

Appendix C

TYPE C MATRIX TRAIN 18 LONESOME SOLIDS SIZE ANALYSIS TEST

CERTIFICATE OF ANALYSIS

Sample ID:	112006-27	Bucket 1	112006-28	Bucket 2
Sample Description:	Solid		Solid	
Preparation Date:	11/20/06		11/20/06	
Analysis Date:	11/20-11/21/06		11/20-11/21/06	
Analyte:	Dry Sieve *		Dry Sieve *	

Sieve #	(um)	Results	%	Results	%
16	1,180	33.58 gr	33.58	19.75 gr	19.75
35	500	26.31 gr	26.31	22.99 gr	22.99
70	212	29.54 gr	29.54	23.94 gr	23.94
100	150	5.78 gr	5.78	22.27 gr	22.27
140	106	1.22 gr	1.22	6.71 gr	6.71
<140	<106	2.54 gr	2.54	3.40 gr	3.40

Sample ID:	112006-27	Bucket 1	112006-28	Bucket 2
Sample Description:	Solid		Solid	
Preparation Date:	11/20/06		11/20/06	
Analysis Date:	11/20-11/21/06		11/20-11/21/06	
Analyte:	Wet Sieve *		Wet Sieve *	

Sieve #	(um)	Results	%	Results	%
16	1,180	19.06 gr	24.77	8.00 gr	10.23
35	500	7.54 gr	9.78	9.62 gr	12.30
70	212	33.24 gr	43.10	34.06 gr	43.57
100	150	8.87 gr	11.50	7.38 gr	9.43
140	106	1.66 gr	2.15	4.84 gr	6.19
<140	<106	6.75 gr	8.75	14.28 gr	18.27

* = not currently accredited for this method

Analyst RT

SYMBOL MEANING

- A Value reported is the arithmetic mean (average) of two or more determinations. This code shall be used if the reported value is the average of results for two or more discrete and separate samples. These samples shall have been processed and analyzed independently. Do not use this code if the data are the result of replicate analysis on the same sample aliquot, extract or digestate.
- H Value based on field kit determination; results may not be accurate. This code shall be used if a field screening test (i.e., field gas chromatograph data, immunoassay, vendor-supplied field kit, etc.) was used to generate the value and the field kit or method has not been recognized by the Department as equivalent to laboratory methods.
- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J Estimated value. A "J" value shall be accompanied by a narrative justification for its use. Where possible, the organization shall report whether the actual value is less than or greater than the reported value. A "J" value shall not be used as a substitute for K, L, M, T, V, or Y, however, if additional reasons exist for identifying the value as estimate (e.g., matrix spiked failed to meet acceptance criteria), the "J" code may be added to a K, L, M, T, V, or Y. The following are some examples of narrative descriptions that may accompany a "J" code:
- No known quality control criteria exist for the component;
 - The reported value failed to meet the established quality control criteria for either precision or accuracy (the specific failure must be identified);
 - The sample matrix interfered with the ability to make any accurate determination;
 - The data are questionable because of improper laboratory or field protocols (e.g., composite sample was collected instead of a grab sample).
 - The field calibration verification did not meet calibration acceptance criteria.
- K Off-scale low. Actual value is known to be less than the value given. This code shall be used if:
1. The value is less than the lowest calibration standard and the calibration curve is known to be non-linear; or
 2. The value is known to be less than the reported value based on sample size, dilution.
- This code shall not be used to report values that are less than the laboratory practical quantitation limit or laboratory method detection limit.
- L Off-scale high. Actual value is known to be greater than value given. To be used when the concentration of the analyte is above the acceptable level for quantitation (exceeds the linear range or highest calibration standard) and the calibration curve is known to exhibit a negative deflection.
- M When reporting chemical analyses: presence of material is verified but not quantified; the actual value is less than the value given. The reported value shall be the laboratory practical quantitation limit. This code shall be used if the level is too low to permit accurate quantification, but the estimated concentration is greater than the method detection limit. If the value is less than the method detection limit use "T" below.
- N Presumptive evidence of presence of material. This qualifier shall be used if:
1. The component has been tentatively identified based on mass spectral library search; or
 2. There is an indication that the analyte is present, but quality control requirements for confirmation were not met (i.e., presence of analyte was not confirmed by alternative procedures).
- 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.
- ? 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.
- * Not currently accredited for this analyte.
- ! Not within scope of method.

1/2006 - 008

[illegible]

Sample Log-in Checklist

Shipping Method: _____ Date/Time of Receipt: 11/7/06

Cooler Check

Cooler #	Ice in cooler			Custody Seal			
	Yes	No	If No Temp.	Yes	No	Intact	Not Intact

Note: If the temperature of a cooler is above 6° C or a custody seal is damaged then identify the bottles in the affected cooler and note on "Improper Sample List"

- 1) Custody Seal on Bottles present Yes _____ No X
- 2) Condition of Sample containers
 - Headspace (Volatiles) N/A
 - Bubble > 5mm N/A
 - Loose caps Yes _____ No X
 - Broken Containers Yes _____ No X
- 3) Chain of Custody included Yes _____ No X
- 4) Acid preserved: pH less than 2 Yes _____ No N/A

Coolers Unpacked/Checked by: Robert Date: 11/7/06

Client: GIW Industries Project: Sieve Analysis

Improper Sample List

Bottle #	Out of Hold	Improper Containers	Seal Intact	Loose Cap	Damaged Bottle	Damaged Cap	pH>2	Sample Volume	Action



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PARTICLE SIZE ANALYSIS

Date: 12/11/2006

Tested For: FIPR

Sample: Lonesome Type C Matrix
(Bucket #1, Summation)

Test Method: Wet Sieve

Initial Sample Weight (g): 856.00

Test #: N/A

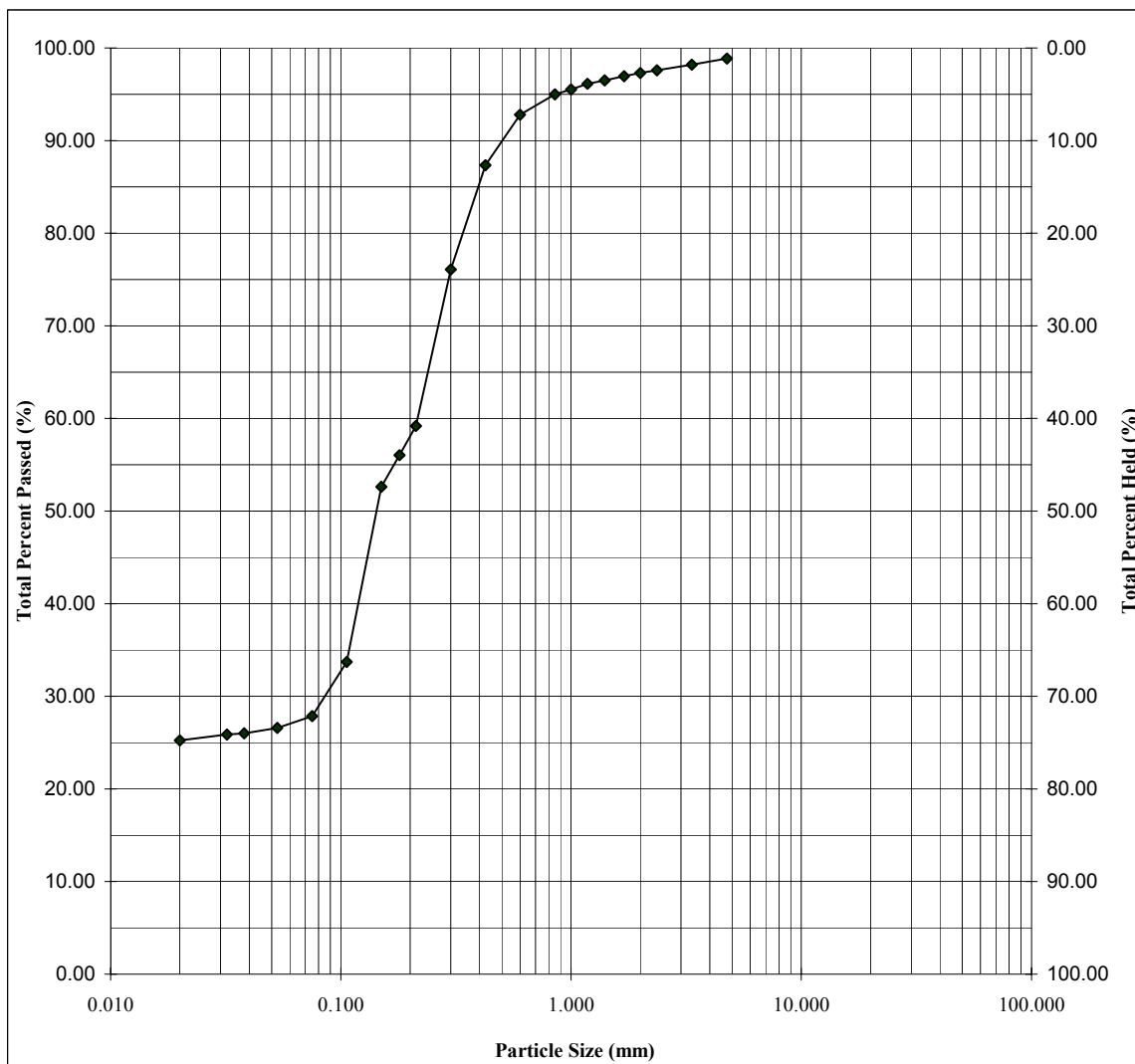
Work Order #: N/A

D50 Value (micron): 144

D85 Value (micron): 399

Sieve Size (mm)	Mass Held (g)	Total Mass Held (g)	Total % Held (%)	Total % Passed (%)
4.750	9.77	9.77	1.14	98.86
3.350	5.66	15.43	1.80	98.20
2.360	5.30	20.73	2.42	97.58
2.000	2.46	23.19	2.71	97.29
1.700	2.97	26.16	3.06	96.94
1.400	3.71	29.87	3.49	96.51
1.180	3.31	33.18	3.88	96.12
1.000	5.22	38.40	4.49	95.51
0.850	4.47	42.87	5.01	94.99
0.600	18.84	61.71	7.21	92.79
0.425	46.68	108.39	12.66	87.34
0.300	96.41	204.80	23.93	76.07
0.212	144.43	349.23	40.80	59.20
0.180	27.07	376.30	43.96	56.04
0.150	29.29	405.59	47.38	52.62
0.106	161.72	567.31	66.27	33.73
0.075	50.15	617.46	72.13	27.87
0.053	10.91	628.37	73.41	26.59
0.038	5.09	633.46	74.00	26.00
0.032	0.97	634.43	74.12	25.88
0.020	5.64	640.07	74.77	25.23
Fines	215.93	856.00	100.00	0.00

Test Engineer : Jonathan Latta



COMMENTS: 5-gal bucket #1 Lonesome Type C Matrix sample taken on 11/15/06 from drag-line bucket.



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PARTICLE SIZE ANALYSIS

Date: 12/11/2006

Tested For: FIPR

Sample: Lonesome Type C Matrix
(Bucket #2, Summation)

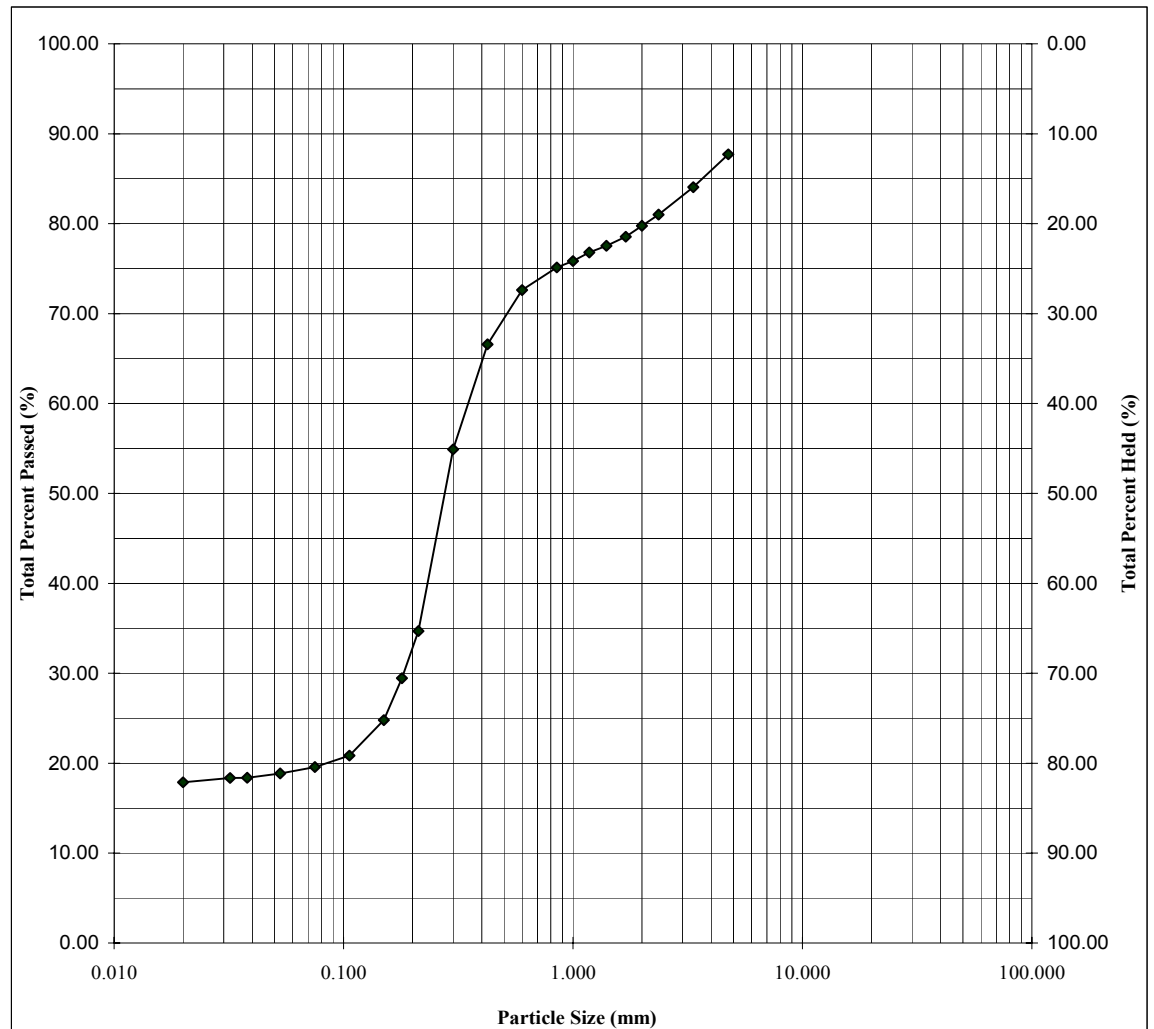
Test Method: Wet Sieve
Initial Sample Weight (g): 900.00

Test #: N/A
Work Order #: N/A

D50 Value (micron): 279
D85 Value (micron): 3713

Sieve Size (mm)	Mass Held (g)	Total Mass Held (g)	Total % Held (%)	Total % Passed (%)
4.750	110.54	110.54	12.28	87.72
3.350	33.02	143.56	15.95	84.05
2.360	27.33	170.89	18.99	81.01
2.000	11.25	182.14	20.24	79.76
1.700	11.03	193.17	21.46	78.54
1.400	8.87	202.04	22.45	77.55
1.180	6.82	208.86	23.21	76.79
1.000	8.56	217.42	24.16	75.84
0.850	6.45	223.87	24.87	75.13
0.600	22.70	246.57	27.40	72.60
0.425	54.23	300.80	33.42	66.58
0.300	105.12	405.92	45.10	54.90
0.212	181.81	587.73	65.30	34.70
0.180	47.16	634.89	70.54	29.46
0.150	41.95	676.84	75.20	24.80
0.106	35.62	712.46	79.16	20.84
0.075	11.36	723.82	80.42	19.58
0.053	6.56	730.38	81.15	18.85
0.038	4.09	734.47	81.61	18.39
0.032	0.33	734.80	81.64	18.36
0.020	4.35	739.15	82.13	17.87
Fines	160.85	900.00	100.00	0.00

Test Engineer : Jonathan Latta



COMMENTS: 5-gal bucket #2 Lonesome Type C Matrix sample taken on 11/15/06 from drag-line bucket.

Appendix D

SAND-CLAY MIX LAB TESTS

Sand-Clay Mix Test Program Summary

Performed for:

**FIPR
1855 West Main Street
Bartow, Florida 33830**

Reported by:

Jonathan Latta

on behalf of:

GIW Industries Inc.

December 18, 2006

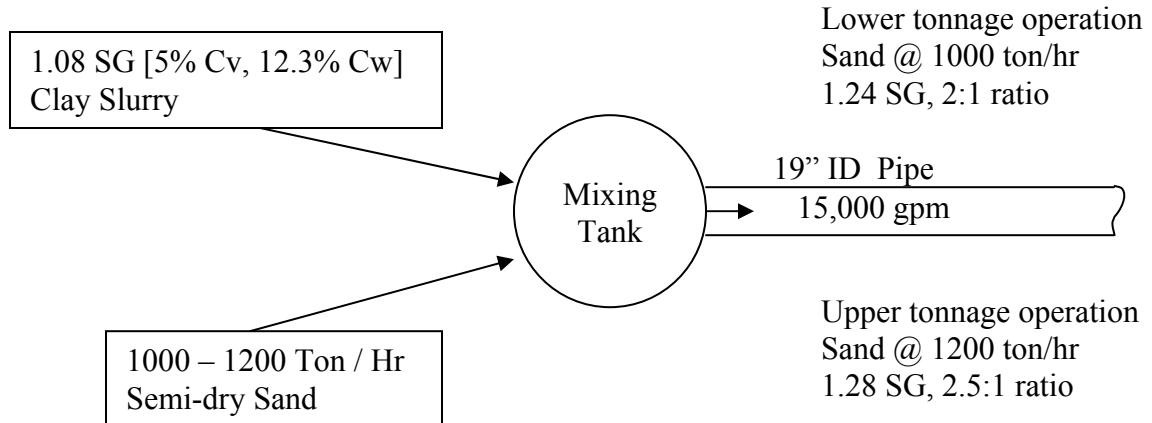
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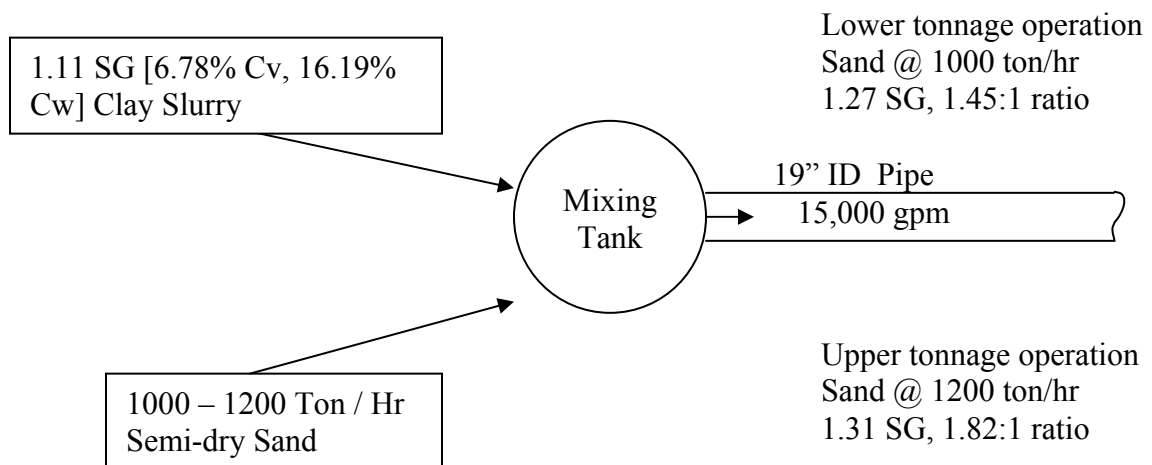
INTRODUCTION

In December 2006, sand-clay mixes from CF Industries were tested in the 3" pipeline loop system at GIW Hydraulic Testing Laboratory. The respective test concentrations and resulting sand to clay ratios were back calculated based upon input associated with the field application as detailed in the schematic below.

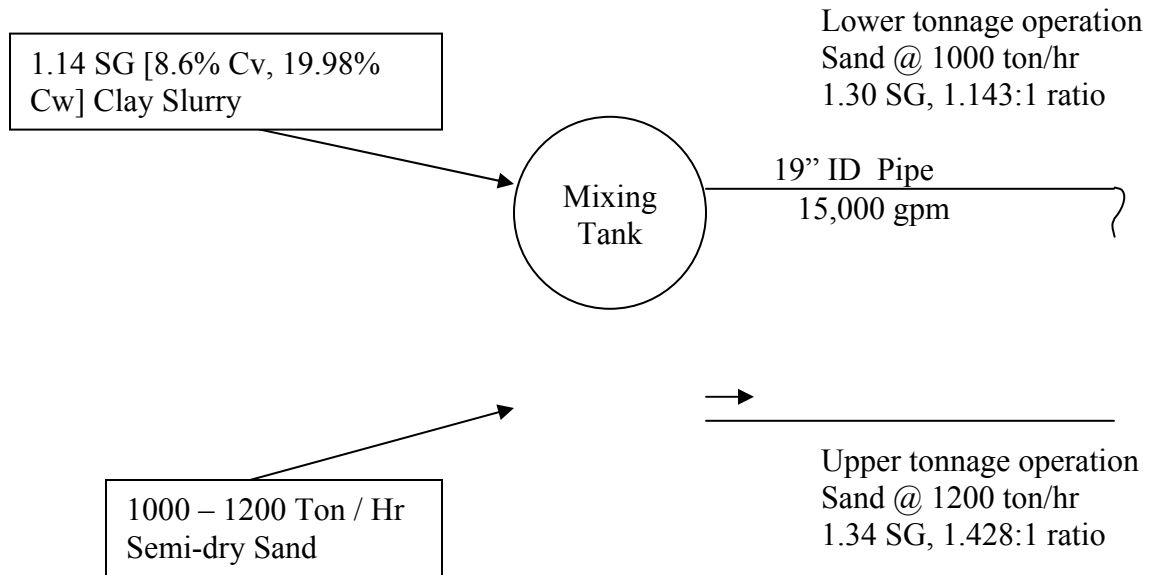
Phase 1



Phase 2



Phase 3



GIW therefore performed closed loop testing to evaluate the sand-clay mix slurries for both the lower and upper sand tonnage operations for each phase as indicated above.

EXPERIMENTAL SETUP

The 3X4 LCC 12 GIW pump was connected to existing 3" slurry loop system at the GIW Hydraulic Test Laboratory. A schematic of the test loop can be seen in Figure D-1. As shown, the system ran from a mixing tank to the pump and then back to the tank. Friction head loss was measured in the 3" pipe with a 10-foot long loss section.

Pump head pressure taps were located two diameters away from the suction and discharge flange connections. The suction and discharge piping was standard wall 4 inch and 3 inch, respectively.

The system drive train was powered by a 75 hp, 460-volt, 1780-rpm motor connected to a variable frequency drive to vary the speed and therefore pipeline velocities. The output of this motor was connected to the pump using a standard v-belt drive.

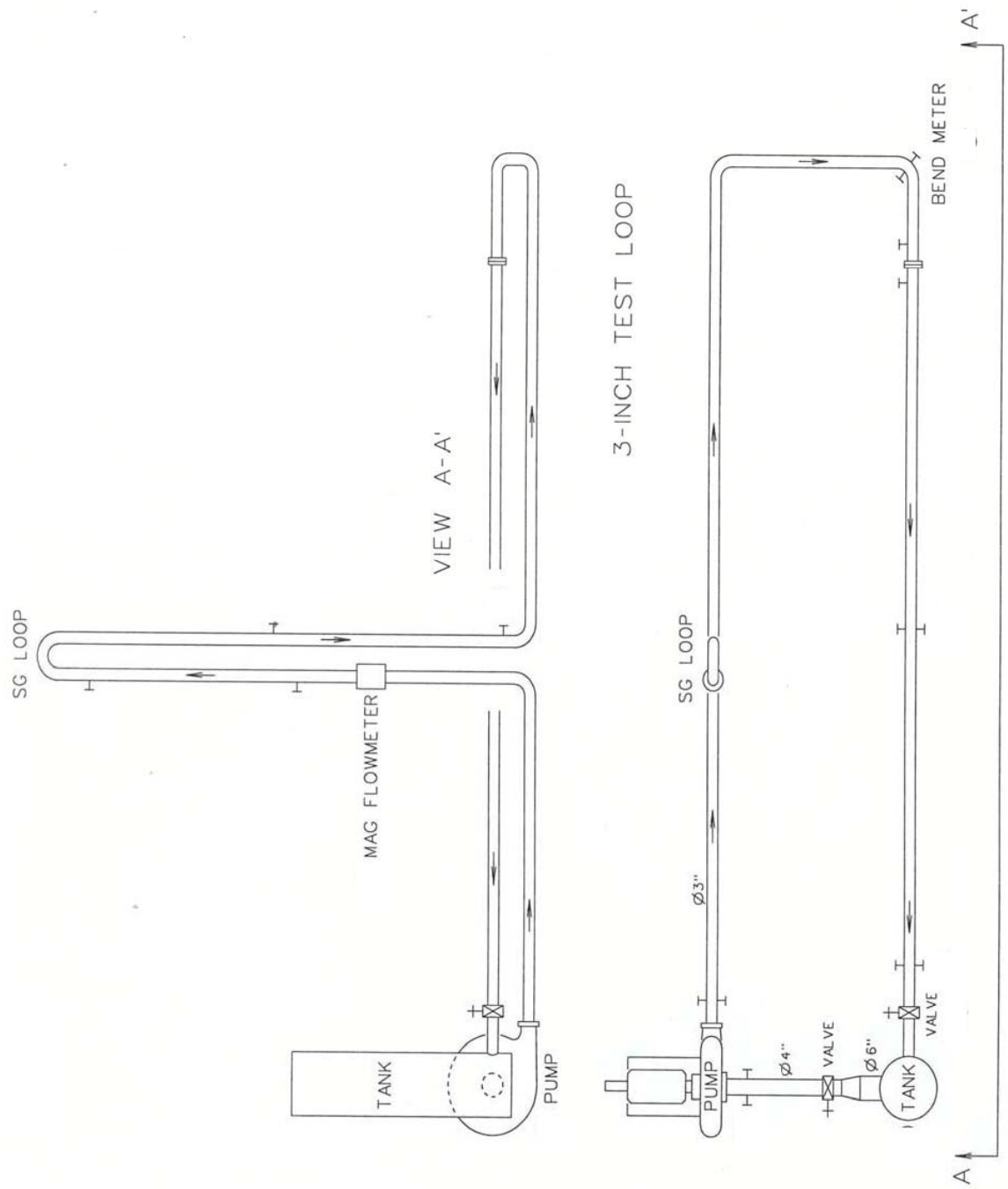


Figure D-1. Standard GIW 3" closed test loop diagram.

TEST INSTRUMENTATION

The GIW Hydraulic Test Laboratory instrumentation was used for the testing. All instrumentation was calibrated to ISO 9001 standards at intervals as specified in GIW calibration procedure ER001. A copy of this procedure can be provided upon request. During all testing, measurements were taken with both a primary and a secondary instrument. If any one instrument varied outside its specified accuracy, then the transducer would be examined and re-calibrated if necessary.

The primary flow meter for the 3-inch slurry system was a 3" Yokogawa magnetic flow meter. As shown in Figure D-1, this flow meter was located down stream of the pump. The secondary flow meter in the system was a 3-inch bend flow meter. This meter calculates flow rate from the measured pressure difference between the inner and outer curvature of the bend. As shown in Figure D-1, this elbow meter was located downstream of the pump.

All pressure measurements used for the pump suction, discharge, and bend meters were measured during the tests with Yokogawa differential pressure transducers. These transducers are certified bi-annually using a certified dead weight tester, mercury manometer and a 20 foot water column. Transducers that had converted readings that varied more than 0.25% of full scale were re-calibrated.

To account for variation in the density and vapor pressure of water with changes in temperature, an RTD type temperature transducer was located in the tank. A second RTD was used to measure lab ambient temperature. Measurement of the slurry density was accomplished by use of a specific gravity loop located downstream of the pump.

TEST PROCEDURE AND TESTS CARRIED OUT

In December 2006, 3 phases of lab tests were conducted with a 3X4 LCC 12 GIW pump in the GIW Hydraulic Test Lab. Table D-1 below has been provided to summarize the lab test work in sequential form for each phase. All test data mentioned can be found in Attachment 1 of this report.

Table D-1. Summary of Laboratory Tests.

GIW Test Number	Description of Test / Material Description	Pump Speed (rpm)
	Phase 1 (1.08 SG Clay Slurry)	
M376 -06	Variable speed water test	423 to 1063
M377 -06	Variable speed slurry test, Clay only 1.08 S.G.	423 to 976
M378 -06	Fixed speed slurry test, Clay only 1.08 S.G.	1000
M379 -06	Variable speed slurry test, Sand-clay mix 1.24 S.G.	459 to 993
M380 -06	Fixed speed slurry test, Sand-clay mix 1.24 S.G.	1000
M381 -06	Variable speed slurry test, Sand-clay mix 1.28 S.G.	501 to 999
M382 -06	Fixed speed slurry test, Sand-clay mix 1.28 S.G.	1000
	Phase 2 (1.11 SG Clay Slurry)	
M388 -06	Variable speed slurry test, Clay only 1.11 S.G.	504 to 1023
M389 -06	Fixed speed slurry test, Clay only 1.11 S.G.	1000
M390 -06	Variable speed slurry test, Sand-clay mix 1.29 S.G.	646 to 1064
M391 -06	Fixed speed slurry test, Sand-clay mix 1.29 S.G.	1000
M392 -06	Variable speed slurry test, Sand-clay mix 1.31 S.G.	676 to 1091
M393 -06	Fixed speed slurry test, Sand-clay mix 1.31 S.G.	1000
	Phase 3 (1.14 SG Clay Slurry)	
M394 -06	Variable speed slurry test, Clay only 1.14 S.G.	626 to 1068
M395 -06	Fixed speed slurry test, Clay only 1.14 S.G.	1000
M396 -06	Variable speed slurry test, Sand-clay mix 1.30 S.G.	703 to 1109
M397 -06	Fixed speed slurry test, Sand-clay mix 1.30 S.G.	1000
M398 -06	Variable speed slurry test, Sand-clay mix 1.34 S.G.	745 to 1147
M399 -06	Fixed speed slurry test, Sand-clay mix 1.34 S.G.	1000

Before testing could begin, the loop was polished with 662 micron sand for approximately 3 hours to remove any rust or rough spots that would smooth during the upcoming tests and result in a change in the relative roughness of the pipe. Test M376 – 06 was used to verify that the relative roughness (e/d) of the loss section had not changed since M 78 –04.

For each of the tests listed above, all pressure transducer lines were purged prior to testing to ensure that lines did not contain air, and all instrumentation readings checked against the respective backup before proceeding.

The initial test of Phase 1, test M377 –06 was conducted on clay only slurry having a SG of 1.08. The tank was flushed and slurry received from CF Industries having a SG of 1.06 was loaded into the tank; additional phosphate clay was then loaded into the tank to increase the concentration to 1.08 SG. For test M379 –06 and M381 –06, tailings sand, having the particle size as indicated below in Figure D-2, was loaded into the tank to achieve the desired concentrations.

The initial test of Phase 2, test M388 –06 was conducted on clay only slurry having a SG of 1.11. The tank was flushed and filled with clean water. Phosphate clay was loaded into the tank to increase the concentration to 1.11 SG. For test M390 –06 and M392 –06, tailings sand, having the particle size as indicated below in Figure D-2, was loaded into the tank to achieve the desired concentrations. Test M390 -06 represented the sand-clay mix for the lower tonnage operation with 1000 tons per hour resulting in a SG of 1.27 as indicated in the schematic above. During the process of loading sand to the system, too much sand was added to the tank increasing the concentration to 1.29 SG.

The initial test of Phase 3, test M394 –06 was conducted on clay only slurry having a SG of 1.14. The tank was flushed and filled with clean water. Phosphate clay was loaded into the tank to increase the concentration to 1.14 SG. For test M396 –06 and M398 –06, tailings sand, having the particle size as indicated below in Figure D-2, was loaded into the tank to achieve the desired concentrations.

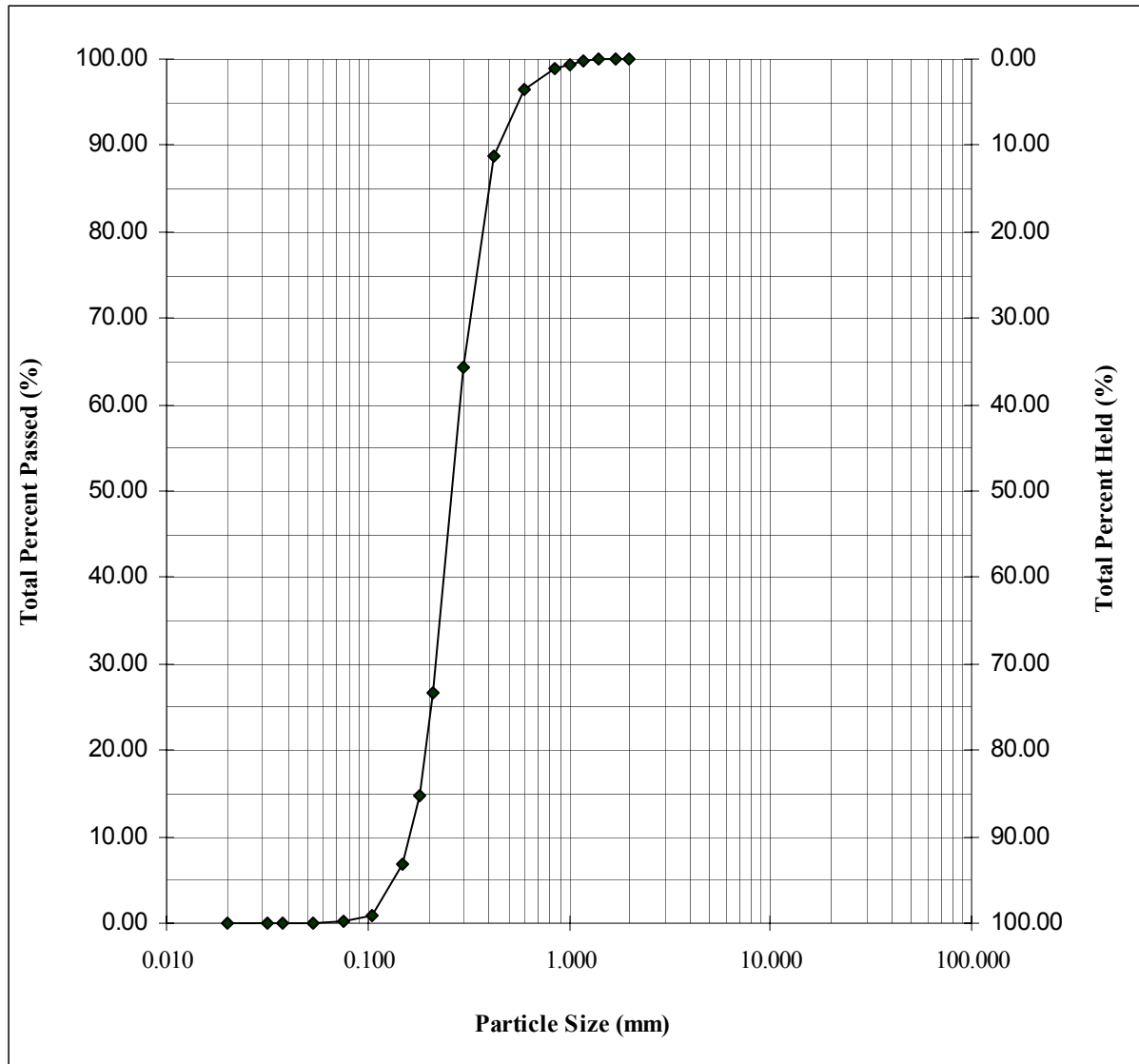


Figure D-2. Particle Size Analysis for the Tailings Sand.

As shown above, the D50 value of the tailings sand was 267 micron and the D85 value was 406 micron. The Dmax was 2.0 mm with only 1 percent passed below 106 micron.

EVALUATION PROCEDURES AND RESULTS

Pressure drop and flow rate data from experiments were transferred into the pipe wall stress and velocity, V . The pipeline shear stress, τ_0 , is related to the friction loss gradient, j , and the pressure gradient, $\Delta p / \Delta x$, through the following relationship:

$$\tau_0 = \frac{(\Delta p / \Delta x) D}{4} = \frac{\rho g j D}{4}$$

where D is the pipeline diameter. The gradient, j , is the friction losses expressed in ft of slurry per ft of pipe, ρ is the delivered density of the slurry, and g is the acceleration due to gravity (32.2 ft/sec^2). Figures D-3, D-5, and D-7 contain the test results of Phase 1, 2, and 3 respectively for this test program.

Phase 1

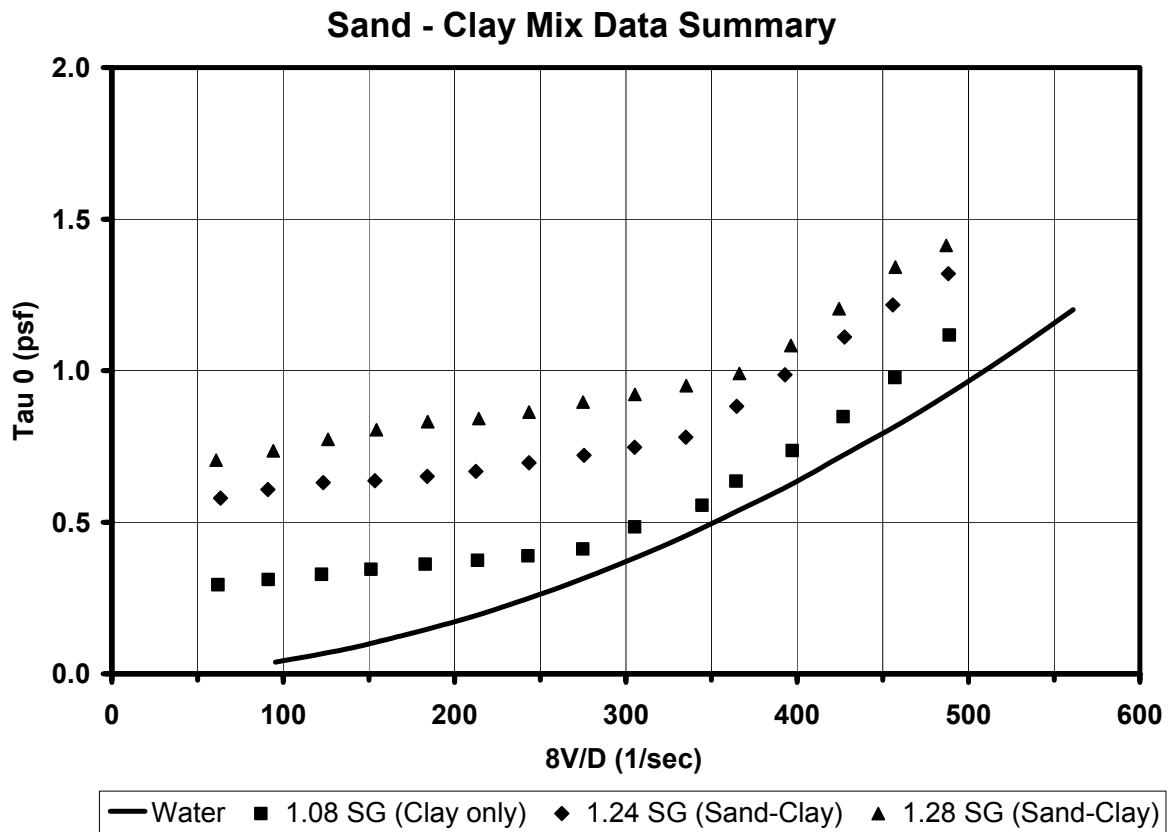


Figure D-3. $8V/D$ Versus τ_0 for Sand-Clay Mix Test Program.

The above test data can also be represented in terms of pipeline velocity versus hydraulic gradient, j , for the test pipe diameter of 3.15 inches as shown below in Figure D-4.

