PROCESS FLOW DIAGRAM FOR

SUNCOR - VOYAGEUR

WASTE WATER TREATMENT PLANT PFD



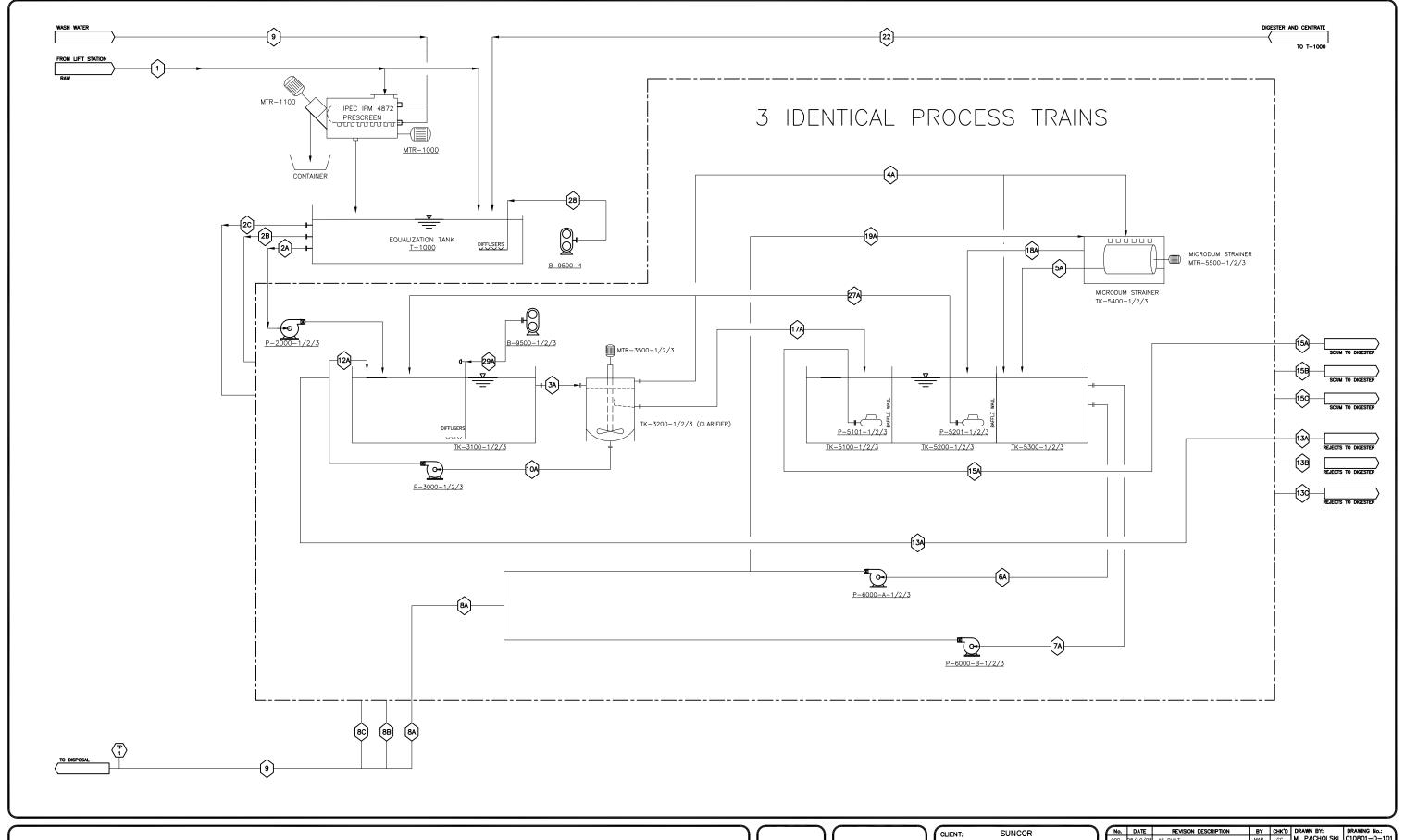
Packaged Water Treatment Solutions





1	CLIENT:	SUNCOR		É
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	WASTE	VOYAGEUR WATER TREATMENT TITLE PAGE	PLANT	ŧ

