# Septic System Design

US Army Corps of Engineers - Sandy Lake Recreational Area



#### Owner Address:

180 5th St. E., Suite 700 St. Paul, MN 55101

#### **Project Information:**

22205 531st Lane McGregor MN 55760

PID# 18-0-043000 Aitkin County

#### Septic System Design Completed By:

Brian Koski Septic Check 6074 Keystone Road Milaca, MN 56353 Lic # 2624

Phone: 888-983-2447



# **Detailed Parcel Report**

Parcel Number: 18-0-043000

# **General Information**

Township/City:

LIBBY TWP

Taxpayer Name:

**USA CORP OF ENGINEERS** 

Taxpayer Address:

**Property Address:** 

22205 531st Ln

Township:

50

Lake Number:

1006200

Range:

24

Lake Name:

**BIG SANDY LAKE** 

Section:

25

Acres:

20.55

Green Acres:

No

School District:

4.00

Plat:

**Brief Legal Description:** 

(NE SE) LOT 11 (ALL FLOWAGE)

## **Tax Information**

Class Code 1:

Federal Public Property

Class Code 2:

Unclassified

Class Code 3:

Unclassified

Homestead:

Non Homestead

Assessment Year:

2019

Estimated Land Value:

\$350,700.00

**Estimated Building Value:** 

\$79,100.00

**Estimated Total Value:** 

\$429,800.00

Prior Year Total Taxable Value:

\$0.00

Current Year Net Tax (Specials Not Included):

\$0.00

**Total Special Assessments:** 

\$0.00

\*\*Current Year Balance Not Including Penalty:

\$0.00

**Delinquent Taxes:** 

No

<sup>\*</sup> For more information on delinquent taxes, please call the Aitkin County Treasurer's Office at 218-927-7325.

<sup>\*\*</sup> Balance Due on a parcel does not include late payment penalties.

# Septic System Design Additional Information



Property Owner: Army Corps of Engineers – Sandy Lake Dam McGregor MN

#### Description of Wastewater Treatment and Dispersal System

This holding tank design is for the Sandy Lake Dam campground and recreation area on Big Sandy Lake north of McGregor MN. The wastewater at this facility is currently served by a state permitted wastewater treatment plant. The wastewater plant is going to be decommissioned and the owner of the property will replace the existing system with new large capacity holding tanks.

#### Flow Determination

Existing water use data is available from the existing treatment plant. The long-term average flow is approximately 1,900 GPD. Daily peak flows range from 2,000 GPD to 8,000 GPD during heavy use times in the summer months. Water use at the facility is generated from RV campsites, onsite bathrooms, dump station, and office buildings.

#### Proposed system upgrades

The existing wastewater plant will be properly abandoned. The existing collection system and lift station will remain in place and will be upgraded with new pumps and controls. A new 2" force main will be installed from the lift station and will be plumbed to the new holding tanks. Two 10,000 gallon holding tanks are proposed. A high-level alarm will be installed in the outlet end of the second tank to alert staff when this tank is 50% full. This alarm float will be mounted on a float tree and the alarm junction box will be mounted on the lift station control panel.

#### **Tank Specifications**

- 1. The septic tanks proposed are Wieser Concrete W10,000 holding tanks or approved equal.
- 2. Bed tanks in 6" of pea gravel or 3/4" minus rock.
- 3. New tanks are to be vaccum tested prior to backfill.
- 4. Tanks are to be insulated if final cover is less than 24". Use 2" thick foam board insulation if required.
- 5. Tank risers are to be 24" concrete or ultra-rib riser.
- 6. Tank access covers are to be casting inserts with bolt down cast iron lids.
- 7. The inside of the tank is to be coated with a tar coal sealant.
- 8. Tank backfill shall be compacted in lifts with 3" minus granular backfill.
- 9. A class 5 driveway will be provided for septic pumping access.

#### System Management

The owner shall contract with a licensed maintainer to provide the holding tank pumping services. The maintainer shall visit the site on call or at least weekly to remove effluent from the tanks. Septage disposal shall be completed under MPCA guidelines. An electronic alarm system will be installed in the tanks to alert onsite staff when tanks are nearing capacity.

