

PREPARED FOR



HYDROLOGICAL TECHNOLOGY SERVICES

# SPECIFIC PURPOSE SURVEY SURVEYOR'S REPORT

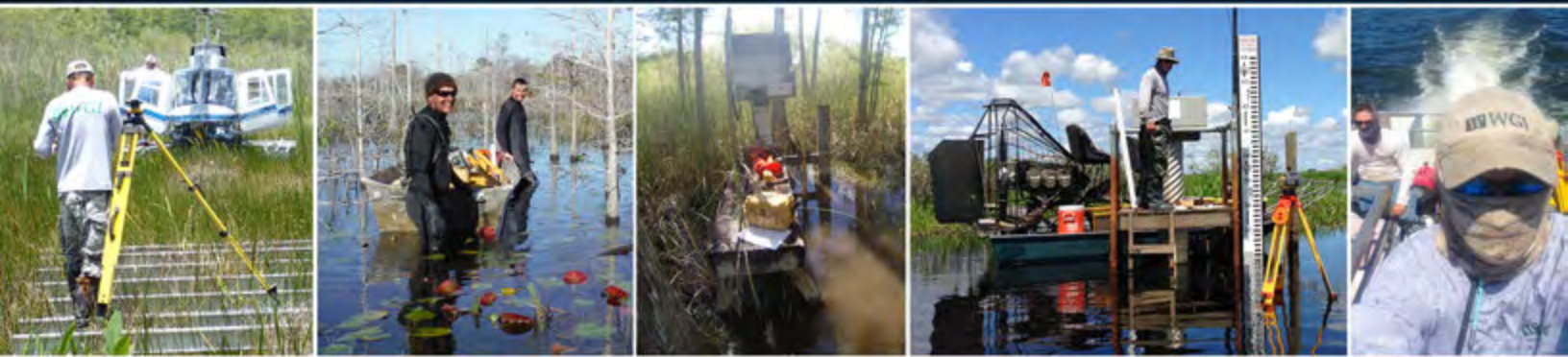
VERTICAL DATUM UPGRADE PROJECT

WO# 4600002187-WO13

SAP PO# 9500007032

WGI# 1071.13

 **WGI**®



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# **Overview of Project**

## OVERVIEW OF PROJECT

### **Purpose of Project:**

Procure all materials to construct and install 60 staff gauges (and 1 staff gauge BBCW1 from 4600002187-WO14) calibrated to the North American Vertical Datum of 1988 (NAVD88) at various sites identified by the Vertical Datum Project Manager. Establish a new NAVD88 Bench Mark at sites where needed, and prepare a SFWMD Bench Mark Data Sheet. Establish a NAVD88 Reference Elevation on the inside deck of existing Telemetry Stations and Ground Well Sites, and stamp site specific data onto a brass tag, using a steel stamp die set. The brass tags were delivered to SFWMD and would be installed by SFWMD Field Personnel during site inspections.

### **Accuracy:**

Staff gauges have been set (adjusted) to the nearest two hundredth (.02') of a foot. Elevations have been transferred from bench mark using a digital level, level rod, and redundant measurements.

### **Bench Marks:**

A bench mark was provided by SFWMD at each location, unless otherwise noted, and used to establish the reference elevation and calibrate each staff gauge. Six (6) new bench marks were set during this project.

### **Survey Equipment Used:**

Topcon DL-502 (Digital Level)  
Fiberglass Digital Level Rods  
Conventional Level Rod

### **Vertical Datum Factor:**

The staff gauges in this report, have been correctly calibrated to the North American Vertical Datum of 1988. The datum conversion to the National Geodetic Vertical Datum of 1929 (NGVD 29), as shown herein and engraved on each gauge, were provided by the SFWMD VDUP Project Manager.

### **Completion Date:**

Staff Gauge installation and calibration was completed on July 26, 2017.

### **Construction:**

Each Staff Gauge is attached to a 4" O.D. galvanized steel pipe with stainless steel hardware, except where installed on existing structures or pilings, as noted on the installation sheet. The pipes were driven by jack hammer to a depth to achieve required stability, to a minimum of 10', unless otherwise noted. Sections of pipes were attached with a galvanized threaded coupling.