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No.	DATE	REVISION DESCRIPTION	BY	CHK'D	DRAWN BY:		NG No.:
000	28/10/08	AS BUILT	MAP	GC	M. PACHOLSKI	01080	01—T—101
					CHECKED BY:	DATE:	
					G. CATTANI	28-0	CT-2008
					APPROVED BY:	SCALE	:
					K.SLOUGH		N/A
					JOB/QUOTE No.		
					010801	l	
					PLOT SCALE:	REV.	SHEET No.
					N/A	00	1 OF 1

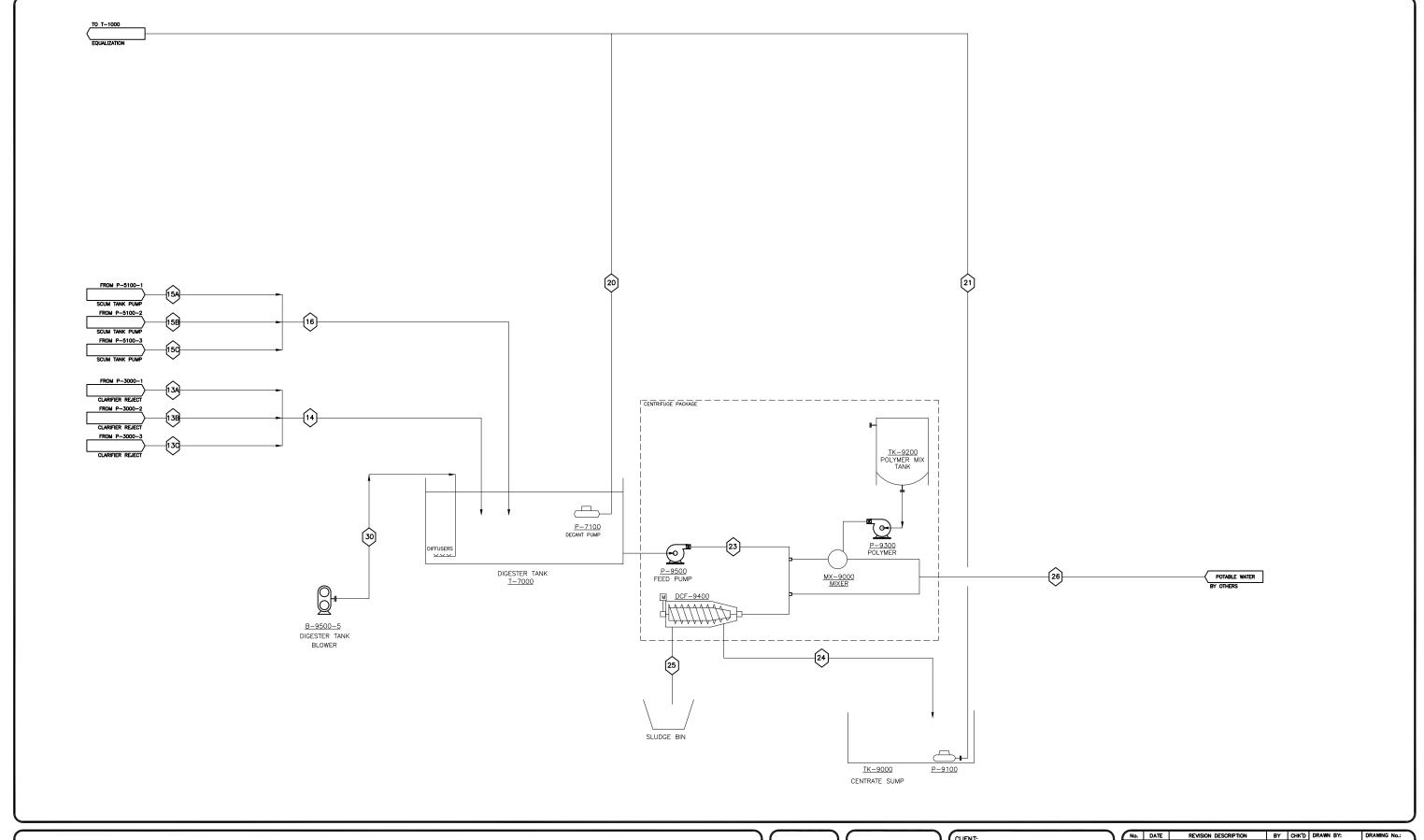






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No.	DATE	REVISION DESCRIPTION	BY	CHK'D	DRAWN BY:	DRAWING No.:
00	28/10/08	AS BUILT	MAP	GC	M. PACHOLSKI	010801-D-101
					CHECKED BY:	DATE:
					G. CATTANI	28/10/08
					APPROVED BY:	SCALE:
					K. SLOUGH	N/A
					JOB/QUOTE No.	
					010801	
					PLOT SCALE:	REV. SHEET No.
					N/A	00 1 OF 3







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TITLE:		F
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WASTE PR	WATER TREATMENT PLANT OCESS FLOW DIAGRAM	Įŧ

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No.	DATE	REVISION DESCRIPTION	BY	CHK'D	DRAWN BY:	DRAWING No.:
000	28/10/08	AS BUILT	MAP	GC	M. PACHOLSKI	010801-D-102
					CHECKED BY:	DATE:
					G. CATTANI	28/10/08
					APPROVED BY:	SCALE:
					K. SLOUGH	N/A
					JOB/QUOTE No.	
					010801	
					PLOT SCALE:	REV. SHEET No.
,					N/A	00   2 OF 3 <sub>4</sub>