#### Additional notes:

Refer to the Army Corps of Engineers specs for the lift station and control panel upgrades for more information on the overall scope of this project.

Keep all vehicles and construction equipment off septic area. Rutting and/or compacting the soil will change the percolation rates and may lead to system failure.

Owner to verify all property lines.

Contractor to verify well setbacks of 50' to the proposed tanks.

Installer to verify all elevations, dimensions, and ensure proper fall to pipes. Pitch pump chamber outlet to ensure complete drainback to pump chamber.

Establish turf to prevent erosion and freezing.

Each tank is to be pumped through the maintenance cover when serviced. Do not pump through inspection pipes.

Owner is responsible for all costs involved in servicing, monitoring, and mitigating the system.

All construction to be performed in accordance with MN Rule 7080 and the Aitkin County septic ordinance.

#### Maintenance Requirements

See attached operating permit or management plan for details

2011 purple code

# Holding tank Design

www.SepticResource.com (vers 19.2)

	Property Owner:	Amry Corps Engineers	Date: 7/29/2019	
	Site Address:	Big Sandy Dam - 22205 531st In Mo	PID: 18-0-043000	_
	Comments:			
	instructions:	= site specific input = ad	just if desired = self-calc	ulated (DO NOT ADJUST)
1)	? bedroom	Type II Other Establi	shment System	
2)	1900 GPD design fl	.ow		
	Yes Lift station to	o holding tank (lift basket < 100 ga	l treat as sewer line, > 100 gal trea	at as tank)
3)		20,00	Gallon Holding tank (minimum)	at 127.43 gpi
4)	42 inches from b	oottom of tank to "Hi Level" float (	50% full when alarm activates)	
5)	4700 gallons reserv	ve capacity (after High Level Alarm i	s activated)	
		7		
	I hereby certify that	I have completed this work in accord	ance with all applicable ordinances	, rules and laws.
0		Septic Check	2624	7/29/2019
	Designer Signature	Company	License#	Date

# INSPECTOR CHECK LIST - Holding Tank Big Sandy Dam - 22205 531st ln Mcgregor MN

DIS	3 Salidy Dalli - ZZZOS SSISC (II I	Megregor Min			
	WELL setbacks:	20'-50' to se 50' to every	ewer line req's MDH pressure	e test form (5 psi	for 15 min)
	PROPERTY LINES setback: Road setback: LAKE/BLUFF setback: Building setbacks: WATER LINE under pressure	10' to every platted: 10 20' for bluff 10' for every	rthing O'prop line. Metes & bounds f. Lakes: GD, RD, N	NE Prote	
	Sewer line & tank connection (no depth reg's, cleated to the station to Holding to the station to the statio	an out every 1		•	
	Holding tank and risers (wat	ter tight risers _20000_gal		existing verified	by pumping)
	Riser within 12" of grade, 6"	'+ access pipe	e to grade.		
	High Level Alarm (set at 75	% capacity)	(electrical or mechanical)		$\underline{42}$ inches from bottom of tank
	Water tight testing form				
	Re-use existing tank certificate Abandon existing system if no monitoring plan and type well abandonment form if no monitoring plan and type well abandonment form if no monitoring plan abandon plan ab	ecessary			

System Elevations

hanchmark

	bencnmark
	(Grade elevations are existing. If a different final grade is desired it should be shown and described here.)
	nusanus de la compania del compania del compania de la compania del compania del compania de la compania del
	1
Sewer pipe exiting house	Holding Tank
Grade	Grade
Pipe	inlet
	Tank bottom



# Septic System Management Plan for Holding Tank Systems

The goal of a septic system is to protect human health and the environment by properly treating wastewater before returning it to the environment. Your holding tank system is designed to store your used water before it is recycled back into our lakes, streams and groundwater.