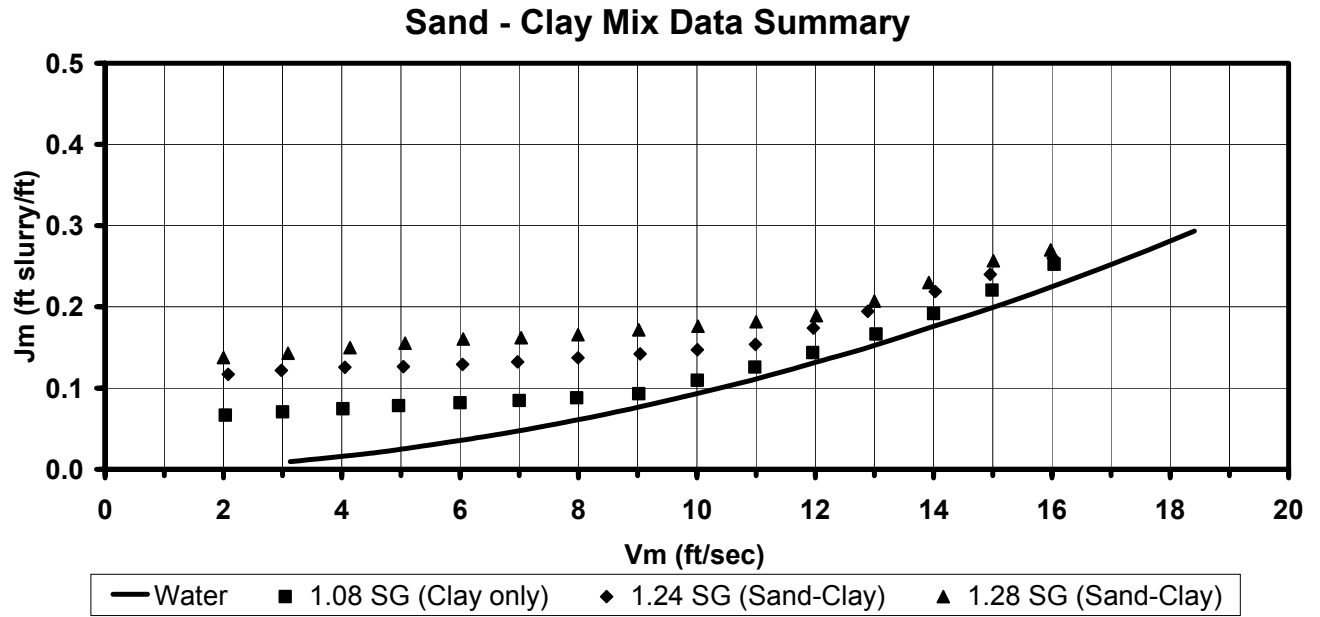


Figure D-4. Pipeline Velocity Versus Hydraulic Gradient for 3.15" Pipe.

Phase 2

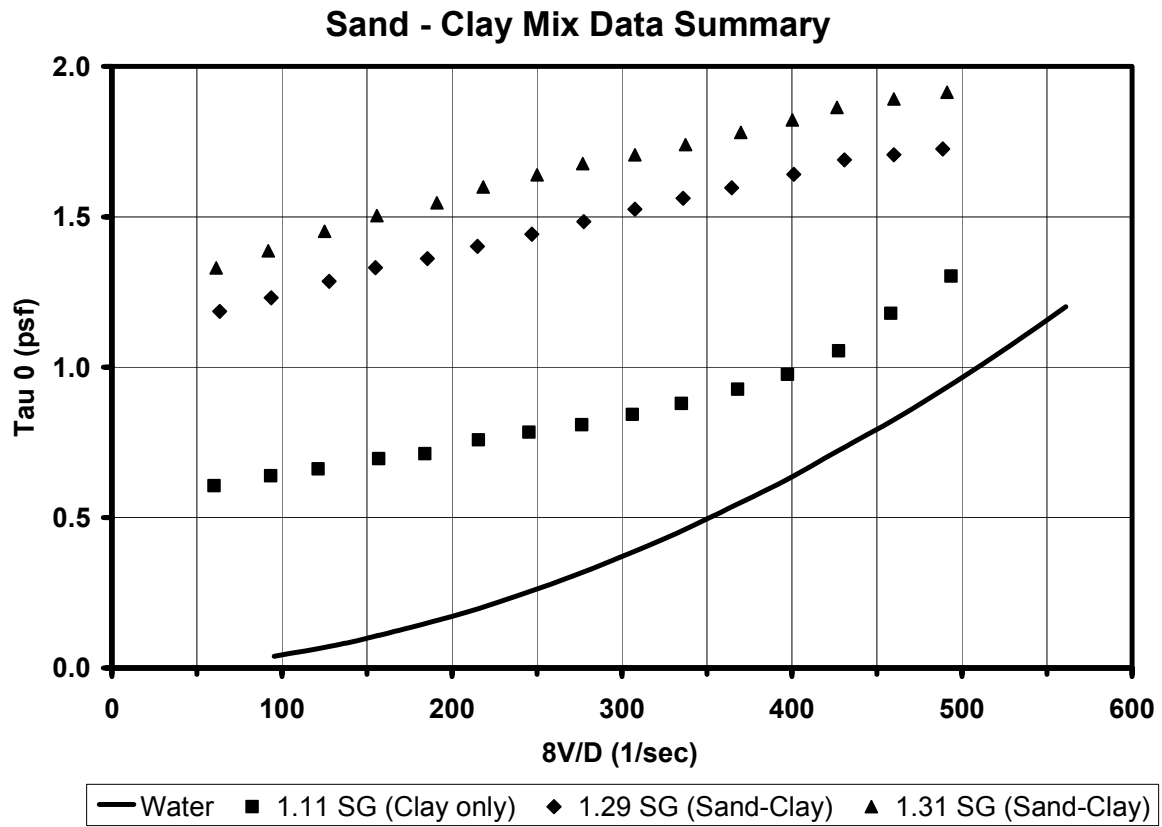


Figure D-5. $8V/D$ Versus τ_0 for Sand-Clay Mix Test Program.

The above test data can also be represented in terms of pipeline velocity versus hydraulic gradient, j , for the test pipe diameter of 3.15 inches as shown below in Figure D-6.

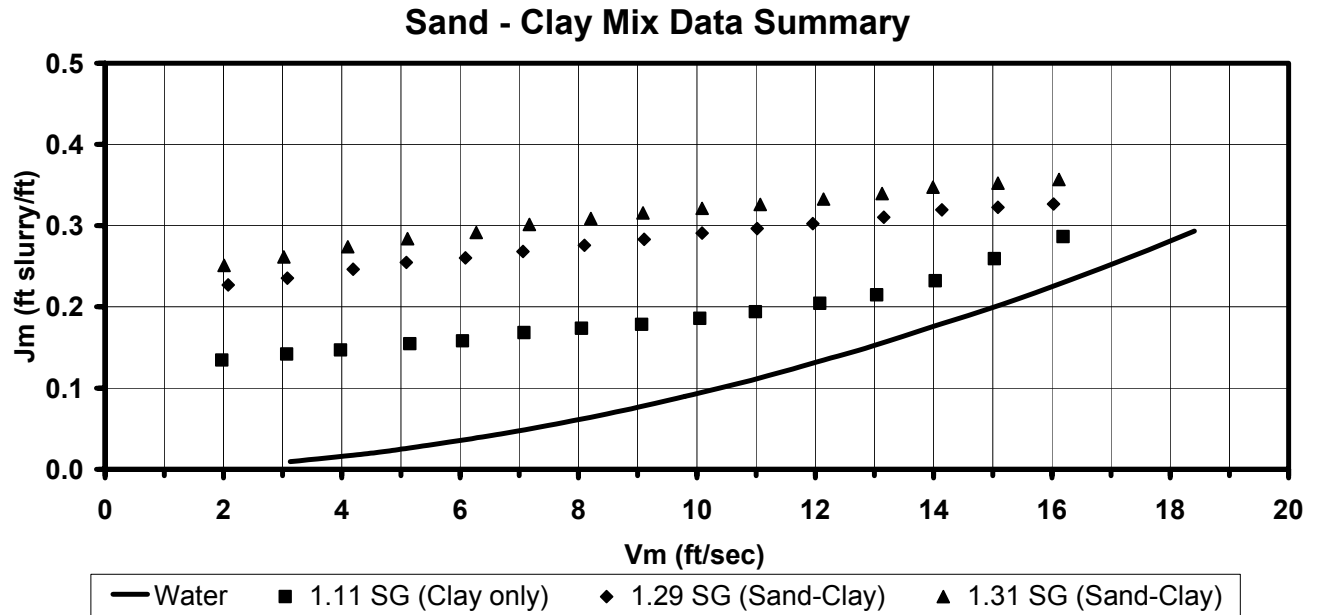


Figure D-6. Pipeline Velocity Versus Hydraulic Gradient for 3.15" Pipe.

Phase 3

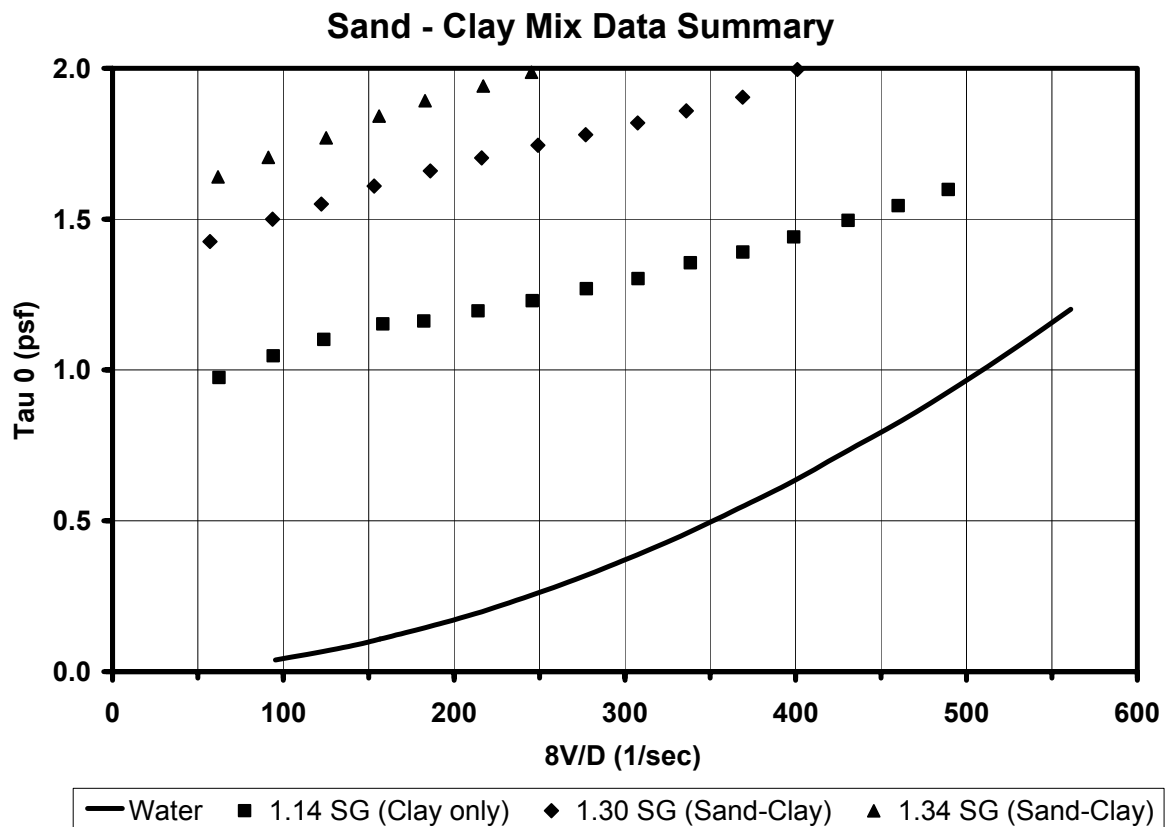


Figure D-7. $8V/D$ Versus τ_0 for Sand-Clay Mix Test Program.

The above test data can also be represented in terms of pipeline velocity versus hydraulic gradient, j , for the test pipe diameter of 3.15 inches as shown below in Figure D-8.

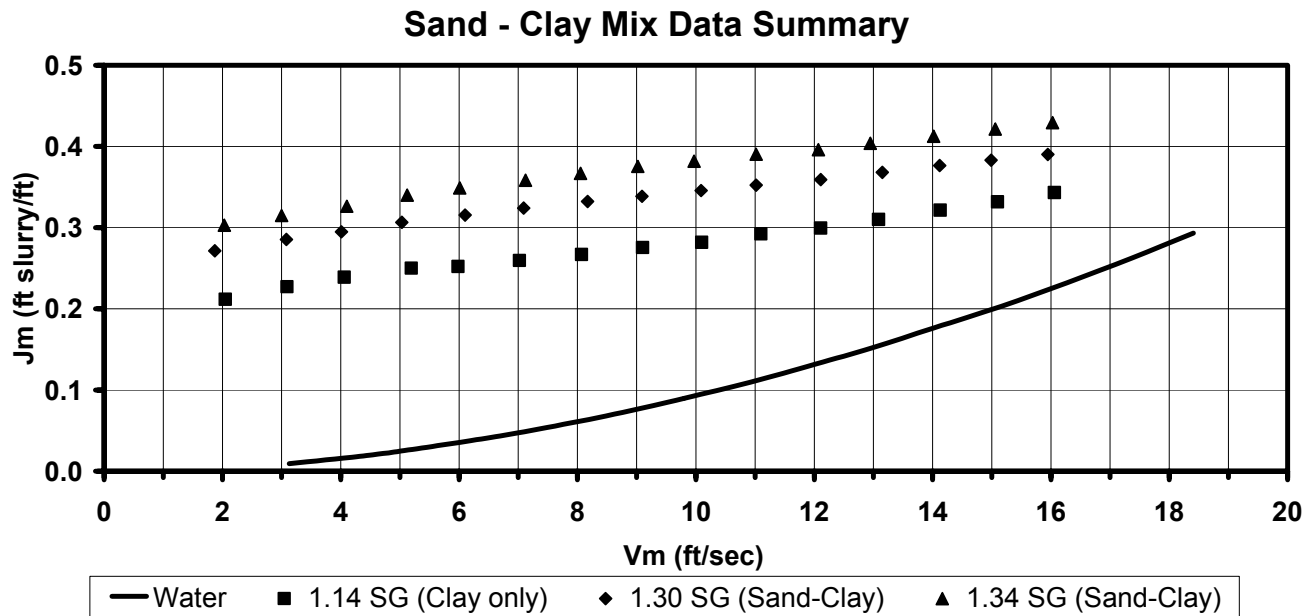


Figure D-8. Pipeline Velocity versus Hydraulic Gradient for 3.15" Pipe.

CONCLUSION

Based on the above test program, GIW will establish a transport model suitable for field applications up to production pipeline sizes. This is to be addressed by Dr. Anders Sellgren.

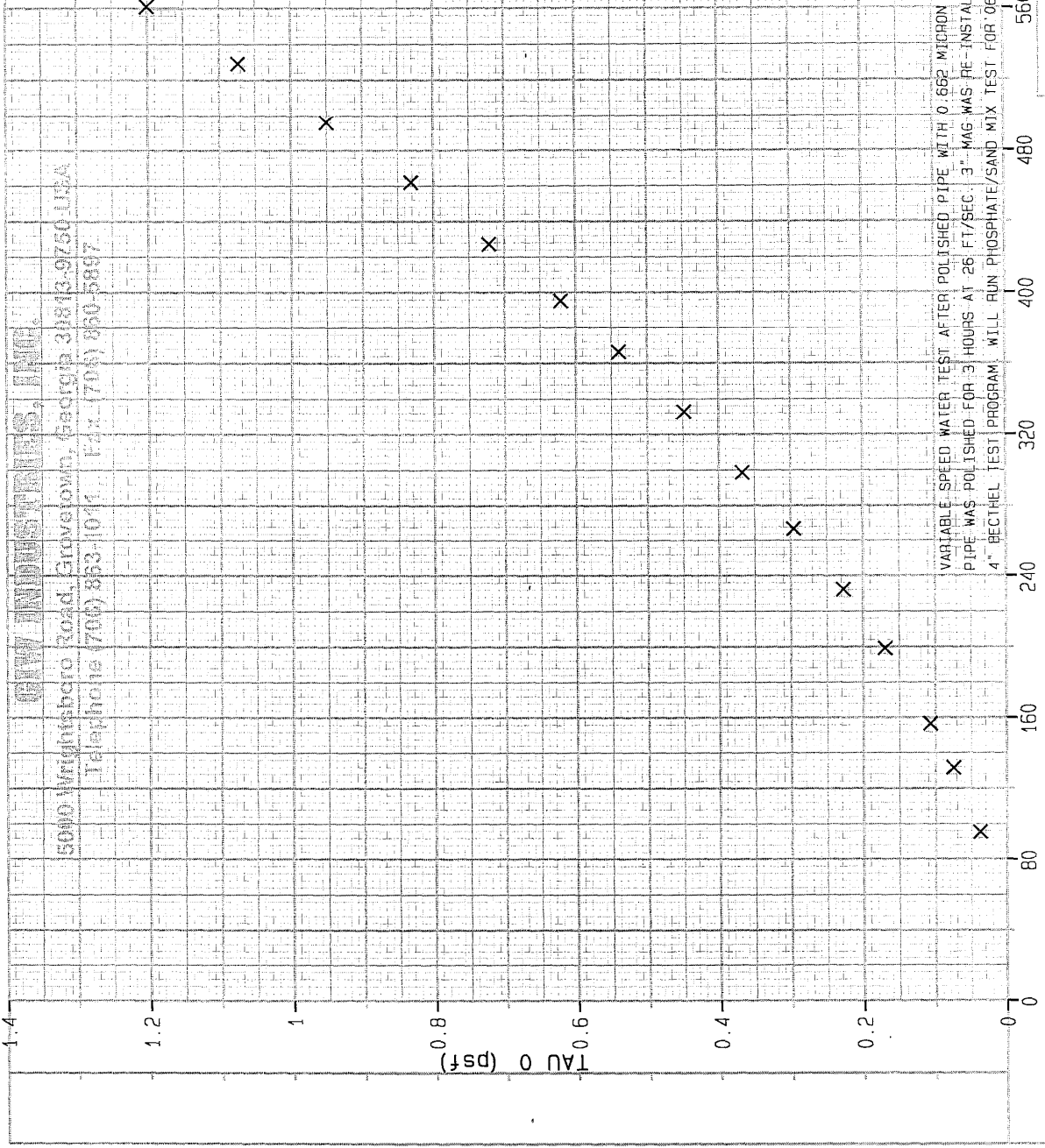
Attachment 1

20051201

GIW Industries Inc.
A KSB Company

GIW **W.O.** **CUST.** **NAME** **REF.** **CUST.** **P.O.** **PUMP** **PUMP** **ASSY.** **SHELL** **D/NO.** **IMP.** **D/NO.** **DATE**

N/A FIPR
VARIABLE SPEED H2O
80H
N/A
3X4 LCC 12 M
5012-LAB
2004X
37980
22 DEG 1.00"
38000 12.15"
12/14/06



VARIABLE SPEED WATER TEST AFTER POLISHED PIPE WITH 0.662 MICRON SAND
PIPE WAS POLISHED FOR 3 HOURS AT 26 FT/SEC. 3" MAG WAS RE-INSTALLED FROM THE
4" RECTHEL TEST PROGRAM. WILL RUN PHOSPHATE/SAND MIX TEST FOR 06 FIPR PROGRAM.

CURVE # V375 -06

PUMP DETAIL		CH	USE	RDG	SOURCE	INSTRUMENT		GIW INDUSTRIES INC.						
								5000 WRIGHTSBORO ROAD						
PUMP	3X4 LCC 12 M	1	SUCTION	#1	YOKOGAWA-30-30	H2O-1E2	06123B	1.000	GROVETOWN, GEORGIA 30813-9750					
		2	AVE S.G.U-SECDN	#2	YOKOGAWA -4-8'	H2O-1E2	02096B	0.500	TELEPHONE (706) 863-1011					
SERIAL NUMBER	5012-LAB	3S	DIFHEAD B	#3	YOKOGAWA 236'	H2O 1E1	06123B	1.000	FAX (Engr) (706) 868-8025					
ASSEMBLY DRAWING NO	2004X	4S	FLOWBEND A	#4	YOKOGAWA 24'	H2O 1E2	06123B	1.000	FAX (Sales) (706) 860-5897					
SHELL DRAWING NO	3798D	5S	LOSS B	#5	YOKOGAWA 12'	H2O 1E2	08116B	1.000						
IMPELLER DRAWING NO	3800D	6.	NULLLOSSHEAT X	#6	YOKOGAWA 24'	H2O 1E2	06123B	0.000	TEST CURVE NO V376 -06 DATE 12/14/06					
IMPELLER DIAMETER	12.15"	7P	NULLDIFHEAD	#7	YOKO -30'TO 30'H2O	1E2	04285B	0.000						
OUTLET ANGLE	22 DEG	8.	NULLLOSSHEAT X	#8	YOKOGAWA 236'	H2O 1E1	06123B	0.000	PUMP TEST DATA FOR FIPR					
OUTLET WIDTH	1.00"	9	AVE S.G.U-SECUP	#9	YOKOGAWA 12'	H2O 1E2	08116B	0.500	----- VARIABLE SPEED H2O					
ROTATION	CLOCKWISE	10.	DISCHARGE	#10	YOKOGAWA 236'	H2O 1E1	06123B	1.000	PROJECT 80H					
HYDROSTATIC PRESS.	STD	11P	DIFHEAD A	#11	YOKOGAWA 60'	H2O 1E2	08116B	1.000	GIW WORK ORDER NO N/A					
		12.	FLOWBEND B	#12	YOKOGAWA 36'	H2O 1E2	02096B	1.000	CUSTOMER ORDER NO N/A					
DRIVER DETAIL		13P	LOSS A	#13	YOKOGAWA-4T08'	H2O-1E2	02096B	1.000						
-----		14.	NULLDISCHARGE	#14	ROSE. 5 -30-30'H2O-1E2	07142D	0.000							
TYPE 11.8:11.8 V-BELTS	DRIVE	15S	NULLDISCHARGE	#15	ROSEMOUNT 5 60'H2O	1E2	09153B	0.000	TEST CONSTANTS					
MAKE	BALDOR	16.	NULLFLOW	#16	ROSEMONT 7 692'H2O	1E1	07142D	0.000	1 FT H2O = 0.0 US GPM USING					
SERIAL NO	5275	17P	NULLFLOWMAG 4"	#17	4" YOKO 1200GPM	1E0	08174B	0.000	BEND HT CORR = 0.1 FT CONST = 143.01					
FRAME SIZE	365T	18P	NULLFLOW3" MAG	#18	3" F&P 700 GPM	1E1	02145B	0.000	DISCHARGE PIPE DIAMETER = 3.00 INS.					
RPM = 1780	BHP = 75.	19P	NULLFLOW8" MAG	#19	8" F&P 5000 GPM		09305B	0.000	METER 1.87' ABOVE PUMP DATUM, TAP-0.56'					
460 VOLTS 3 PHASE 60 CPS		20P	TEMP TANK	#20	RTD 4" 100OHM F 1E1		09286B	1.000	SUCTION PIPE DIAMETER = 4.00 INS.					
		21S	TEMPAMB	#21	RTD AMB 100OHM F 1E1		09215B	1.000	METER 1.87' ABOVE PUMP DATUM, TAP 0.00'					
SCALED PERFORMANCE FACTORS		22	NULLAMP METER	#22	AMP TRANS AMP 1E1		05114B	0.000	PREROTATION LIM 0.0' BAROMETER 29.70"					
-----		23S	NULLTEMPAMBIENT	#23	RTD7 100OHM F 1E1		04088B	0.000	HEAD LOSS = 10.00 FT OF 3.15 INCH DIAM					
SPEED OR RATIO	1000.000	24P	BHP TRQ*RPM	#24	LEBOW DAY 166 FTLB1E1		03173C	1.000	S.G. TAPS 6.00' APART G= 32.14 FT/S/S					
		25	RPM TRQ BAR	#25	LEBOW, DAY1500 RPM 1E0		08164C	1.000	SOLIDS SG 2.65 OF 50.MICRONS S.D.=0.0					
IMP TURN DOWN RATIO	1.000	26S	BHP TRQ BAR	#26	LEBOW, DAY 75HP 1E2		12211D	1.000	PIPE ROUGHNESS REF M 78 -04 E/D=.000120					
MERIDINAL WIDTH RATIO	1.000	27P	NULLFLOW3"MAG	#27	3" YOKO 800 GPM 1E1		12089D	0.000	SAMPLER AREA = 0.00 SQUARE FEET					
SCALE RATIO	1.000	28S	NULLFLOWORIFICE	TECO# 6158	21.80 FPS 1E2		09256C	0.000						
BEP REF	0.GPM, 0.RPM	29P	FLOWMAG 3"	#29	3" YOKO 800 GPM 1E1		03045B	1.065						
EFFICIENCY	0.0% BY 1.000	30P	NULLBHP TRQ*RPM	#30	LEBOW, DAY 833 FTLB1E1		05098C	0.000						
		31	NULLRPM TRQ BAR	#31	LEBOW, DAY1500 RPM 1E0		05024C	0.000						
		32S	NULLBHP TRQ BAR	#32	LEBOW, DAY 300 HP 1E1		07287C	0.000						
TEST RESULTS		^ PRIMARY INSTRUMENTATION USED												

NO	:VELOCITY:	FLOW	: TEMP	: S.G.	: S.G.	:VOLUME:WEIGHT:	MASS	:PIPELINE LOSSES:	dp/dx	: Tau 0 :	8V/D :	Tau 0 :	8V/D :	TIME :
	: Vm :	Qm :	Tm :	Sw :	Sm :	CONC.: CONC.:	Ms :	Im :	Iw :	:	:	ln :	ln :	t :
	: FT/S :	GPM :	F :	:	:	Cv % : Cw % :	TON/HR :	FT/FT :	FT/FT :	psf :	psf :	1/SEC :	psf :	1/SEC :
1 :	18.41 :	447.2 :	73.7 :	0.998 :	0.995 :	-0.2 :	-0.6 :	-0.7 :	0.2933 :	0.2949 :	18.303 :	1.2011 :	561.03 :	0.1833 :
2 :	17.36 :	421.7 :	74.2 :	0.998 :	0.994 :	-0.3 :	-0.7 :	-0.7 :	0.2623 :	0.2638 :	16.366 :	1.0740 :	529.06 :	0.0714 :
3 :	16.27 :	395.3 :	74.4 :	0.998 :	0.995 :	-0.2 :	-0.6 :	-0.6 :	0.2322 :	0.2335 :	14.487 :	0.9507 :	495.95 :	-0.0505 :
4 :	15.16 :	368.2 :	74.6 :	0.998 :	0.994 :	-0.3 :	-0.7 :	-0.7 :	0.2032 :	0.2043 :	12.678 :	0.8320 :	462.03 :	-0.1839 :
5 :	14.02 :	340.6 :	74.9 :	0.998 :	0.994 :	-0.3 :	-0.7 :	-0.6 :	0.1764 :	0.1764 :	11.007 :	0.7224 :	427.30 :	-0.3252 :
6 :	12.97 :	315.1 :	75.1 :	0.998 :	0.994 :	-0.3 :	-0.7 :	-0.6 :	0.1517 :	0.1524 :	9.4643 :	0.6211 :	395.33 :	-0.4763 :
7 :	12.02 :	292.0 :	75.2 :	0.998 :	0.994 :	-0.3 :	-0.7 :	-0.5 :	0.1319 :	0.1321 :	8.2323 :	0.5402 :	366.31 :	-0.6157 :
8 :	10.92 :	265.2 :	75.3 :	0.998 :	0.994 :	-0.3 :	-0.8 :	-0.5 :	0.1096 :	0.1104 :	6.8395 :	0.4488 :	332.72 :	-0.8011 :
9 :	9.80 :	238.0 :	75.3 :	0.998 :	0.994 :	-0.2 :	-0.7 :	-0.4 :	0.0897 :	0.0903 :	5.5966 :	0.3673 :	298.64 :	-1.002 :
10 :	8.76 :	212.7 :	75.3 :	0.998 :	0.994 :	-0.3 :	-0.7 :	-0.4 :	0.0724 :	0.0733 :	4.5151 :	0.2963 :	266.85 :	-1.216 :
11 :	7.62 :	185.0 :	75.3 :	0.998 :	0.994 :	-0.3 :	-0.7 :	-0.3 :	0.0556 :	0.0566 :	3.4682 :	0.2276 :	232.13 :	-1.480 :
12 :	6.54 :	158.8 :	75.2 :	0.998 :	0.994 :	-0.2 :	-0.6 :	-0.2 :	0.0416 :	0.0427 :	2.5941 :	0.1702 :	199.20 :	-1.771 :
13 :	5.14 :	124.9 :	74.7 :	0.998 :	0.994 :	-0.2 :	-0.7 :	-0.2 :	0.0263 :	0.0275 :	1.6397 :	0.1076 :	156.65 :	-2.229 :
14 :	4.32 :	104.8 :	74.6 :	0.998 :	0.994 :	-0.2 :	-0.6 :	-0.2 :	0.0184 :	0.0200 :	1.1452 :	0.0752 :	131.55 :	-2.588 :
15 :	3.13 :	76.0 :	74.6 :	0.998 :	0.994 :	-0.3 :	-0.7 :	-0.1 :	0.0093 :	0.0112 :	0.5819 :	0.0382 :	95.368 :	-3.265 :
TESTED BY	J.LATTA	DATE 12/14/06	COMMENTS: VARIABLE SPEED WATER TEST AFTER POLISHED PIPE WITH 0.662 MICRON SAND.											
			PIPE WAS POLISHED FOR 3 HOURS AT 26 FT/SEC. 3" MAG WAS RE-INSTALLED FROM THE											
WITNESSED BY	L. WHITLOCK	FOR	FIPR 4" BECTHEL TEST PROGRAM. WILL RUN PHOSPHATE/SAND MIX TEST FOR'06 FIPR PROGRAM.											
Version:	20051201		V376 -06 12/14/06											

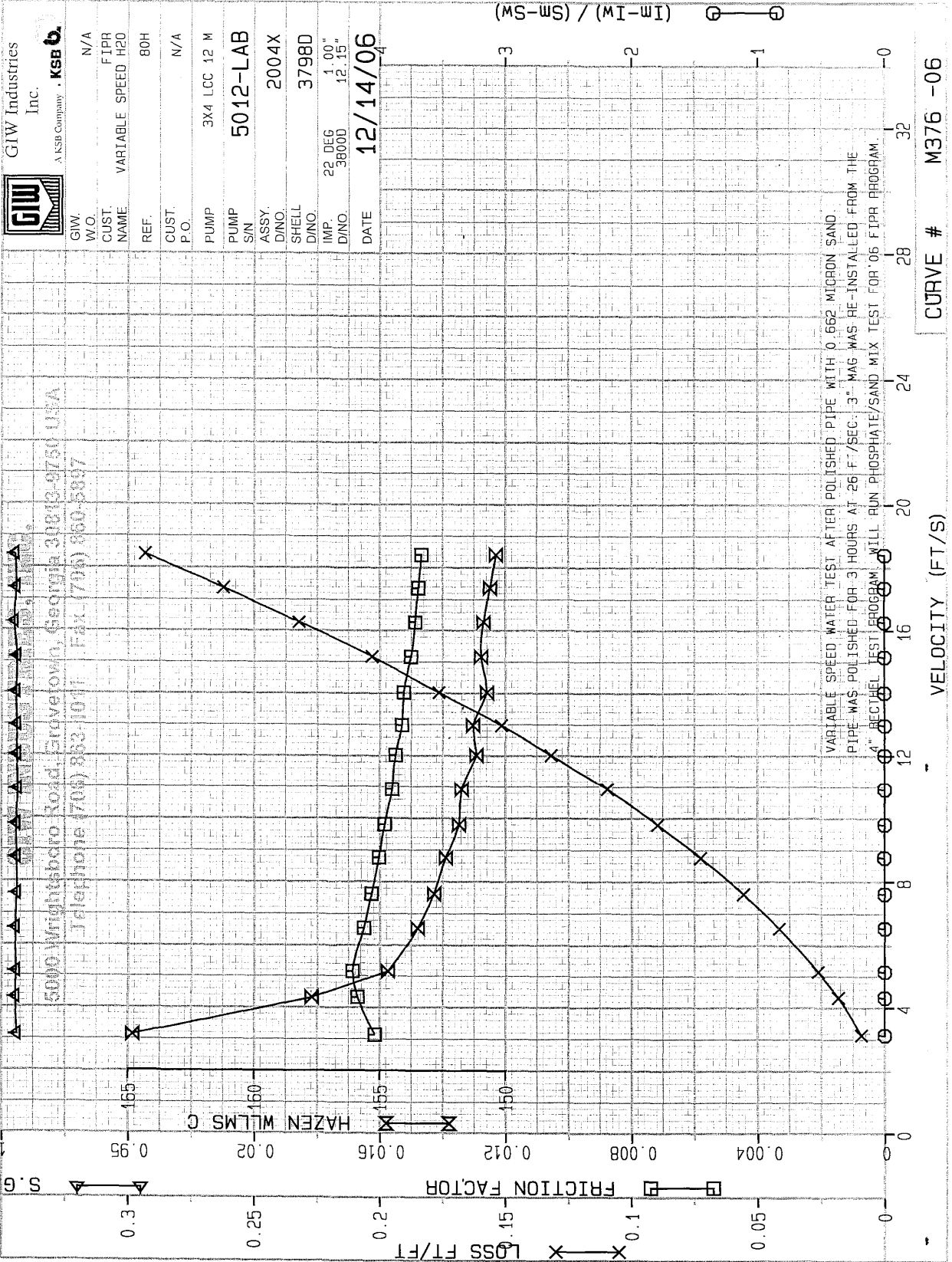
20051201



GIW Industries Inc.
A KSB Company

W.O. N/A
CUST. FIPR
NAME VARIABLE SPEED H2O
REF. 80H
CUST. P.O. N/A
PUMP 3X4 LCC 12 M
PUMP S/N 5012-LAB
ASSY. D/NO. 2004X
SHELL 3798D
D/NO. 1 00"
IMP. 22 DEG 38000 12.15"
D/NO. 12.15"
DATE 12/14/06

5000 Wrightsboro Road, Groveside, Georgia 30813-9750 USA
Telephone (706) 863-1041 Fax (706) 860-5897



PUMP DETAIL

PUMP 3X4 LCC 12 M

SERIAL NUMBER 5012-LAB
 ASSEMBLY DRAWING NO 2004X
 SHELL DRAWING NO 3798D
 IMPELLER DRAWING NO 3800D
 IMPELLER DIAMETER 12.15"
 OUTLET ANGLE 22 DEG
 OUTLET WIDTH 1.00"
 ROTATION CLOCKWISE
 HYDROSTATIC PRESS. STD

DRIVER DETAIL

TYPE 11.8:11.8 V-BELTS/DRIVE
 MAKE BALDOR
 SERIAL NO 5275
 FRAME SIZE 365T
 RPM = 1780 BHP = 75.
 460 VOLTS 3 PHASE 60 CPS

SCALED PERFORMANCE FACTORS

SPEED OR RATIO 1000.000

IMP TURN DOWN RATIO 1.000
 MERIDINAL WIDTH RATIO 1.000
 SCALE RATIO 1.000
 BEP REF 0.GPM, 0.RPM
 EFFICIENCY 0.0% BY 1.000

TEST RESULTS

NO	VELOCITY	FLOW	TEMP	S.G.	S.G.	VOLUME	WEIGHT	MASS	REYNOLDS	PIPELINE LOSSES	FRICTION FACTRS	HAZEN	Im-Iw	TIME
:	Vm	Qm	Tm	Sw	Sm	CONC.	CONC.	Ms	NUMBER	Im	Iw	Fm	Fw	WLLMS
:	FT/S	GPM	F			Cv %	Cw %	TON/HR	Re	FT/FT	FT/FT		SAME Re	C
1	18.41	447.2	73.7	0.998	0.995	-0.2	-0.6	-0.7	0.482E+06	0.2933	0.2949	0.0147	0.0147	150.:0.0000
2	17.36	421.7	74.2	0.998	0.994	-0.3	-0.7	-0.7	0.459E+06	0.2623	0.2638	0.0148	0.0148	151.:0.0000
3	16.27	395.3	74.4	0.998	0.995	-0.2	-0.6	-0.6	0.431E+06	0.2322	0.2335	0.0149	0.0149	151.:0.0000
4	15.16	368.2	74.6	0.998	0.994	-0.3	-0.7	-0.7	0.402E+06	0.2032	0.2043	0.0150	0.0150	151.:0.0000
5	14.02	340.6	74.9	0.998	0.994	-0.3	-0.7	-0.6	0.374E+06	0.1764	0.1764	0.0152	0.0152	151.:0.0000
6	12.97	315.1	75.1	0.998	0.994	-0.3	-0.7	-0.6	0.346E+06	0.1517	0.1524	0.0153	0.0153	151.:0.0000
7	12.02	292.0	75.2	0.998	0.994	-0.3	-0.7	-0.5	0.321E+06	0.1319	0.1321	0.0155	0.0155	151.:0.0000
8	10.92	265.2	75.3	0.998	0.994	-0.3	-0.8	-0.5	0.292E+06	0.1096	0.1104	0.0156	0.0157	152.:0.0000
9	9.80	238.0	75.3	0.998	0.994	-0.2	-0.7	-0.4	0.263E+06	0.0897	0.0903	0.0159	0.0159	152.:0.0000
10	8.76	212.7	75.3	0.998	0.994	-0.3	-0.7	-0.4	0.235E+06	0.0724	0.0733	0.0160	0.0162	152.:0.0000
11	7.62	185.0	75.3	0.998	0.994	-0.3	-0.7	-0.3	0.204E+06	0.0556	0.0566	0.0163	0.0165	153.:0.0000
12	6.54	158.8	75.2	0.998	0.994	-0.2	-0.6	-0.2	0.175E+06	0.0416	0.0427	0.0165	0.0169	154.:0.0000
13	5.14	124.9	74.7	0.998	0.994	-0.2	-0.7	-0.2	0.137E+06	0.0263	0.0275	0.0169	0.0176	155.:0.0000
14	4.32	104.8	74.6	0.998	0.994	-0.2	-0.6	-0.2	0.115E+06	0.0184	0.0200	0.0167	0.0182	158.:0.0000
15	3.13	76.0	74.6	0.998	0.994	-0.3	-0.7	-0.1	0.830E+05	0.0093	0.0112	0.0162	0.0193	165.:0.0000

TESTED BY J.LATTA DATE 12/14/06 COMMENTS: VARIABLE SPEED WATER TEST AFTER POLISHED PIPE WITH 0.662 MICRON SAND.

PIPE WAS POLISHED FOR 3 HOURS AT 26 FT/SEC. 3" MAG WAS RE-INSTALLED FROM THE
 WITNESSED BY L. WHITLOCK FOR FIPR 4" BECTHEL TEST PROGRAM. WILL RUN PHOSPHATE/SAND MIX TEST FOR '06 FIPR PROGRAM
 Version: 20051201 M376 -06 12/14/06

CH USE RDG SOURCE INSTRUMENT

1 SUCTION #1 YOKOGAWA-30-30 H20-1E2 06123B 1.000
 2 AVE S.G.U-SECDN #2 YOKOGAWA -4-8' H20-1E2 02096B 0.500
 3S DIFHEAD B #3 YOKOGAWA 236' H20 1E1 06123B 1.000
 4S FLOWBEND A #4 YOKOGAWA 24' H20 1E2 06123B 1.000
 5S LOSS B #5 YOKOGAWA 12' H20 1E2 08116B 1.000
 6. NULLLOSSHEAT X #6 YOKOGAWA 24' H20 1E2 06123B 0.000
 7P NULLDIFHEAD #7 YOKO -30'TO 30'H20 1E2 04285B 0.000
 8. NULLLOSSHEAT X #8 YOKOGAWA 236' H20 1E1 06123B 0.000
 9 AVE S.G.U-SECUP #9 YOKOGAWA 12' H20 1E2 08116B 0.500
 10. DISCHARGE #10YOKOGAWA 236' H20 1E1 06123B 1.000
 11P DIFHEAD A #11YOKOGAWA 60' H20 1E2 08116B 1.000
 12. FLOWBEND B #12YOKOGAWA 36' H20 1E2 02096B 1.000
 13P LOSS A #13YOKOGAWA-4TO8' H20-1E2 02096B 1.000
 14. NULLDISCHARGE #14ROSE. 5 -30-30'H20-1E2 07142D 0.000
 15S NULLDISCHARGE #15ROSEMOUNT 5 60'H20 1E2 09153B 0.000
 16. NULLFLOW #16ROSEMONT 7 692'H20 1E1 07142D 0.000
 17P NULLFLOWMAG 4" #17 4" YOKO 1200GPM 1E0 08174B 0.000
 18P NULLFLOW3" MAG #18 3" F&P 700 GPM 1E1 02145B 0.000
 19P NULLFLOW8" MAG #19 8" F&P 5000 GPM 09305B 0.000
 20P TEMPTANK #20 RTD 4" 1000HM F 1E1 09286B 1.000
 21S TEMPAMB #21 RTD AMB 1000HM F 1E1 09215B 1.000
 22 NULLAMP METER #22 AMP TRANS AMP 1E1 05114B 0.000
 23S NULLTEMPAMBIENT #23 RTD7 1000HM F 1E1 04088B 0.000
 24P BHP TRQ*RPM #24 LEBOW DAY 166 FTLB1E1 03173C 1.000
 25 RPM TRQ BAR #25 LEBOW, DAY1500 RPM 1E0 08164C 1.000
 26S BHP TRQ BAR #26 LEBOW, DAY 75HP 1E2 12211D 1.000
 27P NULLFLOW3" MAG #27 3" YOKO 800 GPM 1E1 12089D 0.000
 28S NULLFLOWORIFICE TECO# 6158 21.80 FPS 1E2 09256C 0.000
 29P FLOWMAG 3" #29 3" YOKO 800 GPM 1E1 03045B 1.065
 30P NULLBHP TRQ*RPM #30 LEBOW, DAY 833 FTLB1E1 05098C 0.000
 31 NULLRPM TRQ BAR #31 LEBOW, DAY1500 RPM 1E0 05024C 0.000
 32S NULLBHP TRQ BAR #32 LEBOW, DAY 300 HP 1E1 07287C 0.000

^ PRIMARY INSTRUMENTATION USED

GIW INDUSTRIES INC.

