

Collected on: 06/26/03
Received on: 06/26/03

Date of Analysis: 06/27/03

524.2 VOLATILE ORGANIC COMPOUNDS (62-550)

PARAMETER	RESULT	DL	UNITS	ANALYST
Benzene	U	0.5	µg/L	EMH
Carbon tetrachloride	U	0.5	µg/L	EMH
Chlorobenzene	U	0.5	µg/L	EMH
1,2-Dichlorobenzene	U	0.5	µg/L	EMH
1,4-Dichlorobenzene	U	0.5	µg/L	EMH
1,2-Dichloroethane	U	0.5	µg/L	EMH
1,1-Dichloroethene	U	0.5	µg/L	EMH
cis-1,2-Dichloroethene	U	0.5	µg/L	EMH
trans-1,2-Dichloroethene	U	0.5	µg/L	EMH
Dichloromethane	U	0.5	µg/L	EMH
1,2-Dichloropropane	U	0.5	µg/L	EMH
Ethylbenzene	U	0.5	µg/L	EMH
Styrene	U	0.5	µg/L	EMH
Tetrachloroethylene	U	0.5	µg/L	EMH
Toluene	U	0.5	µg/L	EMH
1,2,4-Trichlorobenzene	U	0.5	µg/L	EMH
1,1,1-Trichloroethane	U	0.5	µg/L	EMH
1,1,2-Trichloroethane	U	0.5	µg/L	EMH
Trichloroethylene	U	0.5	µg/L	EMH
Vinyl chloride	U	0.5	µg/L	EMH
Xylenes, Total	U	0.5	µg/L	EMH

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 24, 2003
Report: 2003/06495
Sample No: 2003/06495- 1

Attention: Jaya Navani

Project: System 9 ASR Permit
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: Monitoring Well AI08806 Collected by: Noel Fleites Jr.

Collected on: 06/26/03
Received on: 06/26/03

Date of Analysis: 06/27/03

531.1 GROUP I UNREGULATED ORGANIC PESTICIDES

PARAMETER	RESULT	DL	UNITS	ANALYST
Aldicarb	U	1.0	µg/L	MLD
Aldicarb sulfone	U	1.0	µg/L	MLD
Aldicarb sulfoxide	U	1.0	µg/L	MLD
Carbaryl	U	1.0	µg/L	MLD
3-Hydroxycarbofuran	U	1.0	µg/L	MLD
Methomyl	U	1.0	µg/L	MLD

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July 24, 2003
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Sample No: 2003/06495- 1

Attention: Jaya Navani

Project: System 9 ASR Permit
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: Monitoring Well AI08806 Collected by: Noel Fleites Jr.

Collected on: 06/26/03
Received on: 06/26/03

Date of Analysis: 06/29/03
Date of Extraction: 06/27/03

625 GROUP III UNREGULATED ORGANIC CONTAMINANTS

PARAMETER	RESULT	DL	UNITS	ANALYST
Butyl benzyl phthalate	U	1.0	µg/L	SPH
2-Chlorophenol	U	1.0	µg/L	SPH
Di-n-butylphthalate	U	1.0	µg/L	SPH
Diethylphthalate	U	1.0	µg/L	SPH
Dimethylphthalate	U	1.0	µg/L	SPH
Di-n-octyl phthalate	U	1.0	µg/L	SPH
2,4-Dinitrotoluene	U	1.0	µg/L	SPH
Isophorone	U	1.0	µg/L	SPH
2-Methyl-4,6-dinitrophenol	U	1.0	µg/L	SPH
Phenol	U	1.0	µg/L	SPH
2,4,6-Trichlorophenol	U	1.0	µg/L	SPH

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 24, 2003
Report: 2003/06495
Sample No: 2003/06495- 1

Attention: Jaya Navani

Project: System 9 ASR Permit
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: Monitoring Well AI08806 Collected by: Noel Fleites Jr.

Collected on: 06/26/03
Received on: 06/26/03

Date of Analysis: 06/29/03
Date of Extraction: 06/27/03

625 MUNICIPAL WASTEWATER MINIMUM CRITERIA

PARAMETER	RESULT	DL	UNITS	ANALYST
Anthracene	U	1.0	µg/L	SPH
Naphthalene	U	1.0	µg/L	SPH
Phenanthrene	U	1.0	µg/L	SPH

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 24, 2003
Report: 2003/06495
Sample No: 2003/06495- 2

Attention: Jaya Navani

Project: System 9 ASR Permit
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: Trip Blank

Collected by: Noel Fleites Jr.

Collected on: 06/26/03
Received on: 06/26/03

Date of Analysis: 07/04/03

524.2 GROUP II UNREGULATED ORGANIC CONTAMINANTS

PARAMETER	RESULT	DL	UNITS	ANALYST
Bromobenzene	U	0.5	µg/L	EMH
Bromodichloromethane	U	0.5	µg/L	EMH
Bromoform	U	0.5	µg/L	EMH
Bromomethane	U	0.5	µg/L	EMH
Chloroethane	U	0.5	µg/L	EMH
Chloroform	U	0.5	µg/L	EMH
Chloromethane	U	0.5	µg/L	EMH
o-Chlorotoluene	U	0.5	µg/L	EMH
p-Chlorotoluene	U	0.5	µg/L	EMH
Dibromochloromethane	U	0.5	µg/L	EMH
Dibromomethane	U	0.5	µg/L	EMH
m-Dichlorobenzene	U	0.5	µg/L	EMH
Dichlorodifluoromethane	U	0.5	µg/L	EMH
1,1-Dichloroethane	U	0.5	µg/L	EMH
2,2-Dichloropropane	U	0.5	µg/L	EMH
1,1-Dichloropropylene	U	0.5	µg/L	EMH
1,3-Dichloropropane	U	0.5	µg/L	EMH
1,3-Dichloropropene	U	0.5	µg/L	EMH
Methyl tert-butyl-ether (MTBE)	U	0.5	µg/L	EMH
1,1,1,2-Tetrachloroethane	U	0.5	µg/L	EMH
1,1,2,2-Tetrachloroethane	U	0.5	µg/L	EMH
Trichlorofluoromethane	U	0.5	µg/L	EMH
1,2,3-Trichloropropane	U	0.5	µg/L	EMH

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
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Delray Beach, FL 33446

July 24, 2003
Report: 2003/06495
Sample No: 2003/06495- 2

Attention: Jaya Navani

Project: System 9 ASR Permit
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: Trip Blank

Collected by: Noel Fleites Jr.

Collected on: 06/26/03

Received on: 06/26/03

Date of Analysis: 07/04/03

524.2 TRIHALOMETHANES (THM'S)

PARAMETER	RESULT	DL	UNITS	ANALYST
Bromodichloromethane	U	0.5	µg/L	EMH
Bromoform	U	0.5	µg/L	EMH
Chloroform	U	0.5	µg/L	EMH
Dibromochloromethane	U	0.5	µg/L	EMH
Total Trihalomethanes	U	0.5	µg/L	EMH

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

July 24, 2003
Report: 2003/06495
Sample No: 2003/06495- 2

Attention: Jaya Navani

Project: System 9 ASR Permit
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: Trip Blank

Collected by: Noel Fleites Jr.

Collected on: 06/26/03
Received on: 06/26/03

Date of Analysis: 07/04/03

524.2 VOLATILE ORGANIC COMPOUNDS (62-550)


PARAMETER	RESULT	DL	UNITS	ANALYST
Benzene	U	0.5	µg/L	EMH
Carbon tetrachloride	U	0.5	µg/L	EMH
Chlorobenzene	U	0.5	µg/L	EMH
1,2-Dichlorobenzene	U	0.5	µg/L	EMH
1,4-Dichlorobenzene	U	0.5	µg/L	EMH
1,2-Dichloroethane	U	0.5	µg/L	EMH
1,1-Dichloroethene	U	0.5	µg/L	EMH
cis-1,2-Dichloroethene	U	0.5	µg/L	EMH
trans-1,2-Dichloroethene	U	0.5	µg/L	EMH
Dichloromethane	U	0.5	µg/L	EMH
1,2-Dichloropropane	U	0.5	µg/L	EMH
Ethylbenzene	U	0.5	µg/L	EMH
Styrene	U	0.5	µg/L	EMH
Tetrachloroethylene	U	0.5	µg/L	EMH
Toluene	U	0.5	µg/L	EMH
1,2,4-Trichlorobenzene	U	0.5	µg/L	EMH
1,1,1-Trichloroethane	U	0.5	µg/L	EMH
1,1,2-Trichloroethane	U	0.5	µg/L	EMH
Trichloroethylene	U	0.5	µg/L	EMH
Vinyl chloride	U	0.5	µg/L	EMH
Xylenes, Total	U	0.5	µg/L	EMH

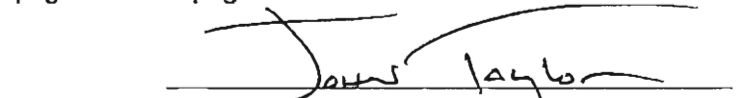
CERTIFICATE OF ANALYSIS

cfu = Colony forming units

Analysis contained herein conform to EPA, Standard Methods and DEP approved methods. Subcontracted analyses are denoted by certification number in the analyst column. All relevant quality assurance samples were within specified control limits unless otherwise stated. Uncertainties for test results are available upon request. Envirodyne certifies that its test results meet all requirements of the NELAC standards, where applicable. For questions, please call the project manager at the number listed above.

This is the last page of the report. See bottom of page for total pages.


Project Manager


Quality Assurance Officer

ENVIRODYNE INC.

Quality Control Report

EPA 504.1

Matrix Spike and Duplicate Analysis

Date: JULY 3, 2003
Batch No.: EDB070303A
Matrix: WATER

Compound	R P D	Percent Recovery
EDB	4.26%	94%
DBCP	12.24%	98%

ENVIRODYNE INC.

Quality Control Report

EPA 508.1

Matrix Spike and Duplicate Analysis

Date: JULY 2, 2003
Batch No.: LPEST070103C
Matrix: WATER



Compound	R P D	Percent Recovery
Alachlor	6.90%	97%
Atrazine	16.73%	92%
Hexachlorocyclopentadiene	10.53%	95%
Simazine	16.33%	82%

ENVIRODYNE INC.

Quality Control Report

EPA 508

Matrix Spike and Duplicate Analysis

Date: JULY 2, 2003
Batch No.: LPEST070103B
Matrix: WATER



Compound	R P D	Percent Recovery
Chlordane	2.67%	125%
Endrin	2.41%	138%
Heptachlor	2.67%	125%
Heptachlor epoxide	0.00%	127%
Hexachlorobenzene	2.74%	122%
Lindane	0.00%	123%
Methoxychlor	2.47%	135%

ENVIRODYNE INC.

Quality Control Report

EPA 531.1

Matrix Spike and Duplicate Analysis

Date: 6/26/2003
Batch No.: L531.1062603
Matrix: LIQUID



Compound	R P D	Percent Recovery
Aldicarb Sulfoxide	1.59%	101%
Aldicarb Sulfone	0.10%	99%
Oxamyl	0.00%	101%
Methomyl	0.76%	105%
3-Hydroxycarbofuran	1.35%	96%
Aldicarb	2.06%	102%
Propoxur (Baygon)	1.55%	97%
Carbofuran	2.17%	97%
Carbaryl	1.48%	95%
Methiocarb	1.93%	93%

ENVIRODYNE INC.

Quality Control Report

EPA 524.2

Matrix Spike and Duplicate

Date: July 4, 2003
Batch No.: GCMS1070303W
Matrix: WATER

Compound	R P D	Percent Recovery
Benzene	7.82%	112%
Chlorobenzene	0.49%	101%
1,1-Dichloroethene	0.66%	113%
Toluene	0.77%	98%
Trichloroethene	2.59%	106%
1,2-Dichloroethane Surr*	2.13%	94%
4-Bromofluorobenzene Surr*	10.32%	93%
2-Bromo-1-Chloropropane Surr*	1.24%	97%

Blank < 0.5 PPB Pass/Fail: PASS

ENVIRODYNE INC.

Quality Control Report

EPA 515.1

Matrix Spike and Duplicate Analysis

Date: JULY 1, 2003
Batch No.: HERB062703A
Matrix: WATER



Compound	R P D	Percent Recovery
Dalapon	0.00%	85%
Dinoseb	5.61%	89%
Pentachlorophenol	0.00%	110%
Picloram	23.01%	94%
2,4-D	5.83%	86%
2,4,5-TP (Silvex)	0.00%	108%
DCPA (Dactal)	4.65%	110%

AND ANALYSIS REQUEST

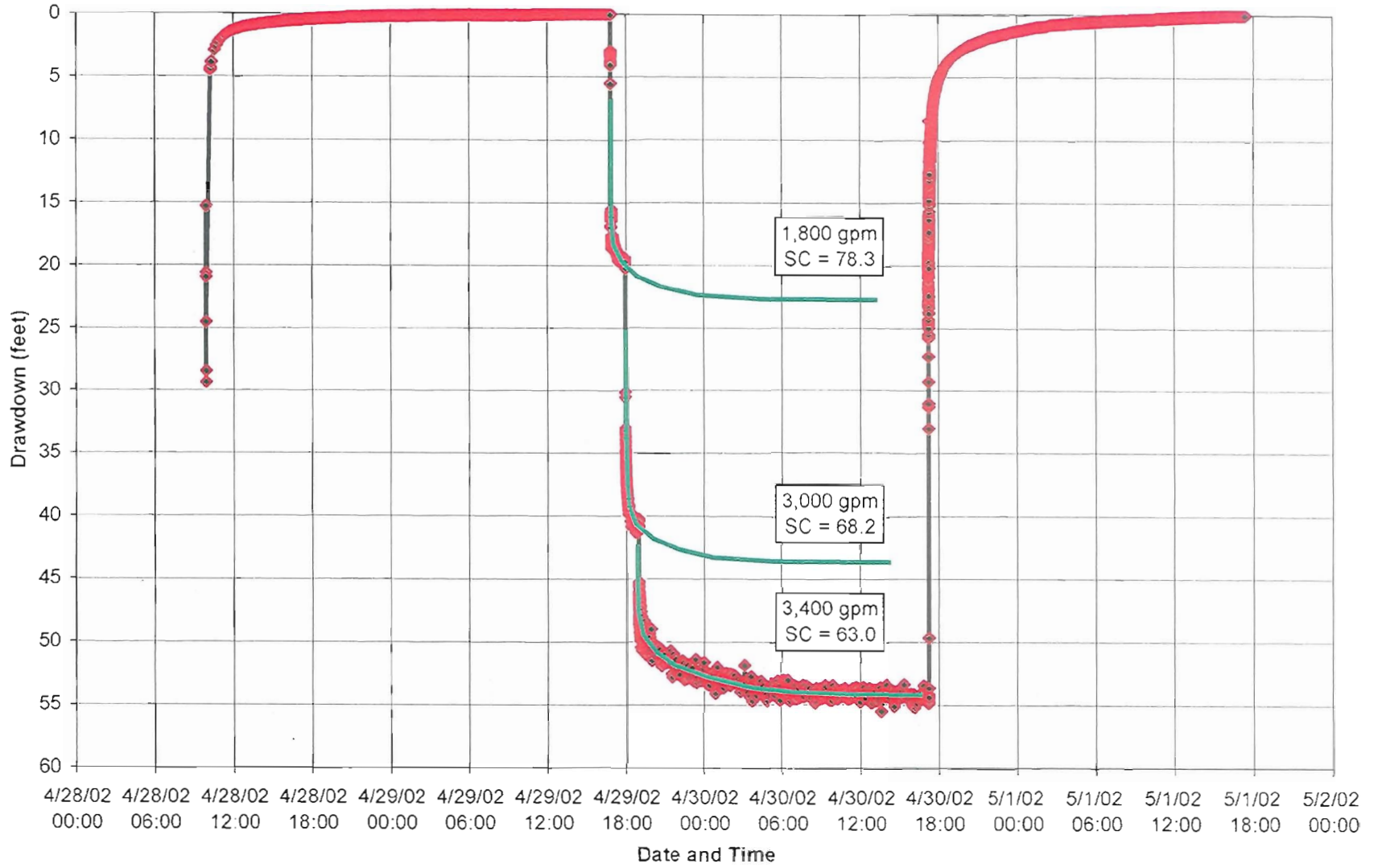
4805 NW 2nd Avenue • Boca Raton, FL 33431
 (800) 713-7737 • Fax (561) 989-5204
 edyne@bellsouth.net

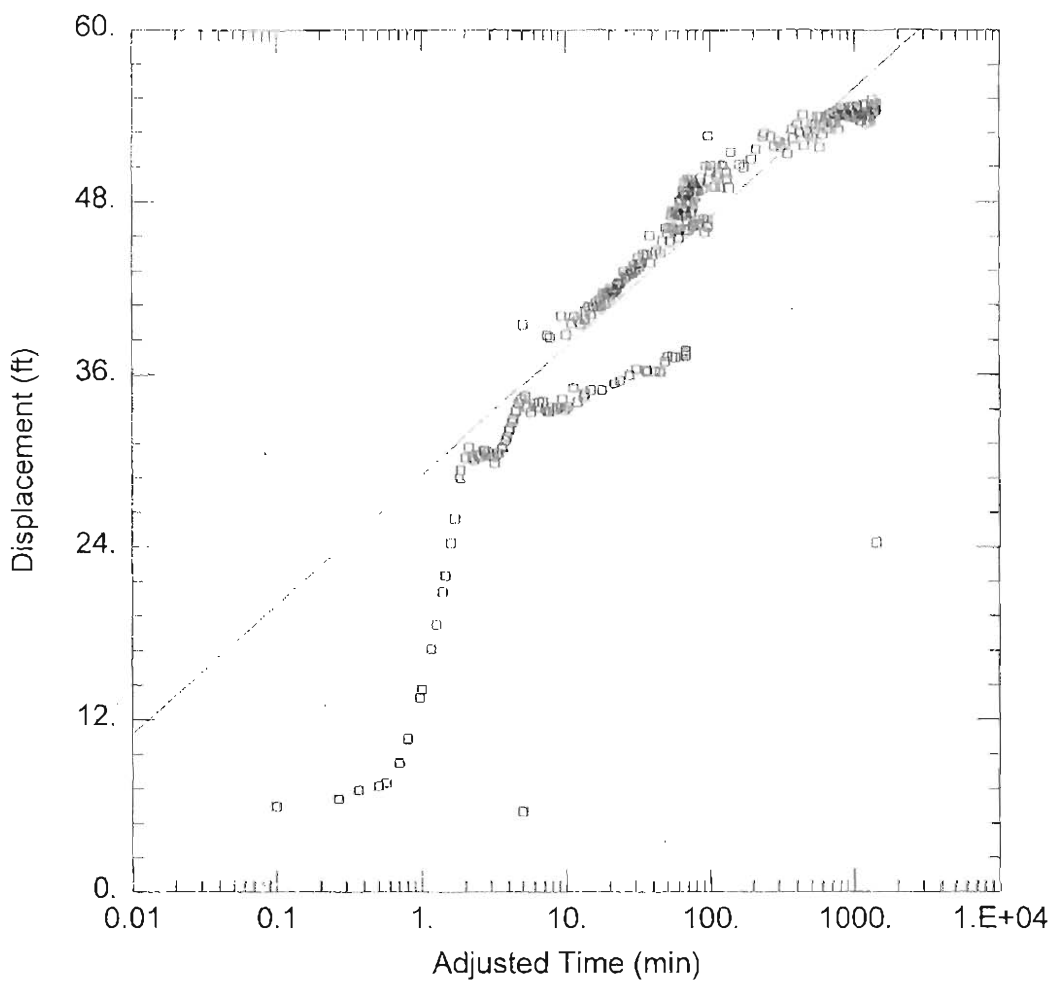
PROJECT NUMBER		PROJECT NAME <i>Sys 9</i> <i>AsR Permit</i>		P.O. NUMBER		SAMPLE TYPE		PRESERVATIVE												
PROJECT LOCATION				PALM BEACH COUNTY WATER UTILITIES LABORATORY 13026 JOG ROAD, BLDG "K" DELRAY BEACH, FLORIDA 33446				ANALYSES REQUESTED												
CLIENT NAME		CLIENT ADDRESS		PHONE		FAX		SOLID		LIQUID		AIR		NON-AQUEOUS LIQUID		NO. OF CONTAINERS		RUSH TAT (SURCHARGE)		
								TABLE 61		504.2 *								<input type="checkbox"/>		
SAMPLE INFORMATION																				
NUMBER	DATE	TIME	IDENTIFICATION	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	REMARKS
1	6/26/03	1330	<i>Sys 9 Monitoring Well (9W-0069)</i>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	<i>AT 8806</i>
2			<i>Trip Blank (No log #)</i>																	<i>Call Rebecca COCCO</i>
3																				
4																				
5																				
6																				<i>Log # added</i>
7																				<i>6/26/03 per Rebecca</i>
8																				<i>AT</i>
9																				<i>* trip blank analysis added per Becky 7/2/03</i>
10																				
SAMPLE COLLECTED BY <i>Noel Fleiter Jr</i>				ARE THESE SAMPLES LISTED OR CHARACTERISTIC HAZARDOUS WASTE? <input type="checkbox"/> YES <input type="checkbox"/> NO												27		TOTAL OF ALL CONTAINERS		
SEND REPORT TO (PERSON) <i>JAYA NAVANI</i>				ARE THESE SAMPLES FROM <input type="checkbox"/> PETROLEUM <input type="checkbox"/> DRY CLEANER OR <input type="checkbox"/> OTHER SITE?		RELINQUISHED BY		DATE		TIME		RECEIVED BY		DATE		TIME				
SAMPLES CONDITION <i>INTACT 4°C</i>				1		6-26-03		16:25		2		<i>DRJ</i>		6-26-03		16:25				
LOG NUMBER <i>2003 06495</i>				3		6-26-03		17:00		4		<i>Michelle Thecardo</i>		6-26-03		1700				
				5						6										

Constant-Rate Pumping Test Data

**Pumping Well
(ASR)**

Palm Beach County Water Utilities Department
WTP No. 9 Eastern Hillsboro ASR Well
24-Hour Constant-Rate Pumping Test





CONSTANT RATE PUMPING TEST

Data Set: C:\TGU\Projects\Hillsboro ASR\Data\ASR\Pump Tests\CRTAQTESTASR\ASR Cooper.aqt
 Date: 10/22/02 Time: 08:01:41

PROJECT INFORMATION

Company: Palm Beach County WUD
 Project: 98-66B
 Test Location: Hillsboro Canal
 Test Well: ASR-1
 Test Date: 4/30/02

AQUIFER DATA

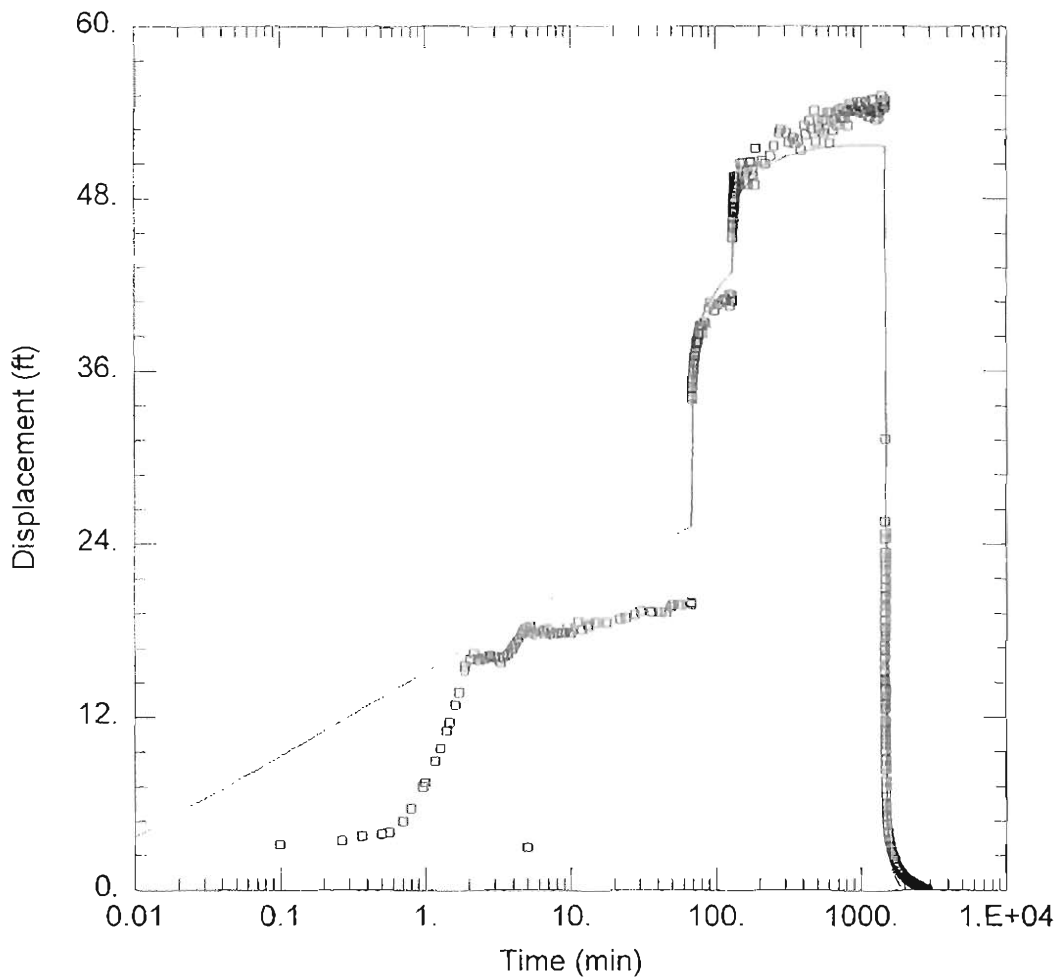
Saturated Thickness: 225. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
ASR-1	0	0	□ ASR-1	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Cooper-Jacob
 T = 9.97E+04 gal/day/ft S = 0.01263



CONSTANT RATE PUMPING TEST

Data Set: C:\...ASR Hantush Jacob.aqt

Date: 10/22/02

Time: 08:01:58

PROJECT INFORMATION

Company: Palm Beach County WUD

Project: 98-66B

Test Location: Hillsboro Canal

Test Well: ASR-1

Test Date: 4/30/02

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
ASR-1	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
□ ASR-1	0	0

SOLUTION

Aquifer Model: Leaky

Solution Method: Hantush-Jacob

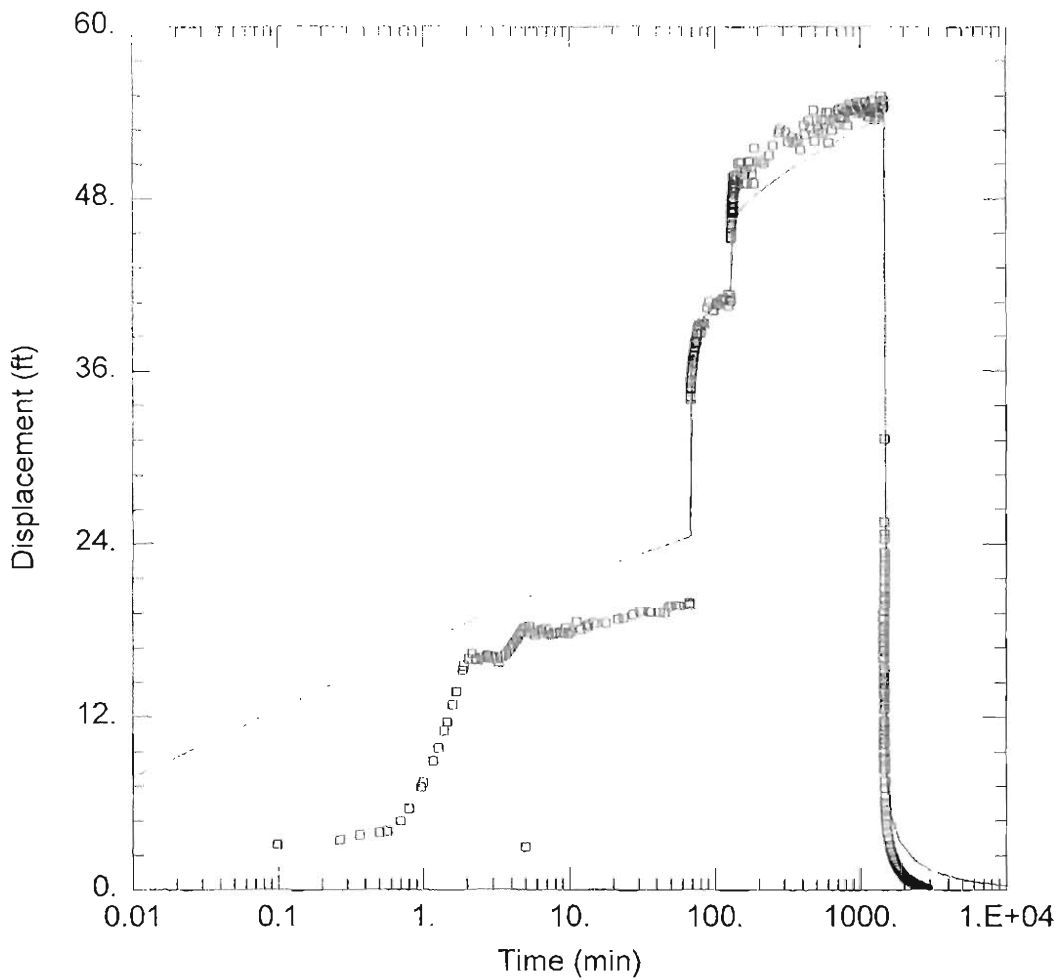
T = 8.067E+04 gal/day/ft

S = 0.04527

r/B = 0.005322

Kz/Kr = 1.

b = 225. ft



CONSTANT RATE PUMPING TEST

Data Set: C:\...ASR Hantush Leaky.aqt

Date: 10/22/02

Time: 08:01:22

PROJECT INFORMATION

Company: Palm Beach County WUD

Project: 98-66B

Test Location: Hillsboro Canal

Test Well: ASR-1

Test Date: 4/30/02

WELL DATA

Pumping Wells

Observation Wells

Well Name	X (ft)	Y (ft)
ASR-1	0	0

Well Name	X (ft)	Y (ft)
□ ASR-1	0	0

SOLUTION

Aquifer Model: Leaky

Solution Method: Hantush

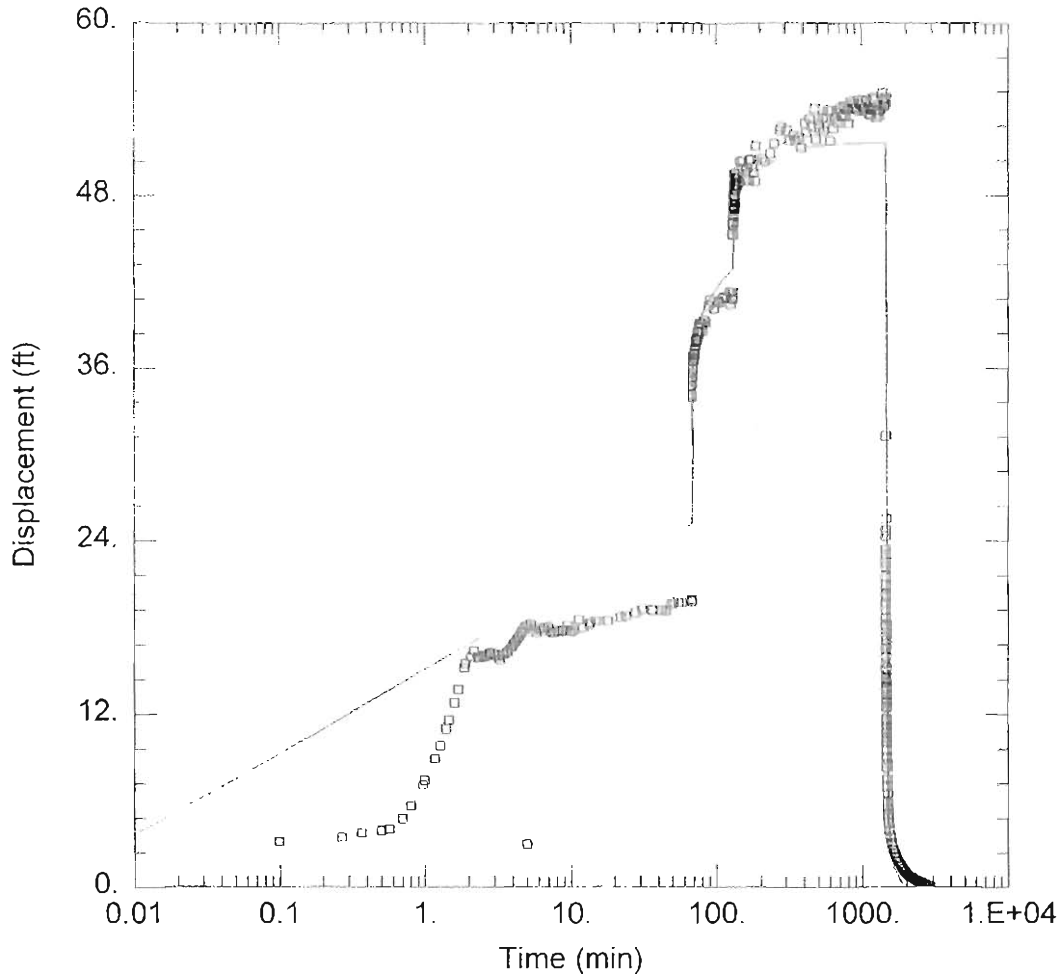
T = 9.809E+04 gal/day/ft

S = 0.005053

β = 0.0008185

Kz/Kr = 1.

