QUALITY CONTROLLED LOCAL CLIMATOLOGICAL DATA

(final)

NOAA, National Climatic Data Center

Month: 10/2012

Station Location: FORT WORTH ALLIANCE ARPT (53909)
FORT WORTH, TX

Lat. 32.973 Lon. -97.318

Elevation(Ground): 685 ft. above sea level

Date	Temperature (Fahrenheit) Max.	Min.	Avg.	Dep From Normal	Avg. Dew pt.	Avg Wet Bulb	Degree Days Base 65 Degrees Heating	Cooling	Sun Sunrise LST	Sunset LST	Significant Weather	Snow/Ice on Ground(In) 1200 UTC Depth	1800 UTC Water Equiv	Precipitation (In) 2400 LST Snow Fall	2400 LST Water Equiv	Pressure (inches of Hg) Avg. Station	Avg. Sea Level	Wind: Speed=mph Dir=tens of degrees Resultant Speed	Res Dir	Avg. Speed	max 5-second Speed	Dir	max 2-minute Speed	Dir	Date
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
01	82	55	69	M	54	60	0	4	-	-	BR	0	M	0.0	0.00	29.08	29.83	8.6	32	8.8	23	340	17	340	01
02	79	57	68	M	53	59	0	3	-	-		0	M	0.0	0.00	29.17	29.91	4.6	32	5.5	18	340	13	320	02
03	83	54	69	M	52	60	0	4	-	-		0	M	0.0	0.00	29.20	29.94	5.1	17	5.8	25	150	15	160	03
04	85	63	74	M	62	66	0	9	-	-		0	M	0.0	0.00	29.28	30.02	6.7	16	8.0	22	150	16	160	04
05	78	55	67	M	56	61	0	2	-	-		0	M	0.0	0.00	29.29	30.04	5.8	34	8.2	26	360	22	350	05
06	55	46	51	M	42	47	14	0	-	-		0	M	0.0	0.00	29.42	30.18	11.2	03	11.4	23	040	18	040	06
07	51	39	45*	M	34	42	20	0	-	-		0	M	0.0	0.00	29.47	30.26	6.2	02	7.0	20	040	15	040	07
08	65	32	49	M	37	44	16	0	-	-		0	M	0.0	0.00	29.36	30.17	2.3	15	2.9	18	130	10	110	08
09	83	50	67	M	55	60	0	2	-	-		0	M	0.0	0.00	29.16	29.94	7.8	17	8.1	29	190	20	190	09
10	69	57	63	M	60	61	2	0	-	-	DZ FG BR HZ	0	M	0.0	T	29.33	30.07	4.8	05	5.3	21	060	14	050	10
11	85	63	74	M	66	69	0	9	-	-	BR	0	M	0.0	0.00	29.31	30.06	7.3	15	7.7	29	130	22	150	11
12	86	70	78	M	66	70	0	13	-	-	BR	0	M	0.0	0.00	29.31	30.07	7.8	16	8.7	23	130	17	140	12
13	84	66	75	M	68	70	0	10	-	-	TS TSRA RA	0	M	0.0	1.15	29.13	29.89	12.1	18	13.2	40	280	30	250	13
14	81	54	68	M	53	59	0	3	-	-		0	M	0.0	0.00s	29.27	30.01	4.6	31	6.5	21	340	15	350	14
15	82	50	66	M	50	57	0	1	-	-		0	M	0.0	0.00	29.25	30.02	1.7	19	2.3	10	150	8	160	15
16	77	58	68	M	56	60	0	3	-	-		0	M	0.0	0.00	28.98	29.77	7.4	18	7.5	29	190	18	190	16
17	84	53	69	M	54	62	0	4	-	-		0	M	0.0	0.00	28.90	29.63	5.2	25	12.0	32	220	23	230	17
18	74	43	59	M	35	48	6	0	-	-		0	M	0.0	0.00	29.20	29.94	3.7	35	5.0	21	010	16	360	18
19	76	44	60	M	35	48	5	0	-	-		0	M	0.0	0.00	29.18	29.94	3.8	29	4.9	21	300	16	300	19
20	86	49	68	M	55	62	0	3	-	-		0	M	0.0	0.00	29.01	29.77	9.3	18	9.6	28	210	18	180	20
21	88*	73	81*	M	67	71	0	16	-	-		0	M	0.0	0.00	29.05	29.78	12.7	18	12.9	31	170	22	180	21
22	85	68	77	M	66	69	0	12	-	-	RA	0	M	0.0	0.07	29.15	29.88	8.2	18	10.0	39	260	22	270	22
23	86	69	78	M	66	69	0	13	-	-		0	M	0.0	0.00	29.13	29.87	10.4	17	10.6	26	190	18	190	23
24	84	66	75	M	64	67	0	10	-	-		0	M	0.0	0.00	29.10	29.85	10.7	17	10.8	29	160	21	160	24
25	78	52	65	M	55	60	0	0	-	-	RA	0	M	0.0	0.01	29.18	29.91	2.9	34	13.3	31	010	23	360	25
26	55	39	47	M	34	43	18	0	-	-		0	M	0.0	0.00	29.49	30.24	14.0	36	14.1	30	350	23	360	26
27	58	34	46	M	28	38	19	0	-	-		0	M	0.0	0.00	29.47	30.27	4.9	35	5.4	17	360	12	340	27
28	63	29*	46	M	29	38	19	0	-	-		0	M	0.0	0.00	29.46	30.26	2.5	01	2.8	18	030	14	040	28
29	68	30	49	M	29	41	16	0	-	-		0	M	0.0	0.00	29.41	30.22	1.5	16	1.8	14	140	9	210	29
30	77	38	58	M	38	48	7	0	-	-		0	M	0.0	0.00	29.23	30.02	3.7	22	4.0	16	210	12	220	30
31	83	45	64	M	44	52	1	0	-	-		0	M	0.0	0.00	29.21	29.98	0.6	32	2.5	15	360	12	360	31
	76.5	51.6	64.1		50.4	56.8	4.6	3.9	<---Monthly Averages | Totals--->				M	M	1.24s	29.23	29.99	1.5	18	7.6	<Monthly Average				
	M	M	M					<---Departure From Normal--->							M										

Greatest 24-hr Precipitation: 1.15 Date: 13
Greatest 24-hr Snowfall: M Date: M
Greatest Snow Depth: M Date: M

Sea Level Pressure		Date	Time (LST)
Maximum	30.37	27	0948
Minimum	29.53	17	0748

Degree Days	Monthly Total	Departure	Season to Date Total	Departure
Heating:	143	M	M	M
Cooling:	121	M	M	M

Number of Days with ---->
Max Temp >=90: 0
Max Temp <=32: 0
Thunderstorms : 2
Min Temp <=32: 3
Min Temp <=0 : 0
Heavy Fog : 0
Precipitation >=.01 inch: 4s
Precipitation >=.10 inch:
Snowfall >=1.0 inch : M

Data Version: VER2

* EXTREME FOR THE MONTH - LAST OCCURRENCE IF MORE THAN ONE.

TCMUD001791

QUALITY CONTROLLED LOCAL CLIMATOLOGICAL DATA

(final)

NOAA, National Climatic Data Center

Month: 11/2012

Station Location: FORT WORTH ALLIANCE ARPT (53909)
FORT WORTH, TX

Lat. 32.973 Lon. -97.318

Elevation(Ground): 685 ft. above sea level

Date	Temperature (Fahrenheit)						Degree Days Base 65 Degrees		Sun			Snow/Ice on Ground(In)		Precipitation (In)		Pressure(inches of Hg)		Wind: Speed=mph Dir=tens of degrees							Date
												1200 UTC	1800 UTC	2400 LST	2400 LST						max 5-second		max 2-minute		
	Max.	Min.	Avg.	Dep From Normal	Avg. Dew pt.	Avg Wet Bulb	Heating	Cooling	Sunrise LST	Sunset LST	Significant Weather	Depth	Water Equiv	Snow Fall	Water Equiv	Avg. Station	Avg. Sea Level	Resultant Speed	Res Dir	Avg. Speed	Speed	Dir	Speed	Dir	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
01	88*	44	66	M	46	55	0	1	-	-		0	M	0.0	0.00	29.19	29.96	2.5	23	2.7	22	310	14	230	01
02	87	55	71	M	52	60	0	6	-	-		0	M	0.0	0.00	29.16	29.91	6.7	20	7.5	25	230	18	220	02
03	82	57	70	M	54	60	0	5	-	-		0	M	0.0	0.00	29.28	30.00	1.0	02	5.0	18	190	12	190	03
04	75	48	62	M	41	50	3	0	-	-		0	M	0.0	0.00	29.31	30.08	2.5	35	3.4	15	010	10	350	04
05	76	44	60	M	38	49	5	0	-	-		0	M	0.0	0.00	29.29	30.06	5.7	35	5.8	26	360	20	350	05
06	75	36	56	M	39	47	9	0	-	-		0	M	0.0	0.00	29.33	30.10	0.3	25	1.3	12	230	8	240	06
07	74	38	56	M	37	47	9	0	-	-		0	M	0.0	0.00	29.33	30.11	1.4	13	2.2	13	140	9	140	07
08	82	52	67	M	49	57	0	2	-	-		0	M	0.0	0.00	29.22	29.99	11.8	17	12.0	31	160	23	180	08
09	83	64	74*	M	57	63	0	9	-	-		0	M	0.0	0.00	29.18	29.92	14.7	18	14.8	35	180	23	170	09
10	81	65	73	M	59	64	0	8	-	-		0	M	0.0	0.00	29.09	29.85	19.5	17	19.6	40	160	29	170	10
11	74	40	57	M	52	56	8	0	-	-	RA	0	M	0.0	0.01	29.23	29.94	2.4	21	12.0	37	160	26	170	11
12	56	29	43	M	25	36	22	0	-	-		0	M	0.0	0.00	29.68	30.44	3.7	36	4.0	18	360	14	360	12
13	57	24*	41*	M	24	36	24	0	-	-		0	M	0.0	0.00	29.62	30.43	3.0	13	3.5	17	150	14	160	13
14	62	30	46	M	27	38	19	0	-	-		0	M	0.0	0.00	29.55	30.36	0.7	15	1.5	M	M	8	160	14
15	66	32	49	M	31	41	16	0	-	-		0	M	0.0	0.00	29.51	30.29	2.8	13	3.7	15	080	13	090	15
16	64	30	47	M	30	39	18	0	-	-		0	M	0.0	0.00	29.57	30.37	1.0	09	2.0	13	100	9	110	16
17	65	27	46	M	30	39	19	0	-	-		0	M	0.0	0.00	29.54	30.34	2.6	15	3.0	15	130	12	130	17
18	69	38	54	M	34	45	11	0	-	-		0	M	0.0	T	29.44	30.23	6.9	16	7.0	30	130	20	160	18
19	74	54	64	M	48	54	1	0	-	-		0	M	0.0	0.00	29.36	30.15	6.9	18	7.1	22	190	16	180	19
20	79	43	61	M	49	54	4	0	-	-	BR HZ	0	M	0.0	0.00	29.39	30.15	0.9	07	1.1	12	100	9	100	20
21	80	42	61	M	46	53	4	0	-	-		0	M	0.0	0.00	29.38	30.17	4.8	17	5.2	21	130	15	160	21
22	78	54	66	M	50	56	0	1	-	-		0	M	0.0	T	29.28	30.04	8.0	18	8.2	29	190	21	190	22
23	65	40	53	M	30	45	12	0	-	-		0	M	0.0	0.00	29.59	30.32	11.3	01	11.8	38	040	26	040	23
24	61	26	44	M	22	37	21	0	-	-		0	M	0.0	0.00	29.46	30.28	2.3	17	4.2	15	170	12	170	24
25	76	41	59	M	36	48	6	0	-	-		0	M	0.0	0.00	29.12	29.93	9.1	18	9.4	24	180	17	180	25
26	71	47	59	M	44	51	6	0	-	-	BR	0	M	0.0	0.00	29.26	29.99	5.6	33	11.7	31	350	24	360	26
27	52	31	42	M	32	38	23	0	-	-		0	M	0.0	0.00	29.57	30.35	4.9	34	6.2	21	360	16	340	27
28	66	26	46	M	34	42	19	0	-	-		0	M	0.0	0.00	29.52	30.33	5.7	16	5.8	21	140	16	160	28
29	68	41	55	M	40	48	10	0	-	-		0	M	0.0	0.00	29.36	30.16	7.8	17	8.1	22	150	17	170	29
30	78	50	64	M	54	58	1	0	-	-	BR HZ	0	M	0.0	0.00	29.27	30.04	9.2	17	9.6	25	210	17	160	30
	72.1	41.6	56.9		40.3	48.9	9.0	1.1	<——Monthly Averages | Totals——>				M	M	0.01s	29.37	30.14	3.0	17	6.6	<Monthly Average				
	M	M	M	<————Departure From Normal————>											M										

Greatest 24-hr Precipitation: 0.01 Date: 11
Greatest 24-hr Snowfall: M Date: M
Greatest Snow Depth: M Date: M

Sea Level Pressure		Date	Time (LST)
Maximum	30.54	13	0847
Minimum	29.70	11	0346

Degree Days	Monthly Total	Monthly Departure	Season to Date Total	Season to Date Departure
Heating:	270	M	M	M
Cooling:	32	M	M	M

Number of Days with ——>
Max Temp >=90: 0
Max Temp <=32: 0
Thunderstorms : 0
Min Temp <=32: 9
Min Temp <=0 : 0
Heavy Fog : 0
Precipitation >=.01 inch: 1
Precipitation >=.10 inch:
Snowfall >=1.0 inch : M

* EXTREME FOR THE MONTH - LAST OCCURRENCE IF MORE THAN ONE.

Data Version: VER2

TCMUD001792

APPENDIX C

TCMUD PLANT CAPACITY CALCULATIONS

APPENDIX C
TCMUD PLANT CAPACITY CALCULATIONS
TROPHY CLUB MUD

1	Build-Out Population		14,000
2	Current Population	x	9,800
3	Population Growth	=	4,200
4	Flow per capita per day	x	100
5	Flow - gallons per day	=	420,000
6	Build-Out Time (months)	÷	48
7	Flow - gallons per month	=	8,750
8			
9	Peak Organic Plant Capacity		875,000
10	Current Average Daily Flow	-	729,000
11	Remaining Capacity of Plant	=	146,000
12	Flow - gallons per month	÷	8,750
13	Months Remaining To Capacity	=	17
14			
15	Date To Reach Plant Capacity		May 2014

TCMUD001794

APPENDIX D

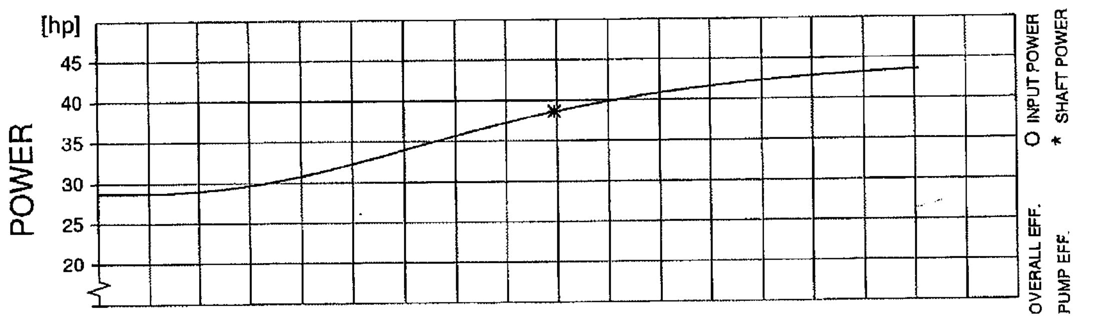
INFLUENT LIFT STATION PUMP CURVES

New Larger Pumps - 4 same size *Influent Lift Sta. 4.6 MGD*

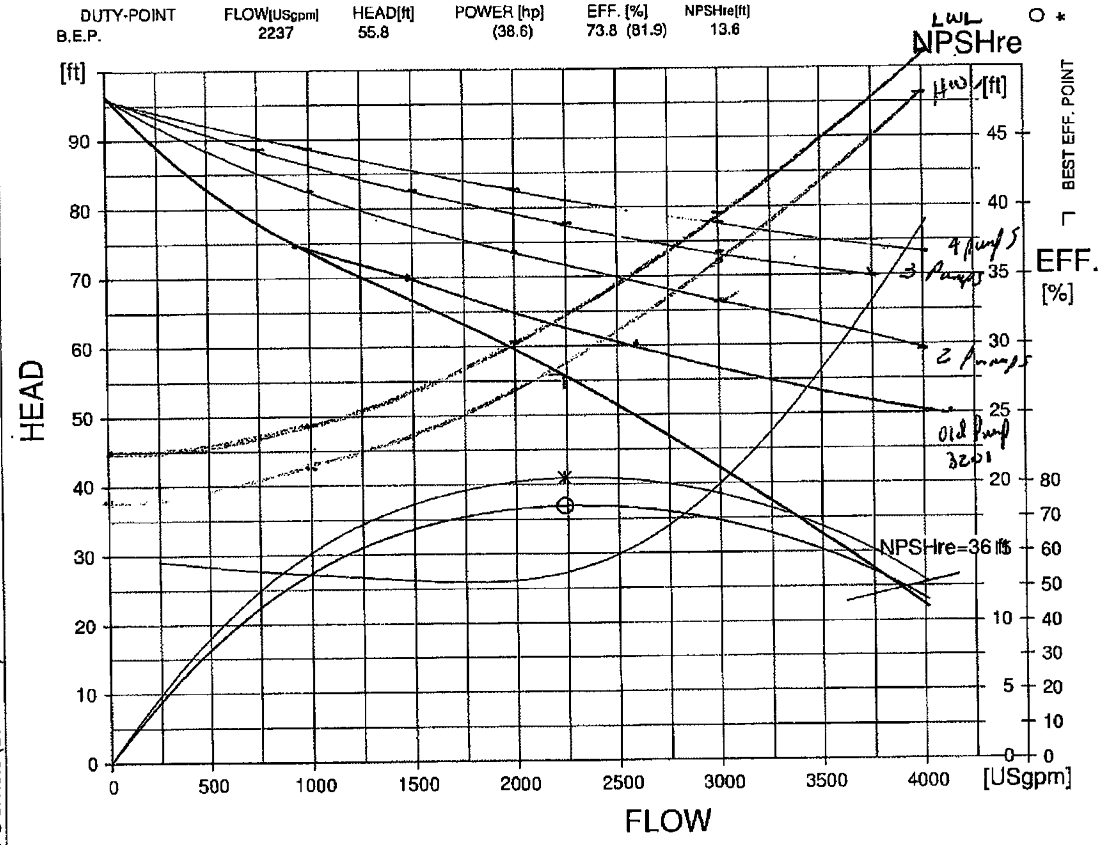
FLYGT	PERFORMANCE CURVE	PRODUCT NP3202.180	TYPE MT
DATE 2010-08-02	PROJECT FLYGT US Catalog	CURVE NO 63-641-00-6040	ISSUE 7

