

OPERATION AND MAINTENANCE MANUAL

Wastewater System

St. George, Alaska



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Table of Contents

TABLE OF CONTENTS	I
ACRONYMS AND ABBREVIATIONS	IV
1. INTRODUCTION	1
A. PURPOSE OF THIS MANUAL	1
B. MANUAL OVERVIEW	1
C. HOW TO USE THIS MANUAL	2
D. OPERATOR'S RESPONSIBILITIES	4
E. SYSTEM OVERVIEW	4
F. DESIGN INFORMATION	6
2. SAFETY AND HEALTH	7
A. GENERAL	7
B. SEWAGE AND DISEASES	7
C. HOUSEKEEPING	8
D. ELECTRICAL	9
E. LOCK OUT/TAG OUT PROCEDURE	9
F. MECHANICAL EQUIPMENT	10
G. FALLING	10
H. LIFTING	10
I. FIRE	11
J. CHEMICAL HANDLING	12
K. TOOLS	12
L. PERSONAL PROTECTIVE EQUIPMENT (PPE)	12
M. CONFINED SPACES	13
3. PREVENTIVE MAINTENANCE	15
A. MAINTENANCE PROCEDURE	15
B. SYSTEM TASKS	15
4. RECORDS	17
A. THE IMPORTANCE OF RECORD KEEPING	17
5. SYSTEM COMPONENTS	19
A. CHAPTER OVERVIEW	19
B. WASTEWATER SERVICE LINES	21
C. GRAVITY SEWER MAINS	23
D. SEPTIC TANKS	27
E. SEWAGE SLUDGE PUMP	31
F. OCEAN OUTFALL	35
G. JETTER	39
6. EMERGENCY PLAN	43

A. MANHOLE OVERFLOW	43
B. SEWAGE SPILL	44
7. CONTACTS	45
8. GLOSSARY OF TERMS	49

Appendices

A.	REPLACEMENT PARTS	61
	THE ALASKA UTILITY SUPPLY CENTER (AUSC).....	62
	MEMBERSHIP AGREEMENT	63
	AUSC CATALOG.....	67
B.	EQUIPMENT LIST	87
	STANDARD EQUIPMENT	88
	EMERGENCY EQUIPMENT	92
	SAFETY EQUIPMENT.....	93
C.	MSDSs	95
	LIME/QUICKLIME	96
D.	OPERATOR NOTES	107

Acronyms and Abbreviations

A	Amps
ADEC	Alaska Department of Environmental Conservation
ANTHC	Alaska Native Tribal Health Consortium
APIA	Aleutian Pribilof Island Association, Inc.
AUSC	Alaska Utility Supply Center
DEHE	Division of Environmental Health and Engineering
DSO	Department of Sustained Operations
EH	environmental health
EHS	environmental health specialist
HDPE	high density polyethylene
hp	horsepower
MSDSs	material safety data sheets
NR	no recording
O&M	operation and maintenance
oz.	ounces
PMP	preventive maintenance plan
PPE	personal protective equipment
RUBA	rural utility business advisor
RMW	remote maintenance worker
VSW	Village Safe Water
WWTS	wastewater treatment system

1. INTRODUCTION

A. Purpose of This Manual

The purpose of this Operation & Maintenance (O&M) Manual is to guide you through the workings of the St. George Wastewater Treatment System (WWTS). This is not an exhaustive guide to every piece of equipment within the system. Rather, it lists the basic safety, preventive maintenance, and record-keeping requirements necessary to protect you, the operator, and to keep the system running. Additionally, this manual describes the system and provides basic troubleshooting advice for common problems.

B. Manual Overview

This manual describes the operation and maintenance of the wastewater treatment system and provides appendices listing additional information about the system. The manual is divided into eight chapters:

Chapter	Title	Contents
1	Introduction	An overview of the manual and the system
2	Safety	Information on protecting the operator
3	Preventive Maintenance	Routine actions for keeping the WWTS running properly
4	Records	Paperwork that must be filled out to document maintenance
5	System Components	An explanation of each individual piece of the system
6	Emergency Plan	Instructions for how to handle a major malfunction. Instructions for how to shut the plant down.
7	Contacts	A list of phone numbers and addresses you will need to run the WWTS.
8	Glossary of Terms	A dictionary of terms used in this manual.

C. How To Use This Manual

Read this manual. **Underline, highlight, or make notes next to passages that you find particularly important or relevant. This is your manual, so do what is necessary to make it clear and usable for you.** If you do not understand a word, see Chapter 8.

Glossary of Terms. If you do not understand a section, mark it and ask for an explanation from one of the contacts listed on the next page.

The following table explains what the lettering and symbols in this manual mean.

Typography in this manual

	Shows you a telephone number that you may need to call if you need assistance or if have to report a violation.
	Reminds you to write something down, usually in one of the operation logs.
	Shows you an address to which you must mail something, usually a sample or an operation record
	Warns you of a deadly hazard.
<p>red lettering</p>	Warns of possible damage to you
<p>blue lettering</p>	Warns of possible damage to the equipment

If you experience a problem with a particular piece of equipment and you do not know what is wrong, follow these steps:

1. Read the section in Chapter 5 about the troublesome system component. These sections explain normal operation and list common problems and their solutions.
2. If the problem cannot be solved by reading Chapter 5, look at the manufacturers' literature in Volume II. The manufacturer's literature presents specific information about each component and offers additional troubleshooting suggestions. There is often a customer service number listed in this literature.
3. If steps 1 and 2 do not solve the problem, call one of the following contacts.



Before you call, write down the following information to share with the person you are calling:

- The equipment information
 - Component name
 - Manufacturer name
 - Model number
- The problem
 - What is wrong with the equipment
 - What you have done to try to repair it



Contact information if you need assistance with repairs

Doug Abbas
RMW
Aleutian Pribilof Island Association, Inc. (APIA)
Community Services Department
201 E. 3rd Ave.
Anchorage AK 99501
1-800-478-2742
907-222-4218
907-279-4351 fax
doug@apiai.com

Paul Gabbert
Utility Operations Consultant
DSO at ANTHC, DEHE
1901 S. Bragaw St., Suite 200
Anchorage AK 99508
907-729-3560
1-800-560-8637 ext 3560
907-729-4506 fax
pgabbert@anthc.org

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Utility Operations Specialist
DSO at ANTHC, DEHE
1901 S. Bragaw St., Suite 200
Anchorage AK 99508
907-729-4086
1-800-560-8637 ext 4086
907-729-4506 fax
fmurphy@anthc.org

D. Operator's Responsibilities

You, the operator of this WWTS, are responsible for making sure that the City of St. George is served by a healthy and efficient sewage removal system. If you face a problem you cannot solve with the help of this manual, you should contact your supervisor immediately. Problems that prevent the normal delivery of sewage to the septic tanks and ocean outfall line can harm the public and yourself.