b = 225. ft



CONSTANT RATE PUMPING TEST

Data Set: C:\TGU\Projects\Hillsboro ASR\Data\ASR\Pump Tests\CRTAQTEST\ASR\ASR Hantush.aqt

Date: 10/22/02

Time: 08:02:29

PROJECT INFORMATION

Company: Palm Beach County WUD

Project: 98-66B

Test Location: Hillsboro Canal

Test Well: ASR-1

Test Date: 4/30/02

AQUIFER DATA

Saturated Thickness: 225. ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
ASR-1	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
ASR-1	0	0

SOLUTION

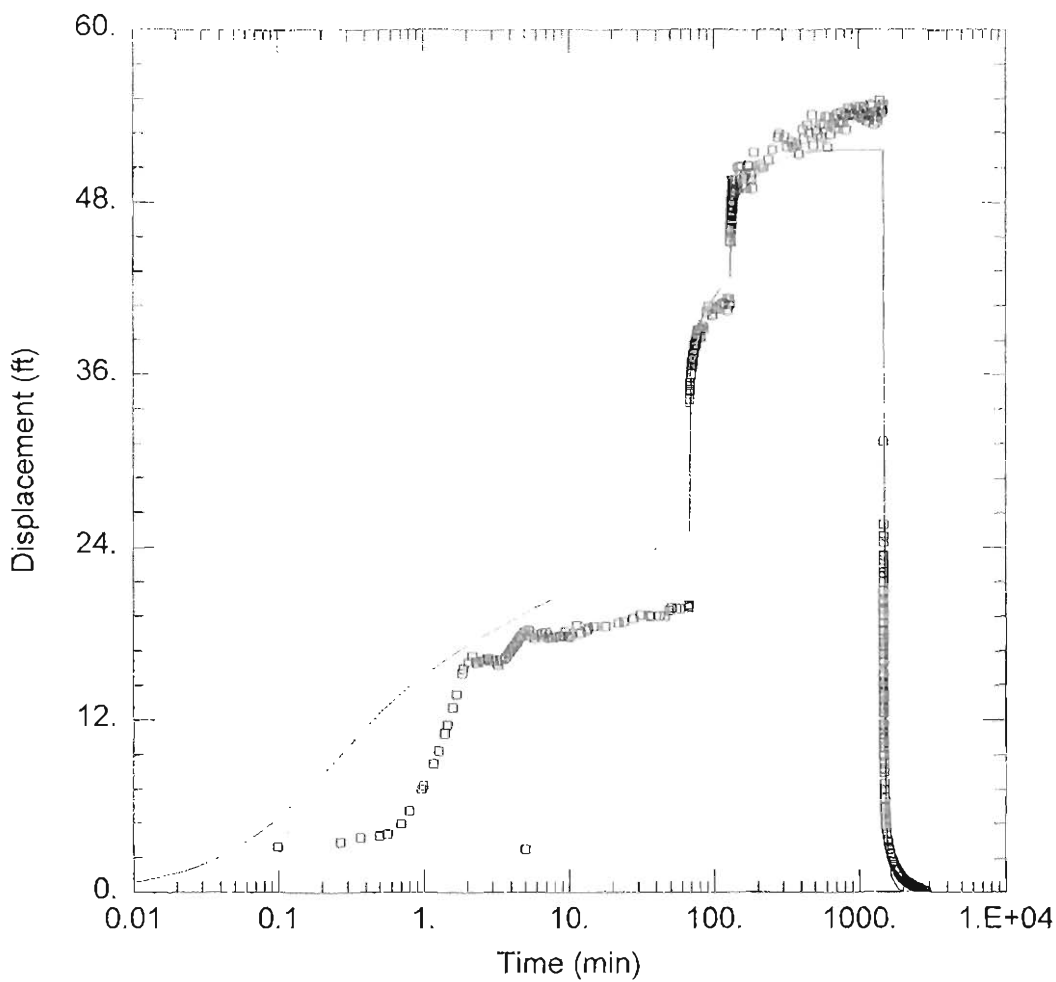
Aquifer Model: Confined

Solution Method: Hantush (Wedge)

T = 8.067E+04 gal/day/ft

S = 0.04527

r/a = 0.005322



CONSTANT RATE PUMPING TEST

Data Set: C:\TGU\Projects\Hillsboro ASR\Data\ASR\Pump Tests\CRTVAQTEST\ASR\ASR Moench.aqt
 Date: 10/22/02 Time: 08:03:05

PROJECT INFORMATION

Company: Palm Beach County WUD
 Project: 98-66B
 Test Location: Hillsboro Canal
 Test Well: ASR-1
 Test Date: 4/30/02

AQUIFER DATA

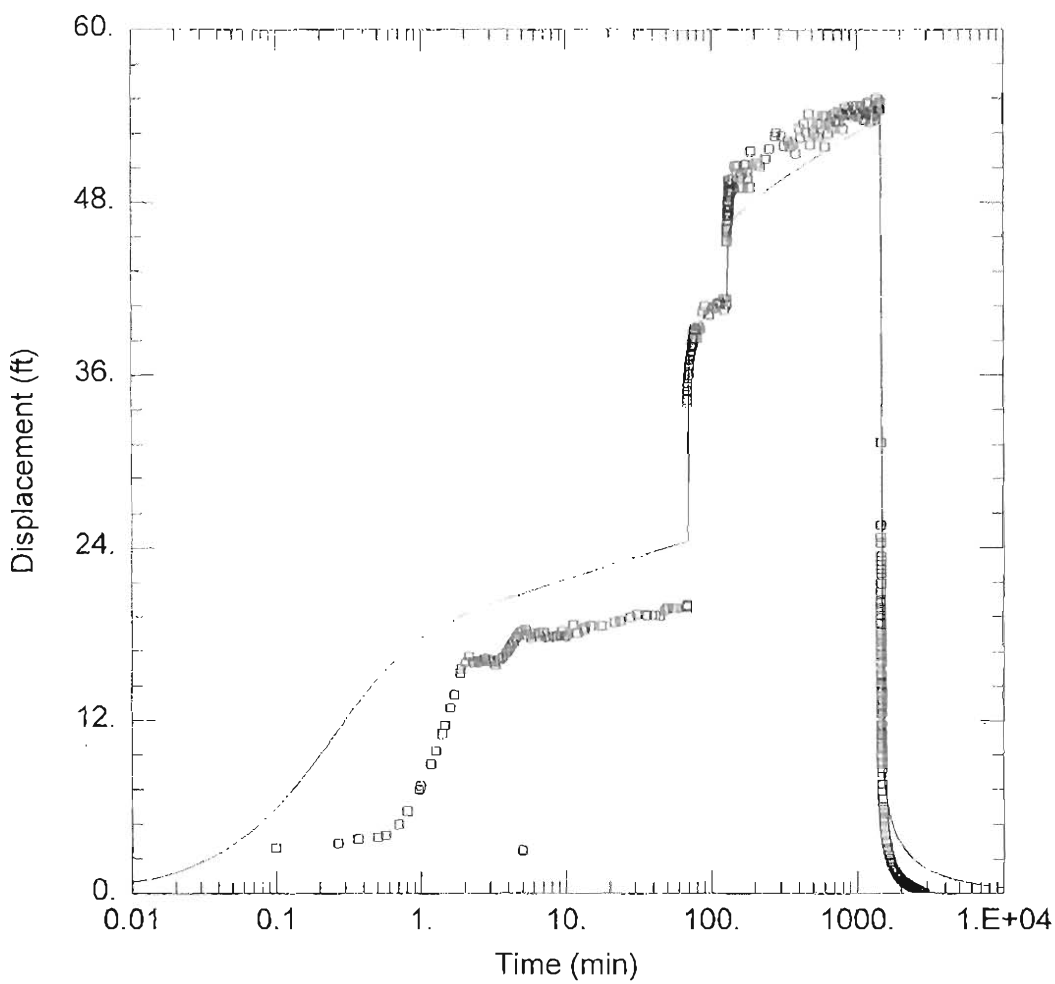
Saturated Thickness: 225. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
ASR-1	0	0	ASR-1	0	0

SOLUTION

Aquifer Model: <u>Leaky</u>	Solution Method: <u>Moench (Case 1)</u>
T = <u>4.937E+04 gal/day/ft</u>	S = <u>7.094E-08</u>
r/B = <u>0.0004497</u>	β = <u>8.806</u>
Sw = <u>-4.551</u>	Rw = <u>0.0008762 ft</u>



CONSTANT RATE PUMPING TEST

Data Set: C:\...ASR Moench 2.aqt

Date: 10/22/02

Time: 08:02:49

PROJECT INFORMATION

Company: Palm Beach County WUD

Project: 98-66B

Test Location: Hillsboro Canal

Test Well: ASR-1

Test Date: 4/30/02

AQUIFER DATA

Saturated Thickness: 225. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Observation Wells

Well Name	X (ft)	Y (ft)
ASR-1	0	0

Well Name	X (ft)	Y (ft)
□ ASR-1	0	0

SOLUTION

Aquifer Model: Leaky

Solution Method: Moench (Case 2)

T = 7.685E+04 gal/day/ft

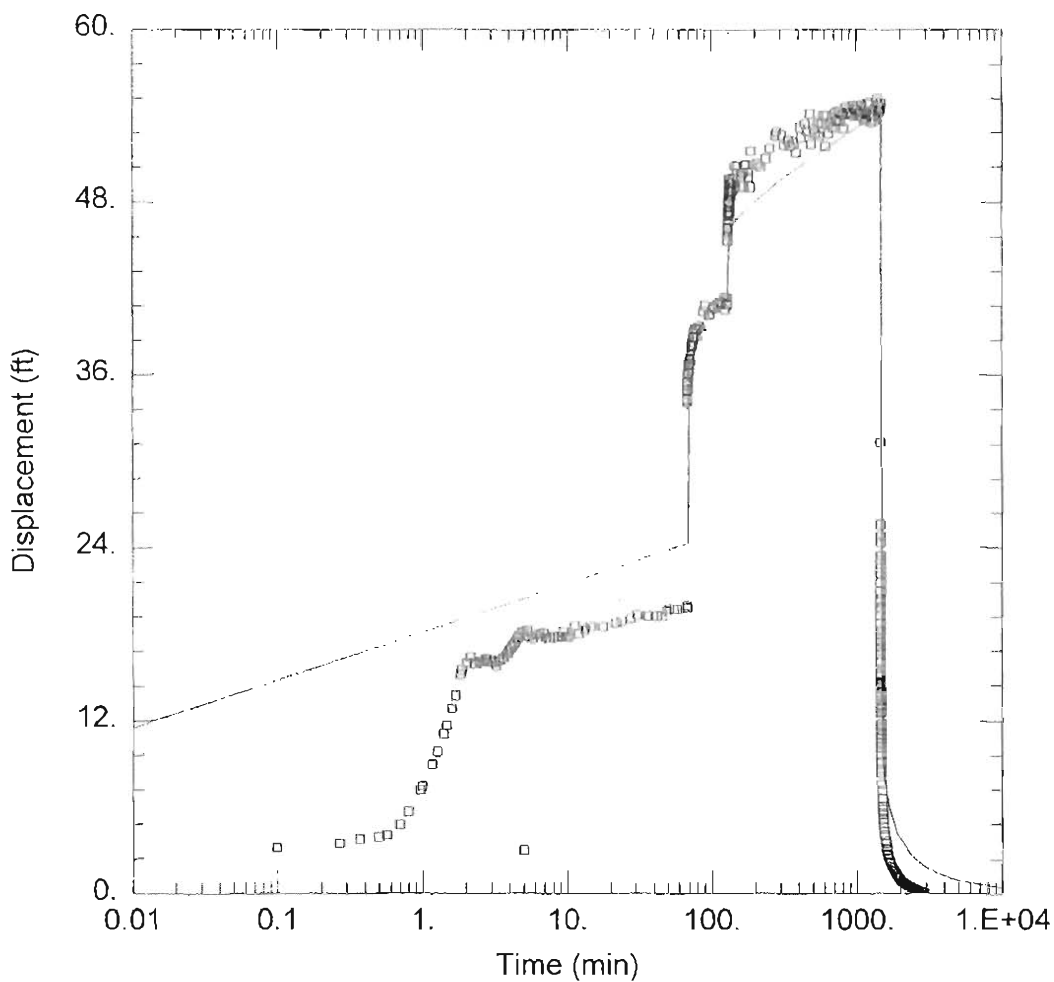
S = 1.471E-07

r/B = 1.004E-05

β = 9.291

Sw = -2.608

Rw = 0.00159 ft



CONSTANT RATE PUMPING TEST

Data Set: C:\TGU\Projects\Hillsboro ASR\Data\ASR\Pump Tests\CRTVAQTEST\ASR\ASR Neuman.aqt
 Date: 10/22/02 Time: 08:03:23

PROJECT INFORMATION

Company: Palm Beach County WUD
 Project: 98-66B
 Test Location: Hillsboro Canal
 Test Well: ASR-1
 Test Date: 4/30/02

AQUIFER DATA

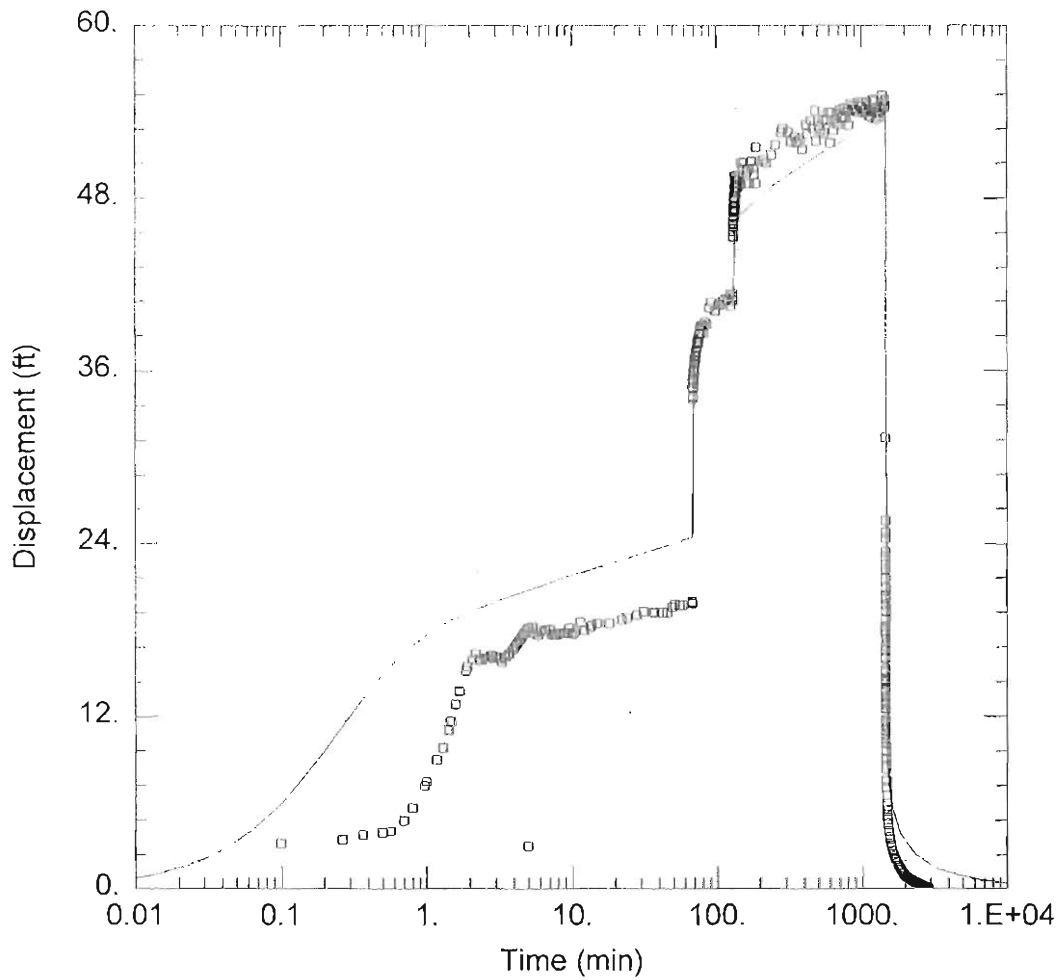
Saturated Thickness: 225. ft Anisotropy Ratio (K_z/K_r): 1.

WELL DATA

Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
ASR-1	0	0	ASR-1	0	0

SOLUTION

Aquifer Model: <u>Leaky</u>	Solution Method: <u>Neuman-Witherspoon</u>
$T = 7.081E+04$ gal/day/ft	$S = 1.586E-07$
$r/B = 1.004E-05$	$\beta = 5.426$
$T' = 1.077E+09$ gal/day/ft	$S' = 1.E-10$



CONSTANT RATE PUMPING TEST

Data Set: C:\TGU\Projects\Hillsboro ASR\Data\ASR\Pump Tests\CRTVAQTEST\ASR\ASR Papa.aqt
 Date: 10/22/02 Time: 08:03:38

PROJECT INFORMATION

Company: Palm Beach County WUD
 Project: 98-66B
 Test Location: Hillsboro Canal
 Test Well: ASR-1
 Test Date: 4/30/02

AQUIFER DATA

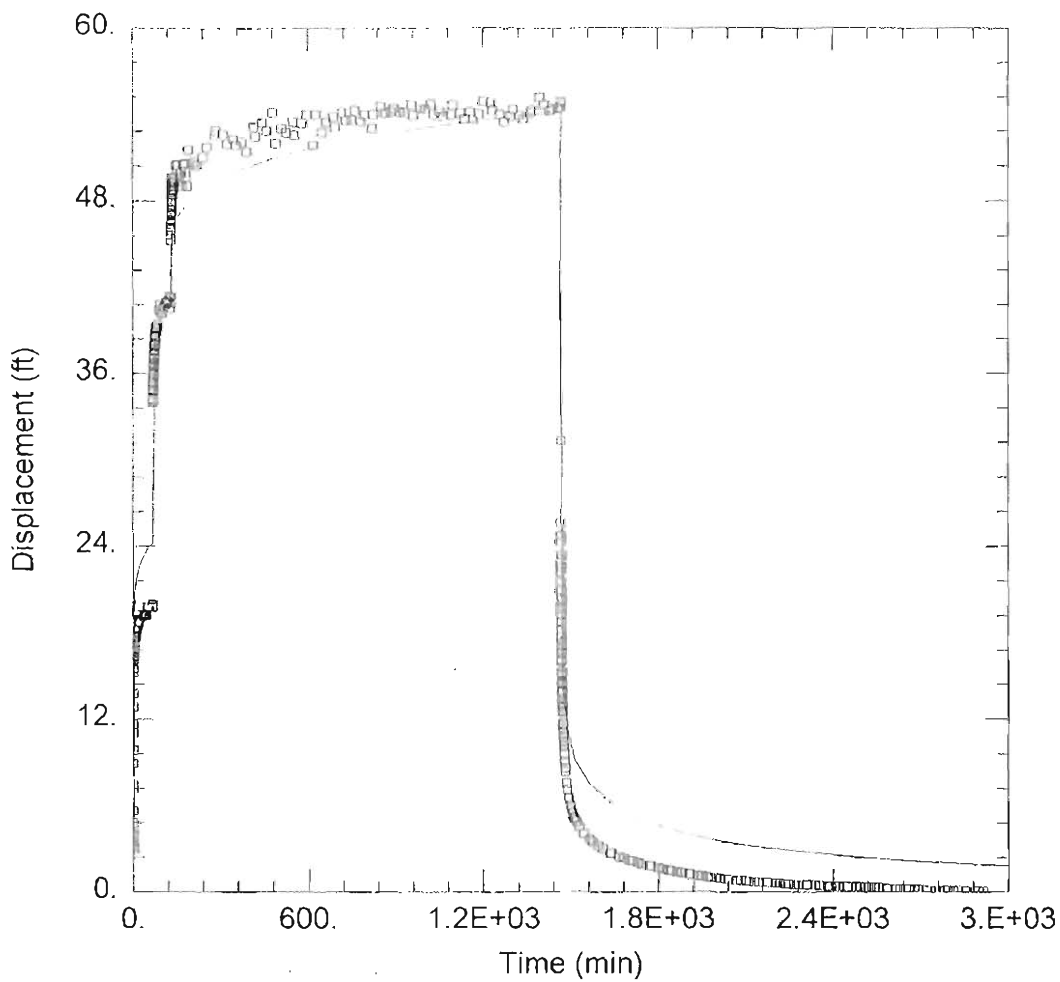
Saturated Thickness: 225. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
ASR-1	0	0	ASR-1	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Papadopoulos-Cooper
 T = 1.538E+05 gal/day/ft S = 0.03562
 Rw = 0.02762 ft



CONSTANT RATE PUMPING TEST

Data Set: C:\TGU\Projects\Hillsboro ASR\Data\ASR\Pump Tests\CRTAQTEST\ASR\ASR Theis.aqt
 Date: 10/22/02 Time: 08:03:56

PROJECT INFORMATION

Company: Palm Beach County WUD
 Project: 98-66B
 Test Location: Hillsboro Canal
 Test Well: ASR-1
 Test Date: 4/30/02

WELL DATA

Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
ASR-1	0	0	ASR-1	0	0

SOLUTION

Aquifer Model: Confined

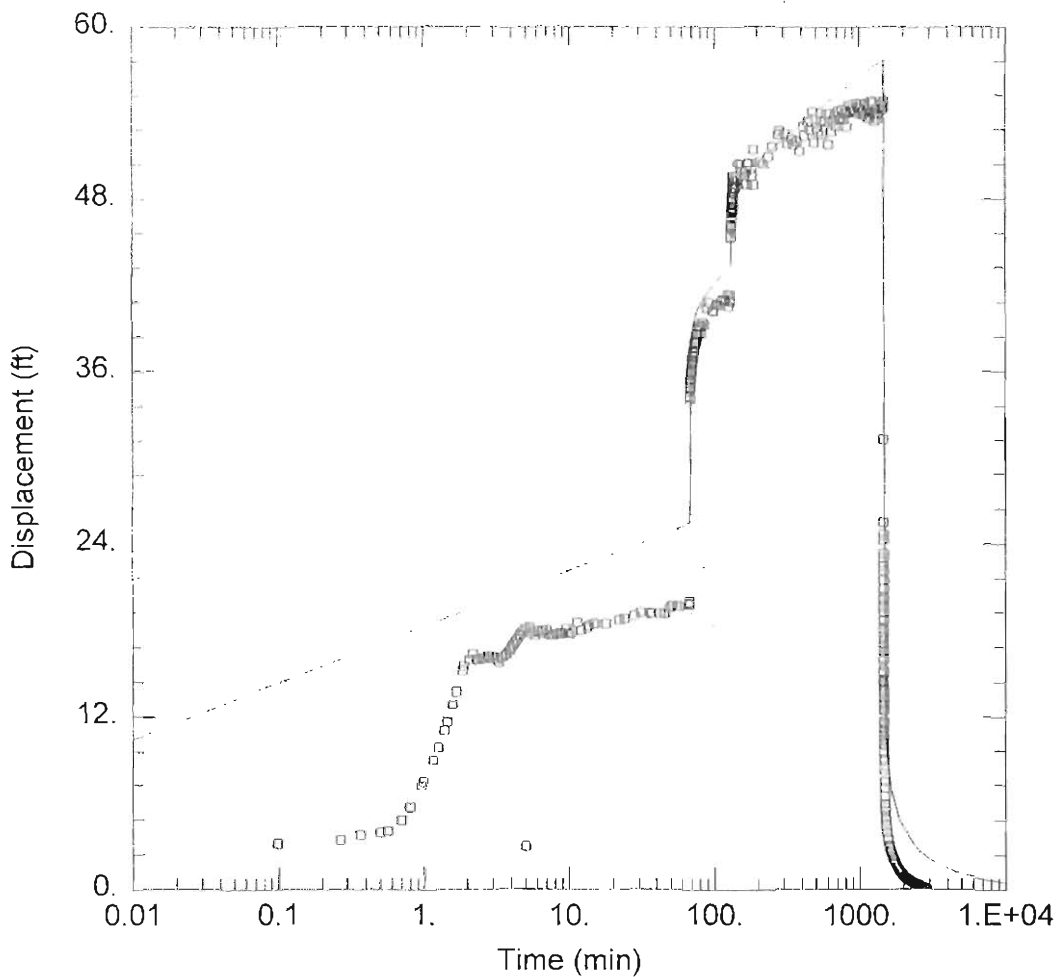
Solution Method: Theis

T = 1.416E+05 gal/day/ft

S = 0.0001184

Kz/Kr = 1.

b = 225. ft



CONSTANT RATE PUMPING TEST

Data Set: C:\...ASR TRM SRT.aqt

Date: 10/22/02

Time: 08:04:14

PROJECT INFORMATION

Company: Palm Beach County WUD

Project: 98-66B

Test Location: Hillsboro Canal

Test Well: ASR-1

Test Date: 4/30/02

AQUIFER DATA

Saturated Thickness: 225. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Observation Wells

Well Name	X (ft)	Y (ft)
ASR-1	0	0

Well Name	X (ft)	Y (ft)
ASR-1	0	0

SOLUTION

Aquifer Model: Confined

Solution Method: Theis (Step Test)

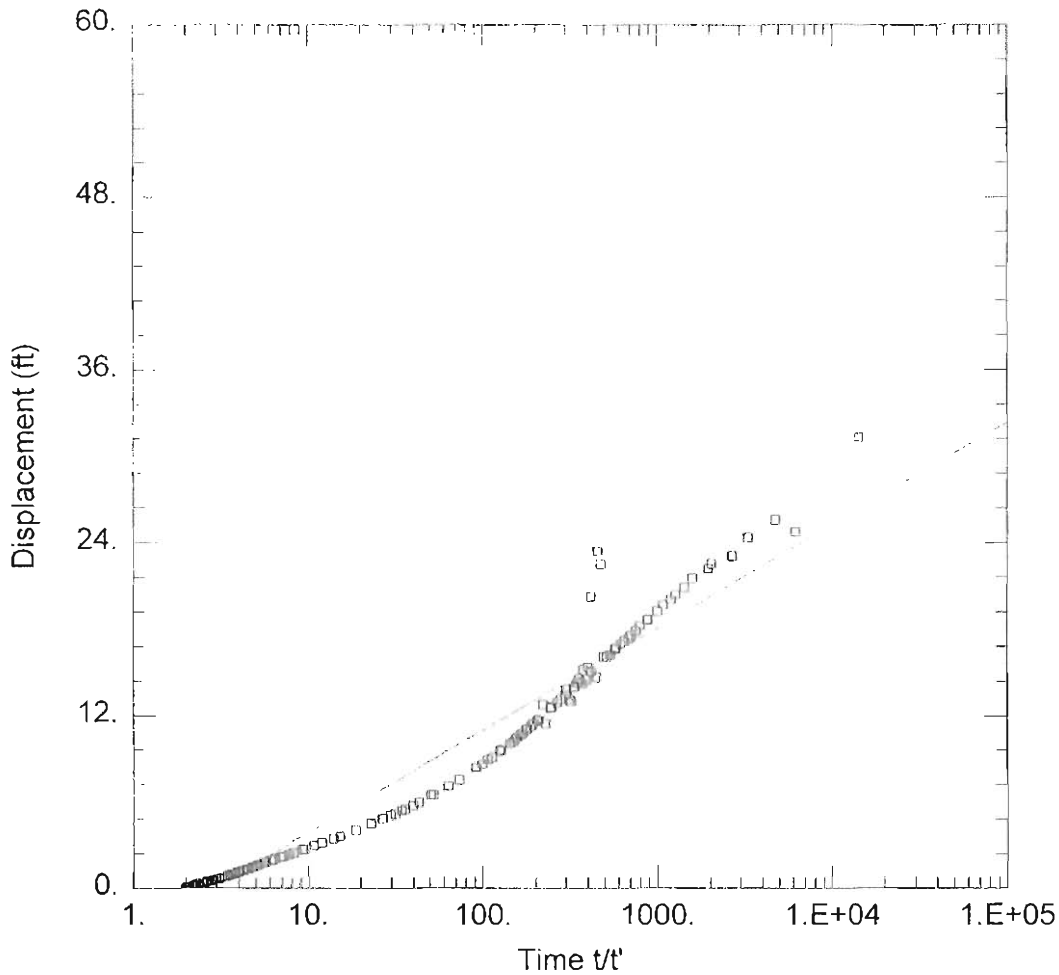
T = 1.213E+05 gal/day/ft

S = 8.423E-05

Sw = -0.9501

C = 0. min²/ft⁵

P = 3.