	1/1-LOAD	3/4-LOAD	1/2-LOAD			
POWER FACTOR	0.85	0.82	0.73	RATED POWER	45	hp
EFFICIENCY	89.5 %	90.0 %	89.5 %	STARTING CURRENT ..	330	A
MOTOR DATA	---	---	---	RATED CURRENT ...	55	A
COMMENTS		INLET/OUTLET -/ 8 inch		RATED SPEED	1170	rpm
NEMA Code Letter: G		IMP. THROUGHLET ---		TOT.MOM.OF INERTIA ..	0.48	kgm2
				NO. OF BLADES	2	

IMPELLER DIAMETER			
354 mm			
MOTOR #	STATOR	REV	
30-23-6AA	1 D	12	
FREQ.	PHASES	VOLTAGE	POLES
60 Hz	3	460 V	6
GEARTYPE	RATIO		
---	---		



DUTY-POINT	FLOW[USgpm]	HEAD[ft]	POWER [hp]	EFF. [%]	NPSHre[ft]
B.E.P.	2237	55.8	(38.6)	73.8 (81.9)	13.6



FLYPS 3.1.6.3 (20060531)

NPSHre = NPSH3% + min. operational margin

Performance with clear water and ambient temp 40 °C

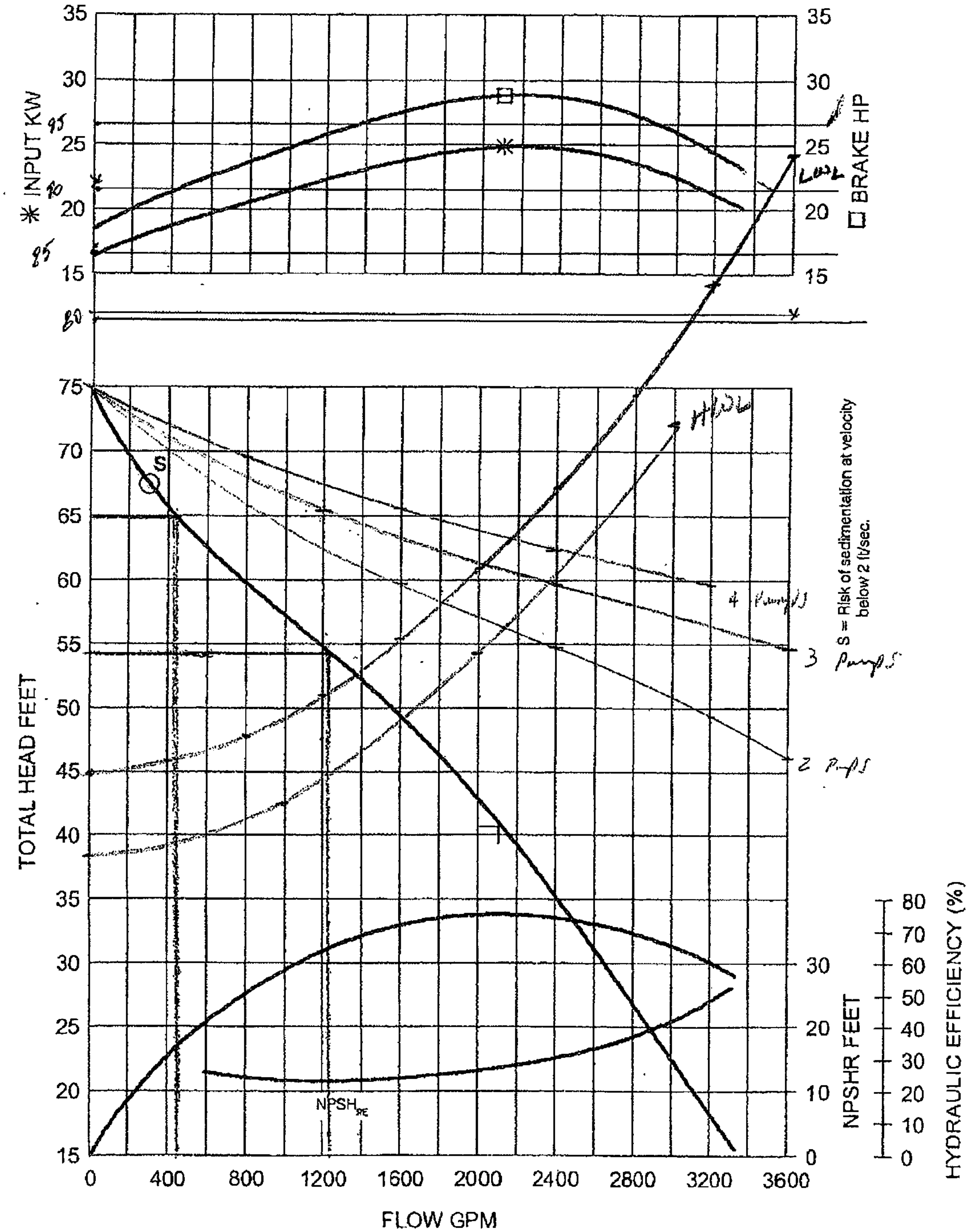
FLYGT CURVE

TCMUD001796

Existing Large Pump

CONSTANT SPEED

PAGE	SECTION	C-3201 637 Impeller	CONFIG.	
12	3		CP/CT/CZ/CS	
ISSUED	SUPERSEDES		VANES	PHASE
2/96	6/94		2	3

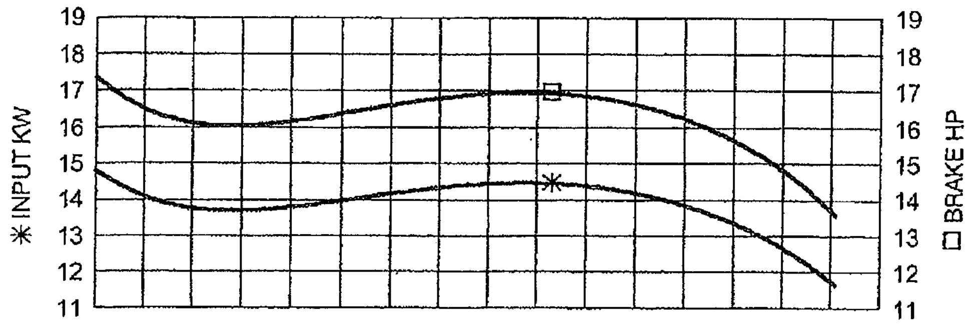


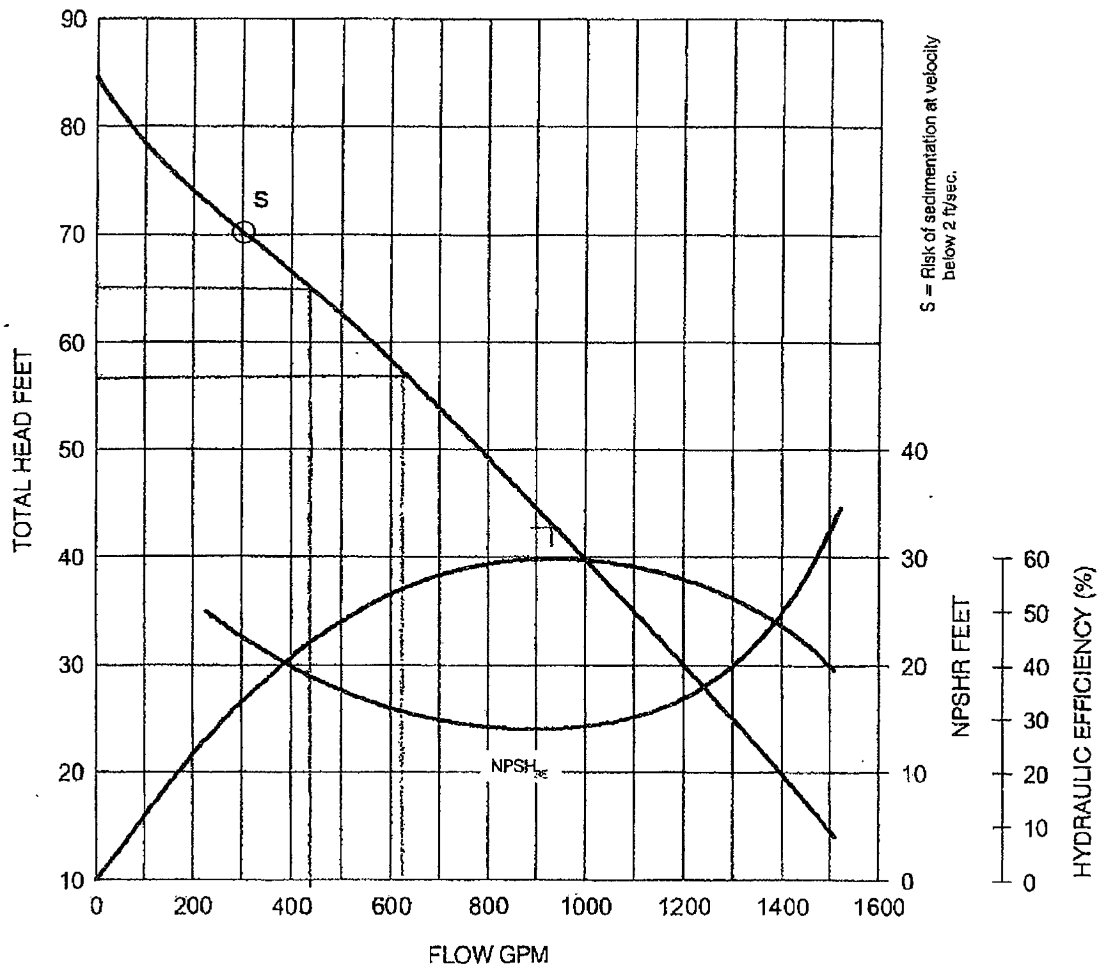
FLYGT

Existing Small Pump

VARIABLE SPEED

PAGE	SECTION		CONFIG.	
10	3	**C-3152**	CP/CT/CS	
ISSUED	SUPERSEDES	**434 Impeller**	VANES	PHASE
2/96	6/94		1	3





FLYGT

TCMUD001798

APPENDIX E

RAS/WAS LIFT STATION PUMP CURVES

FLYGT ®

Bill of Material
Return Activated Sludge

2- 4" CP3102 Impeller 433, 5 HP, 480V, 3 Phase, 350 GPM @ 20 T.D.H.

2- Safety Chain Hooks
2- 4" Discharge Connections
2- Guide Bar Brackets
40'- Chain (2 x 20')
2- Chain Kits
60'- Electric Cable (2 x 30')
1- Cable Holder
1- Duplex Control
Nema 4 Stainless Steel
High Water Alarm Light
Run Lights
Time Meters
Lightening Arrestor
Condensation Protection
Pedestal Mount
4- Float Switches-Model ENH-10 (20' of cable per switch)
1- Certified Test

F.O.B. - Job Site
Start-Up
Submittal + O & M Manuals

TCMUD001800

FLYGT

Materials of Construction

1.	Stator Housing Pump Housing Impeller Discharge Connection	Cast Iron ASTM A48-64 No. 30-B
2.	Impeller Nut Impeller Washer	Stainless Steel 302
3.	Shaft 420 Stainless Steel	
4.	O Rings	Nitrile Rubber
5.	Grommet	Chloroprene Rubber
6.	Wear Ring	Nitrile Rubber
7.	Mechanical Seals a. Inner (Upper)Rotating b. Inner (Upper) Stationary c. Outer (Lower) Rotating d. Outer (Lower) Stationary	 Carbon Tungstein Carbon Tungstein Carbon Tungstein Carbon
8.	Nuts, Bolts, and etc.	304 Stainless Steel

TCMUD001801

FLYGT

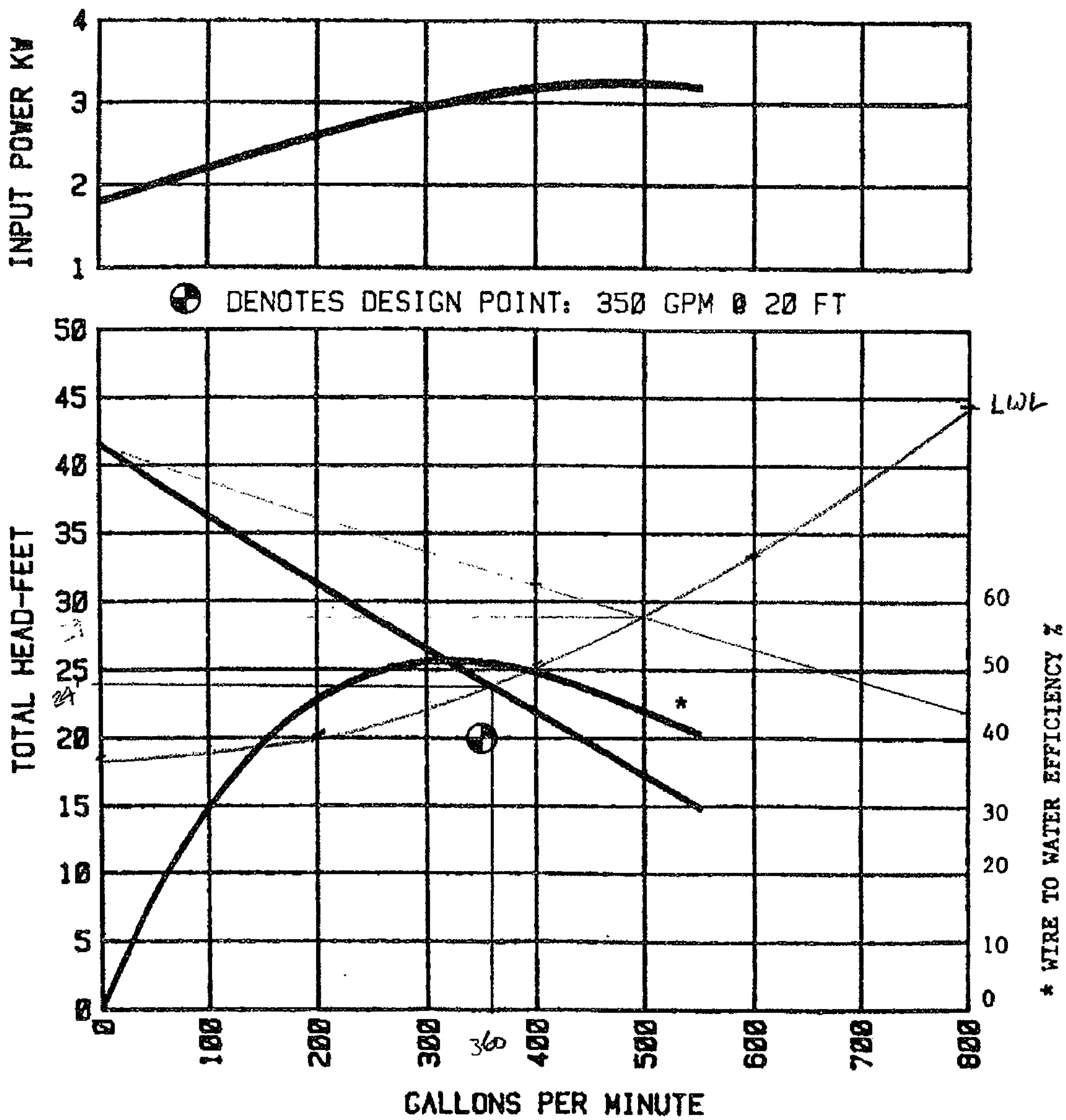
CUSTOMER REF. NO.
Gracon Constr. Co.
P.O.# 8506-3100
REP. Flygt TX

CERTIFIED TEST CURVE NO. 4184

SER. NO. 180-8580683		KW 4.8	FLYGT REF. NO. C- 16272-6	
HP 5	PH 3	VOLT. 480	PUMP MODEL CP-3102	SIZE 4"
RTD. RPM 1700		IMPLR. 433		

CERTIFICATION THIS TEST WAS CONDUCTED AT A FLYGT CORPORATION TEST FACILITY USING CLEAR WATER AT AMBIENT TEMP. (60-80 F.). FLOW, HEAD AND POWER READINGS WERE TAKEN FROM ELECTRONIC METERING EQUIPMENT. ACCURACY OF THE TEST EQUIPMENT CONFIRMED BY PERIODIC CALIBRATIONS.