The following responsibilities are general guidelines for your job. More specific responsibilities are listed as Preventive Maintenance (Chapter 3). Do not attempt to operate this facility without reading Chapter 3.

- Be safe. Above all, protect yourself from injury (see Chapter 2).
- Keep a clean, well-organized facility.
- Perform daily, weekly, monthly, semi-annual, and annual maintenance.
- Keep clear and accurate records.
- Be aware of problems with the equipment. Look and listen for leaks, strange noises and vibrations, and broken lights or meters.
- Maintain all parts of the system as well as you can.

E. System Overview

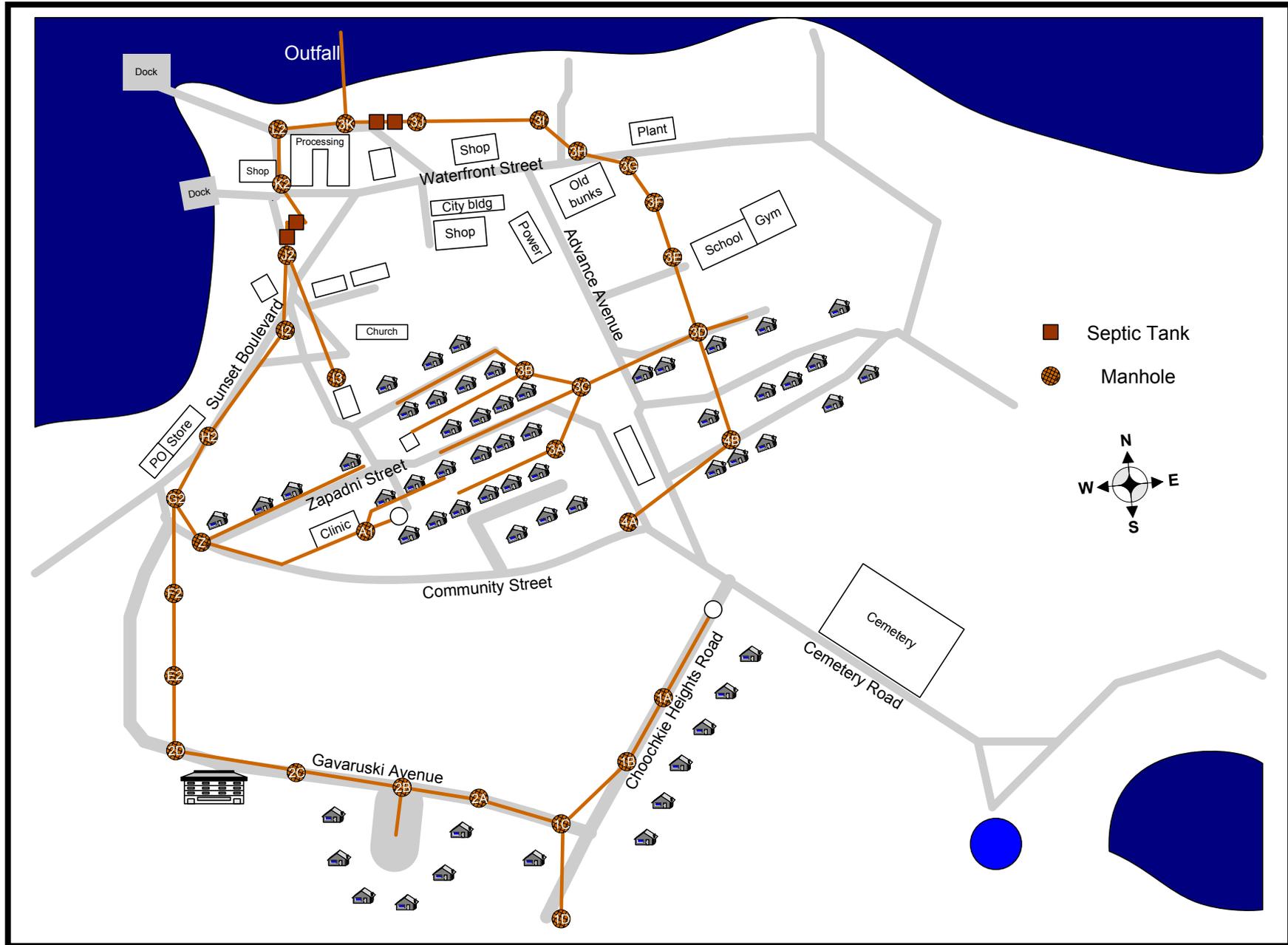
The City of St. George is served by a gravity flow sewer system that uses four septic tanks and an ocean outfall.

A system of sewer mains collects sewage from the toilets, sinks, and drains of houses and businesses. These sewer mains are sloped so the sewage flows downhill to the septic tanks. Much of the solid waste remains in the settling tank, while the clarified wastewater flows out of the tank and to the ocean outfall that extends 315 feet into the Bering Sea

The sludge and scum that settle or float in the septic tank are partially eaten by microorganisms that live in the tank. Periodically, the digested sludge has to be removed from the settling tank by stirring and diluting it, then pumping it into the system's terminal manhole, 3K. (There should be a sewage solids disposal site at the new landfill. When that is finished at permitting is acquired, pump the solids to the disposal site.)

A diagram of the wastewater system is presented on the next page.

ST. GEORGE WASTEWATER SYSTEM O&M MANUAL



F. Design Information

System		
Community	St. George	
Population		
Current	147	people
Septic Tanks		
Number of tanks	4	each
Length	20	feet
Diameter	7	feet
Capacity	≈ 5,750	gallons
Material	Aluminum	
Ocean Outfall		
Length	315	feet
Size	6	inch
Material	Ductile Iron	
Sludge Pumper		
Manufacturer		
Capacity		gallons
Jetter		
Manufacturer	Aquatech	
Model	SJ600P	
Power take-off manufacturer	Rockford	
Pump manufacturer	General Pump	
Pump model	KLS40	
Pump volume	35	gpm
Pump pressure	2000	psi
Pump size	36.6	hp

Notes:

gpm = gallons per minute

psi = pounds per square inch

hp = horsepower

2. SAFETY AND HEALTH

WASH YOUR HANDS FREQUENTLY WHEN WORKING WITH THE ST. GEORGE WASTEWATER SYSTEM.

A. General

Safety must be the operator's highest concern. There are many potential safety hazards associated with the operation and maintenance of a wastewater treatment system. Even routine tasks at the facilities can be dangerous. The operator must use caution, judgment, and the appropriate equipment to protect himself, the public, and the facility properties.