CONSTANT RATE PUMPING TEST

Data Set: C:\TGU\Projects\Hillsboro ASR\Data\ASR\Pump Tests\CRTAQTEST\ASR\ASR TRM.aqt
 Date: 10/22/02 Time: 08:04:31

PROJECT INFORMATION

Company: Palm Beach County WUD
 Project: 98-66B
 Test Location: Hillsboro Canal
 Test Well: ASR-1
 Test Date: 4/30/02

AQUIFER DATA

Saturated Thickness: 225. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

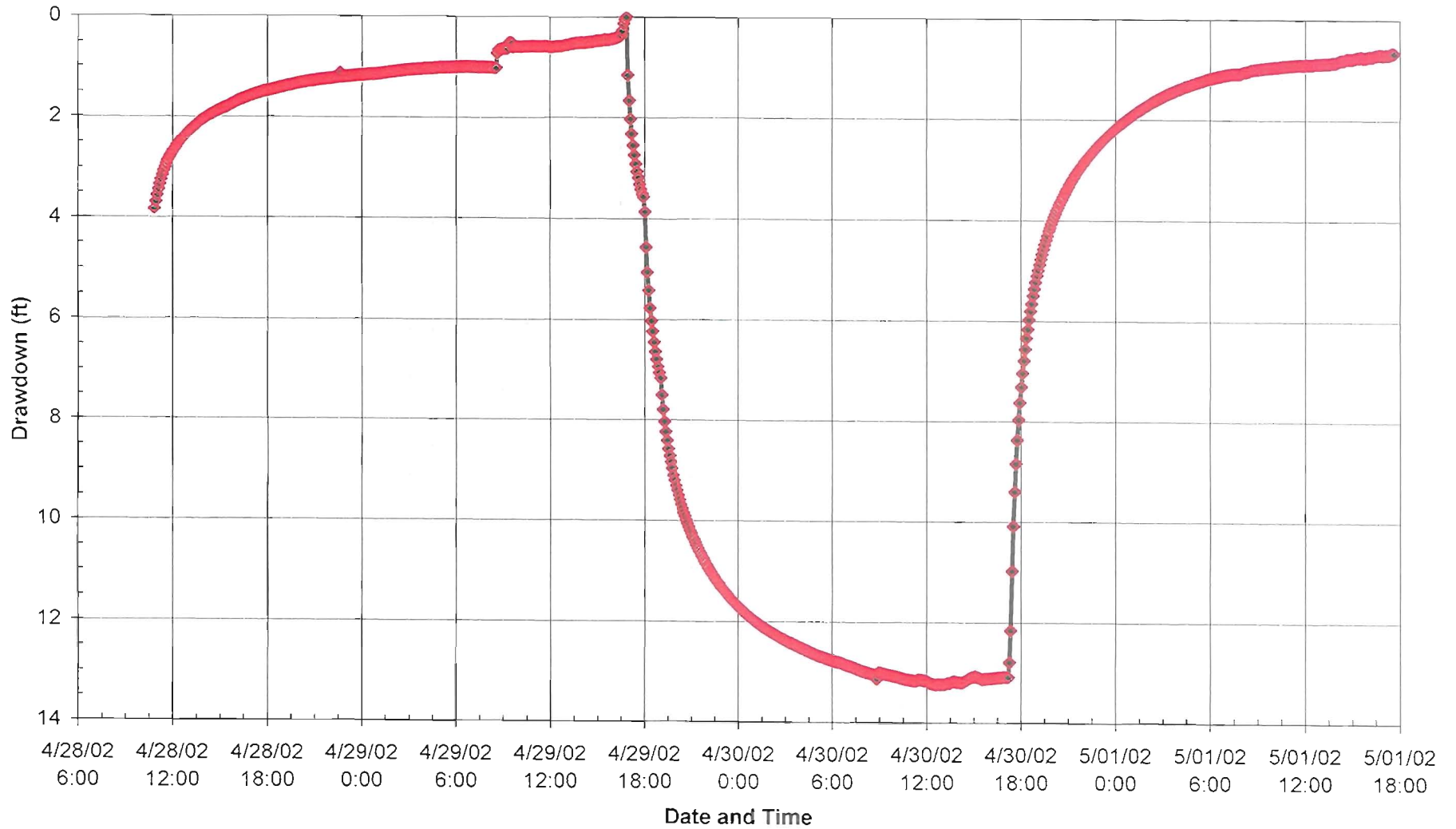
Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
ASR-1	0	0	ASR-1	0	0

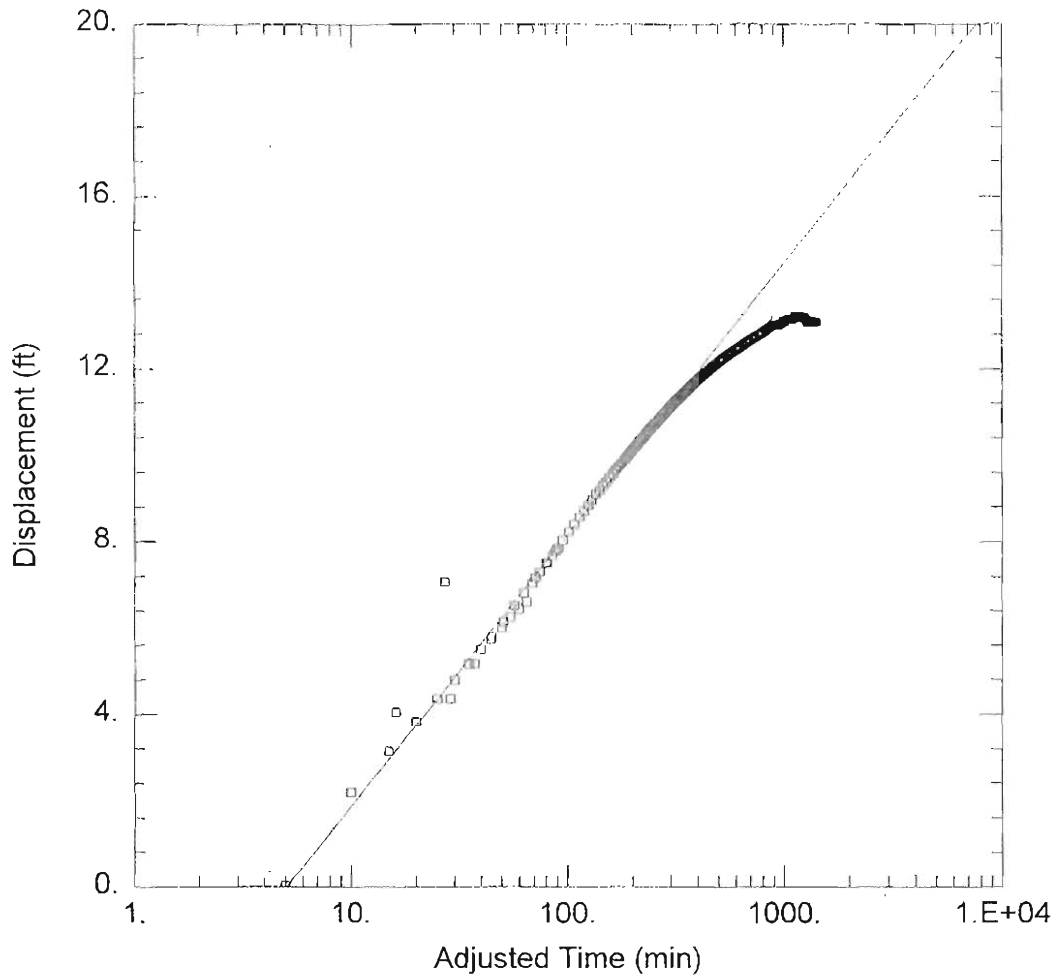
SOLUTION

Aquifer Model: Confined Solution Method: Theis (Recovery)
 T = 1.261E+05 gal/day/ft S' = 2.859

**Observation Well
(FAMW)**

Palm Beach County Water Utilities Department
WTP No. 9 Eastern Hillsboro ASR Well
24-Hour Constant-Rate Pumping Test
Floridan Aquifer Monitor Well FAMW-1





CONSTANT RATE PUMPING TEST

Data Set: C:\...\FAMW Cooper 2.aqt
 Date: 10/22/02

Time: 08:11:22

PROJECT INFORMATION

Company: Palm Beach County WUD
 Project: 98-66B
 Test Location: Hillsboro Canal
 Test Well: ASR-1
 Test Date: 4/30/02

AQUIFER DATA

Saturated Thickness: 225 ft

Anisotropy Ratio (Kz/Kr): 1

WELL DATA

Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
ASR-1	0	0	FAMW-1	758	0

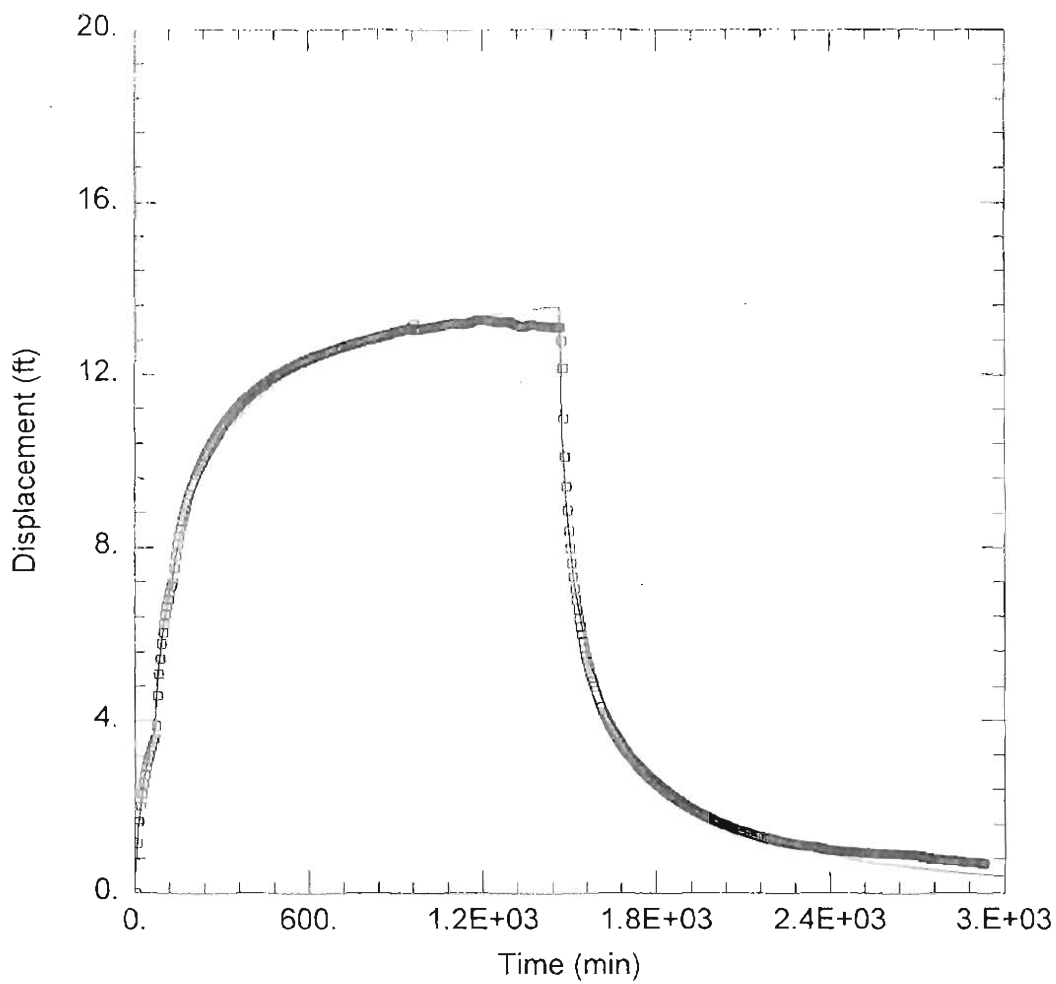
SOLUTION

Aquifer Model: Confined

Solution Method: Cooper-Jacob

T = 1.426E+05 gal/day/ft

S = 0.0002622



CONSTANT RATE PUMPING TEST

Data Set: C:\...\FAMW Hantush Jacob 2.aqt

Date: 10/22/02

Time: 08:13:13

PROJECT INFORMATION

Company: Palm Beach County WUD

Project: 98-66B

Test Location: Hillsboro Canal

Test Well: ASR-1

Test Date: 4/30/02

WELL DATA

Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
ASR-1	0	0	□ FAMW-1	758	0

SOLUTION

Aquifer Model: Leaky

Solution Method: Hantush-Jacob

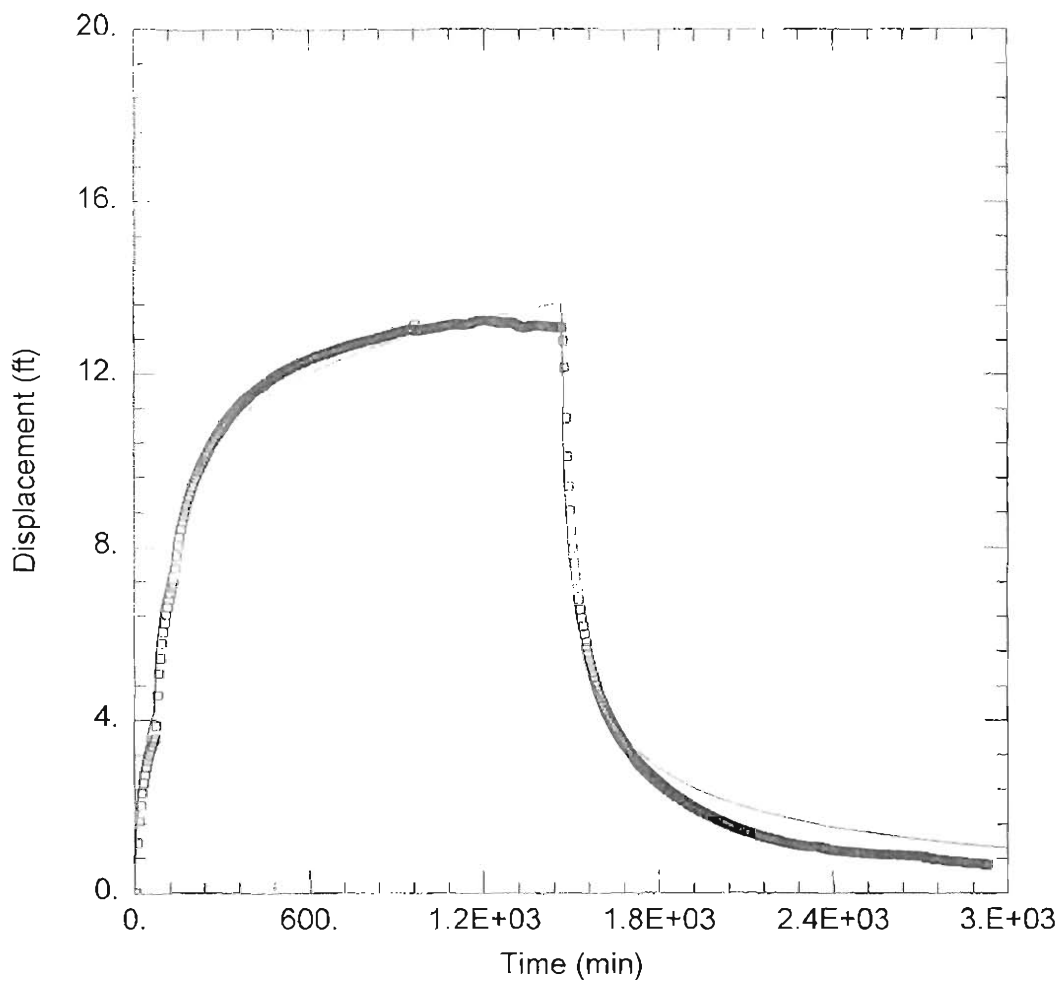
T = 1.327E+05 gal/day/ft

S = 0.0002928

r/B = 0.1023

Kz/Kr = 1.

b = 225. ft



CONSTANT RATE PUMPING TEST

Data Set: C:\...\FAMW Hantush Leaky.aqt

Date: 10/22/02

Time: 08:14:59

PROJECT INFORMATION

Company: Palm Beach County WUD

Project: 98-66B

Test Location: Hillsboro Canal

Test Well: ASR-1

Test Date: 4/30/02

WELL DATA

Pumping Wells

Observation Wells

Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
ASR-1	0	0	o FAMW-1	758	0

SOLUTION

Aquifer Model: Leaky

Solution Method: Hantush

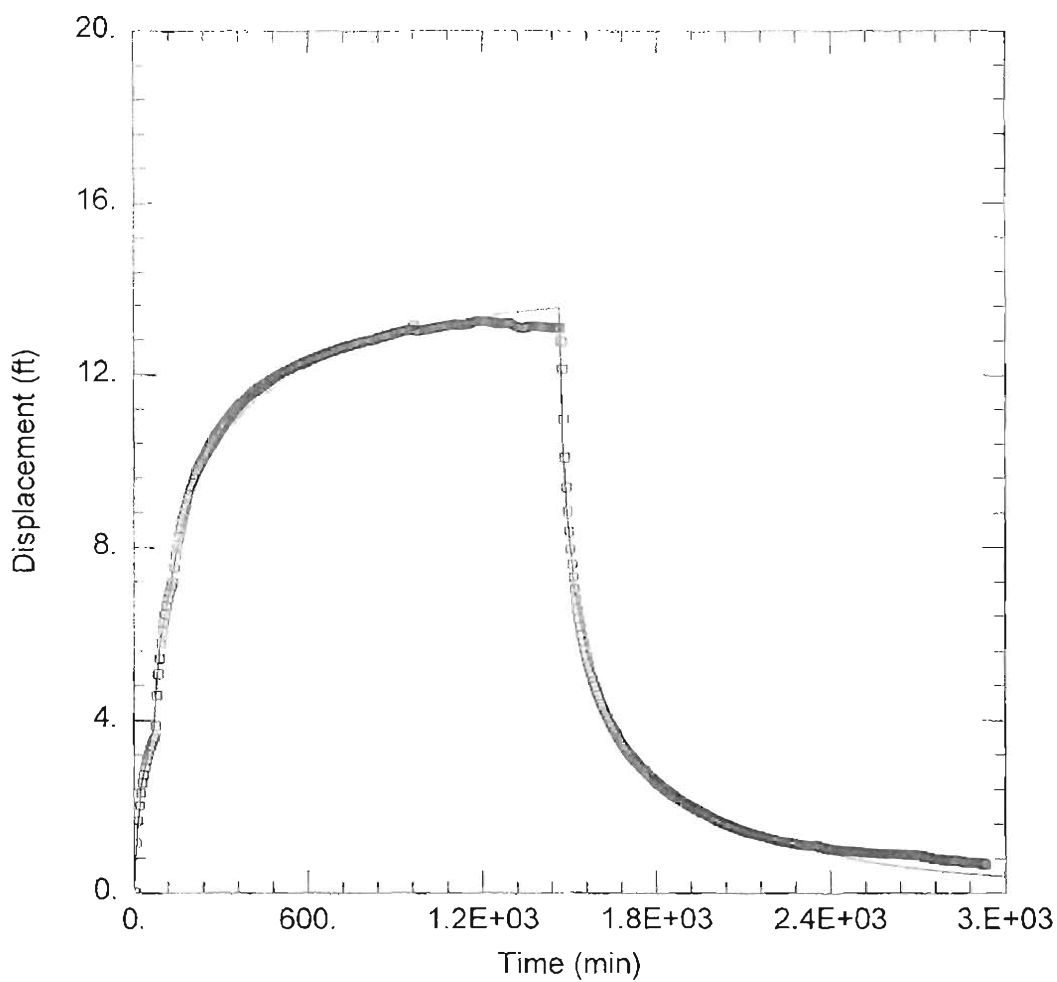
T = 1.469E+05 gal/day/ft

S = 0.0001292

g = 0.0304

Kz/Kr = 1.

o = 225. ft



CONSTANT RATE PUMPING TEST

Data Set: C:\...FAMW Hantush 2.aqt

Date: 10/22/02

Time: 08:12:42

PROJECT INFORMATION

Company: Palm Beach County WUD

Project: 98-66B

Test Location: Hillsboro Canal

Test Well: ASR-1

Test Date: 4/30/02

AQUIFER DATA

Saturated Thickness: 225. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Observation Wells

Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
ASR-1	0	0	□ FAMW-1	758	0

SOLUTION

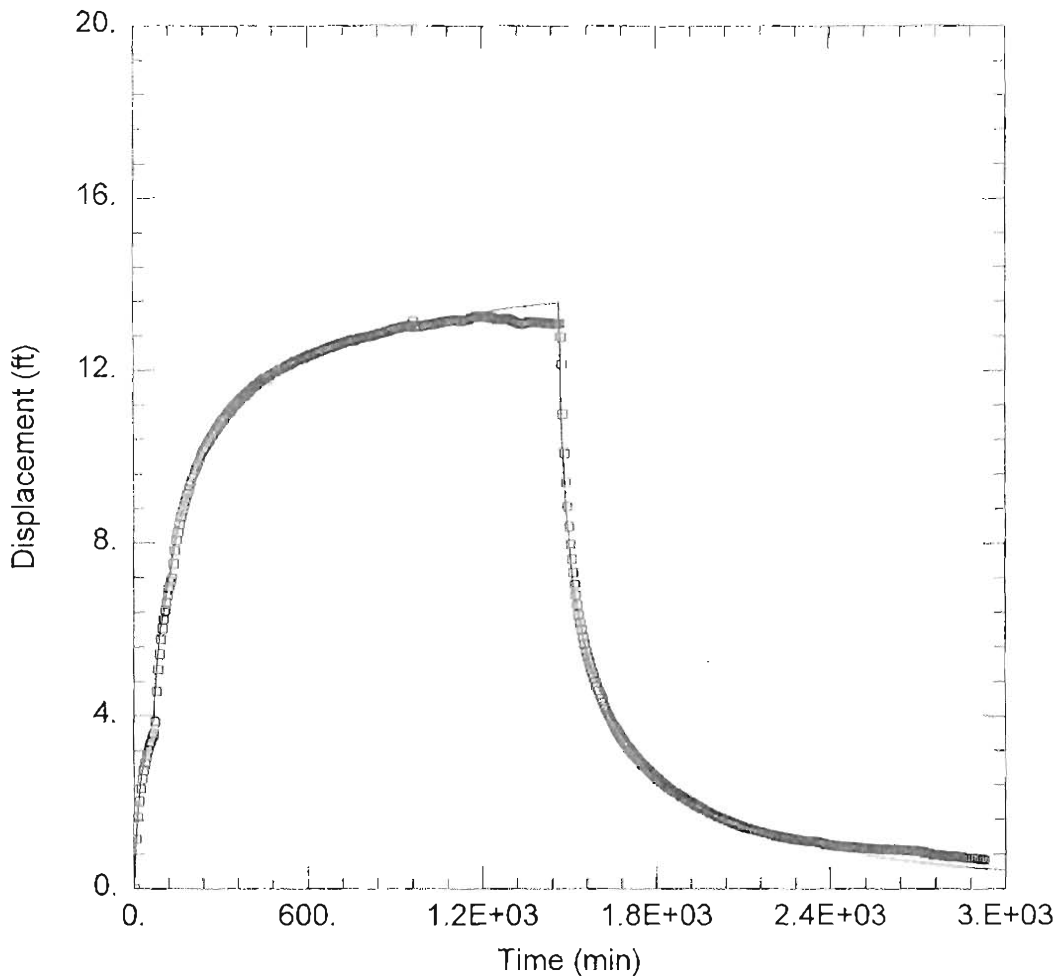
Aquifer Model: Confined

Solution Method: Hantush (Wedge)

T = 1.47E+05 gal/day/ft

S = 0.0003242

r/a = 0.1022



CONSTANT RATE PUMPING TEST

Data Set: C:\...\FAMW Moench.aqt

Date: 10/22/02

Time: 08:16:32

PROJECT INFORMATION

Company: Palm Beach County WUD

Project: 98-66B

Test Location: Hillsboro Canal

Test Well: ASR-1

Test Date: 4/30/02

AQUIFER DATA

Saturated Thickness: 225. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
ASR-1	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
□ FAMW-1	758	0

SOLUTION

Aquifer Model: Leaky

Solution Method: Moench (Case 1)

T = 1.438E+05 gal/day/ft

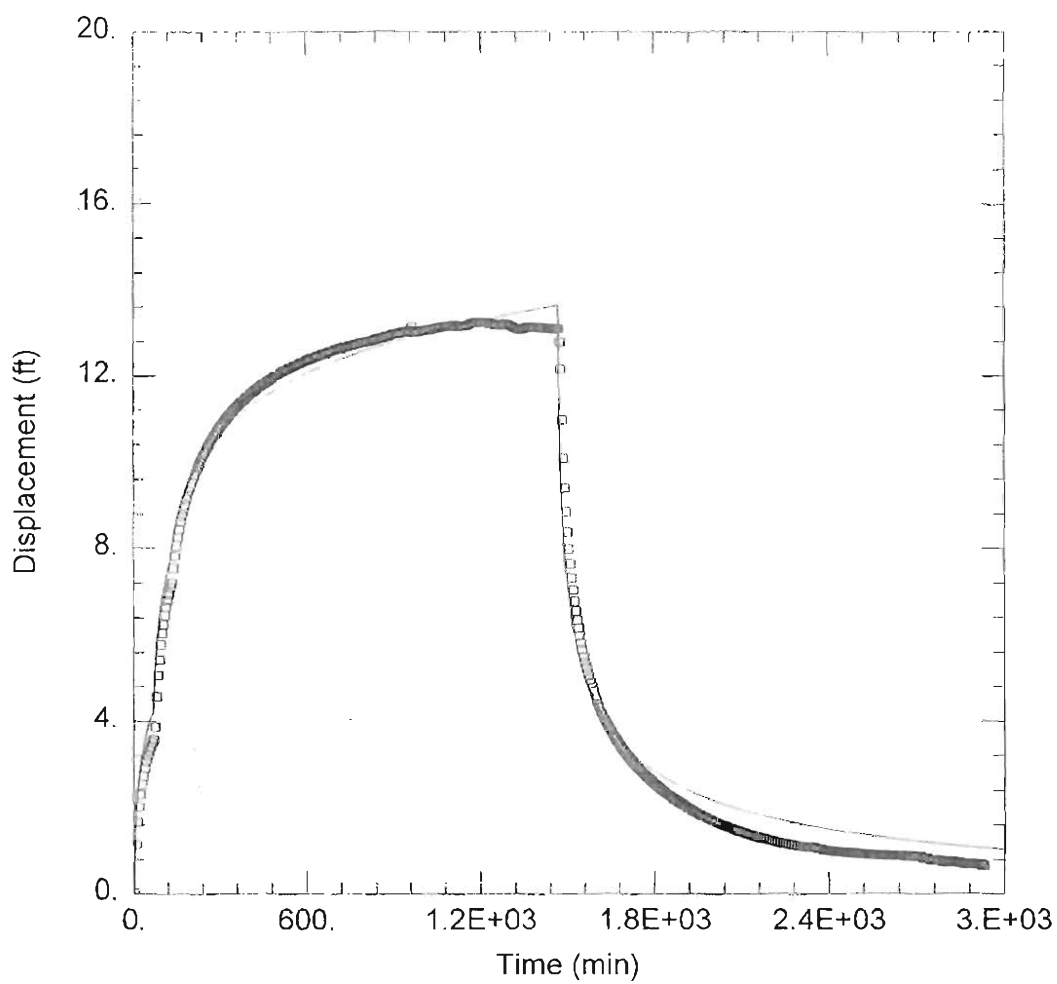
S = 0.0002311

r/B = 0.08219

β = 0.002387

Sw = 10.

Rw = 1.E-05 ft



CONSTANT RATE PUMPING TEST

Data Set: C:\...\FAMW Moench 2.aqt

Date: 10/22/02

Time: 08:16:03

PROJECT INFORMATION

Company: Palm Beach County WUD

Project: 98-66B

Test Location: Hillsboro Canal

Test Well: ASR-1

Test Date: 4/30/02

AQUIFER DATA

Saturated Thickness: 225. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
ASR-1	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
□ FAMW-1	758	0

SOLUTION

Aquifer Model: Leaky

Solution Method: Moench (Case 2)

T = 1.481E+05 gal/day/ft

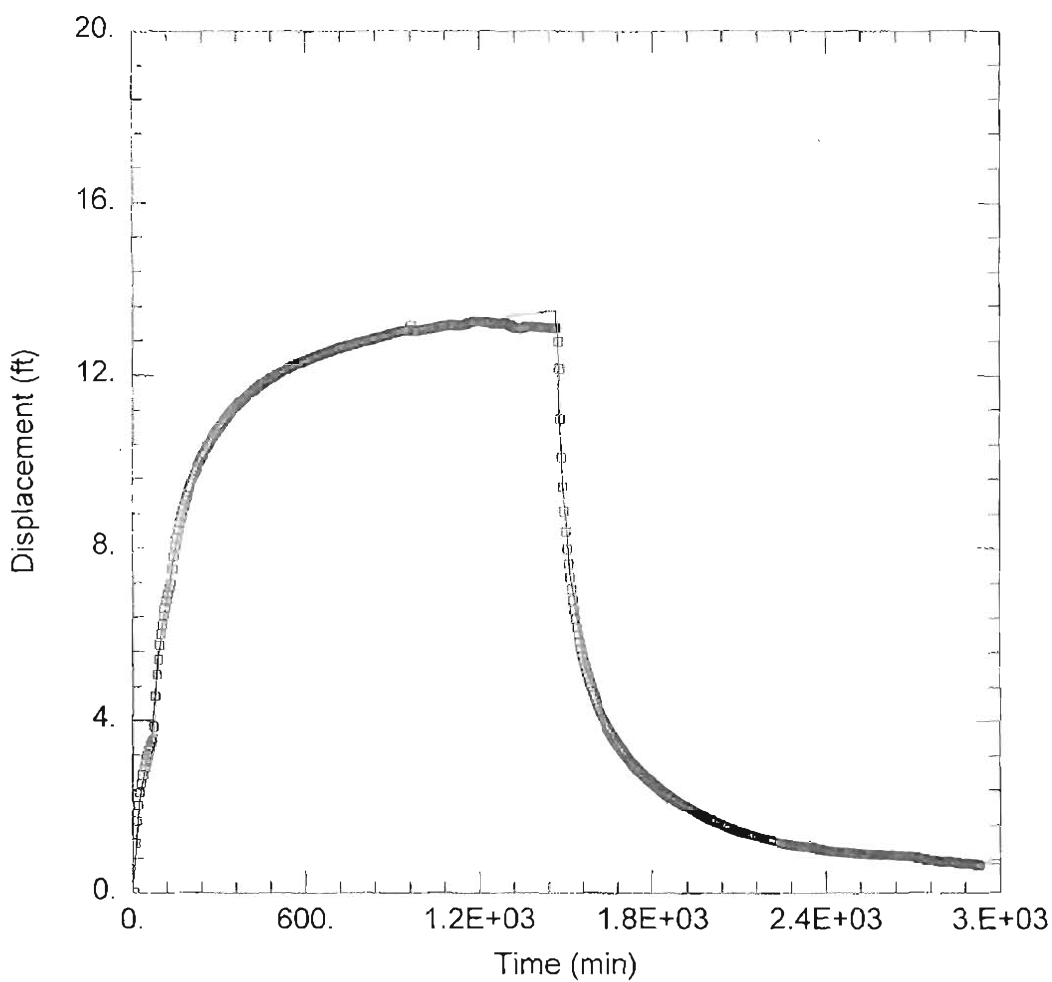
S = 0.0001173

r/B = 0.03472

β = 0.03167

Sw = 10.