TEST BY J. Roach	PREP. BY A. Hannis	WITNESSED BY
DATE 3/14/86	DATE 3/20/86	DATE

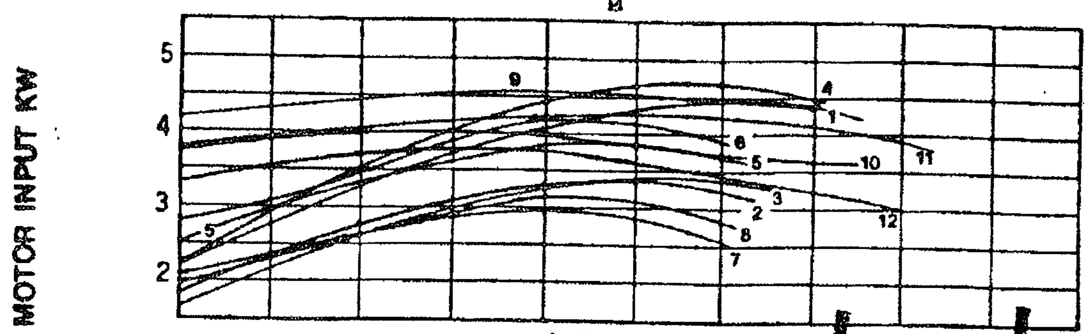


TCMUD001802

C-3102 3Ø and 1Ø

Wastewater Pump Performance Chart

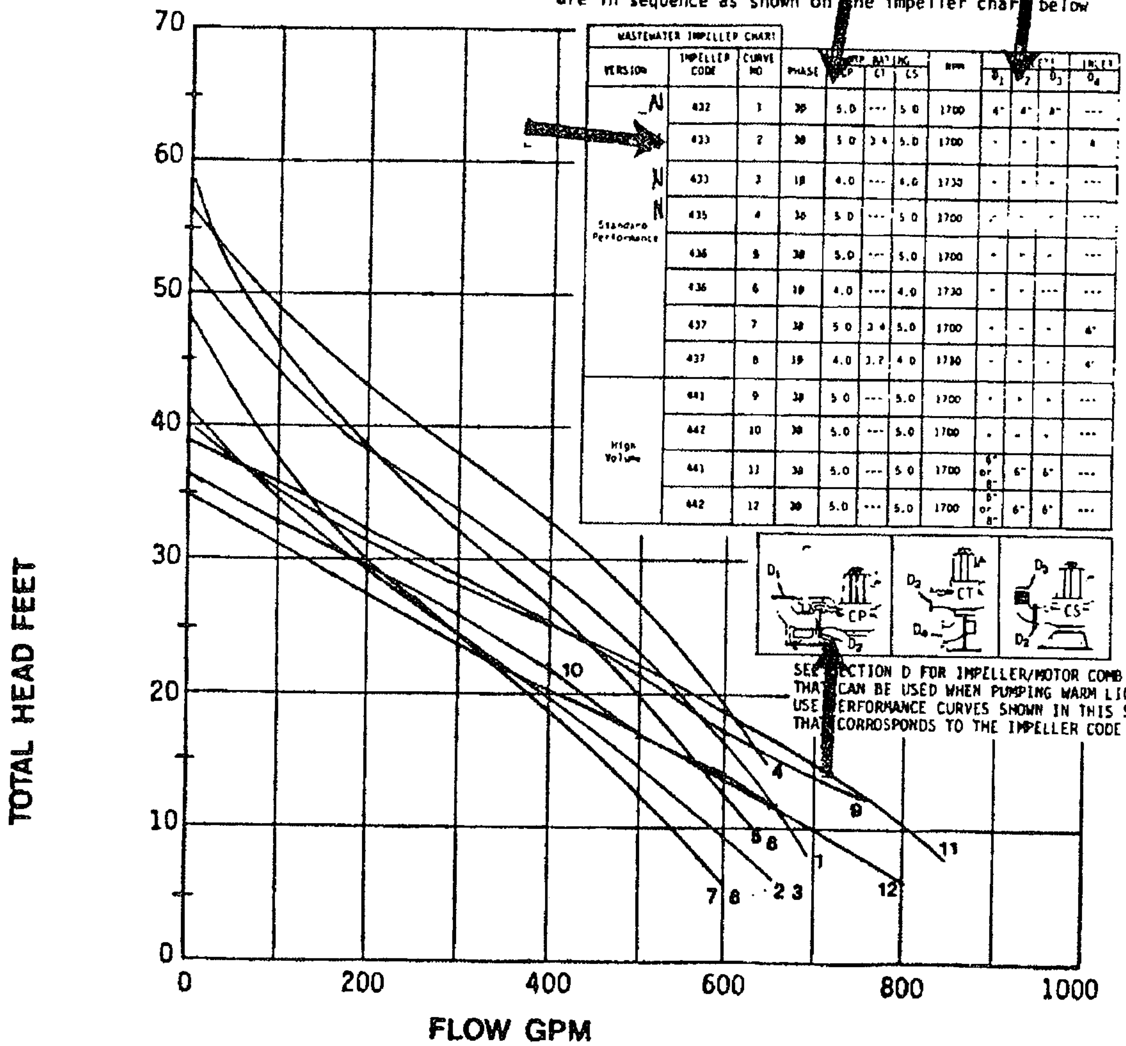
SECTION	PAGE
3102	1
SUPERSEDES	ISSUED
2/85	



Individual Performance Curves, pages 8A, 8B, 8C etc. are in sequence as shown on the impeller chart below

WASTEWATER IMPELLER CHART

VERSION	IMPELLER CODE	CURVE NO	PHASE	HP RATING CP	CT	CS	RPM	D1	D2	D3	INLET D4
	432	1	3Ø	5.0	---	5.0	1700	4"	4"	4"	---
	433	2	3Ø	5.0	3.4	5.0	1700	-	-	-	4
	433	3	1Ø	4.0	---	4.0	1730	-	-	-	---
Standard Performance	435	4	3Ø	5.0	---	5.0	1700	-	-	-	---
	436	5	3Ø	5.0	---	5.0	1700	-	-	-	---
	436	6	1Ø	4.0	---	4.0	1730	-	-	---	---
	437	7	3Ø	5.0	3.4	5.0	1700	-	-	-	4"
	437	8	1Ø	4.0	3.7	4.0	1730	-	-	-	4"
	441	9	3Ø	5.0	---	5.0	1700	-	-	-	---
High Volume	442	10	3Ø	5.0	---	5.0	1700	-	-	-	---
	441	11	3Ø	5.0	---	5.0	1700	6" or 8"	6"	6"	---
	442	12	3Ø	5.0	---	5.0	1700	8" or 8"	6"	6"	---



SEE SECTION D FOR IMPELLER/MOTOR COMBINATIONS THAT CAN BE USED WHEN PUMPING WARM LIQUIDS. USE PERFORMANCE CURVES SHOWN IN THIS SECTION THAT CORRESPONDS TO THE IMPELLER CODE NUMBER

NOTE FAMILY PERFORMANCE CURVES - FOR PRESELECTION ONLY
SEE INDIVIDUAL CURVES IN THIS SECTION FOR FINAL SELECTION

FLYGT
FLYGT CORPORATION
129 GLOVER AVE., NORWALK, CT 06856

TCMUD001803

FLYGT

Bill of Material
Waste Activated Sludge

1- 4" CP3127 Impeller 484, 10 HP, 480V, 3 Phase, 400 GPM @ 36 T.D.H.

1- Safety Chain Hook
1- 4" Discharge Connections
1- Guide Bar Bracket
20'- Chain (1 x 20')
1- Chain Kit
30'- Electric Cable (1 x 30')
1- Cable Holder
1- Simplex Control-Time Clock Operated
Nema 4 Stainless Steel
High Water Alarm Light
Run Lights
Time Meters
Lightening Arrestor
Condensation Protection
Pedestal Mount
2- Float Switches-Model ENH-10 (20' of cable per switch)
(a) For High Water Alarm
(b) For Low Water Level Shut Down
1- Certified Test

F.O.B. - Job Site
Start-Up
Submittal + O & M Manuals

Materials of Construction

1.	Stator Housing Pump Housing Impeller Discharge Connection	Cast Iron ASTM A48-64 No. 30-B
2.	Impeller Nut Impeller Washer	Stainless Steel 302
3.	Shaft 420 Stainless Steel	
4.	O Rings	Nitrile Rubber
5.	Grommet	Chloroprene Rubber
6.	Wear Ring	Nitrile Rubber
7.	Mechanical Seals a. Inner (Upper)Rotating b. Inner (Upper) Stationary c. Outer (Lower) Rotating d. Outer (Lower) Stationary	 Carbon Tungstein Carbon Tungstein Carbon Tungstein Carbon
8.	Nuts, Bolts, and etc.	304 Stainless Steel

TCMUD001805

FLYGT

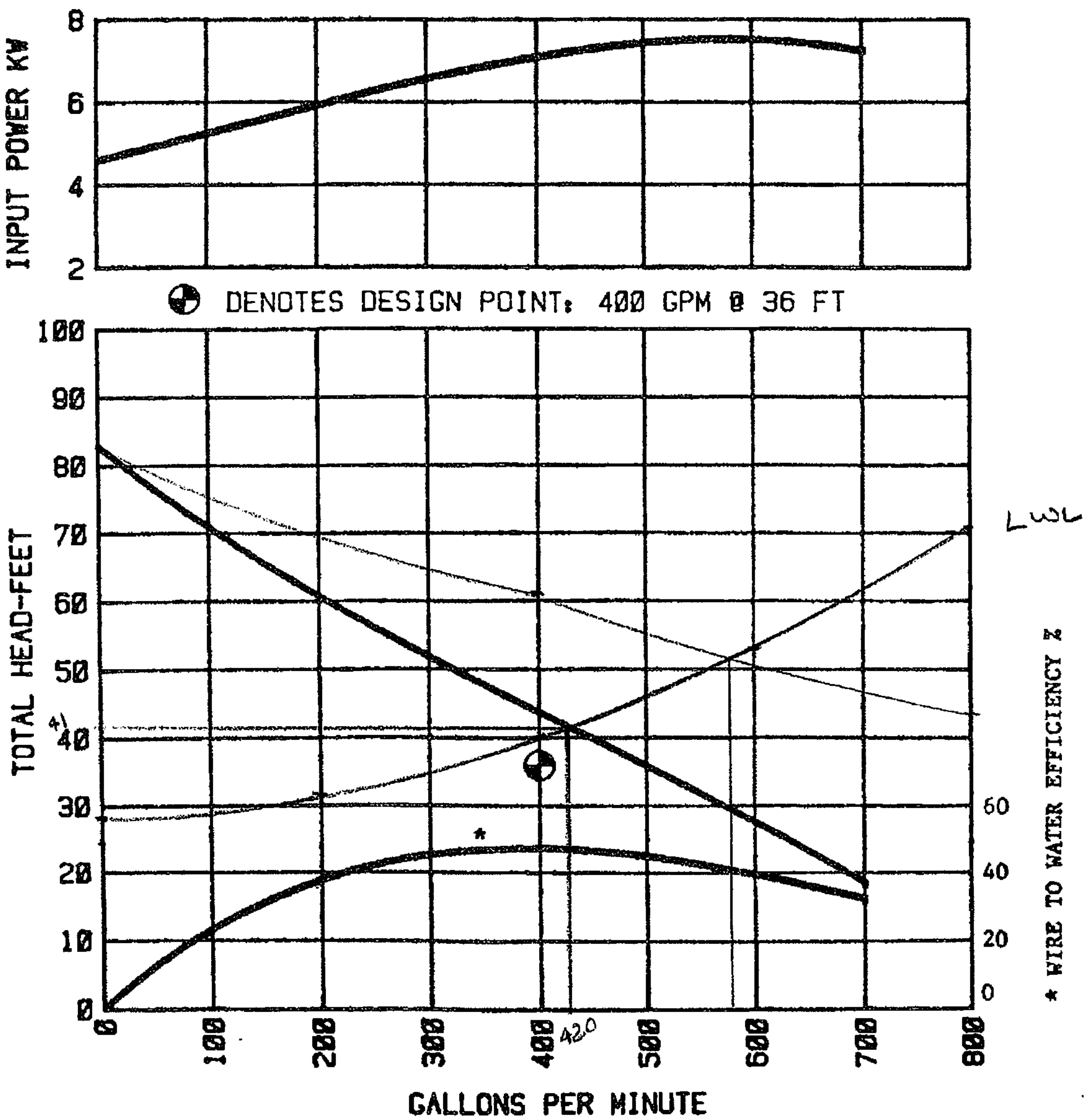
CUSTOMER REF. NO.
Gracon Constr. Co.
P.O.# 8506-3100
REP. Flygt TX

CERTIFIED TEST CURVE NO. 4180

SER. NO. 180-8580321	KW 8.8	FLYGT REF. NO. C-16272-3	
HP 10 / PH 3	VOLT. 480	PUMP MODEL CP-3127	SIZE
RTD. RPM 1750	IMPLR. 484		

CERTIFICATION THIS TEST WAS CONDUCTED AT A FLYGT CORPORATION TEST FACILITY USING CLEAR WATER AT AMBIENT TEMP. (60-80 F.). FLOW, HEAD AND POWER READINGS WERE TAKEN FROM ELECTRONIC METERING EQUIPMENT. ACCURACY OF THE TEST EQUIPMENT CONFIRMED BY PERIODIC CALIBRATIONS.

