

**Amended Site Plan for
Tin Barn Brewing, Inc.
62 Kings Highway, Town of Chester
October 18, 2023
W.O. # 1925.01**

Water Use Calculations

Water supply is provided by a connection to the Town of Chester municipal system. Water use records indicate that the peak 6-month demand occurred from March 31, 2022 to September 30, 2022. We provide the following calculations:

Use in 183 days = 368,000 gallons

Average use per day = 368,000 gallons / 183 days = 2,011 gpd

The facility was open to the public four days per week, therefore,

Average use per active day = 368,000 / 104 days = 3,538 gpd = 2.46 gpm

Average use per seat per active day = 3,538 gpd / 523 seats = 6.8 gpd per seat

A peaking factor of 6.0 is used to estimate demand during the peak hour:

2.46 gpm x 6.0 = 14.7 gpm.

Wastewater Flow Calculations

Wastewater from the Tin Barn facility is collected in a 2000-gallon pump tank located to the south of the brewery building, then pumped to the facilities of the Moodna Basin Sewer Commission. A force main connects the pump tank to a sanitary sewer manhole located along the Sugar Loaf bypass road, as shown in Figure F-1.

Wastewater flows are not metered, so we have used the water use calculations as a basis for the wastewater use calculations.

Water use in 183 days = 368,000 gallons

Wastewater volumes will be less than water demand because a portion of the water supplied to the facility is bottled as beer. The applicants estimate that they brewed 55,000 gallons of

beer in the 6-month period from 3/31/22 to 9/30/22, and that 40 percent of the product was sold for offsite use:

$$55,000 \text{ gallons} \times 0.40 = 22,000 \text{ gallons.}$$

$$\text{Adjusted wastewater volume} = 368,000 \text{ gallons} - 22,000 \text{ gallons} = \underline{346,000 \text{ gallons.}}$$

$$\text{Average flow per active day} = 346,000 / 104 \text{ days} = \underline{3,327 \text{ gpd}} = \underline{2.31 \text{ gpm}}$$

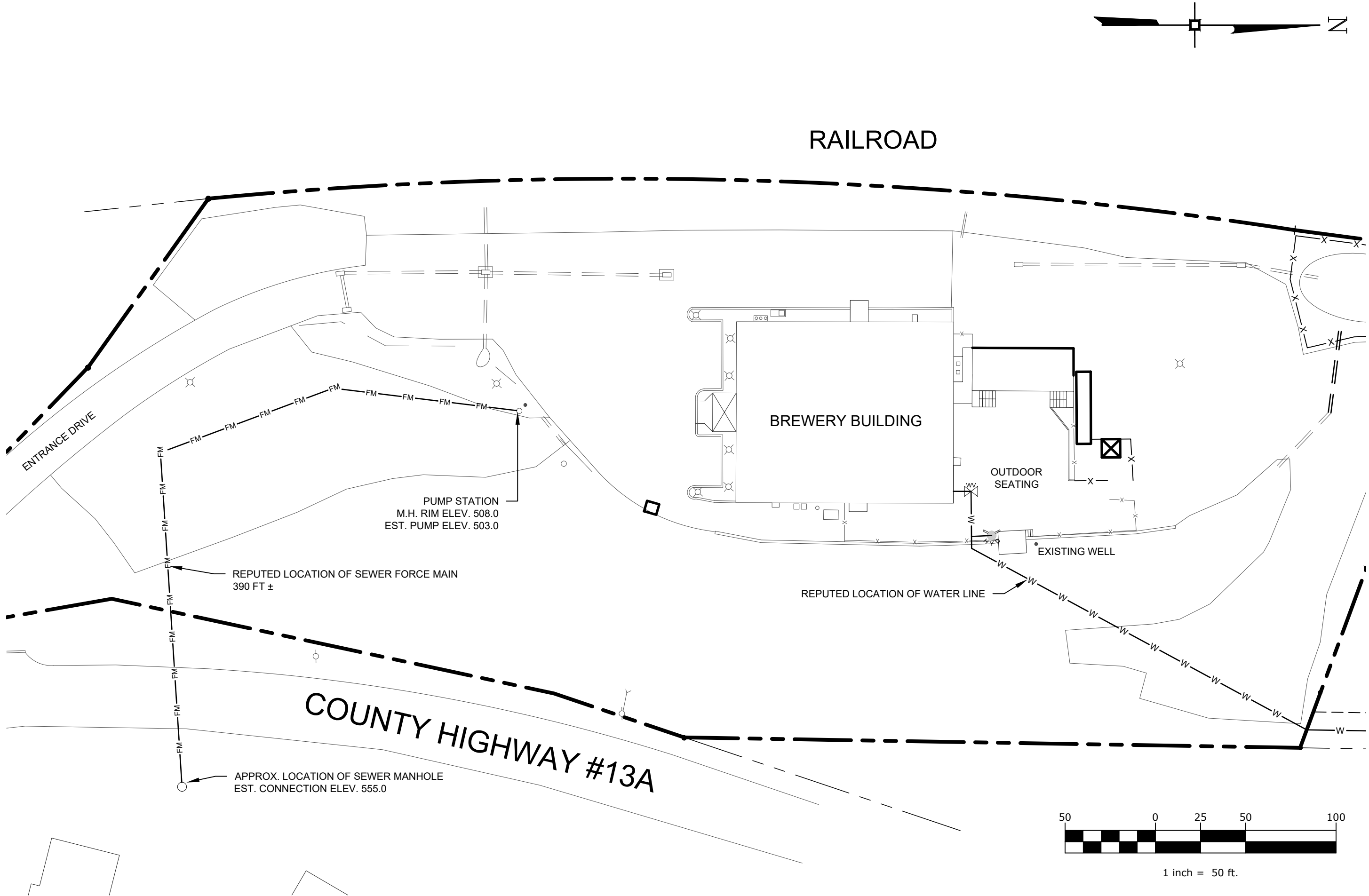
$$\text{Average flow per seat per active day} = 3,327 \text{ gpd} / 523 \text{ seats} = \underline{6.4 \text{ gpd per seat}}$$