Rw = 1.E-05 ft



CONSTANT RATE PUMPING TEST

Data Set: C:\...FAMW Neuman 3.aqt

Date: 10/22/02

Time: 08:17:27

PROJECT INFORMATION

Company: Palm Beach County WUD

Project: 98-66B

Test Location: Hillsboro Canal

Test Well: ASR-1

Test Date: 4/30/02

AQUIFER DATA

Saturated Thickness: 225. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Observation Wells

Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
ASR-1	0	0	FAMW-1	758	0

SOLUTION

Aquifer Model: Leaky

Solution Method: Neuman-Witherspoon

T = 1.015E+05 gal/day/ft

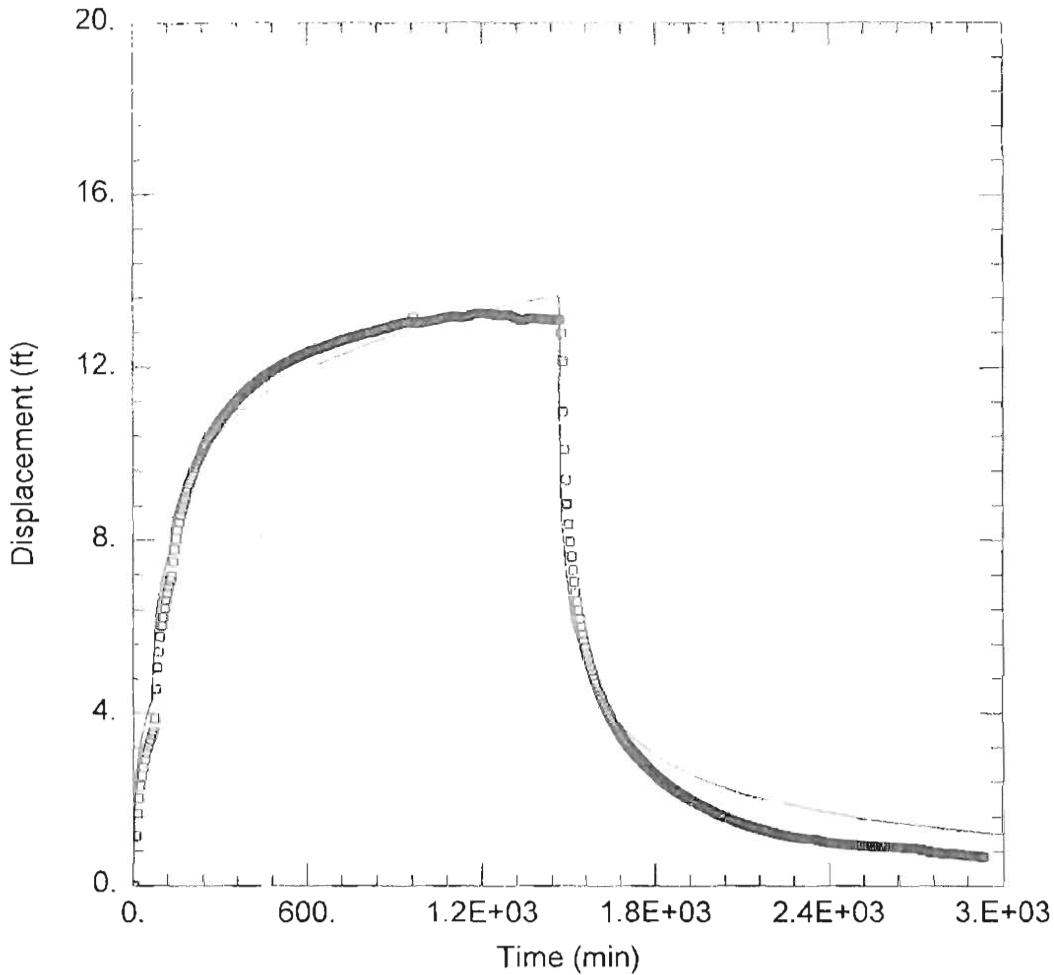
S = 0.0004049

r/B = 0.2216

β = 0.001206

T' = 2.604E+05 gal/day/ft

S' = 0.001127



CONSTANT RATE PUMPING TEST

Data Set: C:\...\FAMW PAPA 2.aqt

Date: 10/22/02

Time: 08:18:25

PROJECT INFORMATION

Company: Palm Beach County WUD

Project: 98-66B

Test Location: Hillsboro Canal

Test Well: ASR-1

Test Date: 4/30/02

AQUIFER DATA

Saturated Thickness: 225. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
ASR-1	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
FAMW-1	758	0

SOLUTION

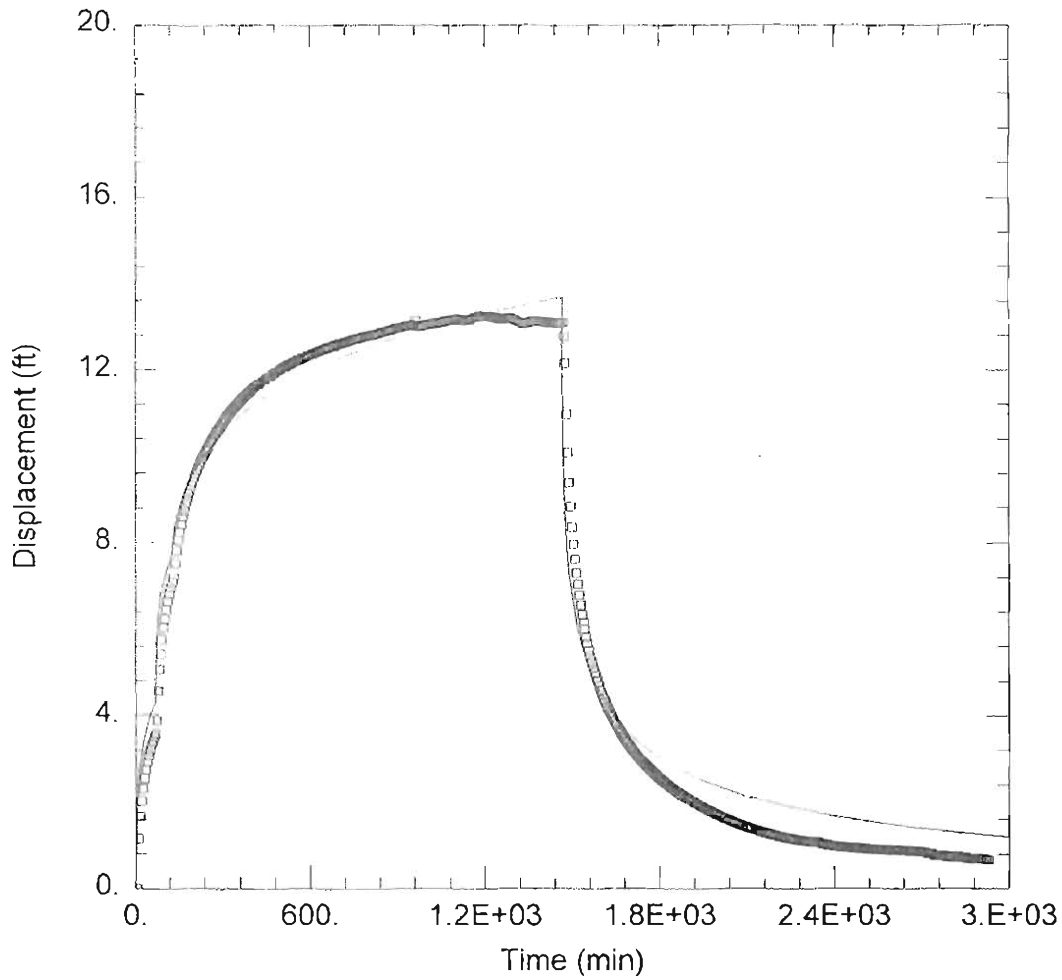
Aquifer Model: Confined

Solution Method: Papadopoulos-Cooper

T = 2.141E+05 gal/day/ft

S = 6.067E-05

Rw = 1.E-05 ft



CONSTANT RATE PUMPING TEST

Data Set: C:\...\FAMW Theis 2.aqt

Date: 10/22/02

Time: 08:19:33

PROJECT INFORMATION

Company: Palm Beach County WUD

Project: 98-66B

Test Location: Hillsboro Canal

Test Well: ASR-1

Test Date: 4/30/02

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
ASR-1	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
□ FAMW-1	758	0

SOLUTION

Aquifer Model: Confined

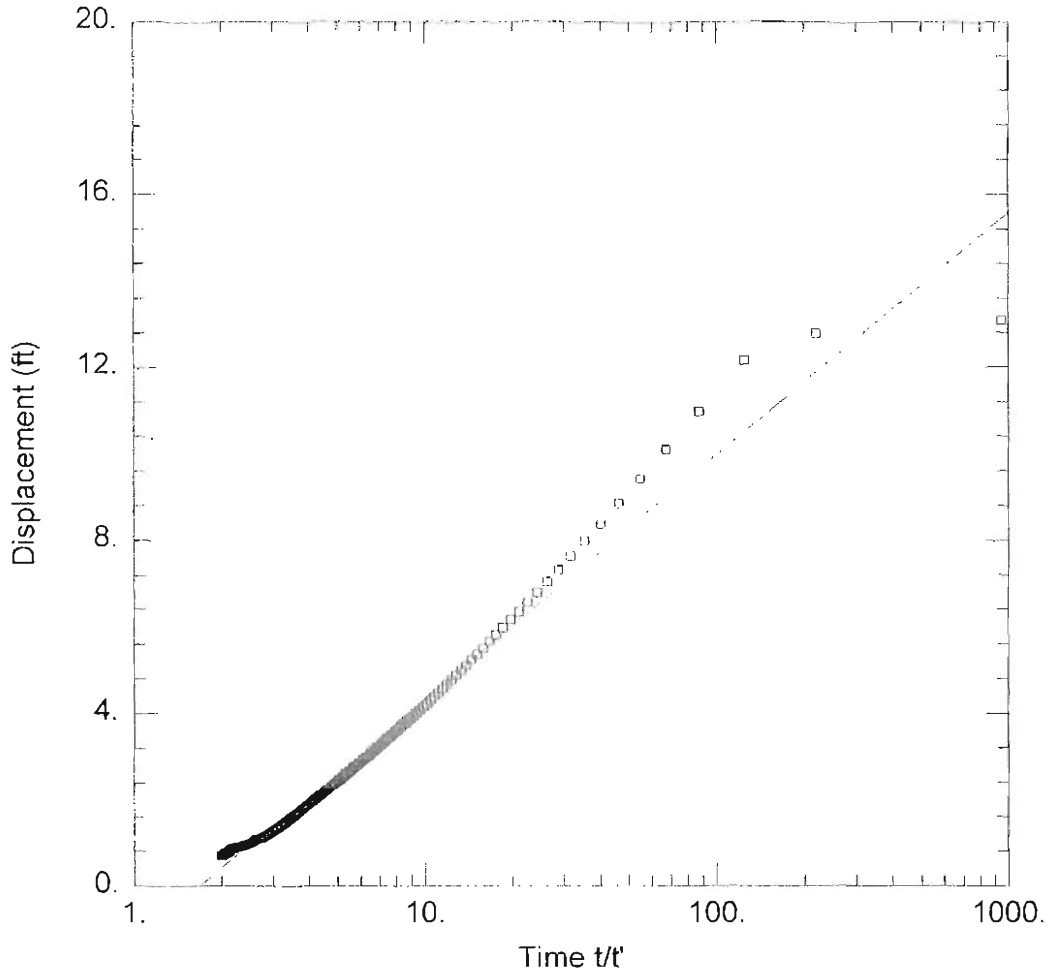
Solution Method: Theis

T = 2.132E+05 gal/day/ft

S = 6.223E-05

Kz/Kr = 1.

b = 225. ft



CONSTANT RATE PUMPING TEST

Data Set: C:\...\FAMW TRM.aqt

Date: 10/22/02

Time: 08:20:24

PROJECT INFORMATION

Company: Palm Beach County WUD

Project: 98-66B

Test Location: Hillsboro Canal

Test Well: ASR-1

Test Date: 4/30/02

AQUIFER DATA

Saturated Thickness: 225. ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA

Pumping Wells

Observation Wells

Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
ASR-1	0	0	□ FAMW-1	758	0

SOLUTION

Aquifer Model: Confined

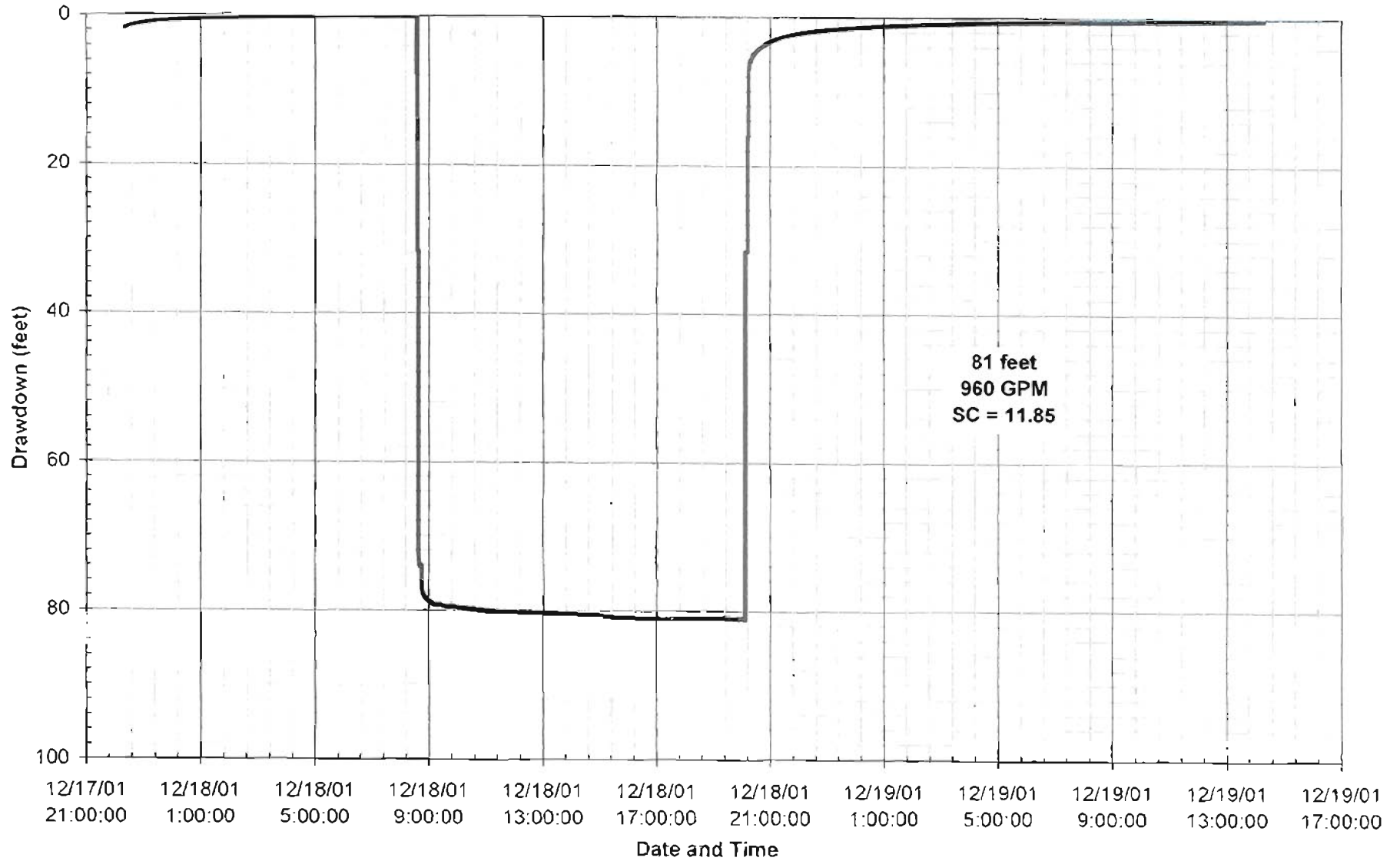
Solution Method: Theis (Recovery)

T = 1.599E+05 gal/day/ft

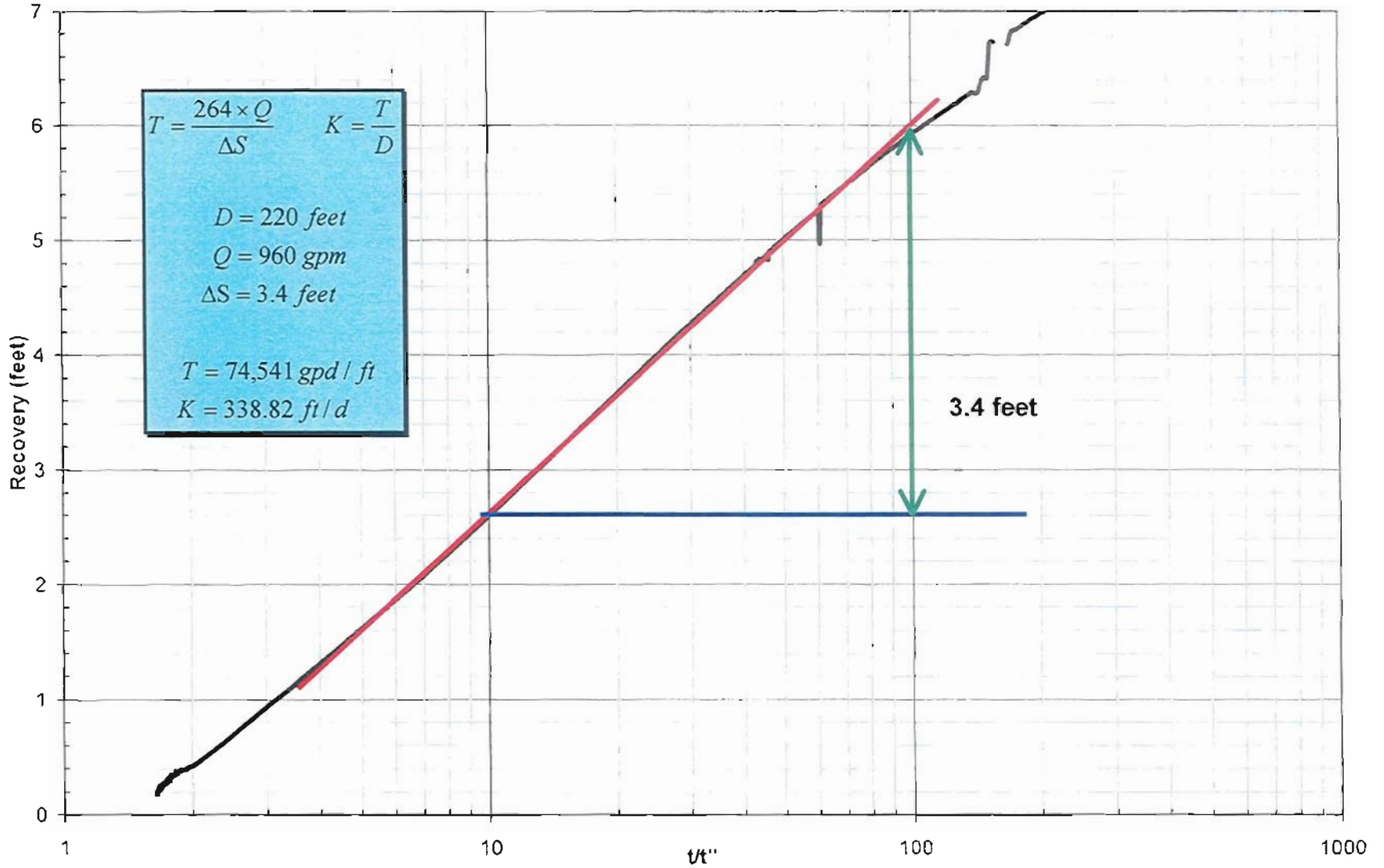
S' = 1.674

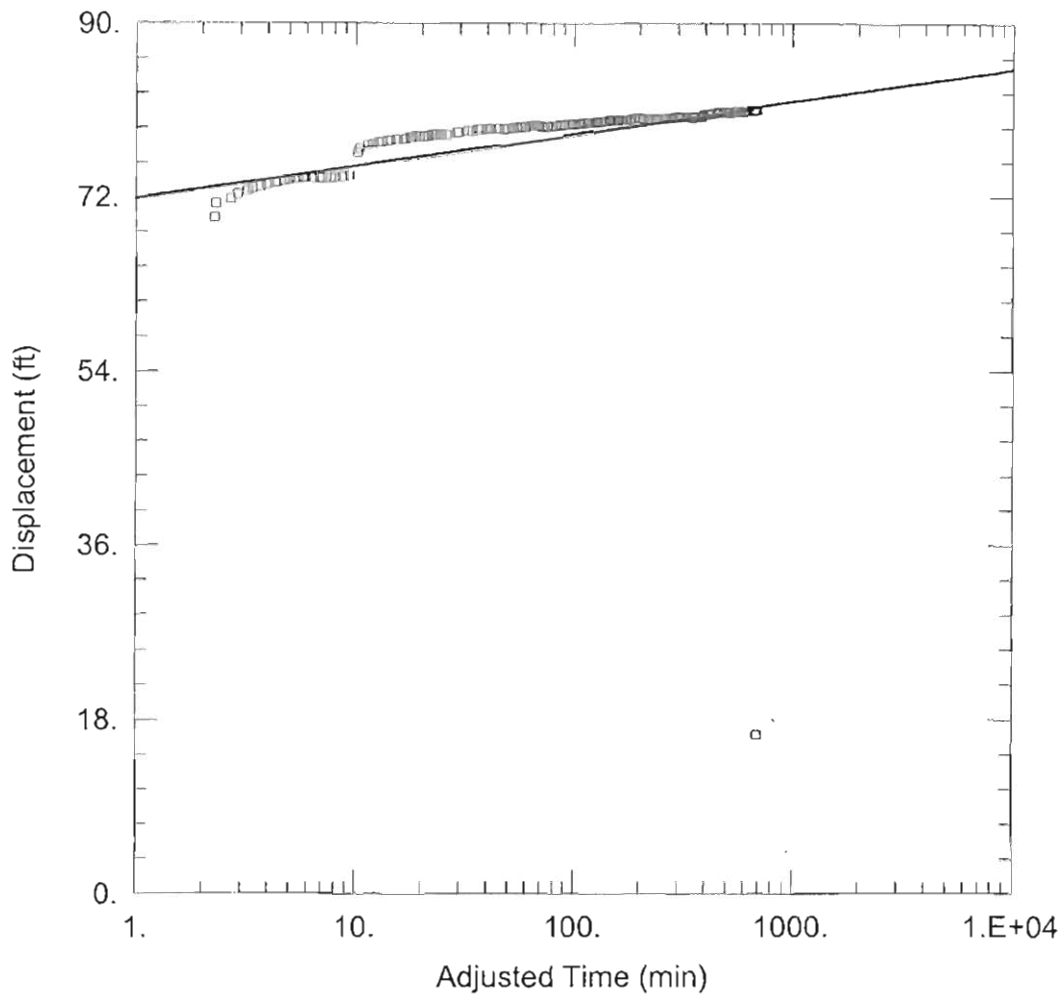
**Pumping Well
(FAMW)**

Palm Beach County Water Utilities Department
FAMW-1 Constant Rate Pumping Test



Palm Beach County Water Utilities Department
FAMW-1 Constant Rate Pumping Test
This Recovery Method - 1,005 - 1,225





CONSTANT RATE TEST

Data Set: C:\TGU\Projects\Hillsboro ASR\Data\FAMW\Pump Tests\CRTAqtest\Cooper.aqt
 Date: 02/28/03 Time: 11:14:02

PROJECT INFORMATION

Company: PALM BEACH COUNTY WUD
 Client: Palm Beach County
 Project: 98-66B
 Test Location: Hillsboro Canal
 Test Well: FAMW-1
 Test Date: 12/18/01

AQUIFER DATA

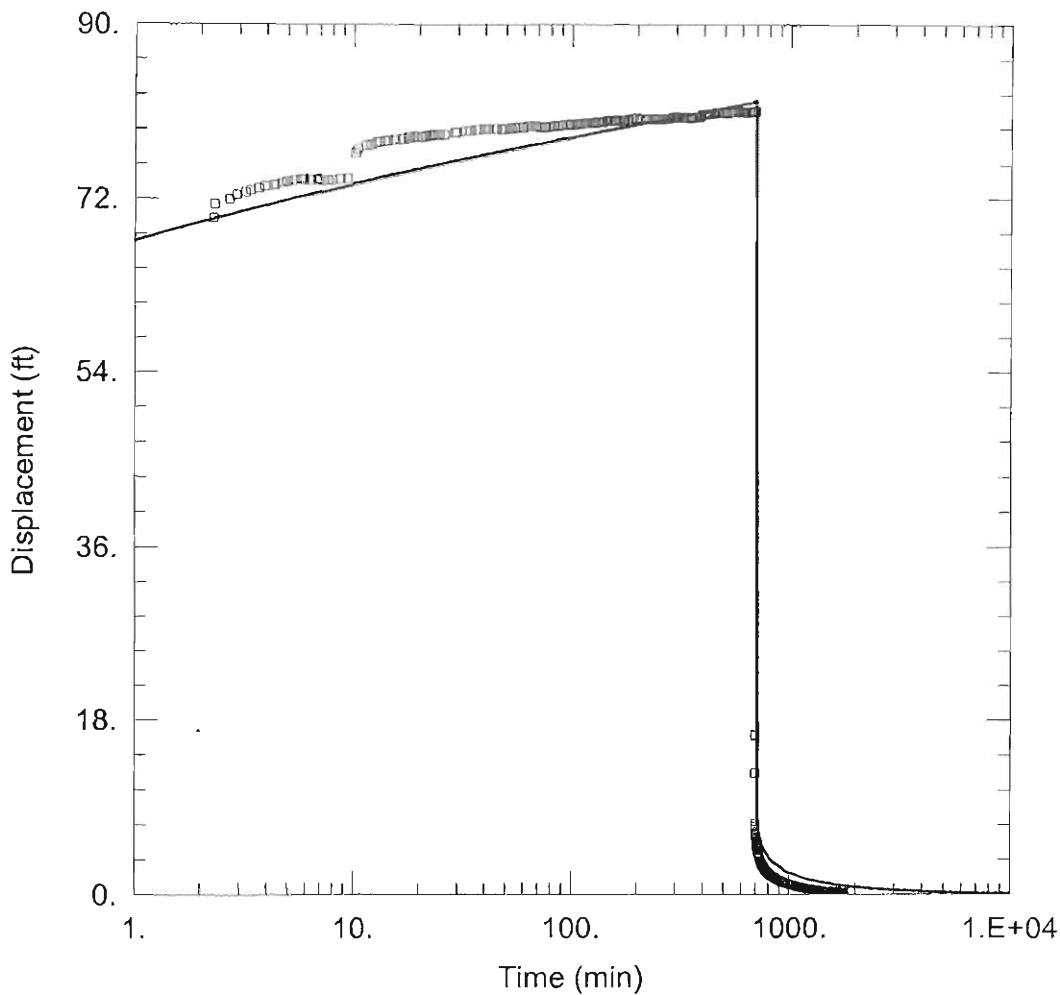
Saturated Thickness: 220. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
FAMW-1	0	0	□ FAMW-1	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Cooper-Jacob
 T = 7.583E+04 gal/day/ft S = 1.903E-20



CONSTANT RATE TEST

Data Set: C:\TGU\Projects\Hillsboro ASR\Data\FAMW\Pump Tests\CRT\Aqtest\Hantush.aqt
 Date: 02/28/03 Time: 11:24:34

PROJECT INFORMATION

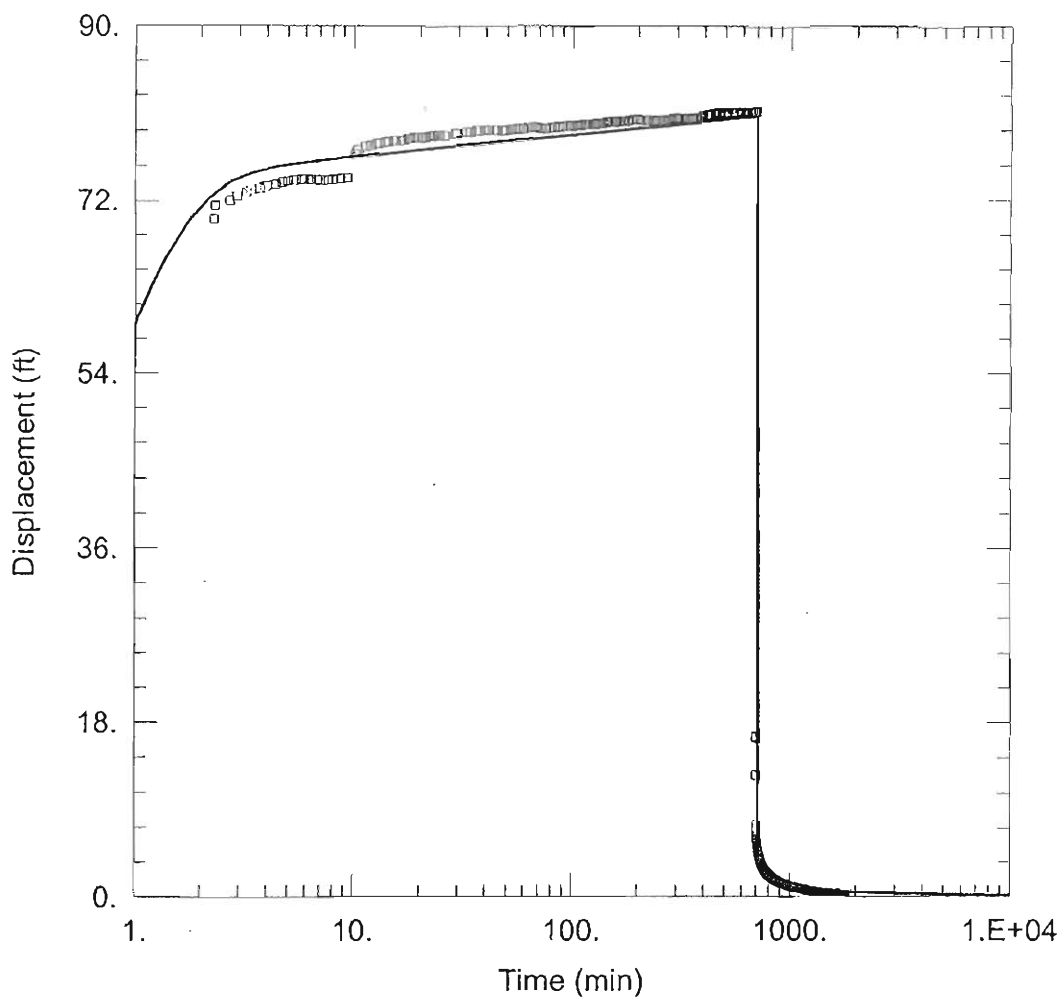
Company: PAlm Beach County WUD
 Client: Palm Beach County
 Project: 98-66B
 Test Location: Hillsboro Canal
 Test Well: FAMW-1
 Test Date: 12/18/01

WELL DATA

Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
FAMW-1	0	0	□ FAMW-1	0	0

SOLUTION

Aquifer Model: <u>Leaky</u>	Solution Method: <u>Hantush</u>
T = <u>3.127E+04</u> gal/day/ft	S = <u>7.315E-08</u>
β = <u>1.E-05</u>	Kz/Kr = <u>1.</u>
b = <u>220.</u> ft	



CONSTANT RATE TEST

Data Set: C:\TGU\Projects\Hillsboro ASR\Data\FAMW\Pump Tests\CRT\Agtest\Moench.agt

Date: 02/28/03

Time: 11:33:21

PROJECT INFORMATION

Company: PAIm Beach County WUD

Client: Palm Beach County

Project: 98-66B

Test Location: Hillsboro Canal

Test Well: FAMW-1

Test Date: 12/18/01

AQUIFER DATA

Saturated Thickness: 220. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
FAMW-1	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
□ FAMW-1	0	0

SOLUTION

Aquifer Model: Leaky

Solution Method: Moench (Case 2)

T = 5.801E+04 gal/day/ft

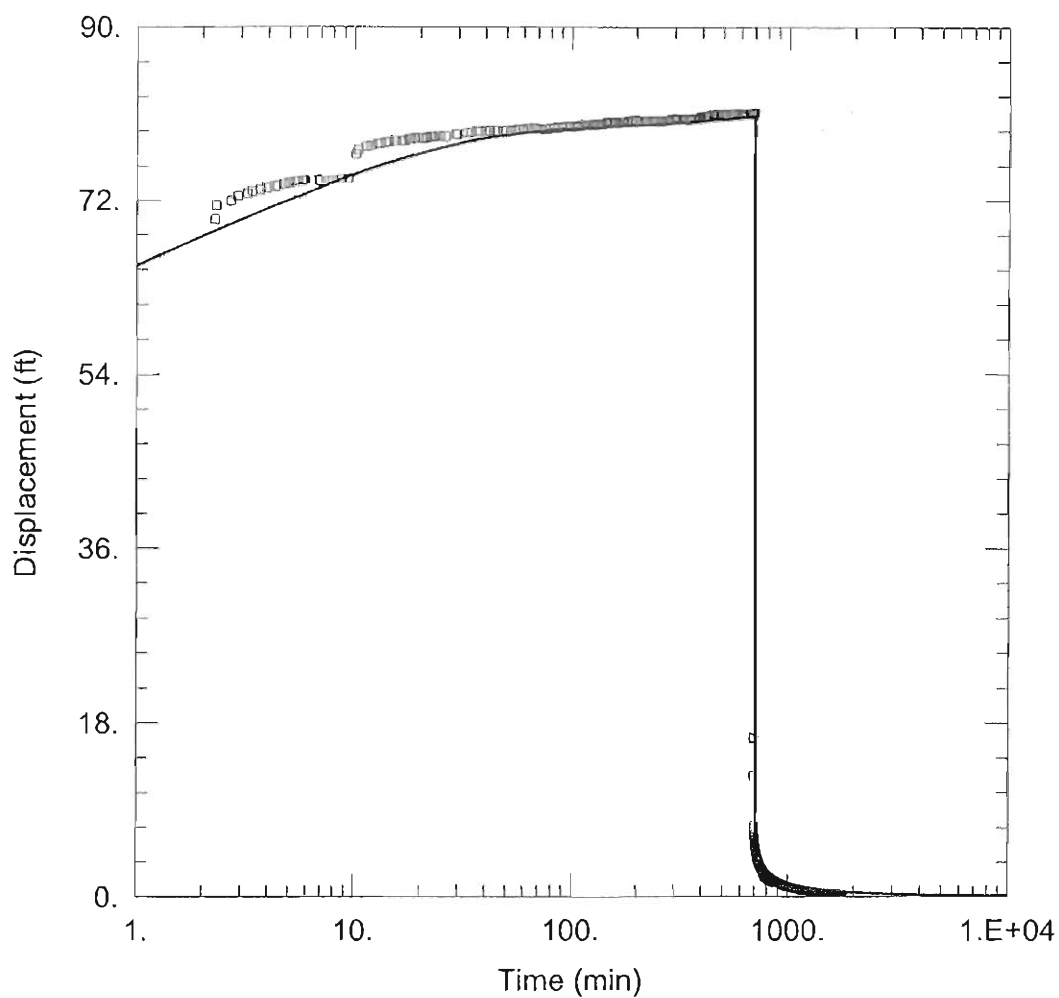
S = 4.698E-07

r/B = 1.E-05

β = 0.5481

Sw = 10.