T.A.# 5490	TEST BY J. Roach	PREP. BY A. Hannis	WITNESSED BY
	DATE 3/14/86	DATE 3/20/86	DATE

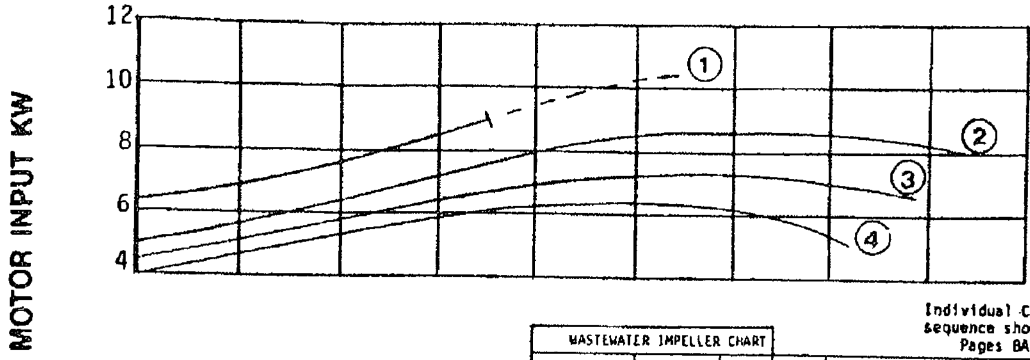


TCMUD001806

C-3127 - 3ϕ

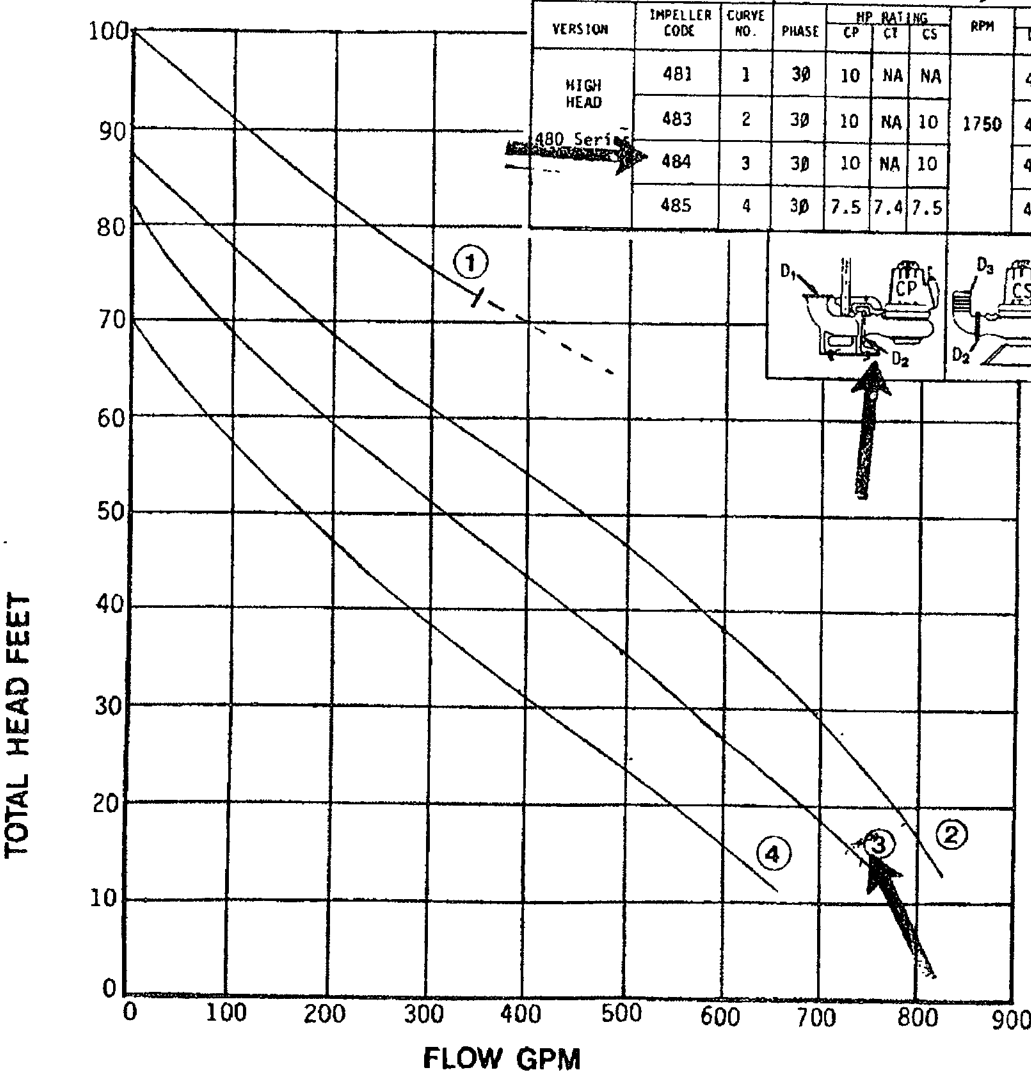
Wastewater Performance Chart (480 Series)

SECTION	PAGE
3127	1A
SUPERSEDES	ISSUED
—	1/84



Individual Curves are in the sequence shown in chart below, Pages 8A - 8D

WASTEWATER IMPELLER CHART												
VERSION	IMPELLER CODE	CURVE NO.	PHASE	HP RATING			RPM	OUTLETS			INLET
				CP	CT	CS		D_1	D_2	D_3	D_4
HIGH HEAD	481	1	3Ø	10	NA	NA	1750	4"	4"	--	--
	483	2	3Ø	10	NA	10		4"	4"	4"	--
480 Series	484	3	3Ø	10	NA	10		4"	4"	4"	--
	485	4	3Ø	7.5	7.4	7.5		4"	4"	4"	4"



NOTE
FAMILY PERFORMANCE CURVES - FOR PRESELECTION ONLY
SEE INDIVIDUAL CURVES IN THIS SECTION FOR FINAL SELECTION

FLYGT CORPORATION
A SUBSIDIARY OF ITT
129 GLOVER AVE., NORWALK, CT. 06856

TCMUD001807

APPENDIX F

TRA FINANCIAL ANALYSIS I

TCMUD001808

APPENDIX F
TRA FINANCIAL ANALYSIS I
TROPHY CLUB MUD

	A	B	C	D	E	
Revenue Estimate						
MUD Sewer Rates						
Minimum Fee per Conn. Per Month	$ 12.71	$ 12.71	$ 12.71	$ 12.71	$ 22.00	
Additional Flow Charge/1000 gallons	$ 2.50	$ 2.50	$ 2.50	$ 2.50	$ 3.25	
Average Gallons per Day	729,000	800,000	729,000	800,000	2,400,000	
Number of connections	3,915	4,296	3,915	4,296	11,101	
Population	9,800	10,754			27,753	
Capita per meter	2.50				2.5	
Avg Daily flow per Conn.	186	186	186	186		
Revenue						
Minimum	$ 597,115.80	$ 655,271.11	$ 597,115.80	$ 655,271.11	$ 2,930,716.80	
Flow	$ 665,212.50	$ 730,000.00	$ 665,212.50	$ 730,000.00	$ 2,847,000.00	
2011 Effluent to Golf Course	$ 80,878.00	$ 80,878.00	$ 80,878.00	$ 80,878.00	$ 80,878.00	
Total Revenue	$ 1,343,206.30	$ 1,466,149.11	$ 1,343,206.30	$ 1,466,149.11	$ 5,858,594.80	
Expenses (Based on 2012-2013 Budget)						
Fixed	$ 437,183.00	$ 437,183.00	$ -	$ -		
Variable/1000 gallons	$ 2.26	$ 2.26	$ -	$ -		
TRA			$ 4.36	$ 4.36		
Collection	$ 459,887.00	$ 504,677.09	$ 459,887.00	$ 504,677.09	$ 1,431,039.93	$ 1,431,039.93
Fixed	$ 437,183.00	$ 437,183.00	$ -	$ -	$ 437,183.00	
Variable	$ 602,150.36	$ 660,796.00	$ -	$ -	$ 1,982,388.00	
Bond Cost					$ 698,400.00	$ 116,400.00
TRA ($4.36/1000 gallons)	$ -	$ -	$ 1,160,130.60	$ 1,273,120.00		$ 3,819,360.00
Collection	$ 459,887.00	$ 504,677.09	$ 459,887.00	$ 504,677.09	$ 1,304,035.14	$ 1,304,035.14
Total Expenses	$ 1,499,220.36	$ 1,602,656.09	$ 1,620,017.60	$ 1,777,797.09	$ 5,853,046.07	$ 6,670,835.07
Difference	$ (156,014.06)	$ (136,506.98)	$ (276,811.30)	$ (311,647.98)		

APPENDIX G

TRA FINANCIAL ANALYSIS II

APPENDIX G
TRA FINANCIAL ANALYSIS II
TROPHY CLUB MUD

	A	B	C	D	E	F	G	H
Revenue Estimate			MUD	TRA	MUD	TRA	MUD	TRA
MUD Sewer Rates								
Minimum Fee per Conn. Per Month	$ 12.71	$ 12.71	$ 17.00		$ 17.00		$ 17.00	
Additional Flow Charge/1000 gallons	$ 2.50	$ 2.50	$ 3.95		$ 4.05		$ 3.90	
Average Gallons per Day	729,000	800,000	1,400,000		1,880,000		2,400,000	
Number of connections	3,915	4,296	5,600		7,520		9,600	
Population	9,800	10,754	14,000		18,800		24,000	
Capita per meter	2.50		2.50		2.50		2.5	
Avg Daily flow per Conn.	186	186						
TRA Costs per 1000 gallons	$4.36	$4.36		$4.656		$ 5.100		$ 5.40
Revenue								
Minimum	$ 597,115.80	$ 655,271.11	$ 1,142,400.00		$ 1,534,080.00		$ 1,958,400.00	
Flow	$ 665,212.50	$ 730,000.00	$ 2,018,450.00		$ 2,779,110.00		$ 3,416,400.00	
2011 Effluent to Golf Course	$ 80,878.00	$ 80,878.00	$ 80,878.00		$ 80,878.00		$ 80,878.00	
Total Revenue	$ 1,343,206.30	$ 1,466,149.11	$ 3,241,728.00		$ 4,394,068.00		$ 5,455,678.00	
Expenses (Based on 2012-2013 Budget)								
Fixed (WWTP)	$ 437,183.00	$ 437,183.00						
Variable/1000 gallons (WWTP)	$ 2.26	$ 2.26						
Collection	$ 459,887.00	$ 504,677.09	$ 657,820.49	$ 657,820.49	$ 883,358.94	$ 883,358.94	$ 1,127,692.26	$ 1,127,692.26
Fixed	$ 437,183.00	$ 437,183.00	$ 437,183.00		$ 437,183.00		$ 437,183.00	
Variable/Pumping Costs (TRA)	$ 602,150.36	$ 660,796.00	$ 1,156,393.00	$ 21,400.00	$ 1,552,870.60	$ 28,735.00	$ 1,982,388.00	$ 47,422.00
Bond Cost			$ 310,400.00	$ 186,240.00	$ 620,800.00	$ 186,240.00	$ 776,000.00	$ 186,240.00
TRA Treatment Cost	$ -	$ -		$ 2,379,216.00		$ 3,499,620.00		$ 4,726,896.00
Collection	$ 459,887.00	$ 504,677.09	$ 657,820.49	$ 657,820.49	$ 883,358.94	$ 883,358.94	$ 1,127,692.26	$ 1,127,692.26
Total Expenses	$ 1,499,220.36	$ 1,602,656.09	$ 3,219,616.97	$ 3,902,496.97	$ 4,377,571.47	$ 5,481,312.87	$ 5,450,955.52	$ 7,215,942.52
Revenue minus Expenses	$ (156,014.06)	$ (136,506.98)	$ 22,111.03	$ (660,768.97)	$ 16,496.53	$ (1,087,244.87)	$ 4,722.48	$ (1,760,264.52)
Difference Between TRA								
Bond			$4,000,000	$2,400,000	$8,000,000		$ 10,000,000	

TCMUD001811

APPENDIX H

TRA DENTON CREEK REGIONAL WASTEWATER SYSTEM RATE HISTORY

TCMUD001812

APPENDIX H

TRA Denton Creek Regional Wastewater System Rate History
Current and Historical System Financial and Flow Data

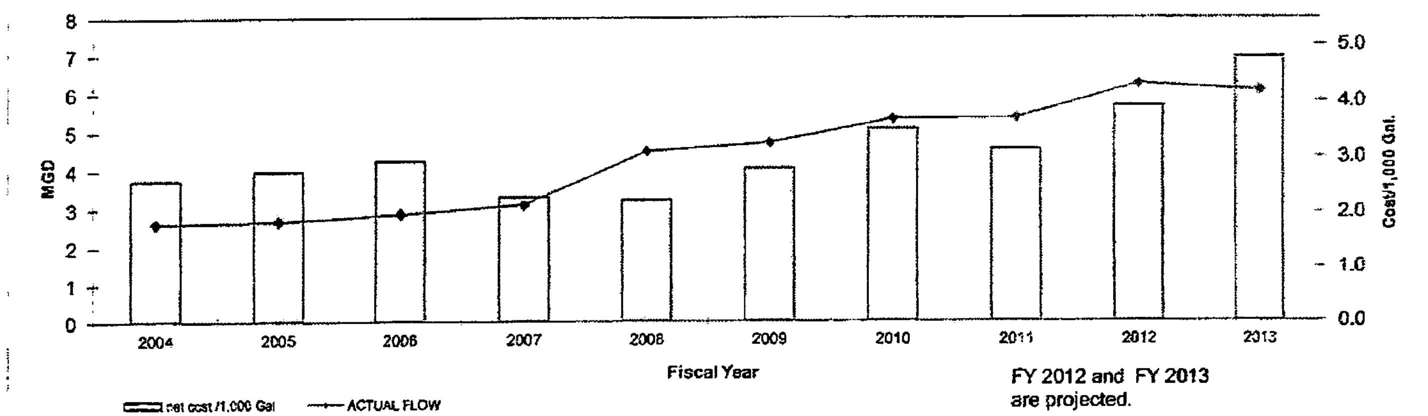
7/27/2012

FISCAL YEAR	BUDGETED EXPENDITURES	ACTUAL EXPENDITURES	BUDGETED REVENUES	ACTUAL REVENUES	PROJECTED FLOWS	ACTUAL FLOWS	PROJECTED NET COST/1000 GAL	ACTUAL NET COST/1000 GAL
2004	$2,625,300	$2,586,997	$2,577,940	$2,504,205	2.862 MGD	2.664 MGD	$2.461	$2.568
2005	$2,734,010	$2,656,025	$2,984,590	$2,860,245	2.781 MGD	2.857 MGD	$2.932	$2.735
2006	$3,262,070	$3.345,787	$3,293,480	$3,296,986	2.981 MGD	3.096 MGD	$3.027	$2.918
2007	$3,556,560	$3,743,159	$3,660,270	$3,730.713	3.303 MGD	4.483 MGD	$2.964	$2.280
2008	$4,318,480	$4.569,793	$4,215,450	$3,831,521	3.838 MGD	4.706 MGD	$3.001	$2.225
2009	$5.445,740	$5,910,776	$5,041,250	$5,446,969	4.881 MGD	5.323 MGD	$2.822	$2.796
2010	$6,808,900	$6,196,819	$7,373,370	$6,822,754	**5.154 MGD	5.963 MGD	**$3.919	$3.502
2011	$7,860,660	$7,153,644	$7,968,980	$7,341,790	6.239 MGD	5.353 MGD	$3.135	$3.757
2012	$8,198,410	*	$8,910,230	*	6.239 MGD	*	$3.902	*
2013	$9,668,470	*	$10,590,410	*	6.069 MGD	*	$4.781	*

* Unknown at this time. 2009 and prior years based on no contract minimum flows from the Town of Argyle.

** 2010 Revised to reflect Town of Argyle contract minimum flows which began January 1, 2010.

Denton Creek Regional Wastewater System
Flow & Net Cost/1,000 Gal



FY 2012 and FY 2013 are projected.

APPENDIX I

OPINION OF PROBABLE CONSTRUCTION COSTS (OPCC)

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COSTS
WASTE WATER TREATMENT FACILITY EXPANSION - TCMUD #1
OPTION 1 - CAS - PHASE I (1.41 MGD)
THE WALLACE GROUP - PROJECT NO. 22650-22

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
CAS TREATMENT SYSTEM					
1	Concrete Basin and Construction - Vertical	CY	365	$ 600.00	$ 219,000.00
2	Concrete Basin and Construction - Horizontal	CY	285	$ 350.00	$ 99,750.00
3	Aeration Basin Equipment & Piping	LS	1	$ 150,000.00	$ 150,000.00
4	Aeration Basin Equipment & Piping Installation	LS	1	$ 60,000.00	$ 60,000.00
5	Aluminum Handrail	LF	360	$ 45.00	$ 16,200.00
6	Blowers & Piping	LS	1	$ 300,000.00	$ 300,000.00
7	Blowers & Piping - Installation	LS	1	$ 75,000.00	$ 75,000.00
8	Extend Existing Concrete Basin Walls	EA	2	$ 25,000.00	$ 50,000.00
9	DO/ORP Control	LS	1	$ 25,000.00	$ 25,000.00
				SUBTOTAL	**$ 994,950.00**
RAS/WAS SUBMERSIBLE LIFT STATION REHAB					
10	Replace Submersible Pumps - 15 Hp	EA	3	$ 16,000.00	$ 48,000.00
11	Upgrade Lift Station Piping & Valving	LS	1	$ 25,000.00	$ 25,000.00
12	Upgrade Forcemain	LF	145	$ 50.00	$ 7,250.00
13	Demolition & Preparation	LS	1	$ 10,000.00	$ 10,000.00
14	Painting & Preparation	LS	1	$ 3,500.00	$ 3,500.00
15	Bypass Pumping	LS	1	$ 5,000.00	$ 5,000.00
				SUBTOTAL	**$ 98,750.00**
TERTIARY FINAL FILTRATION					
16	Demolition & Basin Preparation	LS	1	$ 20,000.00	$ 20,000.00
17	Disk Filter Equipment & Installation	LS	1	$ 470,000.00	$ 470,000.00
18	Upgrade Basin Piping & Valving	LS	1	$ 20,000.00	$ 20,000.00
19	Painting & Preparation	LS	1	$ 5,000.00	$ 5,000.00
				SUBTOTAL	**$ 515,000.00**
WEIR CONTROL STRUCTURES					
20	Concrete Basin and Construction - Vertical	CY	90	$ 525.00	$ 47,250.00
21	Concrete Basin and Construction - Horizontal	CY	60	$ 325.00	$ 19,500.00
22	Adjustable Wier Gate	EA	12	$ 5,000.00	$ 60,000.00
23	Equipment Installation	LS	2	$ 7,500.00	$ 15,000.00
24	Aluminum Grating & Treading	SF	320	$ 50.00	$ 16,000.00
25	Hand Rail - Sch. 40 Aluminum	LF	240	$ 45.00	$ 10,800.00
				SUBTOTAL	**$ 168,550.00**
UV DISINFECTION					
26	Concrete Basin and Construction - Vertical	CY	45	$ 550.00	$ 24,750.00
27	Concrete Basin and Construction - Horizontal	CY	20	$ 350.00	$ 7,000.00
28	UV Equipment	EA	1	$ 225,000.00	$ 225,000.00
29	UV Equipment Installation	LS	1	$ 25,000.00	$ 25,000.00
30	Retrofitting To Existing UV System	LS	1	$ 25,000.00	$ 25,000.00
31	Aluminum Grating & Treading	SF	200	$ 50.00	$ 10,000.00
32	Hand Rail - Sch. 40 Aluminum	LF	150	$ 45.00	$ 6,750.00
				SUBTOTAL	**$ 323,500.00**