	WASTE WATER TREA	ATMENT PLANT F	PROCESS FLOW		
STREAM ID	SYSTEM PROCESS STREAM	SYSTEM PRESSURE (kPa)	SYSTEM FLOW RATE (M3/DAY)	SYSTEM PRESSURE (PSI)	SYSTEM FLOW RATE (USGPM)
1	RAW WATER INFULENT	TBD	750	TBD	137.80
2A	FEED STREAM PROCESS TRAIN 1	29.83	250	4.33	36.50
2B	FEED STREAM PROCESS TRAIN 2	29.83	250	4.33	36.50
2C	FEED STREAM PROCESS TRAIN 3	29.83	250	4.33	36.50
3A	CLARIFIER FEED PROCESS TRAIN 1	GRAVITY	248.75	GRAVITY	45.70
3B	CLARIFIER FEED PROCESS TRAIN 2	GRAVITY	248.75	GRAVITY	45.70
3C	CLARIFIER FEED PROCESS TRAIN 3	GRAVITY	248.75	GRAVITY	45.70
4A	MICRODRUM STRAINER FEED PROCESS TRAIN 1	GRAVITY	248.75	GRAVITY	45.70
4B	MICRODRUM STRAINER FEED PROCESS TRAIN 2	GRAVITY	248.75	GRAVITY	45.70
4C	MICRODRUM STRAINER FEED PROCESS TRAIN 3	GRAVITY	248.75	GRAVITY	45.70
5A	DOSE TANK FEED PROCESS TRAIN 1	GRAVITY	248.75	GRAVITY	45.70
5B	DOSE TANK FEED PROCESS TRAIN 2	GRAVITY	248.75	GRAVITY	45.70
5C	DOSE TANK FEED PROCESS TRAIN 3	GRAVITY	248.75	GRAVITY	45.70
6A	PUMP P-6000-A-1 FEED	448.15	248.75	65.00	45.70
6B	PUMP P-6000-A-2 FEED	448.15	248.75	65.00	45.70
6C	PUMP P-6000-A-3 FEED	448.15	248.75	65.00	45.70
7A	PUMP P-6000-B-1 FEED	448.15	248.75	65.00	45.70
7B	PUMP P-6000-B-2 FEED	448.15	248.75	65.00	45.70
7C	PUMP P-6000-B-3 FEED	448.15	248.75	65.00	45.70
8A	PROCESS TRAIN 1 TO DISPOSAL	448.15	248.75	65.00	45.70
8B	PROCESS TRAIN 2 TO DISPOSAL	448.15	248.75	65.00	45.70
8C	PROCESS TRAIN 3 TO DISPOSAL	448.15	248.75	65.00	45.70
9	TOTAL EFFLUENT TO DISPOSAL	448.15	746.25	65.00	137.10
10	INLET SCREEN WASH WATER	448.15	VARIOUS	65.00	VARIOUS
11A	CLARIFIER SLUDGE PUMP FEED TRAIN 1	GRAVITY	92.16	GRAVITY	16.93
11B	CLARIFIER SLUDGE PUMP FEED TRAIN 2	GRAVITY	92.16	GRAVITY	16.93
11C	CLARIFIER SLUDGE PUMP FEED TRAIN 3	GRAVITY	92.16	GRAVITY	16.93
12A	CLAIRIFIER SLUDGE RECYCLE TRAIN 1	29.83	90.91	25.00	16.70
12B 12C	CLAIRIFIER SLUDGE RECYCLE TRAIN 2	29.83	90.91	25.00	16.70
12C	CLAIRIFIER SLUDGE RECYCLE TRAIN 3 TRAIN 1 CLARIFIER SLUDGE TO DIGESTER	29.83	90.91	25.00	16.70
13B	TRAIN 1 CLARIFIER SLUDGE TO DIGESTER  TRAIN 2 CLARIFIER SLUDGE TO DIGESTER	172.37	1.25	25.00	0.23