5000 WRIGHTSBORO ROAD

GROVETOWN, GEORGIA 30813-9750

TELEPHONE (706) 863-1011

FAX (Engr) (706) 868-8025

FAX (Sales) (706) 860-5897

TEST CURVE NO M376 -06 DATE 12/14/06

PUMP TEST DATA FOR FIPR

VARIABLE SPEED H20

PROJECT 80H

GIW WORK ORDER NO N/A

CUSTOMER ORDER NO N/A

TEST CONSTANTS

1 FT H2O = 0.0 US GPM USING

BEND HT CORR = 0.1 FT CONST = 143.01

DISCHARGE PIPE DIAMETER = 3.00 INS.

METER 1.87' ABOVE PUMP DATUM, TAP-0.56'

SUCTION PIPE DIAMETER = 4.00 INS.

METER 1.87' ABOVE PUMP DATUM, TAP 0.00'

PREROTATION LIM 0.0' BAROMETER 29.70"

HEAD LOSS = 10.00 FT OF 3.15 INCH DIAM

S.G. TAPS 6.00' APART G= 32.14 FT/S/S

SOLIDS SG 2.65 OF 50.MICRONS S.D.=0.0

PIPE ROUGHNESS REF M 78 -04 E/D=.000120

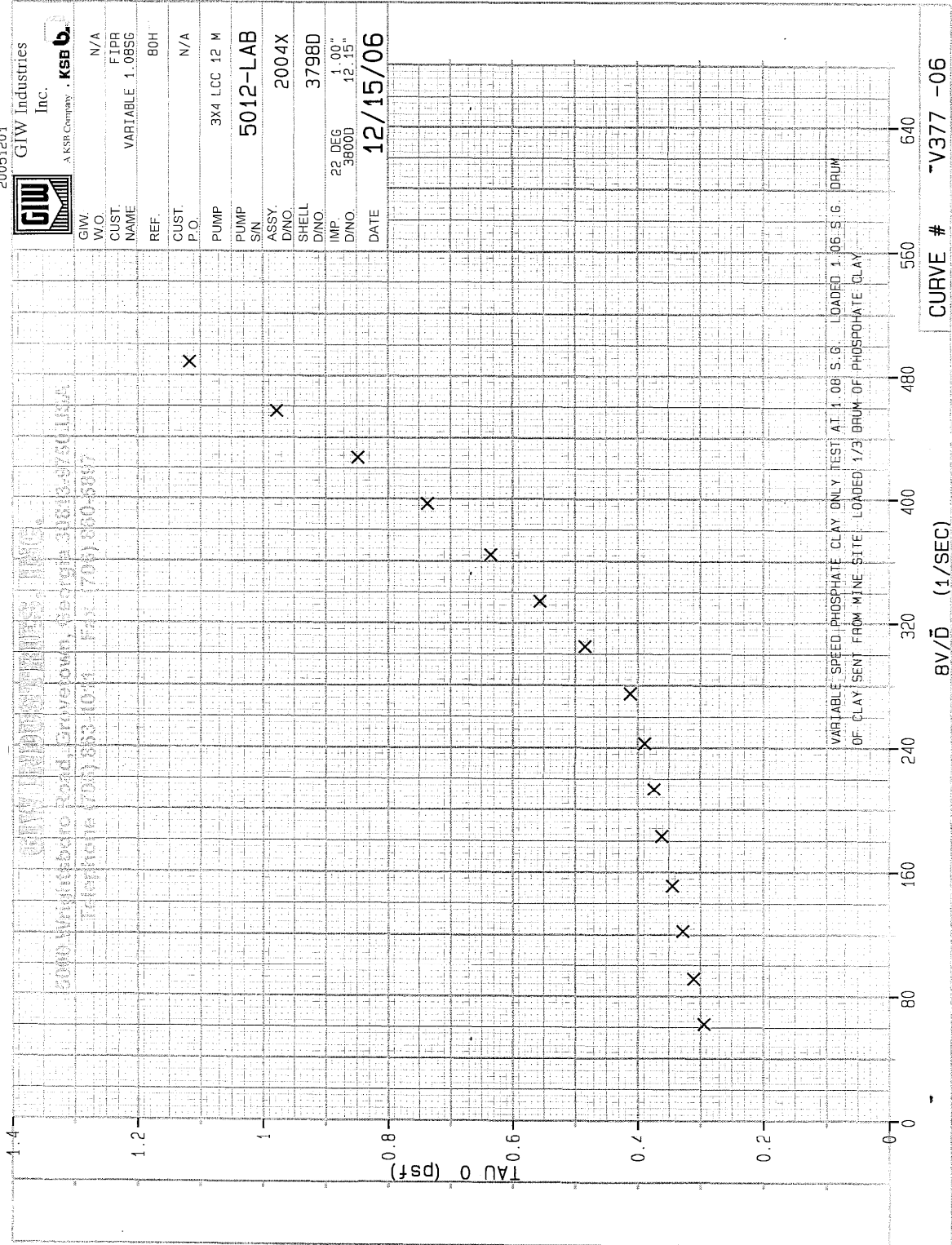
SAMPLER AREA = 0.00 SQUARE FEET

20051201



GIW INDUSTRIES, INC.
6000 Wrightboro Road, Gravelton, Georgia 31013-9750 USA
Telephone (706) 863-1011 Fax (706) 860-5817

GIW: N/A
W.O. FIPR
CUST. NAME VARIABLE 1.06SG
REF. 80H
CUST. P.O. N/A
PUMP 3X4 LOC 12 M
PUMP 5012-LAB
SIN 2004X
ASSY. 37980
SHELL
D/NO. 22 DEG
IMP. 3800D
D/NO. 1.00"
12.15"
DATE 12/15/06



PUMP DETAIL

PUMP 3X4 LCC 12 M

SERIAL NUMBER 5012-LAB

ASSEMBLY DRAWING NO 2004X

SHELL DRAWING NO 3798D

IMPELLER DRAWING NO 3800D

IMPELLER DIAMETER 12.15"

OUTLET ANGLE 22 DEG

OUTLET WIDTH 1.00"

ROTATION CLOCKWISE

HYDROSTATIC PRESS. STD

DRIVER DETAIL

TYPE 11.8:11.8 V-BELTS DRIVE

MAKE BALDOR

SERIAL NO 5275

FRAME SIZE 365T

RPM = 1780 BHP = 75.

460 VOLTS 3 PHASE 60 CPS

SCALED PERFORMANCE FACTORS

SPEED OR RATIO 1000.000

IMP TURN DOWN RATIO 1.000

MERIDINAL WIDTH RATIO 1.000

SCALE RATIO 1.000

BEP REF 0.GPM, 0.RPM

EFFICIENCY 0.0% BY 1.000

TEST RESULTS

CH USE RDG SOURCE INSTRUMENT

1 SUCTION #1 YOKOGAWA-30-30 H2O-1E2 06123B 1.000

2 AVE S.G.U-SECDN #2 YOKOGAWA -4-8' H2O-1E2 02096B 0.500

3S DIFHEAD B #3 YOKOGAWA 236' H2O 1E1 06123B 1.000

4S FLOWBEND A #4 YOKOGAWA 24' H2O 1E2 06123B 1.000

5S LOSS B #5 YOKOGAWA 12' H2O 1E2 08116B 1.000

6. NULLLOSSHEAT X #6 YOKOGAWA 24' H2O 1E2 06123B 0.000

7P NULLDIFHEAD #7 YOKO -30'TO 30'H2O 1E2 04285B 0.000

8. NULLLOSSHEAT X #8 YOKOGAWA 236' H2O 1E1 06123B 0.000

9 AVE S.G.U-SECUP #9 YOKOGAWA 12' H2O 1E2 08116B 0.500

10. DISCHARGE #10YOKOGAWA 236' H2O 1E1 06123B 1.000

11P DIFHEAD A #11YOKOGAWA 60' H2O 1E2 08116B 1.000

12. FLOWBEND B #12YOKOGAWA 36' H2O 1E2 02096B 1.000

13P LOSS A #13YOKOGAWA-4TO8' H2O-1E2 02096B 1.000

14. NULLDISCHARGE #14ROSE. 5 -30-30'H2O-1E2 07142D 0.000

15S NULLDISCHARGE #15ROSEMOUNT 5 60'H2O 1E2 09153B 0.000

16. NULLFLOW #16ROSEMOUNT 7 692'H2O 1E1 07142D 0.000

17P NULLFLOWMAG 4" #17 4" YOKO 1200GPM 1E0 08174B 0.000

18P NULLFLOW3" MAG #18 3" F&P 700 GPM 1E1 02145B 0.000

19P NULLFLOW8" MAG #19 8" F&P 5000 GPM 09305B 0.000

20P TEMPTANK #20 RTD 4" 100OHM F 1E1 09286B 1.000

21S TEMPAMB #21 RTD AMB 100OHM F 1E1 09215B 1.000

22 NULLAMP METER #22 AMP TRANS AMP 1E1 05114B 0.000

23S NULLTEMPAMBIENT #23 RTD7 100OHM F 1E1 04088B 0.000

24P BHP TRQ*RPM #24 LEBOW DAY 166 FTLB1E1 03173C 1.000

25 RPM TRQ BAR #25 LEBOW, DAY 1500 RPM 1E0 08164C 1.000

26S BHP TRQ BAR #26 LEBOW, DAY 75HP 1E2 12211D 1.000

27P NULLFLOW3" MAG #27 3" YOKO 800 GPM 1E1 12089D 0.000

28S NULLFLOWORIFICE TECO# 6158 21.80 FPS 1E2 09256C 0.000

29P FLOWMAG 3" #29 3" YOKO 800 GPM 1E1 03045B 1.065

30P NULLBHP TRQ*RPM #30 LEBOW, DAY 833 FTLB1E1 05098C 0.000

31 NULLRPM TRQ BAR #31 LEBOW, DAY 1500 RPM 1E0 05024C 0.000

32S NULLBHP TRQ BAR #32 LEBOW, DAY 300 HP 1E1 07287C 0.000

^ PRIMARY INSTRUMENTATION USED

GIW INDUSTRIES INC.
5000 WRIGHTSBORO ROAD
GROVETOWN, GEORGIA 30813-9750
TELEPHONE (706) 863-1011
FAX (Engr) (706) 868-8025
FAX (Sales) (706) 860-5897

TEST CURVE NO V377 -06 DATE 12/15/06

PUMP TEST DATA FOR FIPR
VARIABLE 1.08SG

PROJECT 80H
GIW WORK ORDER NO N/A
CUSTOMER ORDER NO N/A

TEST CONSTANTS

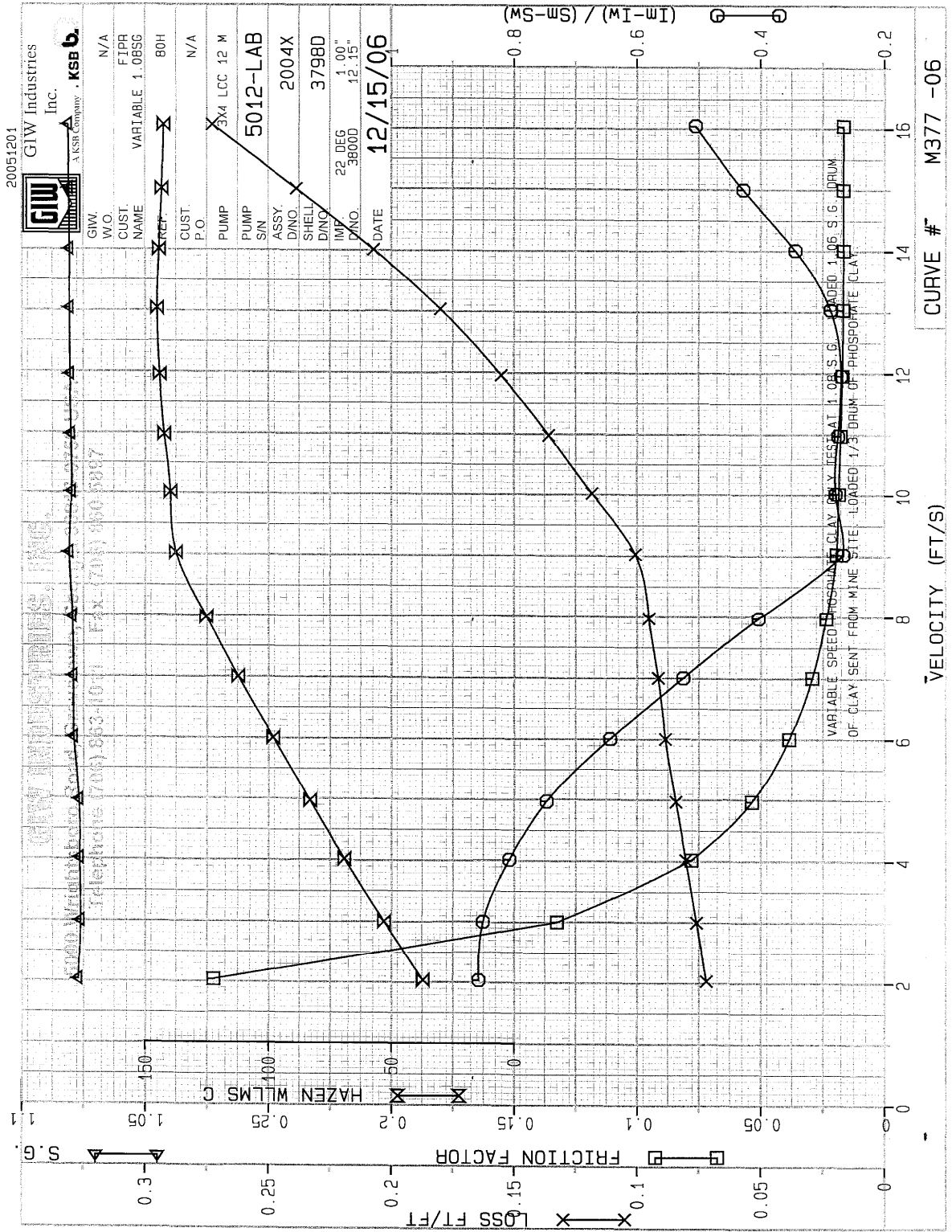
1 FT H2O = 0.0 US GPM USING
BEND HT CORR = 0.1 FT CONST = 143.01
DISCHARGE PIPE DIAMETER = 3.00 INS.
METER 1.87' ABOVE PUMP DATUM, TAP-0.56'
SUCTION PIPE DIAMETER = 4.00 INS.
METER 1.87' ABOVE PUMP DATUM, TAP 0.00'
PREROTATION LIM 0.0' BAROMETER 29.70"
HEAD LOSS = 10.00 FT OF 3.15 INCH DIAM
S.G. TAPS 6.00' APART G= 32.14 FT/S/S
SOLIDS SG 2.65 OF 50.MICRONS S.D.=0.0
PIPE ROUGHNESS REF M 78 -04 E/D=.000120
SAMPLER AREA = 0.00 SQUARE FEET

NO	: VELOCITY :	FLOW :	TEMP :	S.G. :	S.G. :	VOLUME :	WEIGHT :	MASS :	PIPELINE :	LOSSES :	dp/dx :	Tau 0 :	8V/D :	Tau 0 :	8V/D :	TIME :
:	Vm :	Qm :	Tm :	Sw :	Sm :	CONC. :	CONC. :	Ms :	Im :	Iw :	:	:	:	ln :	ln :	t :
:	FT/S :	GPM :	F :	:	:	Cv % :	Cw % :	TON/HR :	FT/FT :	FT/FT :	psf :	psf :	1/SEC :	psf :	1/SEC :	HH.MM :
1	: 16.04 :	: 389.6 :	: 64.0 :	: 1.000 :	: 1.081 :	: 4.9 :	: 12.1 :	: 12.8 :	: 0.2728 :	: 0.2316 :	: 17.023 :	: 1.1171 :	: 488.78 :	: 0.1108 :	: 6.1919 :	: 8.43 :
2	: 14.99 :	: 364.2 :	: 64.8 :	: 0.999 :	: 1.081 :	: 4.9 :	: 12.1 :	: 11.9 :	: 0.2386 :	: 0.2039 :	: 14.890 :	: 0.9772 :	: 456.98 :	: .0231 :	: 6.1246 :	: 8.46 :
3	: 14.00 :	: 340.2 :	: 65.1 :	: 0.999 :	: 1.081 :	: 4.9 :	: 12.1 :	: 11.1 :	: 0.2072 :	: 0.1793 :	: 12.931 :	: 0.8486 :	: 426.81 :	: -.1641 :	: 6.0563 :	: 8.48 :
4	: 13.03 :	: 316.5 :	: 65.4 :	: 0.999 :	: 1.080 :	: 4.9 :	: 12.0 :	: 10.3 :	: 0.1799 :	: 0.1567 :	: 11.226 :	: 0.7367 :	: 397.13 :	: -.3055 :	: 5.9843 :	: 8.49 :
5	: 11.96 :	: 290.4 :	: 65.9 :	: 0.999 :	: 1.080 :	: 4.9 :	: 12.0 :	: 9.4 :	: 0.1552 :	: 0.1333 :	: 9.6830 :	: 0.6354 :	: 364.35 :	: -.4534 :	: 5.8981 :	: 8.54 :
6	: 10.98 :	: 266.6 :	: 66.1 :	: 0.999 :	: 1.080 :	: 4.9 :	: 12.0 :	: 8.6 :	: 0.1358 :	: 0.1137 :	: 8.4741 :	: 0.5561 :	: 334.51 :	: -.5868 :	: 5.8127 :	: 8.58 :
7	: 10.01 :	: 243.2 :	: 66.2 :	: 0.999 :	: 1.080 :	: 4.9 :	: 11.9 :	: 7.9 :	: 0.1183 :	: 0.0959 :	: 7.3805 :	: 0.4843 :	: 305.17 :	: -.7250 :	: 5.7209 :	: 8.59 :
8	: 9.02 :	: 219.1 :	: 66.4 :	: 0.999 :	: 1.081 :	: 4.9 :	: 12.1 :	: 7.1 :	: 0.1006 :	: 0.0790 :	: 6.2756 :	: 0.4118 :	: 274.84 :	: -.8871 :	: 5.6162 :	: 9.02 :
9	: 7.97 :	: 193.6 :	: 66.4 :	: 0.999 :	: 1.079 :	: 4.8 :	: 11.9 :	: 6.2 :	: 0.0950 :	: 0.0628 :	: 5.9303 :	: 0.3892 :	: 242.89 :	: -.9437 :	: 5.4926 :	: 9.03 :
10	: 7.00 :	: 170.1 :	: 66.4 :	: 0.999 :	: 1.079 :	: 4.8 :	: 11.9 :	: 5.4 :	: 0.0913 :	: 0.0495 :	: 5.7002 :	: 0.3741 :	: 213.38 :	: -.9833 :	: 5.3631 :	: 9.06 :
11	: 6.00 :	: 145.8 :	: 66.5 :	: 0.999 :	: 1.079 :	: 4.8 :	: 11.8 :	: 4.6 :	: 0.0884 :	: 0.0373 :	: 5.5161 :	: 0.3620 :	: 182.90 :	: -.1016 :	: 5.2089 :	: 9.07 :
12	: 4.96 :	: 120.6 :	: 66.5 :	: 0.999 :	: 1.077 :	: 4.7 :	: 11.5 :	: 3.7 :	: 0.0842 :	: 0.0264 :	: 5.2514 :	: 0.3446 :	: 151.27 :	: -.1065 :	: 5.0191 :	: 9.09 :
13	: 4.02 :	: 97.6 :	: 66.4 :	: 0.999 :	: 1.076 :	: 4.7 :	: 11.5 :	: 3.0 :	: 0.0801 :	: 0.0180 :	: 4.9983 :	: 0.3280 :	: 122.42 :	: -.1115 :	: 4.8075 :	: 9.14 :
14	: 3.00 :	: 72.8 :	: 66.3 :	: 0.999 :	: 1.076 :	: 4.6 :	: 11.5 :	: 2.2 :	: 0.0759 :	: 0.0106 :	: 4.7337 :	: 0.3106 :	: 91.293 :	: -.1169 :	: 4.5141 :	: 9.18 :
15	: 2.03 :	: 49.4 :	: 66.2 :	: 0.999 :	: 1.077 :	: 4.7 :	: 11.6 :	: 1.5 :	: 0.0718 :	: 0.0053 :	: 4.4806 :	: 0.2940 :	: 61.956 :	: -.1224 :	: 4.1264 :	: 9.22 :

TESTED BY J.LATTA DATE 12/15/06 COMMENTS: VARIABLE SPEED PHOSPHATE CLAY ONLY TEST AT 1.08 S.G. LOADED 1.06 S.G. DRUM
OF CLAY SENT FROM MINE SITE. LOADED 1/3 DRUM OF PHOSPHATE CLAY.

WITNESSED BY L. WHITLOCK FOR FIPR
Version: 20051201

V377 -06 12/15/06

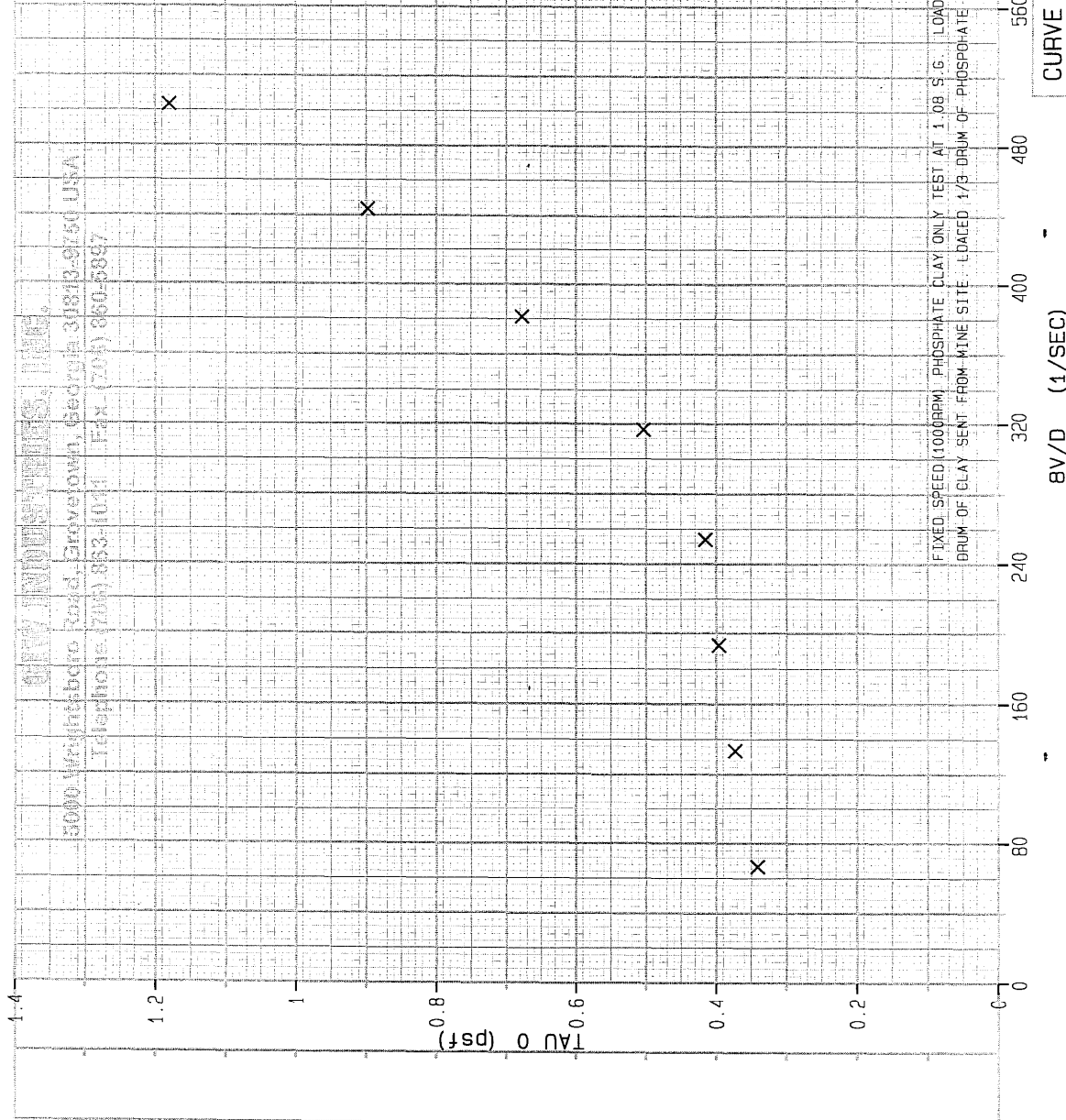


PUMP DETAIL		CH	USE	RDG	SOURCE	INSTRUMENT		GIW INDUSTRIES INC.	
-----		-----						5000 WRIGHTSBORO ROAD	
PUMP	3X4 LCC 12 M	1	SUCTION		#1 YOKOGAWA-30-30	H20-1E2	06123B	1.000	GROVETOWN, GEORGIA 30813-9750
SERIAL NUMBER	5012-LAB	2	AVE	S.G.U-SECDN	#2 YOKOGAWA -4-8'	H20-1E2	02096B	0.500	TELEPHONE (706) 863-1011
ASSEMBLY DRAWING NO	2004X	3S	DIFHEAD	B	#3 YOKOGAWA 236'	H20 1E1	06123B	1.000	FAX (Engr) (706) 868-8025
SHELL DRAWING NO	3798D	4S	FLOWBEND	A	#4 YOKOGAWA 24'	H20 1E2	06123B	1.000	FAX (Sales) (706) 860-5897
IMPELLER DRAWING NO	3800D	6.	NULLLOSSHEAT	X	#6 YOKOGAWA 24'	H20 1E2	06123B	0.000	TEST CURVE NO M377 -06
IMPELLER DIAMETER	12.15"	7P	NULLDIFHEAD		#7 YOKO -30'TO 30'H20	1E2	04285B	0.000	DATE 12/15/06
OUTLET ANGLE	22 DEG	8.	NULLLOSSHEAT	X	#8 YOKOGAWA 236'	H20 1E1	06123B	0.000	PUMP TEST DATA FOR
OUTLET WIDTH	1.00"	9	AVE	S.G.U-SECUP	#9 YOKOGAWA 12'	H20 1E2	08116B	0.500	FIPR
ROTATION	CLOCKWISE	10.	DISCHARGE		#10YOKOGAWA 236'	H20 1E1	06123B	1.000	----- VARIABLE 1.08SG
HYDROSTATIC PRESS.	STD	11P	DIFHEAD	A	#11YOKOGAWA 60'	H20 1E2	08116B	1.000	PROJECT
		12.	FLOWBEND	B	#12YOKOGAWA 36'	H20 1E2	02096B	1.000	GIW WORK ORDER NO
		13P	LOSS	A	#13YOKOGAWA-4TO8'	H20-1E2	02096B	1.000	CUSTOMER ORDER NO
DRIVER DETAIL		14.	NULLDISCHARGE		#14ROSE. 5 -30-30'H20-1E2	07142D	0.000	N/A	N/A
-----		15S	NULLDISCHARGE		#15ROSEMOUNT 5 60'H20 1E2	09153B	0.000	TEST CONSTANTS	
TYPE 11.8:11.8 V-BELTS	DRIVE	16.	NULLFLOW		#16ROSEMONT 7 692'H20 1E1	07142D	0.000	1 FT H2O =	0.0 US GPM USING
MAKE	BALDOR	17P	NULLFLOW	MAG 4"	#17 4" YOKO 1200GPM 1E0	08174B	0.000	BEND HT CORR =	0.1 FT CONST = 143.01
SERIAL NO	5275	18P	NULLFLOW	3" MAG	#18 3" F&P 700 GPM 1E1	02145B	0.000	DISCHARGE PIPE DIAMETER =	3.00 INS.
FRAME SIZE	365T	19P	NULLFLOW	8" MAG	#19 8" F&P 5000 GPM	09305B	0.000	METER 1.87' ABOVE PUMP DATUM, TAP-0.56'	
RPM = 1780	BHP = 75.	20P	TEMP	TANK	#20 RTD 4" 100OHM F 1E1	09286B	1.000	SUCTION PIPE DIAMETER =	4.00 INS.
460 VOLTS	3 PHASE	21S	TEMP	PAMB	#21 RTD AMB 100OHM F 1E1	09215B	1.000	METER 1.87' ABOVE PUMP DATUM, TAP 0.00'	
60 CPS		22	NULL	LAMP METER	#22 AMP TRANS AMP 1E1	05114B	0.000	PREROTATION LIM 0.0' BAROMETER 29.70"	
SCALED PERFORMANCE FACTORS		23S	NULL	TEMPAMB	IENT #23 RTD7 100OHM F 1E1	04088B	0.000	HEAD LOSS = 10.00 FT OF 3.15 INCH DIAM	
-----		24P	BHP	TRQ*RPM	#24 LEBOW DAY 166 FTLB1E1	03173C	1.000	S.G. TAPS 6.00' APART G= 32.14 FT/S/S	
SPEED OR RATIO	1000.000	25	RPM	TRQ BAR	#25 LEBOW,DAY1500 RPM 1E0	08164C	1.000	SOLIDS SG 2.65 OF 50.MICRONS S.D.=0.0	
		26S	BHP	TRQ BAR	#26 LEBOW, DAY 75HP 1E2	12211D	1.000	PIPE ROUGHNESS REF M 78 -04 E/D=.000120	
IMP TURN DOWN RATIO	1.000	27P	NULL	FLOW3"MAG	#27 3" YOKO 800 GPM 1E1	12089D	0.000	SAMPLER AREA = 0.00 SQUARE FEET	
MERIDINAL WIDTH RATIO	1.000	28S	NULL	FLOW	ORIFICE TECO# 6158 21.80 FPS 1E2	09256C	0.000		
SCALE RATIO	1.000	29P	FLOW	MAG 3"	#29 3" YOKO 800 GPM 1E1	03045B	1.065		
BEP REF	0.GPM, 0.RPM	30P	NULL	BHP	TRQ*RPM #30 LEBOW,DAY 833 FTLB1E1	05098C	0.000		
EFFICIENCY	0.0% BY 1.000	31	NULL	RPM	TRQ BAR #31 LEBOW,DAY1500 RPM 1E0	05024C	0.000		
		32S	NULL	BHP	TRQ BAR #32 LEBOW,DAY 300 HP 1E1	07287C	0.000		
TEST RESULTS		^ PRIMARY INSTRUMENTATION USED							

NO :VELOCITY:	FLOW :	TEMP :	S.G. :	S.G. :	VOLUME:WEIGHT:	MASS :	REYNOLDS :	PIPELINE LOSSES:	FRICTION FACTRS:
: Vm :	Qm :	Tm :	Sw :	Sm :	CONC.: CONC.:	Ms :	NUMBER :	Im :	Iw :
: FT/S :	GPM :	F :	:	:	Cv % : Cw % :	TON/HR :	Re :	FT/FT :	FT/FT :
1 : 16.04 :	389.6 :	64.0 :	1.000 :	1.081 :	4.9 : 12.1 :	12.8 :	0.366E+06 :	0.2728 :	0.2316 :
2 : 14.99 :	364.2 :	64.8 :	0.999 :	1.081 :	4.9 : 12.1 :	11.9 :	0.347E+06 :	0.2386 :	0.2039 :
3 : 14.00 :	340.2 :	65.1 :	0.999 :	1.081 :	4.9 : 12.1 :	11.1 :	0.325E+06 :	0.2072 :	0.1793 :
4 : 13.03 :	316.5 :	65.4 :	0.999 :	1.080 :	4.9 : 12.0 :	10.3 :	0.304E+06 :	0.1799 :	0.1567 :
5 : 11.96 :	290.4 :	65.9 :	0.999 :	1.080 :	4.9 : 12.0 :	9.4 :	0.281E+06 :	0.1552 :	0.1333 :
6 : 10.98 :	266.6 :	66.1 :	0.999 :	1.080 :	4.9 : 12.0 :	8.6 :	0.258E+06 :	0.1358 :	0.1137 :
7 : 10.01 :	243.2 :	66.2 :	0.999 :	1.080 :	4.9 : 11.9 :	7.9 :	0.236E+06 :	0.1183 :	0.0959 :
8 : 9.02 :	219.1 :	66.4 :	0.999 :	1.081 :	4.9 : 12.1 :	7.1 :	0.213E+06 :	0.1006 :	0.0790 :
9 : 7.97 :	193.6 :	66.4 :	0.999 :	1.079 :	4.8 : 11.9 :	6.2 :	0.189E+06 :	0.0950 :	0.0628 :
10 : 7.00 :	170.1 :	66.4 :	0.999 :	1.079 :	4.8 : 11.9 :	5.4 :	0.166E+06 :	0.0913 :	0.0495 :
11 : 6.00 :	145.8 :	66.5 :	0.999 :	1.079 :	4.8 : 11.8 :	4.6 :	0.142E+06 :	0.0884 :	0.0373 :
12 : 4.96 :	120.6 :	66.5 :	0.999 :	1.077 :	4.7 : 11.5 :	3.7 :	0.118E+06 :	0.0842 :	0.0264 :
13 : 4.02 :	97.6 :	66.4 :	0.999 :	1.076 :	4.7 : 11.5 :	3.0 :	0.0950E+05 :	0.0801 :	0.0180 :
14 : 3.00 :	72.8 :	66.3 :	0.999 :	1.076 :	4.6 : 11.5 :	2.2 :	0.708E+05 :	0.0759 :	0.0106 :
15 : 2.03 :	49.4 :	66.2 :	0.999 :	1.077 :	4.7 : 11.6 :	1.5 :	0.480E+05 :	0.0718 :	0.0053 :
TESTED BY	J.LATTA	DATE 12/15/06	COMMENTS: VARIABLE SPEED PHOSPHATE CLAY ONLY TEST AT 1.08 S.G. LOADED 1.06 S.G. DRUM						
			OF CLAY SENT FROM MINE SITE. LOADED 1/3 DRUM OF PHOSPOHATE CLAY.						
WITNESSED BY	L. WHITLOCK	FOR	FIPR						
Version:	20051201								
								M377 -06	12/15/06

20051201

GIW Industries Inc. A KSB Company • ksb b	
GIW	N/A
W.O.	FIPR
CUST. NAME	FIXED SPD @ 1.08 SG
REF.	80H
CUST. P.O.	N/A
PUMP	3X4 LCC 12 M
PUMP S/N	5012-LAB
ASSY. D/NO.	2004X
SHELL D/NO.	3798D
IMP. D/NO.	22 DEG 3600D
DATE	12/15/06



CURVE # V378 -06

PUMP DETAIL

PUMP 3X4 LCC 12 M

SERIAL NUMBER 5012-LAB

ASSEMBLY DRAWING NO 2004X

SHELL DRAWING NO 3798D

IMPELLER DRAWING NO 3800D

IMPELLER DIAMETER 12.15"

OUTLET ANGLE 22 DEG

OUTLET WIDTH 1.00"

ROTATION CLOCKWISE

HYDROSTATIC PRESS. STD

DRIVER DETAIL

TYPE 11.8:11.8 V-BELTS DRIVE

MAKE BALDOR

SERIAL NO 5275

FRAME SIZE 365T

RPM = 1780 BHP = .75

460 VOLTS 3 PHASE 60 CPS

SCALED PERFORMANCE FACTORS

SPEED OR RATIO 1000.000

IMP TURN DOWN RATIO 1.000

MERIDINAL WIDTH RATIO 1.000

SCALE RATIO 1.000

BEP REF 0.GPM, 0.RPM

EFFICIENCY 0.0% BY 1.000

TEST RESULTS

CH USE RDG SOURCE INSTRUMENT

1 SUCTION #1 YOKOGAWA-30-30 H20-1E2 06123B 1.000

2 AVE S.G.U-SECDN #2 YOKOGAWA -4-8' H20-1E2 02096B 0.500

3S DIFHEAD B #3 YOKOGAWA 236' H20 1E1 06123B 1.000

4S FLOWBEND A #4 YOKOGAWA 24' H20 1E2 06123B 1.000

5S LOSS B #5 YOKOGAWA 12' H20 1E2 08116B 1.000

6. NULLLOSSHEAT X #6 YOKOGAWA 24' H20 1E2 06123B 0.000

7P NULLDIFHEAD #7 YOKO -30'TO 30'H20 1E2 04285B 0.000

8. NULLLOSSHEAT X #8 YOKOGAWA 236' H20 1E1 06123B 0.000

9 AVE S.G.U-SECUP #9 YOKOGAWA 12' H20 1E2 08116B 0.500

10. DISCHARGE #10YOKOGAWA 236' H20 1E1 06123B 1.000

11P DIFHEAD A #11YOKOGAWA 60' H20 1E2 08116B 1.000

12. FLOWBEND B #12YOKOGAWA 36' H20 1E2 02096B 1.000

13P LOSS A #13YOKOGAWA-4T08' H20-1E2 02096B 1.000

14. NULLDISCHARGE #14ROSE. 5 -30-30'H20-1E2 07142D 0.000

15S NULLDISCHARGE #15ROSEMOUNT 5 60'H20 1E2 09153B 0.000

16. NULLFLOW #16ROSEMONT 7 692'H20 1E1 07142D 0.000

17P NULLFLOWMAG 4" #17 4" YOKO 1200GPM 1E0 08174B 0.000

18P NULLFLOW3" MAG #18 3" F&P 700 GPM 1E1 02145B 0.000

19P NULLFLOW8" MAG #19 8" F&P 5000 GPM 09305B 0.000

20P TEMPTANK #20 RTD 4" 1000HM F 1E1 09286B 1.000

21S TEMPAMB #21 RTD AMB 1000HM F 1E1 09215B 1.000

22 NULLAMP METER #22 AMP TRANS AMP 1E1 05114B 0.000

23S NULLTEMPAMBIENT #23 RTD7 1000HM F 1E1 04088B 0.000

24P BHP TRQ*RPM #24 LEBOW DAY 166 FTLB1E1 03173C 1.000

25 RPM TRQ BAR #25 LEBOW, DAY1500 RPM 1E0 08164C 1.000

26S BHP TRQ BAR #26 LEBOW, DAY 75HP 1E2 12211D 1.000

27P NULLFLOW3"MAG #27 3" YOKO 800 GPM 1E1 12089D 0.000

28S NULLFLOWRIFICE TECO# 6158 21.80 FPS 1E2 09256C 0.000

29P FLOWMAG 3" #29 3" YOKO 800 GPM 1E1 03045B 1.065

30P NULLBHP TRQ*RPM #30 LEBOW, DAY 833 FTLB1E1 05098C 0.000

31 NULLRPM TRQ BAR #31 LEBOW, DAY1500 RPM 1E0 05024C 0.000

32S NULLBHP TRQ BAR #32 LEBOW, DAY 300 HP 1E1 07287C 0.000

^ PRIMARY INSTRUMENTATION USED

GIW INDUSTRIES INC.
5000 WRIGHTSBORO ROAD
GROVETOWN, GEORGIA 30813-9750
TELEPHONE (706) 863-1011
FAX (Engr) (706) 868-8025
FAX (Sales) (706) 860-5897

TEST CURVE NO V378 -06 DATE 12/15/06

PUMP TEST DATA FOR FIPR
FIXED SPD @ 1.08 SG
PROJECT 80H
GIW WORK ORDER NO N/A
CUSTOMER ORDER NO N/A

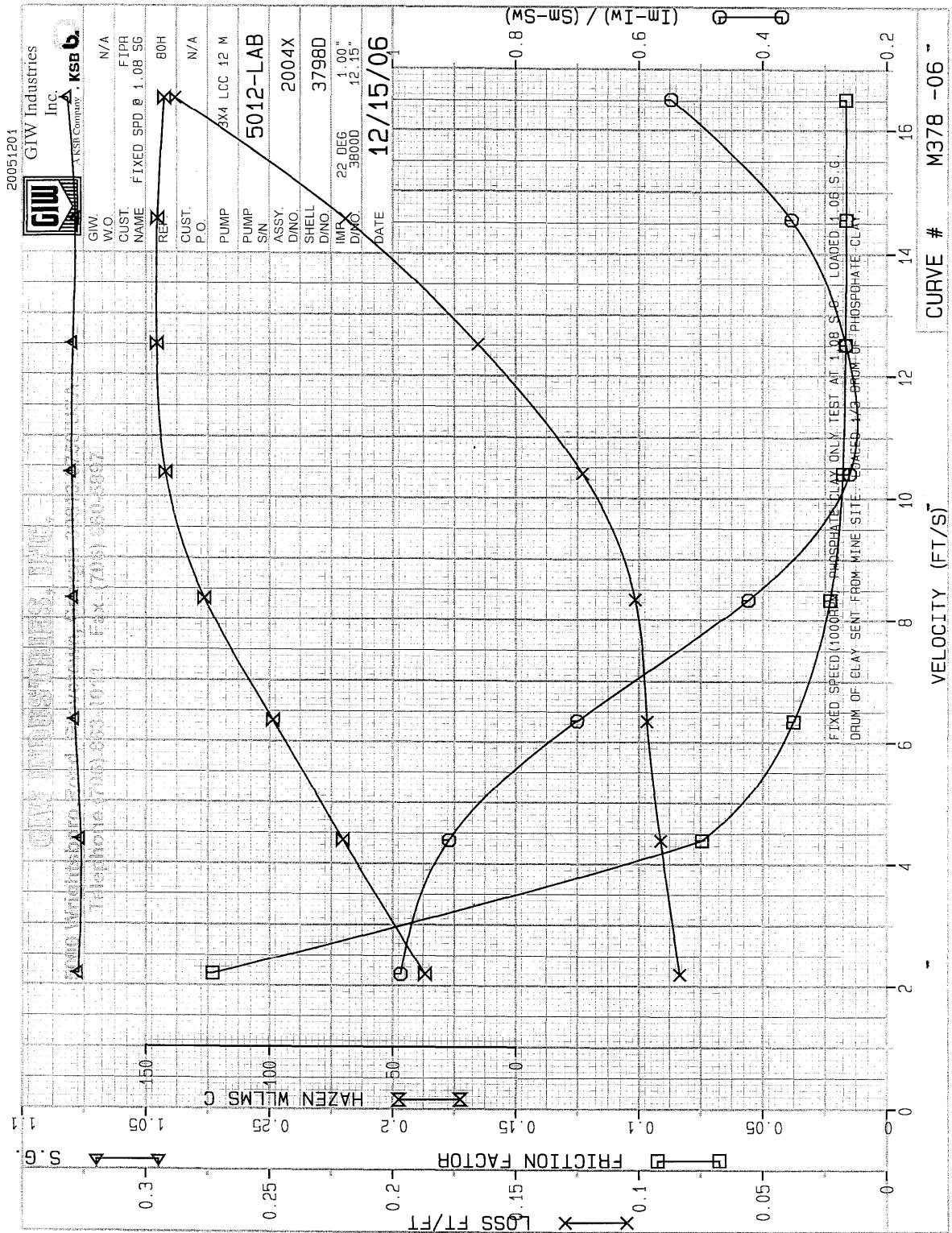
TEST CONSTANTS
1 FT H2O = 0.0 US GPM USING
BEND HT CORR = 0.1 FT CONST = 143.01
DISCHARGE PIPE DIAMETER = 3.00 INS.
METER 1.87' ABOVE PUMP DATUM, TAP-0.56'
SUCTION PIPE DIAMETER = 4.00 INS.
METER 1.87' ABOVE PUMP DATUM, TAP 0.00'
PREROTATION LIM 0.0' BAROMETER 29.70"
HEAD LOSS = 10.00 FT OF 3.15 INCH DIAM
S.G. TAPS 6.00' APART G= 32.14 FT/S/S
SOLIDS SG 2.65 OF 50.MICRONS S.D.=0.0
PIPE ROUGHNESS REF M 78 -04 E/D=.000120
SAMPLER AREA = 0.00 SQUARE FEET

NO :VELOCITY: FLOW : TEMP : S.G. : S.G. :VOLUME:WEIGHT: MASS :PIPELINE LOSSES: dp/dx : Tau 0 : 8V/D : Tau 0 : 8V/D : TIME :
: Vm : Qm : Tm : Sw : Sm : CONC.: CONC.: Ms : Im : Iw : : : : ln : ln : t :
4 FT/S : GPM : F : : : Cv % : Cw % : TON/HR : FT/FT : FT/FT : psf : psf : 1/SEC : psf : 1/SEC : HH.MM :
1 : 16.51 : 401.1 : 67.5 : 0.999 : 1.082 : 5.0 : 12.2 : 13.3 : 0.2881 : 0.2430 : 17.980 : 1.1799 : 503.29 : 0.1655 : 6.2212 : 9.34 :
2 : 14.55 : 353.4 : 69.0 : 0.999 : 1.078 : 4.8 : 11.8 : 11.3 : 0.2192 : 0.1912 : 13.680 : 0.8978 : 443.44 : -1.1078 : 6.0946 : 9.38 :
3 : 12.51 : 303.9 : 69.7 : 0.999 : 1.079 : 4.9 : 12.0 : 9.8 : 0.1653 : 0.1440 : 10.316 : 0.6770 : 381.31 : -1.9901 : 5.9436 : 9.41 :
4 : 10.40 : 252.6 : 70.7 : 0.999 : 1.080 : 4.9 : 12.0 : 8.2 : 0.1229 : 0.1018 : 7.6682 : 0.5032 : 316.91 : -1.6867 : 5.7586 : 9.44 :
5 : 8.34 : 202.6 : 71.7 : 0.999 : 1.079 : 4.9 : 12.0 : 6.5 : 0.1015 : 0.0675 : 6.3331 : 0.4156 : 254.14 : -1.8780 : 5.5379 : 9.48 :
6 : 6.34 : 154.1 : 72.4 : 0.999 : 1.079 : 4.8 : 11.9 : 4.9 : 0.0967 : 0.0407 : 6.0339 : 0.3960 : 193.33 : -1.9264 : 5.2644 : 9.51 :
7 : 4.38 : 106.4 : 73.0 : 0.999 : 1.076 : 4.7 : 11.6 : 3.3 : 0.0912 : 0.0207 : 5.6887 : 0.3733 : 133.51 : -1.9853 : 4.8942 : 9.54 :
8 : 2.19 : 53.1 : 73.1 : 0.999 : 1.077 : 4.8 : 11.7 : 1.7 : 0.0834 : 0.0059 : 5.2054 : 0.3416 : 66.683 : -1.074 : 4.1999 : 9.56 :

TESTED BY J.LATTA DATE 12/15/06 COMMENTS: FIXED SPEED(1000RPM) PHOSPHATE CLAY ONLY TEST AT 1.08 S.G. LOADED 1.06 S.G.
DRUM OF CLAY SENT FROM MINE SITE. LOADED 1/3 DRUM OF PHOSPHATE CLAY.