A peaking factor of 6.0 is used to estimate flows during the peak hour:

$$2.31 \text{ gpm} \times 6.0 = \underline{13.9 \text{ gpm.}}$$

The Tin Barn pump tank is equipped with a duplex system with two Goulds Model 3885 - WE10H submersible effluent pumps. The following pages include calculations showing that with a single pump in operation, the system operates at a flow of 27 gallons per minute, roughly double the estimated peak hourly flow of 13.9 gpm. The applicants report that the system has never been overloaded, even during their largest events. Manufacturer's data on the pumps is also enclosed.

Drawing Name: Z:\1925.01 - Tin Barn Brewing\EAF & EIS Figures\1925.01 - Wastewater map.dwg Date Printed: Oct 12, 2023, 4:53pm



WASTEWATER FACILITIES	TIN BARN BREWING, INC. 62 KINGS HIGHWAY TOWN OF CHESTER ORANGE COUNTY, NEW YORK	DATE: 10/12/23	JOB # 1925.01	<div>ENGINEERING & SURVEYING</div> <div>— F — ID PROPERTIES</div> <div>Achieving Successful Results with Innovative Designs</div>	<div>GOSHEN OFFICE</div> <div>262 GREENWICH Ave. Ste B</div> <div>GOSHEN, NY 10924</div> <div>Ph: (845) 457-7727</div> <div>WWW.EP-PC.COM</div>
		SCALE: 1" = 50'	SHEET #		
		F-1			

Town of Chester
Customer Recent Activity Report

Report Date: 08/09/23 01:21 PM

Account Id: 4004208-0
Owner: LAUREN VANPAMELEN
Bill To: TIN BARN BREWING
Property Location: 62 KINGS HIGHWAY BYPASS

Active Services:
Water (Active Date: 08/24/20)

Recent Billings:	Bill Date	Due Date	Amount Billed	Amount Due	Usage	Principal Balance	Interest/Penalty
Water	03/31/23	04/15/23	1760.00	0.00	W: 320000	0.00	0.00
Water	09/30/22	10/15/22	2024.00	0.00	W: 368000	0.00	0.00
Water	03/31/22	04/15/22	1221.00	0.00	W: 222000	0.00	0.00
Water	09/30/21	10/15/21	1507.00	0.00	W: 274000	0.00	0.00
Water	03/31/21	04/15/21	720.50	0.00	W: 131000	0.00	0.00
Water	09/30/20	10/31/20	425.00	0.00	W: 80000	0.00	0.00
Current Balance:				\$0.00	Avg W: 344000	\$0.00	\$0.00

Recent Payments & Adjustments:

Type	Date	Amount	Description
Payment	04/11/23	1760.00	CK 544
Payment	10/07/22	2024.00	CK 460
Payment	04/18/22	1221.00	CK 385
Payment	10/19/21	1507.00	CK 279