13C	TRAIN 2 CLARIFIER SLUDGE TO DIGESTER  TRAIN 1 CLARIFIER SLUDGE TO DIGESTER	172.37	1.25	25.00	0.23
14	TOTAL CLARIFIER SLUDGE TO DIGESTER	172.37	1.25	25.00	0.23
15A	TRAIN 1 SCUM TANK TO DIGESTER	172.37	3.75	25.00	0.69
	TRAIN 2 SCUM TANK TO DIGESTER	N/A	N/A	N/A	N/A
15B		N/A	N/A	N/A	N/A
15C	TRAIN 3 SCUM TANK TO DIGESTER	N/A	N/A	N/A	N/A
16	TOTAL SCUM TO DIGESTER	N/A	N/A	N/A	N/A
17A	TRAIN 1 CLARIFIER SCUM TO SCUM TANK	GRAVITY	VARIOUS	GRAVITY	VARIOUS
17B	TRAIN 2 CLARIFIER SCUM TO SCUM TANK	GRAVITY	VARIOUS	GRAVITY	VARIOUS
17C	TRAIN 3 CLARIFIER SCUM TO SCUM TANK	GRAVITY	VARIOUS	GRAVITY	VARIOUS
18A	TRAIN 1 MICRODRUM BACK WASH	GRAVITY	VARIOUS	GRAVITY	VARIOUS
19B	TRAIN 2 MICRODRUM BACK WASH	GRAVITY	VARIOUS	GRAVITY	VARIOUS
18C	TRAIN 3 MICRODRUM BACK WASH	GRAVITY	VARIOUS	GRAVITY	VARIOUS

	WASTE WATER TREATMENT PLANT PROCESS FLOW								
STREAM ID	SYSTEM PROCESS STREAM	SYSTEM PRESSURE (kPa)	SYSTEM FLOW RATE (M3/DAY)	SYSTEM PRESSURE (PSI)	SYSTEM FLOW RATE (USGPM)				
19A	TRAIN 1 MICRODRUM BACKWASH WATER	448.15	VARIOUS	65.00	45.70				
19B	TRAIN 2 MICRODRUM BACKWASH WATER	448.15	VARIOUS	65.00	45.70				
19C	TRAIN 3 MICRODRUM BACKWASH WATER	448.15	VARIOUS	65.00	45.70				
20	DIGESTER DECANT PUMP DISCHARGE	448.15	24.50	65.00	45.00				
21	CENTRATE SUMP PUMP TO EQUALIZATION TANK	448.15	24.50	65.00	45.00				
23	CENTRIFUGE FEED	224.08	60.00	30.00	11.02				
24	CENTRATE	GRAVITY	24.00	GRAVITY	4.41				
25	DEWATERED SLUDGE	GRAVITY	VARIOUS	GRAVITY	VARIOUS				
26	POTABLE WATER	206.84	VARIOUS	SUPPLY	VARIOUS				
27A	TRAIN 1 BACKWASH TANK RECYCLE	448.15	245.00	65.00	45.00				
27B	TRAIN 2 BACKWASH TANK RECYCLE	448.15	245.00	65.00	45.00				
27C	TRAIN 3 BACKWASH TANK RECYCLE	448.15	245.00	65.00	45.00				
28	EQUALIZATION TANK AIR FEED	32.88	7,339.73	4.76	180 CFM				
29A	TRAIN 1 AREATION TANK AIR FEED	29.85	8,155.25	4.33	200 CFM				
29B	TRAIN 2 AREATION TANK AIR FEED	29.85	8,155.25	4.33	200 CFM				
29C	TRAIN 3 AREATION TANK AIR FEED	29.85	8,155.25	4.33	200 CFM				
30	DIGESTER AIR FEED	29.85	14,271.70	4.33	350 CFM				