WITNESSED BY L. WHITLOCK FOR FIPR
Version: 20051201

V378 -06 12/15/06



PUMP DETAIL		CH	USE	RDG	SOURCE	INSTRUMENT	GIW INDUSTRIES INC.									
-----		--	---	---	---	---	5000 WRIGHTSBORO ROAD									
PUMP	3X4 LCC 12 M	1	SUCTION	#1	YOKOGAWA-30-30	H2O-1E2 06123B 1.000	GROVETOWN, GEORGIA 30813-9750									
		2	AVE S.G.U-SECDN	#2	YOKOGAWA -4-8'	H2O-1E2 02096B 0.500	TELEPHONE (706) 863-1011									
SERIAL NUMBER	5012-LAB	3S	DIFHEAD B	#3	YOKOGAWA 236'	H2O 1E1 06123B 1.000	FAX (Engr) (706) 868-8025									
ASSEMBLY DRAWING NO	2004X	4S	FLOWBEND A	#4	YOKOGAWA 24'	H2O 1E2 06123B 1.000	FAX (Sales) (706) 860-5897									
SHELL DRAWING NO	3798D	5S	LOSS B	#5	YOKOGAWA 12'	H2O 1E2 08116B 1.000										
IMPELLER DRAWING NO	3800D	6.	NULLLOSSHEAT X	#6	YOKOGAWA 24'	H2O 1E2 06123B 0.000	TEST CURVE NO M378 -06 DATE 12/15/06									
IMPELLER DIAMETER	12.15"	7P	NULLDIFHEAD	#7	YOKO -30'TO 30'H2O	1E2 04285B 0.000										
OUTLET ANGLE	22 DEG	8.	NULLLOSSHEAT X	#8	YOKOGAWA 236'	H2O 1E1 06123B 0.000	PUMP TEST DATA FOR FIPR									
OUTLET WIDTH	1.00"	9	AVE S.G.U-SECUP	#9	YOKOGAWA 12'	H2O 1E2 08116B 0.500	----- FIXED SPD @ 1.08 SG									
ROTATION	CLOCKWISE	10.	DISCHARGE	#10	YOKOGAWA 236'	H2O 1E1 06123B 1.000	PROJECT 80H									
HYDROSTATIC PRESS.	STD	11P	DIFHEAD A	#11	YOKOGAWA 60'	H2O 1E2 08116B 1.000	GIW WORK ORDER NO N/A									
		12.	FLOWBEND B	#12	YOKOGAWA 36'	H2O 1E2 02096B 1.000	CUSTOMER ORDER NO N/A									
DRIVER DETAIL		13P	LOSS A	#13	YOKOGAWA-4TO8'	H2O-1E2 02096B 1.000										
-----		14.	NULLDISCHARGE	#14	ROSE. 5 -30-30'H2O-1E2	07142D 0.000										
TYPE 11.8:11.8 V-BELTS DRIVE		15S	NULLDISCHARGE	#15	ROSEMOUNT 5 60'H2O 1E2	09153B 0.000	TEST CONSTANTS									
MAKE	BALDOR	16.	NULLFLOW	#16	ROSEMONT 7 692'H2O 1E1	07142D 0.000	1 FT H2O = 0.0 US GPM USING									
SERIAL NO	5275	17P	NULLFLOWMAG 4"	#17	4" YOKO 1200GPM 1E0	08174B 0.000	BEND HT CORR = 0.1 FT CONST = 143.01									
FRAME SIZE	365T	18P	NULLFLOW3" MAG	#18	3" F&P 700 GPM 1E1	02145B 0.000	DISCHARGE PIPE DIAMETER = 3.00 INS.									
RPM = 1780 BHP = 75.		19P	NULLFLOW8" MAG	#19	8" F&P 5000 GPM	09305B 0.000	METER 1.87' ABOVE PUMP DATUM, TAP-0.56'									
460 VOLTS 3 PHASE 60 CPS		20P	TEMP TANK	#20	RTD 4" 100OHM F 1E1	09286B 1.000	SUCTION PIPE DIAMETER = 4.00 INS.									
		21S	TEMP AMP	#21	RTD AMB 100OHM F 1E1	09215B 1.000	METER 1.87' ABOVE PUMP DATUM, TAP 0.00'									
SCALED PERFORMANCE FACTORS		22	NULLAMP METER	#22	AMP TRANS AMP 1E1	05114B 0.000	PREROTATION LIM 0.0' BAROMETER 29.70"									
-----		23S	NULLTEMPAMBIENT	#23	RTD7 100OHM F 1E1	04088B 0.000	HEAD LOSS = 10.00 FT OF 3.15 INCH DIAM									
SPEED OR RATIO	1000.000	24P	BHP TRQ*RPM	#24	LEBOW DAY 166 FTLB1E1	03173C 1.000	S.G. TAPS 6.00' APART G= 32.14 FT/S/S									
		25	RPM TRQ BAR	#25	LEBOW, DAY1500 RPM 1E0	08164C 1.000	SOLIDS SG 2.65 OF 50.MICRONS S.D.=0.0									
IMP TURN DOWN RATIO	1.000	26S	BHP TRQ BAR	#26	LEBOW, DAY 75HP 1E2	12211D 1.000	PIPE ROUGHNESS REF M 78 -04 E/D=.000120									
MERIDINAL WIDTH RATIO	1.000	27P	NULLFLOW3"MAG	#27	3" YOKO 800 GPM 1E1	12089D 0.000	SAMPLER AREA = 0.00 SQUARE FEET									
SCALE RATIO	1.000	28S	NULLFLOWORIFICE	TECO# 6158	21.80 FPS 1E2	09256C 0.000										
BEP REF	0.GPM, 0.RPM	29P	FLOWMAG 3"	#29	3" YOKO 800 GPM 1E1	03045B 1.065										
EFFICIENCY	0.0% BY 1.000	30P	NULLBHP TRQ*RPM	#30	LEBOW, DAY 833 FTLB1E1	05098C 0.000										
		31	NULLRPM TRQ BAR	#31	LEBOW, DAY1500 RPM 1E0	05024C 0.000										
		32S	NULLBHP TRQ BAR	#32	LEBOW, DAY 300 HP 1E1	07287C 0.000										
TEST RESULTS		^ PRIMARY INSTRUMENTATION USED														

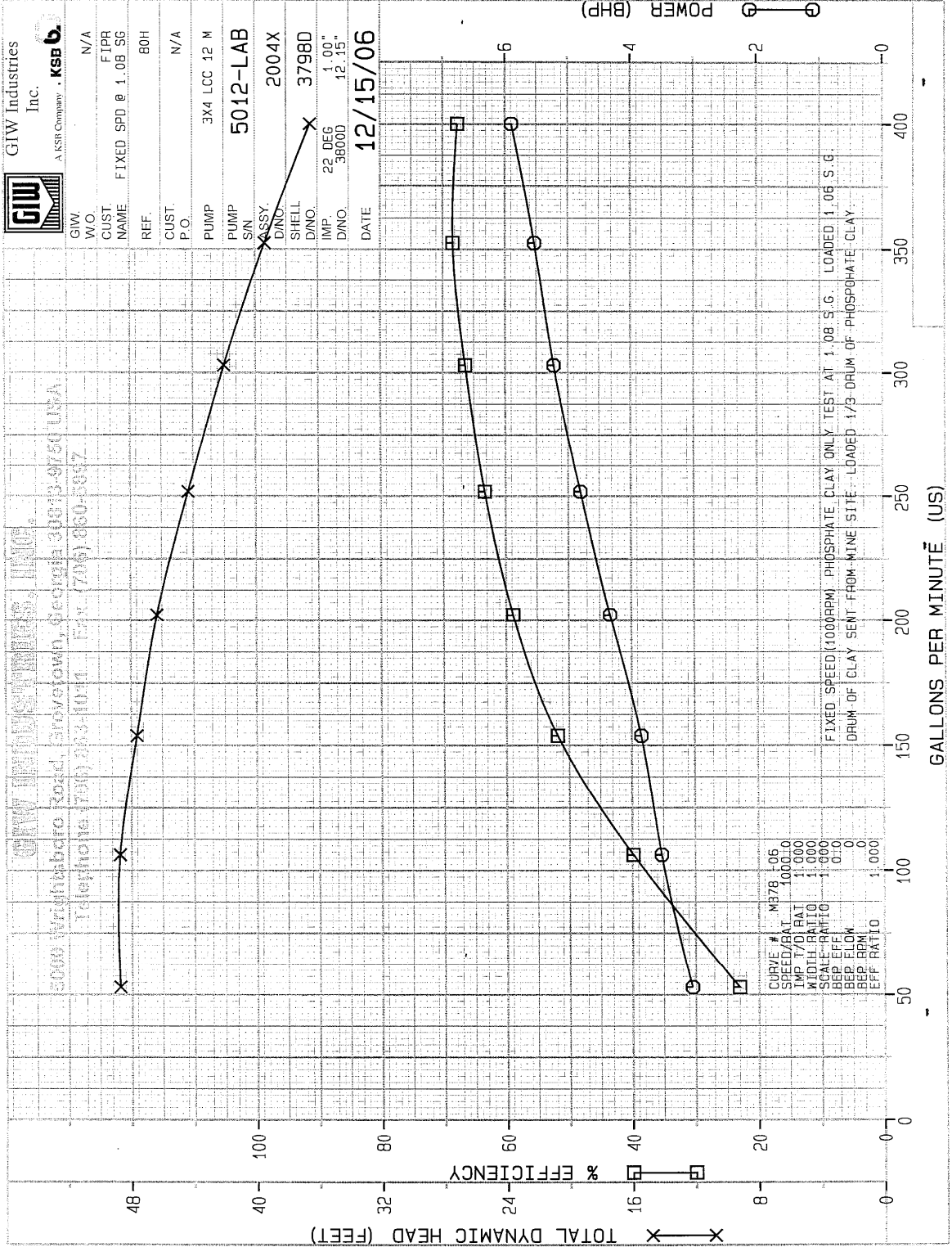
NO VELOCITY:	FLOW : TEMP : S.G. : S.G. : VOLUME:WEIGHT: MASS : REYNOLDS : PIPELINE LOSSES: FRICTION FACTRS:HAZEN: Im-Iw : TIME :															
: Vm :	Qm : Tm : Sw : Sm : CONC.: CONC.: Ms : NUMBER : Im : Iw : Fm : Fw : WLLMS: ----- : t :															
: FT/S :	GPM : F : : : Cv % : Cw % : TON/HR : Re : FT/FT : FT/FT : : SAME Re: C : Sm-Sw : HH.MM :															
1 : 16.51 :	401.1 : 67.5 : 0.999 : 1.082 : 5.0 : 12.2 : 13.3 : 0.397E+06 : 0.2881 : 0.2430 : 0.0165 : 0.0150 : 143. : 0.5478 : 9.34 :															
2 : 14.55 :	353.4 : 69.0 : 0.999 : 1.078 : 4.8 : 11.8 : 11.3 : 0.357E+06 : 0.2192 : 0.1912 : 0.0162 : 0.0152 : 145. : 0.3535 : 9.38 :															
3 : 12.51 :	303.9 : 69.7 : 0.999 : 1.079 : 4.9 : 12.0 : 9.8 : 0.311E+06 : 0.1653 : 0.1440 : 0.0165 : 0.0155 : 146. : 0.2657 : 9.41 :															
4 : 10.40 :	252.6 : 70.7 : 0.999 : 1.080 : 4.9 : 12.0 : 8.2 : 0.262E+06 : 0.1229 : 0.1018 : 0.0178 : 0.0159 : 142. : 0.2600 : 9.44 :															
5 : 8.34 :	202.6 : 71.7 : 0.999 : 1.079 : 4.9 : 12.0 : 6.5 : 0.213E+06 : 0.1015 : 0.0675 : 0.0228 : 0.0164 : 126. : 0.4230 : 9.48 :															
6 : 6.34 :	154.1 : 72.4 : 0.999 : 1.079 : 4.8 : 11.9 : 4.9 : 0.163E+06 : 0.0967 : 0.0407 : 0.0376 : 0.0171 : 99. : 0.7004 : 9.51 :															
7 : 4.38 :	106.4 : 73.0 : 0.999 : 1.076 : 4.7 : 11.6 : 3.3 : 0.114E+06 : 0.0912 : 0.0207 : 0.0745 : 0.0182 : 70. : 0.9085 : 9.54 :															
8 : 2.19 :	53.1 : 73.1 : 0.999 : 1.077 : 4.8 : 11.7 : 1.7 : 0.569E+05 : 0.0834 : 0.0059 : 0.2730 : 0.0208 : 37. : 0.9869 : 9.56 :															

TESTED BY J.LATTA DATE 12/15/06 COMMENTS: FIXED SPEED(1000RPM) PHOSPHATE CLAY ONLY TEST AT 1.08 S.G. LOADED 1.06 S.G. DRUM OF CLAY SENT FROM MINE SITE. LOADED 1/3 DRUM OF PHOSPHATE CLAY.

WITNESSED BY L. WHITLOCK FOR FIPR

Version: 20051201 M378 -06 12/15/06

20051201



PUMP DETAIL	CH	USE	RDG	SOURCE	INSTRUMENT
PUMP	3X4 LCC 12 M	1	SUCTION	#1 YOKOGAWA-30-30	H20-1E2 06123B 1.000
		2	AVE S.G.U-SECDN	#2 YOKOGAWA -4-8'	H20-1E2 02096B 0.500
SERIAL NUMBER	5012-LAB	3S	DIFHEAD B	#3 YOKOGAWA 236'	H20 1E1 06123B 1.000
ASSEMBLY DRAWING NO	2004X	4S	FLOWBEND A	#4 YOKOGAWA 24'	H20 1E2 06123B 1.000
SHELL DRAWING NO	3798D	5S	LOSS B	#5 YOKOGAWA 12'	H20 1E2 08116B 1.000
IMPELLER DRAWING NO	3800D	6.	NULLLOSSHEAT X	#6 YOKOGAWA 24'	H20 1E2 06123B 0.000
IMPELLER DIAMETER	12.15"	7P	NULLDIFHEAD	#7 YOKO -30'/TO 30'	H20 1E2 04285B 0.000
OUTLET ANGLE	22 DEG	8.	NULLLOSSHEAT X	#8 YOKOGAWA 236'	H20 1E1 06123B 0.000
OUTLET WIDTH	1.00"	9	AVE S.G.U-SECUP	#9 YOKOGAWA 12'	H20 1E2 08116B 0.500
ROTATION	CLOCKWISE	10.	DISCHARGE	#10YOKOGAWA 236'	H20 1E1 06123B 1.000
HYDROSTATIC PRESS.	STD	11P	DIFHEAD A	#11YOKOGAWA 60'	H20 1E2 08116B 1.000
		12.	FLOWBEND B	#12YOKOGAWA 36'	H20 1E2 02096B 1.000
DRIVER DETAIL		13P	LOSS A	#13YOKOGAWA-4TO8'	H20-1E2 02096B 1.000
		14.	NULLDISCHARGE	#14ROSE. 5 -30-30'	H20-1E2 07142D 0.000
TYPE 11.8:11.8 V-BELTS	DRIVE	15S	NULLDISCHARGE	#15ROSEMOUNT 5 60'	H20 1E2 09153B 0.000
MAKE	BALDOR	16.	NULLFLOW	#16ROSEMONT 7 692'	H20 1E1 07142D 0.000
SERIAL NO	5275	17P	NULLFLOWMAG 4"	#17 4" YOKO 1200GPM	1E0 08174B 0.000
FRAME SIZE	365T	18P	NULLFLOW3" MAG	#18 3" F&P 700 GPM	1E1 02145B 0.000
RPM = 1780	BHP = 75.	19P	NULLFLOW8" MAG	#19 8" F&P 5000 GPM	09305B 0.000
460 VOLTS 3 PHASE 60 CPS		20P	TEMP TANK	#20 RTD 4" 100OHM F 1E1	09286B 1.000
		21S	TEMP AMB	#21 RTD AMB 100OHM F 1E1	09215B 1.000
SCALED PERFORMANCE FACTORS		22	NULLAMP METER	#22 AMP TRANS AMP 1E1	05114B 0.000
		23S	NULLTEMP AMBIENT	#23 RTD7 100OHM F 1E1	04088B 0.000
SPEED OR RATIO	1000.000	24P	BHP TRQ*RPM	#24 LEBOW DAY 166 FTLB1E1	03173C 1.000
		25	RPM TRQ BAR	#25 LEBOW, DAY 1500 RPM	1E0 08164C 1.000
IMP TURN DOWN RATIO	1.000	26S	BHP TRQ BAR	#26 LEBOW, DAY 75HP	1E2 12211D 1.000
MERIDINAL WIDTH RATIO	1.000	27P	NULLFLOW3" MAG	#27 3" YOKO 800 GPM	1E1 12089D 0.000
SCALE RATIO	1.000	28S	NULLFLOWORIFICE	TECO# 6158 21.80 FPS	1E2 09256C 0.000
BEP REF	0.GPM, 0.RPM	29P	FLOWMAG 3"	#29 3" YOKO 800 GPM	1E1 03045B 1.065
EFFICIENCY	0.0% BY 1.000	30P	NULLBHP TRQ*RPM	#30 LEBOW, DAY 833 FTLB1E1	05098C 0.000
		31	NULLRPM TRQ BAR	#31 LEBOW, DAY 1500 RPM	1E0 05024C 0.000
		32S	NULLBHP TRQ BAR	#32 LEBOW, DAY 300 HP	1E1 07287C 0.000

GIW INDUSTRIES INC.
5000 WRIGHTSBORO ROAD
GROVETOWN, GEORGIA 30813-9750
TELEPHONE (706) 863-1011
FAX (Engr) (706) 868-8025
FAX (Sales) (706) 860-5897

TEST CURVE NO T378 -06 DATE 12/15/06

PUMP TEST DATA FOR FIPR
----- FIXED SPD @ 1.08 SG
PROJECT 80H
GIW WORK ORDER NO N/A
CUSTOMER ORDER NO N/A

TEST CONSTANTS
1 FT H2O = 0.0 US GPM USING
BEND HT CORR = 0.1 FT CONST = 143.01
DISCHARGE PIPE DIAMETER = 3.00 INS.
METER 1.87' ABOVE PUMP DATUM, TAP-0.56'
SUCTION PIPE DIAMETER = 4.00 INS.
METER 1.87' ABOVE PUMP DATUM, TAP 0.00'
PREROTATION LIM 0.0' BAROMETER 29.70"
HEAD LOSS = 10.00 FT OF 3.15 INCH DIAM
S.G. TAPS 6.00' APART G= 32.14 FT/S/S
SOLIDS SG 2.65 OF 50.MICRONS S.D.=0.0
PIPE ROUGHNESS REF M 78 -04 E/D=.000120
SAMPLER AREA = 0.00 SQUARE FEET

TEST¹ RESULTS

:FLOW MEASUREMENT: HEAD MEASUREMENT :S.G.:DRIVER POWER:SPEED: PUMP :TEMP: SCALED PERFORMANCE : TIME:MAG3" :BEND A:
: FLOW Q:VELOCITY:DISCH: SUCTN:TOT HD: :INPUT:OUTPUT: N :OUTPUT: EFF: Tm : FLOW : HEAD:POWER: EFF: t : C 29 : S 4 :
NO: GPM : FT/S : PSI : " HG : H FT : : KW : BHP : RPM : WHP : n %: F : GPM : FT : BHP : % : H.MM: *1.065:*1.000:
1: 401.1: 16.51 :13.97: -3.24: 36.68:1.08: 0.0: 5.9:1002.: 4.0:67.6: 67.5: 400.: 36.5: 5.9:67.6: 9.34:401.13:384.24:
2: 353.4: 14.55 :15.92: -2.68: 39.59:1.08: 0.0: 5.6:1002.: 3.8:68.4: 69.0: 353.: 39.4: 5.5:68.4: 9.38:353.43:335.70:
3: 303.9: 12.51 :17.75: -2.20: 42.24:1.08: 0.0: 5.3:1003.: 3.5:66.4: 69.7: 303.: 42.0: 5.2:66.4: 9.41:303.91:286.97:
4: 252.6: 10.40 :19.36: -1.74: 44.56:1.08: 0.0: 4.8:1003.: 3.1:63.4: 70.7: 252.: 44.3: 4.8:63.4: 9.44:252.58:235.43:
5: 202.6: 8.34 :20.60: -1.40: 46.39:1.08: 0.0: 4.3:1001.: 2.6:58.9: 71.7: 202.: 46.3: 4.3:58.9: 9.48:202.55:188.69:
6: 154.1: 6.34 :21.52: -1.15: 47.72:1.08: 0.0: 3.9:1001.: 2.0:51.8: 72.4: 154.: 47.6: 3.9:51.8: 9.51:154.09:144.10:
7: 106.4: 4.38 :22.20: -0.95: 48.83:1.08: 0.0: 3.5:1001.: 1.4:39.8: 73.0: 106.: 48.7: 3.5:39.8: 9.54:106.41:99.875:
8: 53.1: 2.19 :22.43: -0.78: 48.91:1.08: 0.0: 3.1:1002.: 0.7:23.1: 73.1: 53.: 48.7: 3.1:23.1: 9.56:53.147:55.276:

TESTED BY J.LATTA DATE 12/15/06 COMMENTS: FIXED SPEED(1000RPM) PHOSPHATE CLAY ONLY TEST AT 1.08 S.G. LOADED 1.06 S.G.
DRUM OF CLAY SENT FROM MINE SITE. LOADED 1/3 DRUM OF PHOSPHATE CLAY.

WITNESSED BY L. WHITLOCK FOR FIPR
Version: 20051201

T378 -06 12/15/06

PUMP DETAIL		CH	USE	RDG	SOURCE	INSTRUMENT		GIW INDUSTRIES INC.
							5000 WRIGHTSBORO ROAD	
PUMP	3X4 LCC 12 M	1	SUCTION	#1	YOKOGAWA-30-30	H20-1E2 06123B	1.000	GROVETOWN, GEORGIA 30813-9750
SERIAL NUMBER	5012-LAB	2	AVE S.G.U-SECDN	#2	YOKOGAWA -4-8'	H20-1E2 02096B	0.500	TELEPHONE (706) 863-1011
ASSEMBLY DRAWING NO	2004X	3S	DIFHEAD B	#3	YOKOGAWA 236'	H20 1E1 06123B	1.000	FAX (Engr) (706) 868-8025
SHELL DRAWING NO	3798D	4S	FLOWBEND A	#4	YOKOGAWA 24'	H20 1E2 06123B	1.000	FAX (Sales) (706) 860-5897
IMPELLER DRAWING NO	3800D	5S	LOSS B	#5	YOKOGAWA 12'	H20 1E2 08116B	1.000	
IMPELLER DIAMETER	12.15"	6.	NULLLOSSHEAT X	#6	YOKOGAWA 24'	H20 1E2 06123B	0.000	TEST CURVE NO X378 -06 DATE 12/15/06
OUTLET ANGLE	22 DEG	7P	NULLDIFHEAD	#7	YOKO -30'TO 30'H20	1E2 04285B	0.000	
OUTLET WIDTH	1.00"	8.	NULLLOSSHEAT X	#8	YOKOGAWA 236'	H20 1E1 06123B	0.000	PUMP TEST DATA FOR FIPR
ROTATION	CLOCKWISE	9	AVE S.G.U-SECUP	#9	YOKOGAWA 12'	H20 1E2 08116B	0.500	----- FIXED SPD @ 1.08 SG
HYDROSTATIC PRESS.	STD	10.	DISCHARGE	#10	YOKOGAWA 236'	H20 1E1 06123B	1.000	PROJECT 80H
		11P	DIFHEAD A	#11	YOKOGAWA 60'	H20 1E2 08116B	1.000	GIW WORK ORDER NO N/A
		12.	FLOWBEND B	#12	YOKOGAWA 36'	H20 1E2 02096B	1.000	CUSTOMER ORDER NO N/A
DRIVER DETAIL		13P	LOSS A	#13	YOKOGAWA-4T08'	H20-1E2 02096B	1.000	
TYPE 11.8:11.8 V-BELTS DRIVE		14.	NULLDISCHARGE	#14	ROSE. 5 -30-30'H20-1E2	07142D	0.000	TEST CONSTANTS
MAKE	BALDOR	15S	NULLDISCHARGE	#15	ROSEMOUNT 5 60'H20	1E2 09153B	0.000	1 FT H2O = 0.0 US GPM USING
SERIAL NO	5275	16.	NULLFLOW	#16	ROSEMONT 7 692'H20	1E1 07142D	0.000	BEND HT CORR = 0.1 FT CONST = 143.01
FRAME SIZE	365T	17P	NULLFLOWMAG 4"	#17	4" YOKO 1200GPM	1E0 08174B	0.000	DISCHARGE PIPE DIAMETER = 3.00 INS.
RPM = 1780 BHP = 75.		18P	NULLFLOW3" MAG	#18	3" F&P 700 GPM	1E1 02145B	0.000	METER 1.87' ABOVE PUMP DATUM, TAP-0.56'
460 VOLTS 3 PHASE 60 CPS		19P	NULLFLOW8" MAG	#19	8" F&P 5000 GPM	09305B	0.000	SUCTION PIPE DIAMETER = 4.00 INS.
		20P	TEMP TANK	#20	RTD 4" 1000HM F	1E1 09286B	1.000	METER 1.87' ABOVE PUMP DATUM, TAP 0.00'
SCALED PERFORMANCE FACTORS		21S	TEMP AMP	#21	RTD AMB 1000HM F	1E1 09215B	1.000	PREROTATION LIM 0.0' BAROMETER 29.70"
		22	NULLAMP METER	#22	AMP TRANS AMP	1E1 05114B	0.000	HEAD LOSS = 10.00 FT OF 3.15 INCH DIAM
		23S	NULLTEMP AMBIENT	#23	RTD7 1000HM F	1E1 04088B	0.000	S.G. TAPS 6.00' APART G= 32.14 FT/S/S
SPEED OR RATIO 1000.000		24P	BHP TRQ *RPM	#24	LEBOW DAY 166 FTLB1E1	03173C	1.000	SOLIDS SG 2.65 OF 50.MICRONS S.D.=0.0
		25	RPM TRQ BAR	#25	LEBOW, DAY1500 RPM	1E0 08164C	1.000	PIPE ROUGHNESS REF M 78 -04 E/D=.000120
IMP TURN DOWN RATIO 1.000		26S	BHP TRQ BAR	#26	LEBOW, DAY 75HP	1E2 12211D	1.000	SAMPLER AREA = 0.00 SQUARE FEET
MERIDINAL WIDTH RATIO 1.000		27P	NULLFLOW3" MAG	#27	3" YOKO 800' GPM	1E1 12089D	0.000	
SCALE RATIO 1.000		28S	NULLFLOWORIFICE	TECO# 6158	21.80 FPS	1E2 09256C	0.000	
BEP REF 0.GPM, 0.RPM		29P	FLOWMAG 3"	#29	3" YOKO 800 GPM	1E1 03045B	1.065	
EFFICIENCY 0.0% BY 1.000		30P	NULLBHP IRQ *RPM	#30	LEBOW, DAY 833 FTLB1E1	05098C	0.000	
		31	NULLRPM TRQ BAR	#31	LEBOW, DAY1500 RPM	1E0 05024C	0.000	
		32S	NULLBHP TRQ BAR	#32	LEBOW, DAY 300 HP	1E1 07287C	0.000	
TEST RESULTS		^ PRIMARY INSTRUMENTATION USED						
:FLOW MEASUREMENT: HEAD MEASUREMENT :S.G.:DRIVER POWER:SPEED: PUMP :MAG3" :BEND A:BEND B:LOSS A:LOSS B:DISCH :DIFH A:DIFH B:								
: FLOW Q:VELOCITY:DISCH: SUCTN:TOT HD: :INPUT:OUTPUT: N :OUTPUT: EFF: C 29 : S 4 : S 12 : C 13 : C 5 : C 10 : C 11 : C 3 :								
NO: GPM : FT/S : PSI : " HG : H FT : : KW : BHP : RPM : WHP : n %:*1.065:*1.000:*1.000:*1.000:*1.000:*1.000:*1.000:								
1: 401.1: 16.51 :13.97: -3.24: 36.68:1.08: 0.0: 5.9:1002.: 4.0:67.6:401.13:384.24:383.78: 2.881: 2.925:32.112:35.908:35.994:								
2: 353.4: 14.55 :15.92: -2.68: 39.59:1.08: 0.0: 5.6:1002.: 3.8:68.4:353.43:335.70:335.30: 2.192: 2.232:36.601:39.789:39.857:								
3: 303.9: 12.51 :17.75: -2.20: 42.24:1.08: 0.0: 5.3:1003.: 3.5:66.4:303.91:286.97:286.56: 1.653: 1.690:40.800:43.459:43.504:								
4: 252.6: 10.40 :19.36: -1.74: 44.56:1.08: 0.0: 4.8:1003.: 3.1:63.4:252.58:235.43:235.01: 1.229: 1.264:44.528:46.659:46.718:								
5: 202.6: 8.34 :20.60: -1.40: 46.39:1.08: 0.0: 4.3:1001.: 2.6:58.9:202.55:188.69:187.88: 1.015: 1.052:47.388:49.132:49.137:								
6: 154.1: 6.34 :21.52: -1.15: 47.72:1.08: 0.0: 3.9:1001.: 2.0:51.8:154.09:144.10:143.05: 0.967: 1.002:49.487:50.958:50.979:								
7: 106.4: 4.38 :22.20: -0.95: 48.83:1.08: 0.0: 3.5:1001.: 1.4:39.8:106.41:99.875:99.057: 0.912: 0.946:51.080:52.324:52.351:								
8: 53.1: 2.19 :22.43: -0.78: 48.91:1.08: 0.0: 3.1:1002.: 0.7:23.1:53.147:55.276:52.813: 0.834: 0.868:51.587:52.656:52.676:								

TESTED BY J.LATTA DATE 12/15/06 COMMENTS: FIXED SPEED(1000RPM) PHOSPHATE CLAY ONLY TEST AT 1.08 S.G. LOADED 1.06 S.G. DRUM OF CLAY SENT FROM MINE SITE. LOADED 1/3 DRUM OF PHOSPHATE CLAY.