**PUMP STATION
HYDRAULICS WORKSHEET**

WO. NO. 1925.01	DATE 08/30/23	REVISED	SHEET 1	OF 1
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PROJECT TITLE
TIN BARN BREWING

LOCATION
TOWN OF CHESTER

CALCULATED BY
DJG

APPROVED BY
DAG

REF DRAWING(S)

REQUIRED SCOUR FLOW:

Required Scour Velocity (V): 2.0 ft/sec

Force Main Diameter (D): 2.0 inches

Forcemain Material: Sch. 40 PVC

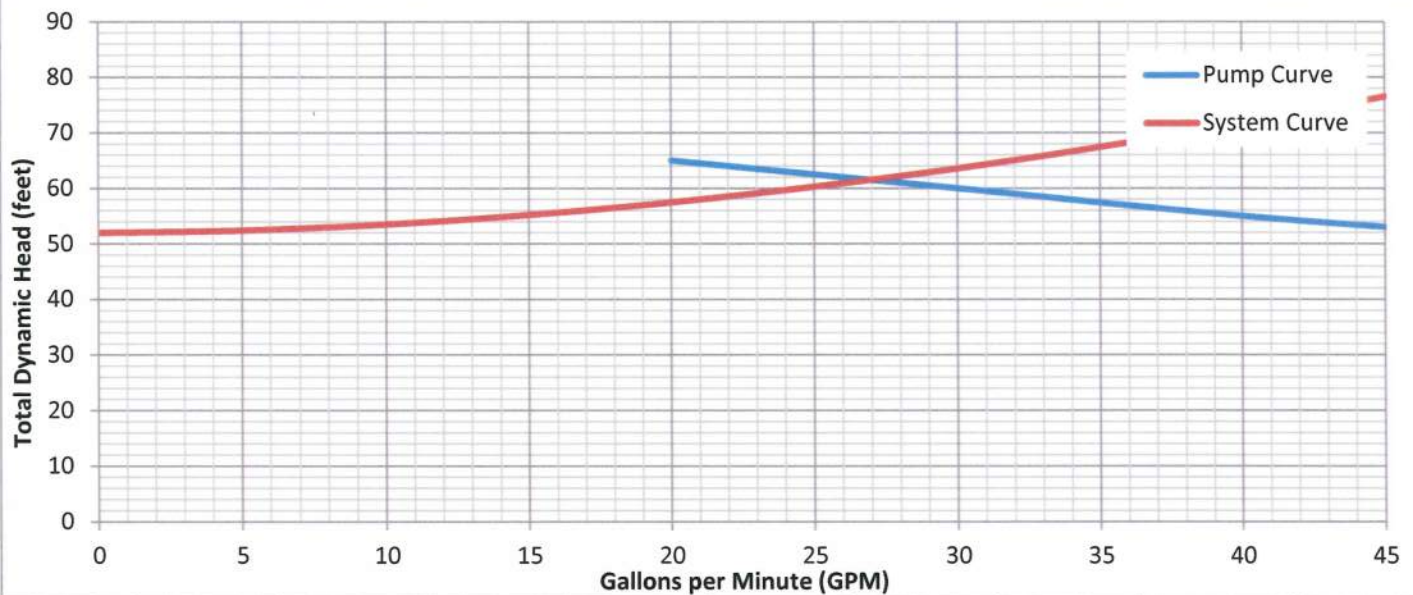
Hazen-Williams Constant (C): 130

Cross Sectional Area (A): 3.1 in² { $A = \pi * (D / 2)^2$ }

Required Scour Flow (Q): 19.6 GPM { $Q = (A) / 144 * (V) * 7.4805 * 60$ }

PUMP SELECTION:

	Pump Water Elevation	Max F.M. Elevation	Static Head (ft)	F.M. Length (ft)	Minor Loss. 25% (ft)	Total Adj. Length (L, ft)	Total Dynamic Head (hf) @ flow rates		Goulds Pump Model
							19.6 GPM	27.0 GPM	
	503.00	555.00	52.0	390	97.5	487.5	57.3	61.5	WE10H



$$hf = \text{Static Head} + 10.44 * (L) * (Q)^{1.85} / (C)^{1.85} * (D)^{4.8655}$$

Pumps are Goulds Submersible Effluent Pump Series 3885, Model as specified above.