Rw = 1.152E-05 ft



CONSTANT RATE TEST

Data Set: C:\TGU\Projects\Hillsboro ASR\Data\FAMW\Pump Tests\CRT\Aqtest\Neuman.aqt
 Date: 02/28/03 Time: 11:35:39

PROJECT INFORMATION

Company: PAIm Beach County WUD
 Client: Palm Beach County
 Project: 98-66B
 Test Location: Hillsboro Canal
 Test Well: FAMW-1
 Test Date: 12/18/01

AQUIFER DATA

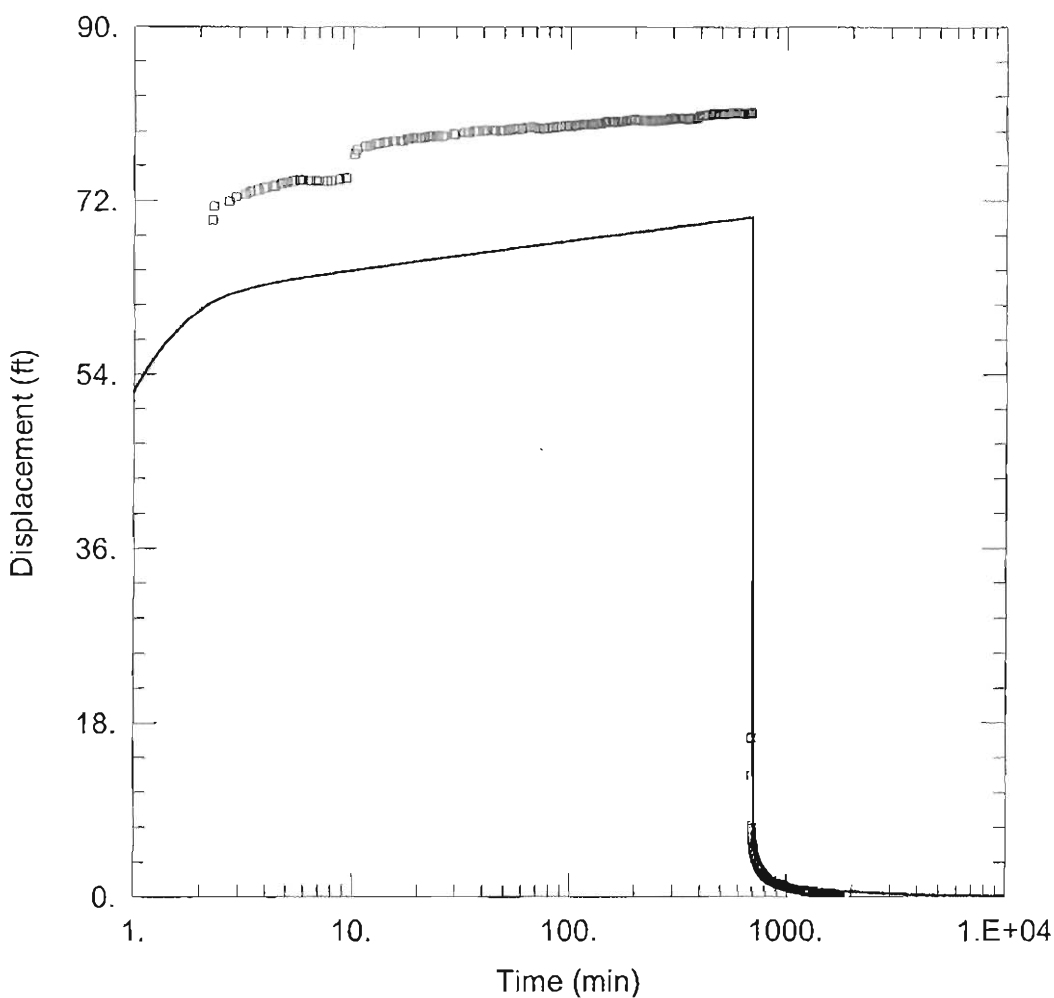
Saturated Thickness: 220. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
FAMW-1	0	0	□ FAMW-1	0	0

SOLUTION

Aquifer Model: <u>Leaky</u>	Solution Method: <u>Neuman-Witherspoon</u>
T = <u>2.428E+04 gal/day/ft</u>	S = <u>1.101E-05</u>
r/B = <u>0.0001753</u>	β = <u>1.E-05</u>
T' = <u>6.815E+04 gal/day/ft</u>	S' = <u>0.0002725</u>



CONSTANT RATE TEST

Data Set: C:\TGU\Projects\Hillsboro ASR\Data\FAMW\Pump Tests\CRT\Aqtest\Papa.agt
 Date: 02/28/03 Time: 11:37:06

PROJECT INFORMATION

Company: PAIm Beach County WUD
 Client: Palm Beach County
 Project: 98-66B
 Test Location: Hillsboro Canal
 Test Well: FAMW-1
 Test Date: 12/18/01

AQUIFER DATA

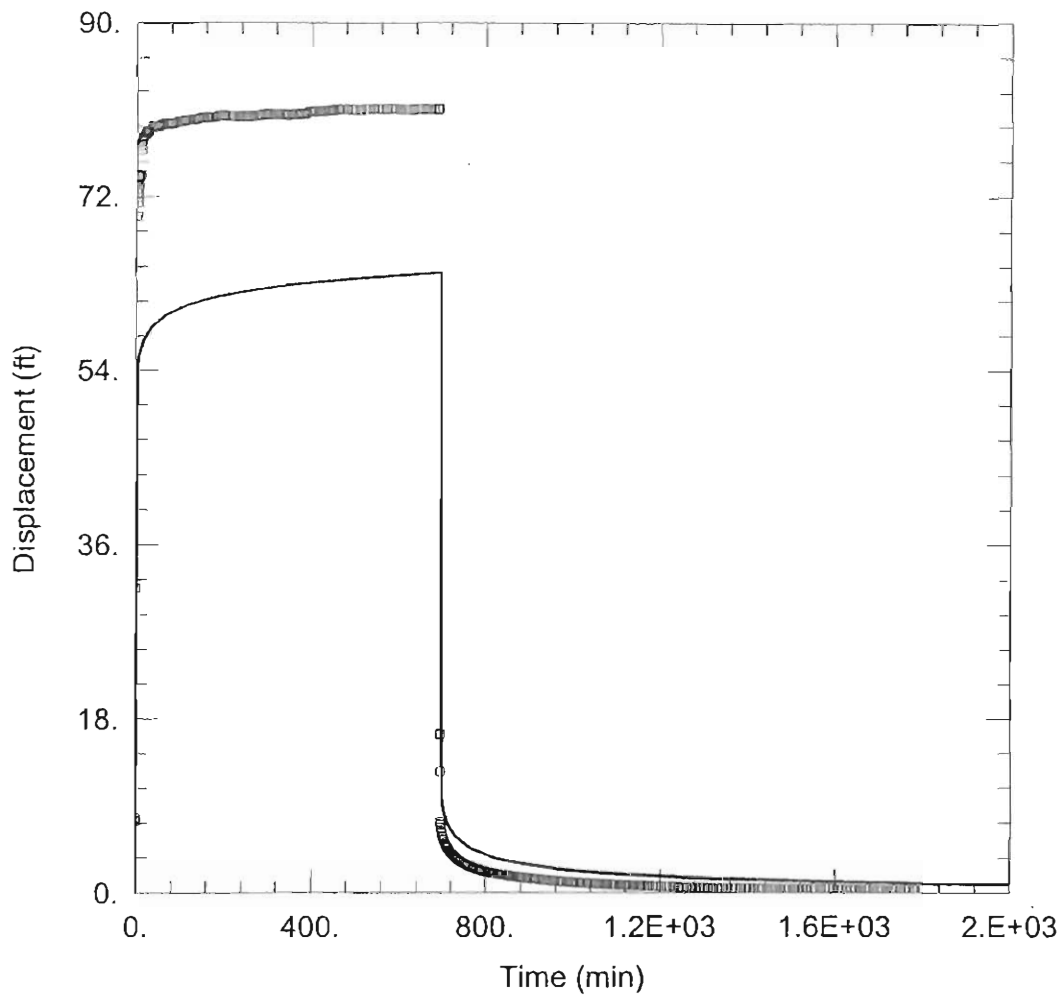
Saturated Thickness: 220. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
FAMW-1	0	0	□ FAMW-1	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Papadopulos-Cooper
 T = 8.684E+04 gal/day/ft S = 1.E-10
 Rw = 1.E-05 ft



CONSTANT RATE TEST

Data Set: C:\TGU\Projects\Hillsboro ASR\Data\FAMW\Pump Tests\CRT\Aqtest\Theis.aqt
 Date: 02/28/03 Time: 11:25:23

PROJECT INFORMATION

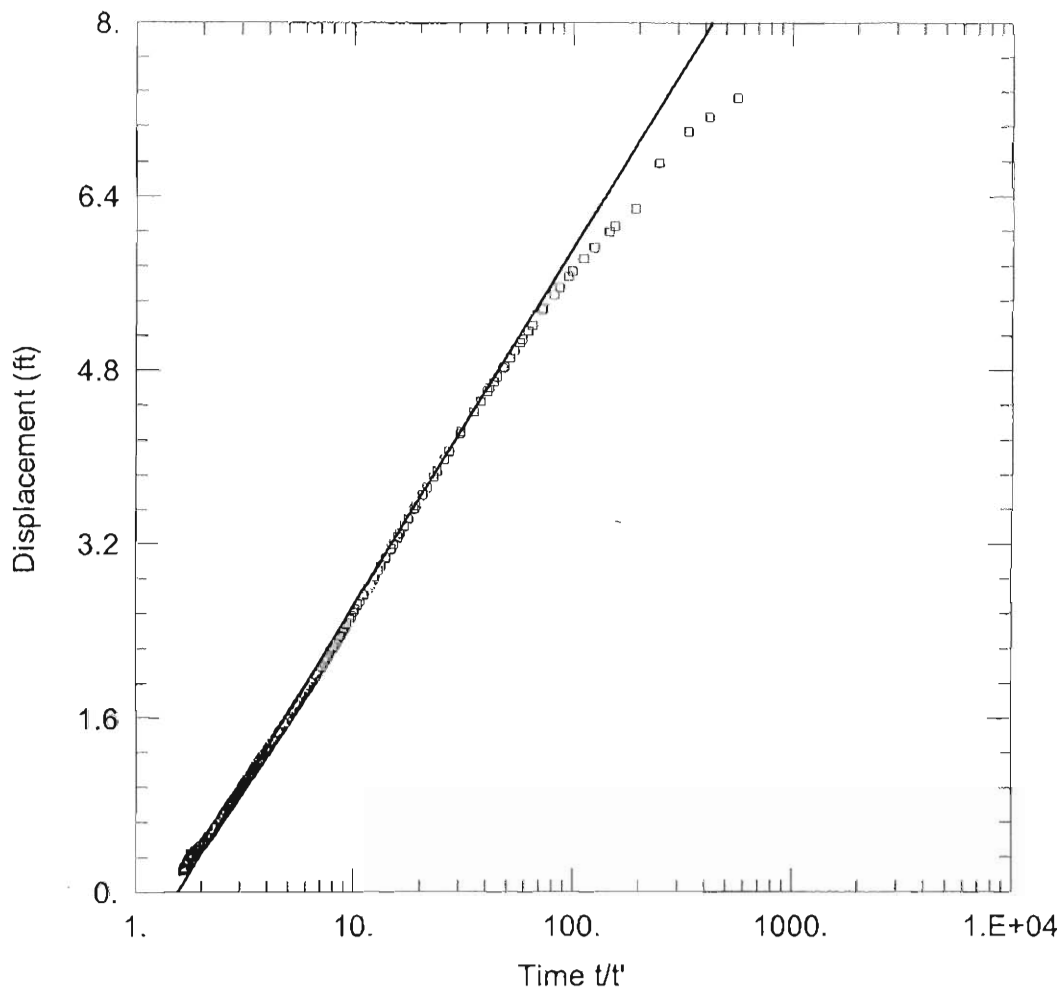
Company: Palm Beach County WUD
 Client: Palm Beach County
 Project: 98-66B
 Test Location: Hillsboro Canal
 Test Well: FAMW-1
 Test Date: 12/18/01

WELL DATA

Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
FAMW-1	0	0	□ FAMW-1	0	0

SOLUTION

Aquifer Model: <u>Confined</u>	Solution Method: <u>Theis</u>
T = <u>5.731E+04</u> gal/day/ft	S = <u>1.E-10</u>
Kz/Kr = <u>1.</u>	b = <u>220.</u> ft



CONSTANT RATE TEST

Data Set: C:\TGU\Projects\Hillsboro ASR\Data\FAMW\Pump Tests\CRTAqtest\TRM.aqt
 Date: 02/28/03 Time: 11:25:35

PROJECT INFORMATION

Company: PALM Beach County WUD
 Client: Palm Beach County
 Project: 98-66B
 Test Location: Hillsboro Canal
 Test Well: FAMW-1
 Test Date: 12/18/01

AQUIFER DATA

Saturated Thickness: 220. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
FAMW-1	0	0	□ FAMW-1	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Theis (Recovery)
 T = 7.727E+04 gal/day/ft S' = 1.568

Pressure Test Data

ASR Well



APPENDIX

INJECTION WELL PRESSURE TEST
24" FINAL CASING



Location: Palm Beach County
Well: Hillsboro ASR

Date: February 4, 2002
Contractor: Haskel Corp.

Time	Casing Pressure	Packer Pressure	Time	Casing Pressure	Packer Pressure
12:30	149.0				
12:35	149.0				
12:40	148.5				
12:45	148.2				
12:50	148.0				
12:55	148.0				
13:00	148.0				
13:05	147.8				
13:10	147.5				
13:15	147.5				
13:20	147.2				
13:25	147.0				
13:30	147.0				

Witnessed By: *Dan Phelps* 2/4/02 Pressure Decrease: 1.34%
 Dan Phelps, P.G., FDEP
Results subject to receipt of gas certificate

Certified By: *Thomas G. Uram*
 Thomas G. Uram, P.G., Hydrologist

Water Needed For Pressure Test

Volume from the Compressability of Water

K = Bulk Modulus of Elasticity (compressability of water)	320000
dP = Test Pressure	150
Wt = Wall Thickness	0.5
Dod - OD of Casing	24
h = length of casing to be tested	975
dV = Change in Volume of 1 cubic foot of Water	0.0004688
Vid = Volume of Water Inside the Casing	2813.12
Vc = Volume Change	1.32
Vcg = Volume Change in Gallons	9.86

Volume from the Stretching of the Casing

Ks = Elasticity of Steel	30000000
q = Outward Stress due to Internal Pressure	3600
s = Resulting Strain	0.0001200
Ci = Initial Circumference	75.40
Cf = Final Circumference	75.41
Dn = New Casing Diameter	24.00
Vi = Initial Casing Volume	3063.05
Vf = Final Casing Volume	3063.79
V = Casing Volume Change	0.74
Vg = Casing Volume Change in Gallons	5.50

Total Volume of Water Needed	15.36
-------------------------------------	--------------



Customer: Steven C. Underwood
 Customer Order No.: Verbal (Tom Uram)
 Trecice Order No.: 707824

Temperature: 79 F
 Humidity: N/A
 Instrument Make: Trecice
 Model & Size: D82LFB 2.5"
 Serial No.: G1610
 Stated Accuracy: % of Full Scale +/- 1.50%
 Range: PSI 0 160
Unit of Measure Low High

This instrument has been tested in accordance with ASME B40.1 against a calibration standard traceable to the National Institute of Standards and Technology (NIST).

Calibration Standard: Heise 30"-200 PSI
 Serial No.: CMM 22778
 Test Report No.: _____

NIST Test Report No.: _____

CALIBRATION STANDARD READING	TESTED INSTRUMENT FINAL CALIBRATION READINGS							
	UP SCALE READING	DEVIATION from Standard			DOWN SCALE READING	DEVIATION from Standard		
		PSI	% of Full Scale	Disposition PASS / FAIL		PSI	% of Full Scale	Disposition PASS / FAIL
120.0	118.0	-2.0	-1.25%	PASS	118.0	-2.0	-1.25%	PASS
130.0	128.0	-2.0	-1.25%	PASS	128.0	-2.0	-1.25%	PASS
140.0	138.0	-2.0	-1.25%	PASS	138.0	-2.0	-1.25%	PASS
150.0	148.0	-2.0	-1.25%	PASS	148.0	-2.0	-1.25%	PASS
160.0	158.0	-2.0	-1.25%	PASS	158.0	-2.0	-1.25%	PASS

CAUTION TO USERS: "Pressure gauges and thermometers can be rendered inaccurate during shipment despite care taken in packaging. To insure conformance to the standard grade to which the instrument was manufactured, it should be checked before use." (ASME B40.1, paragraph 3.4.1.12)

Typist: *mm* Test Performed by: Gerald Marzette Date: 02/07/02
 Proofed: *mm* Test Supervisor: John Bieniek Date: 02/07/02

FAMW



APPENDIX

MONITOR WELL PRESSURE TEST
6 5/8" FINAL CASING



Location: Palm Beach County
Well: Hillsboro FAMW

Date: April 6, 2002
Contractor: Haskel Corp.

Time	Casing Pressure	Packer Pressure	Time	Casing Pressure	Packer Pressure
8:10	151.0				
8:15	150.7				
8:20	150.6	230			
8:25	150.4				
8:30	150.3				
8:35	149.0				
8:40	149.0				
8:45	148.0	223			
8:50	148.0				
8:55	147.8	220			
9:00	147.5				
9:05	147.4				
9:10	147.2	215			

Witnessed By: NA
Dan Phelps, P.G., FDEP

Pressure Decrease: 2.52%

Certified By: Thomas G. Uram
Thomas G. Uram, P.G., Hydrologist

Video Survey

ASR Well



ASR VIDEO SURVEY

DATE(S): 24-Feb-02

PROJECT: HILLSBORO ASR

WUD Project No.: 98-66B

CONTRACTOR: Haskel Corp.

PROJECT MANAGER: Brandon Selle

VIDEO CONTRACTOR: MV Geophysical

TOTAL DEPTH: 1,213

DESCRIPTION OF OPERATIONS: _____

Open Hole Video Log

DEPTH IN FEET		OBSERVATIONS
From	To	
1010		Bottom of casing - good cement at casing bottom.
1030		Enlarged borehole
1045	1055	Very rugose - numerous fossils
1058		Formation change - bedding plane
1060	1070	Very vuggular - rugose hole
1108		Laminations
1125		Formation change
1130		Formation change - numerous vugs
1144		Vugular.
1146		Gray banding - bedding plane
1148		Vugular.
1155	1174	Vuggy.
1175	1183	Very vuggular - rugose hole
1184	1191	Very vuggular - rugose hole
1198		Large vugs
1199		Bedding plane
1199	1213	Chalky white appearance - smooth hole
1213		Cloudy water - stop down log



ASR VIDEO SURVEY

DATE(S): 27-Apr-02

PROJECT: HILLSBORO ASR

WUD Project No.: 98-66B

CONTRACTOR: Haskel Corp.

PROJECT MANAGER: Brandon Selle

VIDEO CONTRACTOR: MV Geophysical

TOTAL DEPTH: 1,225

DESCRIPTION OF OPERATIONS: _____

Final Video Log - Post acid

DEPTH IN FEET		OBSERVATIONS
From	To	
0		Ground Level
27		Casing joint
47		Casing joint
87		Casing joint
96		Casing joint
126		Casing joint
168		Casing joint
210		Casing joint
250		Casing joint
291		Casing joint
330		Casing joint
370		Casing joint
410		Casing joint
450		Casing joint
490		Casing joint
530		Casing joint
570		Casing joint
610		Casing joint
650		Casing joint
690		Casing joint
730		Casing joint
770		Casing joint

810		Casing joint
850		Casing joint
890		Casing joint
931		Casing joint
971		Casing joint
1010		Bottom of casing - good cement at casing bottom.
1011	1020	Formation gray/white, vuggy.
1020	1042	Formation white, chalky, slightly rugose.
1042	1058	Very vuggy with large holes.
1058		Gray limestone ring with vugs.
1061	1104	Formation change, white/chalky, smooth gauge hole, tight.
1069	1069	Vuggy.
1104		Formation change, buff colored, rougher hole.
1108		Tan ring.
1112		Tan ring.
1114		Increase in vugs.
1118		Increase in rugosity.
1118	1122	White/chalky, gauge hole.
1122	1124	Vugs.
1125	1142	White/chalky, gauge hole.
1128	1130	Vugs.
1132		Vuggy ring.
1136		Vuggy ring.
1139		Vuggy ring.
1142		Formation change, layers of tan to brown limestone within white/chalky limestone.
		Layers at 1142 - 1143 1167 - 1168
		1147 Large vugs. 1169 Vugs
		1158 - 1159 1170
		1161 1173
		1163 - 1165
1174		Vugs.
1176		Vuggy and rugose.
1178		Bedding plane.
1190		Vuggy and rugose, water cloudy.
1225		Bottom of hole

FAMW



FAMW VIDEO SURVEY

DATE(S): 9-Oct-01

PROJECT: HILLSBORO ASR

WUD Project No.: 98-66B

CONTRACTOR: Haskel Corp.

PROJECT MANAGER: Brandon Selle

VIDEO CONTRACTOR: MV Geophysical

TOTAL DEPTH: 1,628

DESCRIPTION OF OPERATIONS: _____

Open Hole Video Log

DEPTH IN FEET		OBSERVATIONS
From	To	
1002		Bottom of casing - good cement at casing bottom.
1010		Secondary porosity - vugs and fossil casts and molds visible.
1015		Oval hole - looks to be a dual hole.
1056		Vugular.
1060		Washout.
1073		Minor vugs.
1090		Slight washout.
1095		Vuggy.
1100		Increasing in gray colored limestone.
1128		Fracture.
1137	1145	Numerous vugs - rugose hole.
1142		White and chalky looking.
1145	1155	Numerous vugs.
1170	1178	Numerous vugs - rugose hole.
1188	1200	Numerous vugs - rugose hole - increase in gray limestone.
1214		Laminations.
1240		Rugose hole - more vugs.
1243		Laminations.
1260		Formation appears tighter - decrease in vuggy texture.
1275		Laminations.
1323		Washout.
1335		Vugs.

1400	1404	Laminations.
1409		Thin gray limestone beds.
1412		Unconformity with thin laminations.
1422		Formation change - unconformity.
1424	1450	Layers of gray limestone and buff colored limestone.
1455		Laminations.
1456	1460	Layers of gray limestone and buff colored limestone - 1/2 foot intervals.
1460	1462	Laminations.
1464		Bands of gray limestone - laminations.
1485		Bands of gray limestone - appears to be an unconformity.
1488		Bands of gray limestone.
1500		Bands of gray limestone.
1515		Bands of gray limestone - appears to be an unconformity.
1518		
1525	1530	Laminations and bands of gray limestone.
1538		Bands of gray limestone.
1546		Bands of gray limestone.
1551		Bands of gray limestone.
1553		Bands of gray limestone.
1557		Laminations.
1564		Bands of gray limestone.
1566		Bands of gray limestone.
1568		
1594		Laminations.
1598		Fracture.
1615		Formation change - mainly buff colored limestone.
1625		Increasing in gray colored limestone.
1628		Bottom of borehole - fill.



FAMW VIDEO SURVEY

DATE(S): 19-Apr-02

PROJECT: HILLSBORO ASR

WUD Project No.: 98-66B

CONTRACTOR: Haskel Corp.

PROJECT MANAGER: Brandon Selle

VIDEO CONTRACTOR: MV Geophysical
TOTAL DEPTH: 1,230

DESCRIPTION OF OPERATIONS: Final Video Log

DEPTH IN FEET		OBSERVATIONS
From	To	
0		Gate valve.
25		Casing joint.
53		Casing joint.
81		Casing joint.
110		Casing joint.
139		Casing joint.
168		Casing joint.
197		Casing joint.
226		Casing joint.
254		Casing joint.
283		Casing joint.
311		Casing joint.
340		Casing joint.
369		Casing joint.
396		Casing joint.
427		Casing joint.
456		Casing joint.
485		Casing joint.
514		Casing joint.
543		Casing joint.
572		Casing joint.
601		Casing joint.

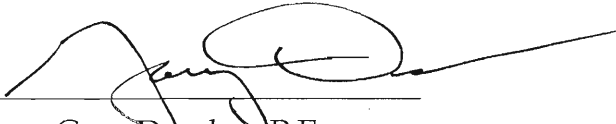
630		Casing joint.
658		Casing joint.
688		Casing joint.
717		Casing joint.
746		Casing joint.
775		Casing joint.
803		Casing joint.
832		Casing joint.
861		Casing joint.
890		Casing joint.
919		Casing joint.
948		Casing joint.
997		Casing joint.
1005		Casing bottom.
1005	1014	Large borehole at base of casing.
1060	1065	Washout.
1098		Vuggy - water entry - turbulent.
1110		Vuggy.
1149		Good flow.
1182	1184	Big borehole - washout.
1190		Cloudy - no flow.
1207		End log - cloudy water.
		Entire borehole very rugose - not gauge.
		Under reamer grooves visible throughout open hole interval.
		Formation appears white and chalky.

**Certificate of Completion,
Well completion Reports,
and As-Built drawings**

**Palm Beach County Water Utilities Department
WTP No. 9 – Hillsboro Canal ASR Well System**

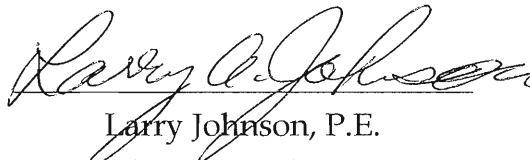
Certification of Completion

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."



Gary Demlan, P.E.
Director, Water Utilities

Date 8/5/03



Larry Johnson, P.E.
Project Engineer

Date 8/5/03



Thomas G. Uram, P.G.
Project Hydrogeologist

Date 8/5/03

WELL COMPLETION REPORT

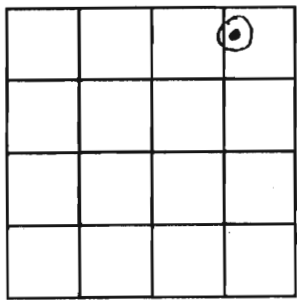
FORM 0124
Rev. 11/90

WELL PERMIT NO. _____
SFWMD WATER USE PERMIT NO. 50-00135-W

Palm Beach County 2065 Prairie Road West Palm Beach FL 33406
City State Zip
Robert McEwen FL-2166 1,010 1,225 ASR-1
Contractor's Signature License No. Completion Date Casing Depth Total Depth Well #

TYPE OF WORK: Construct (X) Repair () Abandon ()
 WELL USE: Domestic Well () Public (X) Monitor () Test ()
 Irrigation () Fire Well () Other _____
 METHOD: Rotary with MUD (X) or Air (X), Cable Tool (), Jet ()
 Casing Driven (), Other _____
 STATIC WATER LEVEL - 35 Ft. below top of casing
 PUMPING WATER LEVEL 19 Ft. after 24 Hrs. at 3,400 GPM
 PUMP SIZE 300 H.P. CAPACITY 4,000 GPM
 PUMP TYPE Subm. INTAKE DEPTH 120
From top of ground

LOCATION
 Located Near _____
 County Palm Beach
NE NE 35 47S 41E
Section Township Range
26°20'01.35" 80°13'21.20"
Latitude-Longitude



Cuttings sent to District? (X) Yes () No
 LOCATE IN SECTION
Note: PWS Wells attach a site map if well location is different from site location on permit application.

Grout	Casing & Screen		Depth (ft)		DRILL CUTTINGS LOG Examine cuttings every 20 ft. or at formation changes Give color, grain size, and type of material Note cavities, depth to producing zones.
	Thick-ness & Depth	Diameter & Depth	From	To	
	48	35	0	30	SAND - Orange to Brown, Fine-gr.
	34	235	30		LIMESTONE - Gray to Y. Brown
	24	1,010	200	200	SHELL - White to Pale Orange
			200	230	LIMESTONE - as above
				230	SHELL - as above
			230		CLAY - Olive Gray
					CLAY - Olive Gray to Yellowish-Gray
					LIMESTONE - Gray, Packstone
			970		SHELL - Lt. Brown to Pale Orange
			970		LIMESTONE - Med to Lt. Olive
				1,060	Gray, Wackestone to Packstone
Number of bags			1,060	1,140	LIMESTONE - Pale Yellowish Brown
			1,140		LIMESTONE - V. Pale Orange
2,202				1,225	Mudstone to Wackestone

Casing: Black Steel (X) Galv. () PVC () Fiberglass ()
 Screen: Type N/A Slot size N/A
 Screened from N/A (ft.) to N/A (ft.)
 Type of grout with % additives _____
 Water: Clear (X) Colored () Sulphur () Salty (X) Iron ()
 Conductivity 6,850 Chlorides 1,740 mg/l

WELL COMPLETION REPORT

FORM 0124
Rev. 11/90

WELL PERMIT NO. _____

SFWMD WATER USE PERMIT NO. 50-00135-W

Palm Beach County 2065 Prairie Road West Palm Beach FL 33406

Robert M' Ewen FL-2166 1,005 1,225 FAMW-1
Contractor's Signature License No. Completion Date Casing Depth Total Depth Well #

TYPE OF WORK: Construct (X) Repair () Abandon ()
WELL USE: Domestic Well () Public () Monitor (X) Test ()
Irrigation () Fire Well () Other _____
METHOD: Rotary with MUD (X) or Air () Cable Tool () Jet ()
Casing Driven () Other _____
STATIC WATER LEVEL -34 Ft. below top of casing
PUMPING WATER LEVEL 50 Ft. after 11.5 Hrs. at 960 GPM
PUMP SIZE N/A H.P. CAPACITY N/A GPM
PUMP TYPE N/A INTAKE DEPTH N/A
From top of ground

LOCATION

Located Near _____

County Palm Beach

NE NE 35 47S 41E
Section Township Range
26° 19' 58.85" 80° 13' 13.37"
Latitude-Longitude

				⊙

LOCATE IN SECTION

Cuttings sent to District? (X) Yes
() No

Note: PWS Wells attach a site map if well location is different from site location on permit application.