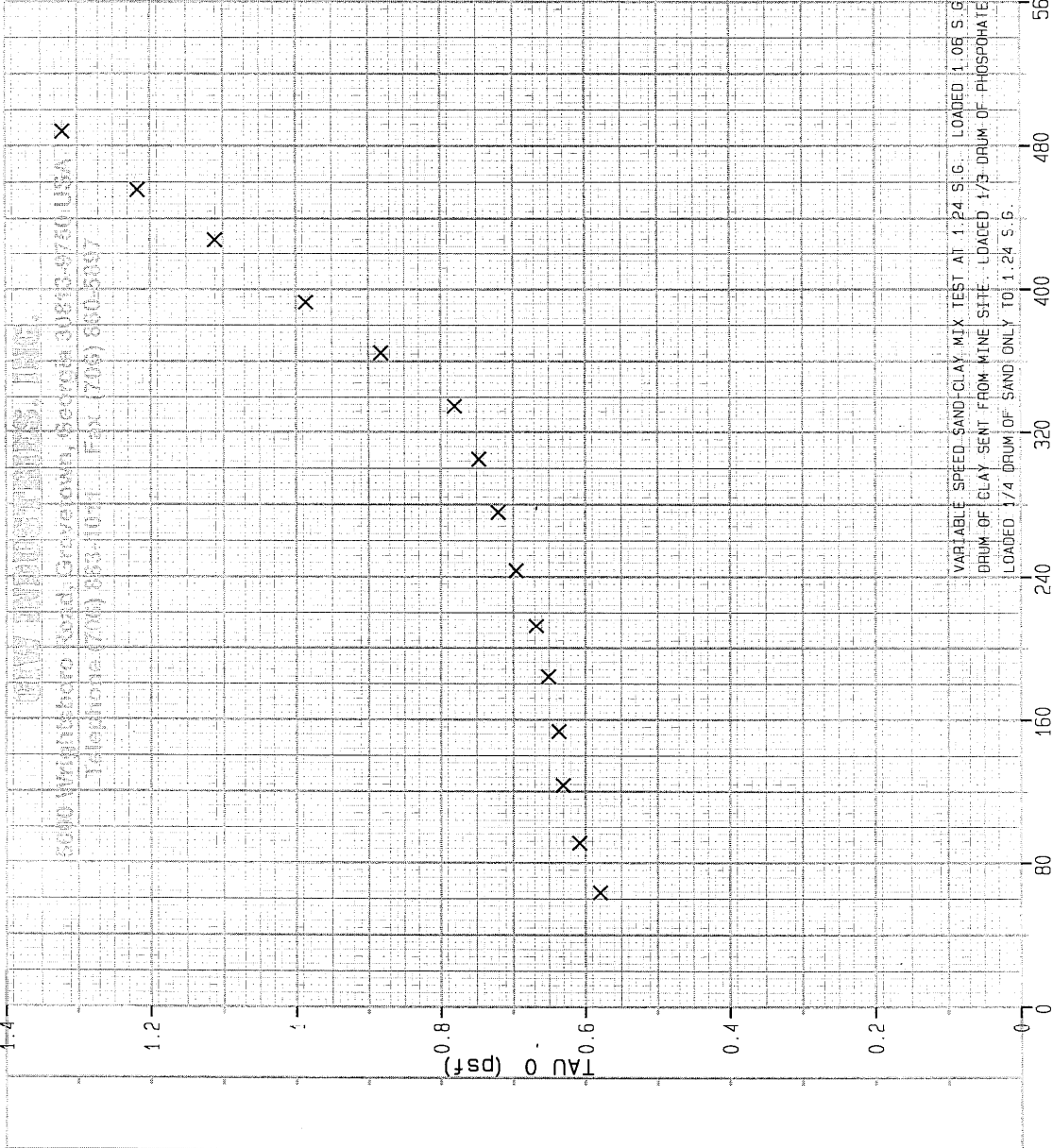
WITNESSED BY L. WHITLOCK FOR FIPR

Version: 20051201 X378 -06 12/15/06

20051201



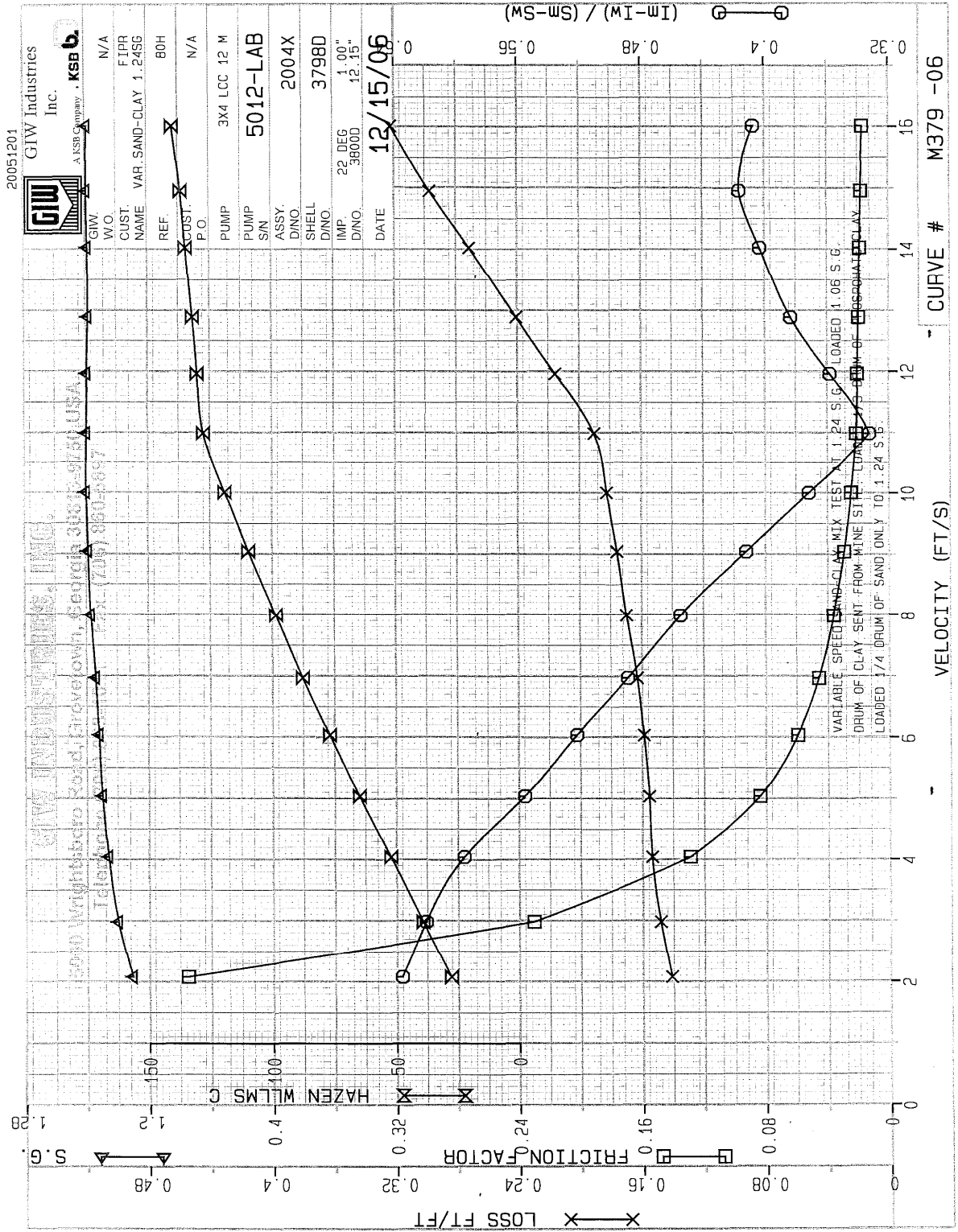
GIW W/O N/A
CUST. FIPR
NAME VAR. SAND-CLAY 1.24SG
REF. 80H
CUST. P.O. N/A
PUMP 3X4 LCC 12 M
PUMP S/N 5012-LAB
ASSY D/NO 2004X
SHELL D/NO 3798D
IMP. 22 DEG 1.00"
D/NO 3800D 12.15"
DATE 12/15/06



CURVE # V379 -06

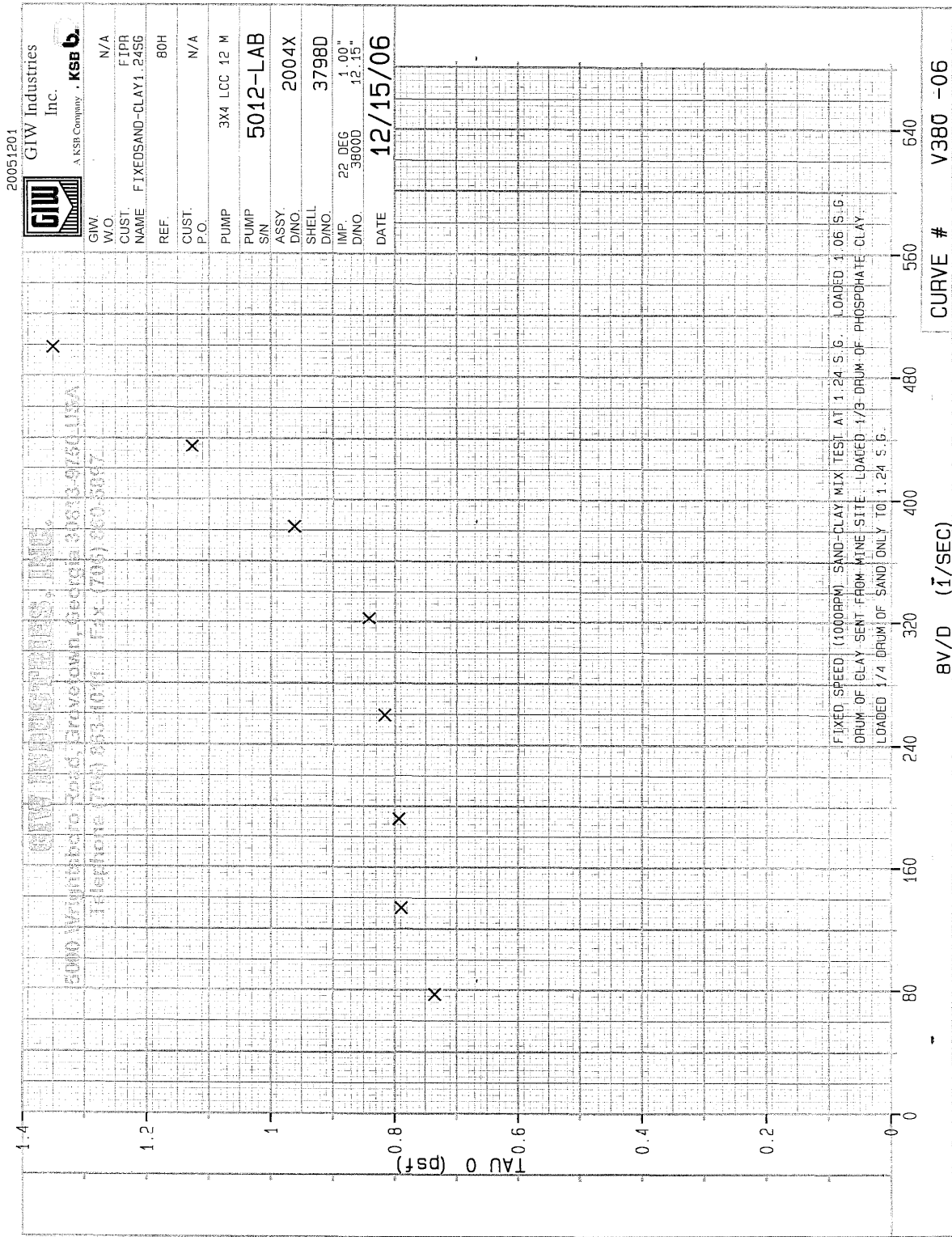
PUMP DETAIL		CH	USE	RDG	SOURCE	INSTRUMENT	GIW INDUSTRIES INC.										
-----		-----					5000 WRIGHTSBORO ROAD										
PUMP	3X4 LCC 12 M	1	SUCTION	#1	YOKOGAWA-30-30	H2O-1E2 06123B 1.000	GROVETOWN, GEORGIA 30813-9750										
		2	AVE S.G.U-SECDN	#2	YOKOGAWA -4-8'	H2O-1E2 02096B 0.500	TELEPHONE (706) 863-1011										
SERIAL NUMBER	5012-LAB	3S	DIFHEAD B	#3	YOKOGAWA 236'	H2O 1E1 06123B 1.000	FAX (Engr) (706) 868-8025										
ASSEMBLY DRAWING NO	2004X	4S	FLOWBEND A	#4	YOKOGAWA 24'	H2O 1E2 06123B 1.000	FAX (Sales) (706) 860-5897										
SHELL DRAWING NO	3798D	5S	LOSS B	#5	YOKOGAWA 12'	H2O 1E2 08116B 1.000											
IMPELLER DRAWING NO	3800D	6.	NULLLOSSHEAT X	#6	YOKOGAWA 24'	H2O 1E2 06123B 0.000	TEST CURVE NO T379 -06	DATE 12/15/06									
IMPELLER DIAMETER	12.15"	7P	NULLDIFHEAD	#7	YOKO -30'TO 30'	H2O 1E2 04285B 0.000											
OUTLET ANGLE	22 DEG	8.	NULLLOSSHEAT X	#8	YOKOGAWA 236'	H2O 1E1 06123B 0.000	PUMP TEST DATA FOR	FIPR									
OUTLET WIDTH	1.00"	9	AVE S.G.U-SECUP	#9	YOKOGAWA 12'	H2O 1E2 08116B 0.500	----- VAR.SAND-CLAY 1.24SG										
ROTATION	CLOCKWISE	10.	DISCHARGE	#10	YOKOGAWA 236'	H2O 1E1 06123B 1.000	PROJECT	80H									
HYDROSTATIC PRESS.	STD	11P	DIFHEAD A	#11	YOKOGAWA 60'	H2O 1E2 08116B 1.000	GIW WORK ORDER NO	N/A									
		12.	FLOWBEND B	#12	YOKOGAWA 36'	H2O 1E2 02096B 1.000	CUSTOMER ORDER NO	N/A									
DRIVER DETAIL		13P	LOSS A	#13	YOKOGAWA-4TO8'	H2O-1E2 02096B 1.000											
-----		14.	NULLDISCHARGE	#14	ROSE. 5 -30-30'	H2O-1E2 07142D 0.000											
TYPE 11.8:11.8 V-BELTS	DRIVE	15S	NULLDISCHARGE	#15	ROSEMOUNT 5 60'	H2O 1E2 09153B 0.000	TEST CONSTANTS										
MAKE	BALDOR	16.	NULLFLOW	#16	ROSEMONT 7 692'	H2O 1E1 07142D 0.000	1 FT H2O = 0.0 US GPM USING										
SERIAL NO	5275	17P	NULLFLOWMAG 4"	#17	4" YOKO 1200GPM	1E0 08174B 0.000	BEND HT CORR = 0.1 FT CONST = 143.01										
FRAME SIZE	365T	18P	NULLFLOW3" MAG	#18	3" F&P 700 GPM	1E1 02145B 0.000	DISCHARGE PIPE DIAMETER = 3.00 INS.										
RPM = 1780	BHP = 75.	19P	NULLFLOW8" MAG	#19	8" F&P 5000 GPM	09305B 0.000	METER 1.87' ABOVE PUMP DATUM, TAP-0.56'										
460 VOLTS 3 PHASE 60 CPS		20P	TEMP TANK	#20	RTD 4" 1000HM	F 1E1 09286B 1.000	SUCTION PIPE DIAMETER = 4.00 INS.										
		21S	TEMP PAMB	#21	RTD AMB 1000HM	F 1E1 09215B 1.000	METER 1.87' ABOVE PUMP DATUM, TAP 0.00'										
SCALED PERFORMANCE FACTORS		22	NULLAMP METER	#22	AMP TRANS	AMP 1E1 05114B 0.000	PREROTATION LIM 0.0' BAROMETER 29.70"										
-----		23S	NULLTEMPAMBIENT	#23	RTD7 1000HM	F 1E1 04088B 0.000	HEAD LOSS = 10.00 FT OF 3.15 INCH DIAM										
SPEED OR RATIO	1000.000	24P	BHP TRQ*RPM	#24	LEBOW DAY 166	FTLB1E1 03173C 1.000	S.G. TAPS 6.00' APART G= 32.14 FT/S/S										
		25	RPM TRQ BAR	#25	LEBOW, DAY 1500 RPM	1E0 08164C 1.000	SOLIDS SG 2.65 OF 50.MICRONS S.D.=0.0										
IMP TURN DOWN RATIO	1.000	26S	BHP TRQ BAR	#26	LEBOW, DAY 75HP	1E2 12211D 1.000	PIPE ROUGHNESS REF M 78 -04 E/D=.000120										
MERIDINAL WIDTH RATIO	1.000	27P	NULLFLOW3" MAG	#27	3" YOKO 800 GPM	1E1 12089D 0.000	SAMPLER AREA = 0.00 SQUARE FEET										
SCALE RATIO	1.000	28S	NULLFLOWORIFICE	TECO# 6158	21.80 FPS	1E2 09256C 0.000											
BEP REF	0.GPM, 0.RPM	29P	FLOWMAG 3"	#29	3" YOKO 800 GPM	1E1 03045B 1.065											
EFFICIENCY	0.0% BY 1.000	30P	NULLBHP TRQ*RPM	#30	LEBOW, DAY 833	FTLB1E1 05098C 0.000											
		31	NULLRPM TRQ BAR	#31	LEBOW, DAY 1500 RPM	1E0 05024C 0.000											
		32S	NULLBHP TRQ BAR	#32	LEBOW, DAY 300	HP 1E1 07287C 0.000											
TEST RESULTS		^ PRIMARY INSTRUMENTATION USED															

:FLOW MEASUREMENT: HEAD MEASUREMENT :S.G.:DRIVER POWER:SPEED: PUMP : TEMP: SCALED PERFORMANCE : TIME:MAG3" :BEND A:																	
: FLOW Q:VELOCITY:DISCH: SUCTN:TOT HD: :INPUT:OUTPUT: N :OUTPUT: EFF: Tm: FLOW: HEAD:POWER: EFF: t : C 29 : S 4 :																	
NO:	GPM :	FT/S :	PSI :	" HG :	H FT :	: KW :	BHP :	RPM :	WHP :	n %:	F :	GPM :	FT :	BHP :	% :	H.MM: *	1.065:*1.000:
1:	389.0:	16.02	:16.19:	-3.19:	36.28:	1.24:	0.0:	6.4:	993.0:	4.4:	69.3:	81.3:	392.:	36.8:	6.5:	69.3:	10.35:389.04:365.42:
2:	363.3:	14.96	:14.90:	-2.94:	33.20:	1.24:	0.0:	5.6:	948.9:	3.8:	67.8:	83.0:	383.:	36.9:	6.5:	67.8:	10.41:363.31:344.47:
3:	340.8:	14.03	:13.45:	-2.66:	29.92:	1.24:	0.0:	4.7:	897.9:	3.2:	67.3:	83.6:	380.:	37.1:	6.5:	67.3:	10.44:340.82:320.56:
4:	313.1:	12.89	:11.79:	-2.33:	26.14:	1.24:	0.0:	3.8:	836.3:	2.6:	66.6:	84.1:	374.:	37.4:	6.6:	66.6:	10.47:313.14:293.17:
5:	290.7:	11.97	:10.46:	-2.05:	23.10:	1.24:	0.0:	3.2:	782.4:	2.1:	65.5:	84.8:	372.:	37.7:	6.7:	65.5:	10.53:290.66:269.46:
6:	267.0:	10.99	: 9.25:	-1.78:	20.30:	1.24:	0.0:	2.7:	729.5:	1.7:	63.7:	85.1:	366.:	38.1:	6.9:	63.7:	10.56:267.00:245.61:
7:	243.1:	10.01	: 8.43:	-1.58:	18.32:	1.24:	0.0:	2.2:	687.3:	1.4:	62.4:	85.2:	354.:	38.8:	6.9:	62.4:	10.58:243.09:223.61:
8:	219.7:	9.04	: 7.75:	-1.42:	16.68:	1.24:	0.0:	1.9:	649.4:	1.1:	60.4:	85.4:	338.:	39.6:	6.9:	60.4:	11.01:219.70:202.47:
9:	194.1:	7.99	: 7.16:	-1.23:	15.19:	1.24:	0.0:	1.6:	610.7:	0.9:	56.9:	85.5:	318.:	40.7:	7.1:	56.9:	11.03:194.11:177.99:
10:	169.3:	6.97	: 6.62:	-1.07:	13.87:	1.23:	0.0:	1.4:	574.7:	0.7:	54.1:	85.5:	295.:	42.0:	7.1:	54.1:	11.05:169.29:155.16:
11:	146.7:	6.04	: 6.21:	-0.94:	12.86:	1.23:	0.0:	1.1:	545.2:	0.6:	51.1:	85.5:	269.:	43.3:	7.1:	51.1:	11.07:146.68:135.54:
12:	122.4:	5.04	: 5.86:	-0.85:	12.00:	1.23:	0.0:	1.0:	518.6:	0.5:	46.5:	85.4:	236.:	44.6:	7.0:	46.5:	11.08:122.39:115.96:
13:	98.4:	4.05	: 5.55:	-0.78:	11.28:	1.23:	0.0:	0.8:	494.9:	0.3:	41.4:	85.4:	199.:	46.1:	6.8:	41.4:	11.10:98.354:95.858:
14:	72.5:	2.98	: 5.22:	-0.72:	10.56:	1.22:	0.0:	0.7:	473.7:	0.2:	34.1:	85.4:	153.:	47.1:	6.5:	34.1:	11.12:72.502:73.505:
15:	50.5:	2.08	: 4.94:	-0.67:	10.01:	1.21:	0.0:	0.6:	459.2:	0.2:	25.6:	85.2:	110.:	47.5:	6.2:	25.6:	11.15:50.549:54.826:
TESTED BY		J.LATTA		DATE 12/15/06		COMMENTS: VARIABLE SPEED SAND-CLAY MIX TEST AT 1.24 S.G. LOADED 1.06 S.G.											
		DRUM OF CLAY SENT FROM MINE SITE. LOADED 1/3 DRUM OF PHOSPHATE CLAY.															
WITNESSED BY		L. WHITLOCK		FOR		FIPR LOADED 1/4 DRUM OF SAND ONLY TO 1.24 S.G.											
Version: 20051201		T379 -06 12/15/06															



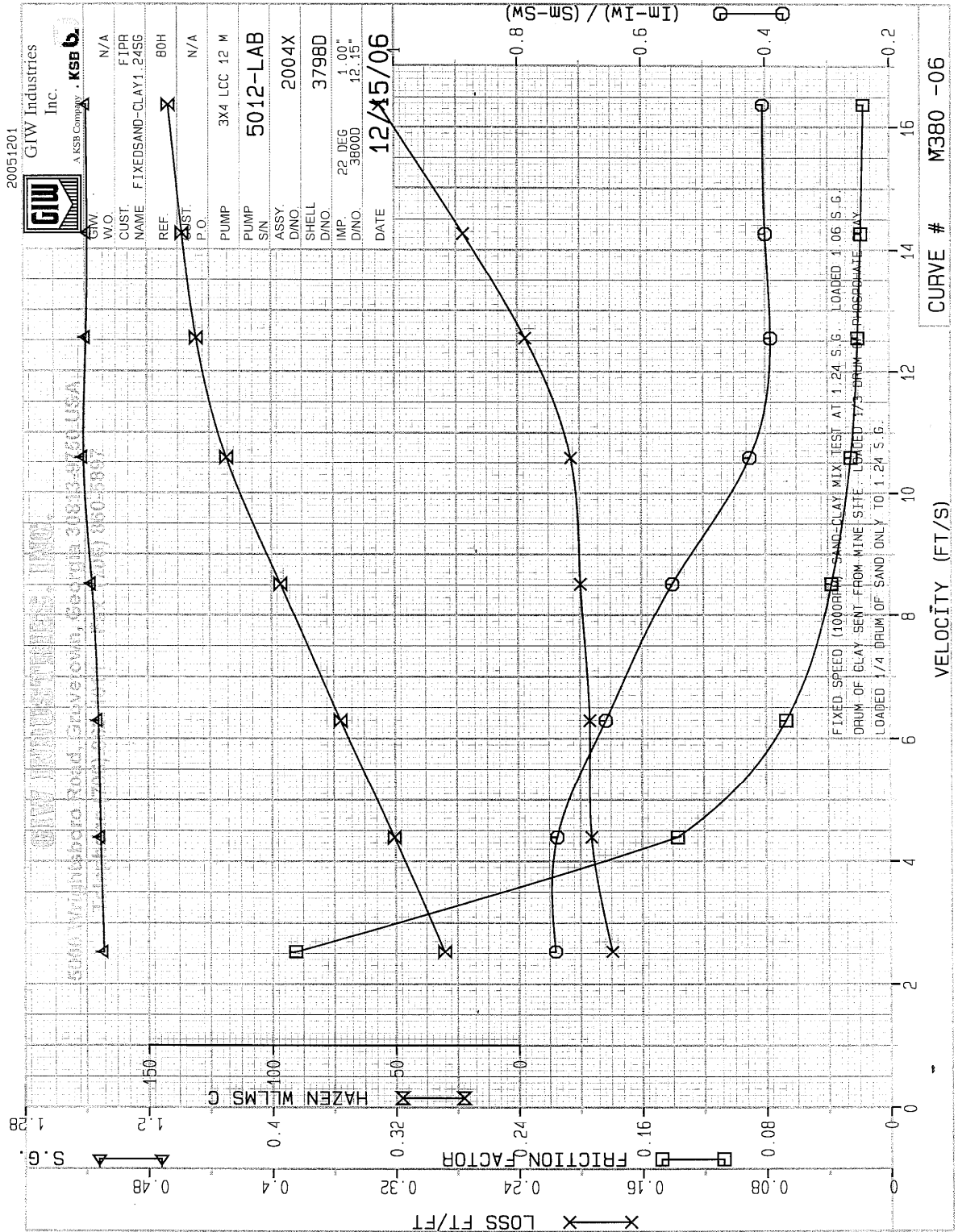
PUMP DETAIL		CH	USE	RDG	SOURCE	INSTRUMENT		GIW INDUSTRIES INC.					
								5000 WRIGHTSBORO ROAD					
PUMP	3X4 LCC 12 M	1	SUCTION	#1	YOKOGAWA-30-30	H2O-1E2	06123B	1.000	GROVETOWN, GEORGIA 30813-9750				
		2	AVE S.G.U-SECDN	#2	YOKOGAWA -4-8'	H2O-1E2	02096B	0.500	TELEPHONE (706) 863-1011				
SERIAL NUMBER	5012-LAB	3S	DIFHEAD B	#3	YOKOGAWA 236'	H2O 1E1	06123B	1.000	FAX (Engr) (706) 868-8025				
ASSEMBLY DRAWING NO	2004X	4S	FLOWBEND A	#4	YOKOGAWA 24'	H2O 1E2	06123B	1.000	FAX (Sales) (706) 860-5897				
SHELL DRAWING NO	3798D	5S	LOSS B	#5	YOKOGAWA 12'	H2O 1E2	08116B	1.000					
IMPELLER DRAWING NO	3800D	6.	NULLLOSSHEAT X	#6	YOKOGAWA 24'	H2O 1E2	06123B	0.000	TEST CURVE NO M379 -06				
IMPELLER DIAMETER	12.15"	7P	NULLDIFHEAD	#7	YOKO -30'TO 30'H2O	1E2	04285B	0.000	DATE 12/15/06				
OUTLET ANGLE	22 DEG	8.	NULLLOSSHEAT X	#8	YOKOGAWA 236'	H2O 1E1	06123B	0.000	PUMP TEST DATA FOR				
OUTLET WIDTH	1.00"	9	AVE S.G.U-SECUP	#9	YOKOGAWA 12'	H2O 1E2	08116B	0.500	----- VAR.SAND-CLAY 1.24SG				
ROTATION	CLOCKWISE	10.	DISCHARGE	#10	YOKOGAWA 236'	H2O 1E1	06123B	1.000	PROJECT				
HYDROSTATIC PRESS.	STD	11P	DIFHEAD A	#11	YOKOGAWA 60'	H2O 1E2	08116B	1.000	GIW WORK ORDER NO				
		12.	FLOWBEND B	#12	YOKOGAWA 36'	H2O 1E2	02096B	1.000	CUSTOMER ORDER NO				
DRIVER DETAIL		13P	LOSS A	#13	YOKOGAWA-4T08'	H2O-1E2	02096B	1.000	N/A				
-----		14.	NULLDISCHARGE	#14	ROSE. 5 -30-30'H2O	1E2	07142D	0.000	N/A				
TYPE 11.8:11.8 V-BELTS	DRIVE	15S	NULLDISCHARGE	#15	ROSEMOUNT 5 60'H2O	1E2	09153B	0.000	TEST CONSTANTS				
MAKE	BALDOR	16.	NULLFLOW	#16	ROSEMONT 7 692'H2O	1E1	07142D	0.000	1 FT H2O = 0.0 US GPM USING				
SERIAL NO	5275	17P	NULLFLOWMAG 4"	#17	4" YOKO 1200GPM	1E0	08174B	0.000	BEND HT CORR = 0.1 FT CONST = 143.01				
FRAME SIZE	365T	18P	NULLFLOW3" MAG	#18	3" F&P 700 GPM	1E1	02145B	0.000	DISCHARGE PIPE DIAMETER = 3.00 INS.				
RPM = 1780	BHP = 75.	19P	NULLFLOW8" MAG	#19	8" F&P 5000 GPM		09305B	0.000	METER 1.87' ABOVE PUMP DATUM, TAP-0.56'				
460 VOLTS 3 PHASE 60 CPS		20P	TEMP TANK	#20	RTD 4" 100OHM	F 1E1	09286B	1.000	SUCTION PIPE DIAMETER = 4.00 INS.				
		21S	TEMP AMB	#21	RTD AMB 100OHM	F 1E1	09215B	1.000	METER 1.87' ABOVE PUMP DATUM, TAP 0.00'				
SCALED PERFORMANCE FACTORS		22	NULLAMP METER	#22	AMP TRANS	AMP 1E1	05114B	0.000	PREROTATION LIM 0.0' BAROMETER 29.70"				
-----		23S	NULLTEMP AMBIENT	#23	RTD7 100OHM	F 1E1	04088B	0.000	HEAD LOSS = 10.00 FT OF 3.15 INCH DIAM				
SPEED OR RATIO	1000.000	24P	BHP TRQ*RPM	#24	LEBOW DAY 166	FTLB1E1	03173C	1.000	S.G. TAPS 6.00' APART G= 32.14 FT/S/S				
		25	RPM TRQ BAR	#25	LEBOW, DAY 1500	RPM 1E0	08164C	1.000	SOLIDS SG 2.65 OF 50.MICRONS S.D.=0.0				
IMP TURN DOWN RATIO	1.000	26S	BHP TRQ BAR	#26	LEBOW, DAY 75HP	1E2	12211D	1.000	PIPE ROUGHNESS REF M 78 -04 E/D=.000120				
MERIDINAL WIDTH RATIO	1.000	27P	NULLFLOW3" MAG	#27	3" YOKO 800	GPM 1E1	12089D	0.000	SAMPLER AREA = 0.00 SQUARE FEET				
SCALE RATIO	1.000	28S	NULLFLOWORIFICE	TECO# 6158	21.80	FPS 1E2	09256C	0.000					
BEP REF	0.GPM, 0.RPM	29P	FLOWMAG 3"	#29	3" YOKO 800	GPM 1E1	03045B	1.065					
EFFICIENCY	0.0% BY 1.000	30P	NULLBHP TRQ*RPM	#30	LEBOW, DAY 833	FTLB1E1	05098C	0.000					
		31	NULLRPM TRQ BAR	#31	LEBOW, DAY 1500	RPM 1E0	05024C	0.000					
		32S	NULLBHP TRQ BAR	#32	LEBOW, DAY 300	HP 1E1	07287C	0.000					
TEST RESULTS		^ PRIMARY INSTRUMENTATION USED											

NO : VELOCITY:	FLOW :	TEMP :	S.G. :	S.G. :	VOLUME:	WEIGHT:	MASS :	REYNOLDS :	PIPELINE LOSSES:	FRICTION FACTRS:	HAZEN:	Im-Iw :	TIME :
: Vm :	Qm :	Tm :	Sw :	Sm :	CONC. :	CONC. :	Ms :	NUMBER :	Im :	Iw :	Fm :	Fw :	WLLMS: ----- : t :
: FT/S :	GPM :	F :	:	:	Cv % :	Cw % :	TON/HR :	Re :	FT/FT :	FT/FT :	:	SAME Re: C :	Sm-Sw : HH.MM :
1 : 16.02 :	389.0 :	81.3 :	0.997 :	1.239 :	14.6 :	31.2 :	37.7 :	0.464E+06 :	0.3223 :	0.2240 :	0.0171 :	0.0148 :	140. : 0.4073 : 10.35 :
2 : 14.96 :	363.3 :	83.0 :	0.997 :	1.239 :	14.7 :	31.3 :	35.3 :	0.443E+06 :	0.2972 :	0.1964 :	0.0181 :	0.0149 :	137. : 0.4164 : 10.41 :
3 : 14.03 :	340.8 :	83.6 :	0.997 :	1.239 :	14.6 :	31.3 :	33.0 :	0.418E+06 :	0.2713 :	0.1740 :	0.0188 :	0.0150 :	135. : 0.4031 : 10.44 :
4 : 12.89 :	313.1 :	84.1 :	0.997 :	1.238 :	14.6 :	31.2 :	30.3 :	0.387E+06 :	0.2408 :	0.1483 :	0.0197 :	0.0151 :	132. : 0.3835 : 10.47 :
5 : 11.97 :	290.7 :	84.8 :	0.997 :	1.239 :	14.7 :	31.3 :	28.2 :	0.362E+06 :	0.2155 :	0.1288 :	0.0205 :	0.0152 :	130. : 0.3582 : 10.53 :
6 : 10.99 :	267.0 :	85.1 :	0.997 :	1.240 :	14.7 :	31.4 :	26.0 :	0.334E+06 :	0.1906 :	0.1098 :	0.0215 :	0.0154 :	128. : 0.3329 : 10.56 :
7 : 10.01 :	243.1 :	85.2 :	0.997 :	1.240 :	14.7 :	31.4 :	23.7 :	0.304E+06 :	0.1825 :	0.0922 :	0.0248 :	0.0156 :	119. : 0.3719 : 10.58 :
8 : 9.04 :	219.7 :	85.4 :	0.997 :	1.239 :	14.6 :	31.3 :	21.3 :	0.275E+06 :	0.1760 :	0.0763 :	0.0293 :	0.0158 :	110. : 0.4124 : 11.01 :
9 : 7.99 :	194.1 :	85.5 :	0.997 :	1.237 :	14.5 :	31.1 :	18.7 :	0.244E+06 :	0.1699 :	0.0606 :	0.0363 :	0.0161 :	99. : 0.4550 : 11.03 :
10 : 6.97 :	169.3 :	85.5 :	0.997 :	1.234 :	14.3 :	30.8 :	16.1 :	0.213E+06 :	0.1631 :	0.0471 :	0.0459 :	0.0164 :	88. : 0.4893 : 11.05 :
11 : 6.04 :	146.7 :	85.5 :	0.997 :	1.232 :	14.2 :	30.6 :	13.8 :	0.184E+06 :	0.1591 :	0.0361 :	0.0597 :	0.0168 :	77. : 0.5225 : 11.07 :
12 : 5.04 :	122.4 :	85.4 :	0.997 :	1.230 :	14.1 :	30.4 :	11.4 :	0.154E+06 :	0.1555 :	0.0259 :	0.0841 :	0.0173 :	65. : 0.5562 : 11.08 :
13 : 4.05 :	98.4 :	85.4 :	0.997 :	1.226 :	13.9 :	30.0 :	9.0 :	0.123E+06 :	0.1541 :	0.0174 :	0.1293 :	0.0179 :	52. : 0.5961 : 11.10 :
14 : 2.98 :	72.5 :	85.4 :	0.997 :	1.220 :	13.5 :	29.3 :	6.5 :	0.909E+05 :	0.1485 :	0.0100 :	0.2306 :	0.0189 :	39. : 0.6209 : 11.12 :
15 : 2.08 :	50.5 :	85.2 :	0.997 :	1.211 :	13.0 :	28.3 :	4.3 :	0.633E+05 :	0.1415 :	0.0052 :	0.4553 :	0.0203 :	28. : 0.6368 : 11.15 :
TESTED BY	J.LATTA	DATE	12/15/06	COMMENTS:	VARIABLE SPEED SAND-CLAY MIX TEST AT 1.24 S.G. LOADED 1.06 S.G.								
					DRUM OF CLAY SENT FROM MINE SITE. LOADED 1/3 DRUM OF PHOSPHATE CLAY.								
WITNESSED BY	L. WHITLOCK	FOR			FIPR LOADED 1/4 DRUM OF SAND ONLY TO 1.24 S.G.								
Version:	20051201												
					M379 -06 12/15/06								



PUMP DETAIL		CH	USE	RDG	SOURCE	INSTRUMENT		GIW INDUSTRIES INC.	
-----		CH	USE	RDG	SOURCE	INSTRUMENT		5000 WRIGHTSBORO ROAD	
PUMP	3X4 LCC 12 M	1	SUCTION	#1	YOKOGAWA-30-30	H2O-1E2	06123B	1.000	GROVETOWN, GEORGIA 30813-9750
SERIAL NUMBER	5012-LAB	2	AVE S.G.U-SECDN	#2	YOKOGAWA -4-8'	H2O-1E2	02096B	0.500	TELEPHONE (706) 863-1011
SHELL DRAWING NO	3798D	3P	DIFHEAD B	#3	YOKOGAWA 236'	H2O 1E1	06123B	1.000	FAX (Engr) (706) 868-8025
ASSEMBLY DRAWING NO	2004X	4S	FLOWBEND A	#4	YOKOGAWA 24'	H2O 1E2	06123B	1.000	FAX (Sales) (706) 860-5897
IMPELLER DRAWING NO	3800D	5S	LOSS B	#5	YOKOGAWA 12'	H2O 1E2	08116B	1.000	
IMPELLER DIAMETER	12.15"	6.	NULLOSSHEAT X	#6	YOKOGAWA 24'	H2O 1E2	06123B	0.000	TEST CURVE NO V380 -06
OUTLET ANGLE	22 DEG	7P	NULLDIFHEAD	#7	YOKO -30'TO 30'H2O	1E2	04285B	0.000	DATE 12/15/06
OUTLET WIDTH	1.00"	8.	NULLOSSHEAT X	#8	YOKOGAWA 236'	H2O 1E1	06123B	0.000	PUMP TEST DATA FOR
ROTATION	CLOCKWISE	9	AVE S.G.U-SECUP	#9	YOKOGAWA 12'	H2O 1E2	08116B	0.500	----- FIXEDSAND-CLAY1.24SG
HYDROSTATIC PRESS.	STD	10.	DISCHARGE	#10	YOKOGAWA 236'	H2O 1E1	06123B	1.000	PROJECT
		11S	DIFHEAD A	#11	YOKOGAWA 60'	H2O 1E2	08116B	1.000	GIW WORK ORDER NO
		12.	FLOWBEND B	#12	YOKOGAWA 36'	H2O 1E2	02096B	1.000	CUSTOMER ORDER NO
		13P	LOSS A	#13	YOKOGAWA-4T08'	H2O-1E2	02096B	1.000	N/A
DRIVER DETAIL		14.	NULLDISCHARGE	#14	ROSE. 5 -30-30'H2O-1E2	07142D	0.000	TEST CONSTANTS	
-----		15S	NULLDISCHARGE	#15	ROSEMOUNT 5 60'H2O 1E2	09153B	0.000	1 FT H2O = 0.0 US GPM USING	
TYPE 11.8:11.8 V-BELTS	DRIVE	16.	NULLFLOW	#16	ROSEMONT 7 692'H2O 1E1	07142D	0.000	BEND HT CORR = 0.1 FT CONST = 143.01	
MAKE	BALDOR	17P	NULLFLOWMAG 4"	#17	4" YOKO 1200GPM 1E0	08174B	0.000	DISCHARGE PIPE DIAMETER = 3.00 INS.	
SERIAL NO	5275	18P	NULLFLOW3" MAG	#18	3" F&P 700 GPM 1E1	02145B	0.000	METER 1.87' ABOVE PUMP DATUM, TAP-0.56'	
FRAME SIZE	365T	19P	NULLFLOW8" MAG	#19	8" F&P 5000 GPM	09305B	0.000	SUCTION PIPE DIAMETER = 4.00 INS.	
RPM = 1780	BHP = 75.	20P	TEMP TANK	#20	RTD 4" 1000HM F 1E1	09286B	1.000	METER 1.87' ABOVE PUMP DATUM, TAP 0.00'	
460 VOLTS 3 PHASE 60 CPS		21S	TEMP PAMB	#21	RTD AMB 1000HM F 1E1	09215B	1.000	PREROTATION LIM 0.0' BAROMETER 29.70"	
SCALED PERFORMANCE FACTORS		22	NULLAMP METER	#22	AMP TRANS AMP 1E1	05114B	0.000	HEAD LOSS = 10.00 FT OF 3.15 INCH DIAM	
-----		23S	NULLTEMPAMBIENT	#23	RTD7 1000HM F 1E1	04088B	0.000	S.G. TAPS 6.00' APART G= 32.14 FT/S/S	
SPEED OR RATIO	1000.000	24P	BHP TRQ*RPM	#24	LEBOW DAY 166 FTLB1E1	03173C	1.000	SOLIDS SG 2.65 OF 50.MICRONS S.D.=0.0	
IMP TURN DOWN RATIO	1.000	25	RPM TRQ BAR	#25	LEBOW, DAY1500 RPM 1E0	08164C	1.000	PIPE ROUGHNESS REF M 78 -04 E/D=.000120	
MERIDINAL WIDTH RATIO	1.000	26S	BHP TRQ BAR	#26	LEBOW, DAY 75HP 1E2	12211D	1.000	SAMPLER AREA = 0.00 SQUARE FEET	
SCALE RATIO	1.000	27P	NULLFLOW3" MAG	#27	3" YOKO 800 GPM 1E1	12089D	0.000		
BEP REF	0.GPM, 0.RPM	28S	NULLFLOWORIFICE	TECO# 6158	21.80 FPS 1E2	09256C	0.000		
EFFICIENCY	0.0% BY 1.000	29P	FLOWMAG 3"	#29	3" YOKO 800 GPM 1E1	03045B	1.065		
		30P	NULLBHP TRQ*RPM	#30	LEBOW, DAY 833 FTLB1E1	05098C	0.000		
		31	NULLRPM TRQ BAR	#31	LEBOW, DAY1500 RPM 1E0	05024C	0.000		
		32S	NULLBHP TRQ BAR	#32	LEBOW, DAY 300 HP 1E1	07287C	0.000		
TEST RESULTS		^ PRIMARY INSTRUMENTATION USED							

NO :VELOCITY:	FLOW	: TEMP	: S.G.	: S.G.	:VOLUME:WEIGHT:	MASS	:PIPELINE LOSSES:	dp/dx	: Tau 0
: Vm	: Qm	: Tm	: Sw	: Sm	: CONC.: CONC.:	Ms	: Im	: lw	: ln
: FT/S	: GPM	: F	:	:	: Cv %: Cw %:	TON/HR	: FT/FT	: FT/FT	: psf
1 : 16.36	: 397.5	: 84.8	: 0.997	: 1.239	: 14.6 : 31.3	: 38.6	: 0.3297	: 0.2320	: 20.576
2 : 14.27	: 346.5	: 86.7	: 0.997	: 1.238	: 14.6 : 31.3	: 33.6	: 0.2752	: 0.1786	: 17.173
3 : 12.54	: 304.7	: 87.5	: 0.997	: 1.239	: 14.7 : 31.4	: 29.6	: 0.2349	: 0.1401	: 14.660
4 : 10.58	: 257.0	: 88.6	: 0.996	: 1.241	: 14.8 : 31.6	: 25.2	: 0.2056	: 0.1017	: 12.828
5 : 8.52	: 206.8	: 89.3	: 0.996	: 1.236	: 14.5 : 31.1	: 19.9	: 0.1995	: 0.0677	: 12.447
6 : 6.29	: 152.8	: 90.1	: 0.996	: 1.232	: 14.2 : 30.7	: 14.4	: 0.1938	: 0.0386	: 12.090
7 : 4.39	: 106.7	: 89.5	: 0.996	: 1.231	: 14.2 : 30.5	: 10.0	: 0.1928	: 0.0200	: 12.033
8 : 2.53	: 61.5	: 89.3	: 0.996	: 1.229	: 14.1 : 30.3	: 5.7	: 0.1795	: 0.0073	: 11.203