This section presents some of the dangers involved with working at this facility and ways to avoid injury. More specific safety information about the system components is available in the manufacturer's literature. The operator and anyone involved with the facility should read this chapter carefully. Report all injuries, accidents, and unsafe working conditions to a supervisor.

While this section presents basic safety information, the State of Alaska Occupational Safety and Health Administration (OSHA) will expect you to have and follow more detailed written safety procedures. Your local environmental health specialist can provide more information on how to implement a comprehensive safety program.

Do not let the public near the septic tanks or any other wastewater system equipment.

Do not use the wastewater system's facilities or tools for maintenance of anyone's personal equipment.

B. Sewage and Diseases

Being the operator of a wastewater system means that you must be especially cautious of protecting your health. Even though some microorganisms are helpful in breaking down the sewage, many microorganisms can be harmful to you. Sick and infected people and

animals will send these microorganisms into your wastewater system. Bacteria, viruses, fungi, and parasites are all threats to your health.

The most common way for humans to pick up these microorganisms is through swallowing but they may also be inhaled or absorbed through your skin. Consequently, always wear long rubber gloves and goggles if you might come in contact with sewage during your work. Wear a face shield if you might be exposed to sewage splash. If you wear a mask to relieve odor nuisance, remember the mask will not protect you from toxic gases (see Section 2M. Confined Spaces).

Wash your hands before you eat or smoke.

If you expect to come into contact with sewage, you should wear rubber pants and a rubber jacket.

Any clothes that come into contact with sewage should be washed immediately in hot water with bleached detergent. Wash your clothes right away in the washeteria rather than taking them home and waiting to wash them later. Clean the top of the washer or table if your clothes have been on either one.

As a wastewater system worker, you are at risk for catching Hepatitis A. This is a virus that attacks the liver. It is transmitted to humans when fecal matter (human and animal waste) comes into contact with the mouth. This can happen if you work around sewage.

Remember to wash your hands before you smoke or eat. Ask your Environmental Health Specialist about recommendations for Hepatitis A, tetanus, or diphtheria vaccination.



Wash your hands before you eat or smoke. This is particularly important when you are working around chemicals and raw sewage.

C. Housekeeping

One of the easiest ways to create a safe working environment is to practice good housekeeping. This means placing items—especially tools—where they belong. Some chemicals should not be stored near each other. See the Material Safety Data Sheets (MSDSs) for details.

Spills should be cleaned up immediately. Leaks should be patched. Unnecessary equipment should be removed. Floors should be swept and mopped weekly (or more frequently if necessary). A bleach or pine-sol type detergent/disinfectant should be used in a water solution for mopping. Be careful when walking on wet floors (see Section G below). This same solution should be used to clean the walls as needed in order to maintain the air quality in the lift stations.



Do not use ammonia products for cleaning. Ammonia mixed with bleach or hypochlorite solutions produces hazardous gases.

D. Electrical

Maintenance work on the facility's electrical systems must be performed by a trained electrician.

When working on electrical equipment,

DO:

- Turn the appropriate circuit breakers and disconnects **OFF** before starting work on any electrical system components or equipment.
- Follow the Lock Out/Tag Out Procedure (see Section E below).
- Replace all operating and warning lights when they burn out.
- Assume that all transformers are energized.
- Investigate the cause of a tripped breaker before you reset the overload.

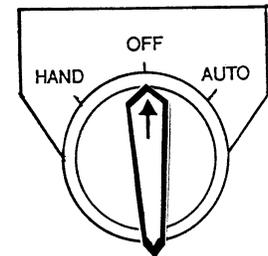
DO NOT:

- Do not work on electrical equipment with wet hands, clothes, or shoes.
- Do not stand in water or on pipes or drains.
- Do not use metal ladders when repairing electrical equipment.

E. Lock Out/Tag Out Procedure

Before working on electrical equipment, follow this procedure:

1. Turn off the equipment using the local power switch (HOA). Throw the main breaker for that piece of equipment to disconnect (open) the power.
2. Lock the main breaker with a pad lock, and **DO NOT** give the key to anyone else.
3. Place a "DO NOT OPERATE" tag on the breaker. Do not let anyone else remove the tag.
4. To make sure that the equipment is not working, try to start the equipment by turning the local switch on (hand or power ON). Check the voltage at the



equipment if there is a voltage tester/meter. THERE SHOULD BE NO VOLTAGE. The equipment should not start. If there is no voltage, it is now safe to work on the equipment.

5. When work is complete, remove the lock and tag yourself.

F. Mechanical Equipment

Before working on mechanical equipment, do the following:

- Turn circuit breakers and electricity **OFF**.
- Use a voltmeter or wiggie to check any red or yellow wires coming from the control panel. These may be time delay switch or relay wires. Trace them out.
- Follow Lock Out/Tag Out Procedure (See Section E above).
- Make sure all moving parts are stopped.

After repair, before restarting the equipment, make sure all personnel and tools are clear of the mechanical equipment and all working parts are free to move without obstruction.

G. Falling

Use caution and step carefully around the septic tanks and the manholes. The septic tanks and the manholes are confined spaces. If you are going to open the covers to either, you must follow the confined space procedures outline in Section 2M. Confined Spaces.

H. Lifting

Improper lifting techniques can cause permanent damage to your back. Both light and heavy objects can be hazardous if you lift them incorrectly. Following these techniques can help you stay safe:

- Never attempt to lift large, awkward, or heavy objects without assistance.
- Lift by bending the legs, never the back. Keep your back straight.
- Hold objects close to you when lifting. In other words, don't reach out to lift an object.
- Do not twist your back. Use your feet to turn if you have to place an object to your side.
- Use mechanical devices or power equipment whenever possible.
- Do not hurry.
- Store heavy items at waist height to avoid bending or reaching when picking them up.

- Store chemicals below eye level.
- Order items in quantities you can move safely.

I. Fire

The chemicals and electricity in the lift stations may cause fires or make fires more dangerous. To avoid fire and injury,

DO:

- Throw away greasy and oily rags in a covered metal container outside the building.
- Store chemicals in a safe and correct manner to avoid dangerous chemical combinations. See the MSDSs.
- Talk to your supervisor or Environmental Health Specialist about fire extinguisher training.
- Know where the fire extinguishers are, and make sure nothing is blocking you from getting to them.
- Check the fire extinguishers every month to make sure they are fully charged and have an annual professional inspection.

DO NOT:

- Do not let flammable garbage build up in or outside the building.
- Do not smoke or use open flames around flammable chemicals, in manholes, or around pump stations.
- Do not smoke or use open flames while handling fuels, solvents, or greases.