Grout	Casing & Screen		Depth (ft)		DRILL CUTTINGS LOG Examine cuttings every 20 ft. or at formation changes. Give color, grain size, and type of material. Note cavities, depth to producing zones.
	Thickness & Depth	Diameter & Depth	From	To	
	34	35	0	30	SAND - Pale Orange to Brown, Fine
	24	220	30	40	SAND - as above w/ SHELL
	14	1,005	40		LIMESTONE - Y. Brown to Gray
	65/8	1,005		210	SHELL - White to Pale Orange
				210	LIMESTONE - Gray, flackstone to Greenstone
					CLAY - Yellow Brown, Low Perm
				280	SHELL - White to Pale Orange, Hash
			280	670	CLAY - Olive to Y. Gray
				670	CLAY - P. Olive to Y. Gray
				940	LIMESTONE - Y. Gray, Microcryst.
			940	995	LIMESTONE - Gray, Wackestone/flack
			995	1215	LIMESTONE - Lt. Gray, Wacke/flack
			1215		LIMESTONE - White to Pale Orange
586				1650	flackstone to Wackestone

Casing: Black Steel () Galv. () PVC () Fiberglass (X)

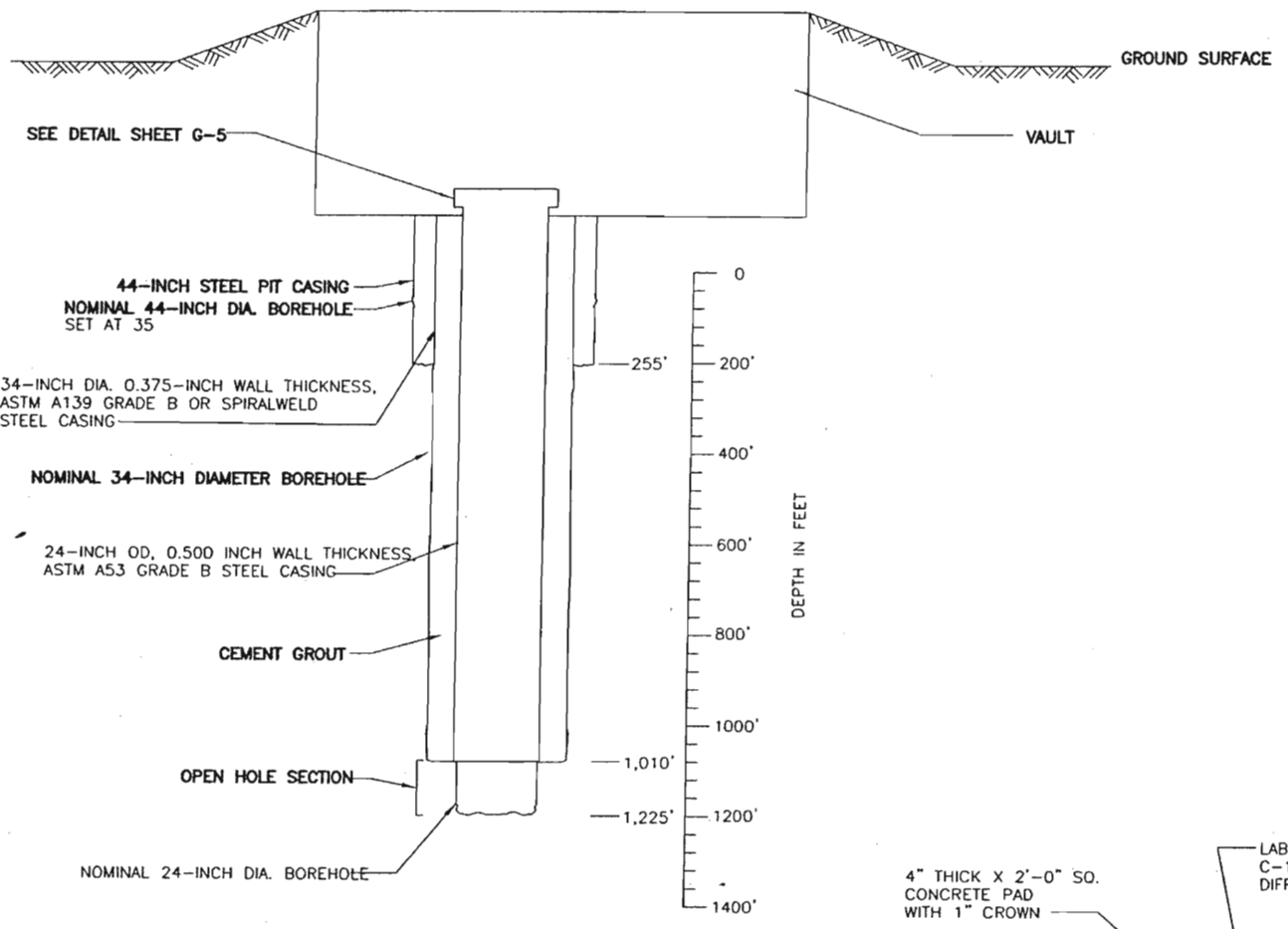
Screen: Type N/A Slot size N/A

Screened from N/A (ft.) to N/A (ft.)

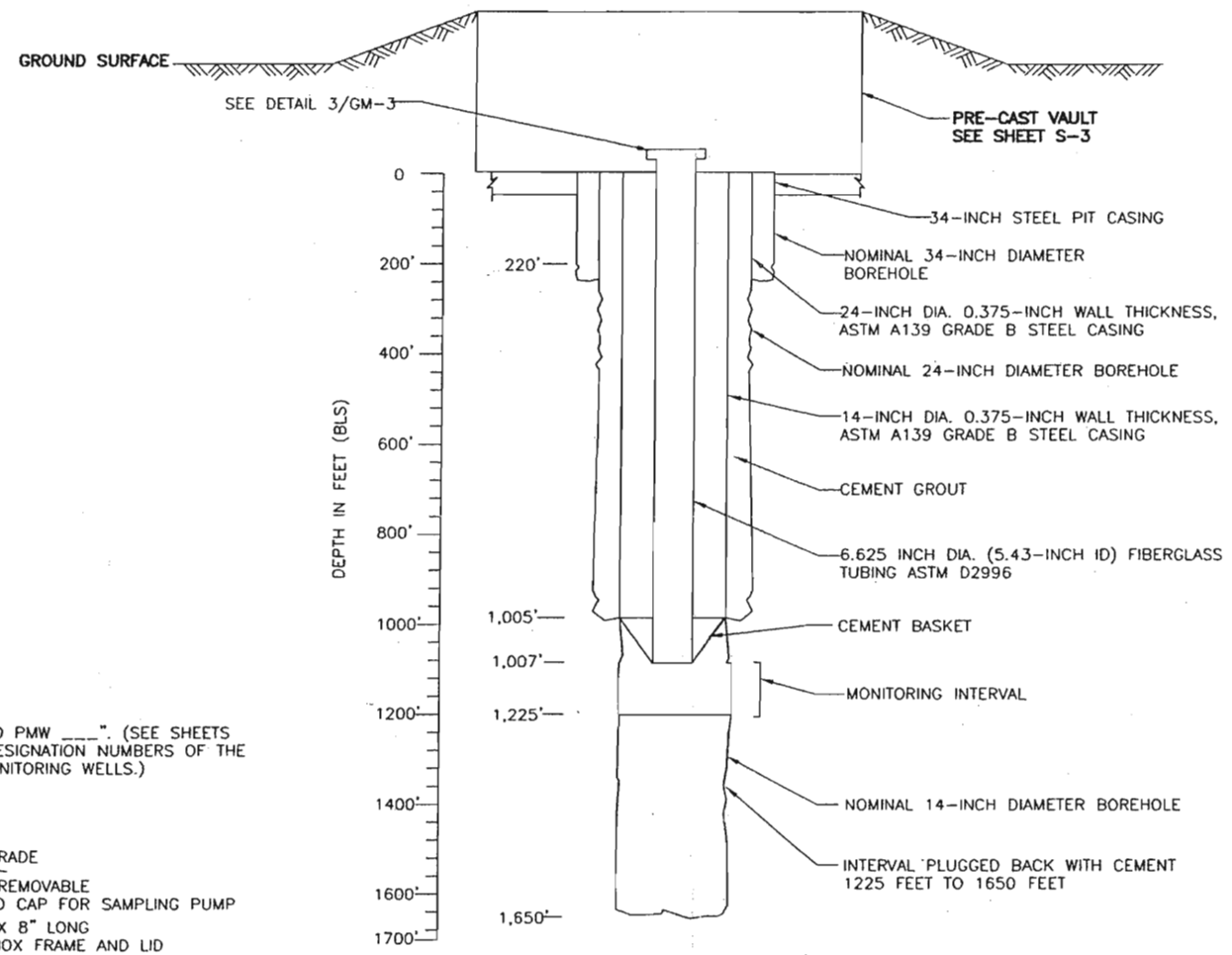
Type of grout with % additives _____

Water: Clear (X) Colored () Sulphur () Salty (X) Iron ()

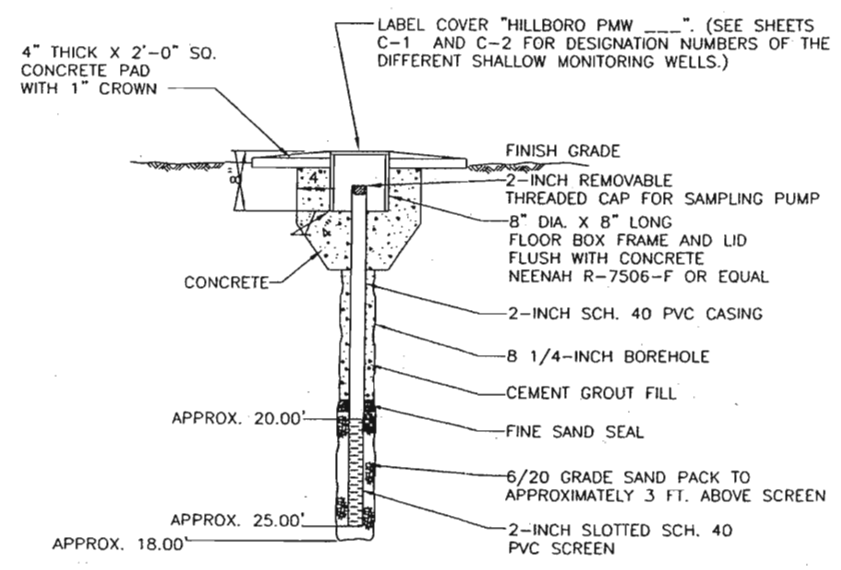
Conductivity _____ Chlorides _____ mg/l



FLORIDAN AQUIFER ASR WELL 1
VAR



FLORIDAN AQUIFER MONITOR WELL (FAMW) 3
VAR



SHALLOW MONITOR WELL 2
VAR

W:\Design\Projects\198-066 (WTP 9 Wellfield Exp)\198-66 HILLSBORO ASR (VOL 2)\198-066_g05.dwg Model Last Modified: Fri, Jul 11, 2003 - 9:40am

REV	DATE	BY	DESCRIPTION
1	6-16-03		RECORD DRAWING

SCALE: N.T.S.
 WARNING: IF THIS BAR DOES NOT MEASURE 1 INCH THEN DRAWING IS NOT TO SCALE.

DESIGNED: H. Hickman
 DRAWN: J. ZANNOZA
 CHECKED: G. HART

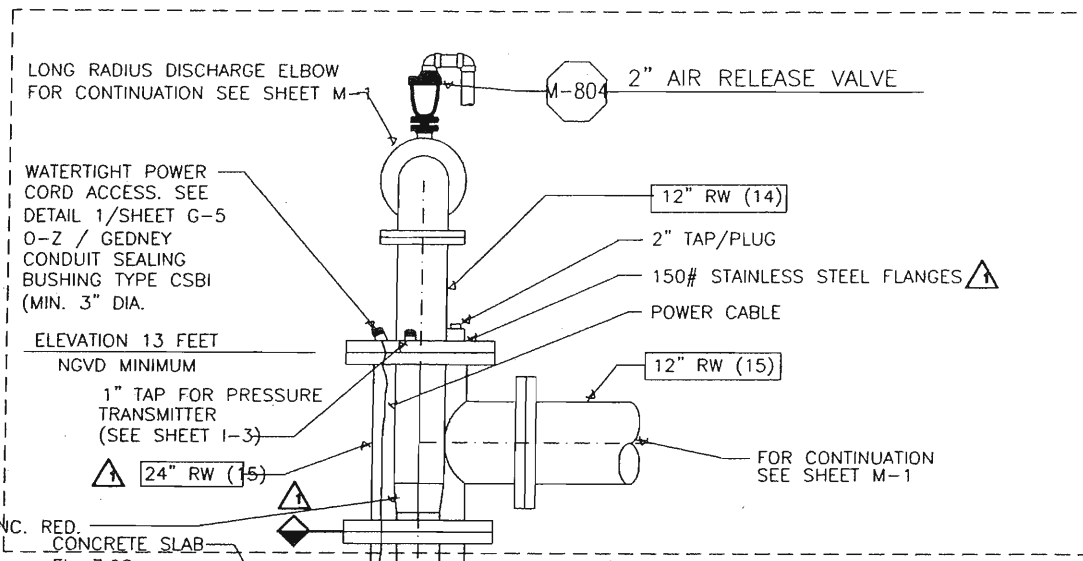
Kimley-Horn and Associates, Inc.
 4431 Embury Dr.
 West Palm Beach, Florida 33407
 Certificate of Authorization Number 686

MONTGOMERY WATSON
 480 BURGESS CORPORATE PARKWAY
 SUITE 300 SUNRISE, FLORIDA 33305
 Certificate of Authorization Number 6775

Palm Beach County
 Water Utilities Department

PALM BEACH COUNTY
 HILLSBORO ASR WELL
 WELL CASING AND CONSTRUCTION DETAILS

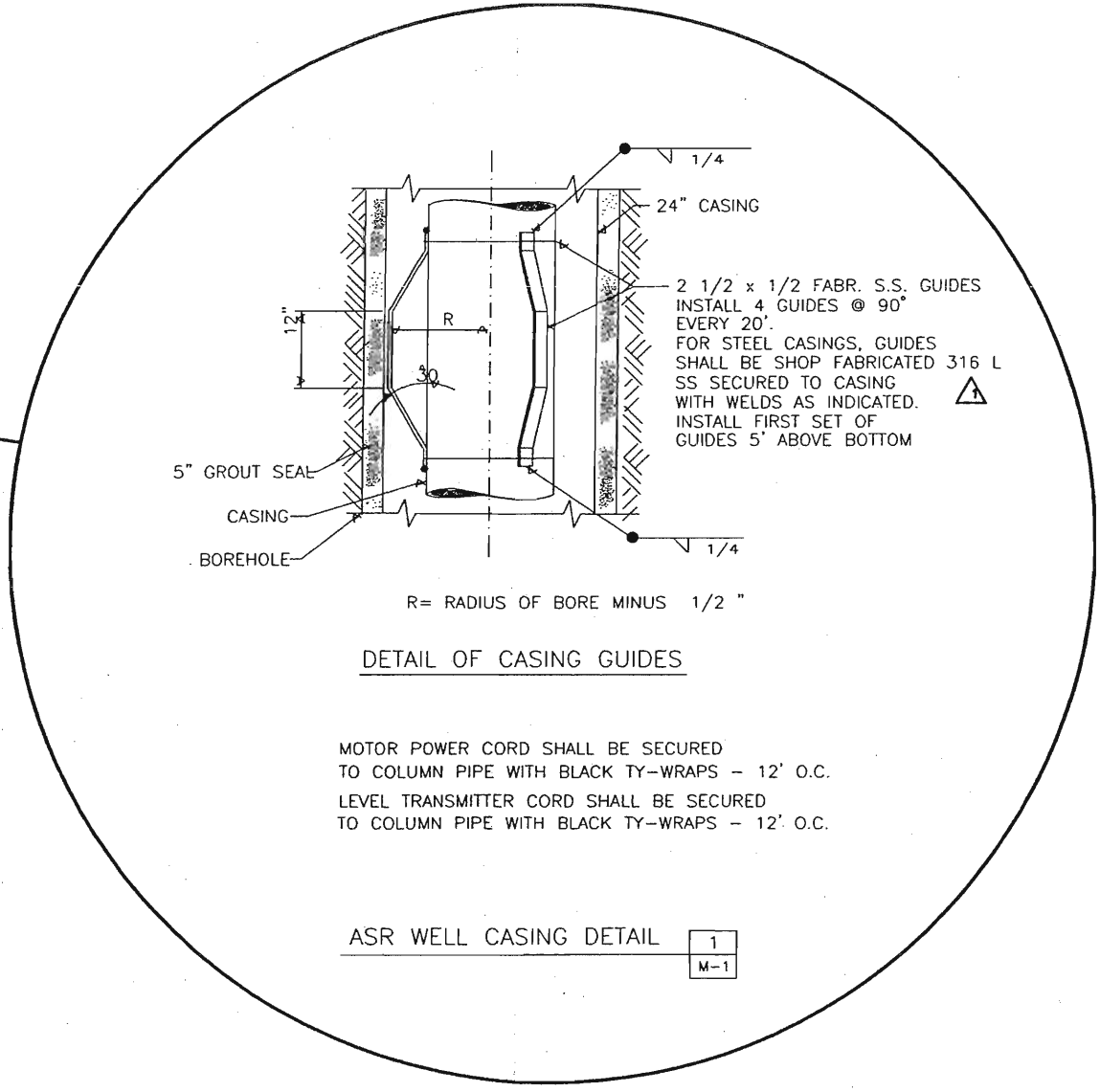
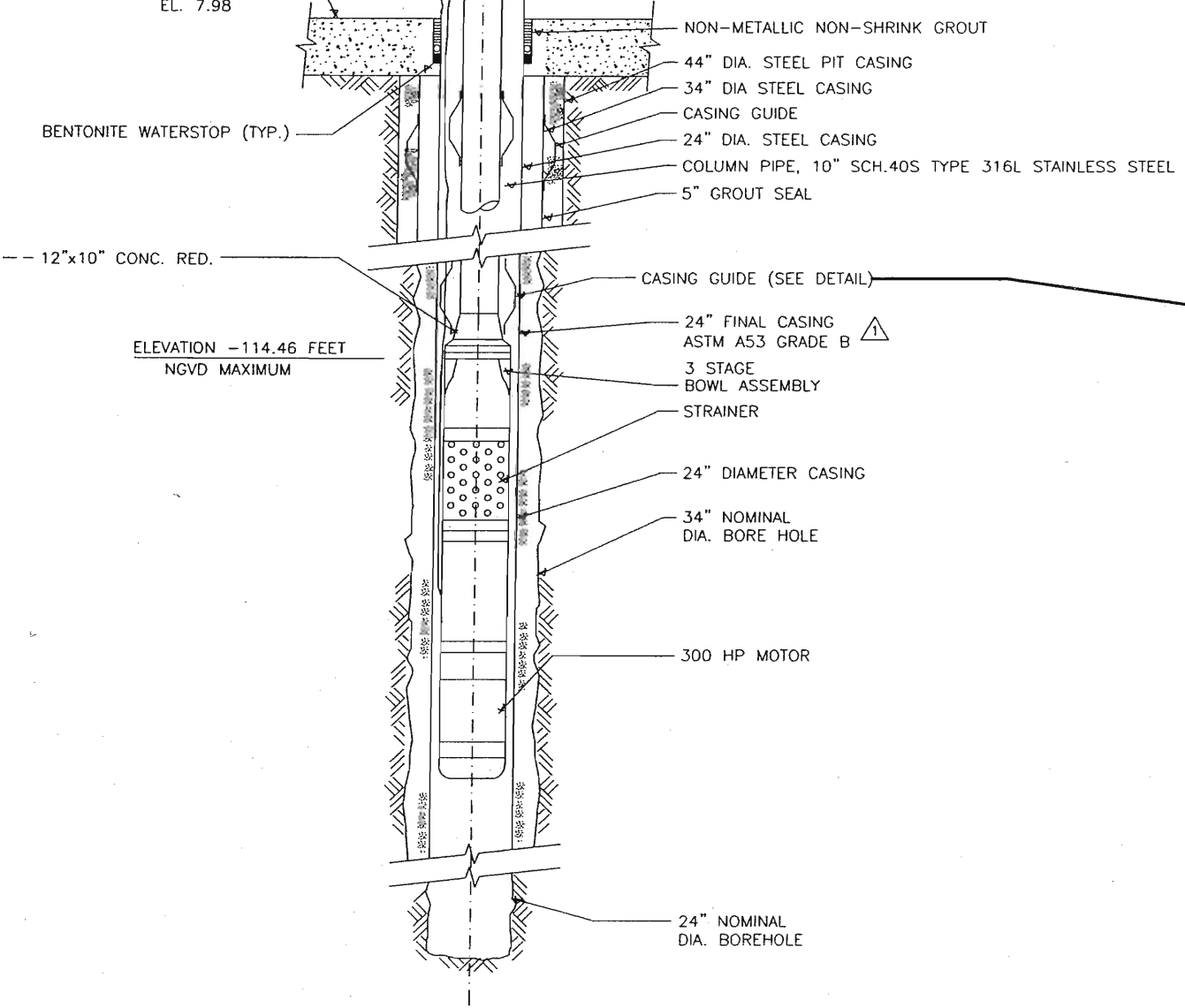
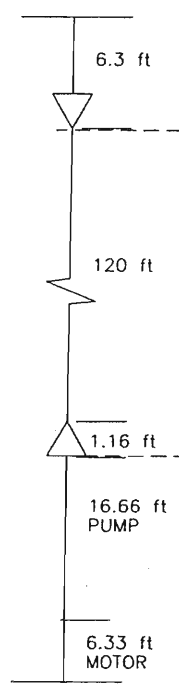
SHEET G-5



CAUTION

CONTRACTOR SHALL EXERCISE EXTREME CARE WHEN INSTALLING PUMP TO AVOID DAMAGE TO MOTOR POWER CORD AND LEVEL TRANSMITTER CORD.

SEE SHEET M-1 FOR DIMENSIONS



DETAIL OF CASING GUIDES

MOTOR POWER CORD SHALL BE SECURED TO COLUMN PIPE WITH BLACK TY-WRAPS - 12' O.C.
 LEVEL TRANSMITTER CORD SHALL BE SECURED TO COLUMN PIPE WITH BLACK TY-WRAPS - 12' O.C.

ASR WELL CASING DETAIL

1
M-1

W:\Design\Projects\98-066 (WTP 9 Wellfield Exp)\98-66 HILLSBORO ASR (VOL 2)\98-066_g06.dwg\Model Last Modified: Fri, Jul 11, 2003 - 9:46am

REV	DATE	BY	DESCRIPTION
6-16-03		JAZ	RECORD DRAWING
11/11/00		JAZ	ADDENDUM #1

SCALE:
N.T.S.

WARNING
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED **J. McMath**
 DRAWN **J. ZARAGOZA**
 CHECKED **G. HART**

Kimley-Horn and Associates, Inc.
 4431 Babcock Road
 West Palm Beach, Florida 33407
 Certificate of Authorization Number 000

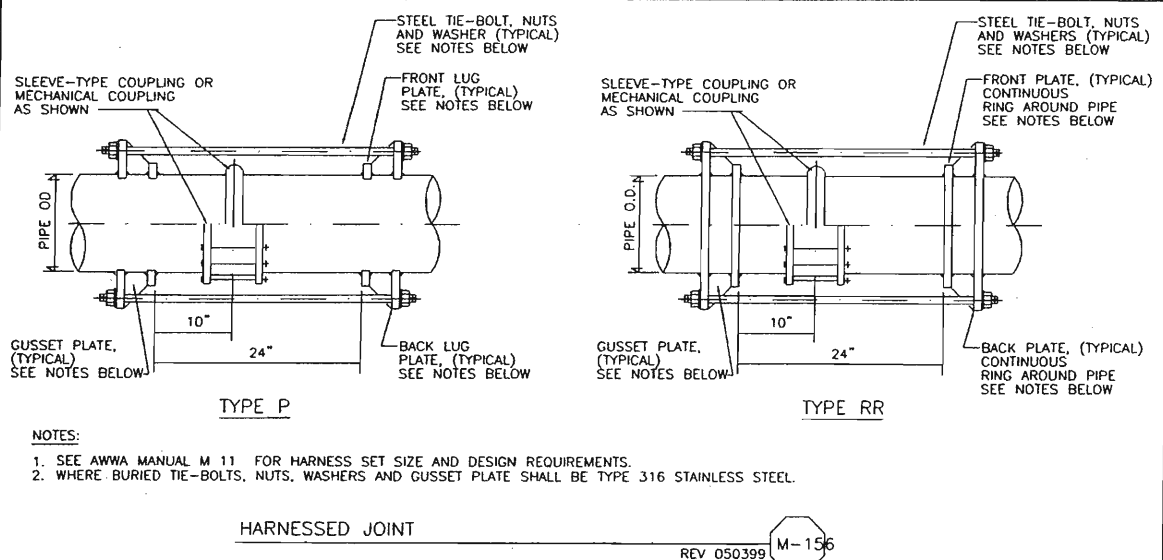
MONTGOMERY WATSON
 400 SHERWOOD CORPORATE PARKWAY
 SUITE 300 PALM BEACH, FLORIDA 33408
 Certificate of Authorization Number 6773

Palm Beach County Water Utilities Department

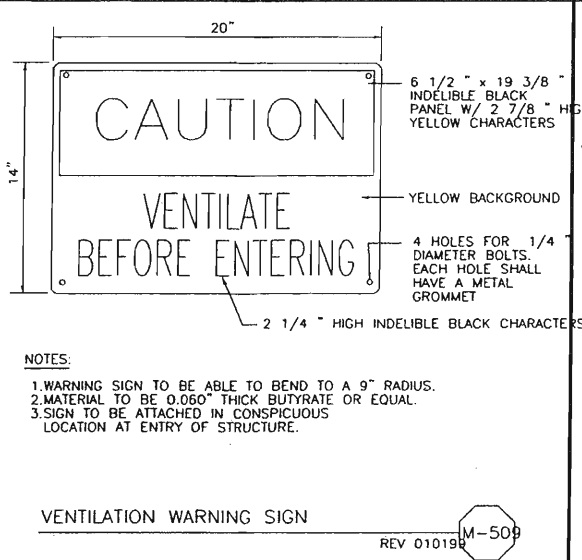
PALM BEACH COUNTY
 HILLSBORO ASR WELL

ASR WELLHEAD AND CASING DETAIL

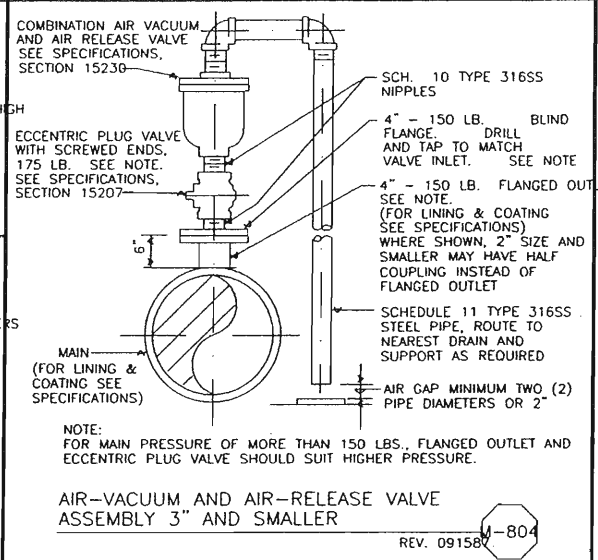
SHEET
G-6



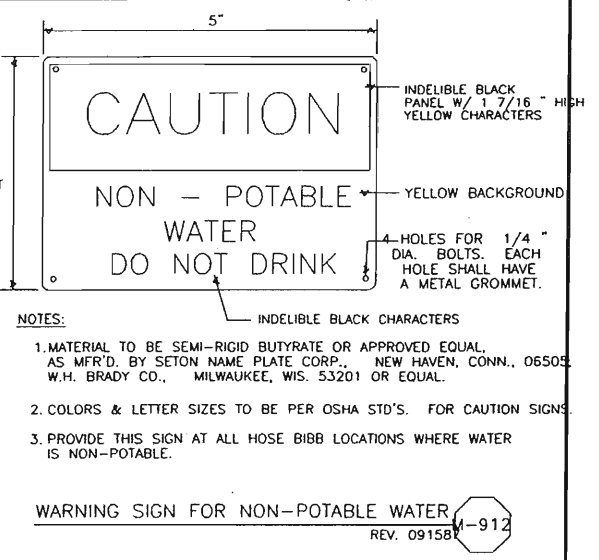
- NOTES:**
- SEE AWWA MANUAL M 11 FOR HARNESS SET SIZE AND DESIGN REQUIREMENTS.
 - WHERE BURIED TIE-BOLTS, NUTS, WASHERS AND GUSSET PLATE SHALL BE TYPE 316 STAINLESS STEEL.



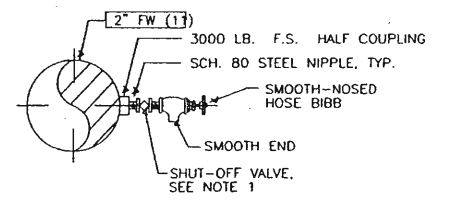
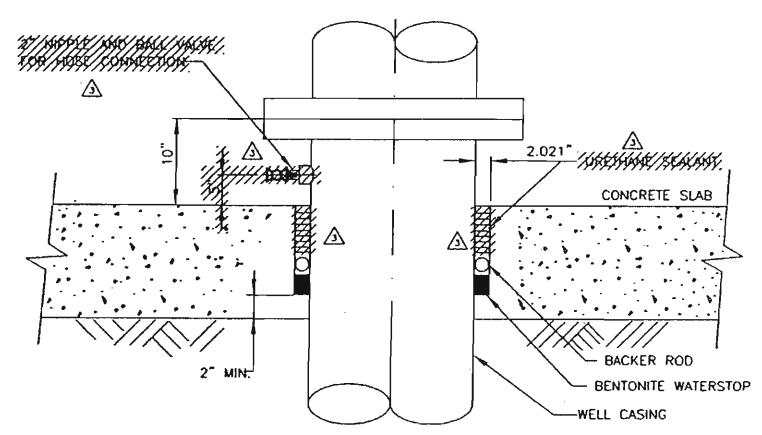
- NOTES:**
- WARNING SIGN TO BE ABLE TO BEND TO A 9" RADIUS.
 - MATERIAL TO BE 0.060" THICK BUTYRATE OR EQUAL.
 - SIGN TO BE ATTACHED IN CONSPICUOUS LOCATION AT ENTRY OF STRUCTURE.



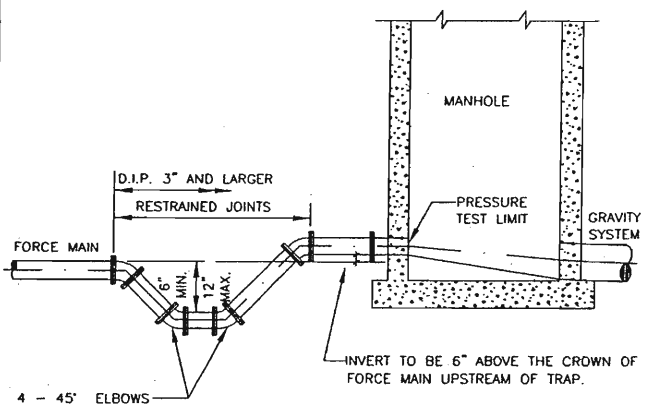
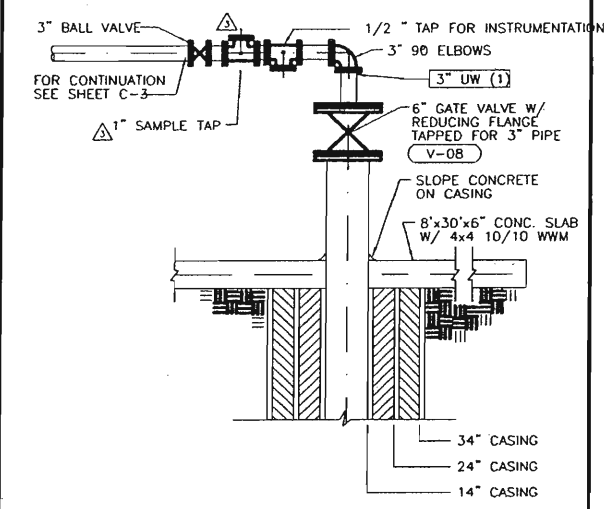
- NOTE:**
- FOR MAIN PRESSURE OF MORE THAN 150 LBS., FLANGED OUTLET AND ECCENTRIC PLUG VALVE SHOULD SUIT HIGHER PRESSURE.



- NOTES:**
- MATERIAL TO BE SEMI-RIGID BUTYRATE OR APPROVED EQUAL, AS MFR'D. BY SETON NAME PLATE CORP., NEW HAVEN, CONN., 06505, W.H. BRADY CO., MILWAUKEE, WIS. 53201 OR EQUAL.
 - COLORS & LETTER SIZES TO BE PER OSHA STD'S. FOR CAUTION SIGNS.
 - PROVIDE THIS SIGN AT ALL HOSE BIBB LOCATIONS WHERE WATER IS NON-POTABLE.



- NOTES:**
- ALL HOSE BIBBS TO BE CONTROLLED BY INDIVIDUAL SHUT-OFF VALVES (BALL OR PLUG VALVES), EXCEPT WHERE INDIVIDUALLY CONTROLLED BRANCH MAIN SERVES HOSE BIBBS ONLY.
 - FOR SIZE AND LOCATION SEE DRAWINGS.
 - PROVIDE WARNING SIGN, WHEN USED FOR NON-POTABLE WATER
 - SEE SPECIFICATIONS SECTIONS 15430.