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No.	DATE	REVISION DESCRIPTION	BY	CHK'D	DRAWN BY:	DRAWING No.:
000	28/10/08	AS BUILT	MAP	GC	M. PACHOLSKI	010801-D-103
					CHECKED BY:	DATE:
					G. CATTANI	28/10/08
					APPROVED BY:	SCALE:
					K. SLOUGH	N/A
					JOB/QUOTE No.	
					010801	
					PLOT SCALE:	REV. SHEET No.
						00 3 OF 3

## SYSTEM WEIGHTS AND DESCRIPTIONS **EXTENDED AERATION PROCESS TANK** SKID #1/#2/#3/#4/#5 Skid #5 - Equalization SKID #5: SKID # 1: SKIDS #2, #3, #4 Skid and Building Enclosure Only = 74,228 lbs or 33,669 kg TYP. SKID DRAWING Equipment Only = 46,000 lbs or 20,865 kg Dry = 120,228 lbs or 54,533 kg **EQUALIZATION PROCESS TANK DIGESTER TANK SKID** Wet = 539,120 lbs or 244,536 kg Skids #2/#3/#4 - Extended Aeration Tank Skid and Building Enclosure Only = 74,228 lbs or 33,669 kg Equipment Only = 46,000 lbs or 20,865 kg Dry = 120,228 lbs or 54,533 kg Wet = 477,373 lbs or 216,529 kg TYP. LIFTING LUG Skid #6 - Clarification Skid and Building Enclosure Only = 75,116 lbs or 34,071 kg Equipment Only = 68,000 lbs or 30,843 kg Dry = 143,116 lbs or 64,915 kg Wet = 204,114 lbs or 92,585 kg Skid # 7 - Micro-Drum Screening Skid and Building Enclosure Only = 75,116 lbs or 34,071 kg Equipment Only = 8,000 lbs or 3,628 kg SKID #6/#7 Dry = 83,116 lbs or 37,700 kg Wet = 104,092 lbs or 47,216 kg **CONNECTION LUGS** <del>618 8 8 8 8 8 8 8 8 8</del> Skid # 1 - Digestion and MCC/HVAC Skid and Building Enclosure Only = 75,116 lbs or 34,071 kg Equipment Only = 25,000 lbs or 11,339 kg Dry = 100,116 lbs or 45,411 kg Wet = 139,798 lbs or 63,410 kg Skid Beam Area Actual Beam Area/Skid = 266.77 ft^2 or 24.78 m^2 SKID #6/#7 Wet Loading Skid #1 - 524.04 lb/ft^2 or 2,558.92 kg/m^2 <del>:::::|::::||</del> **ROOF SUPPORT** Skid #2 - 1,789.46 lb/ft^2 or 8,738.05 kg/m^2 Skid #3 - 1,789.46 lb/ft^2 or 8,738.05 kg/m^2 Skid #4 - 1,789.46 lb/ft^2 or 8,738.05 kg/m^2 Skid #5 - 2,020.92 lb/ft^2 or 9,868.28 kg/m^2 Skid #6 - 765.13 lb/ft^2 or 3,736.28 kg/m^2 Skid #7 - 390.19 lb/ft^2 or 1,905.41 kg/m^2 <del>\$12 2 2 2 2 2 2</del> 金丝 201 TYP. SUMP DETAIL MOTOR CONTROL CEN **CLARIFICATION TANK SKID** PILE LAYOUT DETAIL PILE DIMENSIONS (VERTICAL): 14" x 14" PILE DIMENSIONS (HORIZONTAL): 14" x 28" PILE DINIENSIONS (HONE) PILE QTY: 36 PILES/SKID PILE CAPS: BY OTHERS PILES: BY OTHERS SKID #6/#7 **MICRO-DRUM TANK SKID SKID #6 AND #7** TYP. SKID DRAWING