In the event of a fire remember **RACE**:

- **R**escue any people who are in danger.
- **A**larm—call the local emergency number.
- **C**onfine the fire—keep it to a small area if you can. Close doors and windows.
- **E**xtinguish the fire if you can use the fire extinguisher safely.

If you need to use a fire extinguisher, remember **PASS**:

- **P**ull the pin.
- **A**im the nozzle.
- **S**queeze the trigger.
- **S**weep back and forth over the area on fire.

J. Chemical Handling

Some chemical solutions used in water treatment are harmful and corrosive. Use rubber gloves, aprons, and goggles when preparing these solutions. Clean up all spills immediately. Store chemicals in approved safety containers with the lids on and store them in a dry area separate from fuels, oils, and food. If chemicals splash on clothing or skin, clean immediately.

Detailed information on the handling of certain chemicals and the appropriate First Aid procedures are available in the MSDSs in Appendix C. Familiarize yourself with the MSDSs for each chemical you use.

Make sure you have access to a working ANSI-rated eyewash system. Work the system weekly to make sure it is ready if you need it.

Wash your hands after working around chemicals.

K. Tools

Incorrect use of hand or power tools may lead to serious injuries or accidents. Remember that tools can be just as dangerous when they are not in use. Follow these guidelines to protect yourself:

- Use the appropriate tool for the job. Don't use makeshift tools.
- Repair or replace tools if they are defective or damaged.
- Wear the proper protective clothing (for example, gloves or goggles).
- Carry sharp tools pointed away from your body.
- Don't put sharp tools into your pockets.
- Don't leave tools unattended on a ladder, a ledge, or any other high point where it might fall on you or someone else.
- Make sure tools have the proper guards attached to them.

L. Personal Protective Equipment (PPE)

Personal Protective Equipment (PPE) is your last line of defense for the wastewater system operator. Some of the chemicals used for cleaning can irritate or injure you. Eye and skin irritation is noticeable, but your lungs and kidneys may also be affected if you do not take the proper precautions. The MSDS (Appendix C) for each chemical explains what PPE is necessary for handling that chemical. Follow the PPE recommendations in each MSDS. Even though some of the chemicals are in safe forms in the water supply, the concentrated versions of chemicals, such as chlorine, can be dangerous.

Always wear long rubber gloves, goggles, and a face mask that covers your mouth and nose when you are working with sewage.

M. Confined Spaces

THE LIFT STATION WET WELLS AND THE MANHOLES ARE CONFINED SPACES.



Do not enter a confined space. If work must be done in a confined space, contact your Regional Environmental Health Program Manager or Utility Operations Consultant.

A confined space is a space where there is a limited entry or exit. In other words, there is usually only one way into or out of the space, and that entry/exit may not be very big. These spaces are not created for humans to stay in and may lack proper ventilation. Lift stations, manholes, and utilidor accesses are the most common hazardous confined spaces. Other confined spaces are filters, vaults, and septic tanks.

Understand the following primary hazards of working in a confined space:

- Dangerous air conditions
 - Too little oxygen is in the air.
 - The air is flammable because of dust, vapor, or gas mixing with oxygen and a source of ignition.
 - Toxic chemicals may be inhaled.
- Limited movement or visibility
- Chance of getting stuck
- Over 50% of the workers who die in confined spaces were trying to rescue other workers
- As operator, you should know which system components contain confined spaces. The entries to these spaces should be marked with a “Confined Space” sticker. Ask your regional health program manager or RMW to show you which areas are confined spaces. A confined space may look safe, but it may be filled with dangerous gases or may pose other threats that cannot be seen. **Do not enter a confined space. If work must be done in a confined space, call one of the contacts on the following page.**



**Contacts you must call when work must
be done in a confined space**

Mike Brubaker EH Program Director APIA 201 E. 3 rd Avenue Anchorage AK 99501 1-800-478-2742 907-222-4217 907-279-4351 fax mikeb@apiai.com	Paul Gabbert Utility Operations Consultant DSO at ANTHC, DEHE 1901 S. Bragaw, Ste. 200 Anchorage AK 99508 907-729-3560 1-800-560-8637 ext 3560 907-729-4506 fax pgabbert@anthc.org
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3. PREVENTIVE MAINTENANCE

A. Maintenance Procedure

You, the operator, are responsible for maintaining a safe and properly functioning wastewater system. The best way to maintain this system is to practice scheduled preventive maintenance. This will help prevent breakdowns and will help you catch small problems before they become big problems.

This chapter explains your responsibilities to perform both the general system maintenance and the maintenance required for each system component. The contents of this chapter form your preventive maintenance program or PMP. The PMP is a list of jobs that are performed regularly. Some are done daily, some weekly, some monthly, some twice a year, and some annually.

The tasks in the PMP for the Kobuk Wastewater system are listed on a laminated wall chart, included in this manual, that you should post in a safe and clearly visible location. Following this schedule will help you avoid some major repairs later on.

B. System Tasks

These are general system tasks. Check the equipment listed. If there is a problem with the equipment or if you want to see the maintenance schedule listed by component, refer to Chapter 5. See the manufacturer's literature at the end of this manual for specific information on pump and motor maintenance.

MONTHLY		
Equipment	Make sure that you...	
Septic Tanks	Check the septic tank areas for damage or vandalism. Make sure the inspection hatches are capped.	
EVERY 6 MONTHS		
Equipment	Make sure that you...	

ST. GEORGE WASTEWATER SYSTEM O&M MANUAL

Sewer Mains	Check the manholes for build-up of solids. The manholes are confined spaces. Contact your RMW or EH Specialist before working on the manholes.	
ANNUALLY		
Equipment	Make sure that you...	
Gravity Sewer Mains	Wash down the manholes. Flush the mains. See Section 5C. Gravity Sewer Mains	
Septic Tanks	Check the sludge level. Pump if necessary.	
Sludge Pumper	Change the oil, transmission oil, and air filter.	
EVERY 2 YEARS		
Equipment	Make sure that you...	
Septic Tanks	Pump the tanks at least once every 2 years	

4. RECORDS

A. The Importance of Record Keeping

This chapter describes your record keeping responsibilities and offers a record-keeping form you can use. Your records should be well organized and accurate. Record keeping will alert you to changes that mean you have a small problem, will tell you how often you need to replace and order parts, and will determine what your operating budget should be. Record keeping is an important form of preventive maintenance, and a little attention to the records now will help you to avoid some major problems in the future.

The St. George wastewater system only has 1 record form, and this is found on the following page. If this form is incorrect or if it does not meet your needs, make the necessary changes in red pen on the form and send it to the address listed below. Call ahead and say you are requesting a new form. All forms are kept on computer, and ANTHC will update the form and return it to you.

Keep a clipboard to hold the operation records.