This management plan will identify the operation and maintenance activities necessary to ensure compliance with applicable rules and regulations. Some of these activities must be performed by you, the homeowner. Other tasks must be performed by a licensed septic maintainer. However, it is YOUR responsibility to make sure all tasks get accomplished in a timely manner.

The University of Minnesota's *Septic System Owner's Guide* contains additional tips and recommendations designed to extend the effective life of your system and save you money over time.

Proper septic system design, installation, operation and maintenance means safe and clean water!

Property Owner: US Army Corps of Engineers - Sandy Lake Recreational

Property Address: 22205 531st Ln McGregor MN

System Designer: Septic Check

License #: 2624

System Installer: TBD

License #:

Service Provider/Maintainer: TBD

Phone:

Permitting Authority: Aitkin County

Permit #:

Date Inspected:

Keep this Management Plan with your Septic System Owner's Guide. The Septic System Owner's Guide includes a folder to hold maintenance records including pumping, inspection and evaluation reports. Ask your septic professional to also:

- Attach permit information, designer drawings and as-builts of your system, if they are available.
- Keep copies of all pumping records and other maintenance and repair invoices with this document.
- Review this document with your maintenance professional at each visit; discuss any changes in product use, activities, or water-use appliances.

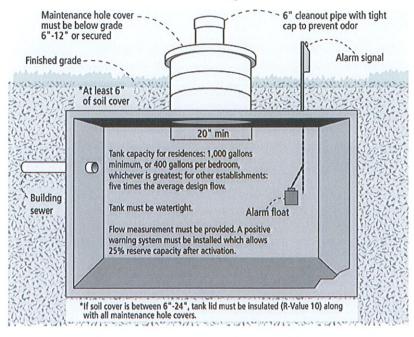
For a copy of the Septic System Owner's Guide, call 1-800-876-8636 or go to http://shop.extension.umn.edu/

http://septic.umn.edu

### Septic System Management Plan For Holding Tank Systems



# **Your Holding Tank**



Dwelling Type	Well Construction
Number of bedrooms:	Well depth (ft): n/a - deep well  Cased well Casing depth:  Other (specify):  Distance from septic (ft): 50' +  Is the well on the design drawing? Y N
Holdin	ng Tank

Holdin	g Tank
One tank: Tank volume: gallons Two tanks: Tank volume: gallons Tank is constructed of concrete	□ Flow measurement device: Lift Station □ Location: east of tanks □ Alarm  visual  audible □ Reserve %: 50
<ul><li>Service contract held by:</li><li>Service contract is attached to this management</li></ul>	nt plan

# University OF MINNESOTA

#### Septic System Management Plan For Holding Tank Systems



### **Homeowner Management Tasks**

These operation and maintenance activities are your responsibility. Use the chart on page 6 to track your activities.

Identify the service intervals recommended by your system designer and your local government. The tank assessment for your system will be the shortest interval of these three intervals. Your pumper/maintainer will determine if your tank needs to be pumped.

Tank capacity ÷ (# of occupants X 50 Gallons/day) = # of days between cleaning

				OR		
			Within 24	4 hours of alarr	n signal	
	Sys	tem Designer:	check every 5	days	My tank needs to be emptied	
	Loc	al Government:	check every	days	every <u>5</u> days	
Sea	ason	ally				
			aily – make sure the ; contact your maint:		t signaled. Alarms signal when your holding	5
		Measure and no money!	te your average da	ily water usag	e on page 5. Conserving water saves you	I
		Leaks. Check (liste	en, look) for leaks in	toilets and drip	pping faucets. Repair leaks promptly.	
٩n	nual	ly				
		Establish a contra	ct for tank cleaning	services with a	state licensed maintenance business.	
					in place. Inspect for damaged caps at leaser to help prevent freezing issues.	t
		water sources to	another location. F	rogram the re	of devices. When possible, discharge clean echarge frequency based on water demand frequently will result in increased pumping	d
			<i>er usage rate.</i> Revie ith your pumper/ma		Jse Appliance chart on Page 5. Discuss any	<b>Y</b>
Du	ring	each visit by a pu	mper/maintainer			
		Ask if your pumpe	er/maintainer is licer	nsed in Minnes	ota.	
		Make sure that yempties the tank		niner has clear	access to the holding tank and completely	Y

☐ Ask your pumper/maintainer to accomplish the tasks listed on the Professional Tasks on Page 4.