PUMP DETAIL		CH	USE	RDG	SOURCE	INSTRUMENT	GIW INDUSTRIES INC.									
-----		-----					5000 WRIGHTSBORO ROAD									
PUMP	3X4 LCC 12 M	1	SUCTION	#1	YOKOGAWA-30-30	H20-1E2 06123B 1.000	GROVETOWN, GEORGIA 30813-9750									
		2	AVE S.G.U-SECDN	#2	YOKOGAWA -4-8'	H20-1E2 02096B 0.500	TELEPHONE (706) 863-1011									
SERIAL NUMBER	5012-LAB	3P	DIFHEAD B	#3	YOKOGAWA 236'	H20 1E1 06123B 1.000	FAX (Engr) (706) 868-8025									
ASSEMBLY DRAWING NO	2004X	4S	FLOWBEND A	#4	YOKOGAWA 24'	H20 1E2 06123B 1.000	FAX (Sales) (706) 860-5897									
SHELL DRAWING NO	3798D	5S	LOSS B	#5	YOKOGAWA 12'	H20 1E2 08116B 1.000										
IMPELLER DRAWING NO	3800D	6.	NULLLOSSHEAT X	#6	YOKOGAWA 24'	H20 1E2 06123B 0.000	TEST CURVE NO M380 -06 DATE 12/15/06									
IMPELLER DIAMETER	12.15"	7P	NULLDIFHEAD	#7	YOKO -30'TO 30'	H20 1E2 04285B 0.000										
OUTLET ANGLE	22 DEG	8.	NULLLOSSHEAT X	#8	YOKOGAWA 236'	H20 1E1 06123B 0.000	PUMP TEST DATA FOR FIPR									
OUTLET WIDTH	1.00"	9	AVE S.G.U-SECUP	#9	YOKOGAWA 12'	H20 1E2 08116B 0.500	----- FIXEDSAND-CLAY1.24SG									
ROTATION	CLOCKWISE	10.	DISCHARGE	#10	YOKOGAWA 236'	H20 1E1 06123B 1.000	PROJECT 80H									
HYDROSTATIC PRESS.	STD	11S	DIFHEAD A	#11	YOKOGAWA 60'	H20 1E2 08116B 1.000	GIW WORK ORDER NO N/A									
		12.	FLOWBEND B	#12	YOKOGAWA 36'	H20 1E2 02096B 1.000	CUSTOMER ORDER NO N/A									
DRIVER DETAIL		13P	LOSS A	#13	YOKOGAWA-4TO8'	H20-1E2 02096B 1.000										
-----		14.	NULLDISCHARGE	#14	ROSE. 5 -30-30'	H20-1E2 07142D 0.000										
TYPE 11.8:11.8 V-BELTS	DRIVE	15S	NULLDISCHARGE	#15	ROSEMOUNT 5 60'	H20 1E2 09153B 0.000	TEST CONSTANTS									
MAKE	BALDOR	16.	NULLFLOW	#16	ROSEMONT 7 692'	H20 1E1 07142D 0.000	1 FT H2O = 0.0 US GPM USING									
SERIAL NO	5275	17P	NULLFLOWMAG 4"	#17	4" YOKO 1200GPM	1E0 08174B 0.000	BEND HT CORR = 0.1 FT CONST = 143.01									
FRAME SIZE	365T	18P	NULLFLOW3" MAG	#18	3" F&P 700 GPM	1E1 02145B 0.000	DISCHARGE PIPE DIAMETER = 3.00 INS.									
RPM = 1780	BHP = 75.	19P	NULLFLOW8" MAG	#19	8" F&P 5000 GPM	09305B 0.000	METER 1.87' ABOVE PUMP DATUM, TAP-0.56'									
460 VOLTS 3 PHASE 60 CPS		20P	TEMP TANK	#20	RTD 4" 1000HM F	1E1 09286B 1.000	SUCTION PIPE DIAMETER = 4.00 INS.									
SCALED PERFORMANCE FACTORS		21S	TEMP AMB	#21	RTD AMB 1000HM F	1E1 09215B 1.000	METER 1.87' ABOVE PUMP DATUM, TAP 0.00'									
-----		22	NULLAMP METER	#22	AMP TRANS AMP 1E1	05114B 0.000	PREROTATION LIM 0.0' BAROMETER 29.70"									
SPEED OR RATIO	1000.000	23S	NULLTEMPAMBIENT	#23	RTD7 1000HM F	1E1 04088B 0.000	HEAD LOSS = 10.00 FT OF 3.15 INCH DIAM									
IMP TURN DOWN RATIO	1.000	24P	BHP TRQ*RPM	#24	LEBOW DAY 166 FTLB1E1	03173C 1.000	S.G. TAPS 6.00' APART G= 32.14 FT/S/S									
MERIDINAL WIDTH RATIO	1.000	25	RPM TRQ BAR	#25	LEBOW, DAY 1500 RPM	1E0 08164C 1.000	SOLIDS SG 2.65 OF 50.MICRONS S.D.=0.0									
SCALE RATIO	1.000	26S	BHP TRQ BAR	#26	LEBOW, DAY 75HP	1E2 12211D 1.000	PIPE ROUGHNESS REF M 78 -04 E/D=.000120									
BEP REF	0.GPM, 0.RPM	27P	NULLFLOW3" MAG	#27	3" YOKO 800 GPM	1E1 12089D 0.000	SAMPLER AREA = 0.00 SQUARE FEET									
EFFICIENCY	0.0% BY 1.000	28S	NULLFLOWORIFICE	TECO# 6158	21.80 FPS	1E2 09256C 0.000										
		29P	FLOWMAG 3"	#29	3" YOKO 800 GPM	1E1 03045B 1.065										
		30P	NULLBHP TRQ*RPM	#30	LEBOW, DAY 833 FTLB1E1	05098C 0.000										
		31	NULLRPM TRQ BAR	#31	LEBOW, DAY 1500 RPM	1E0 05024C 0.000										
		32S	NULLBHP TRQ BAR	#32	LEBOW, DAY 300 HP	1E1 07287C 0.000										
TEST RESULTS		^ PRIMARY INSTRUMENTATION USED														

NO : VELOCITY :	FLOW :	TEMP :	S.G. :	S.G. :	VOLUME:WEIGHT:	MASS :	REYNOLDS :	PIPELINE LOSSES:	FRICTION	FACTS:	HAZEN: Im-Iw :	TIME :				
: Vm :	Qm :	Tm :	Sw :	Sm :	CONC.: CONC.:	Ms :	NUMBER :	Im :	Iw :	Fm :	Fw :	WLLMS: ---- : t :				
: FT/S :	GPM :	F :	:	:	Cv %: Cw %:	TON/HR :	Re :	FT/FT :	FT/FT :	:	SAME Re: C : Sm-Sw :	HH.MM :				
1 : 16.36 :	397.5 :	84.8 :	0.997 :	1.239 :	14.6 : 31.3 :	38.6 :	0.495E+06 :	0.3297 :	0.2320 :	0.0168 :	0.0147 :	141.:0.4038 : 11.24 :				
2 : 14.27 :	346.5 :	86.7 :	0.997 :	1.238 :	14.6 : 31.3 :	33.6 :	0.442E+06 :	0.2752 :	0.1786 :	0.0184 :	0.0149 :	136.:0.3997 : 11.30 :				
3 : 12.54 :	304.7 :	87.5 :	0.997 :	1.239 :	14.7 : 31.4 :	29.6 :	0.392E+06 :	0.2349 :	0.1401 :	0.0203 :	0.0151 :	130.:0.3912 : 11.33 :				
4 : 10.58 :	257.0 :	88.6 :	0.996 :	1.241 :	14.8 : 31.6 :	25.2 :	0.335E+06 :	0.2056 :	0.1017 :	0.0250 :	0.0154 :	118.:0.4250 : 11.38 :				
5 : 8.52 :	206.8 :	89.3 :	0.996 :	1.236 :	14.5 : 31.1 :	19.9 :	0.272E+06 :	0.1995 :	0.0677 :	0.0376 :	0.0158 :	96.:0.5502 : 11.41 :				
6 : 6.29 :	152.8 :	90.1 :	0.996 :	1.232 :	14.2 : 30.7 :	14.4 :	0.202E+06 :	0.1938 :	0.0386 :	0.0671 :	0.0165 :	72.:0.6585 : 11.45 :				
7 : 4.39 :	106.7 :	89.5 :	0.996 :	1.231 :	14.2 : 30.5 :	10.0 :	0.140E+06 :	0.1928 :	0.0200 :	0.1371 :	0.0175 :	50.:0.7377 : 12.01 :				
8 : 2.53 :	61.5 :	89.3 :	0.996 :	1.229 :	14.1 : 30.3 :	5.7 :	0.807E+05 :	0.1795 :	0.0073 :	0.3851 :	0.0194 :	30.:0.7409 : 12.06 :				

TESTED BY J.LATTA DATE 12/15/06 COMMENTS: FIXED SPEED (1000RPM) SAND-CLAY MIX TEST AT 1.24 S.G. LOADED 1.06 S.G. DRUM OF CLAY SENT FROM MINE SITE. LOADED 1/3 DRUM OF PHOSPHATE CLAY.

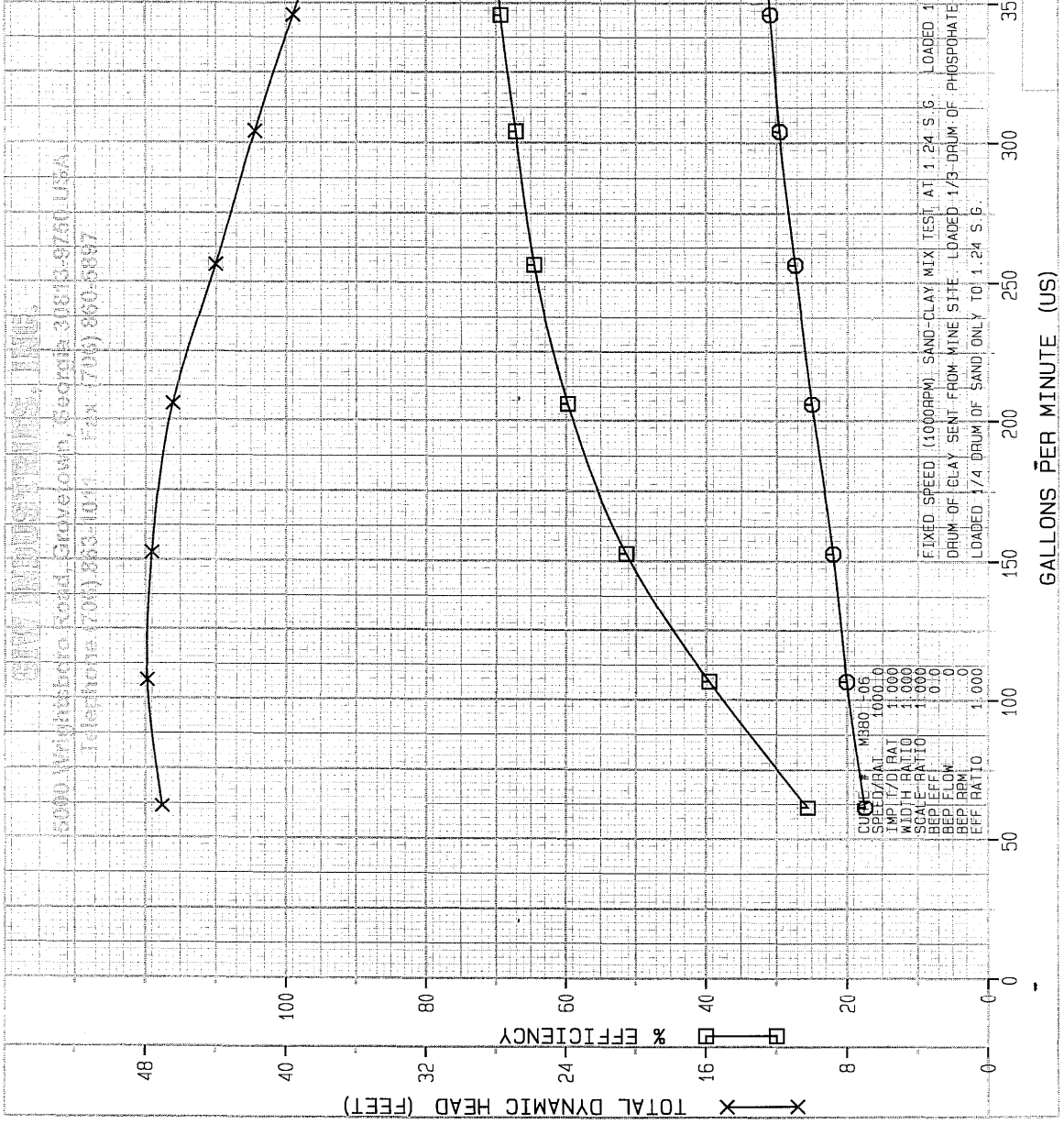
WITNESSED BY L. WHITLOCK FOR FIPR LOADED 1/4 DRUM OF SAND ONLY TO 1.24 S.G.

Version: 20051201

M380 -06 12/15/06

20051201

GIW Industries Inc. A KSB Company	
GIW W.O.	N/A
CUST. NAME	FIXEDSAND-CLAY 1.24SG
REF.	80H
CUST. P.O.	N/A
PUMP	3X4 LCC 12 M
PUMP S/N	5012-LAB
ASSY. D/N	2004X
SHELL D/N	3798D
IMP. D/N	22 DFG
D/N	3600D
DATE	12/15/06



GIW INDUSTRIES INC.
5000 WRIGHTSBORO ROAD
GROVETOWN, GEORGIA 30813-9750
TELEPHONE (706) 863-1011
FAX (Engr) (706) 868-8025
FAX (Sales) (706) 860-5897

TEST CURVE NO T380 -06 DATE 12/15/06

PUMP TEST DATA FOR FIPR
----- FIXEDSAND-CLAY1.24SG
PROJECT 80H
GIW WORK ORDER NO N/A
CUSTOMER ORDER NO N/A

TEST CONSTANTS

1 FT H2O = 0.0 US GPM USING
BEND HT CORR = 0.1 FT CONST = 143.01
DISCHARGE PIPE DIAMETER = 3.00 INS.
METER 1.87' ABOVE PUMP DATUM, TAP-0.56'
SUCTION PIPE DIAMETER = 4.00 INS.
METER 1.87' ABOVE PUMP DATUM, TAP 0.00'
PRERATION LIM 0.0' BAROMETER 29.70"
HEAD LOSS = 10.00 FT OF 3.15 INCH DIAM
S.G. TAPS 6.00' APART G= 32.14 FT/S/S
SOLIDS SG 2.65 OF 50.MICRONS S.D.=0.0
PIPE ROUGHNESS REF M 78 -04 E/D=.000120
SAMPLER AREA = 0.00 SQUARE FEET

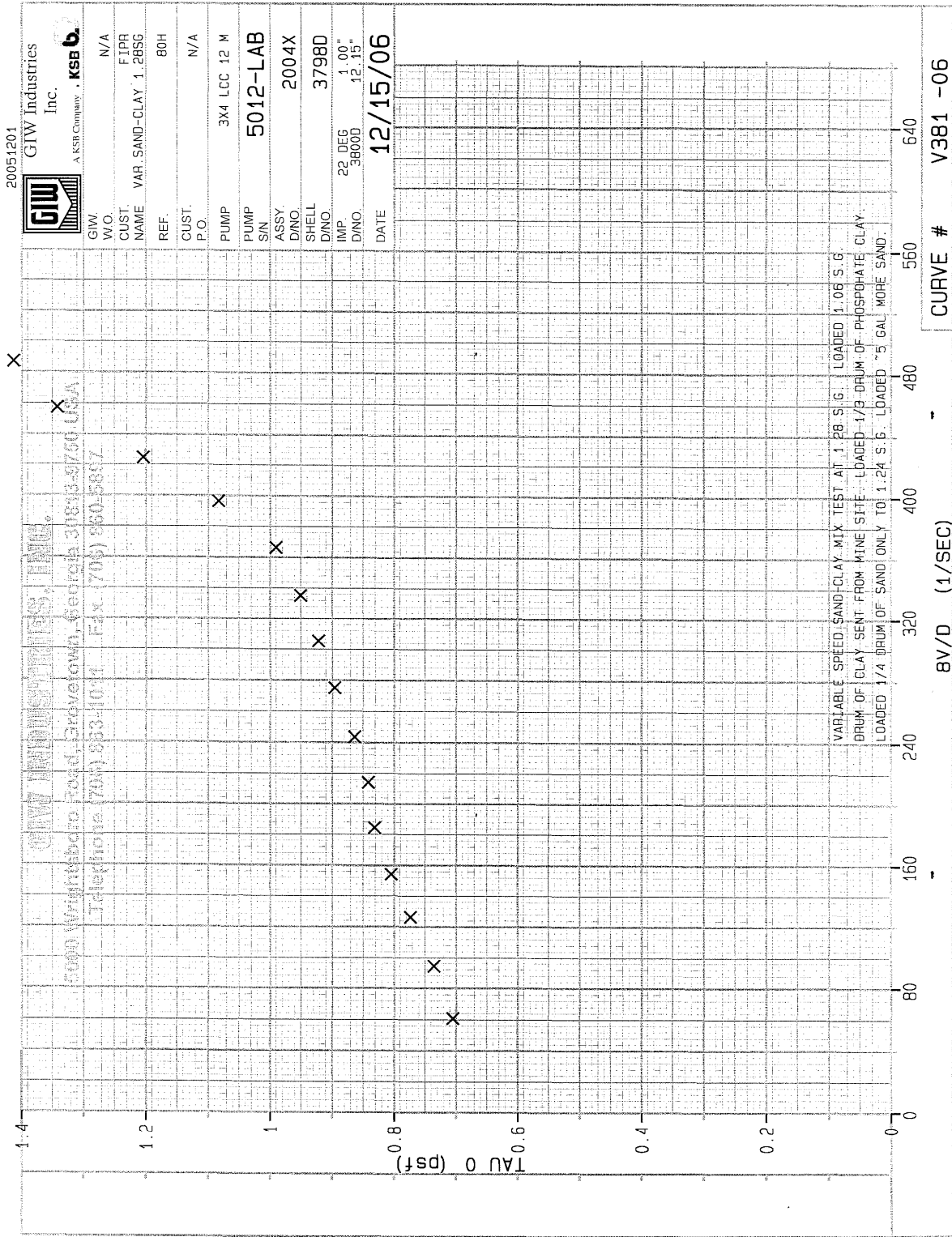
: FLOW MEASUREMENT:		HEAD MEASUREMENT :		S.G.:		DRIVER POWER:		SPEED:		PUMP		: TEMP:		SCALED PERFORMANCE		: TIME:MAG3" :		BEND A:											
: FLOW Q:		VELOCITY:		DISCH:		SUCTN:		TOT HD:		: INPUT:		OUTPUT:		EFF:		Tm :		FLOW :		HEAD:POWER:		EFF:		t :		C 29 :		S 4 :	
NO:	GPM	FT/S	PSI :	" HG :	H FT :	:	KW :	BHP :	RPM :	WHP :	n % :	F :	GPM :	FT :	BHP :	% :	H.MM:	* 1.065 :	* 1.000:										
1:	397.5:	16.36	:16.49:	-3.25	:37.04:	1.24:	0.0:	6.6:	1002.:	4.6:	70.0:	84.8:	397.:	36.9:	6.5:	70.0:	11.24:	397.49:	366.97:										
2:	346.5:	14.27	:18.60:	-2.79:	:39.74:	1.24:	0.0:	6.2:	1002.:	4.3:	69.3:	86.7:	346.:	39.6:	6.2:	69.3:	11.30:	346.54:	321.55:										
3:	304.7:	12.54	:20.40:	-2.25:	:41.98:	1.24:	0.0:	6.0:	1002.:	4.0:	67.2:	87.5:	304.:	41.8:	5.9:	67.2:	11.33:	304.69:	282.45:										
4:	257.0:	10.58	:22.19:	-1.80:	:44.25:	1.24:	0.0:	5.5:	1003.:	3.6:	64.6:	88.6:	256.:	44.0:	5.5:	64.6:	11.38:	257.00:	237.96:										
5:	206.8:	8.52	:23.88:	-1.42:	:46.73:	1.24:	0.0:	5.0:	1003.:	3.0:	59.7:	89.3:	206.:	46.4:	5.0:	59.7:	11.41:	206.84:	190.63:										
6:	152.8:	6.29	:24.70:	-1.08:	:47.68:	1.23:	0.0:	4.4:	1001.:	2.3:	51.4:	90.1:	153.:	47.6:	4.4:	51.4:	11.45:	152.79:	142.59:										
7:	106.7:	4.39	:25.06:	-0.90:	:47.97:	1.23:	0.0:	4.0:	1001.:	1.6:	39.5:	89.5:	107.:	47.9:	4.0:	39.5:	12.01:	106.67:	102.81:										
8:	61.5:	2.53	:24.79:	-0.74:	:47.23:	1.23:	0.0:	3.5:	1002.:	0.9:	25.6:	89.3:	61.:	47.0:	3.5:	25.6:	12.06:	61.46:	64.460:										

TESTED BY J.LATTA DATE 12/15/06 COMMENTS: FIXED SPEED, (1000RPM) SAND-CLAY MIX TEST AT 1.24 S.G. LOADED 1.06 S.G.
DRUM OF CLAY SENT FROM MINE SITE. LOADED 1/3 DRUM OF PHOSPHATE CLAY.
WITNESSED BY L. WHITLOCK FOR FIPR LOADED 1/4 DRUM OF SAND ONLY TO 1.24 S.G.
Version: 20051201 T380 -06 12/

PUMP DETAIL	CH	USE	RDG	SOURCE	INSTRUMENT	
						GIW INDUSTRIES INC.
						5000 WRIGHTSBORO ROAD
						GROVETOWN, GEORGIA 30813-9750
						TELEPHONE (706) 863-1011
						FAX (Engr) (706) 868-8025
						FAX (Sales) (706) 860-5897
						TEST CURVE NO X380 -06 DATE 12/15/06
PUMP	3X4 LCC 12 M	1	SUCTION	#1 YOKOGAWA-30-30	H20-1E2 06123B 1.000	
SERIAL NUMBER	5012-LAB	2	AVE S.G.U-SECDN	#2 YOKOGAWA -4-8'	H20-1E2 02096B 0.500	
ASSEMBLY DRAWING NO	2004X	3P	DIFHEAD B	#3 YOKOGAWA 236'	H20 1E1 06123B 1.000	
SHELL DRAWING NO	3798D	4S	FLOWBEND A	#4 YOKOGAWA 24'	H20 1E2 06123B 1.000	
IMPELLER DRAWING NO	3800D	5S	LOSS B	#5 YOKOGAWA 12'	H20 1E2 08116B 1.000	
IMPELLER DIAMETER	12.15"	6.	NULLLOSSHEAT X	#6 YOKOGAWA 24'	H20 1E2 06123B 0.000	
OUTLET ANGLE	22 DEG	7P	NULLDIFHEAD	#7 YOKO -30'TO 30'H20	1E2 04285B 0.000	
OUTLET WIDTH	1.00"	8.	NULLLOSSHEAT X	#8 YOKOGAWA 236'	H20 1E1 06123B 0.000	
ROTATION	CLOCKWISE	9	AVE S.G.U-SECUP	#9 YOKOGAWA 12'	H20 1E2 08116B 0.500	
HYDROSTATIC PRESS.	STD	10.	DISCHARGE	#10YOKOGAWA 236'	H20 1E1 06123B 1.000	
DRIVER DETAIL		11S	DIFHEAD A	#11YOKOGAWA 60'	H20 1E2 08116B 1.000	
TYPE 11.8:11.8 V-BELTS	DRIVE	12.	FLOWBEND B	#12YOKOGAWA 36'	H20 1E2 02096B 1.000	
MAKE	BALDOR	13P	LOSS A	#13YOKOGAWA-4T08'	H20-1E2 02096B 1.000	
SERIAL NO	5275	14.	NULLDISCHARGE	#14ROSE. 5 -30-30'H20-1E2	07142D 0.000	
FRAME SIZE	365T	15S	NULLDISCHARGE	#15ROSEMOUNT 5 60'H20 1E2	09153B 0.000	
RPM = 1780	BHP = 75.	16.	NULLFLOW	#16ROSEMONT 7 692'H20 1E1	07142D 0.000	
460 VOLTS 3 PHASE 60 CPS		17P	NULLFLOWMAG 4"	#17 4" YOKO 1200GPM 1E0	08174B 0.000	
SCALED PERFORMANCE FACTORS		18P	NULLFLOW3" MAG	#18 3" F&P 700 GPM 1E1	02145B 0.000	
SPEED OR RATIO	1000.000	19P	NULLFLOW8" MAG	#19 8" F&P 5000 GPM	09305B 0.000	
IMP TURN DOWN RATIO	1.000	20P	TEMP TANK	#20 RTD 4" 100OHM F 1E1	09286B 1.000	
MERIDINAL WIDTH RATIO	1.000	21S	TEMPAMB	#21 RTD AMB 100OHM F 1E1	09215B 1.000	
SCALE RATIO	1.000	22	NULLAMP METER	#22 AMP TRANS AMP 1E1	05114B 0.000	
BEP REF	0.0GPM, 0.0RPM	23S	NULLTEMPAMBIENT	#23 RTD7 100OHM F 1E1	04088B 0.000	
EFFICIENCY	0.0% BY 1.000	24P	BHP TRQ*RPM	#24 LEBOW DAY 166 FTLB1E1	03173C 1.000	
TEST RESULTS		25	RPM TRQ BAR	#25 LEBOW, DAY1500 RPM 1E0	08164C 1.000	
		26S	BHP TRQ BAR	#26 LEBOW, DAY 75HP 1E2	12211D 1.000	
		27P	NULLFLOW3" MAG	#27 3" YOKO 800 GPM 1E1	12089D 0.000	
		28S	NULLFLOWORIFICE	TECO# 6158 21.80 FPS 1E2	09256C 0.000	
		29P	FLOWMAG 3"	#29 3" YOKO 800 GPM 1E1	03045B 1.065	
		30P	NULLBHP TRQ*RPM	#30 LEBOW, DAY 833 FTLB1E1	05098C 0.000	
		31	NULLRPM TRQ BAR	#31 LEBOW, DAY1500 RPM 1E0	05024C 0.000	
		32S	NULLBHP TRQ BAR	#32 LEBOW, DAY 300 HP 1E1	07287C 0.000	
		^ PRIMARY INSTRUMENTATION USED				
:FLOW MEASUREMENT: HEAD MEASUREMENT :S.G.:DRIVER POWER:SPEED: PUMP :MAG3" :BEND A:BEND B:LOSS A:LOSS B:DISCH :DIFH A:DIFH B:						
: FLOW Q:VELOCITY:DISCH: SUCTN:TOT HD: :INPUT:OUTPUT: N :OUTPUT: EFF: C 29 : S 4 : S 12 : C 13 : C 5 : C 10 : C 11 : C 3 :						
NO: GPM	: FT/S	: PSI	: " HG	: H FT	: KW	: BHP : RPM : WHP : n %: *1.065: *1.000: *1.000: *1.000: *1.000: *1.000: *1.000: *1.000:
1: 397.5:	16.36	:16.49:	-3.25:	37.04:	1.24:	0.0: 6.6:1002.: 4.6:70.0:397.49:366.97:366.47: 3.297: 3.339:37.940:41.744:41.807:
2: 346.5:	14.27	:18.60:	-2.79:	39.74:	1.24:	0.0: 6.2:1002.: 4.3:69.3:346.54:321.55:321.10: 2.752: 2.794:42.754:46.088:46.140:
3: 304.7:	12.54	:20.40:	-2.25:	41.98:	1.24:	0.0: 6.0:1002.: 4.0:67.2:304.69:282.45:282.04: 2.349: 2.389:46.917:49.630:49.643:
4: 257.0:	10.58	:22.19:	-1.80:	44.25:	1.24:	0.0: 5.5:1003.: 3.6:64.6:257.00:237.96:237.54: 2.056: 2.093:51.044:53.237:53.253:
5: 206.8:	8.52	:23.88:	-1.42:	46.73:	1.24:	0.0: 5.0:1003.: 3.0:59.7:206.84:190.63:190.25: 1.995: 2.034:54.953:56.735:56.720:
6: 152.8:	6.29	:24.70:	-1.08:	47.68:	1.23:	0.0: 4.4:1001.: 2.3:51.4:152.79:142.59:142.08: 1.938: 1.975:56.836:58.239:58.236:
7: 106.7:	4.39	:25.06:	-0.90:	47.97:	1.23:	0.0: 4.0:1001.: 1.6:39.5:106.67:102.81:101.96: 1.928: 1.966:57.632:58.849:58.850:
8: 61.5:	2.53	:24.79:	-0.74:	47.23:	1.23:	0.0: 3.5:1002.: 0.9:25.6:61.461:64.460:63.108: 1.795: 1.832:57.053:58.046:58.056:

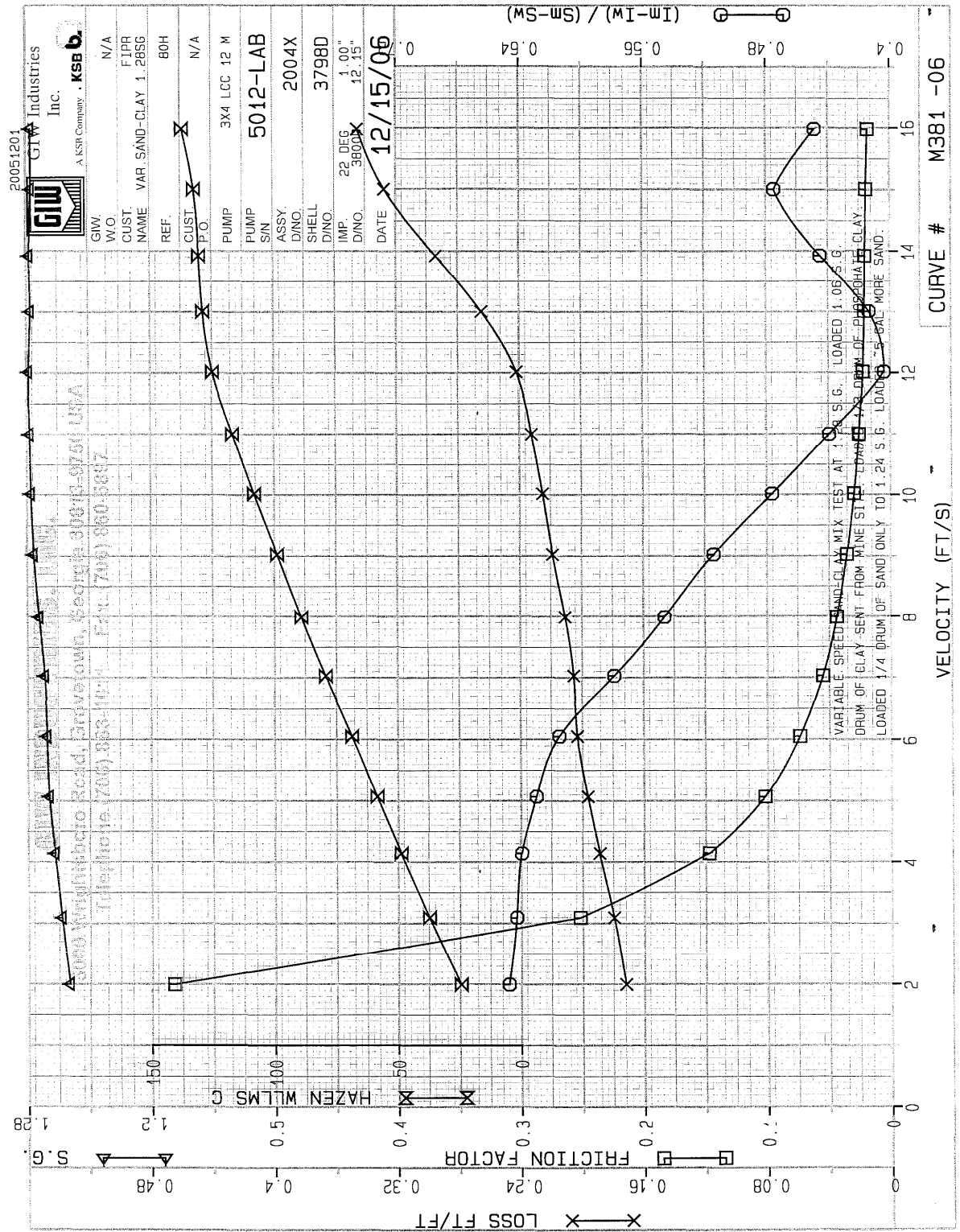
TESTED BY J.LATTA DATE 12/15/06 COMMENTS: FIXED SPEED (1000RPM) SAND-CLAY MIX TEST AT 1.24 S.G. LOADED 1.06 S.G.
 DRUM OF CLAY SENT FROM MINE SITE. LOADED 1/3 DRUM OF PHOSPHATE CLAY.
 WITNESSED BY L. WHITLOCK FOR FIPR LOADED 1/4 DRUM OF SAND ONLY TO 1.24 S.G.
 Version: 20051201

X380 -06 12/15/06



PUMP DETAIL		CH	USE	RDG	SOURCE	INSTRUMENT	GIW INDUSTRIES INC.									
-----		-----					5000 WRIGHTSBORO ROAD									
PUMP	3X4 LCC 12 M	1	SUCTION	#1	YOKOGAWA-30-30	H20-1E2 06123B 1.000	GROVETOWN, GEORGIA 30813-9750									
		2	AVE S.G.U-SECDN	#2	YOKOGAWA -4-8'	H20-1E2 02096B 0.500	TELEPHONE (706) 863-1011									
SERIAL NUMBER	5012-LAB	3P	DIFHEAD B	#3	YOKOGAWA 236'	H20 1E1 06123B 1.000	FAX (Engr) (706) 868-8025									
ASSEMBLY DRAWING NO	2004X	4S	FLOWBEND A	#4	YOKOGAWA 24'	H20 1E2 06123B 1.000	FAX (Sales) (706) 860-5897									
SHELL DRAWING NO	3798D	5S	LOSS B	#5	YOKOGAWA 12'	H20 1E2 08116B 1.000										
IMPELLER DRAWING NO	3800D	6.	NULLLOSSHEAT X	#6	YOKOGAWA 24'	H20 1E2 06123B 0.000	TEST CURVE NO V381 -06 DATE 12/15/06									
IMPELLER DIAMETER	12.15"	7P	NULLDIFHEAD	#7	YOKO -30'TO 30'	H20 1E2 04285B 0.000										
OUTLET ANGLE	22 DEG	8.	NULLLOSSHEAT X	#8	YOKOGAWA 236'	H20 1E1 06123B 0.000	PUMP TEST DATA FOR									
OUTLET WIDTH	1.00"	9	AVE S.G.U-SECUP	#9	YOKOGAWA 12'	H20 1E2 08116B 0.500	----- VAR.SAND-CLAY 1.28SG									
ROTATION	CLOCKWISE	10.	DISCHARGE	#10	YOKOGAWA 236'	H20 1E1 06123B 1.000	PROJECT									
HYDROSTATIC PRESS.	STD	11S	DIFHEAD A	#11	YOKOGAWA 60'	H20 1E2 08116B 1.000	GIW WORK ORDER NO									
		12.	FLOWBEND B	#12	YOKOGAWA 36'	H20 1E2 02096B 1.000	CUSTOMER ORDER NO									
DRIVER DETAIL		13P	LOSS A	#13	YOKOGAWA-4T08'	H20-1E2 02096B 1.000										
-----		14.	NULLDISCHARGE	#14	ROSE. 5 -30-30'	H20-1E2 07142D 0.000										
TYPE	11.8:11.8 V-BELTS	15S	NULLDISCHARGE	#15	ROSEMOUNT 5 60'	H20 1E2 09153B 0.000	TEST CONSTANTS									
MAKE	BALDOR	16.	NULLFLOW	#16	ROSEMONT 7 692'	H20 1E1 07142D 0.000	1 FT H2O = 0.0 US GPM USING									
SERIAL NO	5275	17P	NULLFLOWMAG 4"	#17	4" YOKO 1200GPM	1E0 08174B 0.000	BEND HT CORR = 0.1 FT CONST = 143.01									
FRAME SIZE	365T	18P	NULLFLOW3" MAG	#18	3" F&P 700 GPM	1E1 02145B 0.000	DISCHARGE PIPE DIAMETER = 3.00 INS.									
RPM = 1780	BHP = 75.	19P	NULLFLOW8" MAG	#19	8" F&P 5000 GPM	09305B 0.000	METER 1.87' ABOVE PUMP DATUM, TAP-0.56'									
460 VOLTS 3 PHASE 60 CPS		20P	TEMP TANK	#20	RTD 4" 1000HM	F 1E1 09286B 1.000	SUCTION PIPE DIAMETER = 4.00 INS.									
		21S	TEMP PAMB	#21	RTD AMB 1000HM	F 1E1 09215B 1.000	METER 1.87' ABOVE PUMP DATUM, TAP 0.00'									
SCALED PERFORMANCE FACTORS		22	NULLAMP METER	#22	AMP TRANS	AMP 1E1 05114B 0.000	PREROTATION LIM 0.0' BAROMETER 29.70"									
-----		23S	NULLTEMPAMBIENT	#23	RTD7 1000HM	F 1E1 04088B 0.000	HEAD LOSS = 10.00 FT OF 3.15 INCH DIAM									
SPEED OR RATIO	1000.000	24P	BHP TRQ*RPM	#24	LEBOW DAY 166	FTLB1E1 03173C 1.000	S.G. TAPS 6.00' APART G= 32.14 FT/S/S									
		25	RPM TRQ BAR	#25	LEBOW, DAY 1500	RPM 1E0 08164C 1.000	SOLIDS SG 2.65 OF 50.MICRONS S.D.=0.0									
IMP TURN DOWN RATIO	1.000	26S	BHP TRQ BAR	#26	LEBOW, DAY 75HP	1E2 12211D 1.000	PIPE ROUGHNESS REF M 78 -04 E/D=.000120									
MERIDINAL WIDTH RATIO	1.000	27P	NULLFLOW3" MAG	#27	3" YOKO 800	GPM 1E1 12089D 0.000	SAMPLER AREA = 0.00 SQUARE FEET									
SCALE RATIO	1.000	28S	NULLFLOWORIFICE	TECO# 6158	21.80	FPS 1E2 09256C 0.000										
BEP REF	0.GPM, 0.RPM	29P	FLOWMAG 3"	#29	3" YOKO 800	GPM 1E1 03045B 1.065										
EFFICIENCY	0.0% BY 1.000	30P	NULLBHP TRQ*RPM	#30	LEBOW, DAY 833	FTLB1E1 05098C 0.000										
		31	NULLRPM TRQ BAR	#31	LEBOW, DAY 1500	RPM 1E0 05024C 0.000										
		32S	NULLBHP TRQ BAR	#32	LEBOW, DAY 300	HP 1E1 07287C 0.000										
TEST RESULTS		^ PRIMARY INSTRUMENTATION USED														

NO : VELOCITY:	FLOW	: TEMP	: S.G.	: S.G.	: VOLUME:	WEIGHT:	MASS	: PIPELINE	LOSSES:	dp/dx	: Tau 0	: 8V/D	: Tau 0	: 8V/D	: TIME	
: Vm :	Qm	: Tm	: Sw	: Sm	: CONC.	: CONC.	Ms	: Im	: lw	:	:	:	: ln	: ln	: t	
: FT/S :	GPM	: F	:	:	: Cv %	: Cw %	TON/HR	: FT/FT	: FT/FT	: psf	: psf	: 1/SEC	: psf	: 1/SEC	: HH.MM	
1 : 15.98 :	388.1	: 94.7	: 0.995	: 1.277	: 17.0	: 35.3	: 43.8	: 0.3451	: 0.2187	: 21.533	: 1.4131	: 486.98	: 0.3458	: 6.1882	: 13.12	
2 : 15.01 :	364.5	: 96.1	: 0.995	: 1.277	: 17.0	: 35.4	: 41.2	: 0.3277	: 0.1938	: 20.449	: 1.3419	: 457.30	: 0.2941	: 6.1253	: 13.18	
3 : 13.92 :	338.2	: 97.2	: 0.995	: 1.278	: 17.1	: 35.5	: 38.4	: 0.2941	: 0.1681	: 18.349	: 1.2042	: 424.36	: 0.1858	: 6.0506	: 13.25	
4 : 13.00 :	315.9	: 97.8	: 0.995	: 1.277	: 17.1	: 35.4	: 35.8	: 0.2645	: 0.1476	: 16.504	: 1.0831	: 396.31	: 0.0798	: 5.9822	: 13.30	
5 : 12.02 :	292.0	: 98.1	: 0.995	: 1.279	: 17.2	: 35.6	: 33.2	: 0.2420	: 0.1272	: 15.098	: 0.9908	: 366.31	: 0.0092	: 5.9035	: 13.36	
6 : 11.00 :	267.1	: 98.3	: 0.995	: 1.278	: 17.1	: 35.5	: 30.3	: 0.2322	: 0.1076	: 14.487	: 0.9507	: 335.17	: 0.0505	: 5.8146	: 13.39	
7 : 10.02 :	243.4	: 98.4	: 0.995	: 1.277	: 17.1	: 35.4	: 27.6	: 0.2251	: 0.0904	: 14.049	: 0.9220	: 305.33	: 0.0812	: 5.7214	: 13.40	
8 : 9.02 :	219.2	: 98.5	: 0.995	: 1.276	: 17.0	: 35.3	: 24.7	: 0.2189	: 0.0743	: 13.657	: 0.8963	: 275.00	: 0.1095	: 5.6168	: 13.44	
9 : 7.99 :	194.1	: 98.4	: 0.995	: 1.272	: 16.8	: 34.9	: 21.6	: 0.2109	: 0.0593	: 13.162	: 0.8637	: 243.54	: 0.1465	: 5.4953	: 13.47	
10 : 7.03 :	170.7	: 97.9	: 0.995	: 1.269	: 16.6	: 34.6	: 18.8	: 0.2056	: 0.0467	: 12.828	: 0.8418	: 214.20	: 0.1722	: 5.3669	: 13.50	
11 : 6.05 :	146.9	: 98.1	: 0.995	: 1.267	: 16.5	: 34.5	: 16.1	: 0.2032	: 0.0354	: 12.678	: 0.8320	: 184.36	: 0.1839	: 5.2169	: 13.51	
12 : 5.07 :	123.0	: 97.7	: 0.995	: 1.266	: 16.4	: 34.3	: 13.4	: 0.1965	: 0.0255	: 12.263	: 0.8048	: 154.37	: 0.2172	: 5.0394	: 13.56	
13 : 4.14 :	100.6	: 97.5	: 0.995	: 1.263	: 16.2	: 34.0	: 10.8	: 0.1890	: 0.0176	: 11.791	: 0.7738	: 126.17	: 0.2565	: 4.8377	: 13.59	
14 : 3.09 :	75.1	: 97.3	: 0.995	: 1.258	: 15.9	: 33.5	: 7.9	: 0.1797	: 0.0104	: 11.215	: 0.7360	: 94.227	: 0.3066	: 4.5457	: 14.03	
15 : 2.00 :	48.5	: 97.2	: 0.995	: 1.253	: 15.6	: 33.0	: 5.0	: 0.1722	: 0.0047	: 10.743	: 0.7050	: 60.815	: 0.3496	: 4.1078	: 14.06	
TESTED BY	J.LATTA	DATE	12/15/06	COMMENTS: VARIABLE SPEED SAND-CLAY MIX TEST AT 1.28 S.G. LOADED 1.06 S.G.												
DRUM OF CLAY SENT FROM MINE SITE. LOADED 1/3 DRUM OF PHOSPHATE CLAY.																
WITNESSED BY	L. WHITLOCK	FOR		FIPR LOADED 1/4 DRUM OF SAND ONLY TO 1.24 S.G. LOADED ~5 GAL MORE SAND.												
Version: 20051201																
V381 -06 12/15/06																