Contact information if you need updated record forms

Paul Gabbert
Utility Operations Consultant
DSO at ANTHC, DEHE
907-729-3560
1-800-560-8637 ext 3560
907-729-4506 fax
pgabbert@anthc.org

ST. GEORGE SEWER SYSTEM OPERATION RECORD

MONTH _____ YEAR _____ OPERATOR _____

Day	Problems	Maintenance	Purchases
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			
27			
28			
29			
30			
31			
Total Cost of Ordered Parts			

5. SYSTEM COMPONENTS

A. Chapter Overview

This chapter presents detailed information about each component of the water treatment system. Each lettered section describes how the component works, lists the start-up procedure, lists maintenance tasks, and offers possible solutions for common problems you might encounter. If you need more information about a specific component, consult the manufacturer's literature in Volume II.

Most component sections are presented in 8 parts:

Purpose - Describes the purpose of the components.

Equipment - Lists the major equipment in the component.

Operational Description - Describes the operation of the component and process.

Controls - Describes the component controls.

Electrical - motor starters, breaker panels, etc.

Mechanical - pressure switches, flow meters, etc.

Start-Up Procedures - Lists the step-by-step procedure to start-up each component.

Normal Operating Conditions - Lists the normal operating conditions of the component.

Routine Maintenance and Inspection - Lists routine maintenance and items to check on the equipment and facilities.

Common Operational Problems - Lists common types of problems that may occur with the equipment, and possible solutions to the problems.

This chapter is divided into the following component sections:

A. CHAPTER OVERVIEW	19
B. WASTEWATER SERVICE LINES.....	21
C. GRAVITY SEWER MAINS.....	23
D. SEPTIC TANKS	27

ST. GEORGE WASTEWATER SYSTEM O&M MANUAL

E. SEWAGE SLUDGE PUMP 31
F. OCEAN OUTFALL..... 35
G. JETTER..... 39

B. Wastewater Service Lines

Purpose

The service lines collect sewage from the homes and businesses and transport it to the gravity sewer system.

Equipment

- Cast iron sewer service lines from the homes to the gravity sewer mains.

Operational Description

Wastewater service lines transport sewage from each home into the gravity sewer mains. Sewage flows from each home or business through the building's plumbing into the wastewater service line. The wastewater service lines route the sewage to the gravity sewer mains.

Controls

There are no controls on the wastewater disposal system.

Start-up Procedures

There are no start-up procedures except to see that there are no blockages that would prevent the sewage from flowing in the line.

Normal Operating Conditions

- Sewage should flow freely into the gravity sewer mains.
- No build-up of materials in the sewer lines should occur.
- No excessive odors come out of the plumbing.

Routine Maintenance and Inspections

The wastewater service lines are the homeowner's responsibility for all components on the homeowner's property.

Common Operational Problems

PROBLEM	POSSIBLE CAUSE	POSSIBLE REMEDY
Odors	Seepage from broken pipe or loose joints.	Locate and repair
	Sewage backed up and going septic	Run a snake in the service line. Use the cleanout.
	Siphoned traps due to plugged vents.	Run water in all drains and check the vent pipe.
Sewage backing into building	Sewer line clogged.	Run a snake into the sewer service line. Use the cleanout.
	Venting problems.	Check for blockages.
Large increase in flow or low temperature	Water is being wasted in cold weather to prevent the pipes from freezing	Ask people to conserve their water before the city runs out.
	Infiltration of groundwater into system.	Fix the seep.

C. Gravity Sewer Mains

Purpose

The gravity sewer mains collect the wastewater from the various wastewater service lines in the community and transport it to the septic tank.

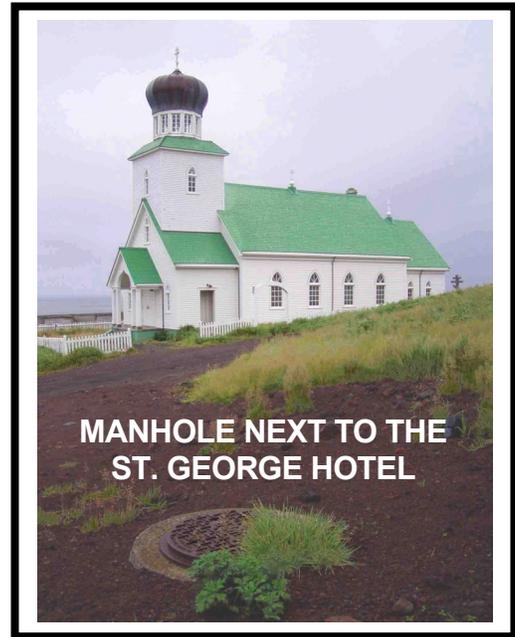
Equipment

West side collection system

- 3,320 feet of 8" ductile iron pipe
- 350 feet of 8" asbestos cement pipe
- 190 feet of 6" vitrified clay pipe
- 150 feet of 6" ductile iron pipe
- 350 feet of 4" concrete sewer main
- 21 manholes
- Cleanouts

East side collection system

- 180 feet of 8" asbestos cement pipe
- 2,030 feet of 6" vitrified clay pipe
- 690 feet of 6" ductile iron pipe
- 12 manholes



Operational Description

The gravity sewer mains are pipes that run beneath the ground at a slope that allows the wastewater to flow downhill. Wastewater flows into the gravity sewer mains from the service lines. Once in the sewer mains, the wastewater flows downhill to the septic tanks. Sewer mains are generally buried four to eight feet deep.

The community is divided into two wastewater drainage basins. Sewage from homes and businesses on the south and west sides of town flows through two septic tanks near the old docks. Sewage from the homes and businesses on the east side of town (east of the hotel) flows through two septic tanks near the carpenter shop immediately before reaching the outfall.

Controls

There are no controls associated with the gravity mains.

Start-Up Procedures

Once constructed, the gravity sewer mains remain in operation.

Normal Operating Conditions

The wastewater in the gravity sewer mains should flow from manhole to manhole until it reaches the septic tanks. The wastewater should not stand at any point in the system. There should be no solids deposited in the mains or manholes.

Routine Maintenance and Inspection

Every 6 Months

- Check manholes for build-up of solids.

WARNING: Manholes are Confined Spaces. See Section 2M. Confined Spaces.