- NOTES:**
- FORCE MAIN TO ENTER MANHOLE AS CLOSE AS POSSIBLE TO 180 TO GRAVITY OUTLET.
 - THE INVERT LEVEL OF FORCE MAIN AT POINT OF ENTRY SHALL BE 6" ABOVE INVERT OF MANHOLE.
 - CORE ENTRY ONLY INTO EXISTING MANHOLES.
 - TRAP TO BE LOCATED PRIOR TO DROP INTO MANHOLE AND OUTSIDE OF PAVED AREAS.
 - USE TWO 45° ELBOWS PAST TRAP IF ELEVATION DROP AS REQUIRED TO ENTER MANHOLE.
 - FLOW CHANNEL REQUIRED.
 - MANHOLE AND FLOW CHANNEL TO BE COATED WITH AN APPROVED CORROSION BARRIER SYSTEM.
 - USE MEGALUGS OR APPROVED EQUAL TO RESTRAIN TRAP JOINTS.

VALVE SCHEDULE							
VALVE	LOCATION	TYPE	ENDS	SIZE (INCHES)	OPERATOR	CLOSURE TIME	REMARKS
FCV-1	ASR WELL RECHARGE LINE	HIGH PERFORMANCE BUTTERFLY	FLANGED	10"	MOTOR	60 SEC.	FLOW CONTROL, AC MODULATING
FCV-2	ASR WELL RECOVERY LINE	HIGH PERFORMANCE BUTTERFLY	FLANGED	10"	MOTOR	60 SEC.	FLOW CONTROL, AC MODULATING
FCV-3	ASR WELL RECOVERY LINE	POLYJET SLEEVE VALVE	FLANGED	10"	MOTOR	60 SEC.	FLOW CONTROL, AC MODULATING
V-01	ASR WELL RECHARGE/RECOVERY LINE	AWWA BUTTERFLY	FLANGED	16"	MANUAL	---	BURIED
V-03	ASR WELL CANAL DISCHARGE LINE	RESILIENT SEATED GATE	FLANGED	10"	MANUAL	---	ISOLATION
V-02	ASR WELL RECHARGE/RECOVERY LINE	RESILIENT SEATED GATE	FLANGED	12"	MANUAL	---	ISOLATION
V-04	ASR WELL CANAL DISCHARGE LINE	SWING CHECK VALVE	FLANGED	12"	---	---	---
V-05	ASR WELL RECOVERY LINE	RESILIENT SEATED GATE	FLANGED	12"	MANUAL	---	ISOLATION
V-06	ASR WELL DISCHARGE	RESILIENT SEATED GATE	FLANGED	12"	MANUAL	---	ISOLATION
V-07	ASR WELL DISCHARGE	SWING CHECK VALVE	FLANGED	12"	---	---	---
V-08	FAMW DISCHARGE	GATE VALVE	FLANGED	6"	MANUAL	---	---
V-09	CANAL OUTFALL	DUCKBILL CHECK VALVE	SLEEVED	20"	---	---	---
V-10	ASR WELL RECOVERY/RECHARGE LINE	CUSHIONED SWING CHECK VALVE (OIL-DAMPED)	FLANGED	10"	---	---	SURGE BYPASS
V-11	YARD/RAW WATER MAIN	AWWA BUTTERFLY	FLANGED	24"	MANUAL	---	EXISTING
V-12	CANAL OUTFALL	DUCKBILL CHECK VALVE	FLANGED	6" I.D.	---	---	---
V-13	CANAL OUTFALL	DUCKBILL CHECK VALVE	FLANGED	6" I.D.	---	---	---

REV	DATE	BY	DESCRIPTION
6-18-03			RECORD DRAWING
3/7/01		JZ	AERATION MODIFICATIONS PER NPDES PERMIT
11/11/00		JZ	ADDENDUM #1

SCALE:

WARNING

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED: J. McElchon
 DRAWN: J. ZARAGOZA
 CHECKED: G. HART

Kimley-Horn and Associates, Inc.
 4431 Embury Dr.
 West Palm Beach, Florida 33407
 Certificate of Authorization Number 006

MONTGOMERY WATSON
 400 SHAWNEE CORPORATE PARKWAY
 SUITE 300 SUNRISE, FLORIDA 33335
 Certificate of Authorization Number 6773

Palm Beach County
 Water Utilities Department

PALM BEACH COUNTY
 HILLSBORO ASR WELL

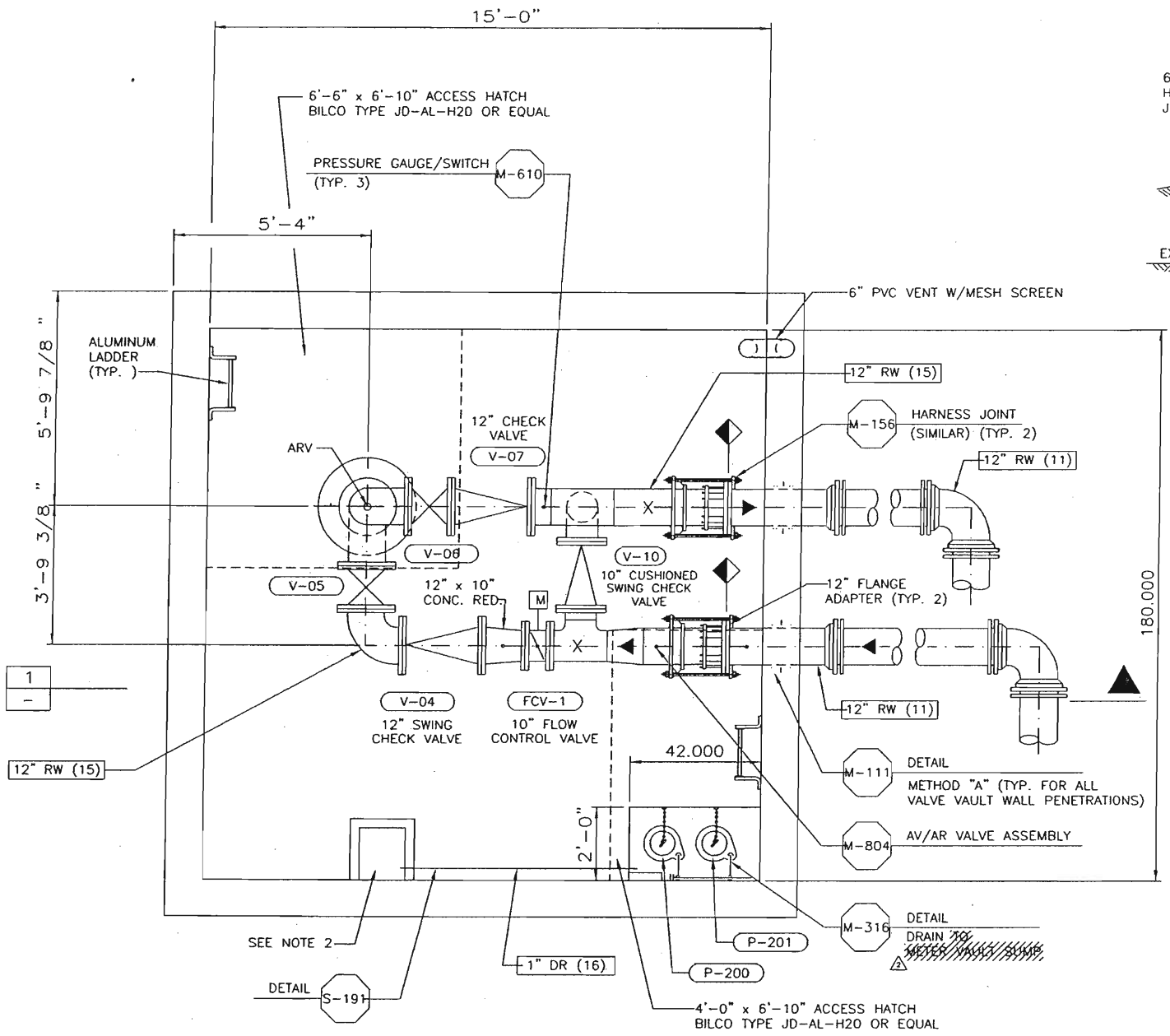
DETAILS AND VALVE SCHEDULE

SHEET

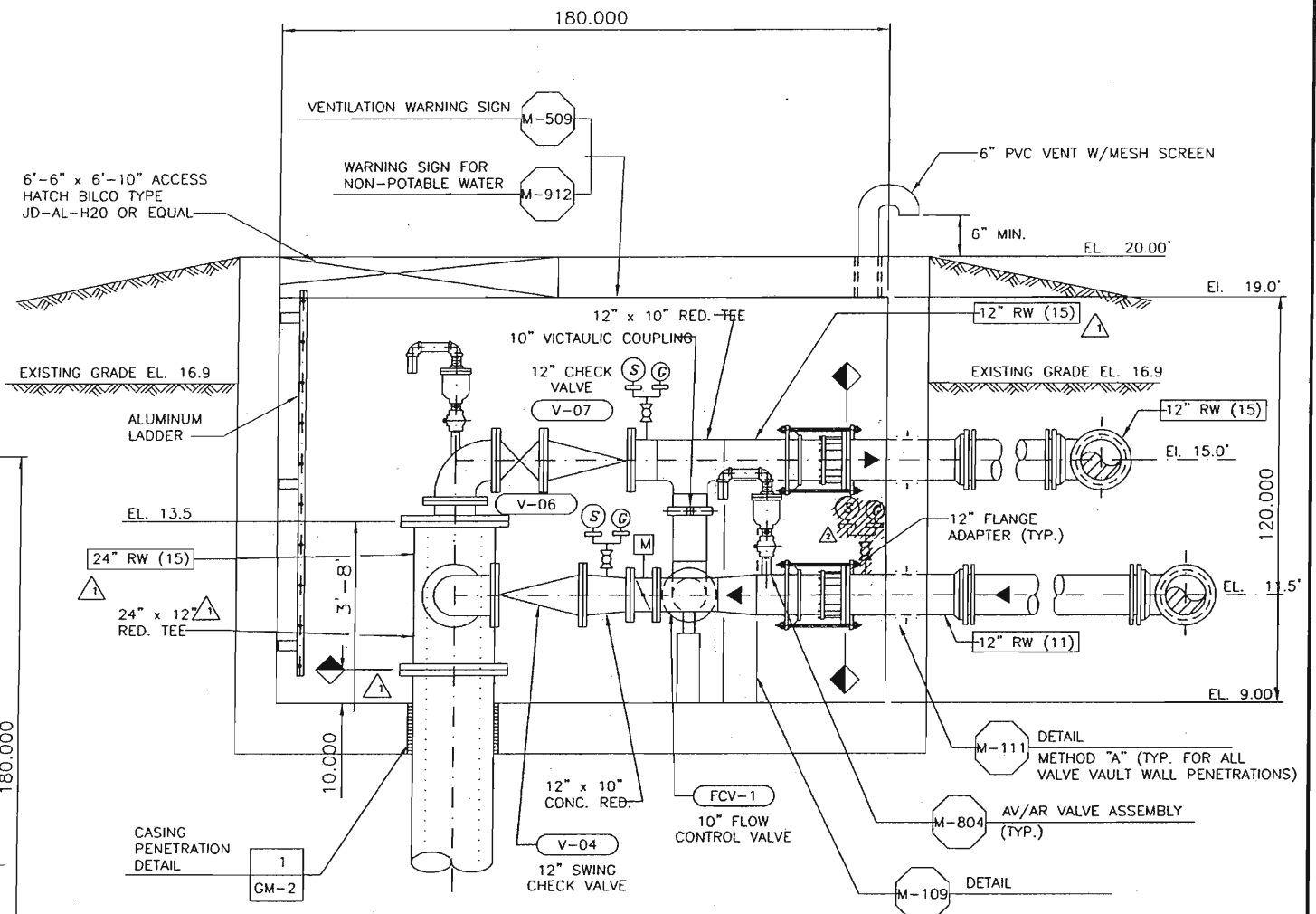
GM-2

W:\Design\Projects\98-066 (WTP 9 Wellfield Exp)\98-066 HILLSBORO ASR (VOL 2)\98-066 gm02.dwg Model Last Modified: Mon Jul 14, 2003 - 10:53am

W:\Design\Projects\98-066 (WTP 9 Wellfield Exp)\98-066 HILLSBORO ASR (VOL 2)\98-066_m01.dwg\Model Last Modified: Mon, Jul 14, 2003 - 10:55am



PLAN
SCALE: 1/2" = 1'-0"



SECTION A
SCALE: 1/2" = 1'-0"

- NOTES:
1. PROVIDE INSULATED SLEEVE AND WASHERS FOR HARNESS RODS.
 2. DEHUMIDIFIER SHALL BE CAPABLE OF REMOVING 15 PINTS OF WATER PER 24 HRS AT 80 F AMBIENT TEMPERATURE - 60 % RELATIVE HUMIDITY. UNIT SHALL HAVE AN ADJUSTABLE HUMIDISTAT. WATER COLLECTOR SHALL HAVE A THR'D. CONNECTION PROVIDED FOR HOSE DRAIN. DEHUMIDIFIER SHALL OPERATE ON 115 VAC, 60 Hz, BE UL LISTED, BE CERTIFIED IN ACCORDANCE WITH AMERICAN NATIONAL STANDARD B149.1 (TYP. 2, SEE SHEET M-2)

NOTE:
REFER TO BROWN & PHILLIPS
RECORD DRAWINGS FOR STATIONS
AND ELEVATIONS.

REV	DATE	BY	DESCRIPTION
1	8/16/03	JAZ	RECORD DRAWING
2	11/11/00	JAZ	ADDENDUM #1

SCALE:	0 1/2 1
WARNING	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED	J. Molohan
DRAWN	J. ZARAGOZA
CHECKED	G. HART

Kimley-Horn and Associates, Inc.
4431 Embury Dr.
West Palm Beach, Florida 33407
Certificate of Authorization Number 088

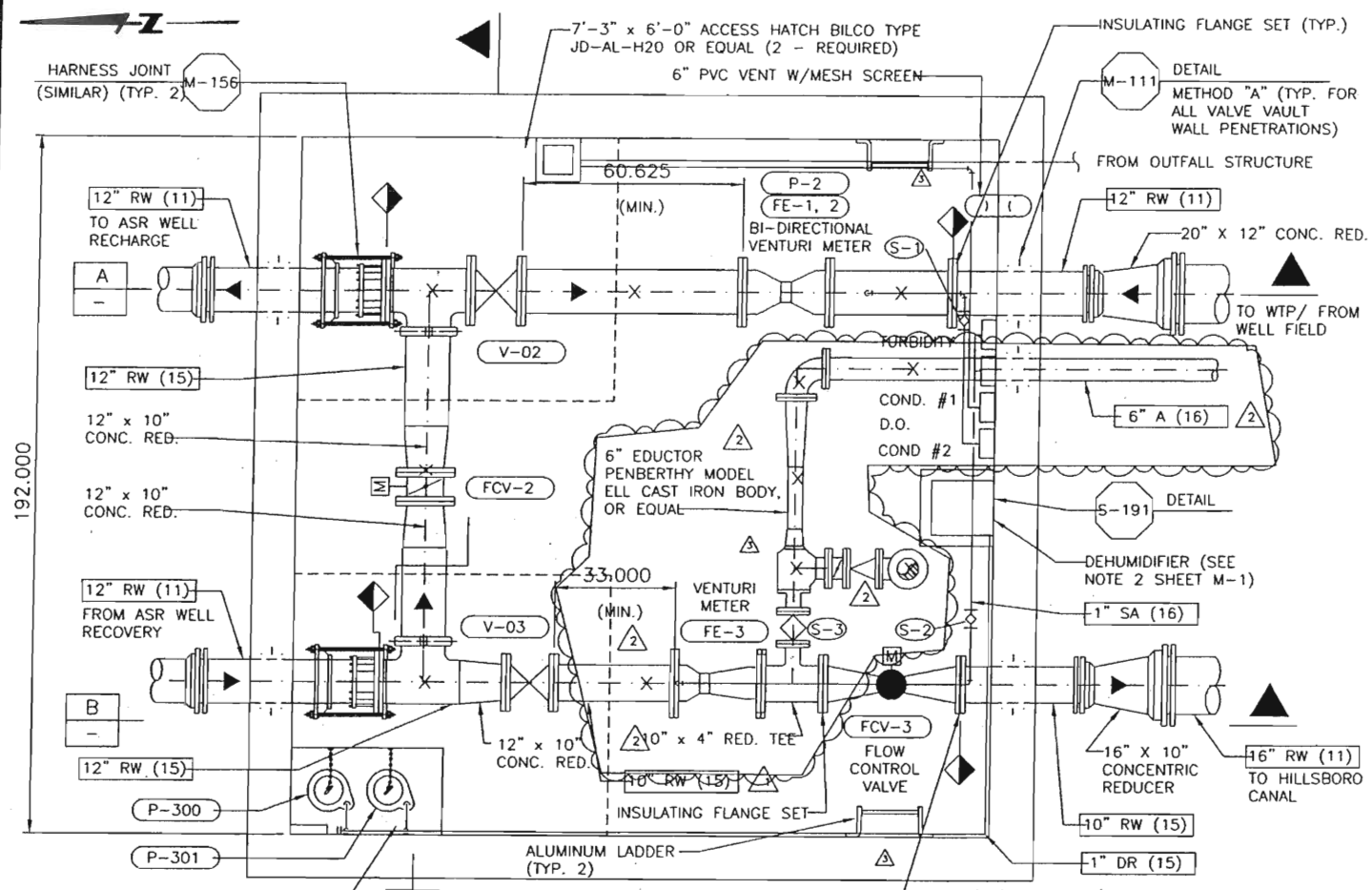
MONTGOMERY WATSON
480 SHOREWAY CORPORATE PARKWAY
SUITE 300 SUNRISE, FLORIDA 33325
Certificate of Authorization Number 6773

Palm Beach County
Water Utilities Department

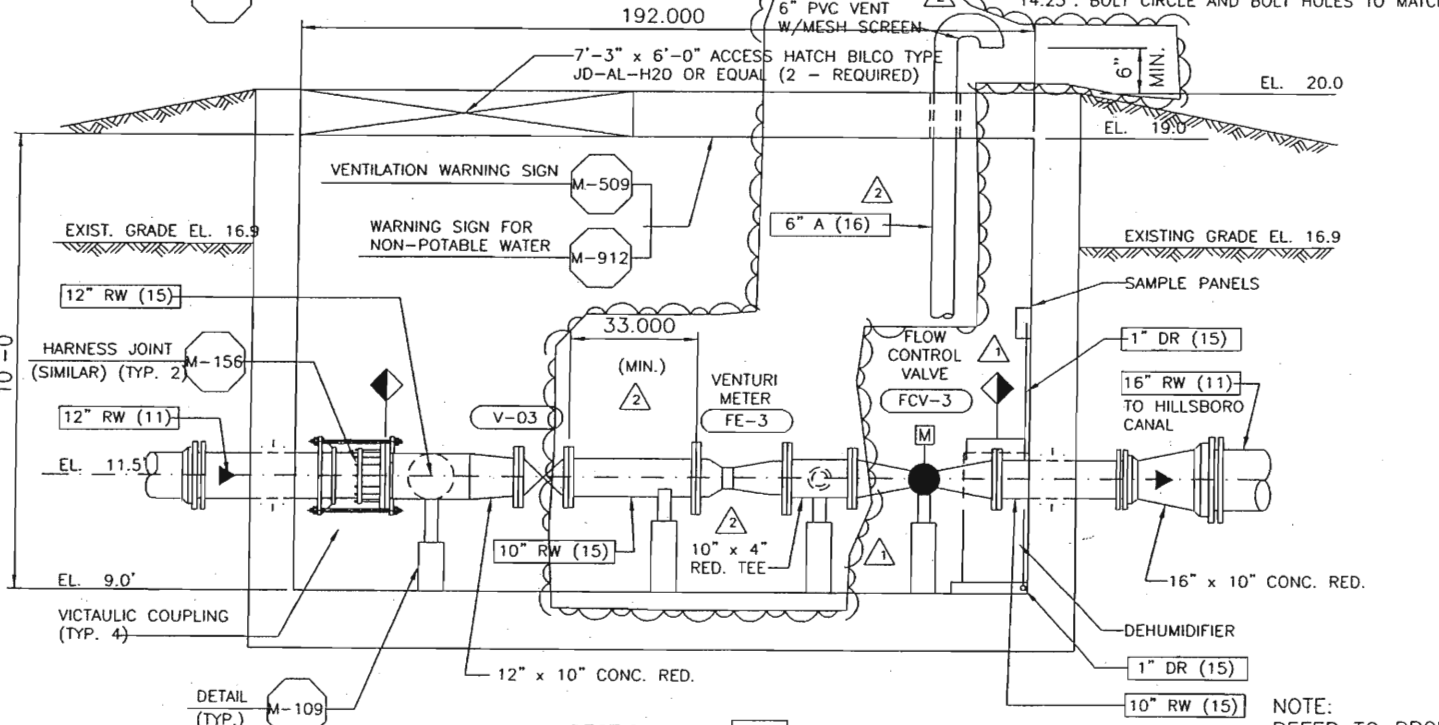
PALM BEACH COUNTY
HILLSBORO ASR WELL
ASR WELL PLAN AND SECTION

SHEET
M-1

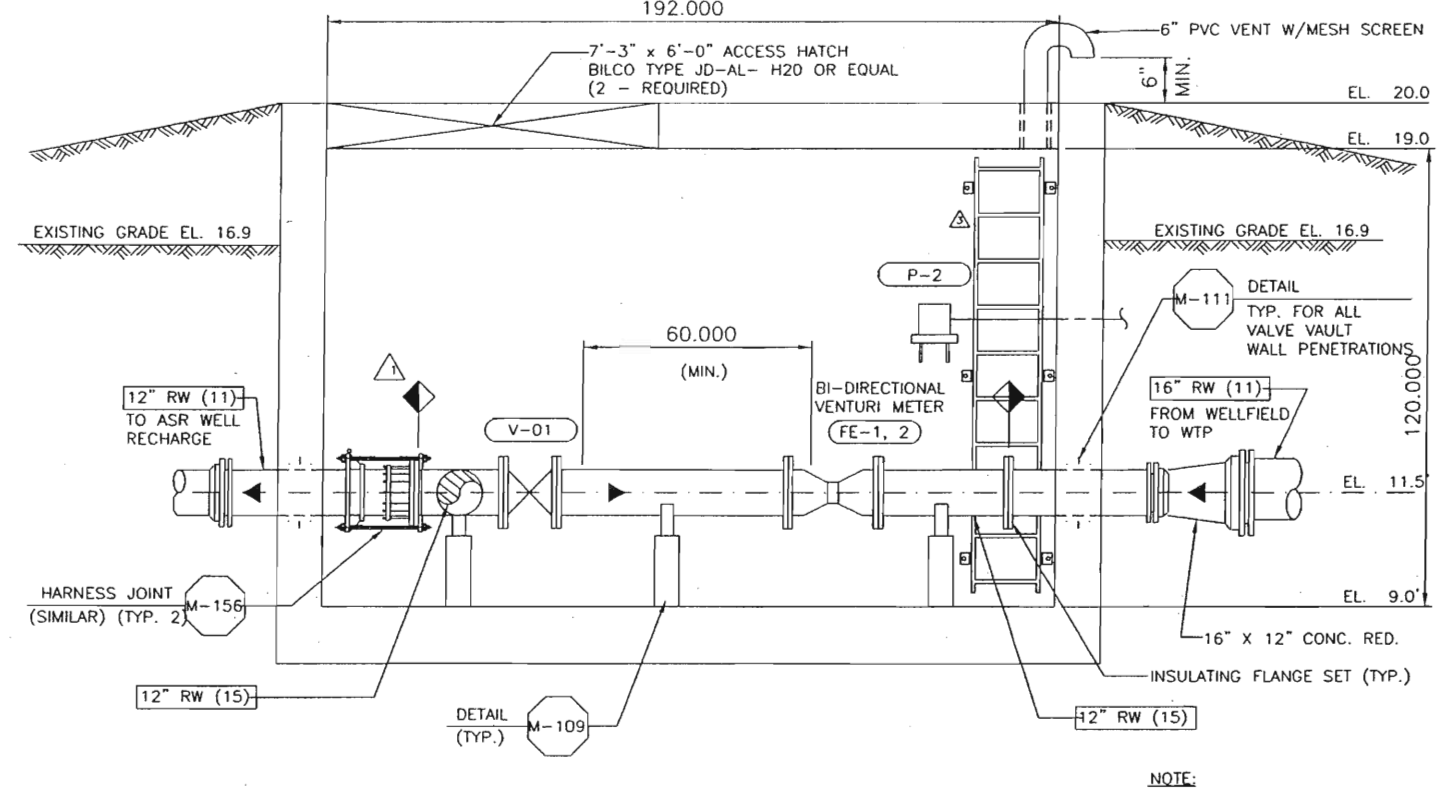
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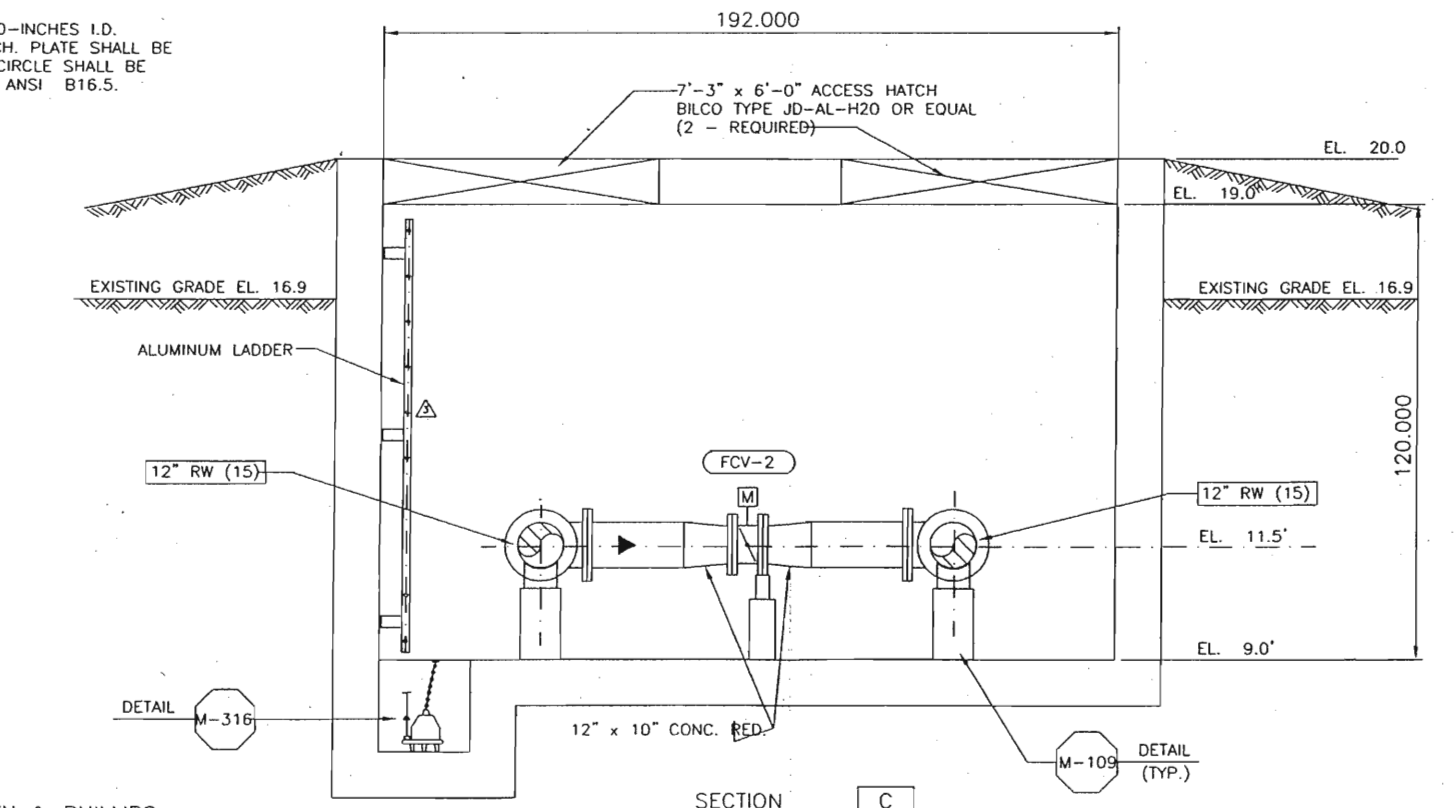
PLAN
SCALE: 1/2" = 1'-0"



SECTION B
SCALE: 1/2" = 1'-0"



SECTION A
SCALE: 1/2" = 1'-0"



SECTION C
SCALE: 1/2" = 1'-0"

NOTE:
REFER TO BROWN & PHILLIPS
RECORD DRAWINGS FOR STATIONS
AND ELEVATIONS.

NOTE:
1. PROVIDE INSULATED SLEEVE
AND WASHERS FOR HARNESS RODS.

REV	DATE	BY	DESCRIPTION
6-18-03			RECORD DRAWING
3/7/01		JAZ	AERATION MODIFICATIONS PER NPDES PERMIT
11/11/00		JAZ	ADDENDUM #1

SCALE:	WARNING
0 1/2 1	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED	J. Malahan
DRAWN	J. ZARAGOZA
CHECKED	G. HART

Kimley-Horn
and Associates, Inc.
4431 Embury Drive
West Palm Beach, Florida 33407
Certificate of Authorization Number 898

MONTGOMERY WATSON
480 SHIRAZ CORPORATE PARKWAY
SUITE 300 SUNRISE, FLORIDA 33325
Certificate of Authorization Number 6775

Palm Beach County
Water Utilities Department

PALM BEACH COUNTY
HILLSBORO ASR WELL
VENTURI METER AND CONTROL VALVE VAULT

SHEET
M-2

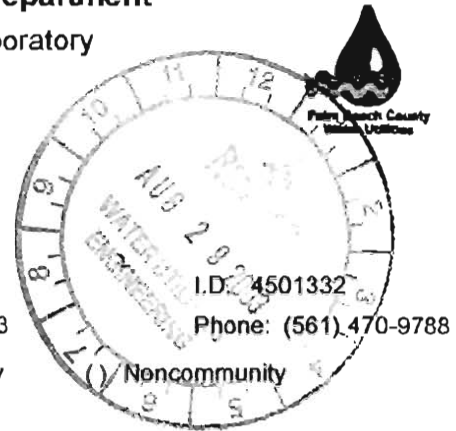
**Composite Raw Water
(Injectate) Quality Analysis**



Palm Beach County Water Utilities Department

Water \ Wastewater Testing Laboratory

13026 Jog Rd., Bldg. K
Delray Beach, FL 33446
(561) 638-5000



Report Date: 8-28-2003

Report ID: 560 -2003

System Name: Palm Beach County Water Utility

System 9

Address: 22438 S.W. 7th Street

Boca Raton, FL. 33433

Type (check one): Community

Nontransient Noncommunity

Noncommunity

SAMPLE INFORMATION

Sample Date: 6/23/2003

Sample Time: 10:15:00 AM

Sample Location: Raw Composite

Sampler Name and Phone #: NF/RMS

(561) 638-5000

Sampler's Signature: _____

Ramesh Sadaranga

Title: Laboratory Assistant \ Tech.