# Septic System Management Plan For Holding Tank Systems



## **Professional Management Tasks**

	r Toressionar Wanagement Tasks
long-term	e the operation and maintenance activities that a pumper/maintainer performs to help ensure n performance of your system. Professionals should refer to the O/M Manual for detailed s for tanks, pumps, alarms and other components. Call 800-322-8642 for more details.
□ V	Vritten record provided to homeowner after each visit.
Plumbing	g/Source of Wastewater
	Review the Water Use Appliance Chart on Page 5 with homeowner. Discuss any changes in water use and the impact those changes may have on the frequency of maintenance.
□ R	leview and document water usage rates with homeowner.
Holding T	Tanks
	Maintenance hole lid. A riser is recommended if the lid is not accessible from the ground urface. Insulate the riser cover for frost protection.
	iquid level. Check to make sure the tank is not leaking.
$\Box$ $Ir$	nspection pipes. Replace damaged caps.
$\Box$ A	larm. Verify that the alarm works and that there is at least 25% reserve capacity.
a e	and of year seasonal property pumping. Remind homeowner of most frequent causes of tank and building sewer freeze-ups. Ensure that there are no "micro-sources" of water such as a high afficiency furnace or other dripping devices. Determine a logical winter water use plan that will not result in need for emergency visit(s).
All other	components – inspect as listed here:

## Septic System Management Plan For Holding Tank Systems



# Water-Use Appliances and Equipment in the Home

Appliance	Impacts on Holding Tank	Management Tips
Garbage disposal	Uses water and increases pumping frequency and expense.	<ul><li> Use of a garbage disposal is not recommended.</li><li> Minimize garbage disposal use. Compost instead.</li></ul>
Washing machine	Uses water and increases pumping frequency and expense.	<ul> <li>Choose a front-loader or water-saving top-loader, these units use less water than older models.</li> <li>Wash only full loads.</li> <li>Do laundry off site.</li> </ul>
Dishwasher	Uses water and increases pumping frequency and expense.	Wash only full loads.
Large bathtub (whirlpool)	Uses water and increases pumping frequency and expense.	Take short showers to conserve water.
Clear Water Uses	Impacts on Holding Tank	Management Tips
High-efficiency furnace	Drip may result in frozen pipes during cold weather.	Re-route water into a sump pump or directly out of the house. Do not route furnace recharge to your holding tank.
Water softener Iron filter Reverse osmosis	Uses water and increases pumping frequency and expense.	<ul> <li>These sources produce water that is not sewage and should not go into your holding tank.</li> <li>Reroute water from these sources to another outlet, such as a dry well, drain tile or old drainfield.</li> </ul>
Surface drainage	Uses water and increases pumping frequency and expense.	When replacing, consider using a demand-based recharge vs. a time-based recharge.

### **Maintenance Log**

Track maintenance activities here for easy reference. See list of management tasks on pages 3 and 4.