Annually (in September, before freeze-up)

- Wash down the manholes.
- Flush the sewer mains. Using a hose connected to the jetter, send a steady stream of water into the upstream end of the gravity sewer main. Flush for 15-30 minutes at each manhole. Start at the farthest point upstream and move downstream to the next manhole. Two people should be at the lower manhole to watch for large objects. If a large object appears, it should be removed. A dipnet with a long handle is useful for picking up objects. **Manholes are confined spaces. Do not enter without consulting section 2M. Confined Spaces and calling the contacts listed in that section. Oxygen testing is required before you enter a manhole.**



Common Operational Problems

PROBLEM	POSSIBLE CAUSE	POSSIBLE REMEDY
The water fails to flow through the system or flows too slowly	The main is frozen	Attempt to thaw it by using the Aquatech jetter
	The main is stopped or partially stopped	Clear the line with a snake or Aquatech jetter
	There are solids deposited in the mains or manhole.	Flush
	There is not enough flow to remove the solids in the waste water	Flush out the lines and manholes by adding excessive water in the next higher manhole.

PROBLEM	POSSIBLE CAUSE	POSSIBLE REMEDY
	The line is broken	Dig up the line where sewage surfaces. Repair the line.
Solids keep depositing in the manholes	Low flow	Increase flushing to 4 times a year.
	Rough manhole invert	Jackhammer out existing trough and pour new, smoother trough. Call RMW
	Manhole has settled or earthquake has shifted the manhole	Call your RMW for suggestions
Strong Odors from Manhole	Solids are depositing	Flush
	Gases are coming from the sewage	DO NOT ENTER. SEE SECTION 2M. Confined Spaces. Call your EHS.

D. Septic Tanks

Purpose

The septic tanks collect sewage solids to prevent them from entering the ocean outfall.

Equipment

- Four 5,000-gallon septic tanks (See the system map in Section 1E. System Overview for septic tank placement.)

Operational Description

Sewage flows from the gravity sewer mains into the septic tanks. Wastewater enters the septic tanks before it reaches the ocean outfall. The septic tanks remove sludge and scum from the wastewater to keep solids and grease from entering the Bering Sea. Sludge is the solid product left behind when wastewater passes through the settling tank. Scum is the film-like residue that remains near the top of the septic tank, stationary and floating on the wastewater that is passing through the tank.

Sludge is partly decomposed as it builds up in the septic tank, but the sludge eventually needs to be pumped out with a sludge pumper (See the next section.). Because most wastewater in the system passes through several tanks, the first septic tank in line may accumulate more sludge and may need to be pumped more often.

The community is divided into two wastewater drainage basins. Sewage from homes and businesses on the south and west sides of town flows through two septic tanks near the old docks. Sewage from the homes and businesses on the east side of town (east of the hotel) flows through two septic tanks near the carpenter shop immediately before reaching the outfall.

All four septic tanks are 20-foot long aluminum cylinders with a 7-foot diameter and two inspection hatches (one at each end).

Controls

No controls.

Start-Up Procedures

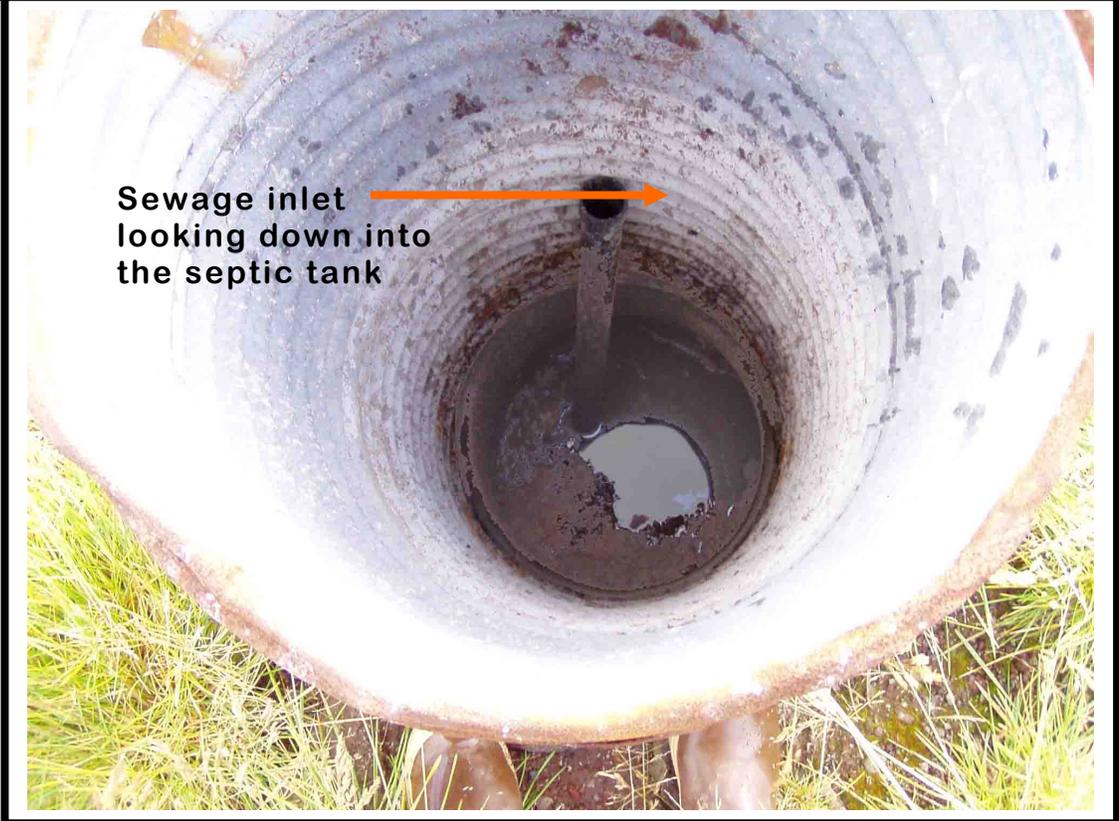
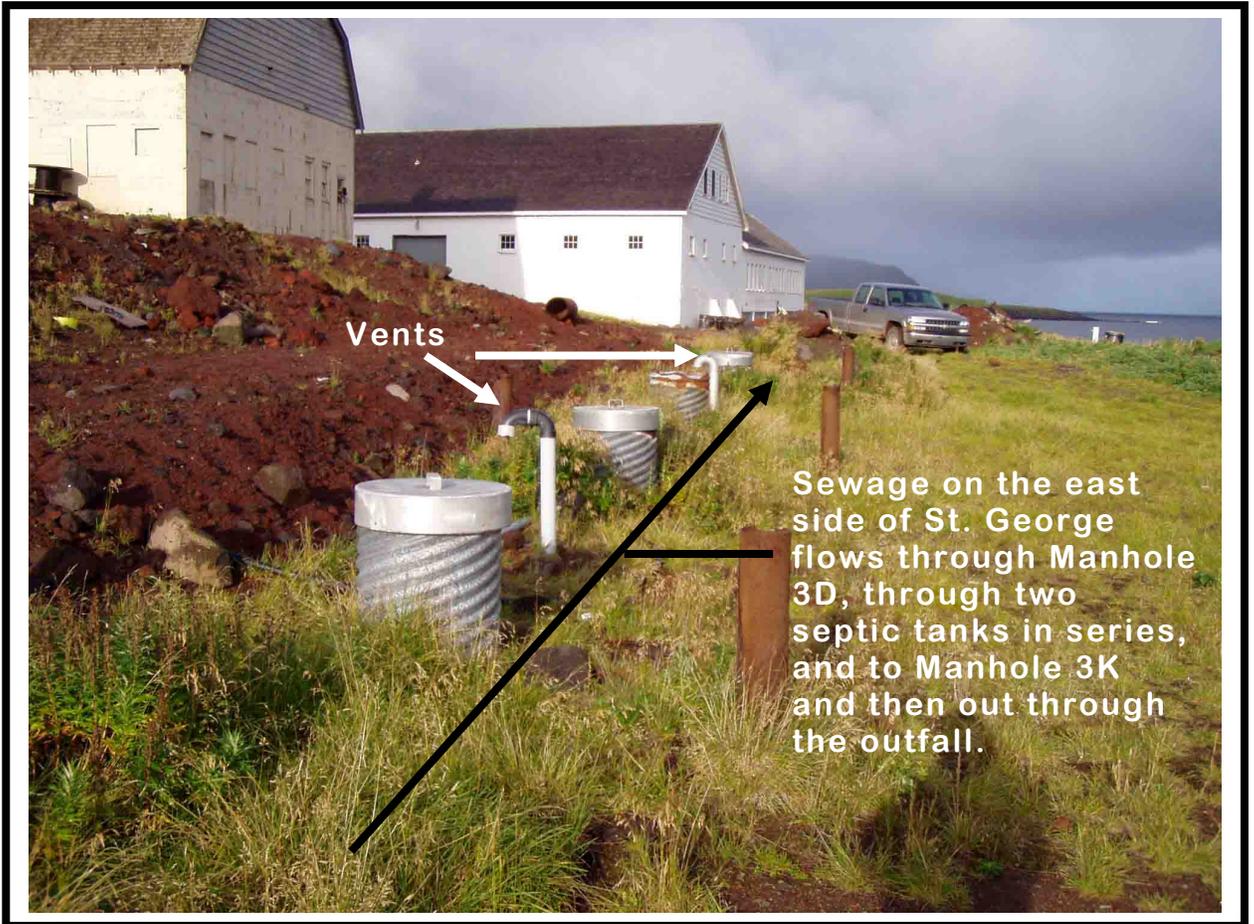
No start-up procedures.