TCMUD001815

ITEM	DESCRIPTION	UNIT	QUANTITY		UNIT COST		TOTAL
AEROBIC DIGESTION							
33	Concrete Basin and Construction - Vertical	CY	135	$	600.00	$	81,000.00
34	Concrete Basin and Construction - Horizontal	CY	80	$	350.00	$	28,000.00
35	Aeration Equipment & Piping	LS	1	$	40,000.00	$	40,000.00
36	Aeration Equipment & Piping Installation	LS	1	$	20,000.00	$	20,000.00
37	Aluminum Handrail	LF	120	$	45.00	$	5,400.00
38	Blowers & Piping	LS	1	$	90,000.00	$	90,000.00
39	DO/ORP Control	LS	1	$	15,000.00	$	15,000.00
					SUBTOTAL	**$**	**279,400.00**
YARD PIPING							
40	8-inch DIP	LF	250	$	40.00	$	10,000.00
41	20-inch DIP	LF	215	$	160.00	$	34,400.00
42	24-inch DIP	LF	1,305	$	170.00	$	221,850.00
43	Pipe Connections to Existing System	EA	10	$	1,500.00	$	15,000.00
					SUBTOTAL	**$**	**271,250.00**
MISCELLANEOUS							
44	Final Grading & Seeding	LS	1	$	7,500.00	$	7,500.00
45	Demolition	LS	1	$	30,000.00	$	30,000.00
46	Paved Roadway - Relocation	SY	470	$	60.00	$	28,200.00
47	Entrance Gate Relocation	LS	1	$	7,500.00	$	7,500.00
48	MCC/Controls Building Expansion	SF	800	$	200.00	$	160,000.00
49	SCADA Upgrade	LS	1	$	75,000.00	$	75,000.00
50	Dewatering	LS	1	$	25,000.00	$	25,000.00
51	Generator	LS	1	$	295,000.00	$	295,000.00
52	Electrical	LS	1	$	225,000.00	$	225,000.00
					SUBTOTAL	**$**	**853,200.00**
					CONTINGENCY (10%)	**$**	**350,000.00**
					CONSTRUCTION TOTAL	**$**	**3,854,600.00**

TCMUD001816

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COSTS
WASTE WATER TREATMENT FACILITY EXPANSION - TCMUD #1
OPTION 1 - CAS - PHASE II (1.88 MGD)
THE WALLACE GROUP - PROJECT NO. 22650-22

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
CAS TREATMENT SYSTEM					
1	Concrete Basin and Construction - Vertical	CY	295	$ 600.00	$ 177,000.00
2	Concrete Basin and Construction - Horizontal	CY	285	$ 350.00	$ 99,750.00
3	Aeration Basin Equipment & Piping	LS	1	$ 150,000.00	$ 150,000.00
4	Aeration Basin Equipment & Piping Installation	LS	1	$ 60,000.00	$ 60,000.00
5	Aluminum Handrail	LF	300	$ 45.00	$ 13,500.00
6	Blowers & Piping	LS	1	$ 280,000.00	$ 280,000.00
7	Blowers & Piping - Installation	LS	1	$ 75,000.00	$ 75,000.00
8	DO/ORP Control	LS	1	$ 25,000.00	$ 25,000.00
				SUBTOTAL	**$ 880,250.00**
RAS/WAS DRY-PIT LIFT STATION REHAB					
9	Upgrade Sewage Pumps - Drives & Motors	EA	3	$ 12,500.00	$ 37,500.00
10	Upgrade Lift Station Piping & Valving	LS	1	$ 25,000.00	$ 25,000.00
11	Upgrade Forcemain	LF	160	$ 50.00	$ 8,000.00
12	Demolition & Preparation	LS	1	$ 10,000.00	$ 10,000.00
13	Painting & Preparation	LS	1	$ 3,500.00	$ 3,500.00
14	Bypass Pumping	LS	1	$ 5,000.00	$ 5,000.00
				SUBTOTAL	**$ 89,000.00**
SCUM SUBMERSIBLE LIFT STATION UPGRADE					
15	Replace Submersible Pump	EA	1	$ 12,500.00	$ 12,500.00
16	Install New 8-inch Clarifier Piping	LF	60	$ 45.00	$ 2,700.00
17	Demolition & Preparation	LS	1	$ 3,500.00	$ 3,500.00
18	Painting & Preparation	LS	1	$ 1,500.00	$ 1,500.00
				SUBTOTAL	**$ 20,200.00**
TERTIARY FINAL FILTRATION					
19	Demolition & Basin Preparation	LS	1	$ 5,000.00	$ 5,000.00
20	Disk Filter Equipment & Installation	LS	1	$ 195,000.00	$ 195,000.00
21	Upgrade Basin Piping & Valving	LS	1	$ 5,000.00	$ 5,000.00
22	Painting & Preparation	LS	1	$ 2,500.00	$ 2,500.00
				SUBTOTAL	**$ 207,500.00**
NEW CLARIFIER					
23	Concrete Basin and Construction - Vertical	CY	245	$ 600.00	$ 147,000.00
24	Concrete Basin and Construction - Horizontal	CY	180	$ 350.00	$ 63,000.00
24	Clarifier Equipment	LS	1	$ 165,000.00	$ 165,000.00
25	Equipment Installation	LS	1	$ 60,000.00	$ 60,000.00
26	Painting & Preparation	LS	1	$ 7,500.00	$ 7,500.00
27	Hand Rail - Sch. 40 Aluminum	LF	260	$ 45.00	$ 11,700.00
				SUBTOTAL	**$ 454,200.00**
UV DISINFECTION					
28	UV Equipment	EA	1	$ 180,000.00	$ 180,000.00
29	UV Equipment Installation	LS	1	$ 25,000.00	$ 25,000.00
				SUBTOTAL	**$ 205,000.00**

TCMUD001817

ITEM	DESCRIPTION	UNIT	QUANTITY		UNIT COST		TOTAL
FINE SCREENING & GRIT FACILITY							
30	Concrete Basin and Construction - Vertical	CY	235	$	525.00	$	123,375.00
31	Concrete Basin and Construction - Horizontal	CY	75	$	350.00	$	26,250.00
32	Fine Screening Equipment & Installation	LS	1	$	245,000.00	$	245,000.00
33	Grit Removal Equipment & Installation	LS	1	$	210,000.00	$	210,000.00
34	Aluminum Grating & Stairs	LS	1	$	20,000.00	$	20,000.00
34	Aluminum Handrail	LF	140	$	45.00	$	6,300.00
35	Facility Piping, Valves & Gates	LS	1	$	20,000.00	$	20,000.00
36	Painting & Preparation	LS	1	$	7,500.00	$	7,500.00
					SUBTOTAL	**$**	**658,425.00**
INFLUENT LIFT STATION UPGRADES							
37	Replace Submersible Pumps - 75 Hp	EA	2	$	100,000.00	$	200,000.00
38	Upgrade Lift Station Controls, Piping & Valving	LS	1	$	65,000.00	$	65,000.00
39	Upgrade Forcemain - 18-inch	LF	220	$	225.00	$	49,500.00
40	Mechanical Bar Screen Upgrade	EA	1	$	290,000.00	$	290,000.00
41	Demolition & Preparation	LS	1	$	10,000.00	$	10,000.00
42	Painting & Preparation	LS	1	$	6,000.00	$	6,000.00
					SUBTOTAL	**$**	**620,500.00**
YARD PIPING							
43	8-inch DIP	LF	255	$	65.00	$	16,575.00
44	20-inch DIP	LF	235	$	160.00	$	37,600.00
45	24-inch DIP	LF	550	$	180.00	$	99,000.00
46	Pipe Connections to Existing System	EA	8	$	1,500.00	$	12,000.00
					SUBTOTAL	**$**	**165,175.00**
MISCELLANEOUS							
47	Final Grading & Seeding	LS	1	$	10,000.00	$	10,000.00
48	Demolition	LS	1	$	20,000.00	$	20,000.00
49	SCADA Upgrade	LS	1	$	50,000.00	$	50,000.00
50	Dewatering	LS	1	$	25,000.00	$	25,000.00
51	Electrical	LS	1	$	281,000.00	$	281,000.00
					SUBTOTAL	**$**	**386,000.00**
					CONTINGENCY (10%)	**$**	**369,000.00**
					CONSTRUCTION TOTAL	**$**	**4,055,250.00**

TCMUD001818

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COSTS
WASTE WATER TREATMENT FACILITY EXPANSION - TCMUD #1
OPTION 1 - CAS - PHASE III (2.35 MGD)
THE WALLACE GROUP - PROJECT NO. 22650-22

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
CAS TREATMENT SYSTEM					
1	Concrete Basin and Construction - Vertical	CY	295	$ 600.00	$ 177,000.00
2	Concrete Basin and Construction - Horizontal	CY	285	$ 350.00	$ 99,750.00
3	Aeration Basin Equipment & Piping	LS	1	$ 150,000.00	$ 150,000.00
4	Aeration Basin Equipment & Piping Installation	LS	1	$ 60,000.00	$ 60,000.00
5	Aluminum Handrail	LF	300	$ 45.00	$ 13,500.00
6	Blowers & Piping	LS	1	$ 270,000.00	$ 270,000.00
7	Blowers & Piping - Installation	LS	1	$ 70,000.00	$ 70,000.00
8	DO/ORP Control	LS	1	$ 25,000.00	$ 25,000.00
				SUBTOTAL	**$ 865,250.00**
UV DISINFECTION					
9	UV Equipment	EA	1	$ 225,000.00	$ 225,000.00
10	UV Equipment Installation	LS	1	$ 25,000.00	$ 25,000.00
				SUBTOTAL	**$ 250,000.00**
INFLUENT LIFT STATION UPGRADES					
11	Replace Submersible Pumps - 75 Hp	EA	2	$ 10,000.00	$ 20,000.00
12	Upgrade Lift Station Controls, Piping & Valving	LS	1	$ 40,000.00	$ 40,000.00
13	Demolition & Preparation	LS	1	$ 7,500.00	$ 7,500.00
14	Painting & Preparation	LS	1	$ 6,000.00	$ 6,000.00
				SUBTOTAL	**$ 73,500.00**
AEROBIC DIGESTION					
15	Concrete Basin and Construction - Vertical	CY	90	$ 600.00	$ 54,000.00
16	Concrete Basin and Construction - Horizontal	CY	80	$ 350.00	$ 28,000.00
17	Aeration Equipment & Piping	LS	1	$ 40,000.00	$ 40,000.00
18	Aeration Equipment & Piping Installation	LS	1	$ 20,000.00	$ 20,000.00
19	Aluminum Handrail	LF	120	$ 45.00	$ 5,400.00
20	Blowers & Piping	LS	1	$ 90,000.00	$ 90,000.00
21	DO/ORP Control	LS	1	$ 15,000.00	$ 15,000.00
				SUBTOTAL	**$ 252,400.00**
EFFLUENT LIFT STATION					
1	Replace Submersible Pumps	EA	4	$ 60,000.00	$ 240,000.00
2	Upgrade Lift Station Controls, Piping & Valving	LS	1	$ 40,000.00	$ 40,000.00
3	Demolition & Preparation	LS	1	$ 7,500.00	$ 7,500.00
4	Painting & Preparation	LS	1	$ 6,000.00	$ 6,000.00
				SUBTOTAL	**$ 293,500.00**
YARD PIPING					
22	6-inch DIP	LF	180	$ 50.00	$ 9,000.00
23	8-inch DIP	LF	150	$ 65.00	$ 9,750.00
24	24-inch DIP	LF	340	$ 180.00	$ 61,200.00
25	Pipe Connections to Existing System	EA	8	$ 1,500.00	$ 12,000.00
				SUBTOTAL	**$ 82,950.00**

TCMUD001819

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
MISCELLANEOUS					
26	Final Grading & Seeding	LS	1	$ 8,000.00	$ 8,000.00
27	Demolition	LS	1	$ 15,000.00	$ 15,000.00
28	SCADA Upgrade	LS	1	$ 35,000.00	$ 35,000.00
29	Dewatering	LS	1	$ 25,000.00	$ 25,000.00
30	Electrical	LS	1	$ 154,000.00	$ 154,000.00
				SUBTOTAL	**$ 237,000.00**
				CONTINGENCY (10%)	**$ 205,000.00**
				CONSTRUCTION TOTAL	**$ 1,966,100.00**

TCMUD001820

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COSTS
WASTE WATER TREATMENT FACILITY EXPANSION - TCMUD #1
OPTION 2 - MBR - PHASE I (1.38 MGD)
THE WALLACE GROUP - PROJECT NO. 22650-22

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
MBR TREATMENT SYSTEM (1 NEW TRAIN/BASIN)					
1	Concrete Basin and Construction - Vertical	CY	365	$ 600.00	$ 219,000.00
2	Concrete Basin and Construction - Horizontal	CY	285	$ 350.00	$ 99,750.00
3	MBR Basin Equipment, Controls & Piping	LS	1	$ 1,910,000.00	$ 1,910,000.00
4	MBR Basin Equipment, Controls & Piping Installation	LS	1	$ 200,000.00	$ 200,000.00
5	Aluminum Walkway & Handrail	LF	240	$ 145.00	$ 34,800.00
6	Aluminum Stairway	EA	1	$ 20,000.00	$ 20,000.00
7	Blower Piping & Installation	LS	1	$ 65,000.00	$ 65,000.00
				SUBTOTAL	**$ 2,548,550.00**
RAS/WAS SUBMERSIBLE LIFT STATION REHAB					
8	Replace Submersible Pumps - 15 Hp	EA	3	$ 16,000.00	$ 48,000.00
9	Upgrade Lift Station Piping & Valving	LS	1	$ 25,000.00	$ 25,000.00
10	Upgrade Forcemain	LF	145	$ 50.00	$ 7,250.00
11	Demolition & Preparation	LS	1	$ 10,000.00	$ 10,000.00
12	Painting & Preparation	LS	1	$ 3,500.00	$ 3,500.00
13	Bypass Pumping	LS	1	$ 5,000.00	$ 5,000.00
				SUBTOTAL	**$ 98,750.00**
FINE SCREENING & GRIT FACILITY					
14	Concrete Basin and Construction - Vertical	CY	235	$ 525.00	$ 123,375.00
15	Concrete Basin and Construction - Horizontal	CY	75	$ 350.00	$ 26,250.00
16	Fine Screening Equipment Installation	LS	1	$ 35,000.00	$ 35,000.00
17	Grit Removal Equipment & Installation	LS	1	$ 200,000.00	$ 200,000.00
18	Aluminum Grating & Stairs	LS	1	$ 20,000.00	$ 20,000.00
19	Aluminum Handrail	LF	140	$ 45.00	$ 6,300.00
20	Facility Piping, Valves & Gates	LS	1	$ 20,000.00	$ 20,000.00
21	Painting & Preparation	LS	1	$ 7,500.00	$ 7,500.00
				SUBTOTAL	**$ 438,425.00**
WEIR CONTROL STRUCTURES					
22	Concrete Basin and Construction - Vertical	CY	45	$ 525.00	$ 23,625.00
23	Concrete Basin and Construction - Horizontal	CY	30	$ 325.00	$ 9,750.00
24	Adjustable Wier Gate	EA	6	$ 5,000.00	$ 30,000.00
25	Equipment Installation	LS	1	$ 7,500.00	$ 7,500.00
26	Aluminum Grating & Treading	SF	160	$ 50.00	$ 8,000.00
27	Hand Rail - Sch. 40 Aluminum	LF	120	$ 45.00	$ 5,400.00
				SUBTOTAL	**$ 84,275.00**
UV DISINFECTION					
28	Concrete Basin and Construction - Vertical	CY	45	$ 550.00	$ 24,750.00
29	Concrete Basin and Construction - Horizontal	CY	20	$ 350.00	$ 7,000.00
30	UV Equipment	EA	1	$ 225,000.00	$ 225,000.00
31	UV Equipment Installation	LS	1	$ 25,000.00	$ 25,000.00
32	Retrofitting To Existing UV System	LS	1	$ 25,000.00	$ 25,000.00
33	Aluminum Grating & Treading	SF	200	$ 50.00	$ 10,000.00
34	Hand Rail - Sch. 40 Aluminum	LF	150	$ 45.00	$ 6,750.00
				SUBTOTAL	**$ 323,500.00**