FEATURES

Impeller: Cast iron, semi-open, non-clog with pump-out vanes for mechanical seal protection. Balanced for smooth operation. Silicon bronze impeller available as an option.

Casing: Cast iron volute type for maximum efficiency. 2" NPT discharge.

Mechanical Seal: Silicon Carbide vs. Silicon Carbide sealing faces. Stainless steel metal parts, BUNA-N elastomers.

Shaft: Corrosion-resistant, stainless steel. Threaded design. Locknut on all models to guard against component damage on accidental reverse rotation.

Fasteners: 300 series stainless steel.

Capable of running dry without damage to components.

Designed for continuous operation when fully submerged.

EXTENDED WARRANTY AVAILABLE FOR RESIDENTIAL APPLICATIONS.

WE Series

Model 3885

SUBMERSIBLE EFFLUENT PUMPS

Wastewater

APPLICATIONS

Specifically designed for the following uses:

- Homes, Farms, Trailer Courts, Motels, Schools, Hospitals, Industry, Effluent Systems

SPECIFICATIONS

Pump

- Solids handling capabilities: $\frac{3}{4}$ " maximum.
- Discharge size: 2" NPT.
- Capacities: up to 140 GPM.
- Total heads: up to 128 feet TDH.
- Temperature:
104°F (40°C) continuous, 140°F (60°C) intermittent.
- See order numbers on reverse side for specific HP, voltage, phase and RPM's available.

MOTORS

- Fully submerged in high-grade turbine oil for lubrication and efficient heat transfer.
- Class B insulation on $\frac{1}{3}$ - 1½ HP models.
- Class F insulation on 2 HP models.

Single phase (60 Hz):

- Capacitor start motors for maximum starting torque.
- Built-in overload with automatic reset.

- SJTOW or STOW severe duty oil and water resistant power cords.
- $\frac{1}{3}$ - 1 HP models have NEMA three prong grounding plugs.
- 1½ HP and larger units have bare lead cord ends.

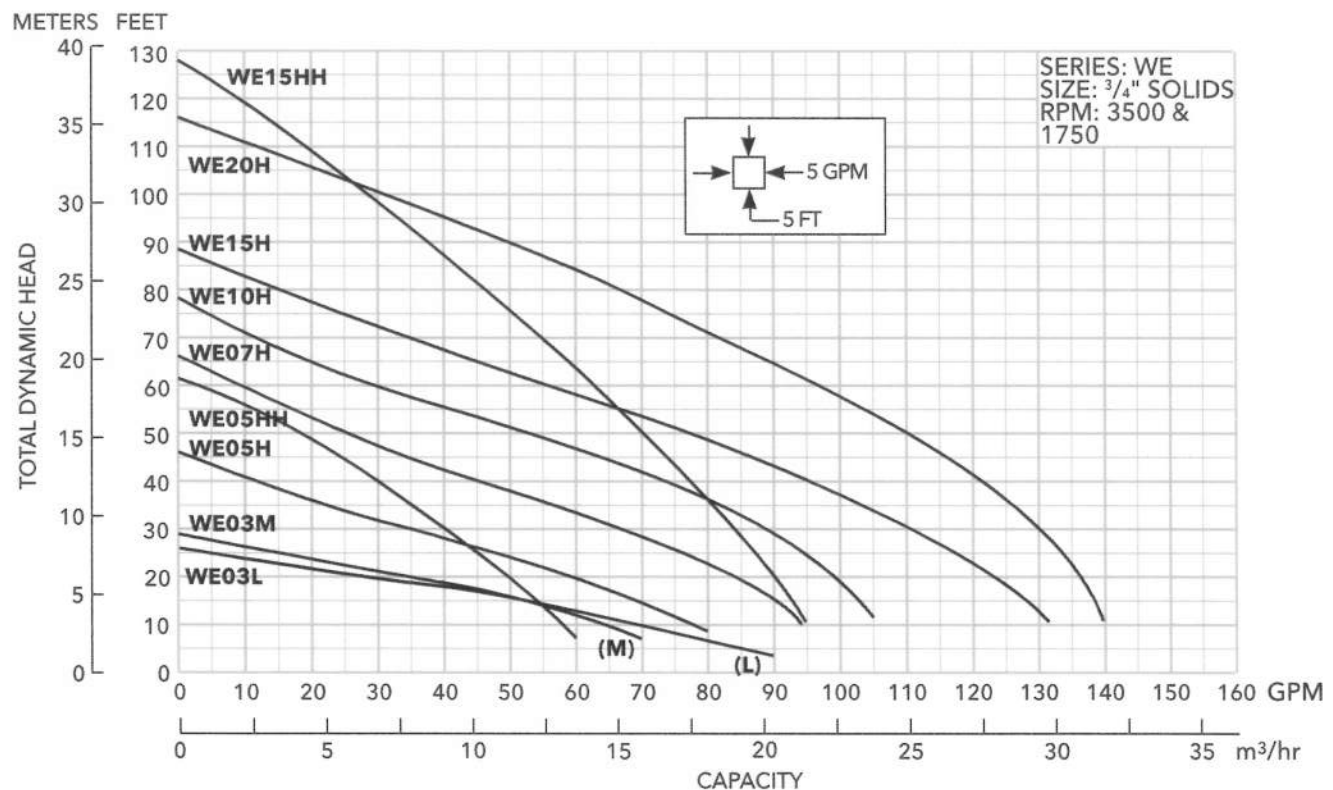
Three phase (60 Hz):