SKIDS #2, #3, #4:







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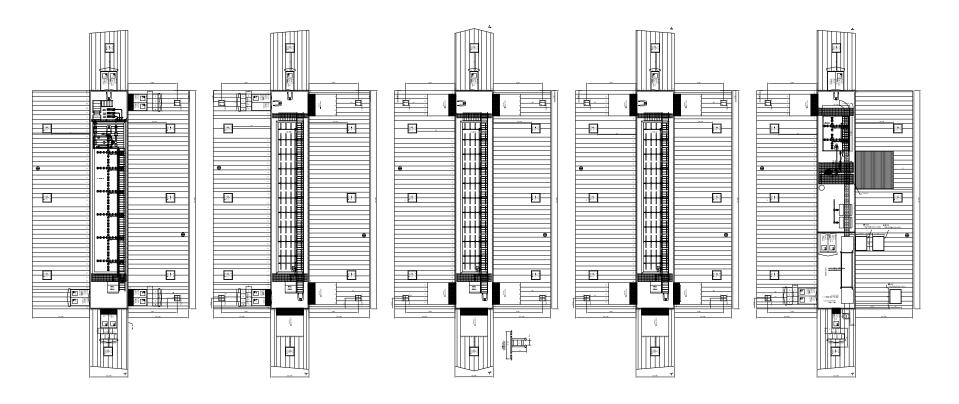
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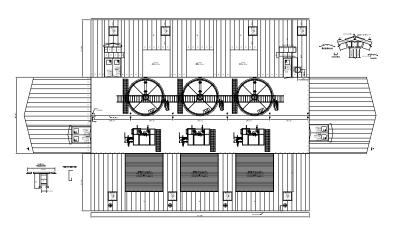
WASTE WATER TREATMENT PLAN