# **Details of Staff Gauges**

Staff Gauge Detail Summary:

Gauges completed:

Staff Gauge Site	Latitude	Longitude	Bench-mark Used	Benchmark Elevation NAVD88	Well Head Reference BM Elevation	Conversion Elevation to NGVD29
BBCW1	25° 27' 55.2"	80° 20' 45.8"	DCBM F61 1	7.13'	N/A	+1.53'
BARW4	25° 59' 41.567"	81° 20' 49.25"	CEH4	6.543'	13.07'	+1.37'
BARW6A	26° 03' 04.286"	81° 20' 40.702"	1174 73a	9.772'	14.65'	+1.36'
FU1_H	25° 57' 37.86"	81° 30' 34.31"	Y407	7.70'	11.69'	+1.34'
FU1_T	25° 57' 36.26"	81° 30' 34.26"	Y407	7.70'	10.62'	+1.34'
S332BS	25° 32' 41.59"	80° 34' 02.32"	S332BS2	10.19'	14.28'	+1.57'
S384_H	27° 23' 45.382"	80° 23' 59.353"	S384	24.90'	26.89'	+1.48'
S384_T	27° 23' 46.227"	80° 23' 57.327"	S384	24.90'	20.04'	+1.48'
TMBR45	25° 58' 41.4"	81° 33' 30.8"	E408	6.43'	6.74'	+1.33'
TMBR52	25° 57' 38.359"	81° 30' 55.312"	TAMI52	6.57'	7.21'	+1.34'
TMBR55	25° 57' 38"	81° 30' 01"	BR55	6.25'	6.86'	+1.34'
TMBR66	25° 55' 59.4"	81° 26' 49.8"	6.31 RESET	6.98'	7.45'	+1.36'
TMBR71	25° 55' 19.3"	81° 24' 39.7"	6.13 RESET	6.81'	7.06'	+1.36'
SGT5W3_GW1	25° 56' 18.686"	81° 29' 08.024"	SGT5W3	1.33'	6.37'	+1.34'
SGT5W3_STG	25° 56' 18.686"	81° 29' 08.024"	SGT5W3	1.33'	6.79'	+1.34'
SGT5W2_GW1	25° 56' 59.786"	81° 31' 55.807"	SGT5W2	1.45'	5.74'	+1.34'
SGT5W2_GW2	25° 56' 59.786"	81° 31' 55.807"	SGT5W2	1.45'	6.91'	+1.34'
SGT5W1_GW1	25° 57' 34.554"	81° 34' 01.543"	SGT5W1	2.25'	6.40'	+1.33'
SGT5W1_STG	25° 57' 34.554"	81° 34' 01.543"	SGT5W1	2.25'	6.94'	+1.33'
TMBR40	25° 59' 16.5"	81° 34' 53.5"	BR40	6.37'	7.27'	+1.32'
TMBR37	25° 59' 54.41"	81° 35' 53.4"	TAMIBR37	7.886'	7.13'	+1.32'
TAMTOM	26° 00' 20.564"	81° 36' 33.06"	L527	3.78'	6.31'	+1.32'
HENDTAMI_H	26° 03' 27.35"	81° 41' 21.77"	HENDTAMI	6.472'	8.74'	+1.32'
COCO4_H	26° 16' 32.03"	81° 37' 34.22"	TE1	13.24'	21.37'	+1.30'
COCO4_T	26° 16' 32.03"	81° 37' 34.22"	TE1	13.24'	21.78'	+1.30'
NAP31_H	26° 10' 55.412"	81° 46' 01.559"	AG25W	8.505'	11.98'	+1.27'
NAP31_T	26° 10' 51.889"	81° 46' 01.308"	AG25W	8.505'	11.99'	+1.27'
BRDROOK	26° 18' 54.84"	81° 38' 07.82"	BRDROOK	16.276'	21.84'	+1.29'
FU6_H	26° 18' 10.35"	81° 31' 47.51"	COLL	17.49'	21.60'	+1.32'
FU6_T	26° 18' 10.35"	81° 31' 47.51"	COLL	17.49'	20.47'	+1.32'
FU5_H	26° 16' 17.17"	81° 31' 43.665"	S5	15.46'	21.12'	+1.32'
FU5_T	26° 16' 15.795"	81° 31' 43.673"	S5	15.46'	21.13'	+1.32'
FU4_H	26° 11' 41.335"	81° 31' 39.838"	FU4S	11.86'	14.94'	+1.33'
FU4_T	26° 11' 38.197"	81° 31' 39.719"	FU4S	11.86'	15.55'	+1.33'
MLRI75	26° 09' 09"	81° 33' 18.7"	I75 R32	19.67'	15.96'	+1.33'