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL	
AEROBIC DIGESTION							
35	Concrete Basin and Construction - Vertical	CY	135	$	600.00	$	81,000.00
36	Concrete Basin and Construction - Horizontal	CY	80	$	350.00	$	28,000.00
37	Aeration Equipment & Piping	LS	1	$	40,000.00	$	40,000.00
38	Aeration Equipment & Piping Installation	LS	1	$	20,000.00	$	20,000.00
39	Aluminum Handrail	LF	120	$	45.00	$	5,400.00
40	Blowers & Piping	LS	1	$	90,000.00	$	90,000.00
41	DO/ORP Control	LS	1	$	15,000.00	$	15,000.00
					SUBTOTAL	**$**	**279,400.00**
YARD PIPING							
42	8-inch DIP	LF	370	$	40.00	$	14,800.00
43	20-inch DIP	LF	215	$	160.00	$	34,400.00
44	24-inch DIP	LF	200	$	180.00	$	36,000.00
45	Pipe Connections to Existing System	EA	8	$	1,500.00	$	12,000.00
					SUBTOTAL	**$**	**82,400.00**
MISCELLANEOUS							
46	Final Grading & Seeding	LS	1	$	7,500.00	$	7,500.00
47	Demolition	LS	1	$	30,000.00	$	30,000.00
48	Paved Roadway - Relocation	SY	470	$	60.00	$	28,200.00
49	Entrance Gate Relocation	LS	1	$	7,500.00	$	7,500.00
50	MCC/Controls Building Expansion	SF	800	$	200.00	$	160,000.00
51	SCADA Upgrade	LS	1	$	75,000.00	$	75,000.00
52	Dewatering	LS	1	$	25,000.00	$	25,000.00
53	Generator	LS	1	$	295,000.00	$	295,000.00
54	Electrical	LS	1	$	328,000.00	$	328,000.00
					SUBTOTAL	**$**	**956,200.00**
					CONTINGENCY (10%)	**$**	**481,000.00**
					COSNTRUCTION TOTAL	**$**	**5,292,500.00**

TCMUD001822

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COSTS
WASTE WATER TREATMENT FACILITY EXPANSION - TCMUD #1
OPTION 2 - MBR - PHASE II (2.40 MGD)
THE WALLACE GROUP - PROJECT NO. 22650-22

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
MBR TREATMENT SYSTEM (4 RETROFIT TRAINS/BASINS)					
1	Concrete Basin Modifications and Construction	LS	1	$ 150,000.00	$ 150,000.00
2	MBR Basin Equipment, Controls & Piping	LS	1	$ 2,795,000.00	$ 2,795,000.00
3	MBR Basin Equipment, Controls & Piping Installation	LS	1	$ 280,000.00	$ 280,000.00
4	Aluminum Walkway & Handrail	LF	220	$ 145.00	$ 31,900.00
5	Blower Piping & Installation	LS	1	$ 45,000.00	$ 45,000.00
				SUBTOTAL	**$ 3,301,900.00**
INFLUENT LIFT STATION UPGRADES					
6	Replace Submersible Pumps - 75 Hp	EA	4	$ 100,000.00	$ 400,000.00
7	Upgrade Lift Station Controls, Piping & Valving	LS	1	$ 75,000.00	$ 75,000.00
8	Upgrade Forcemain - 18-inch	LF	220	$ 225.00	$ 49,500.00
9	Mechanical Bar Screen Upgrade	EA	1	$ 290,000.00	$ 290,000.00
10	Demolition & Preparation	LS	1	$ 15,000.00	$ 15,000.00
11	Painting & Preparation	LS	1	$ 7,500.00	$ 7,500.00
				SUBTOTAL	**$ 837,000.00**
EQ BASINS & EQ LIFT STATION					
12	Demolition of Clarifier Equipment	LS	1	$ 15,000.00	$ 15,000.00
13	Concrete Basin Preparation and Repair	EA	3	$ 7,500.00	$ 22,500.00
14	Modify Forcemains, Piping & Controls	LS	1	$ 50,000.00	$ 50,000.00
15	Painting & Preparation	LS	1	$ 7,500.00	$ 7,500.00
				SUBTOTAL	**$ 95,000.00**
WEIR CONTROL STRUCTURES					
16	Concrete Basin and Construction - Vertical	CY	45	$ 525.00	$ 23,625.00
17	Concrete Basin and Construction - Horizontal	CY	30	$ 325.00	$ 9,750.00
18	Adjustable Wier Gate	EA	6	$ 5,000.00	$ 30,000.00
19	Equipment Installation	LS	1	$ 7,500.00	$ 7,500.00
20	Aluminum Grating & Treading	SF	160	$ 50.00	$ 8,000.00
21	Hand Rail - Sch. 40 Aluminum	LF	120	$ 45.00	$ 5,400.00
				SUBTOTAL	**$ 84,275.00**
UV DISINFECTION					
22	UV Equipment	EA	2	$ 225,000.00	$ 450,000.00
23	UV Equipment Installation	LS	2	$ 25,000.00	$ 50,000.00
				SUBTOTAL	**$ 500,000.00**
AEROBIC DIGESTION					
24	Concrete Basin and Construction - Vertical	CY	90	$ 600.00	$ 54,000.00
25	Concrete Basin and Construction - Horizontal	CY	80	$ 350.00	$ 28,000.00
26	Aeration Equipment & Piping	LS	1	$ 40,000.00	$ 40,000.00
27	Aeration Equipment & Piping Installation	LS	1	$ 20,000.00	$ 20,000.00
28	Aluminum Handrail	LF	120	$ 45.00	$ 5,400.00
29	Blowers & Piping	LS	1	$ 90,000.00	$ 90,000.00
30	DO/ORP Control	LS	1	$ 15,000.00	$ 15,000.00
				SUBTOTAL	**$ 252,400.00**

TCMUD001823

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
EFFLUENT LIFT STATION					
31	Replace Submersible Pumps	EA	4	$ 60,000.00	$ 240,000.00
32	Upgrade Lift Station Controls, Piping & Valving	LS	1	$ 40,000.00	$ 40,000.00
33	Demolition & Preparation	LS	1	$ 7,500.00	$ 7,500.00
34	Painting & Preparation	LS	1	$ 6,000.00	$ 6,000.00
				SUBTOTAL	**$ 293,500.00**
YARD PIPING					
35	8-inch DIP	LF	250	$ 40.00	$ 10,000.00
36	24-inch DIP	LF	355	$ 180.00	$ 63,900.00
37	Pipe Connections to Existing System	EA	5	$ 1,500.00	$ 7,500.00
				SUBTOTAL	**$ 71,400.00**
MISCELLANEOUS					
38	Final Grading & Seeding	LS	1	$ 7,500.00	$ 7,500.00
39	Demolition	LS	1	$ 30,000.00	$ 30,000.00
40	SCADA Upgrade	LS	1	$ 75,000.00	$ 75,000.00
41	Dewatering	LS	1	$ 10,000.00	$ 10,000.00
42	Electrical	LS	1	$ 408,000.00	$ 408,000.00
				SUBTOTAL	**$ 530,500.00**
				CONTINGENCY (10%)	**$ 597,000.00**
				CONSTRUCTION TOTAL	**$ 6,562,975.00**

TCMUD001824

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COSTS
WASTE WATER TREATMENT FACILITY EXPANSION - TCMUD #1
OPTION 3 - BIOMAG - PHASE I (2.40 MGD)
THE WALLACE GROUP - PROJECT NO. 22650-22

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
BIOMAG ENHANCED TREATMENT SYSTEM					
1	Concrete Basin Modifications and Construction	LS	1	$ 100,000.00	$ 100,000.00
2	Concrete Basin and Construction - Vertical	LS	270	$ 600.00	$ 162,000.00
3	Concrete Basin and Construction - Horizontal	LS	185	$ 350.00	$ 64,750.00
4	BioMag System, Equipment & Piping	LS	1	$ 3,595,000.00	$ 3,595,000.00
5	BioMag System, Equipment & Piping Installation	LS	1	$ 360,000.00	$ 360,000.00
6	Aluminum Walkway & Handrail	LF	250	$ 145.00	$ 36,250.00
7	Aluminum Stairway	EA.	1	$ 20,000.00	$ 20,000.00
8	Blowers & Piping Upgrade	LS	1	$ 295,000.00	$ 295,000.00
9	Extend Existing Concrete Basin Walls	EA	2	$ 25,000.00	$ 50,000.00
10	Alkalinity & Coagulant Pump Station & Tankage	LS	1	$ 200,000.00	$ 200,000.00
				SUBTOTAL	**$ 4,883,000.00**
RAS/WAS SUBMERSIBLE LIFT STATION REHAB					
11	Replace Submersible Pumps - 15 Hp	EA	3	$ 16,000.00	$ 48,000.00
12	Upgrade Sewage Pumps - Drives & Motors	EA	3	$ 12,500.00	$ 37,500.00
13	Upgrade Lift Station Piping & Valving	EA	2	$ 25,000.00	$ 50,000.00
14	Upgrade Forcemain	LF	205	$ 50.00	$ 10,250.00
15	Demolition & Preparation	LS	1	$ 20,000.00	$ 20,000.00
16	Painting & Preparation	LS	1	$ 7,000.00	$ 7,000.00
17	Bypass Pumping	LS	1	$ 10,000.00	$ 10,000.00
				SUBTOTAL	**$ 182,750.00**
INFLUENT LIFT STATION UPGRADES					
18	Replace Submersible Pumps - 75 Hp	EA	2	$ 100,000.00	$ 200,000.00
19	Upgrade Lift Station Controls, Piping & Valving	LS	1	$ 65,000.00	$ 65,000.00
20	Upgrade Forcemain - 18-inch	LF	220	$ 225.00	$ 49,500.00
21	Mechanical Bar Screen Upgrade	EA	1	$ 290,000.00	$ 290,000.00
22	Demolition & Preparation	LS	1	$ 10,000.00	$ 10,000.00
23	Painting & Preparation	LS	1	$ 6,000.00	$ 6,000.00
				SUBTOTAL	**$ 620,500.00**
WEIR CONTROL STRUCTURES					
24	Concrete Basin and Construction - Vertical	CY	70	$ 525.00	$ 36,750.00
25	Concrete Basin and Construction - Horizontal	CY	40	$ 325.00	$ 13,000.00
26	Adjustable Wier Gate	EA	8	$ 5,000.00	$ 40,000.00
27	Equipment Installation	LS	2	$ 7,500.00	$ 15,000.00
28	Aluminum Grating & Treading	SF	215	$ 50.00	$ 10,750.00
29	Hand Rail - Sch. 40 Aluminum	LF	170	$ 45.00	$ 7,650.00
				SUBTOTAL	**$ 123,150.00**
UV DISINFECTION					
30	Concrete Basin and Construction - Vertical	CY	45	$ 550.00	$ 24,750.00
31	Concrete Basin and Construction - Horizontal	CY	20	$ 350.00	$ 7,000.00
32	UV Equipment	EA	1	$ 225,000.00	$ 225,000.00
33	UV Equipment Installation	LS	1	$ 25,000.00	$ 25,000.00
34	Retrofitting To Existing UV System	LS	1	$ 25,000.00	$ 25,000.00
35	Aluminum Grating & Treading	SF	200	$ 25.00	$ 5,000.00
36	Hand Rail - Sch. 40 Aluminum	LF	150	$ 45.00	$ 6,750.00
				SUBTOTAL	**$ 318,500.00**

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
AEROBIC DIGESTION					
37	Concrete Basin and Construction - Vertical	CY	135	$ 600.00	$ 81,000.00
38	Concrete Basin and Construction - Horizontal	CY	80	$ 350.00	$ 28,000.00
39	Aeration Equipment & Piping	LS	1	$ 40,000.00	$ 40,000.00
40	Aeration Equipment & Piping Installation	LS	1	$ 20,000.00	$ 20,000.00
41	Aluminum Handrail	LF	120	$ 45.00	$ 5,400.00
42	Blowers & Piping	LS	1	$ 90,000.00	$ 90,000.00
43	DO/ORP Control	LS	1	$ 15,000.00	$ 15,000.00
				SUBTOTAL	**$ 279,400.00**
SHEAR MILL FACILITY & LIFT STATION					
44	Metal Building & Storage	SF	1,500	$ 125.00	$ 187,500.00
45	WAS Lift Station	LS	1	$ 175,000.00	$ 175,000.00
46	Forcemain & Appurtenances	LF	240	$ 50.00	$ 12,000.00
47	Painting & Preparation	LS	1	$ 6,000.00	$ 6,000.00
				SUBTOTAL	**$ 380,500.00**
YARD PIPING					
48	8-inch DIP	LF	400	$ 40.00	$ 16,000.00
49	20-inch DIP	LF	355	$ 160.00	$ 56,800.00
50	24-inch DIP	LF	875	$ 170.00	$ 148,750.00
51	Pipe Connections to Existing System	EA	12	$ 1,500.00	$ 18,000.00
				SUBTOTAL	**$ 223,550.00**
MISCELLANEOUS					
52	Final Grading & Seeding	LS	1	$ 7,500.00	$ 7,500.00
53	Demolition	LS	1	$ 30,000.00	$ 30,000.00
54	Paved Roadway - Relocation	SY	470	$ 60.00	$ 28,200.00
55	Entrance Gate Relocation	LS	1	$ 7,500.00	$ 7,500.00
56	MCC/Controls Building Expansion	SF	800	$ 200.00	$ 160,000.00
57	SCADA Upgrade	LS	1	$ 75,000.00	$ 75,000.00
58	Dewatering	LS	1	$ 20,000.00	$ 20,000.00
59	Generator	LS	1	$ 295,000.00	$ 295,000.00
60	Electrical	LS	1	$ 596,000.00	$ 596,000.00
				SUBTOTAL	**$ 1,219,200.00**
				CONTINGENCY (10%)	**$ 823,000.00**
				CONSTRUCTION TOTAL	**$ 9,053,550.00**

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COSTS
WASTE WATER TREATMENT FACILITY EXPANSION - TCMUD #1
OPTION 3 - BIOMAG - PHASE II (2.40 MGD)
THE WALLACE GROUP - PROJECT NO. 22650-22

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
FINE SCREENING & GRIT FACILITY					
1	Concrete Basin and Construction - Vertical	CY	235	$ 525.00	$ 123,375.00
2	Concrete Basin and Construction - Horizontal	CY	75	$ 350.00	$ 26,250.00
3	Fine Screening Equipment & Installation	LS	1	$ 245,000.00	$ 245,000.00
4	Grit Removal Equipment & Installation	LS	1	$ 200,000.00	$ 200,000.00
5	Aluminum Grating & Stairs	LS	1	$ 20,000.00	$ 20,000.00
6	Aluminum Handrail	LF	140	$ 45.00	$ 6,300.00
7	Facility Piping, Valves & Gates	LS	1	$ 20,000.00	$ 20,000.00
8	Painting & Preparation	LS	1	$ 7,500.00	$ 7,500.00
				SUBTOTAL	**$ 648,425.00**
INFLUENT LIFT STATION UPGRADES					
9	Replace Submersible Pumps - 75 Hp	EA	2	$ 100,000.00	$ 200,000.00
10	Upgrade Lift Station Controls, Piping & Valving	LS	1	$ 40,000.00	$ 40,000.00
11	Demolition & Preparation	LS	1	$ 7,500.00	$ 7,500.00
12	Painting & Preparation	LS	1	$ 6,000.00	$ 6,000.00
				SUBTOTAL	**$ 253,500.00**
UV DISINFECTION					
13	UV Equipment	EA	2	$ 170,000.00	$ 340,000.00
14	UV Equipment Installation	LS	2	$ 17,500.00	$ 35,000.00
				SUBTOTAL	**$ 375,000.00**
AEROBIC DIGESTION					
15	Concrete Basin and Construction - Vertical	CY	135	$ 600.00	$ 81,000.00
16	Concrete Basin and Construction - Horizontal	CY	80	$ 350.00	$ 28,000.00
17	Aeration Equipment & Piping	LS	1	$ 40,000.00	$ 40,000.00
18	Aeration Equipment & Piping Installation	LS	1	$ 20,000.00	$ 20,000.00
19	Aluminum Handrail	LF	120	$ 45.00	$ 5,400.00
20	Blowers & Piping	LS	1	$ 90,000.00	$ 90,000.00
21	DO/ORP Control	LS	1	$ 15,000.00	$ 15,000.00
				SUBTOTAL	**$ 279,400.00**
EFFLUENT LIFT STATION					
22	Replace Submersible Pumps	EA	4	$ 60,000.00	$ 240,000.00
23	Upgrade Lift Station Controls, Piping & Valving	LS	1	$ 40,000.00	$ 40,000.00
24	Demolition & Preparation	LS	1	$ 7,500.00	$ 7,500.00
25	Painting & Preparation	LS	1	$ 6,000.00	$ 6,000.00
				SUBTOTAL	**$ 293,500.00**
YARD PIPING					
26	8-inch DIP	LF	450	$ 40.00	$ 18,000.00
27	20-inch DIP	LF	140	$ 160.00	$ 22,400.00
28	24-inch DIP	LF	350	$ 170.00	$ 59,500.00
29	Pipe Connections to Existing System	EA	10	$ 1,500.00	$ 15,000.00
				SUBTOTAL	**$ 96,900.00**