PUMP DETAIL		CH	USE	RDG	SOURCE	INSTRUMENT	GIW INDUSTRIES INC.	
-----		-----					5000 WRIGHTSBORO ROAD	
PUMP	3X4 LCC 12 M	1	SUCTION	#1	YOKOGAWA-30-30	H20-1E2 06123B 1.000	GROVETOWN, GEORGIA 30813-9750	
		2	AVE S.G.U-SECDN	#2	YOKOGAWA -4-8'	H20-1E2 02096B 0.500	TELEPHONE (706) 863-1011	
SERIAL NUMBER	5012-LAB	3P	DIFHEAD B	#3	YOKOGAWA 236'	H20 1E1 06123B 1.000	FAX (Engr) (706) 868-8025	
ASSEMBLY DRAWING NO	2004X	4S	FLOWBEND A	#4	YOKOGAWA 24'	H20 1E2 06123B 1.000	FAX (Sales) (706) 860-5897	
SHELL DRAWING NO	3798D	5S	LOSS B	#5	YOKOGAWA 12'	H20 1E2 08116B 1.000		
IMPELLER DRAWING NO	3800D	6.	NULLLOSSHEAT X	#6	YOKOGAWA 24'	H20 1E2 06123B 0.000	TEST CURVE NO M381 -06 DATE 12/15/06	
IMPELLER DIAMETER	12.15"	7P	NULLDIFHEAD	#7	YOKO -30'TO 30'H20	1E2 04285B 0.000		
OUTLET ANGLE	22 DEG	8.	NULLLOSSHEAT X	#8	YOKOGAWA 236'	H20 1E1 06123B 0.000	PUMP TEST DATA FOR FIPR	
OUTLET WIDTH	1.00"	9	AVE S.G.U-SECUP	#9	YOKOGAWA 12'	H20 1E2 08116B 0.500	----- VAR.SAND-CLAY 1.28SG	
ROTATION	CLOCKWISE	10.	DISCHARGE	#10	YOKOGAWA 236'	H20 1E1 06123B 1.000	PROJECT 80H	
HYDROSTATIC PRESS.	STD	11S	DIFHEAD A	#11	YOKOGAWA 60'	H20 1E2 08116B 1.000	GIW WORK ORDER NO N/A	
		12.	FLOWBEND B	#12	YOKOGAWA 36'	H20 1E2 02096B 1.000	CUSTOMER ORDER NO N/A	
DRIVER DETAIL		13P	LOSS A	#13	YOKOGAWA-4T08'	H20-1E2 02096B 1.000		
-----		14.	NULLDISCHARGE	#14	ROSE. 5 -30-30'H20-1E2	07142D 0.000		
TYPE 11.8:11.8 V-BELTS DRIVE		15S	NULLDISCHARGE	#15	ROSEMOUNT 5 60'H20 1E2	09153B 0.000	TEST CONSTANTS	
MAKE	BALDOR	16.	NULLFLOW	#16	ROSEMONT 7 692'H20 1E1	07142D 0.000	1 FT H2O = 0.0 US GPM USING	
SERIAL NO	5275	17P	NULLFLOWMAG 4"	#17	4" YOKO 1200GPM 1E0	08174B 0.000	BEND HT CORR = 0.1 FT CONST = 143.01	
FRAME SIZE	365T	18P	NULLFLOW3" MAG	#18	3" F&P 700 GPM 1E1	02145B 0.000	DISCHARGE PIPE DIAMETER = 3.00 INS.	
RPM = 1780 BHP = 75.		19P	NULLFLOW8" MAG	#19	8" F&P 5000 GPM	09305B 0.000	METER 1.87' ABOVE PUMP DATUM, TAP-0.56'	
460 VOLTS 3 PHASE 60 CPS		20P	TEMP TANK	#20	RTD 4" 1000HM F 1E1	09286B 1.000	SUCTION PIPE DIAMETER = 4.00 INS.	
		21S	TEMPAMB	#21	RTD AMB 1000HM F 1E1	09215B 1.000	METER 1.87' ABOVE PUMP DATUM, TAP 0.00'	
SCALED PERFORMANCE FACTORS		22	NULLAMP METER	#22	AMP TRANS AMP 1E1	05114B 0.000	PREROTATION LIM 0.0' BAROMETER 29.70"	
-----		23S	NULLTEMPAMBIENT	#23	RTD7 1000HM F 1E1	04088B 0.000	HEAD LOSS = 10.00 FT OF 3.15 INCH DIAM	
SPEED OR RATIO 1000.000		24P	BHP TRQ*RPM	#24	LEBOW DAY 166 FTLB1E1	03173C 1.000	S.G. TAPS 6.00' APART G= 32.14 FT/S/S	
		25	RPM TRQ BAR	#25	LEBOW,DAY1500 RPM 1E0	08164C 1.000	SOLIDS SG 2.65 OF 50.MICRONS S.D.=0.0	
IMP TURN DOWN RATIO 1.000		26S	BHP TRQ BAR	#26	LEBOW, DAY 75HP 1E2	12211D 1.000	PIPE ROUGHNESS REF M 78 -04 E/D=.000120	
MERIDINAL WIDTH RATIO 1.000		27P	NULLFLOW3" MAG	#27	3" YOKO 800 GPM 1E1	12089D 0.000	SAMPLER AREA = 0.00 SQUARE FEET	
SCALE RATIO 1.000		28S	NULLFLOWORIFICE	TECO# 6158	21.80 FPS 1E2	09256C 0.000		
BEP REF 0.GPM, 0.RPM		29P	FLOWMAG 3"	#29	3" YOKO 800 GPM 1E1	03045B 1.065		
EFFICIENCY 0.0% BY 1.000		30P	NULLBHP TRQ*RPM	#30	LEBOW,DAY 833 FTLB1E1	05098C 0.000		
		31	NULLRPM TRQ BAR	#31	LEBOW,DAY1500 RPM 1E0	05024C 0.000		
		32S	NULLBHP TRQ BAR	#32	LEBOW,DAY 300 HP 1E1	07287C 0.000		
TEST RESULTS		^ PRIMARY INSTRUMENTATION USED						

NO :VELOCITY:	FLOW :	TEMP :	S.G. :	S.G. :	VOLUME:WEIGHT:	MASS :	REYNOLDS :	PIPELINE LOSSES:FRICTION FACTRS:HAZEN: Im-Iw : TIME :
: Vm :	Qm :	Tm :	Sw :	Sm :	CONC.: CONC.:	Ms :	NUMBER :	Im : Iw : Fm : Fw :WLLMS: ---- : t :
: FT/S :	GPM :	F :	:	:	Cv % : Cw % :	TON/HR :	Re :	FT/FT : FT/FT : : SAME Re: C : Sm-Sw : HH.MM :
1 : 15.98 :	388.1 :	94.7 :	0.995 :	1.277 :	17.0 : 35.3 :	43.8 :	0.541E+06 :	0.3451 :0.2187 :0.0179 :0.0145 : 137.:0.4486 : 13.12 :
2 : 15.01 :	364.5 :	96.1 :	0.995 :	1.277 :	17.0 : 35.4 :	41.2 :	0.516E+06 :	0.3277 :0.1938 :0.0192 :0.0146 : 132.:0.4748 : 13.18 :
3 : 13.92 :	338.2 :	97.2 :	0.995 :	1.278 :	17.1 : 35.5 :	38.4 :	0.484E+06 :	0.2941 :0.1681 :0.0200 :0.0147 : 130.:0.4450 : 13.25 :
4 : 13.00 :	315.9 :	97.8 :	0.995 :	1.277 :	17.1 : 35.4 :	35.8 :	0.455E+06 :	0.2645 :0.1476 :0.0207 :0.0148 : 129.:0.4135 : 13.30 :
5 : 12.02 :	292.0 :	98.1 :	0.995 :	1.279 :	17.2 : 35.6 :	33.2 :	0.422E+06 :	0.2420 :0.1272 :0.0221 :0.0149 : 125.:0.4039 : 13.36 :
6 : 11.00 :	267.1 :	98.3 :	0.995 :	1.278 :	17.1 : 35.5 :	30.3 :	0.387E+06 :	0.2322 :0.1076 :0.0253 :0.0151 : 117.:0.4395 : 13.39 :
7 : 10.02 :	243.4 :	98.4 :	0.995 :	1.277 :	17.1 : 35.4 :	27.6 :	0.353E+06 :	0.2251 :0.0904 :0.0296 :0.0153 : 108.:0.4766 : 13.40 :
8 : 9.02 :	219.2 :	98.5 :	0.995 :	1.276 :	17.0 : 35.3 :	24.7 :	0.318E+06 :	0.2189 :0.0743 :0.0356 :0.0155 : 99.:0.5143 : 13.44 :
9 : 7.99 :	194.1 :	98.4 :	0.995 :	1.272 :	16.8 : 34.9 :	21.6 :	0.281E+06 :	0.2109 :0.0593 :0.0438 :0.0157 : 89.:0.5462 : 13.47 :
10 : 7.03 :	170.7 :	97.9 :	0.995 :	1.269 :	16.6 : 34.6 :	18.8 :	0.246E+06 :	0.2056 :0.0467 :0.0553 :0.0160 : 79.:0.5792 : 13.50 :
11 : 6.05 :	146.9 :	98.1 :	0.995 :	1.267 :	16.5 : 34.5 :	16.1 :	0.212E+06 :	0.2032 :0.0354 :0.0739 :0.0164 : 69.:0.6150 : 13.51 :
12 : 5.07 :	123.0 :	97.7 :	0.995 :	1.266 :	16.4 : 34.3 :	13.4 :	0.177E+06 :	0.1965 :0.0255 :0.1021 :0.0169 : 59.:0.6300 : 13.56 :
13 : 4.14 :	100.6 :	97.5 :	0.995 :	1.263 :	16.2 : 34.0 :	10.8 :	0.144E+06 :	0.1890 :0.0176 :0.1473 :0.0174 : 49.:0.6397 : 13.59 :
14 : 3.09 :	75.1 :	97.3 :	0.995 :	1.258 :	15.9 : 33.5 :	7.9 :	0.108E+06 :	0.1797 :0.0104 :0.2521 :0.0184 : 37.:0.6430 : 14.03 :
15 : 2.00 :	48.5 :	97.2 :	0.995 :	1.253 :	15.6 : 33.0 :	5.0 :	0.693E+05 :	0.1722 :0.0047 :0.5821 :0.0200 : 25.:0.6482 : 14.06 :
TESTED BY	J.LATTA	DATE 12/15/06	COMMENTS: VARIABLE SPEED SAND-CLAY MIX TEST AT 1.28 S.G. LOADED 1.06 S.G.					
			DRUM OF CLAY SENT FROM MINE SITE. LOADED 1/3 DRUM OF PHOSPHATE CLAY.					
WITNESSED BY	L. WHITLOCK	FOR	FIPR LOADED 1/4 DRUM OF SAND ONLY TO 1.24 S.G. LOADED ~5 GAL MORE SAND.					
Version:	20051201		M381 -06 12/15/06					

PUMP DETAIL

PUMP 3X4 LCC 12 M

SERIAL NUMBER 5012-LAB

ASSEMBLY DRAWING NO 2004X

SHELL DRAWING NO 3798D

IMPELLER DRAWING NO 3800D

IMPELLER DIAMETER 12.15"

OUTLET ANGLE 22 DEG

OUTLET WIDTH 1.00"

ROTATION CLOCKWISE

HYDROSTATIC PRFSS. STD

DRIVER DETAIL

TYPE 11.8:11.8 V-BELTS DRIVE

MAKE BALDOR

SERIAL NO 5275

FRAME SIZE 365T

RPM = 1780 BHP = 75

460 VOLTS 3 PHASE 60 CPS

SCALED PERFORMANCE FACTORS

SPEED OR RATIO 1000.000

IMP TURN DOWN RATIO 1.000

MERIDIONAL WIDTH RATIO 1.000

SCALE RATIO 1.000

BEP REF 0.0GPM, 0.0RPM

EFFICIENCY 0.0% BY 1.000

TEST RESULTS

CH USE RDG SOURCE INSTRUMENT

1 SUCTION #1 YOKOGAWA-30-30 H2O-1E2 06123B 1.000

2 AVE S.G.U-SECDN #2 YOKOGAWA -4-8' H2O-1E2 02096B 0.500

3P DIFHEAD B #3 YOKOGAWA 236' H2O 1E1 06123B 1.000

4S FLOWBEND A #4 YOKOGAWA 24' H2O 1E2 06123B 1.000

5S LOSS B #5 YOKOGAWA 12' H2O 1E2 08116B 1.000

6. NULLLOSSHEAT X #6 YOKOGAWA 24' H2O 1E2 06123B 0.000

7P NULLDIFHEAD #7 YOKO -30'TO 30'H2O 1E2 04285B 0.000

8. NULLLOSSHEAT X #8 YOKOGAWA 236' H2O 1E1 06123B 0.000

9 AVE S.G.U-SECUP #9 YOKOGAWA 12' H2O 1E2 08116B 0.500

10. DISCHARGE #10YOKOGAWA 236' H2O 1E1 06123B 1.000

11S DIFHEAD A #11YOKOGAWA 60' H2O 1E2 08116B 1.000

12. FLOWBEND B #12YOKOGAWA 36' H2O 1E2 02096B 1.000

13P LOSS A #13YOKOGAWA-4TO8' H2O-1E2 02096B 1.000

14. NULLDISCHARGE #14ROSE. 5 -30-30'H2O-1E2 07142D 0.000

15S NULLDISCHARGE #15ROSEMOUNT 5 60'H2O 1E2 09153B 0.000

16. NULLFLOW #16ROSEMONT 7 692'H2O 1E1 07142D 0.000

17P NULLFLOWMAG 4" #17 4" YOKO 1200GPM 1E0 08174B 0.000

18P NULLFLOW3" MAG #18 3" F&P 700 GPM 1E1 02145B 0.000

19P NULLFLOW8" MAG #19 8" F&P 5000 GPM 09305B 0.000

20P TEMPTANK #20 RTD 4" 100OHM F 1E1 09286B 1.000

21S TEMPAMB #21 RTD AMB 100OHM F 1E1 09215B 1.000

22 NULLAMP METER #22 AMP TRANS AMP 1E1 05114B 0.000

23S NULLTEMPAMBIENT #23 RTD7 100OHM F 1E1 04088B 0.000

24P BHP TRQ*RPM #24 LEBOW DAY 166 FTLB1E1 03173C 1.000

25 RPM TRQ BAR #25 LEBOW, DAY1500 RPM 1E0 08164C 1.000

26S BHP TRQ BAR #26 LEBOW, DAY 75HP 1E2 12211D 1.000

27P NULLFLOW3" MAG #27 3" YOKO 800 GPM 1E1 12089D 0.000

28S NULLFLOWORIFICE TECO# 6158 21.80 FPS 1E2 09256C 0.000

29P FLOWMAG 3" #29 3" YOKO 800 GPM 1E1 03045B 1.065

30P NULLBHP TRQ*RPM #30 LEBOW, DAY 833 FTLB1E1 05098C 0.000

31 NULLRPM TRQ BAR #31 LEBOW, DAY1500 RPM 1E0 05024C 0.000

32S NULLBHP TRQ BAR #32 LEBOW, DAY 300 HP 1E1 07287C 0.000

^ PRIMARY INSTRUMENTATION USED

GIW INDUSTRIES INC.

5000 WRIGHTSBORO ROAD

GROVETOWN, GEORGIA 30813-9750

TELEPHONE (706) 863-1011

FAX (Engr) (706) 868-8025

FAX (Sales) (706) 860-5897

TEST CURVE NO T381 -06 DATE 12/15/06

PUMP TEST DATA FOR FIPR

VAR.SAND-CLAY 1.28SG

PROJECT 80H

GIW WORK ORDER NO N/A

CUSTOMER ORDER NO N/A

TEST CONSTANTS

1 FT H2O = 0.0 US GPM USING

BEND HT CORR = 0.1 FT CONST = 143.01

DISCHARGE PIPE DIAMETER = 3.00 INS.

METER 1.87' ABOVE PUMP DATUM, TAP-0.56'

SUCTION PIPE DIAMETER = 4.00 INS.

METER 1.87' ABOVE PUMP DATUM, TAP 0.00'

PREROTATION LIM 0.0' BAROMETER 29.70"

HEAD LOSS = 10.00 FT OF 3.15 INCH DIAM

S.G. TAPS 6.00' APART G= 32.14 FT/S/S

SOLIDS SG 2.65 OF 50.MICRONS S.D.=0.0

PIPE ROUGHNESS REF M 78 -04 E/D=.000120

SAMPLER AREA = 0.00 SQUARE FEET

:FLOW MEASUREMENT: HEAD MEASUREMENT :S.G.:DRIVER POWER:SPEED: PUMP : TEMP: SCALED PERFORMANCE : TIME:MAG3" :BEND A:

: FLOW Q:VELOCITY:DISCH: SUCTN:TOT HD: :INPUT:OUTPUT: N :OUTPUT: EFF: Tm : FLOW : HEAD:POWER: EFF: t : C 29 : S 4 :

NO: GPM : FT/S : PSI : " HG : H FT : : KW : BHP : RPM : WHP : n %: F : GPM : FT : BHP : % : H.MM: *1.065:*1.000:

1: 388.1: 15.98 :17.18: -3.08: 36.96:1.28: 0.0: 6.7:999.2: 4.6:69.1: 94.7: 388.: 37.0: 6.7:69.1:13.12:388.13:358.69:

2: 364.5: 15.01 :16.23: -2.85: 34.65:1.28: 0.0: 6.1:966.7: 4.1:67.2: 96.1: 377.: 37.1: 6.7:67.2:13.18:364.48:344.01:

3: 338.2: 13.92 :14.40: -2.50: 30.60:1.28: 0.0: 5.0:904.4: 3.3:67.0: 97.2: 374.: 37.4: 6.7:67.0:13.25:338.22:315.03:

4: 315.9: 13.00 :12.98: -2.21: 27.47:1.28: 0.0: 4.2:854.2: 2.8:66.4: 97.8: 370.: 37.6: 6.8:66.4:13.30:315.87:291.92:

5: 292.0: 12.02 :11.69: -1.92: 24.53:1.28: 0.0: 3.5:803.1: 2.3:65.5: 98.1: 364.: 38.0: 6.8:65.5:13.36:291.96:268.13:

6: 267.1: 11.00 :10.85: -1.71: 22.54:1.28: 0.0: 3.1:764.9: 1.9:63.3: 98.3: 349.: 38.5: 6.9:63.3:13.39:267.13:247.43:

7: 243.4: 10.02 :10.05: -1.49: 20.65:1.28: 0.0: 2.6:723.7: 1.6:62.4: 98.4: 336.: 39.4: 6.9:62.4:13.40:243.35:223.48:

8: 219.2: 9.02 :9.38: -1.29: 19.05:1.28: 0.0: 2.2:687.6: 1.3:60.6: 98.5: 319.: 40.3: 6.8:60.6:13.44:219.18:201.28:

9: 194.1: 7.99 :8.73: -1.08: 17.51:1.27: 0.0: 2.0:649.4: 1.1:55.4: 98.4: 299.: 41.5: 7.2:55.4:13.47:194.11:177.69:

10: 170.7: 7.03 :8.19: -0.94: 16.25:1.27: 0.0: 1.6:616.9: 0.9:54.6: 97.9: 277.: 42.7: 6.9:54.6:13.50:170.72:156.83:

11: 146.9: 6.05 :7.79: -0.81: 15.26:1.27: 0.0: 1.4:589.6: 0.7:49.9: 98.1: 249.: 43.9: 7.0:49.9:13.51:146.94:137.57:

12: 123.0: 5.07 :7.38: -0.72: 14.30:1.27: 0.0: 1.3:563.0: 0.6:43.9: 97.7: 219.: 45.1: 7.2:43.9:13.56:123.04:117.87:

13: 100.6: 4.14 :7.00: -0.64: 13.48:1.26: 0.0: 1.1:539.7: 0.4:40.2: 97.5: 186.: 46.3: 6.8:40.2:13.59:100.56:97.870:

14: 75.1: 3.09 :6.62: -0.58: 12.66:1.26: 0.0: 1.0:518.9: 0.3:31.5: 97.3: 145.: 47.0: 6.9:31.5:14.03:75.100:76.413:

15: 48.5: 2.00 :6.26: -0.50: 11.92:1.25: 0.0: 0.8:501.1: 0.2:22.5: 97.2: 97.: 47.5: 6.4:22.5:14.06:48.471:53.976:

TESTED BY J.LATTA DATE 12/15/06 COMMENTS: VARIABLE SPEED SAND-CLAY MIX TEST AT 1.28 S.G. LOADED 1.06 S.G.

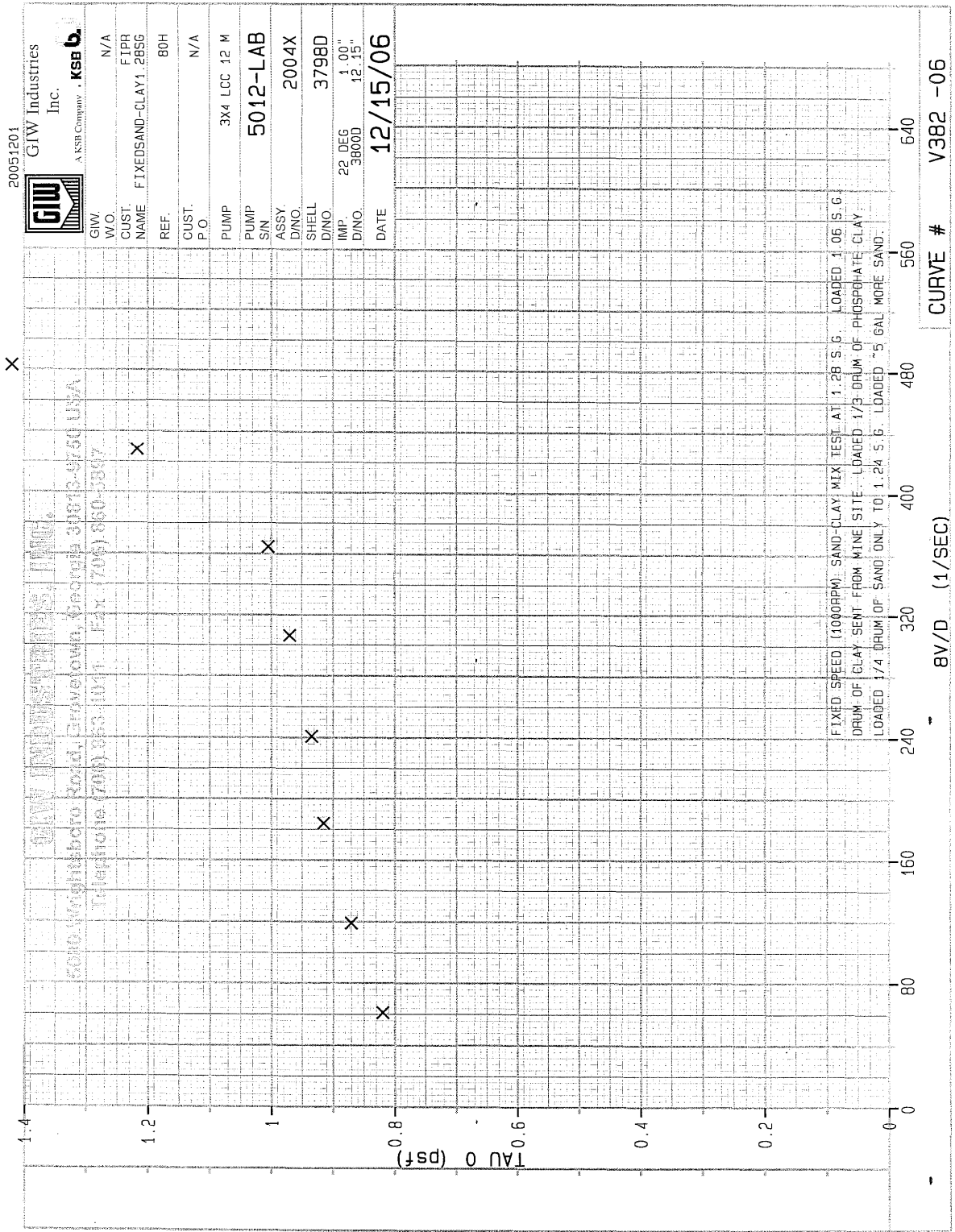
DRUM OF CLAY SENT FROM MINE SITE. LOADED 1/3 DRUM OF PHOSPHATE CLAY.

WITNESSED BY L. WHITLOCK FOR FIPR LOADED 1/4 DRUM OF SAND ONLY TO 1.24 S.G. LOADED ~5 GAL MORE SAND.

Version: 20051201 T381 -06 12/15/06

PUMP DETAIL		CH	USE	RDG	SOURCE	INSTRUMENT	GIW INDUSTRIES INC.	
							5000 WRIGHTSBORO ROAD	
PUMP	3X4 LCC 12 M	1	SUCTION	#1	YOKOGAWA-30-30	H2O-1E2 06123B 1.000	GROVETOWN, GEORGIA 30813-9750	
		2	AVE S.G.U-SECDN	#2	YOKOGAWA -4-8'	H2O-1E2 02096B 0.500	TELEPHONE (706) 863-1011	
SERIAL NUMBER	5012-LAB	3P	DIFHEAD B	#3	YOKOGAWA 236'	H2O 1E1 06123B 1.000	FAX (Engr) (706) 868-8025	
ASSEMBLY DRAWING NO	2004X	4S	FLOWBEND A	#4	YOKOGAWA 24'	H2O 1E2 06123B 1.000	FAX (Sales) (706) 860-5897	
SHELL DRAWING NO	3798D	5S	LOSS B	#5	YOKOGAWA 12'	H2O 1E2 08116B 1.000		
IMPELLER DRAWING NO	3800D	6.	NULLLOSSHEAT X	#6	YOKOGAWA 24'	H2O 1E2 06123B 0.000	TEST CURVE NO X381 -06 DATE 12/15/06	
IMPELLER DIAMETER	12.15"	7P	NULLDIFHEAD	#7	YOKO -30'TO 30'H2O	1E2 04285B 0.000		
OUTLET ANGLE	22 DEG	8.	NULLLOSSHEAT X	#8	YOKOGAWA 236'	H2O 1E1 06123B 0.000	PUMP TEST DATA FOR FIPR	
OUTLET WIDTH	1.00"	9	AVE S.G.U-SECUP	#9	YOKOGAWA 12'	H2O 1E2 08116B 0.500	----- VAR.SAND-CLAY 1.28SG	
ROTATION	CLOCKWISE	10.	DISCHARGE	#10YOKOGAWA	236'	H2O 1E1 06123B 1.000	PROJECT 80H	
HYDROSTATIC PRESS.	STD	11S	DIFHEAD A	#11YOKOGAWA	60'	H2O 1E2 08116B 1.000	GIW WORK ORDER NO N/A	
		12.	FLOWBEND B	#12YOKOGAWA	36'	H2O 1E2 02096B 1.000	CUSTOMER ORDER NO N/A	
DRIVER DETAIL		13P	LOSS A	#13YOKOGAWA-4T08'	H2O-1E2 02096B 1.000			
-----		14.	NULLDISCHARGE	#14ROSE. 5 -30-30'H2O-1E2	07142D 0.000			
TYPE 11.8:11.8 V-BELTS DRIVE		15S	NULLDISCHARGE	#15ROSEMOUNT 5 60'H2O 1E2	09153B 0.000	TEST CONSTANTS		
MAKE	BALDOR	16.	NULLFLOW	#16ROSEMONT 7 692'H2O 1E1	07142D 0.000	1 FT H2O = 0.0 US GPM USING		
SERIAL NO	5275	17P	NULLFLOWMAG 4"	#17 4" YOKO 1200GPM 1E0	08174B 0.000	BEND HT CORR = 0.1 FT CONST = 143.01		
FRAME SIZE	365T	18P	NULLFLOW3" MAG	#18 3" F&P 700 GPM 1E1	02145B 0.000	DISCHARGE PIPE DIAMETER = 3.00 INS.		
RPM = 1780 BHP = 75.		19P	NULLFLOW8" MAG	#19 8" F&P 5000 GPM	09305B 0.000	METER 1.87' ABOVE PUMP DATUM, TAP-0.56'		
460 VOLTS 3 PHASE 60 CPS		20P	TEMP TANK	#20 RTD 4" 1000HM F 1E1	09286B 1.000	SUCTION PIPE DIAMETER = 4.00 INS.		
		21S	TEMPAMB	#21 RTD AMB 1000HM F 1E1	09215B 1.000	METER 1.87' ABOVE PUMP DATUM, TAP 0.00'		
SCALED PERFORMANCE FACTORS		22	NULLAMP METER	#22 AMP TRANS AMP 1E1	05114B 0.000	PREROTATION LIM 0.0' BAROMETER 29.70"		
-----		23S	NULLTEMPAMBIENT	#23 RTD7 1000HM F 1E1	04088B 0.000	HEAD LOSS = 10.00 FT OF 3.15 INCH DIAM		
SPEED OR RATIO 1000.000		24P	BHP TRQ*RPM	#24 LEBOW DAY 166 FTLB1E1	03173C 1.000	S.G. TAPS 6.00' APART G= 32.14 FT/S/S		
		25	RPM TRQ BAR	#25 LEBOW, DAY1500 RPM 1E0	08164C 1.000	SOLIDS SG 2.65 OF 50.MICRONS S.D.=0.0		
IMP TURN DOWN RATIO 1.000		26S	BHP TRQ BAR	#26 LEBOW, DAY 75HP 1E2	12211D 1.000	PIPE ROUGHNESS REF M 78 -04 E/D=.000120		
MERIDINAL WIDTH RATIO 1.000		27P	NULLFLOW3"MAG	#27 3" YOKO 800 GPM 1E1	12089D 0.000	SAMPLER AREA = 0.00 SQUARE FEET		
SCALE RATIO 1.000		28S	NULLFLOWORIFICE	TECO# 6158 21.80 FPS 1E2	09256C 0.000			
BEP REF 0.GPM, 0.RPM		29P	FLOWMAG 3"	#29 3" YOKO 800 GPM 1E1	03045B 1.065			
EFFICIENCY 0.0% BY 1.000		30P	NULLBHP TRQ*RPM	#30 LEBOW, DAY 833 FTLB1E1	05098C 0.000			
		31	NULLRPM TRQ BAR	#31 LEBOW, DAY1500 RPM 1E0	05024C 0.000			
		32S	NULLBHP TRQ BAR	#32 LEBOW, DAY 300 HP 1E1	07287C 0.000			
TEST RESULTS		^ PRIMARY INSTRUMENTATION USED						

:FLOW MEASUREMENT: HEAD MEASUREMENT :S.G.:DRIVER POWER:SPEED: PUMP :MAG3" :BEND A:BEND B:LOSS A:LOSS B:DISCH :DIFH A:DIFH B:								
: FLOW Q:VELOCITY:DISCH: SUCTN:TOT HD: :INPUT:OUTPUT: N :OUTPUT: EFF: C 29 : S 4 : S 12 : C 13 : C 5 : C 10 : C 11 : C 3 :								
NO: GPM : FT/S : PSI : " HG : H FT : : KW : BHP : RPM : WHP : n %:*1.065:*1.000:*1.000:*1.000:*1.000:*1.000:								
1: 388.1: 15.98 :17.18: -3.08: 36.96:1.28: 0.0: 6.7:999.2: 4.6:69.1:388.13:358.69:358.10: 3.451: 3.492:39.533:43.127:43.143:								
2: 364.5: 15.01 :16.23: -2.85: 34.65:1.28: 0.0: 6.1:966.7: 4.1:67.2:364.48:344.01:343.49: 3.277: 3.317:37.325:40.646:40.688:								
3: 338.2: 13.92 :14.40: -2.50: 30.60:1.28: 0.0: 5.0:904.4: 3.3:67.0:338.22:315.03:314.49: 2.941: 2.980:33.089:36.018:36.066:								
4: 315.9: 13.00 :12.98: -2.21: 27.47:1.28: 0.0: 4.2:854.2: 2.8:66.4:315.87:291.92:291.54: 2.645: 2.685:29.868:32.451:32.491:								
5: 292.0: 12.02 :11.69: -1.92: 24.53:1.28: 0.0: 3.5:803.1: 2.3:65.5:291.96:268.13:267.71: 2.420: 2.459:26.900:29.143:29.206:								
6: 267.1: 11.00 :10.85: -1.71: 22.54:1.28: 0.0: 3.1:764.9: 1.9:63.3:267.13:247.43:247.03: 2.322: 2.361:24.945:26.968:27.039:								
7: 243.4: 10.02 :10.05: -1.49: 20.65:1.28: 0.0: 2.6:723.7: 1.6:62.4:243.35:223.48:223.03: 2.251: 2.291:23.135:24.877:24.945:								
8: 219.2: 9.02 :9.38: -1.29: 19.05:1.28: 0.0: 2.2:687.6: 1.3:60.6:219.18:201.28:201.08: 2.189: 2.228:21.579:23.117:23.176:								
9: 194.1: 7.99 :8.73: -1.08: 17.51:1.27: 0.0: 2.0:649.4: 1.1:55.4:194.11:177.69:176.96: 2.109: 2.147:20.058:21.376:21.479:								
10: 170.7: 7.03 :8.19: -0.94: 16.25:1.27: 0.0: 1.6:616.9: 0.9:54.6:170.72:156.83:156.10: 2.056: 2.093:18.864:19.967:20.034:								
11: 146.9: 6.05 :7.79: -0.81: 15.26:1.27: 0.0: 1.4:589.6: 0.7:49.9:146.94:137.57:137.06: 2.032: 2.071:17.923:18.889:18.987:								
12: 123.0: 5.07 :7.38: -0.72: 14.30:1.27: 0.0: 1.3:563.0: 0.6:43.9:123.04:117.87:117.15: 1.965: 2.003:16.982:17.840:17.940:								
13: 100.6: 4.14 :7.00: -0.64: 13.48:1.26: 0.0: 1.1:539.7: 0.4:40.2:100.56:97.870:97.311: 1.890: 1.925:16.113:16.891:16.965:								
14: 75.1: 3.09 :6.62: -0.58: 12.66:1.26: 0.0: 1.0:518.9: 0.3:31.5:75.100:76.413:75.697: 1.797: 1.834:15.208:15.924:15.990:								
15: 48.5: 2.00 :6.26: -0.50: 11.92:1.25: 0.0: 0.8:501.1: 0.2:22.5:48.471:53.976:52.675: 1.722: 1.758:14.412:15.013:15.088:								
TESTED BY J.LATTA DATE 12/15/06 COMMENTS: VARIABLE SPEED SAND-CLAY MIX TEST AT 1.28 S.G. LOADED 1.06 S.G.								
DRUM OF CLAY SENT FROM MINE SITE. LOADED 1/3 DRUM OF PHOSPHATE CLAY.								
WITNESSED BY L. WHITLOCK FOR FIPR LOADED 1/4 DRUM OF SAND ONLY TO 1.24 S.G. LOADED ~5 GAL MORE SAND.								
Version: 20051201 X381 -06 12/15/06								



PUMP DETAIL

PUMP 3X4 LCC 12 M

SERIAL NUMBER 5012-LAB

ASSEMBLY DRAWING NO 2004X

SHELL DRAWING NO 3798D

IMPELLER DRAWING NO 3800D

IMPELLER DIAMETER 12.15"

OUTLET ANGLE 22 DEG

OUTLET WIDTH 1.00"

ROTATION CLOCKWISE

HYDROSTATIC PRESS. STD

DRIVER DETAIL

TYPE 11.8:11.8 V-BELTS DRIVE

MAKE BALDOR

SERIAL NO 5275

FRAME SIZE 365T

RPM = 1780 BHP = 75.