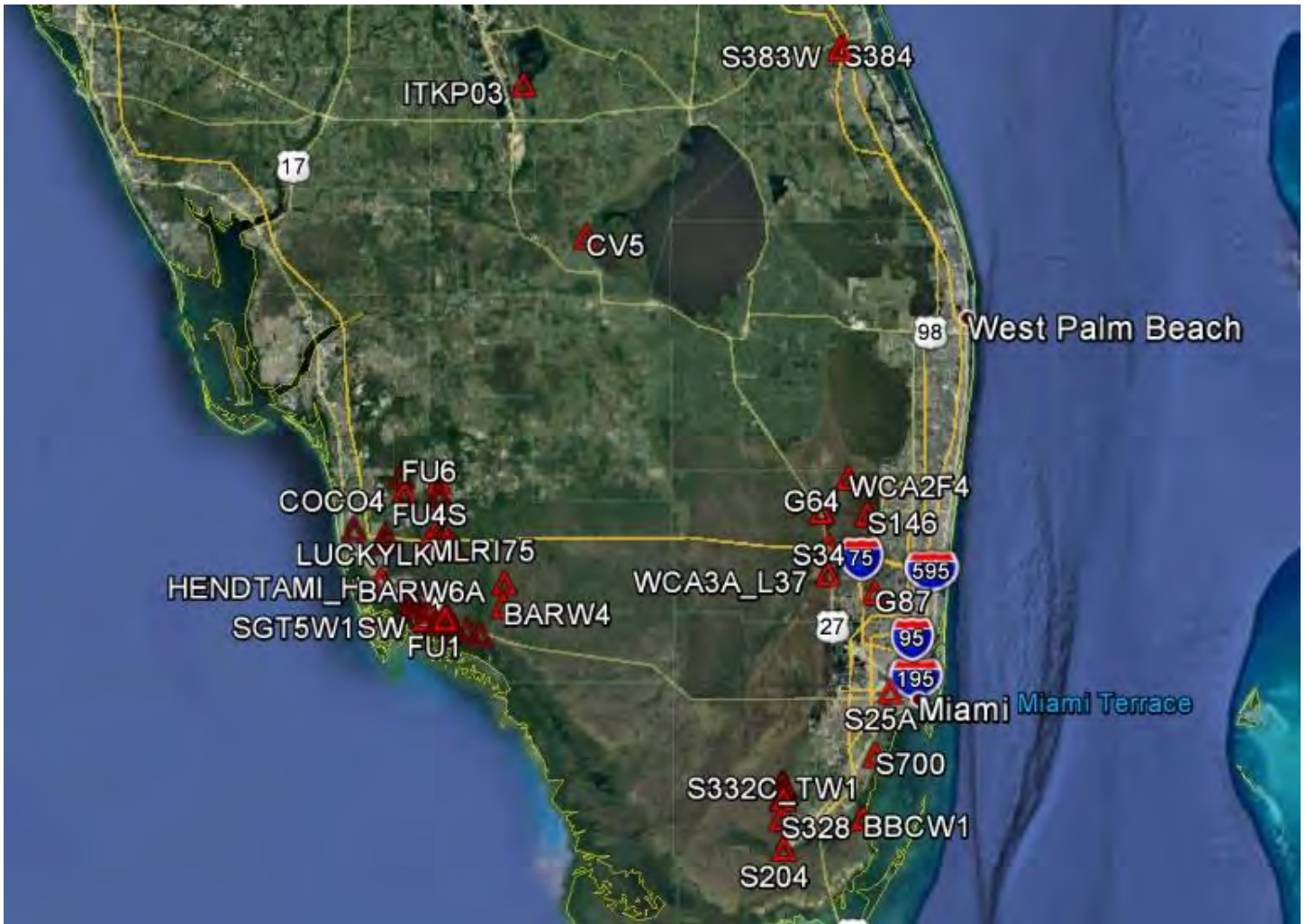
Staff Gauge Site	Latitude	Longitude	Bench-Mark Used	Benchmark Elevation NAVD88	Well Head Reference BM Elevation	Conversion Elevation to NGVD29
FAKI75	26° 09' 10.3"	81° 31' 24.8"	I75U32	20.24'	17.56'	+1.34'
S488_H	26° 08' 22.17"	81° 29' 29.65"	S488	14.191'	16.52'	+1.34'
S488_T	26° 08' 21.18"	81° 29' 29.646"	S488	14.191'	16.38'	+1.34'
CV5_H	26° 55' 10.21"	81° 07' 18.23"	FCE125	24.465'	23.21'	+1.33'
CV5_T	26° 55' 10.21"	81° 07' 18.23"	FCE125	24.465'	19.49'	+1.33'
ITKPO3	27° 18' 03.86"	81° 18' 03.25"	ITKPO3	41.96'	45.93'	+1.14'
LUCKYLK	26° 08' 33.457"	81° 29' 26.854"	COLL0021	11.238'	13.85'	+1.34'
S328_H	25° 27' 47.64"	80° 34' 24.65"	S328	7.119'		+1.56'
S328_T	25° 27' 48.27"	80° 34' 27.09"	S328	7.119'		+1.56'
S204	25° 23' 19.57"	80° 33' 56.506"	Q504	3.543'		+1.58'
S332B_TW1	25° 32' 58.944"	80° 34' 03.598"	S332BTW2	6.751'		+1.57'
S332B_TW2	25° 32' 58.797"	80° 34' 17.921"	S332BTW2	6.751'		+1.57'
S332C_TW1	25° 30' 55.479"	80° 34' 01.951"	S332CTW	11.80'		+1.56'
S332C_TW2	25° 30' 55.555"	80 34' 13.989"	S332CTW	11.80'		+1.56'
S25A_H	25° 46' 57.457"	80° 16' 11.267"	S25A	4.984'		+1.55'
S25A_T	25° 46' 58.062"	80° 16' 10.09"	S25A	4.984'		+1.55'
G87_H	26° 01' 47.3"	80° 18' 46.75"	G87	3.778'		+1.60'