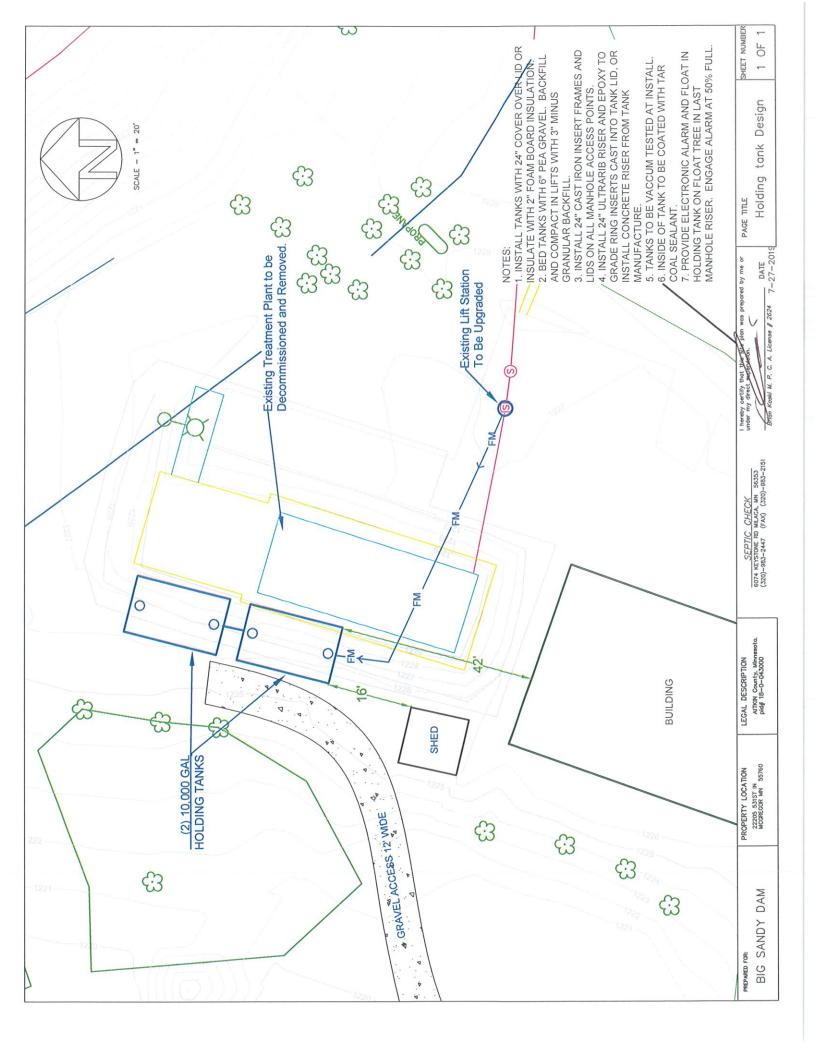
Activity	Date accomplished/measured water usage				
Check daily for a period of time and weekly once average use is determined:					
Water usage rate (gallons per day)					
Leaks: check for plumbing leaks					
Annually:					
Establish and maintain contract for holding tank pumping services					
Water use appliances – review use					

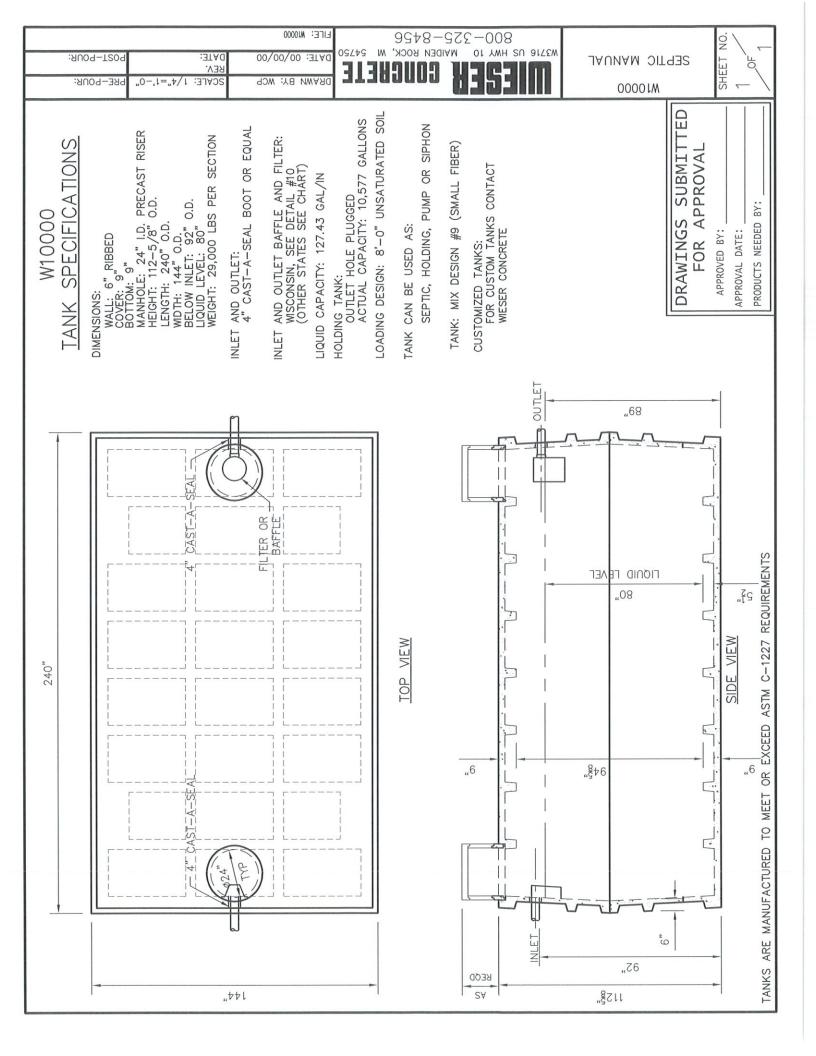
## Septic System Management Plan For Holding Tank Systems