EQUIPMENT

SYSTEM LAYOUT

٥.	DATE	REVISION DESCRIPTION	BY	CHK'D	DRAWN BY:		NG No.:
3	02-JUN-08	IFC	GC	KS	GC	01080	1-G-001
7	08-OCT-08	IFC	GC	KS	CHECKED BY:	DATE:	
					KS	08-1	MAY-08
					APPROVED BY:	SCALE:	
					GC	AS	SHOWN
					JOB/QUOTE No.		
					010801		
					PLOT SCALE:	REV.	SHEET No.
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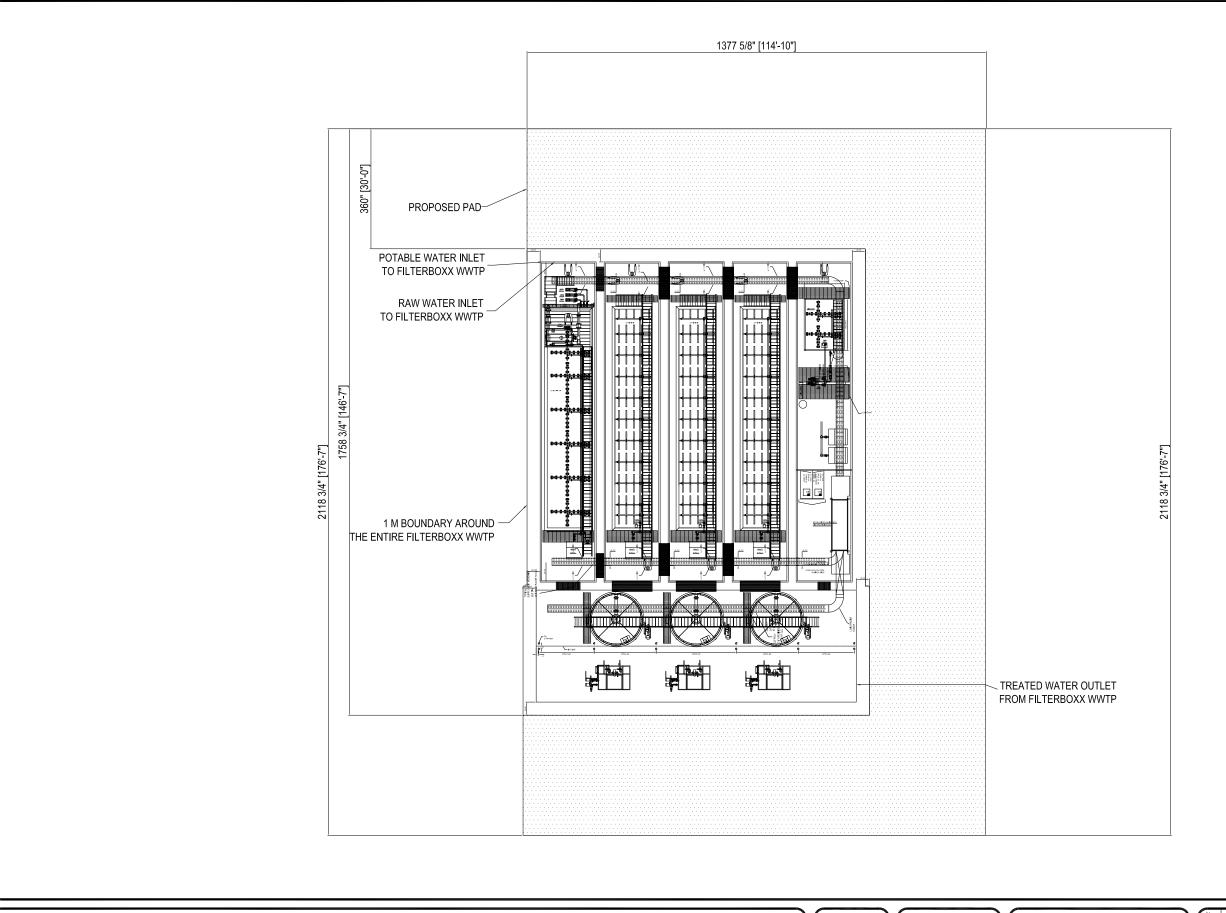


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SUNCOR	ENERGY	CANADA	

TITLE:

WASTE WATER TREATMENT PLANT SUNCOR VOYAGEUR CAMP SYSTEM LAYOUT

٧o.	DATE	REVISION DESCRIPTION	BY	CHK'D	DRAWN BY:	DRAWING No.:	
3	2-JUN-08	IFC	MAP	GC	GC	010801-G-002	
,	8-OCT-08	IFC	GC	KS	CHECKED BY:	DATE:	
					KS	08-APR-08	
					APPROVED BY:	SCALE:	
					GC	AS SHOWN	
					JOB/QUOTE No.		
					010801		
					PLOT SCALE:	REV. SHEET No.	
						G5 2 OF 3	



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CLIENT	: SUNCOR	ENERGY	CANADA	

TITLE:

WASTE WATER TREATMENT PLAN'

EQUIPMENT

SYSTEM LAYOUT

No.	DATE	REVISION DESCRIPTION	BY	CHK'D	DRAWN BY:		NG No.:	4
i	2-JUN-08	IFC	MAP	GC	GC	01080	01-G-003	
	8-OCT-08	IFC	GC	KS	CHECKED BY:	DATE:		
					KS	07-	MAY-08	
					APPROVED BY:	SCALE		
					GC	AS	SHOWN	
					JOB/QUOTE No.			
					010801			
					PLOT SCALE:	REV.	SHEET No.	
						G2	3 OF 3	l