Sewage on the west side of St. George flows from Manhole J2 through the first septic tank, makes a 90° turn, and passes through the second septic tank on its way to Manhole K2 and, eventually, the outfall



The covers should remain over the septic tank inspection hatches unless you are checking the sludge height or pumping the sludge out.





Routine Maintenance and Inspection

Monthly

- Check the septic tank area for damage or vandalism. Make sure the inspection hatches are capped.

Annually

- Check the sludge level. Pump if necessary.
 - Find a long stick or pole. It should be about 12 feet long.
 - Wrap a 6-foot white or light-colored towel around the pole and secure it very tightly with duct tape.
 - Insert the pole into the pumper access/inspection riser pipe on the settling tank.
 - Press the pole down until you get through the first level of resistance and are sure you are at the bottom.
 - Pull the pole out and measure from the bottom of the pole up to the top of the sludge line on the towel. This is how much sludge is in the tank.
 - Pump the tank when the sludge level reaches 4 feet. See the next section for pumping instructions.

Every 2 Years

- Pump the tanks at least once every two years. Pump the tanks more frequently if needed.

Common Operational Problems

PROBLEM	POSSIBLE CAUSE	POSSIBLE REMEDY
Settling Tank Smells too strongly	Sludge level is too deep	Pump the sludge
Solids are entering the terminal manhole	Sludge level is too deep	Pump the sludge
Sewage is backing up in first septic tank	The pipe connecting the two settling tanks is plugged with sludge	Pump the sludge in the first settling tank. If the problem persists, excavate the pipe and inspect it for damage and change in slope/grade

E. Sewage Sludge Pump

Purpose

The sewage sludge pump is used to pump sludge from septic tanks. The sludge is pumped to the outfall.

Equipment

- One 8-hp sludge pump/trash pump
- Relevant hoses

Operational Description

The sludge pumping operation will be used to remove the buildup of sludge that occurs in the bottom of all of the St. George septic tanks. A gasoline engine drives a vacuum/pressure pump that sucks the sludge, water, and scum from the septic tank into Manhole 3K.

The job of pumping out a septic tank is not to just stick the hose in and suck out water. Inside a septic tank there is a floating scum layer, a liquid layer, and a sludge layer. If just the liquid is pumped out, the scum layer will float down as the liquid is removed and not be pumped out. The scum layer can float back up and plug the inlet and outlet baffles as the tank refills. Even if the suction hose is down into the sludge layer, it will only suck a small hole around the end of the hose. **The correct procedure is to thoroughly mix the layers in the tank into a slurry before pumping it out.**

The pumping operation should have two workers. One person should operate the pump and engine while the other maintains the hose at Manhole 3K. Both workers handle the hoses. **Safety and protective personal gear should be worn, including long rubber gloves, face shield, hat, steel toed rubber boots, and foul weather rubber jacket and pants.**

When the hose is uncoupled from the pumper tank fitting, a bucket should be placed under it to catch dripping sewage. Elevate the end of the hose and its entire length to drain the sewage back into the septic tank before laying the hose down. **Be sure to keep children and animals away from the work site.** Cover any spilled sewage with quick-lime.

Controls

- Engine
 - Fuel valve lever
 - Choke lever
 - Throttle lever

- Electric starter with 3 settings for off, on, or start
- Manual (rope pull) starter
- Circuit Breaker

Start-Up Procedures

Loading

1. Check the following:
 - oil
 - transmission oil
 - air filter
 - belt-drive system
 - hoses and connections
2. Turn the Honda engine on and let it warm up (see the manufacturer's literature at the back of this manual for engine start-up instructions).
3. Insert the suction/discharge hose into the tank and place the other end into Manhole 3K
4. Push the hose as far into the septic tank as you can.
5. Slowly open the main valve. This will swirl the contents of the tank around.
6. Slowly close the main valve when the tank is nearly empty.
7. Pull the hose up into the middle of the septic tank.
8. Slowly open the main valve.
9. Close the main valve at the back of the tank when the tank is getting full.
10. Disconnect the hose.