Wate	r Meter Reading and	l Tank Evacuation Sc	hedule
Date	Water Meter Reading (in gallons)	Tank Contents Removed?	Total Gallons Removed
	-		
Notes:			
Mitigation/corrective act	ion plan: If capacity is e	exceeded, install more tar	nkage.
If infiltration is present, fir			
"As the owner of this SSTS, I understa utilizing the Management Plan. If req necessary corrective actions.	nd it is my responsibility to prope uirements in this Management Pl	rly operate and maintain the sewo	nge treatment system on this property, tify the permitting authority and take
Property Owner Signature:		[	Date
Management Plan Prepare	<sub>d By:</sub> Brian Koski	(	Certification # 7989
	in County		

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SHEET NO. 0 PF

AND JOINT DETAIL BOLT DOWN COVER MANHOLE RISER,

800-325-8456 M3716 US HWY10. MAIDEN ROCK, WI 54750

	FILE: SHEET 5		
	DATE: JANUARY 2008		
	TW2:Y8 NWA90		
Ľ	SCALE:1" = 1'	REV NO.	:DATE:

BOLT DOWN COVER

DETAIL

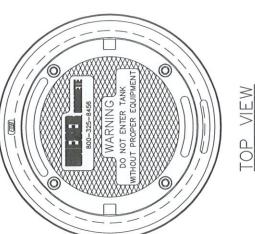
JOINT

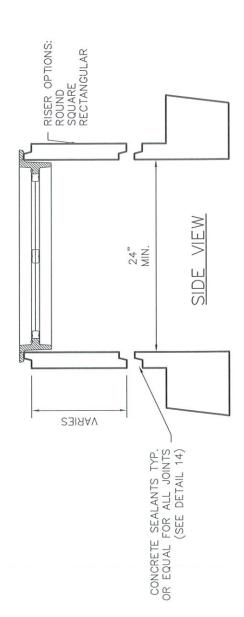
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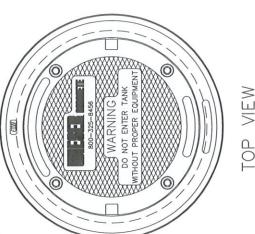
RISER,

MANHOLE









# TANK ALERT® XT

## Versatile Indoor/Outdoor Alarm System

The Tank Alert° XT indoor/outdoor alarm system monitors liquid level conditions in lift pump chambers, sump pump basins, holding tanks, sewage, agricultural, and other nonpotable water applications.

The alarm horn sounds and red beacon illuminates when a potentially threatening liquid level condition occurs. Once the condition is cleared, the alarm automatically resets.