460 VOLTS 3 PHASE 60 CPS

SCALED PERFORMANCE FACTORS

SPEED OR RATIO 1000.000

IMP TURN DOWN RATIO 1.000

MERIDINAL WIDTH RATIO 1.000

SCALE RATIO 1.000

BEP REF 0.GPM, 0.RPM

EFFICIENCY 0.0% BY 1.000

TEST RESULTS

CH	USE	RDG	SOURCE	INSTRUMENT
1	SUCTION	#1	YOKOGAWA-30-30	H20-1E2 06123B 1.000
2	AVE S.G.U-SECDN	#2	YOKOGAWA -4-8'	H20-1E2 02096B 0.500
3S	DIFHEAD B	#3	YOKOGAWA 236'	H20 1E1 06123B 1.000
4S	FLOWBEND A	#4	YOKOGAWA 24'	H20 1E2 06123B 1.000
5S	LOSS B	#5	YOKOGAWA 12'	H20 1E2 08116B 1.000
6.	NULLLOSSHEAT X	#6	YOKOGAWA 24'	H20 1E2 06123B 0.000
7P	NULLDIFHEAD	#7	YOKO -30'TO 30'	H20 1E2 04285B 0.000
8.	NULLLOSSHEAT X	#8	YOKOGAWA 236'	H20 1E1 06123B 0.000
9	AVE S.G.U-SECUP	#9	YOKOGAWA 12'	H20 1E2 08116B 0.500
10.	DISCHARGE	#10	YOKOGAWA 236'	H20 1E1 06123B 1.000
11P	DIFHEAD A	#11	YOKOGAWA 60'	H20 1E2 08116B 1.000
12.	FLOWBEND B	#12	YOKOGAWA 36'	H20 1E2 02096B 1.000
13P	LOSS A	#13	YOKOGAWA-4T08'	H20-1E2 02096B 1.000
14.	NULLDISCHARGE	#14	ROSE. 5 -30-30'	H20-1E2 07142D 0.000
15S	NULLDISCHARGE	#15	ROSEMOUNT 5 60'	H20 1E2 09153B 0.000
16.	NULLFLOW	#16	ROSEMONT 7 692'	H20 1E1 07142D 0.000
17P	NULLFLOWMAG 4"	#17	4" YOKO 1200GPM	1E0 08174B 0.000
18P	NULLFLOW3" MAG	#18	3" F&P 700 GPM	1E1 02145B 0.000
19P	NULLFLOW8" MAG	#19	8" F&P 5000 GPM	09305B 0.000
20P	TEMP TANK	#20	RTD 4" 1000HM	F 1E1 09286B 1.000
21S	TEMP AMB	#21	RTD AMB 1000HM	F 1E1 09215B 1.000
22	NULLAMP METER	#22	AMP TRANS	AMP 1E1 05114B 0.000
23S	NULLTEMP AMBIENT	#23	RTD 7 1000HM	F 1E1 04088B 0.000
24P	BHP TRQ*RPM	#24	LEBOW DAY 166	FTLB1E1 03173C 1.000
25	RPM TRQ BAR	#25	LEBOW, DAY 1500	RPM 1E0 08164C 1.000
26S	BHP TRQ BAR	#26	LEBOW, DAY 75HP	1E2 12211D 1.000
27P	NULLFLOW3" MAG	#27	3" YOKO 800	GPM 1E1 12089D 0.000
28S	NULLFLOW RIFICE	TECO# 6158	21.80 FPS	1E2 09256C 0.000
29P	FLOWMAG 3"	#29	3" YOKO 800	GPM 1E1 03045B 1.065
30P	NULLBHP TRQ*RPM	#30	LEBOW, DAY 833	FTLB1E1 05098C 0.000
31	NULLRPM TRQ BAR	#31	LEBOW, DAY 1500	RPM 1E0 05024C 0.000
32S	NULLBHP TRQ BAR	#32	LEBOW, DAY 300	HP 1E1 07287C 0.000

^ PRIMARY INSTRUMENTATION USED

GIW INDUSTRIES INC.
5000 WRIGHTSBORO ROAD
GROVETOWN, GEORGIA 30813-9750
TELEPHONE (706) 863-1011
FAX (Engr) (706) 868-8025
FAX (Sales) (706) 860-5897

TEST CURVE NO V382 -06 DATE 12/15/06

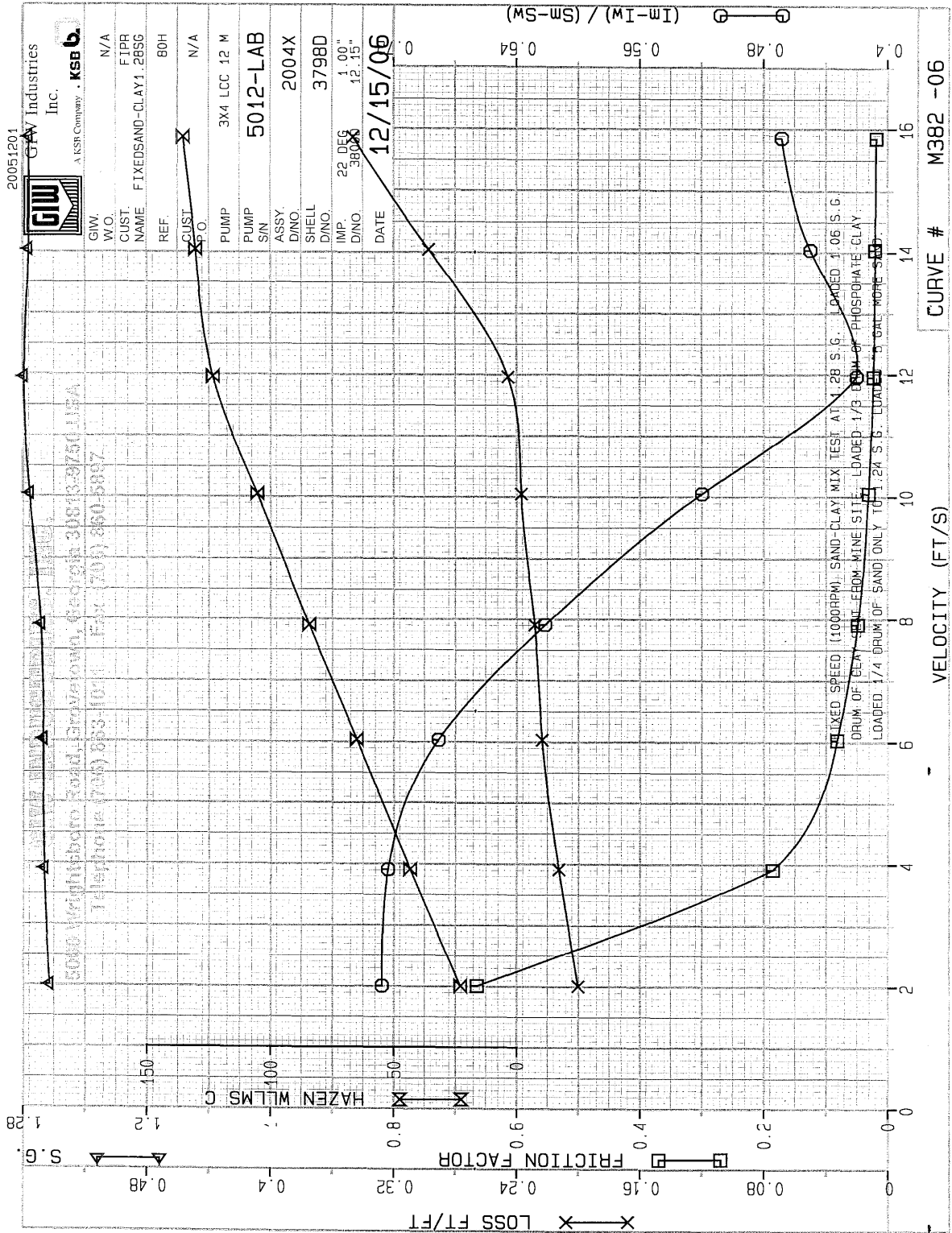
PUMP TEST DATA FOR FIPR
----- FIXEDSAND-CLAY1.28SG
PROJECT 80H
GIW WORK ORDER NO N/A
CUSTOMER ORDER NO N/A

TEST CONSTANTS

1 FT H2O = 0.0 US GPM USING
BEND HT CORR = 0.1 FT CONST = 143.01
DISCHARGE PIPE DIAMETER = 3.00 INS.
METER 1.87' ABOVE PUMP DATUM, TAP-0.56'
SUCTION PIPE DIAMETER = 4.00 INS.
METER 1.87' ABOVE PUMP DATUM, TAP 0.00'
PREROTATION LIM 0.0' BAROMETER 29.70"
HEAD LOSS = 10.00 FT OF 3.15 INCH DIAM
S.G. TAPS 6.00' APART G= 32.14 FT/S/S
SOLIDS SG 2.65 OF 50.MICRONS S.D.=0.0
PIPE ROUGHNESS REF M 78 -04 E/D=.000120
SAMPLER AREA = 0.00 SQUARE FEET

NO	:VELOCITY:	FLOW	: TEMP	: S.G.	: S.G.	:VOLUME:	WEIGHT:	MASS	:PIPELINE	LOSSES:	dp/dx	: Tau 0	: 8V/D	: Tau 0	: 8V/D	: TIME
:	Vm	: Qm	: Tm	: Sw	: Sm	: CONC.	: CONC.	: Ms	: Im	: lw	:	:	:	: ln	: ln	: t
:	FT/S	: GPM	: F	:	:	: Cv %	: Cw %	: TON/HR	: FT/FT	: FT/FT	: psf	: psf	: 1/SEC	: psf	: 1/SEC	: HH.MM
1	: 15.85	: 385.0	: 96.8	: 0.995	: 1.276	: 17.0	: 35.3	: 43.4	: 0.3466	: 0.2148	: 21.626	: 1.4192	: 483.07	: 0.3501	: 6.1802	: 14.22
2	: 14.04	: 341.1	: 98.2	: 0.995	: 1.276	: 17.0	: 35.3	: 38.5	: 0.2972	: 0.1705	: 18.545	: 1.2170	: 427.95	: 0.1964	: 6.0590	: 14.28
3	: 11.96	: 290.5	: 99.3	: 0.994	: 1.279	: 17.2	: 35.6	: 33.1	: 0.2455	: 0.1259	: 15.317	: 1.0052	: 364.52	: 0.0052	: 5.8986	: 14.33
4	: 10.05	: 244.1	: 99.8	: 0.994	: 1.276	: 17.0	: 35.3	: 27.5	: 0.2370	: 0.0907	: 14.787	: 0.9704	: 306.31	: -.0301	: 5.7246	: 14.36
5	: 7.91	: 192.0	: 100.5	: 0.994	: 1.268	: 16.6	: 34.6	: 21.1	: 0.2283	: 0.0579	: 14.245	: 0.9348	: 240.93	: -.0674	: 5.4845	: 14.40
6	: 6.03	: 146.6	: 100.8	: 0.994	: 1.267	: 16.5	: 34.5	: 16.0	: 0.2235	: 0.0351	: 13.945	: 0.9152	: 183.88	: -.0887	: 5.2143	: 14.44
7	: 3.91	: 95.0	: 100.4	: 0.994	: 1.266	: 16.4	: 34.4	: 10.3	: 0.2126	: 0.0158	: 13.265	: 0.8705	: 119.16	: -.1386	: 4.7805	: 14.53
8	: 2.01	: 48.7	: 100.1	: 0.994	: 1.263	: 16.2	: 34.0	: 5.2	: 0.2002	: 0.0047	: 12.493	: 0.8199	: 61.141	: -.1986	: 4.1132	: 14.57

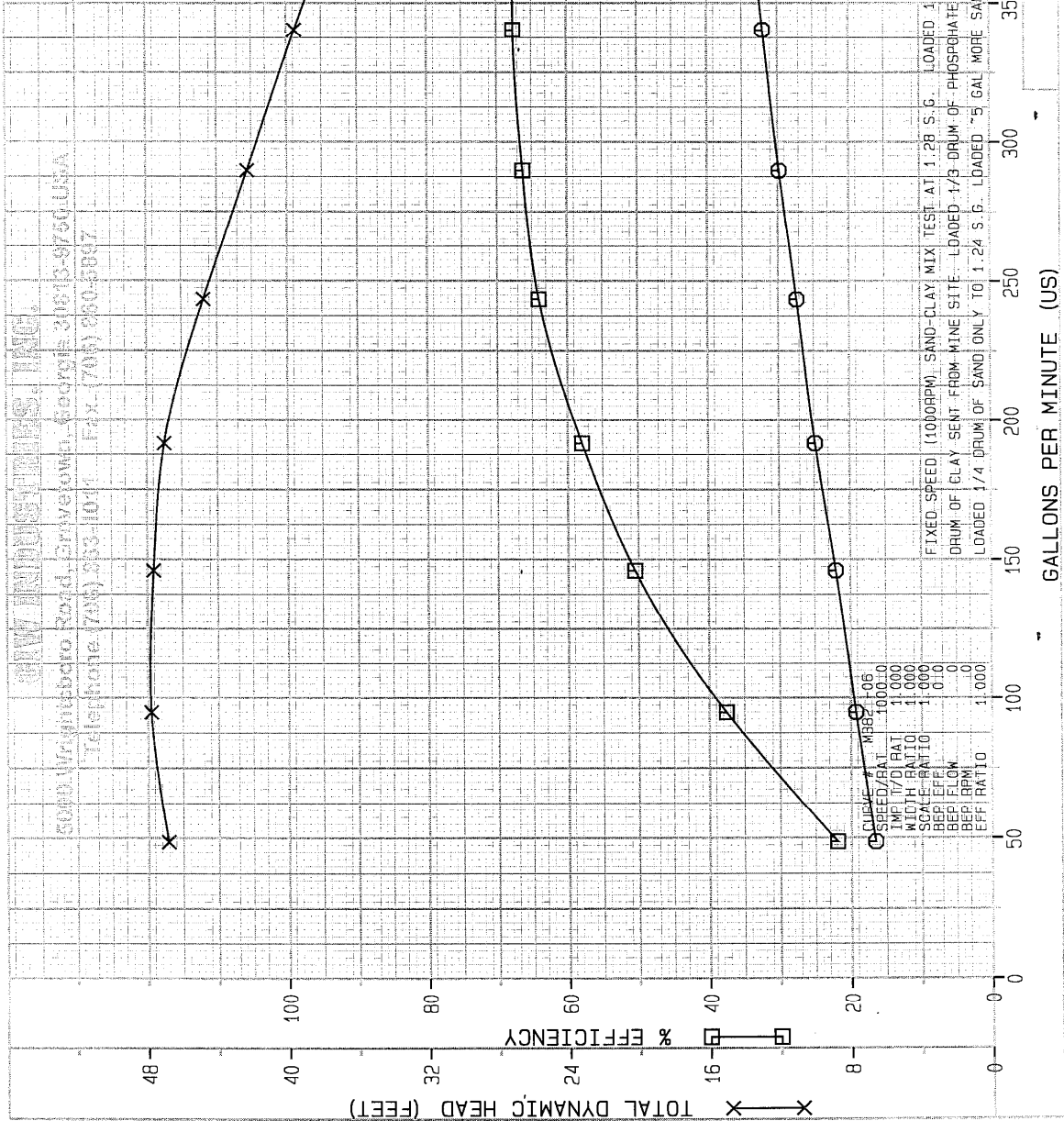
TESTED BY J.LATTA DATE 12/15/06 COMMENTS: FIXED SPEED (1000RPM) SAND-CLAY MIX TEST AT 1.28 S.G. LOADED 1.06 S.G.
DRUM OF CLAY SENT FROM MINE SITE. LOADED 1/3 DRUM OF PHOSPHATE CLAY.
WITNESSED BY L. WHITLOCK FOR FIPR LOADED 1/4 DRUM OF SAND ONLY TO 1.24 S.G. LOADED ~5 GAL MORE SAND.
Version: 20051201 V382 -06 12/15/06



PUMP DETAIL		CH	USE	RDG	SOURCE	INSTRUMENT	GIW INDUSTRIES INC.		
-----		-----					5000 WRIGHTSBORO ROAD		
PUMP	3X4 LCC 12 M	1	SUCTION	#1	YOKOGAWA-30-30	H20-1E2 06123B 1.000	GROVETOWN, GEORGIA 30813-9750		
SERIAL NUMBER	5012-LAB	2	AVE S.G.U-SFCDN	#2	YOKOGAWA -4-8'	H20-1E2 07096B 0.500	TELEPHONE (706) 863-1011		
ASSEMBLY DRAWING NO	2004X	3S	DIFHEAD B	#3	YOKOGAWA 236'	H20 1E1 06123B 1.000	FAX (Engr) (706) 868-8025		
SHELL DRAWING NO	3798D	4S	FLOWBEND A	#4	YOKOGAWA 24'	H20 1E2 06123B 1.000	FAX (Sales) (706) 860-5897		
IMPELLER DRAWING NO	3800D	5S	LOSS B	#5	YOKOGAWA 12'	H20 1E2 08116B 1.000			
IMPELLER DIAMETER	12.15"	6.	NULLLOSSHEAT X	#6	YOKOGAWA 24'	H20 1E2 06123B 0.000	TEST CURVE NO M382 -06	DATE 12/15/06	
OUTLET ANGLE	22 DEG	7P	NULLDIFHEAD	#7	YOKO -30' TO 30'	H20 1E2 04285B 0.000			
OUTLET WIDTH	1.00"	8.	NULLLOSSHEAT X	#8	YOKOGAWA 236'	H20 1E1 06123B 0.000	PUMP TEST DATA FOR	FIPR	
ROTATION	CLOCKWISE	9	AVE S.G.U-SECUP	#9	YOKOGAWA 12'	H20 1E2 08116B 0.500	----- FIXEDSAND-CLAY1.28SG		
HYDROSTATIC PRESS.	STD	10.	DISCHARGE	#10	YOKOGAWA 236'	H20 1E1 06123B 1.000	PROJECT	80H	
DRIVER DETAIL	-----	11P	DIFHEAD A	#11	YOKOGAWA 60'	H20 1E2 08116B 1.000	GIW WORK ORDER NO	N/A	
TYPE 11.8:11.8 V-BELTS DRIVE	-----	12.	FLOWBEND B	#12	YOKOGAWA 36'	H20 1E2 02096B 1.000	CUSTOMER ORDER NO	N/A	
MAKE	BALDOR	13P	LOSS A	#13	YOKOGAWA-4T0B'	H20-1E2 02096B 1.000			
SERIAL NO	5275	14.	NULLDISCHARGE	#14	ROSE. 5 -30-30'	H20-1E2 07142D 0.000			
FRAME SIZE	365T	15S	NULLDISCHARGE	#15	ROSEMOUNT 5 60'	H20 1E2 09153B 0.000	TEST CONSTANTS		
RPM = 1780	BHP = 75.	16.	NULLFLOW	#16	ROSEMONT 7 692'	H20 1E1 07142D 0.000	1 FT H2O =	0.0 US GPM USING	
460 VOLTS 3 PHASE 60 CPS	-----	17P	NULLFLOWMAG 4"	#17	4" YOKO 1200GPM	1E0 08174B 0.000	BEND HT CORR =	0.1 FT CONST = 143.01	
SCALED PERFORMANCE FACTORS	-----	18P	NULLFLOW3" MAG	#18	3" F&P 700 GPM	1E1 02145B 0.000	DISCHARGE PIPE DIAMETER =	3.00 INS.	
SPEED OR RATIO	1000.000	19P	NULLFLOW8" MAG	#19	8" F&P 5000 GPM	09305B 0.000	METER 1.87' ABOVE PUMP DATUM, TAP-0.56'		
IMP TURN DOWN RATIO	1.000	20P	TEMP TANK	#20	RTD 4" 1000HM	F 1E1 09286B 1.000	SUCTION PIPE DIAMETER =	4.00 INS.	
MERIDINAL WIDTH RATIO	1.000	21S	TEMPAMB	#21	RTD AMB 1000HM	F 1E1 09215B 1.000	METER 1.87' ABOVE PUMP DATUM, TAP 0.00'		
SCALE RATIO	1.000	22	NULLAMP METER	#22	AMP TRANS	AMP 1E1 05114B 0.000	PREROTATION LIM 0.0' BAROMETER 29.70"		
BEP REF	0.GPM, 0.RPM	23S	NULLTEMPAMBIENT	#23	RTD7 1000HM	F 1E1 04088B 0.000	HEAD LOSS = 10.00 FT OF	3.15 INCH DIAM	
EFFICIENCY	0.0% BY 1.000	24P	BHP TRQ*RPM	#24	LEBOW DAY 166	FTLB1E1 03173C 1.000	S.G. TAPS 6.00' APART G=	32.14 FT/S/S	
TEST RESULTS	-----	25	RPM TRQ BAR	#25	LEBOW, DAY1500 RPM	1E0 08164C 1.000	SOLIDS SG 2.65 OF	50.MICRONS S.D.=0.0	
NO : VELOCITY:	FLOW : TEMP :	S.G. :	S.G. :	VOLUME:WEIGHT:	MASS :	REYNOLDS :	PIPELINE LOSSES:	FRICITION FACTS:	
: Vm :	Qm :	Tm :	Sw :	Sm :	CONC.: CONC.:	Ms :	NUMBER :	Im : Iw : Fm : Fw :WLLMS: ---- : t :	
: FT/S :	GPM :	F :	:	Cv % :	Cw % :	TON/HR :	Re :	FT/FT : FT/FT : :SAME Re: C : Sm-Sw : HH.MM :	
1 : 15.85 :	385.0 :	96.8 :	0.995 :	1.276 :	17.0 :	35.3 :	43.4 :	0.549E+06 : 0.3466 : 0.2148 : 0.0182 : 0.0145 : 135.:0.4684 : 14.22 :	
2 : 14.04 :	341.1 :	98.2 :	0.995 :	1.276 :	17.0 :	35.3 :	38.5 :	0.493E+06 : 0.2972 : 0.1705 : 0.0199 : 0.0147 : 130.:0.4499 : 14.28 :	
3 : 11.96 :	290.5 :	99.3 :	0.994 :	1.279 :	17.2 :	35.6 :	33.1 :	0.425E+06 : 0.2455 : 0.1259 : 0.0226 : 0.0149 : 123.:0.4200 : 14.33 :	
4 : 10.05 :	244.1 :	99.8 :	0.994 :	1.276 :	17.0 :	35.3 :	27.5 :	0.359E+06 : 0.2370 : 0.0907 : 0.0310 : 0.0152 : 105.:0.5198 : 14.36 :	
5 : 7.91 :	192.0 :	100.5 :	0.994 :	1.268 :	16.6 :	34.6 :	21.1 :	0.284E+06 : 0.2283 : 0.0579 : 0.0486 : 0.0157 : 84.:0.6215 : 14.40 :	
6 : 6.03 :	146.6 :	100.8 :	0.994 :	1.267 :	16.5 :	34.5 :	16.0 :	0.217E+06 : 0.2235 : 0.0351 : 0.0818 : 0.0163 : 65.:0.6908 : 14.44 :	
7 : 3.91 :	95.0 :	100.4 :	0.994 :	1.266 :	16.4 :	34.4 :	10.3 :	0.140E+06 : 0.2126 : 0.0158 : 0.1853 : 0.0175 : 43.:0.7237 : 14.53 :	
8 : 2.01 :	48.7 :	100.1 :	0.994 :	1.263 :	16.2 :	34.0 :	5.2 :	0.718E+05 : 0.2002 : 0.0047 : 0.6646 : 0.0198 : 23.:0.7278 : 14.57 :	
TESTED BY		J.LATTA	DATE 12/15/06	COMMENTS: FIXED SPEED (1000RPM) SAND-CLAY MIX TEST AT 1.28 S.G. LOADED 1.06 S.G.					
WITNESSED BY		L. WHITLOCK	FOR	DRUM OF CLAY SENT FROM MINE SITE. LOADED 1/3 DRUM OF PHOSPHATE CLAY.					
Version: 20051201							FIPR LOADED 1/4 DRUM OF SAND ONLY TO 1.24 S.G. LOADED ~5 GAL MORE SAND.		
							M382 -06 12/15/06		

20051201

GIW Industries Inc.	
A KSB Company	
GIW	W/O
CUST. NAME	FIXEDSAND-CLAY 1.2655
REF.	80H
CUST. P.O.	N/A
PUMP	3X4 LCC 12 M
PUMP S/N	5012-LAB
ASSY.	2004X
SHELL D/N	3798D
IMP	22 DEG
D/N	3800D
DATE	12/15/06



PUMP DETAIL		CH	USE	RDG	SOURCE	INSTRUMENT	GIW INDUSTRIES INC.	
-----		-----					5000 WRIGHTSBORO ROAD	
PUMP	3X4 LCC 12 M	1	SUCTION	#1	YOKOGAWA-30-30	H2O-1E2 06123B 1.000	GROVETOWN, GEORGIA 30813-9750	
		2	AVE S.G.U-SECDN	#2	YOKOGAWA -4-8'	H2O-1E2 02096B 0.500	TELEPHONE (706) 863-1011	
SERIAL NUMBER	5012-LAB	3S	DIFHEAD B	#3	YOKOGAWA 236'	H2O 1E1 06123B 1.000	FAX (Engr) (706) 868-8025	
ASSEMBLY DRAWING NO	2004X	4S	FLOWBEND A	#4	YOKOGAWA 24'	H2O 1E2 06123B 1.000	FAX (Sales) (706) 860-5897	
SHELL DRAWING NO	3798D	5S	LOSS B	#5	YOKOGAWA 12'	H2O 1E2 08116B 1.000		
IMPELLER DRAWING NO	3800D	6.	NULLLOSSHEAT X	#6	YOKOGAWA 24'	H2O 1E2 06123B 0.000	TEST CURVE NO T382 -06	DATE 12/15/06
IMPELLER DIAMETER	12.15"	7P	NULLDIFHEAD	#7	YOKO -30'TO 30'H2O	1E2 04285B 0.000		
OUTLET ANGLE	22 DEG	8.	NULLLOSSHEAT X	#8	YOKOGAWA 236'	H2O 1E1 06123B 0.000	PUMP TEST DATA FOR	FIPR
OUTLET WIDTH	1.00"	9	AVE S.G.U-SECUP	#9	YOKOGAWA 12'	H2O 1E2 08116B 0.500	----- FIXEDSAND-CLAY1.28SG	
ROTATION	CLOCKWISE	10.	DISCHARGE	#10	YOKOGAWA 236'	H2O 1E1 06123B 1.000	PROJECT	80H
HYDROSTATIC PRESS.	STD	11P	DIFHEAD A	#11	YOKOGAWA 60'	H2O 1E2 08116B 1.000	GIW WORK ORDER NO	N/A
		12.	FLOWBEND B	#12	YOKOGAWA 36'	H2O 1E2 02096B 1.000	CUSTOMER ORDER NO	N/A
DRIVER DETAIL		13P	LOSS A	#13	YOKOGAWA-4TO8'	H2O-1E2 02096B 1.000		
-----		14.	NULLDISCHARGE	#14	ROSE. 5 -30-30'H2O-1E2	07142D 0.000		
TYPE 11.8:11.8 V-BELTS DRIVE		15S	NULLDISCHARGE	#15	ROSEMOUNT 5 60'H2O 1E2	09153B 0.000	TEST CONSTANTS	
MAKE	BALDOR	16.	NULLFLOW	#16	ROSEMONT 7 692'H2O 1E1	07142D 0.000	1 FT H2O =	0.0 US GPM USING
SERIAL NO	5275	17P	NULLFLOWMAG 4"	#17	4" YOKO 1200GPM 1E0	08174B 0.000	BEND HT CORR =	0.1 FT CONST = 143.01
FRAME SIZE	365T	18P	NULLFLOW3" MAG	#18	3" F&P 700 GPM 1E1	02145B 0.000	DISCHARGE PIPE DIAMETER =	3.00 INS.
RPM = 1780	BHP = 75.	19P	NULLFLOW8" MAG	#19	8" F&P 5000 GPM	09305B 0.000	METER 1.87' ABOVE PUMP DATUM, TAP-0.56'	
460 VOLTS 3 PHASE 60 CPS		20P	TEMP TANK	#20	RTD 4" 100OHM F 1E1	09286B 1.000	SUCTION PIPE DIAMETER =	4.00 INS.
		21S	TEMPAMB	#21	RTD AMB 100PHM F 1E1	09215B 1.000	METER 1.87' ABOVE PUMP DATUM, TAP 0.00'	
SCALED PERFORMANCE FACTORS		22	NULLAMP METER	#22	AMP TRANS AMP 1E1	05114B 0.000	PREROTATION LIM 0.0' BAROMETER 29.70"	
-----		23S	NULLTEMPAMBIENT	#23	RTD7 100OHM F 1E1	04088B 0.000	HEAD LOSS = 10.00 FT OF	3.15 INCH DIAM
SPEED OR RATIO	1000.000	24P	BHP TRQ*RPM	#24	LEBOW DAY 166 FTLB1E1	03173C 1.000	S.G. TAPS 6.00' APART G=	32.14 FT/S/S
		25	RPM TRQ BAR	#25	LEBOW, DAY1500 RPM 1E0	08164C 1.000	SOLIDS SG 2.65 OF	50.MICRONS S.D.=0.0
IMP TURN DOWN RATIO	1.000	26S	BHP TRQ BAR	#26	LEBOW, DAY 75HP 1E2	12211D 1.000	PIPE ROUGHNESS REF M 78 -04 E/D=.	.000120
MERIDINAL WIDTH RATIO	1.000	27P	NULLFLOW3" MAG	#27	3" YOKO 800 GPM 1E1	12089D 0.000	SAMPLER AREA =	0.00 SQUARE FEET
SCALE RATIO	1.000	28S	NULLFLOWORIFICE	TECO# 6158	21.80 FPS 1E2	09256C 0.000		
BEP REF	0.GPM, 0.RPM	29P	FLOWMAG 3"	#29	3" YOKO 800 GPM 1E1	03045B 1.065		
EFFICIENCY	0.0% BY 1.000	30P	NULLBHP TRQ*RPM	#30	LEBOW, DAY 833 FTLB1E1	05098C 0.000		
		31	NULLRPM TRQ BAR	#31	LEBOW, DAY1500 RPM 1E0	05024C 0.000		
		32S	NULLBHP TRQ BAR	#32	LEBOW, DAY 300 HP 1E1	07287C 0.000		
TEST RESULTS		^ PRIMARY INSTRUMENTATION USED						

: FLOW MEASUREMENT: HEAD MEASUREMENT :S.G.:DRIVER POWER:SPEED: PUMP : TEMP: SCALED PERFORMANCE : TIME:MAG3" :BEND A:								
: FLOW Q:VELOCITY:DISCH: SUCTN:TOT HD: :INPUT:OUTPUT: N :OUTPUT: EFF: Tm : FLOW : HEAD:POWER: EFF: t : C 29 : S 4 :								
NO: GPM	: FT/S	: PSI	: " HG	: H FT	: KW	: BHP	: RPM	: WHP : n %: F : GPM : FT : BHP : % : H.MM: *1.065:*1.000:
1:	385.0:	15.85	:17.24:	-3.13:	37.07:	1.28:	0.0:	6.8:1002.: 4.6:67.2: 96.8: 384.: 36.9: 6.8:67.2:14.22:385.01:360.51:
2:	341.1:	14.04	:19.33:	-2.62:	39.70:	1.28:	0.0:	6.5:1002.: 4.4:67.6: 98.2: 340.: 39.5: 6.4:67.6:14.28:341.08:318.13:
3:	290.5:	11.96	:21.63:	-1.98:	42.49:	1.28:	0.0:	6.0:1003.: 4.0:66.3: 99.3: 290.: 42.3: 6.0:66.3:14.33:290.53:270.80:
4:	244.1:	10.05	:23.48:	-1.52:	45.01:	1.28:	0.0:	5.5:1003.: 3.5:64.0: 99.8: 243.: 44.8: 5.5:64.0:14.36:244.13:223.22:
5:	192.0:	7.91	:25.05:	-1.16:	47.30:	1.27:	0.0:	5.0:1003.: 2.9:58.0:100.5: 191.: 47.0: 5.0:58.0:14.40:192.03:177.44:
6:	146.6:	6.03	:25.73:	-0.89:	48.01:	1.27:	0.0:	4.5:1004.: 2.3:50.5:100.8: 146.: 47.6: 4.4:50.5:14.44:146.55:138.03:
7:	95.0:	3.91	:25.93:	-0.66:	47.93:	1.27:	0.0:	3.9:1001.: 1.5:37.6:100.4: 95.: 47.8: 3.9:37.6:14.53:94.976:93.729:
8:	48.7:	2.01	:25.53:	-0.51:	47.05:	1.26:	0.0:	3.3:1002.: 0.7:21.9:100.1: 49.: 46.9: 3.3:21.9:14.57:48.731:51.658:
TESTED BY J.LATTA DATE 12/15/06 COMMENTS: FIXED SPEED (1000RPM) SAND-CLAY MIX TEST AT 1.28 S.G. LOADED 1.06 S.G.								
DRUM OF CLAY SENT FROM MINE SITE. LOADED 1/3 DRUM OF PHOSPHATE CLAY.								
WITNESSED BY L. WHITLOCK FOR FIPR LOADED 1/4 DRUM OF SAND ONLY TO 1.24 S.G. LOADED ~5 GAL MORE SAND.								
Version: 20051201 T382 -06 12/15/06								

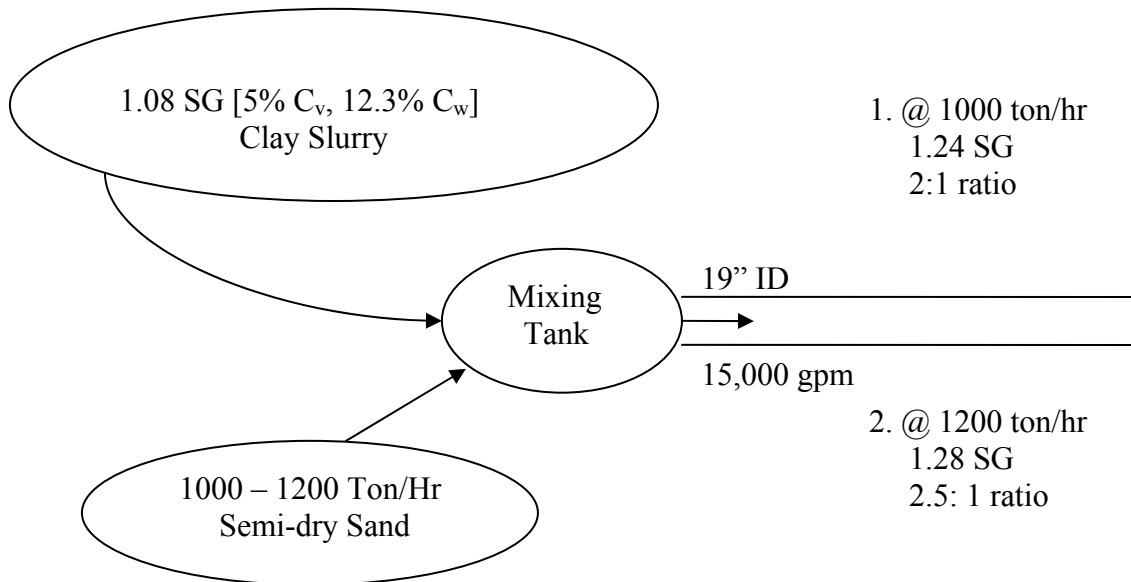
PUMP DETAIL	CH	USE	RDG	SOURCE	INSTRUMENT	
						GIW INDUSTRIES INC.
						5000 WRIGHTSBORO ROAD
						GROVETOWN, GEORGIA 30813-9750
						TELEPHONE (706) 863-1011
						FAX (Engr) (706) 868-8025
						FAX (Sales) (706) 860-5897
PUMP	3X4 LCC 12 M	1	SUCTION	#1 YOKOGAWA-30-30	H2O-1E2 06123B 1.000	
		2	AVE S.G.U-SECDN	#2 YOKOGAWA -4-8'	H2O-1E2 02096B 0.500	
SERIAL NUMBER	5012-LAB	3S	DIFHEAD B	#3 YOKOGAWA 236'	H2O 1E1 06123B 1.000	
ASSEMBLY DRAWING NO	2004X	4S	FLOWBEND A	#4 YOKOGAWA 24'	H2O 1E2 06123B 1.000	
SHELL DRAWING NO	3798D	5S	LOSS B	#5 YOKOGAWA 12'	H2O 1E2 08116B 1.000	
IMPELLER DRAWING NO	3800D	6.	NULLLOSSHEAT X	#6 YOKOGAWA 24'	H2O 1E2 06123B 0.000	TEST CURVE NO X382 -06 DATE 12/15/06
IMPELLER DIAMETER	12.15"	7P	NULLDIFHEAD	#7 YOKO -30'TO 30'H2O	1E2 04285B 0.000	
OUTLET ANGLE	22 DEG	8.	NULLLOSSHEAT X	#8 YOKOGAWA 236'	H2O 1E1 06123B 0.000	PUMP TEST DATA FOR FIPR
OUTLET WIDTH	1.00"	9	AVE S.G.U-SECUP	#9 YOKOGAWA 12'	H2O 1E2 08116B 0.500	----- FIXEDSAND-CLAY1.28SG
ROTATION	CLOCKWISE	10.	DISCHARGE	#10YOKOGAWA 236'	H2O 1E1 06123B 1.000	PROJECT 80H
HYDROSTATIC PRESS.	STD	11P	DIFHEAD A	#11YOKOGAWA 60'	H2O 1E2 08116B 1.000	GIW WORK ORDER NO N/A
		12.	FLOWBEND B	#12YOKOGAWA 36'	H2O 1E2 02096B 1.000	CUSTOMER ORDER NO N/A
DRIVER DETAIL		13P	LOSS A	#13YOKOGAWA-4T08'	H2O-1E2 02096B 1.000	
		14.	NULLDISCHARGE	#14ROSE. 5 -30-30'H2O-1E2	07142D 0.000	
TYPE 11.8:11.8 V-BELTS	DRIVE	15S	NULLDISCHARGE	#15ROSEMOUNT 5 60'H2O 1E2	09153B 0.000	TEST CONSTANTS
MAKE	BALDOR	16.	NULLFLOW	#16ROSEMONT 7 692'H2O 1E1	07142D 0.000	1 FT H2O = 0.0 US GPM USING
SERIAL NO	5275	17P	NULLFLOWMAG 4"	#17 4" YOKO 1200GPM 1E0	08174B 0.000	BEND HT CORR = 0.1 FT CONST = 143.01
FRAME SIZE	365T	18P	NULLFLOW3" MAG	#18 3" F&P 700 GPM 1E1	02145B 0.000	DISCHARGE PIPE DIAMETER = 3.00 INS.
RPM = 1780 BHP = 75.		19P	NULLFLOW8" MAG	#19 8" F&P 5000 GPM	09305B 0.000	METER 1.87' ABOVE PUMP DATUM, TAP-0.56'
460 VOLTS 3 PHASE 60 CPS		20P	TEMP TANK	#20 RTD 4" 100OHM F 1E1	09286B 1.000	SUCTION PIPE DIAMETER = 4.00 INS.
		21S	TEMPAMB	#21 RTD AMB 100OHM F 1E1	09215B 1.000	METER 1.87' ABOVE PUMP DATUM, TAP 0.00'
SCALED PERFORMANCE FACTORS		22	NULLAMP METER	#22 AMP TRANS AMP 1E1	05114B 0.000	PREROTATION LIM 0.0' BAROMETER 29.70"
		23S	NULLTEMPAMBIENT	#23 RTD7 100OHM F 1E1	04088B 0.000	HEAD LOSS = 10.00 FT OF 3.15 INCH DIAM
SPEED OR RATIO	1000.000	24P	BHP TRQ*RPM	#24 LEBOW DAY 166 FTLB1E1	03173C 1.000	S.G. TAPS 6.00' APART G= 32.14 FT/S/S
		25	RPM TRQ BAR	#25 LEBOW, DAY1500 RPM 1E0	08164C 1.000	SOLIDS SG 2.65 OF 50.MICRONS S.D.=0.0
IMP TURN DOWN RATIO	1.000	26S	BHP TRQ BAR	#26 LEBOW, DAY 75HP 1E2	12211D 1.000	PIPE ROUGHNESS REF M 78 -04 E/D=.000120
MERIDINAL WIDTH RATIO	1.000	27P	NULLFLOW3" MAG	#27 3" YOKO 800 GPM 1E1	12089D 0.000	SAMPLER AREA = 0.00 SQUARE FEET
SCALE RATIO	1.000	28S	NULLFLOWORIFICE	TECO# 6158 21.80 FPS 1E2	09256C 0.000	
BEP REF 0.GPM, 0.RPM		29P	FLOWMAG 3"	#29 3" YOKO 800 GPM 1E1	03045B 1.065	
EFFICIENCY 0.0% BY 1.000		30P	NULLBHP TRQ*RPM	#30 LEBOW, DAY 833 FTLB1E1	05098C 0.000	
		31	NULLRPM TRQ BAR	#31 LEBOW, DAY1500 RPM 1E0	05024C 0.000	
		32S	NULLBHP TRQ BAR	#32 LEBOW, DAY 300 HP 1E1	07287C 0.000	
TEST RESULTS		^ PRIMARY INSTRUMENTATION USED				
:FLOW MEASUREMENT: HEAD MEASUREMENT :S.G.:DRIVER POWER:SPEED: PUMP :MAG3" :BEND A:BEND B:LOSS A:LOSS B:DISCH :DIFH A:DIFH B: : FLOW Q:VELOCITY:DISCH: SUCTN:TOT HD: :INPUT:OUTPUT: N :OUTPUT: EFF: C 29 : S 4 : S 12 : C 13 : C 5 : C 10 : C 11 : C 3 : NO: GPM : FT/S : PSI : " HG : H FT : : KW : BHP : RPM : WHP : n %:1.065:1.000:1.000:1.000:1.000:1.000:1.000:1.000: 1: 385.0: 15.85 :17.24: -3.13: 37.07:1.28: 0.0: 6.8:1002.: 4.6:67.2:385.01:360.51:359.81: 3.466: 3.505:39.641:43.321:43.324: 2: 341.1: 14.04 :19.33: -2.62: 39.70:1.28: 0.0: 6.5:1002.: 4.4:67.6:341.08:318.13:317.64: 2.972: 3.014:44.492:47.573:47.584: 3: 290.5: 11.96 :21.63: -1.98: 42.49:1.28: 0.0: 6.0:1003.: 4.0:66.3:290.53:270.80:270.28: 2.455: 2.494:49.777:52.149:52.134: 4: 244.1: 10.05 :23.48: -1.52: 45.01:1.28: 0.0: 5.5:1003.: 3.5:64.0:244.13:223.22:222.98: 2.370: 2.407:54.048:55.904:55.889: 5: 192.0: 7.91 :25.05: -1.16: 47.30:1.27: 0.0: 5.0:1003.: 2.9:58.0:192.03:177.44:176.96: 2.283: 2.321:57.668:59.125:59.139: 6: 146.6: 6.03 :25.73: -0.89: 48.01:1.27: 0.0: 4.5:1004.: 2.3:50.5:146.55:138.03:137.41: 2.235: 2.274:59.225:60.381:60.367: 7: 95.0: 3.91 :25.93: -0.66: 47.93:1.27: 0.0: 3.9:1001.: 1.5:37.6:94.976:93.729:92.988: 2.126: 2.163:59.696:60.482:60.584: 8: 48.7: 2.01 :25.53: -0.51: 47.05:1.26: 0.0: 3.3:1002.: 0.7:21.9:48.731:51.658:50.011: 2.002: 2.040:58.754:59.504:59.500:						

TESTED BY J.LATTA DATE 12/15/06 COMMENTS: FIXED SPEED (1000RPM) SAND-CLAY MIX TEST AT 1.28 S.G. LOADED 1.06 S.G.
 DRUM OF CLAY SENT FROM MINE SITE. LOADED 1/3 DRUM OF PHOSPHATE CLAY.
 WITNESSED BY L. WHITLOCK FOR FIPR LOADED 1/4 DRUM OF SAND ONLY TO 1.24 S.G. LOADED ~5 GAL MORE SAND.
 Version: 20051201 X382 -06 12/15/06

Attachment 2

Illustrative Field Operation:

- Assuming dredge technique optimized for delivery



Determine possible transport SG's & resulting sand-clay mix ratios:

- Consider 1000 ton/hr sand input:

$$1000 \text{ ton/hr} = (1.8)(62.4)(0.7854) \left(\frac{19}{12} \right)^2 (2.65)(C_v) \left[\frac{(0.4085)(15000 \text{ gpm})}{(19'')^2} \right]$$

$C_v = 0.10$ sand in 19" line @ 15,000 gpm

10 % $C_v \longrightarrow 22.78\% C_w \longrightarrow 1.16$ Slurry SG (sand alone)

••• Total $C_v = 10\%$ sand + 5 % clay + 85 % $H_2O = 100\%$ slurry

Roughly... $SG_m = 0.16 + 0.08 + 1.00 = 1.24$

••• 15,000 gpm, 1.24 SG_m , 19" ID pipe @ 2:1 sand: clay ratio

- Consider 1200 ton/hr sand input:

$$1200 \text{ ton/hr} = (1.8)(62.4)(0.7854) \left(\frac{19}{12} \right)^2 (2.65)(C_v) \left[\frac{(0.4085)(15000 \text{ gpm})}{(19'')^2} \right]$$

$C_v = 0.12$ sand in 19" line @ 15,000 gpm

12 % $C_v \longrightarrow 22.78\% C_w \longrightarrow 1.20$ Slurry SG (sand alone)

••• Total $C_v = 12\%$ sand + 5 % clay + 83 % $H_2O = 100\%$ slurry

Roughly... $SG_m = 0.20 + 0.08 + 1.00 = 1.28$

••• 15,000 gpm, 1.28 SG_m , 19" ID pipe @ 2:5 sand: clay ratio