- Class 10 overload protection must be provided in separately ordered starter unit.
- STOW power cords all have bare lead cord ends.
- Designed for Continuous Operation: Pump ratings are within the motor manufacturer's recommended working limits, can be operated continuously without damage when fully submerged.
- Bearings: Upper and lower heavy duty ball bearing construction.
- Power Cable: Severe duty rated, oil and water resistant. Epoxy seal on motor end provides secondary moisture barrier in case of outer jacket damage and to prevent oil wicking. Standard cord is 20'. Optional lengths are available.
- O-ring: Assures positive sealing against contaminants and oil leakage.

AGENCY LISTINGS



Tested to UL 778 and CSA 22.2 108 Standards
By Canadian Standards Association File #LR38549



Wastewater

MODELS

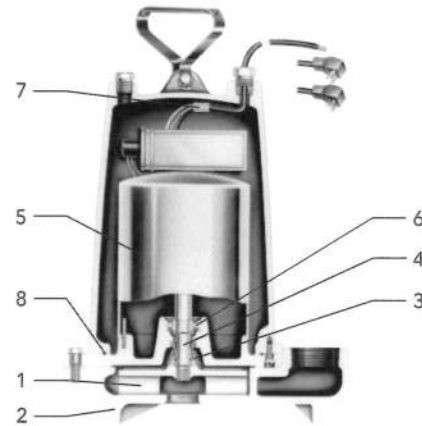
Order Number	HP	Phase	Volts	RPM	Impeller Diameter (in.)	Maximum Amps	Locked Rotor Amps	KVA Code	Full Load Efficiency %	Resistance Start	Resistance Line-Line	Power Cable Size	Weight (lbs.)
WE0311L	0.33	1	115	1750	5.38	10.7	30.0	M	54	11.9	1.7	16/3	56
WE0318L			208			6.8	19.5	K	51	9.1	4.2		
WE0312L			230			4.9	14.1	L	53	14.5	8.0		
WE0311M			115			10.7	30.0	M	54	11.9	1.7		
WE0318M			208			6.8	19.5	K	51	9.1	4.2		
WE0312M			230			4.9	14.1	L	53	14.5	8.0		
WE0511H	0.5	1	115	3450	3.56	14.5	46.0	M	54	7.5	1.0	14/3	60
WE0518H			208			8.1	31.0	K	68	9.7	2.4	16/3	60
WE0512H			230			7.3	34.5	M	53	9.6	4.0	14/4	60
WE0538H		3	200			4.9	22.6	R	68	NA	3.8		
WE0532H			230			3.3	18.8	R	70	NA	5.8		
WE0534H			460			1.7	9.4	R	70	NA	23.2		
WE0537H			575			1.4	7.5	R	62	NA	35.3		
WE0511HH		1	115		3.88	14.5	46.0	M	54	7.5	1.0	14/3	60
WE0518HH			208			8.1	31.0	K	68	9.7	2.4	16/3	60
WE0512HH			230			7.3	34.5	M	53	9.6	4.0	14/4	60
WE0538HH		3	200			4.9	22.6	R	68	NA	3.8		
WE0532HH			230			3.6	18.8	R	70	NA	5.8		
WE0534HH			460			1.8	9.4	R	70	NA	23.2		
WE0537HH			575			1.5	7.5	R	62	NA	35.3		
WE0718H	0.75	1	208	406	4.06	11.0	31.0	K	68	9.7	2.4	14/3	70
WE0712H			230			10.0	27.5	J	65	12.2	2.7	14/4	70
WE0738H		3	200			6.2	20.6	L	64	NA	5.7		
WE0732H			230			5.4	15.7	K	68	NA	8.6		
WE0734H			460			2.7	7.9	K	68	NA	34.2		
WE0737H			575			2.2	9.9	L	78	NA	26.5		
WE1018H	1	1	208	444	4.44	14.0	59.0	K	68	9.3	1.1	14/3	70
WE1012H			230			12.5	36.2	J	69	10.3	2.1	14/4	70
WE1038H		3	200			8.1	37.6	M	77	NA	2.7		
WE1032H			230			7.0	24.1	L	79	NA	4.1		
WE1034H			460			3.5	12.1	L	79	NA	16.2		
WE1037H			575			2.8	9.9	L	78	NA	26.5		
WE1518H		1	208		4.56	17.5	59.0	K	68	9.3	1.1	14/3	80
WE1512H			230			15.7	50.0	H	68	11.3	1.6	14/4	80
WE1538H		3	200			10.6	40.6	K	79	NA	1.9		
WE1532H			230			9.2	31.7	K	78	NA	2.9		
WE1534H			460			4.6	15.9	K	78	NA	11.4		
WE1537H			575			3.7	13.1	K	75	NA	16.9		
WE1518HH		1	208		5.50	17.5	59.0	K	68	9.3	1.1	14/3	80
WE1512HH			230			15.7	50.0	H	68	11.3	1.6	14/4	80
WE1538HH		3	200			10.6	40.6	K	79	NA	1.9		
WE1532HH			230			9.2	31.7	K	78	NA	2.9		
WE1534HH			460			4.6	15.9	K	78	NA	11.4		
WE1537HH			575			3.7	13.1	K	75	NA	16.9		
WE2012H	2	3	230	538	5.38	18.0	49.6	F	78	3.2	1.2	14/3	83
WE2038H			200			12.0	42.4	K	78	NA	1.7	14/4	83
WE2032H			230			11.6	42.4	K	78	NA	1.7		
WE2034H			460			5.8	21.2	K	78	NA	6.6		
WE2037H			575			4.7	16.3	L	78	NA	10.5		