G87_T	26° 01' 44.28"	80° 18' 46.86"	G87	3.778'		+1.60'
S146_H	26° 13' 32.262"	80° 20' 00.167"	E467	16.102'		+1.53'
S146_T	26° 13' 31.088"	80° 20' 00.228"	E467	16.102'		+1.53'
G64_T	26° 13' 56.52"	80° 27' 43.741"	G64	10.379'		+1.48'
G64_H	26° 13' 56.849"	80° 27' 42.228"	G64	10.379'		+1.48'
S383_H	27° 23' 33.852"	80° 24' 28.698"	S383	32.90'	35.29'	+1.48'
S383_T	27° 23' 33.565"	80° 24' 26.488"	S383	32.90'		+1.48'
S383_Well1	27°23'33.28"	80°24'28.32"	S383	32.90'	34.92'	+1.48'
S383_Well2	27°23'33.28"	80°24'28.32"	S383	32.90'	34.47'	+1.48'
S383_well3	27°23'33.28"	80°24'28.32"	S383	32.90'	34.93'	+1.48'
S383_Well4	27°23'33.28"	80°24'28.32"	S383	32.90'	34.75'	+1.48'
S383_Well5	27°23'33.28"	80°24'28.32"	S383	32.90'	34.89'	+1.48'
S383_Well6	27°23'33.28"	80°24'28.32"	S383	32.90'	34.90'	+1.48'
S383_T1	27° 23' 33.284"	80° 24' 26.506"	S383	32.90'	29.42'	+1.48'
S383_T2	27° 23' 33.384"	80° 24' 26.504"	S383	32.90'	29.37'	+1.48'
WCA2F4_STG	26° 19' 01"	80° 23' 06"	WCA2F4	12.926'	15.29'	+1.49'
WCA2F4_GW1	26° 19' 01"	80° 23' 06"	WCA2F4	12.926'	17.01'	+1.49'
WCA2F4_GW2	26° 19' 01"	80° 23' 06"	WCA2F4	12.926'	15.29'	+1.49'
WCA2F4_GW3	26° 19' 01"	80° 23' 06"	WCA2F4	12.926'	15.83'	+1.49'
WCA2F4_GW4	26° 19' 01"	80° 23' 06"	WCA2F4	12.926'	16.02'	+1.49'