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
MISCELLANEOUS					
30	Final Grading & Seeding	LS	1	$ 7,500.00	$ 7,500.00
31	Demolition	LS	1	$ 25,000.00	$ 25,000.00
32	SCADA Upgrade	LS	1	$ 75,000.00	$ 75,000.00
33	Dewatering	LS	1	$ 20,000.00	$ 20,000.00
34	Electrical	LS	1	$ 195,000.00	$ 195,000.00
				SUBTOTAL	$ 322,500.00
				CONTINGENCY (10%)	$ 227,000.00
				CONSTRUCTION TOTAL	$ 2,496,225.00

TCMUD001828

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COSTS
WASTE WATER TREATMENT FACILITY EXPANSION - TCMUD #1
OPTION 1 - CAS - PHASE I (1.41 MGD)
THE WALLACE GROUP - PROJECT NO. 22650-22

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
CAS TREATMENT SYSTEM					
1	Concrete Basin and Construction - Vertical	CY	365	$ 600.00	$ 219,000.00
2	Concrete Basin and Construction - Horizontal	CY	285	$ 350.00	$ 99,750.00
3	Aeration Basin Equipment & Piping	LS	1	$ 150,000.00	$ 150,000.00
4	Aeration Basin Equipment & Piping Installation	LS	1	$ 60,000.00	$ 60,000.00
5	Aluminum Handrail	LF	360	$ 45.00	$ 16,200.00
6	Blowers & Piping	LS	1	$ 300,000.00	$ 300,000.00
7	Blowers & Piping - Installation	LS	1	$ 75,000.00	$ 75,000.00
8	Extend Existing Concrete Basin Walls	EA	2	$ 25,000.00	$ 50,000.00
9	DO/ORP Control	LS	1	$ 25,000.00	$ 25,000.00
				SUBTOTAL	**$ 994,950.00**
RAS/WAS SUBMERSIBLE LIFT STATION REHAB					
10	Replace Submersible Pumps - 15 Hp	EA	3	$ 16,000.00	$ 48,000.00
11	Upgrade Lift Station Piping & Valving	LS	1	$ 25,000.00	$ 25,000.00
12	Upgrade Forcemain	LF	145	$ 50.00	$ 7,250.00
13	Demolition & Preparation	LS	1	$ 10,000.00	$ 10,000.00
14	Painting & Preparation	LS	1	$ 3,500.00	$ 3,500.00
15	Bypass Pumping	LS	1	$ 5,000.00	$ 5,000.00
				SUBTOTAL	**$ 98,750.00**
TERTIARY FINAL FILTRATION					
16	Demolition & Basin Preparation	LS	1	$ 20,000.00	$ 20,000.00
17	Disk Filter Equipment & Installation	LS	1	$ 470,000.00	$ 470,000.00
18	Upgrade Basin Piping & Valving	LS	1	$ 20,000.00	$ 20,000.00
19	Painting & Preparation	LS	1	$ 5,000.00	$ 5,000.00
				SUBTOTAL	**$ 515,000.00**
WEIR CONTROL STRUCTURES					
20	Concrete Basin and Construction - Vertical	CY	90	$ 525.00	$ 47,250.00
21	Concrete Basin and Construction - Horizontal	CY	60	$ 325.00	$ 19,500.00
22	Adjustable Wier Gate	EA	12	$ 5,000.00	$ 60,000.00
23	Equipment Installation	LS	2	$ 7,500.00	$ 15,000.00
24	Aluminum Grating & Treading	SF	320	$ 50.00	$ 16,000.00
25	Hand Rail - Sch. 40 Aluminum	LF	240	$ 45.00	$ 10,800.00
				SUBTOTAL	**$ 168,550.00**
UV DISINFECTION					
26	Concrete Basin and Construction - Vertical	CY	45	$ 550.00	$ 24,750.00
27	Concrete Basin and Construction - Horizontal	CY	20	$ 350.00	$ 7,000.00
28	UV Equipment	EA	1	$ 225,000.00	$ 225,000.00
29	UV Equipment Installation	LS	1	$ 25,000.00	$ 25,000.00
30	Retrofitting To Existing UV System	LS	1	$ 25,000.00	$ 25,000.00
31	Aluminum Grating & Treading	SF	200	$ 50.00	$ 10,000.00
32	Hand Rail - Sch. 40 Aluminum	LF	150	$ 45.00	$ 6,750.00
				SUBTOTAL	**$ 323,500.00**

TCMUD001829

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
AEROBIC DIGESTION					
33	Concrete Basin and Construction - Vertical	CY	135	$ 600.00	$ 81,000.00
34	Concrete Basin and Construction - Horizontal	CY	80	$ 350.00	$ 28,000.00
35	Aeration Equipment & Piping	LS	1	$ 40,000.00	$ 40,000.00
36	Aeration Equipment & Piping Installation	LS	1	$ 20,000.00	$ 20,000.00
37	Aluminum Handrail	LF	120	$ 45.00	$ 5,400.00
38	Blowers & Piping	LS	1	$ 90,000.00	$ 90,000.00
39	DO/ORP Control	LS	1	$ 15,000.00	$ 15,000.00
				SUBTOTAL	**$ 279,400.00**
YARD PIPING					
40	8-inch DIP	LF	250	$ 40.00	$ 10,000.00
41	20-inch DIP	LF	215	$ 160.00	$ 34,400.00
42	24-inch DIP	LF	1,305	$ 170.00	$ 221,850.00
43	Pipe Connections to Existing System	EA	10	$ 1,500.00	$ 15,000.00
				SUBTOTAL	**$ 271,250.00**
MISCELLANEOUS					
44	Final Grading & Seeding	LS	1	$ 7,500.00	$ 7,500.00
45	Demolition	LS	1	$ 30,000.00	$ 30,000.00
46	Paved Roadway - Relocation	SY	470	$ 60.00	$ 28,200.00
47	Entrance Gate Relocation	LS	1	$ 7,500.00	$ 7,500.00
48	MCC/Controls Building Expansion	SF	800	$ 200.00	$ 160,000.00
49	SCADA Upgrade	LS	1	$ 75,000.00	$ 75,000.00
50	Dewatering	LS	1	$ 25,000.00	$ 25,000.00
51	Generator	LS	1	$ 295,000.00	$ 295,000.00
52	Electrical	LS	1	$ 225,000.00	$ 225,000.00
				SUBTOTAL	**$ 853,200.00**
				CONTINGENCY (10%)	**$ 350,000.00**
				CONSTRUCTION TOTAL	**$ 3,854,600.00**

TCMUD001830

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COSTS
WASTE WATER TREATMENT FACILITY EXPANSION - TCMUD #1
OPTION 1 - CAS - PHASE II (1.88 MGD)
THE WALLACE GROUP - PROJECT NO. 22650-22

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
CAS TREATMENT SYSTEM					
1	Concrete Basin and Construction - Vertical	CY	295	$ 600.00	$ 177,000.00
2	Concrete Basin and Construction - Horizontal	CY	285	$ 350.00	$ 99,750.00
3	Aeration Basin Equipment & Piping	LS	1	$ 150,000.00	$ 150,000.00
4	Aeration Basin Equipment & Piping Installation	LS	1	$ 60,000.00	$ 60,000.00
5	Aluminum Handrail	LF	300	$ 45.00	$ 13,500.00
6	Blowers & Piping	LS	1	$ 280,000.00	$ 280,000.00
7	Blowers & Piping - Installation	LS	1	$ 75,000.00	$ 75,000.00
8	DO/ORP Control	LS	1	$ 25,000.00	$ 25,000.00
				SUBTOTAL	**$ 880,250.00**
RAS/WAS DRY-PIT LIFT STATION REHAB					
9	Upgrade Sewage Pumps - Drives & Motors	EA	3	$ 12,500.00	$ 37,500.00
10	Upgrade Lift Station Piping & Valving	LS	1	$ 25,000.00	$ 25,000.00
11	Upgrade Forcemain	LF	160	$ 50.00	$ 8,000.00
12	Demolition & Preparation	LS	1	$ 10,000.00	$ 10,000.00
13	Painting & Preparation	LS	1	$ 3,500.00	$ 3,500.00
14	Bypass Pumping	LS	1	$ 5,000.00	$ 5,000.00
				SUBTOTAL	**$ 89,000.00**
SCUM SUBMERSIBLE LIFT STATION UPGRADE					
15	Replace Submersible Pump	EA	1	$ 12,500.00	$ 12,500.00
16	Install New 8-inch Clarifier Piping	LF	60	$ 45.00	$ 2,700.00
17	Demolition & Preparation	LS	1	$ 3,500.00	$ 3,500.00
18	Painting & Preparation	LS	1	$ 1,500.00	$ 1,500.00
				SUBTOTAL	**$ 20,200.00**
TERTIARY FINAL FILTRATION					
19	Demolition & Basin Preparation	LS	1	$ 5,000.00	$ 5,000.00
20	Disk Filter Equipment & Installation	LS	1	$ 195,000.00	$ 195,000.00
21	Upgrade Basin Piping & Valving	LS	1	$ 5,000.00	$ 5,000.00
22	Painting & Preparation	LS	1	$ 2,500.00	$ 2,500.00
				SUBTOTAL	**$ 207,500.00**
NEW CLARIFIER					
23	Concrete Basin and Construction - Vertical	CY	245	$ 600.00	$ 147,000.00
24	Concrete Basin and Construction - Horizontal	CY	180	$ 350.00	$ 63,000.00
24	Clarifier Equipment	LS	1	$ 165,000.00	$ 165,000.00
25	Equipment Installation	LS	1	$ 60,000.00	$ 60,000.00
26	Painting & Preparation	LS	1	$ 7,500.00	$ 7,500.00
27	Hand Rail - Sch. 40 Aluminum	LF	260	$ 45.00	$ 11,700.00
				SUBTOTAL	**$ 454,200.00**
UV DISINFECTION					
28	UV Equipment	EA	1	$ 180,000.00	$ 180,000.00
29	UV Equipment Installation	LS	1	$ 25,000.00	$ 25,000.00
				SUBTOTAL	**$ 205,000.00**

TCMUD001831

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
FINE SCREENING & GRIT FACILITY					
30	Concrete Basin and Construction - Vertical	CY	235	$ 525.00	$ 123,375.00
31	Concrete Basin and Construction - Horizontal	CY	75	$ 350.00	$ 26,250.00
32	Fine Screening Equipment & Installation	LS	1	$ 245,000.00	$ 245,000.00
33	Grit Removal Equipment & Installation	LS	1	$ 210,000.00	$ 210,000.00
34	Aluminum Grating & Stairs	LS	1	$ 20,000.00	$ 20,000.00
34	Aluminum Handrail	LF	140	$ 45.00	$ 6,300.00
35	Facility Piping, Valves & Gates	LS	1	$ 20,000.00	$ 20,000.00
36	Painting & Preparation	LS	1	$ 7,500.00	$ 7,500.00
				SUBTOTAL	**$ 658,425.00**
INFLUENT LIFT STATION UPGRADES					
37	Replace Submersible Pumps - 75 Hp	EA	2	$ 100,000.00	$ 200,000.00
38	Upgrade Lift Station Controls, Piping & Valving	LS	1	$ 65,000.00	$ 65,000.00
39	Upgrade Forcemain - 18-inch	LF	220	$ 225.00	$ 49,500.00
40	Mechanical Bar Screen Upgrade	EA	1	$ 290,000.00	$ 290,000.00
41	Demolition & Preparation	LS	1	$ 10,000.00	$ 10,000.00
42	Painting & Preparation	LS	1	$ 6,000.00	$ 6,000.00
				SUBTOTAL	**$ 620,500.00**
YARD PIPING					
43	8-inch DIP	LF	255	$ 65.00	$ 16,575.00
44	20-inch DIP	LF	235	$ 160.00	$ 37,600.00
45	24-inch DIP	LF	550	$ 180.00	$ 99,000.00
46	Pipe Connections to Existing System	EA	8	$ 1,500.00	$ 12,000.00
				SUBTOTAL	**$ 165,175.00**
MISCELLANEOUS					
47	Final Grading & Seeding	LS	1	$ 10,000.00	$ 10,000.00
48	Demolition	LS	1	$ 20,000.00	$ 20,000.00
49	SCADA Upgrade	LS	1	$ 50,000.00	$ 50,000.00
50	Dewatering	LS	1	$ 25,000.00	$ 25,000.00
51	Electrical	LS	1	$ 281,000.00	$ 281,000.00
				SUBTOTAL	**$ 386,000.00**
				CONTINGENCY (10%)	**$ 369,000.00**
				CONSTRUCTION TOTAL	**$ 4,055,250.00**

TCMUD001832

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COSTS
WASTE WATER TREATMENT FACILITY EXPANSION - TCMUD #1
OPTION 1 - CAS - PHASE III (2.35 MGD)
THE WALLACE GROUP - PROJECT NO. 22650-22

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
CAS TREATMENT SYSTEM					
1	Concrete Basin and Construction - Vertical	CY	295	$ 600.00	$ 177,000.00
2	Concrete Basin and Construction - Horizontal	CY	285	$ 350.00	$ 99,750.00
3	Aeration Basin Equipment & Piping	LS	1	$ 150,000.00	$ 150,000.00
4	Aeration Basin Equipment & Piping Installation	LS	1	$ 60,000.00	$ 60,000.00
5	Aluminum Handrail	LF	300	$ 45.00	$ 13,500.00
6	Blowers & Piping	LS	1	$ 270,000.00	$ 270,000.00
7	Blowers & Piping - Installation	LS	1	$ 70,000.00	$ 70,000.00
8	DO/ORP Control	LS	1	$ 25,000.00	$ 25,000.00
				SUBTOTAL	**$ 865,250.00**
UV DISINFECTION					
9	UV Equipment	EA	1	$ 225,000.00	$ 225,000.00
10	UV Equipment Installation	LS	1	$ 25,000.00	$ 25,000.00
				SUBTOTAL	**$ 250,000.00**
INFLUENT LIFT STATION UPGRADES					
11	Replace Submersible Pumps - 75 Hp	EA	2	$ 10,000.00	$ 20,000.00
12	Upgrade Lift Station Controls, Piping & Valving	LS	1	$ 40,000.00	$ 40,000.00
13	Demolition & Preparation	LS	1	$ 7,500.00	$ 7,500.00
14	Painting & Preparation	LS	1	$ 6,000.00	$ 6,000.00
				SUBTOTAL	**$ 73,500.00**
AEROBIC DIGESTION					
15	Concrete Basin and Construction - Vertical	CY	90	$ 600.00	$ 54,000.00
16	Concrete Basin and Construction - Horizontal	CY	80	$ 350.00	$ 28,000.00
17	Aeration Equipment & Piping	LS	1	$ 40,000.00	$ 40,000.00
18	Aeration Equipment & Piping Installation	LS	1	$ 20,000.00	$ 20,000.00
19	Aluminum Handrail	LF	120	$ 45.00	$ 5,400.00
20	Blowers & Piping	LS	1	$ 90,000.00	$ 90,000.00
21	DO/ORP Control	LS	1	$ 15,000.00	$ 15,000.00
				SUBTOTAL	**$ 252,400.00**
EFFLUENT LIFT STATION					
1	Replace Submersible Pumps	EA	4	$ 60,000.00	$ 240,000.00
2	Upgrade Lift Station Controls, Piping & Valving	LS	1	$ 40,000.00	$ 40,000.00
3	Demolition & Preparation	LS	1	$ 7,500.00	$ 7,500.00
4	Painting & Preparation	LS	1	$ 6,000.00	$ 6,000.00
				SUBTOTAL	**$ 293,500.00**
YARD PIPING					
22	6-inch DIP	LF	180	$ 50.00	$ 9,000.00
23	8-inch DIP	LF	150	$ 65.00	$ 9,750.00
24	24-inch DIP	LF	340	$ 180.00	$ 61,200.00
25	Pipe Connections to Existing System	EA	8	$ 1,500.00	$ 12,000.00
				SUBTOTAL	**$ 82,950.00**

TCMUD001833

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
MISCELLANEOUS					
26	Final Grading & Seeding	LS	1	$ 8,000.00	$ 8,000.00
27	Demolition	LS	1	$ 15,000.00	$ 15,000.00
28	SCADA Upgrade	LS	1	$ 35,000.00	$ 35,000.00
29	Dewatering	LS	1	$ 25,000.00	$ 25,000.00
30	Electrical	LS	1	$ 154,000.00	$ 154,000.00
				SUBTOTAL	**$ 237,000.00**
				CONTINGENCY (10%)	**$ 205,000.00**
				CONSTRUCTION TOTAL	**$ 1,966,100.00**

TCMUD001834

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COSTS
WASTE WATER TREATMENT FACILITY EXPANSION - TCMUD #1
OPTION 2 - MBR - PHASE I (1.38 MGD)
THE WALLACE GROUP - PROJECT NO. 22650-22