PERFORMANCE RATINGS (gallons per minute)

Order No.	WE-03L	WE-03M	WE-05H	WE-07H	WE-10H	WE-15H	WE-05HH	WE-15HH	WE-20H
HP	1/2	1/2	1/2	3/4	1	1 1/2	1/2	1 1/2	2
RPM	1750	1750	3500	3500	3500	3500	3500	3500	3500
5	86	-	-	-	-	-	-	-	-
10	70	63	78	94	-	-	58	95	-
15	52	52	70	90	103	128	53	93	138
20	27	35	60	83	98	123	49	90	136
25	5	15	48	76	94	117	45	87	133
30	-	-	35	67	88	110	40	83	130
35	-	-	22	57	82	103	35	80	126
40	-	-	-	45	74	95	30	77	121
45	-	-	-	35	64	86	25	74	116
50	-	-	-	25	53	77	-	70	110
55	-	-	-	-	40	67	-	66	103
60	-	-	-	-	30	56	-	63	96
65	-	-	-	-	20	45	-	58	89
70	-	-	-	-	-	35	-	55	81
75	-	-	-	-	-	25	-	51	74
80	-	-	-	-	-	-	-	47	66
90	-	-	-	-	-	-	-	37	49
100	-	-	-	-	-	-	-	28	30

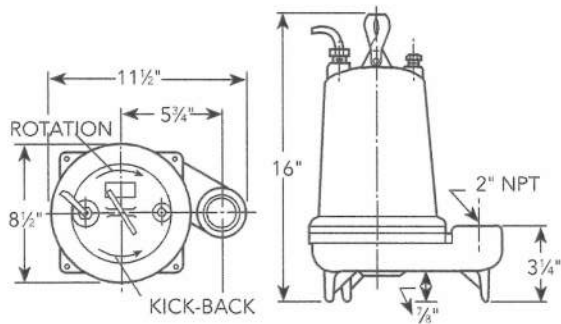
COMPONENTS

Item No.	Description
1	Impeller
2	Casing
3	Mechanical Seal
4	Motor Shaft
5	Motor
6	Ball Bearings
7	Power Cable
8	Casing O-Ring



DIMENSIONS

(All dimensions are in inches. Do not use for construction purposes.)



xylem
Let's Solve Water

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