Staff Gauge Site	Latitude	Longitude	Bench-Mark Used	Benchmark Elevation NAVD88	Well Head Reference BM Elevation	Conversion Elevation to NGVD29
WCA3A_L37	26° 03' 45.6"	80° 26' 37.9"	WCA3A_L37	13.699'		+1.49'
S700_HW	25° 37' 23.2"	80° 18' 43.1"	AMELIA	7.068'	8.13'	+1.53'

- All Elevations shown are NAVD 88

## Project Location Maps:

Overall Map:

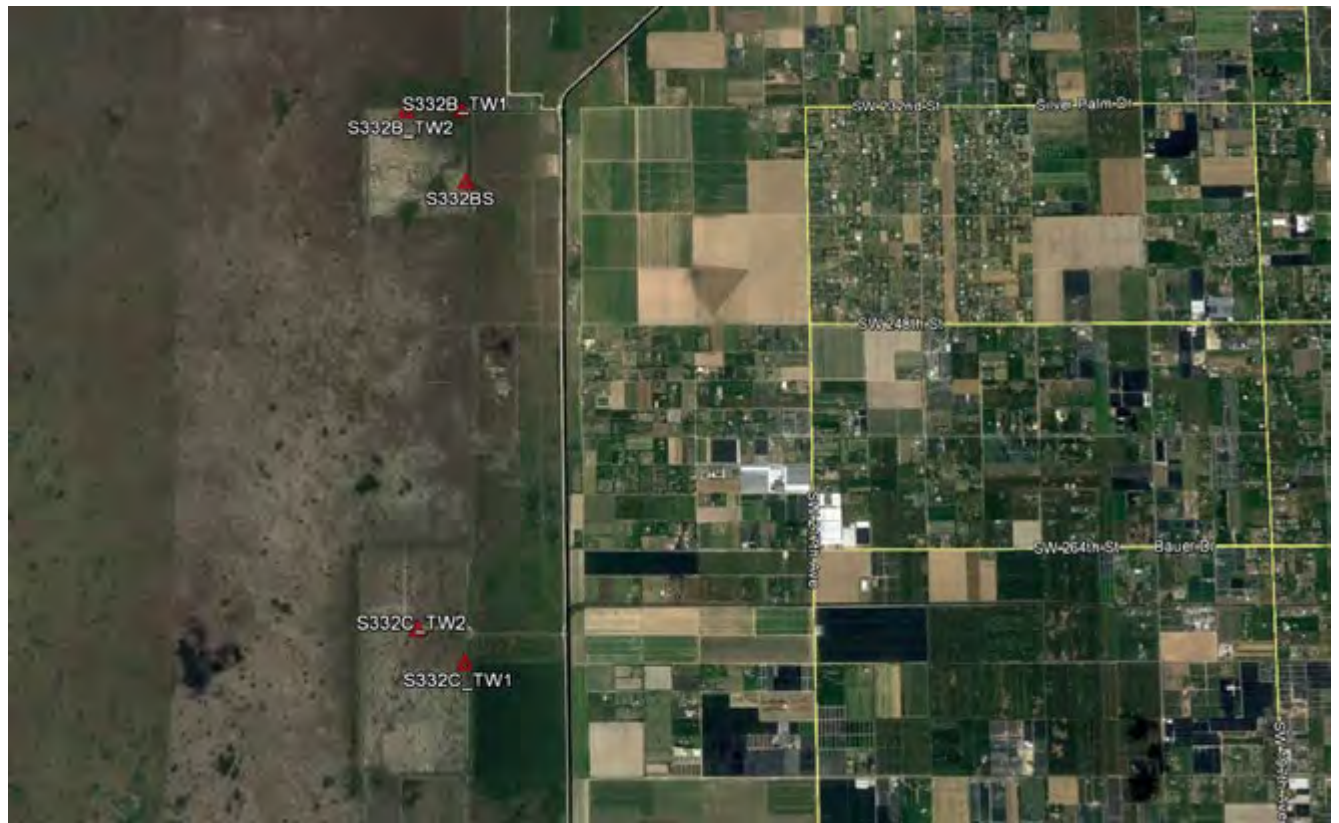




Location Map #8



Location Map #9



## Stage Recorder Site: BBCW1

Party Chief: Jose Mendoza	Field Book Number: 646	Page Number: 29
Benchmark Elevation (NAVD 88): 7.13	Date of Field Work: January 17, 2017	Datum Offset to NGVD 29: +1.53
Benchmark Agency: NGS	Benchmark Type: Brass Disk	Benchmark Stamp: DCBM F61 1
Reference Elevation (NAVD88):		Existing Tag Elevation (Datum):
Latitude: 25° 27' 55.2"		Longitude: 80° 20' 45.8"
Notes: Staff gauge location per Bahram Charkhian SFWMD. No stilling well on site. Natural ground elevation at gauge <b>-0.2'</b>		
Removed Old Board: No existing gauge.		

Photographs:

Overall Site:



Benchmark Location:



Benchmark Close Up:



New Staff Gauge:

Front View:



Side View:





# BBCW1 Field Notes

1527 5179 N  