- Check Type(s) Distribution Recheck of MCL Resample of Lab Invalidated Sample(s)
- Clearance Thm Max Res Time Plant Tap
- Distrib entry pt Raw Composite of Multiple Sites

LABORATORY CERTIFICATION INFORMATION

Lab Name: Palm Beach County Water Utilities Department

Address: 13026 Jog Road, Bldg. K

Delray Beach, FL 33446

Phone #: (561) 638-5000

DOH#: E56090 Expiration Date: 6/30/2004

ANALYSIS INFORMATION SAMPLE NUMBER AI08561

Date Sample(s) Received: 6/23/2003

Group(s) Analyzed Results attached for compliance with 62-550, F.A.C.:

- | | | | |
|---|--|--|---|
| <input type="checkbox"/> Nitrate Onl | <input type="checkbox"/> Nitrite Only | <input type="checkbox"/> Asbestos Only | <input checked="" type="checkbox"/> Trihalomethanes |
| Inorganics-- | Volatile Organics-- | Secondaries-- | Pesticides / PCBs |
| <input checked="" type="checkbox"/> All 17 | <input checked="" type="checkbox"/> All 21 | <input checked="" type="checkbox"/> All 14 | <input type="checkbox"/> All 30 |
| <input type="checkbox"/> Partial | <input type="checkbox"/> Partial | <input type="checkbox"/> Partial | <input checked="" type="checkbox"/> Partial |
| Group I | Group II | Group III | Radiochemicals-- |
| Unregulateds-- | Unregulateds-- | Unregulateds-- | <input checked="" type="checkbox"/> Single Sample |
| <input type="checkbox"/> All 13 | <input checked="" type="checkbox"/> All 23 | <input checked="" type="checkbox"/> All 11 | <input type="checkbox"/> Qtrly Composite |
| <input checked="" type="checkbox"/> Partial | <input type="checkbox"/> Partial | <input type="checkbox"/> Partial | |



Palm Beach County Water Utilities Department

Water \ Wastewater Testing Laboratory

13026 Jog Rd., Bldg. K
Delray Beach, FL 33446
(561) 638-5000



Contact: Jaya Navani (561) 638-5000

** Analysis contained herein conform to EPA, Standard Methods and DEP approved methods. Subcontracted analyses are denoted by certification number in the analyst column. All relevant quality assurance samples were within specified control limits unless otherwise stated. Uncertainties for test results are available upon request. Palm Beach County Water Utilities certifies its test results meets all requirements of the NELAC Standards, where applicable. For questions, please call the QA Officer or the Lab Manager at the phone number listed above.

I do HEREBY CERTIFY that all attached analytical data are correct.

QA Officer, Shree Kundalkar

B. B. Kundalkar
Jaya Navani

Date:

8/28/03

Laboratory Manager, Jaya Navani

Date:

8-28-03

COMPLIANCE INFORMATION

Sample Collection Satisfactory: _____

Sample Analysis Satisfactory: _____

Resample Requested for: _____

Reason: _____

Person notified to resample: _____

Date Notified: _____

DEP/ACPHU Reviewing Official: _____

Notice: The information contained in this report is confidential and is intended only for the use of the individual or entity named above. If the reader of this communication is not the recipient, you are hereby notified that any dissemination, distribution or copying of this information is prohibited. If you have received this communication in error, please immediately notify us at (561) 638-5000. Thank you.



Palm Beach County Water Utilities Department

Water \ Wastewater Testing Laboratory

13026 Jog Rd., Bldg. K
Delray Beach, FL 33446
(561) 638-5000



System 9

WATER QUALITY ANALYSIS

Sample Number: AI08561

Sample Location: Raw Composite

Analysis	Analysis Result(mg/L)	Qual.	Analytical Method	Det. Lt. (MDL)	Analysis Date	Analyst
Conduct.	748		SM 2510-B	0.5	6/23/2003	NF/RMS
Temp	25.5		SM 2550-B	0.1	6/23/2003	NF/RMS
pH	7.09		EPA 150.1	0.01	6/23/2003	NF/RMS
Turbidity	0.10		SM 2130-B	0.05	6/23/2003	NF/RMS



Palm Beach County Water Utilities Department

Water \ Wastewater Testing Laboratory

13026 Jog Rd., Bldg. K
Delray Beach, FL 33446
(561) 638-5000



System 9

WATER QUALITY ANALYSIS

Qualifier Codes

QUALIFIER	EXPLANATION
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J	Estimated value; value may not be accurate. This code shall be used in the following instances:
J1	Surrogate recovery limits have been exceeded;
J2	No known quality control criteria exists for the component;
J3	The reported value failed to meet the established quality control criteria for either precision or accuracy;
J4	The sample matrix interfered with the ability to make any accurate determination
J5	The data are questionable because of improper laboratory or field protocols (e.g. composite sample was collected instead of a grab sample).
O	Sampled, but analysis lost or not performed.
Q	Sample held beyond the accepted holding time. This code shall be used if the value is derived from a sample that was prepared or analyzed after the approved holding time restrictions for sample preparation or analysis.
T	Value reported is less than the laboratory method detection limit. The value is reported for informational purposes only – and shall not be used in statistical analysis.
U	Indicates that the compound was analyzed for but not detected, this symbol shall be used to indicate that the specified component was not detected. The value associated with the qualifier shall be the laboratory method detection limit. Unless requested by the client, less than the method detection limit values shall not be reported (see "T" above).
V	Indicates that the analyte was detected in both the sample and the associated method blank. Note: the value in the blank shall not be subtracted from associated samples.
Y	The laboratory analysis was from an improperly preserved sample. The data may not be accurate.
Z	Too many colonies were present (TNTC): the numeric value represent the filtration volume.
?	Data are rejected and should not be used. Some or all of the quality control data for the analyte were outside criteria, and the presence or absence of the analyte cannot be determined from the data.
D	Measurement was made in the field (i.e., in situ). This applies to any value (except pH, specific conductance, dissolved oxygen, temperature, total residual chlorine, transparency, or salinity) that was obtained under field conditions using approved analytical methods. If the parameter code specifies a field measurement e.g., "Field pH", this code is not required.
R	Significant rain in the past 48 hours. (Significant rain typically involves rain in excess of ½ inch within the past 48 hours). This code shall be used when the rainfall might contribute to a lower than normal value.
!	Data deviates from historically established concentration ranges.

Envirodyne Inc.

4805 NW 2nd Avenue
Boca Raton, FL 33431

Phone 561-989-5225
Fax 561-989-5204
edyne@bellsouth.net

August 27, 2003

Shree Kundalkar
Palm Beach County Utilities
13026 Jog Road Bldg. K
Delray Beach, FL 33446

RE: Envirodyne Report: 2003/06403.

Dear Shree,

Per your request Sodium data reported for Palm Beach County Sample AI08561 (Envirodyne Inc. report number 2003/06403) was reviewed August 28, 2003. Review of raw data records showed a 1-10 dilution was made on this sample but was not calculated or reported. The reported result of 3.4 has been corrected to 34 mg/L on the amended report to be hand delivered tomorrow (8/29). I regret any inconvenience this may have caused. Thank you for allowing us to service Palm Beach County.

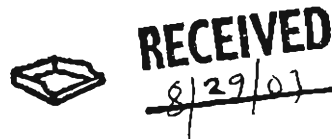
Please feel free to call me at (800) 713-7737 with questions or comments. Thank you for your continuing business.

Sincerely



Michael Rentoumis
President

Cc. Suzanne Chang QA Officer





RECEIVED

8/29/03

4805 N.W. 2nd Avenue
Boca Raton, FL 33431
561-989-5225
edyne@bellsouth.net

CERTIFICATE OF ANALYSIS

Palm Beach County Water Utilities Laboratory
13026 Jog Road Bldg K
Delray Beach, FL 33446

✓ APR 8/29/03

July 15, 2003
Report: 2003/06403B Amended
Revision Date: August 28, 2003
Sample No: 2003/06403- 1

Attention: **Jaya Navani**

Project: **System 9 WTP Annual Primary & Secondary DWS**
22438 SW 7th Street Boca Raton, FL

SAMPLE ID: Raw Composite AI08561

Collected by: **Ricky Sadarangani**
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

PARAMETER	RESULT	METHOD	DL UNITS	DATE	ANALYST
Aluminum	0.16	200.7	0.10 mg/L	06/27/03	KYT
Arsenic	U	200.7	0.010 mg/L	06/24/03	APR
Barium	0.026	200.7	0.010 mg/L	06/24/03	APR
Beryllium	U	200.7	0.0030 mg/L	06/24/03	APR
Cadmium	U	200.7	0.0040 mg/L	06/24/03	APR
Chromium	U	200.7	0.010 mg/L	06/24/03	APR
Copper	U	200.7	0.010 mg/L	06/24/03	APR
Iron	0.83	200.7	0.010 mg/L	06/27/03	KYT
Manganese	U	200.7	0.010 mg/L	06/24/03	APR
Nickel	U	200.7	0.010 mg/L	06/24/03	APR
Silver	U	200.7	0.010 mg/L	06/24/03	APR
Sodium	34	200.7	1.0 mg/L	06/27/03	KYT
Zinc	0.019	200.7	0.010 mg/L	06/24/03	APR
Antimony	U	200.8	0.0010 mg/L	07/01/03	APR
Lead	U	200.8	0.00020 mg/L	07/01/03	APR
Selenium	U	200.8	0.0010 mg/L	07/01/03	APR
Thallium	U	200.8	0.00030 mg/L	07/01/03	APR

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DL = Detection Limit

QA/QC Review
Laboratory Certification No. E86188

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Delray Beach, FL 33446

July 15, 2003
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22438 SW 7th Street Boca Raton, FL

SAMPLE ID: Raw Composite AI08561

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

PARAMETER	RESULT	METHOD	DL	UNITS	DATE	ANALYST
Mercury	U	245.1	0.00003	mg/L	06/24/03	KYT
Dibromochloropropane (DBCP)	U	504.1	0.020	µg/L	06/27/03	CMM
1,2-Dibromoethane (EDB)	U	504.1	0.020	µg/L	06/27/03	CMM
Benzo(a)pyrene	U	525.2	0.20	µg/L	06/25/03	SPH
Di(2-ethylhexyl)adipate	U	525.2	1.0	µg/L	06/25/03	SPH
Di(2-ethylhexyl)phthalate	U	525.2	1.0	µg/L	06/25/03	SPH
Carbofuran	U	531.1	1.0	µg/L	06/24/03	MLD
Oxamyl (Vydate)	U	531.1	1.0	µg/L	06/24/03	MLD
Glyphosate	U	547	40	µg/L	06/27/03	E86515
Endothall	U	548.1	50	µg/L	07/02/03	E86515
Diquat	U	549	1.44	µg/L	07/02/03	E86515
Biochemical Oxygen Demand	U	405.1	2.0	mg/L	06/23/03	JGT
Bromate	U	300.1	10	µg/L	06/26/03	DNS
Chlorate	U	300.0	0.20	mg/L	06/26/03	DNS
Chloride	50	SM4500CL-B	2.0	mg/L	06/24/03	DNS
Chlorite	U	300.0	0.20	mg/L	06/26/03	DNS
Chemical Oxygen Demand	6.3	410.4	5.0	mg/L	06/24/03	DNS

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Delray Beach, FL 33446

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SAMPLE ID: Raw Composite AI08561

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

PARAMETER	RESULT	METHOD	DL UNITS	DATE	ANALYST
Color	25	110.2	5 CU	06/24/03	JGT
Specific Conductance	670	120.1	μ mhos/cm	06/25/03	JNM
Cyanide, Total	U	335.4	0.0040 mg/L	06/26/03	JNM
Fluoride	0.33	SM450OF-C	0.10 mg/L	06/24/03	JMJ
Gross Alpha	3 \pm 2	900.0	1.0 pCi/L	06/30/03	E84088
Surfactants (as LAS, MW = 340)	0.10	425.1	0.010 mg/L	06/24/03	JGT
Ammonia, as N	0.43	350.1	0.020 mg/L	06/25/03	JGT
Nitrite, as Nitrogen	U	353.2	0.020 mg/L	06/25/03	JGT
Nitrate, as Nitrogen	U	353.2	0.020 mg/L	06/25/03	JGT
Nitrate-Nitrite, as Nitrogen	U	353.2	0.020 mg/L	06/25/03	JGT
Odor	400	SM2150B	1 T.O.N.	06/24/03	JGT
pH (Laboratory)	7.1	150.1	pH Units	06/24/03	MM
Radium 226	0.7 \pm 0.1	903.1	0.1 pCi/L	07/08/03	E84088
Radium 228	0.5 \pm 0.5 U	RA-05	0.5 pCi/L	07/08/03	E84088
Sulfate	29	375.4	5.0 mg/L	06/24/03	JNM
Total Coliform Bacteria	<1	SM9222B	1 cfu/100 ml	06/23/03	JGT
Total Dissolved Solids	480	160.1	10 mg/L	06/27/03	DNS

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July 15, 2003
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Revision Date: August 28, 2003
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Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

PARAMETER	RESULT	METHOD	DL UNITS	DATE	ANALYST
Total Kjeldahl Nitrogen	0.94	351.2	0.10 mg/L	06/30/03	JMJ
Organic Nitrogen	0.51	351-350	0.50 mg/L	06/30/03	JMJ
Phosphorus, Total	0.027	365.4	0.010 mg/L	06/30/03	JMJ

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SAMPLE ID: Raw Composite AI08561

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/28/03
Date of Extraction: 06/25/03

508 GROUP I UNREGULATED ORGANIC CONTAMINANTS

PARAMETER	RESULT	DL UNITS	ANALYST
Aldrin	U	0.10 µg/L	CMM
Dieldrin	U	0.10 µg/L	CMM

U = Analyte not detected
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Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/28/03
Date of Extraction: 06/25/03

508 ORGANOHALIDE PESTICIDES 62-550.310(2)(c) FAC

PARAMETER	RESULT	DL UNITS	ANALYST
Chlordane	U	0.50 µg/L	CMM
Endrin	U	0.10 µg/L	CMM
Heptachlor	U	0.10 µg/L	CMM
Heptachlor epoxide	U	0.10 µg/L	CMM
Hexachlorobenzene	U	0.10 µg/L	CMM
Lindane	U	0.10 µg/L	CMM
Methoxychlor	U	0.20 µg/L	CMM
Toxaphene	U	1.0 µg/L	CMM
PCB 1016	U	0.20 µg/L	CMM
PCB 1221	U	0.20 µg/L	CMM
PCB 1240	U	0.20 µg/L	CMM
PCB 1242	U	0.20 µg/L	CMM
PCB 1248	U	0.20 µg/L	CMM
PCB 1254	U	0.20 µg/L	CMM
PCB 1260	U	0.20 µg/L	CMM

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Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/29/03
Date of Extraction: 06/25/03

508.1 CHLORINATED PESTICIDES (62-550 FAC)

PARAMETER	RESULT	DL UNITS	ANALYST
Alachlor	U	0.10 µg/L	CMM
Atrazine	U	1.0 µg/L	CMM
Hexachlorocyclopentadiene	U	0.10 µg/L	CMM
Simazine	U	1.0 µg/L	CMM

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22438 SW 7th Street Boca Raton, FL

SAMPLE ID: Raw Composite AI08561

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/30/03

Date of Extraction: 06/27/03

515.1 HERBICIDES (62-550 FAC)

PARAMETER	RESULT	DL UNITS	ANALYST
Dalapon	U	0.50 µg/L	CMM
Dinoseb	U	0.50 µg/L	CMM
Pentachlorophenol	U	0.50 µg/L	CMM
Picloram	U	0.50 µg/L	CMM
2,4-D	U	0.50 µg/L	CMM
2,4,5-TP (Silvex)	U	0.10 µg/L	CMM

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SAMPLE ID: Raw Composite AI08561

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/25/03

524.2 GROUP II UNREGULATED ORGANIC CONTAMINANTS

PARAMETER	RESULT	DL UNITS	ANALYST
Bromobenzene	U	0.5 µg/L	JCB
Bromodichloromethane	U	0.5 µg/L	JCB
Bromoform	U	0.5 µg/L	JCB
Bromomethane	U	0.5 µg/L	JCB
Chloroethane	U	0.5 µg/L	JCB
Chloroform	U	0.5 µg/L	JCB
Chloromethane	U	0.5 µg/L	JCB
o-Chlorotoluene	U	0.5 µg/L	JCB
p-Chlorotoluene	U	0.5 µg/L	JCB
Dibromochloromethane	U	0.5 µg/L	JCB
Dibromomethane	U	0.5 µg/L	JCB
m-Dichlorobenzene	U	0.5 µg/L	JCB
Dichlorodifluoromethane	U	0.5 µg/L	JCB
1,1-Dichloroethane	U	0.5 µg/L	JCB
2,2-Dichloropropane	U	0.5 µg/L	JCB
1,1-Dichloropropylene	U	0.5 µg/L	JCB
1,3-Dichloropropane	U	0.5 µg/L	JCB
1,3-Dichloropropene	U	0.5 µg/L	JCB
Methyl tert-butyl-ether (MTBE)	U	0.5 µg/L	JCB
1,1,1,2-Tetrachloroethane	U	0.5 µg/L	JCB
1,1,2,2-Tetrachloroethane	U	0.5 µg/L	JCB
Trichlorofluoromethane	U	0.5 µg/L	JCB
1,2,3-Trichloropropane	U	0.5 µg/L	JCB

U=Analyte not detected
DL=Detection Limit

QA/QC Review
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July 15, 2003
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SAMPLE ID: Raw Composite AI08561

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/25/03

524.2 TRIHALOMETHANES (THM'S)

PARAMETER	RESULT	DL UNITS	ANALYST
Bromodichloromethane	U	0.5 µg/L	JCB
Bromoform	U	0.5 µg/L	JCB
Chloroform	U	0.5 µg/L	JCB
Dibromochloromethane	U	0.5 µg/L	JCB
Total Trihalomethanes	U	µg/L	JCB

U = Analyte not detected
DL = Detection Limit

QA/QC Review 
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Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/25/03

524.2 VOLATILE ORGANIC COMPOUNDS (62-550)

PARAMETER	RESULT	DL	UNITS	ANALYST
Benzene	U	0.5	µg/L	JCB
Carbon tetrachloride	U	0.5	µg/L	JCB
Chlorobenzene	U	0.5	µg/L	JCB
1,2-Dichlorobenzene	U	0.5	µg/L	JCB
1,4-Dichlorobenzene	U	0.5	µg/L	JCB
1,2-Dichloroethane	U	0.5	µg/L	JCB
1,1-Dichloroethene	U	0.5	µg/L	JCB
cis-1,2-Dichloroethene	U	0.5	µg/L	JCB
trans-1,2-Dichloroethene	U	0.5	µg/L	JCB
Dichloromethane	U	0.5	µg/L	JCB
1,2-Dichloropropane	U	0.5	µg/L	JCB
Ethylbenzene	U	0.5	µg/L	JCB
Styrene	U	0.5	µg/L	JCB
Tetrachloroethylene	U	0.5	µg/L	JCB
Toluene	U	0.5	µg/L	JCB
1,2,4-Trichlorobenzene	U	0.5	µg/L	JCB
1,1,1-Trichloroethane	U	0.5	µg/L	JCB
1,1,2-Trichloroethane	U	0.5	µg/L	JCB
Trichloroethylene	U	0.5	µg/L	JCB
Vinyl chloride	U	0.5	µg/L	JCB
Xylenes, Total	U	0.5	µg/L	JCB

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SAMPLE ID: Raw Composite AI08561

Collected by: Ricky Sadarangani
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/24/03

531.1 GROUP I UNREGULATED ORGANIC PESTICIDES

PARAMETER	RESULT	DL UNITS	ANALYST
Aldicarb	U	1.0 µg/L	MLD
Aldicarb sulfone	U	1.0 µg/L	MLD
Aldicarb sulfoxide	U	1.0 µg/L	MLD
Carbaryl	U	1.0 µg/L	MLD
3-Hydroxycarbofuran	U	1.0 µg/L	MLD
Methomyl	U	1.0 µg/L	MLD

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QA/QC Review
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SAMPLE ID: Raw Composite AI08561

Collected by: **Ricky Sadarangani**
Noel Fleites

Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/29/03
Date of Extraction: 06/27/03

625 GROUP III UNREGULATED ORGANIC CONTAMINANTS

PARAMETER	RESULT	DL UNITS	ANALYST
Butyl benzyl phthalate	U	1.0 µg/L	SPH
2-Chlorophenol	U	1.0 µg/L	SPH
Di-n-butylphthalate	U	1.0 µg/L	SPH
Diethylphthalate	U	1.0 µg/L	SPH
Dimethylphthalate	U	1.0 µg/L	SPH
Di-n-octyl phthalate	U	1.0 µg/L	SPH
2,4-Dinitrotoluene	U	1.0 µg/L	SPH
Isophorone	U	1.0 µg/L	SPH
2-Methyl-4,6-dinitrophenol	U	1.0 µg/L	SPH
Phenol	U	1.0 µg/L	SPH
2,4,6-Trichlorophenol	U	1.0 µg/L	SPH

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DL = Detection Limit

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Collected on: 06/23/03
Received on: 06/23/03

Date of Analysis: 06/29/03
Date of Extraction: 06/27/03

625 MUNICIPAL WASTEWATER MINIMUM CRITERIA

PARAMETER	RESULT	DL UNITS	ANALYST
Anthracene	U	1.0 µg/L	SPH
Naphthalene	U	1.0 µg/L	SPH
Phenanthrene	U	1.0 µg/L	SPH

U= Analyte not detected
DL= Detection Limit

QA/QC Review
Laboratory Certification No. E86188

ENVIRODYNE INC.

Quality Control Report

EPA 625

Matrix Spike and Duplicate Analysis

Date: June 29, 2003
Batch No.: GC/MS062403b
Matrix: water

Compound	R P D	Percent Recovery
Acenaphthene	7.35%	119%
N-Nitroso-di-n-propylamine	1.89%	120%
Pentachlorophenol	5.81%	161%
Phenol	0.44%	142%
Pyrene	2.45%	135%
1,4-Dichlorobenzene	2.50%	111%
1,2,4-Trichlorobenzene	2.43%	111%
2-Chlorophenol	1.83%	142%
2,4-Dinitrotoluene	5.26%	126%
4-Chloro-3-Methylphenol	8.17%	167%
4-Nitrophenol	18.82%	150%

ENVIRODYNE INC.

Quality Control Report

EPA 625

Matrix Spike and Duplicate Analysis

Date: June 29, 2003
Batch No.: GC/MS062403b
Matrix: water

Compound	R P D	Percent Recovery	
Acenaphthene	7.35%	119%	
N-Nitroso-di-n-propylamine	1.89%	120%	
Pentachlorophenol	5.81%	161%	*
Phenol	0.44%	142%	
Pyrene	2.45%	135%	*
1,4-Dichlorobenzene	2.50%	111%	
1,2,4-Trichlorobenzene	2.43%	111%	
2-Chlorophenol	1.83%	142%	*
2,4-Dinitrotoluene	5.26%	126%	
4-Chloro-3-Methylphenol	8.17%	167%	*
4-Nitrophenol	18.82%	150%	

* Recoveries above established limits; possibly due to matrix interference. Samples did not show positive hits for these analytes

ENVIRODYNE INC.

Quality Control Report

EPA 525.2

Matrix Spike and Duplicate Analysis

Date: June 24, 2003
Batch No.: GC/MS052403k
Matrix: Water

Compound	R P D	Percent Recovery
Butachlor	18.74%	104%
Atrazine	5.80%	76%
Hexachlorobenzene	10.69%	79%
Di(2-ethylhexyl)adipate	4.86%	70%
Di(2-ethylhexyl)phthalate	11.25%	73%
Benzo(a)pyrene	3.22%	124%

ENVIRODYNE INC.

Quality Control Report

EPA 524.2

Matrix Spike and Duplicate

Date: June 24, 2003

Batch No.: GCMS1062403W

Matrix: WATER

Compound	R P D	Percent Recovery
Benzene	0.71%	105%
Chlorobenzene	2.04%	98%
1,1-Dichloroethene	5.63%	98%
Toluene	2.14%	105%
Trichloroethene	5.98%	113%
1,2-Dichloroethane Surr*	4.77%	92%
4-Bromofluorobenzene Surr*	4.90%	106%
1,2-Dichlorobenzene-d4 Surr*	2.00%	110%

Blank < 1.0 PPB Pass/Fail: PASS

ENVIRODYNE INC.

Quality Control Report

EPA 531.1

Matrix Spike and Duplicate Analysis

Date: 6/26/2003

Batch No.: L531.1062603

Matrix: LIQUID

Compound	R P D	Percent Recovery
Aldicarb Sulfoxide	1.59%	101%
Aldicarb Sulfone	0.10%	99%
Oxamyl	0.00%	101%
Methomyl	0.76%	105%
3-Hydroxycarbofuran	1.35%	96%
Aldicarb	2.06%	102%
Propoxur (Baygon)	1.55%	97%
Carbofuran	2.17%	97%
Carbaryl	1.48%	95%
Methiocarb	1.93%	93%

ENVIRODYNE INC.

Quality Control Report

EPA 504.1

Matrix Spike and Duplicate Analysis

Date: JUNE 27, 2003

Batch No.: EDB062603A

Matrix: WATER

Compound	R P D	Percent Recovery
EDB	4.26%	94%
DBCP	4.08%	98%

ENVIRODYNE INC.

Quality Control Report

EPA 515.1

Matrix Spike and Duplicate Analysis

Date: JULY 1, 2003
Batch No.: HERB062703A
Matrix: WATER

Compound	R P D	Percent Recovery
Dalapon	0.00%	85%
Dinoseb	5.61%	89%
Pentachlorophenol	0.00%	110%
Picloram	23.01%	94%
2,4-D	5.83%	86%
2,4,5-TP (Silvex)	0.00%	108%
DCPA (Dactal)	4.65%	110%

ENVIRODYNE INC.

Quality Control Report

EPA 508.1

Matrix Spike and Duplicate Analysis

Date: JUNE 30, 2003
Batch No.: LPEST062503B
Matrix: WATER

Compound	R P D	Percent Recovery
Alachlor	2.67%	125%
Atrazine	0.85%	117%
Hexachlorocyclopentadiene	0.00%	120%
Simazine	7.37%	122%

ENVIRODYNE INC.

Quality Control Report

EPA 508

Matrix Spike and Duplicate Analysis

Date: JUNE 29,2003

Batch No.: LPEST062503A

Matrix: WATER

Compound	R P D	Percent Recovery
Chlordane	3.23%	103%
Endrin	0.00%	97%
Heptachlor	3.51%	95%
Heptachlor epoxide	3.08%	108%
Hexachlorobenzene	3.17%	105%
Lindane	3.08%	108%
Methoxychlor	3.17%	105%

CHAIN OF CUSTODY RECORD
AND
ANALYSIS REQUEST

4805 NW 2nd Avenue • Boca Raton, FL 33431
(800) 713-7737 • Fax (561) 989-5204
edyne@bellsouth.net

PROJECT NUMBER	PROJECT NAME <i>Sys 9 WTP</i> <i>Annual Primary/Secondary</i>	P.O. NUMBER	SAMPLE TYPE	PRESERVATIVE
PROJECT LOCATION	PALM BEACH COUNTY WATER UTILITIES LABORATORY 13026 JOG ROAD, BLDG "K" DELRAY BEACH, FLORIDA 33446		ANALYSES REQUESTED	
CLIENT NAME	CLIENT ADDRESS	PHONE	FAX	RUSH TAT (SURCHARGE) <input type="checkbox"/>

SAMPLE INFORMATION				SOLID	LIQUID	AIR	NON-AQUEOUS LIQUID	TABLE 16	TABLE 12	TABLE 50	TABLE 8	MBAS	TABLE 601	524/502?	NO. OF CONTAINERS	DUE DATE:	REMARKS
1	6/23/03	1015	Sys 9 Raw Composite (22438 SW 7th)	✓			✓	✓	✓	✓	✓	✓			?		ATO 8561
2	"	0930	" Finish Water (")	✓			✓	✓	✓	✓	✓	✓			?		ATO 8562
3			TRIP BLANK	✓									✓				
5																	Diquat
6																	Highscale
7																	
8																	
9																	
10																	

SAMPLE COLLECTED BY <i>icky Sadarangani / Noel Fierres</i> <i>TRIP BLANK ENVIRODYNE</i>	ARE THESE SAMPLES LISTED OR CHARACTERISTIC HAZARDOUS WASTE? <input type="checkbox"/> YES <input type="checkbox"/> NO										63	TOTAL OF ALL CONTAINERS
	ARE THESE SAMPLES FROM <input type="checkbox"/> PETROLEUM <input type="checkbox"/> DRY CLEANER OR <input type="checkbox"/> OTHER SITE?											
SEND REPORT TO (PERSON) <i>JAYA NAVANI</i>	REINQUISHED BY	DATE	TIME	RECEIVED BY	DATE	TIME						
SAMPLES CONDITION <i>INTACT 4°C</i>	1 <i>R. FLOW</i>	6/23/03	1640	2 <i>D P S</i>	6-23-03	16:30						
LOG NUMBER <i>2003 06403</i>	3 <i>D P S</i>	6-23-03	17:09	4 <i>Michelle Mercado</i>	6-23-03	1709						
	5			6								

PEMBROKE LABORATORIES, INC.

HRS # E84088
NELAC Certified

528 Gooch Road
Fort Meade, Florida 33841
pembrokelab@earthlink.net

Ph (863) 285-8145
Fax (863) 285-7030

CERTIFICATE OF ANALYSIS W57682

Envirodyne, Inc.
4805 NW 2nd Avenue
Boca Raton, FL 33431
Attn: Michael Rentoumis

Date Received: 6/25/03
Time Received: 1630
Date Reported: 7/10/03



Lab Number W 57682	Sample ID 2003	06403 1	Sample Date / Time	6/23/03	1015		
Parameter	Unit	Result	Code	Method	Analysis Date	Time	Analyst

Gross Alpha	pCi/l	3 ± 2		EPA 900	6/30/03	1150	CF
Ra226	pCi/l	0.7 ± 0.1		EPA 903.1	7/8/03	1315	CF
Ra228	pCi/l	0.5 ± 0.5	U	RA-05	7/8/03	1156	CF

Lab Number W 57683	Sample ID 2003	06403 2	Sample Date / Time	6/23/03	0930		
Parameter	Unit	Result	Code	Method	Analysis Date	Time	Analyst

Gross Alpha	pCi/l	1 ± 1	U	EPA 900	6/30/03	1150	CF
Ra226	pCi/l	0.1 ± 0.1	U	EPA 903.1	7/8/03	1315	CF
Ra228	pCi/l	0.5 ± 0.5	U	RA-05	7/8/03	1156	CF

Data Qualifier Codes: J4- Estimated Value / sample matrix interfered with the ability to make an accurate determination
: U - Compound was analyzed for but not detected at the MDL

Certified by

S. Gene Whitney

S. GENE WHITNEY
Laboratory Director



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8/29/03



Kappa Laboratories, Inc.

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Phone (305) 599-0199 • Fax (305) 592-1224

Mt. Sinai Medical Center • Biomedical Research
Pearlman Building
4300 Alton Road • Miami Beach, Florida 33140

www.kappalabs.com

LABORATORY REPORT: Amended - 8/6/03

CLIENT: Envirodyne, Inc.
4805 NW 2nd AVE
Boca Raton, FL 33431

REPORT DATE: 7/14/03

SOURCE: Water
SAMPLE DATE: 1015 6/23/03
SAMPLE RECEIVED: 1310 6/24/03
SAMPLED BY: Client

✓ DR
8/29/03

JOB #: 551892
SAMPLE LOG #: D850
SAMPLE ID: 2003 06403-01

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT	DATE EXT.	DATE ANALY.	ANALYST
Endothall	BDL	µg/l	548.1	50	6/30/03	7/2/03	DR
Diquat	BDL	µg/l	549	1.44	6/30/03	7/2/03	IF
Glyphosate	BDL	µg/l	547	40	6/27/03	6/27/03	IF
Spike Recovery - Endothall	83	percent	Recovery Limits: 29-103%				
Spike Recovery - Diquat	72	percent	Recovery Limits: 25-130%				
Spike Recovery - Glyphosate	91	percent	Recovery Limits: 83-118%				

BDL: Below Detection Level

Kappa Laboratories has been inspected and is currently certified by the U. S. Department of Agriculture (USDA Microbiology-#0093); the Florida Dept. of Health, Drinking Water, including Microbiology, Pesticides and PCB's; Environmental certification as Basic Environmental Laboratory (DOH #E86515) (FDEP CompQAP #940109); Registered with the U.S. Food and Drug Administration (FDA-#1039389) and is an FDA Accepted Laboratory for Import Testing. Kappa Laboratory is currently a Contract Laboratory to the U.S. Centers for Disease Control (CDC), Atlanta, Georgia; Vessel Sanitation Program and is NELAC certified.

Signed:
Dr. Peter J. Kmiecik
Director, Kappa Laboratories, Inc.

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8/29/03

**Cycle Testing
Technical Memorandums**