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
MBR TREATMENT SYSTEM (1 NEW TRAIN/BASIN)					
1	Concrete Basin and Construction - Vertical	CY	365	$ 600.00	$ 219,000.00
2	Concrete Basin and Construction - Horizontal	CY	285	$ 350.00	$ 99,750.00
3	MBR Basin Equipment, Controls & Piping	LS	1	$ 1,910,000.00	$ 1,910,000.00
4	MBR Basin Equipment, Controls & Piping Installation	LS	1	$ 200,000.00	$ 200,000.00
5	Aluminum Walkway & Handrail	LF	240	$ 145.00	$ 34,800.00
6	Aluminum Stairway	EA	1	$ 20,000.00	$ 20,000.00
7	Blower Piping & Installation	LS	1	$ 65,000.00	$ 65,000.00
				SUBTOTAL	**$ 2,548,550.00**
RAS/WAS SUBMERSIBLE LIFT STATION REHAB					
8	Replace Submersible Pumps - 15 Hp	EA	3	$ 16,000.00	$ 48,000.00
9	Upgrade Lift Station Piping & Valving	LS	1	$ 25,000.00	$ 25,000.00
10	Upgrade Forcemain	LF	145	$ 50.00	$ 7,250.00
11	Demolition & Preparation	LS	1	$ 10,000.00	$ 10,000.00
12	Painting & Preparation	LS	1	$ 3,500.00	$ 3,500.00
13	Bypass Pumping	LS	1	$ 5,000.00	$ 5,000.00
				SUBTOTAL	**$ 98,750.00**
FINE SCREENING & GRIT FACILITY					
14	Concrete Basin and Construction - Vertical	CY	235	$ 525.00	$ 123,375.00
15	Concrete Basin and Construction - Horizontal	CY	75	$ 350.00	$ 26,250.00
16	Fine Screening Equipment Installation	LS	1	$ 35,000.00	$ 35,000.00
17	Grit Removal Equipment & Installation	LS	1	$ 200,000.00	$ 200,000.00
18	Aluminum Grating & Stairs	LS	1	$ 20,000.00	$ 20,000.00
19	Aluminum Handrail	LF	140	$ 45.00	$ 6,300.00
20	Facility Piping, Valves & Gates	LS	1	$ 20,000.00	$ 20,000.00
21	Painting & Preparation	LS	1	$ 7,500.00	$ 7,500.00
				SUBTOTAL	**$ 438,425.00**
WEIR CONTROL STRUCTURES					
22	Concrete Basin and Construction - Vertical	CY	45	$ 525.00	$ 23,625.00
23	Concrete Basin and Construction - Horizontal	CY	30	$ 325.00	$ 9,750.00
24	Adjustable Wier Gate	EA	6	$ 5,000.00	$ 30,000.00
25	Equipment Installation	LS	1	$ 7,500.00	$ 7,500.00
26	Aluminum Grating & Treading	SF	160	$ 50.00	$ 8,000.00
27	Hand Rail - Sch. 40 Aluminum	LF	120	$ 45.00	$ 5,400.00
				SUBTOTAL	**$ 84,275.00**
UV DISINFECTION					
28	Concrete Basin and Construction - Vertical	CY	45	$ 550.00	$ 24,750.00
29	Concrete Basin and Construction - Horizontal	CY	20	$ 350.00	$ 7,000.00
30	UV Equipment	EA	1	$ 225,000.00	$ 225,000.00
31	UV Equipment Installation	LS	1	$ 25,000.00	$ 25,000.00
32	Retrofitting To Existing UV System	LS	1	$ 25,000.00	$ 25,000.00
33	Aluminum Grating & Treading	SF	200	$ 50.00	$ 10,000.00
34	Hand Rail - Sch. 40 Aluminum	LF	150	$ 45.00	$ 6,750.00
				SUBTOTAL	**$ 323,500.00**

TCMUD001835

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL	
AEROBIC DIGESTION							
35	Concrete Basin and Construction - Vertical	CY	135	$	600.00	$	81,000.00
36	Concrete Basin and Construction - Horizontal	CY	80	$	350.00	$	28,000.00
37	Aeration Equipment & Piping	LS	1	$	40,000.00	$	40,000.00
38	Aeration Equipment & Piping Installation	LS	1	$	20,000.00	$	20,000.00
39	Aluminum Handrail	LF	120	$	45.00	$	5,400.00
40	Blowers & Piping	LS	1	$	90,000.00	$	90,000.00
41	DO/ORP Control	LS	1	$	15,000.00	$	15,000.00
					SUBTOTAL	**$**	**279,400.00**
YARD PIPING							
42	8-inch DIP	LF	370	$	40.00	$	14,800.00
43	20-inch DIP	LF	215	$	160.00	$	34,400.00
44	24-inch DIP	LF	200	$	180.00	$	36,000.00
45	Pipe Connections to Existing System	EA	8	$	1,500.00	$	12,000.00
					SUBTOTAL	**$**	**82,400.00**
MISCELLANEOUS							
46	Final Grading & Seeding	LS	1	$	7,500.00	$	7,500.00
47	Demolition	LS	1	$	30,000.00	$	30,000.00
48	Paved Roadway - Relocation	SY	470	$	60.00	$	28,200.00
49	Entrance Gate Relocation	LS	1	$	7,500.00	$	7,500.00
50	MCC/Controls Building Expansion	SF	800	$	200.00	$	160,000.00
51	SCADA Upgrade	LS	1	$	75,000.00	$	75,000.00
52	Dewatering	LS	1	$	25,000.00	$	25,000.00
53	Generator	LS	1	$	295,000.00	$	295,000.00
54	Electrical	LS	1	$	328,000.00	$	328,000.00
					SUBTOTAL	**$**	**956,200.00**
					CONTINGENCY (10%)	**$**	**481,000.00**
					COSNTRUCTION TOTAL	**$**	**5,292,500.00**

TCMUD001836

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COSTS
WASTE WATER TREATMENT FACILITY EXPANSION - TCMUD #1
OPTION 2 - MBR - PHASE II (2.40 MGD)
THE WALLACE GROUP - PROJECT NO. 22650-22

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
MBR TREATMENT SYSTEM (4 RETROFIT TRAINS/BASINS)					
1	Concrete Basin Modifications and Construction	LS	1	$ 150,000.00	$ 150,000.00
2	MBR Basin Equipment, Controls & Piping	LS	1	$ 2,795,000.00	$ 2,795,000.00
3	MBR Basin Equipment, Controls & Piping Installation	LS	1	$ 280,000.00	$ 280,000.00
4	Aluminum Walkway & Handrail	LF	220	$ 145.00	$ 31,900.00
5	Blower Piping & Installation	LS	1	$ 45,000.00	$ 45,000.00
				SUBTOTAL	**$ 3,301,900.00**
INFLUENT LIFT STATION UPGRADES					
6	Replace Submersible Pumps - 75 Hp	EA	4	$ 100,000.00	$ 400,000.00
7	Upgrade Lift Station Controls, Piping & Valving	LS	1	$ 75,000.00	$ 75,000.00
8	Upgrade Forcemain - 18-inch	LF	220	$ 225.00	$ 49,500.00
9	Mechanical Bar Screen Upgrade	EA	1	$ 290,000.00	$ 290,000.00
10	Demolition & Preparation	LS	1	$ 15,000.00	$ 15,000.00
11	Painting & Preparation	LS	1	$ 7,500.00	$ 7,500.00
				SUBTOTAL	**$ 837,000.00**
EQ BASINS & EQ LIFT STATION					
12	Demolition of Clarifier Equipment	LS	1	$ 15,000.00	$ 15,000.00
13	Concrete Basin Preparation and Repair	EA	3	$ 7,500.00	$ 22,500.00
14	Modify Forcemains, Piping & Controls	LS	1	$ 50,000.00	$ 50,000.00
15	Painting & Preparation	LS	1	$ 7,500.00	$ 7,500.00
				SUBTOTAL	**$ 95,000.00**
WEIR CONTROL STRUCTURES					
16	Concrete Basin and Construction - Vertical	CY	45	$ 525.00	$ 23,625.00
17	Concrete Basin and Construction - Horizontal	CY	30	$ 325.00	$ 9,750.00
18	Adjustable Wier Gate	EA	6	$ 5,000.00	$ 30,000.00
19	Equipment Installation	LS	1	$ 7,500.00	$ 7,500.00
20	Aluminum Grating & Treading	SF	160	$ 50.00	$ 8,000.00
21	Hand Rail - Sch. 40 Aluminum	LF	120	$ 45.00	$ 5,400.00
				SUBTOTAL	**$ 84,275.00**
UV DISINFECTION					
22	UV Equipment	EA	2	$ 225,000.00	$ 450,000.00
23	UV Equipment Installation	LS	2	$ 25,000.00	$ 50,000.00
				SUBTOTAL	**$ 500,000.00**
AEROBIC DIGESTION					
24	Concrete Basin and Construction - Vertical	CY	90	$ 600.00	$ 54,000.00
25	Concrete Basin and Construction - Horizontal	CY	80	$ 350.00	$ 28,000.00
26	Aeration Equipment & Piping	LS	1	$ 40,000.00	$ 40,000.00
27	Aeration Equipment & Piping Installation	LS	1	$ 20,000.00	$ 20,000.00
28	Aluminum Handrail	LF	120	$ 45.00	$ 5,400.00
29	Blowers & Piping	LS	1	$ 90,000.00	$ 90,000.00
30	DO/ORP Control	LS	1	$ 15,000.00	$ 15,000.00
				SUBTOTAL	**$ 252,400.00**

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL	
EFFLUENT LIFT STATION							
31	Replace Submersible Pumps	EA	4	$	60,000.00	$	240,000.00
32	Upgrade Lift Station Controls, Piping & Valving	LS	1	$	40,000.00	$	40,000.00
33	Demolition & Preparation	LS	1	$	7,500.00	$	7,500.00
34	Painting & Preparation	LS	1	$	6,000.00	$	6,000.00
					SUBTOTAL	**$**	**293,500.00**
YARD PIPING							
35	8-inch DIP	LF	250	$	40.00	$	10,000.00
36	24-inch DIP	LF	355	$	180.00	$	63,900.00
37	Pipe Connections to Existing System	EA	5	$	1,500.00	$	7,500.00
					SUBTOTAL	**$**	**71,400.00**
MISCELLANEOUS							
38	Final Grading & Seeding	LS	1	$	7,500.00	$	7,500.00
39	Demolition	LS	1	$	30,000.00	$	30,000.00
40	SCADA Upgrade	LS	1	$	75,000.00	$	75,000.00
41	Dewatering	LS	1	$	10,000.00	$	10,000.00
42	Electrical	LS	1	$	408,000.00	$	408,000.00
					SUBTOTAL	**$**	**530,500.00**
					CONTINGENCY (10%)	**$**	**597,000.00**
					CONSTRUCTION TOTAL	**$**	**6,562,975.00**

TCMUD001838

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COSTS
WASTE WATER TREATMENT FACILITY EXPANSION - TCMUD #1
OPTION 3 - BIOMAG - PHASE I (2.40 MGD)
THE WALLACE GROUP - PROJECT NO. 22650-22

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
BIOMAG ENHANCED TREATMENT SYSTEM					
1	Concrete Basin Modifications and Construction	LS	1	$ 100,000.00	$ 100,000.00
2	Concrete Basin and Construction - Vertical	LS	270	$ 600.00	$ 162,000.00
3	Concrete Basin and Construction - Horizontal	LS	185	$ 350.00	$ 64,750.00
4	BioMag System, Equipment & Piping	LS	1	$ 3,595,000.00	$ 3,595,000.00
5	BioMag System, Equipment & Piping Installation	LS	1	$ 360,000.00	$ 360,000.00
6	Aluminum Walkway & Handrail	LF	250	$ 145.00	$ 36,250.00
7	Aluminum Stairway	EA	1	$ 20,000.00	$ 20,000.00
8	Blowers & Piping Upgrade	LS	1	$ 295,000.00	$ 295,000.00
9	Extend Existing Concrete Basin Walls	EA	2	$ 25,000.00	$ 50,000.00
10	Alkalinity & Coagulant Pump Station & Tankage	LS	1	$ 200,000.00	$ 200,000.00
				SUBTOTAL	**$ 4,883,000.00**
RAS/WAS SUBMERSIBLE LIFT STATION REHAB					
11	Replace Submersible Pumps - 15 Hp	EA	3	$ 16,000.00	$ 48,000.00
12	Upgrade Sewage Pumps - Drives & Motors	EA	3	$ 12,500.00	$ 37,500.00
13	Upgrade Lift Station Piping & Valving	EA	2	$ 25,000.00	$ 50,000.00
14	Upgrade Forcemain	LF	205	$ 50.00	$ 10,250.00
15	Demolition & Preparation	LS	1	$ 20,000.00	$ 20,000.00
16	Painting & Preparation	LS	1	$ 7,000.00	$ 7,000.00
17	Bypass Pumping	LS	1	$ 10,000.00	$ 10,000.00
				SUBTOTAL	**$ 182,750.00**
INFLUENT LIFT STATION UPGRADES					
18	Replace Submersible Pumps - 75 Hp	EA	2	$ 100,000.00	$ 200,000.00
19	Upgrade Lift Station Controls, Piping & Valving	LS	1	$ 65,000.00	$ 65,000.00
20	Upgrade Forcemain - 18-inch	LF	220	$ 225.00	$ 49,500.00
21	Mechanical Bar Screen Upgrade	EA	1	$ 290,000.00	$ 290,000.00
22	Demolition & Preparation	LS	1	$ 10,000.00	$ 10,000.00
23	Painting & Preparation	LS	1	$ 6,000.00	$ 6,000.00
				SUBTOTAL	**$ 620,500.00**
WEIR CONTROL STRUCTURES					
24	Concrete Basin and Construction - Vertical	CY	70	$ 525.00	$ 36,750.00
25	Concrete Basin and Construction - Horizontal	CY	40	$ 325.00	$ 13,000.00
26	Adjustable Wier Gate	EA	8	$ 5,000.00	$ 40,000.00
27	Equipment Installation	LS	2	$ 7,500.00	$ 15,000.00
28	Aluminum Grating & Treading	SF	215	$ 50.00	$ 10,750.00
29	Hand Rail - Sch. 40 Aluminum	LF	170	$ 45.00	$ 7,650.00
				SUBTOTAL	**$ 123,150.00**
UV DISINFECTION					
30	Concrete Basin and Construction - Vertical	CY	45	$ 550.00	$ 24,750.00
31	Concrete Basin and Construction - Horizontal	CY	20	$ 350.00	$ 7,000.00
32	UV Equipment	EA	1	$ 225,000.00	$ 225,000.00
33	UV Equipment Installation	LS	1	$ 25,000.00	$ 25,000.00
34	Retrofitting To Existing UV System	LS	1	$ 25,000.00	$ 25,000.00
35	Aluminum Grating & Treading	SF	200	$ 25.00	$ 5,000.00
36	Hand Rail - Sch. 40 Aluminum	LF	150	$ 45.00	$ 6,750.00
				SUBTOTAL	**$ 318,500.00**

TCMUD001839

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL	
AEROBIC DIGESTION							
37	Concrete Basin and Construction - Vertical	CY	135	$	600.00	$	81,000.00
38	Concrete Basin and Construction - Horizontal	CY	80	$	350.00	$	28,000.00
39	Aeration Equipment & Piping	LS	1	$	40,000.00	$	40,000.00
40	Aeration Equipment & Piping Installation	LS	1	$	20,000.00	$	20,000.00
41	Aluminum Handrail	LF	120	$	45.00	$	5,400.00
42	Blowers & Piping	LS	1	$	90,000.00	$	90,000.00
43	DO/ORP Control	LS	1	$	15,000.00	$	15,000.00
					SUBTOTAL	**$**	**279,400.00**
SHEAR MILL FACILITY & LIFT STATION							
44	Metal Building & Storage	SF	1,500	$	125.00	$	187,500.00
45	WAS Lift Station	LS	1	$	175,000.00	$	175,000.00
46	Forcemain & Appurtenances	LF	240	$	50.00	$	12,000.00
47	Painting & Preparation	LS	1	$	6,000.00	$	6,000.00
					SUBTOTAL	**$**	**380,500.00**
YARD PIPING							
48	8-inch DIP	LF	400	$	40.00	$	16,000.00
49	20-inch DIP	LF	355	$	160.00	$	56,800.00
50	24-inch DIP	LF	875	$	170.00	$	148,750.00
51	Pipe Connections to Existing System	EA	12	$	1,500.00	$	18,000.00
					SUBTOTAL	**$**	**223,550.00**
MISCELLANEOUS							
52	Final Grading & Seeding	LS	1	$	7,500.00	$	7,500.00
53	Demolition	LS	1	$	30,000.00	$	30,000.00
54	Paved Roadway - Relocation	SY	470	$	60.00	$	28,200.00
55	Entrance Gate Relocation	LS	1	$	7,500.00	$	7,500.00
56	MCC/Controls Building Expansion	SF	800	$	200.00	$	160,000.00
57	SCADA Upgrade	LS	1	$	75,000.00	$	75,000.00
58	Dewatering	LS	1	$	20,000.00	$	20,000.00
59	Generator	LS	1	$	295,000.00	$	295,000.00
60	Electrical	LS	1	$	596,000.00	$	596,000.00
					SUBTOTAL	**$**	**1,219,200.00**
					CONTINGENCY (10%)	**$**	**823,000.00**
					CONSTRUCTION TOTAL	**$**	**9,053,550.00**

TCMUD001840