#### **FEATURES**

- Automatic alarm reset
- Power on indicator
- Alarm test switch
- Horn silence switch
- Indoor/outdoor enclosure meets Type 3R water-tight standard
- Includes 15' SJE SignalMaster® control switch
- Alternative float models for high and low level alarm
- Optional auxiliary contacts for remote devices
- Optional pre-mounted terminal block so enclosure can be used as a junction box
- Optional 6 ft. power cord and liquid-tight connectors

#### PART NO. DESCRIPTION

1009923 TA XT, High, 15' SJE SignalMaster®

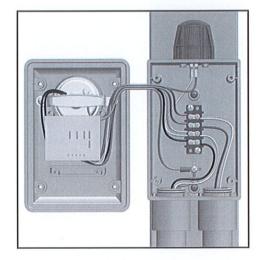
TA XT, No float 1005141

















# TANK ALERT® XT Alarm System

Versatile, indoor or outdoor liquid level alarm system.

This alarm system monitors liquid levels in lift pump chambers, sump pump basins, holding tanks, sewage, agricultural, and other water applications.

The Tank Alert® XT indoor/outdoor alarm can serve as a high or low level alarm depending on the float switch model used.

The alarm horn sounds and the red beacon illuminates when a potentially threatening liquid level condition occurs. The horn can be silenced, but the alarm light remains on until the condition is remedied. Once the condition is cleared, the alarm will automatically reset.

A "power on" light on the switch indicates power to the alarm panel.

#### **FEATURES**

- Enclosure meets Type 3R water-tight standard.
- Automatic alarm reset, horn silence switch, and alarm test switch.
- Alarm horn sounds at 85 decibels at 10 feet (3 meters).
- Alarm system (when installed on separate circuit) operates even if pump circuit fails.
- Complete package includes standard SJE SignalMaster\* control switch with 15 feet (4.57 meters) of cable (other lengths available) and mounting clamp.
- · UL Listed for indoor or outdoor use.
- CSA Certified.
- Five-year limited warranty.



#### **OPTIONS**

When ordered with the alarm, the system is available with:

- alternate float switch models for high or low liquid level warning.
- auxiliary dry normally open contacts for easy attachment of remote devices.
- premounted terminal block so enclosure can also be used as a junction box for splicing pump, pump switch, and pump power. Meets NEC standard for junction boxes.
- 6 foot (1.8 meter) power cord and liquid-tight connectors.



VOLTAGE: 120 VAC, 50/60 Hz

ALARM ENCLOSURE: 6.5 x 4.5 x 3.0 inch (16.51 x 11.43 x 7.62 cm), indoor-outdoor, weatherproof, thermoplastic meets Type 3R water-tight standard

ALARM HORN: 85 decibels at 10 feet (3 meters), meets Type 3R water-tight standard as installed by factory

**ALARM BEACON:** UL Listed, Type 4x beacon assembly

TEST/SILENCE SWITCH: certified to IP66 and IP68 standards

AUXILIARY ALARM CONTACTS (OPTIONAL): 120 VAC, 5 amps max., 50/60 Hz

PRE-MOUNTED TERMINAL BLOCK (OPTIONAL): 20 amps, 120/230 VAC

POWER CORD (OPTIONAL): 6 foot (1.8 meter) cord with 120 VAC plug

FLOAT SWITCH: SJE SignalMaster® control switch with mounting clamp

Cable: 15 feet (4.57 meters), flexible 18 gauge, 2 conductor (UL) SJOW, water-resistant (CPE)

Float: 2.74 inch diameter x 4.83 inch long (7 cm x 12.3 cm), high impact, corrosion resistant polypropylene housing for use in sewage and non-potable water up to 140°F (60°C)



# TANK ALERT® XT Alarm System

Versatile indoor or outdoor liquid level alarm system.

#### ORDERING INFORMATION

STANDA	Shipping	
Part#	Part# Description	
1009923	TAXT-01H (120 VAC w/15' SJE SignalMaster' High Level )	3.00 lbs.
1010251	TAXT- 01L (120 VAC w/15' SJE SignalMaster* Low Level )	3.00 lbs.
1004442	TAXT-01H (120 VAC w/15' SJE Sensor Float' High Level)	3.00 lbs.
1005140	TAXT-01L (120 VAC w/15' SJE Sensor Float* Low Level)	3.00 lbs.
1005141	TAXT-01X (120 VAC no float)	1.50 lbs.