 8070 4591 W  
 2-MOVED TO NORTH PROVIDED  
 SEE NOTE

301107114

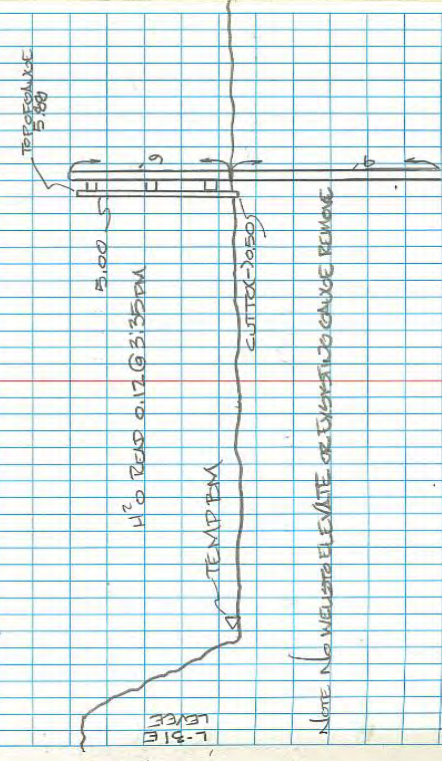
14/9/19

NO. 00 DESCRIBED ICPM STAMPED ICPM F-61-1

STAIN W. EDGE OF LEVEE RD

IRC LEVISES ± 10'S OF PROPOSED PIPE AND TOE OF SLOPE EAST OF LEVEL

NOTE 3/4" BURIAL CHAIN HAD BEEN FOUND HE REQUESTED THE GAUGE BE MOVED TO THE NORTH WHERE NEW CULVERT SPACING WAS TO BE INSTALLED STILL ± 200 TO THE EAST OF LEVEE HE WAS ALSO PRESENT WHEN NO SHOT WAS TAKEN NEW HUNT LOG 16° 27' 55.2" N 80° 20' 45.9" W TAKEN W/GARMIN ETREX 10  
 190



BS	BS RH	BS DIST	FS RH	FS DIST	ELEV	ADJ ELEV	DESC	80° RC
1-17-17								
WENTZORA								
VANDELL								
HALLS								
DILLON								
5.002	172.7		5.005	173.3	7.207			
5.457	256.3		5.051	254.1	7.073			
2.142	30.7		0.852	25.4	1.403		SET	
8.376	25.3		2.104	30.7	7.075		NL	
4.851	256.1		5.210	254.4	7.215		NL	
5.270	176.5		5.408	188.4	7.177	7.113	ONE IN GPM	
			ERROR 0.003					
4.110					1.46			
5.806	3.806	5.32	5.55		(-) 0.123	7.113	PER ✓	
3.50			5.55				NO. 00 DISTANCE	
			✓			5.880		
			INVERTED 0.506					
0.30								
0.95	0.95	4.93	3.74					
1.492			3.480	3.480	1.45	1.407	TEMPERM	
			3.22					