STANDARD ALARM (120 VAC) with Terminal Block		Shipping	
Part#	Description	Weight	
1012416	TAXT-01HAUXTB (120 VAC w/15' SJE SignalMaster® High Level Auxiliary Contacts TB)	3.50 lbs.	
1022241	TAXT-01HTB (120 VAC w/15' SJE SignalMaster® High Level TB)	2.00 lbs.	
1005481	TAXT-01HTB (120 VAC w/15' Sensor Float® High Level TB)	3.50 lbs.	
1005835	TAXT-01LTB (120 VAC w/15' Sensor Float® Low Level TB)	3.50 lbs.	
1005836	TAXT-01XTB (120 VAC no float TB)	2.00 lbs.	
1009214	TAXT-01HAUXTB (120 VAC w/15' Sensor Float® High Level Auxiliary Contacts TB)	3.50 lbs.	

STANDARD ALARM (120 VAC) with Options		Shipping
Part#	Description	Weight
1006850	TAXT-01HAUX (120 VAC w/15' Sensor Float® High Level & Aux Con)	3.50 lbs.
1006690	TAXT-01HPC (120 VAC w/15' Sensor Float* High Level Power Cord)	3.50 lbs.

H = High Level L = Low Level X = No Float TB = Includes Terminal Block PC = Power Cord

AUX = Auxiliary Contacts MASTER CARTON holds 12 boxed units.

SEE PRICE BOOK FOR LIST PRICE.

#### **SPECIFICATIONS**

VOLTAGE: 120 VAC, 50/60 Hz

**ALARM ENCLOSURE:**  $6.5 \times 4.5 \times 3$  inches  $(16.51 \times 11.43 \times 7.62$  cm), indoor -outdoor, weatherproof, thermoplastic, meets Type 3R water-tight standard

**ALARM HORN:** 85 decibels at 10 feet (3 meters), meets Type 3R water-tight standard as installed by factory

ALARM BEACON: UL Listed, Type 4X beacon assembly

TEST/SILENCE SWITCH: certified to IP66 and IP68 standards

AUXILIARY ALARM CONTACTS (OPTIONAL): 120 VAC, 5 amps max., 50/60 HZ

PRE-MOUNTED TERMINAL BLOCK (OPTIONAL): 20 amps, 120/230 VAC

POWER CORD: (optional) 6 foot (1.8 meters) cord with 120 VAC plug

FLOAT SWITCH: SJE SignalMaster\* control switch with mounting clamp

CABLE: 15 feet (4.57 meters), flexible 18 gauge, 2 conductor (UL) SJOW, water-resistant (CPE)

**FLOAT:** 2.74 inch diameter x 4.83 inch long (7 cm x 12.3 cm), high impact, corrosion resistant polypropylene housing for use in sewage and non-potable water up to 140°F (60°C)

MAXIMUM WATER DEPTH: 30 feet (9 meters), 13 psi ELECTRICAL: 5 amps, 125 VAC/250 VAC, 50/60 Hz

> Call or fax your order! 1-888-DIAL-SJE (1-888-342-5753) • Fax 218-847-4617

#### **OPTIONS**

# CONTROL SWITCH OPTIONS

The Tank Alert°
XT alarm system
comes standard
with a 15 foot SJE
SignalMaster° control
switch with mounting
clamp. Other float
switches are available.
See control switch
section of the catalog.

To determine the price of alarm with an alternate float, add the price of the part number with "no float" to the price of the float switch.

UL Listed for Water & Sewage







## OTHER INFORMATION

Option	Description
AUX	Auxiliary Alarm Contacts (factory installed)
PC	6 foot power cord with two RCC8 1/2 inch liquid-tight connectors



www.sjerhombus.com customer.service@sjeinc.com