Unloading

1. Tow the sludge pumper to the terminal manhole (3K).
2. Connect the suction/discharge hose to the Cam-lock fitting at the back of the tank.
3. The sludge in the pumper may flow out without being pumped. If you don't need the pump to unload the tank, go to Step 5.
4. Start the Honda engine.
5. Slowly open the main valve at the back of the tank and unload the sludge into the terminal manhole (or the designated sewage solids disposal area at the new landfill). This is an 8-inch ductile iron pipe between the terminal manhole and the lagoon.

6. Slowly close the main valve at the back of the tank when it is empty.
7. Shut off the Honda engine.
8. Disconnect and drain the suction/discharge hose.
9. Clean the tank, pump, and hoses with a pressure washer.

Normal Operating Conditions

The sludge pump should be running only when the sewage is being loaded into or unloaded from the sludge tank.

Routine Maintenance and Inspection

Before Each Use

- The gas engine requires good quality regular or unleaded **unmixed gasoline**. Use fresh gasoline, not old "flat" gasoline.
- Check the engine oil.
- Check the air filter and replace if necessary (See the Manufacturer's Literature in Volume II)
- Check the transmission oil.
- Check the tires for proper air pressure, and check the wheel bearings and lug nut tightness.
- Check the hoses and connections for wear and tightness and replace if necessary. Check the main valve on the rear of the tank. Check the vacuum/pressure gauge, safety relief valve, and sight glasses.

Annually

- Change the oil. Use SAE 10W-30.
- Change the transmission oil.
- Change the air filter.

Common Operational Problems

PROBLEM	POSSIBLE CAUSE	POSSIBLE REMEDY
Pump does not start	Fuel valve is OFF	Move lever to ON
	Choke is open	Close the choke
	Engine switch is OFF	Turn the engine ON
	Battery needs charging	Charge the battery

PROBLEM	POSSIBLE CAUSE	POSSIBLE REMEDY
	Spark plug is faulty	Replace
Pump runs but no pressure change (no intake or discharge)	Air filter is clogged	Clean or replace the filter
	Fuel is bad	Drain the fuel tank and carburetor and refill with fresh gasoline

F. Ocean Outfall

Purpose

The purpose of an ocean outfall is to dispose of the settling tank effluent (mostly water) by diluting it in the ocean.

Equipment

- 315-foot-long 6-inch ductile iron outfall pipe

Operational Description

After wastewater passes through the septic tanks, it enters an ocean outfall. The wastewater flowing into the ocean outfall is mostly water. Dilution of the septic tank effluent takes place at the end of the ocean outfall. Wind and sunlight contribute to the treatment process. Since the outfall is an important component of the sewer system it should be protected from becoming clogged. Keep the septic tanks pumped regularly to prevent sludge from flowing into or through the outfall.

Controls

There are no controls associated with the outfall.

Start-Up Procedure

After the septic tanks fill up with wastewater, the ocean outfall will function by itself.

Normal Operating Conditions

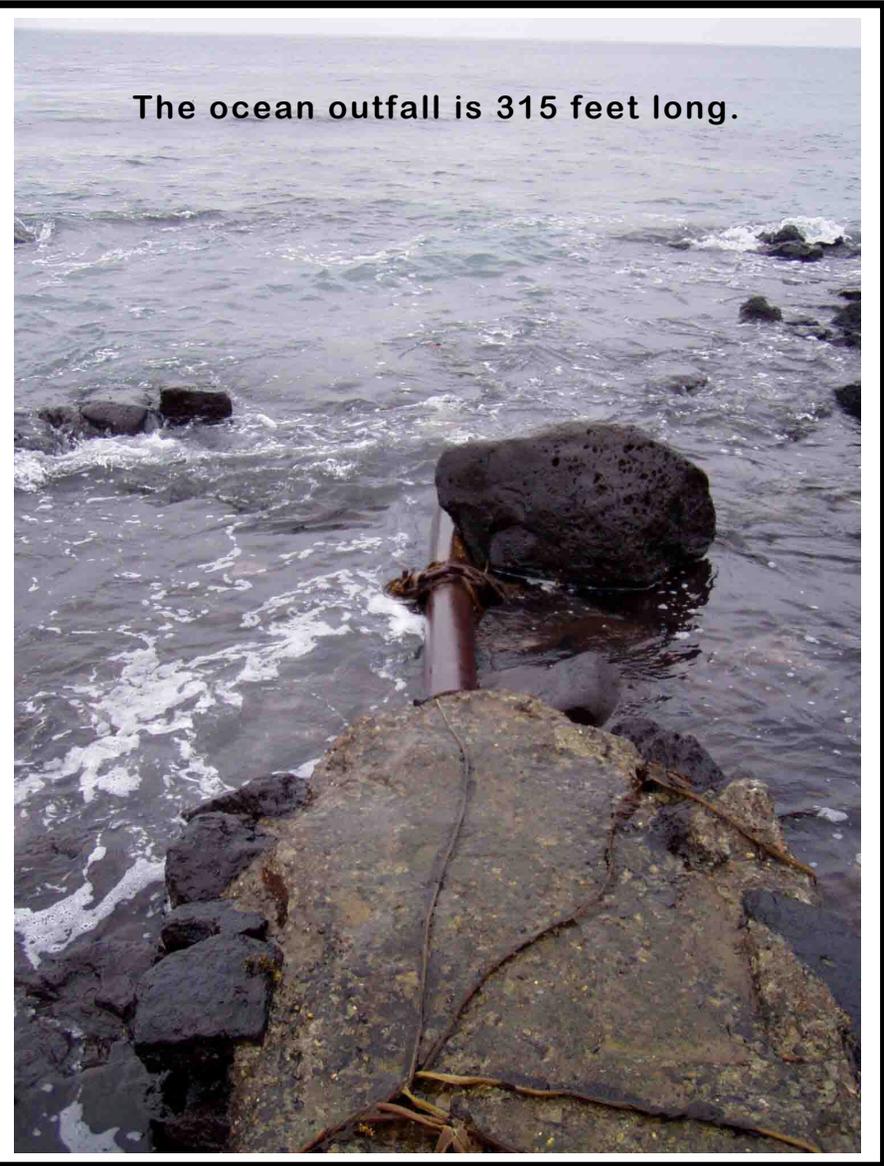
Under normal conditions, the sewage will gradually and continually flow out the outfall piping.

Common Operational Problems

Blockage

If any large objects find their way into the outfall, the blockage or partial blockage will eventually plug the line. This may not be apparent until the settling tanks or lower manholes (such as Manhole 3K) start overflowing. If the problem continues to that point, not only will there be a very apparent health hazard, but also a very difficult clean-up problem.





G. Jetter

Purpose

The jetter is for flushing out the sewer mains and outfall with a high-pressure stream of water.

Equipment

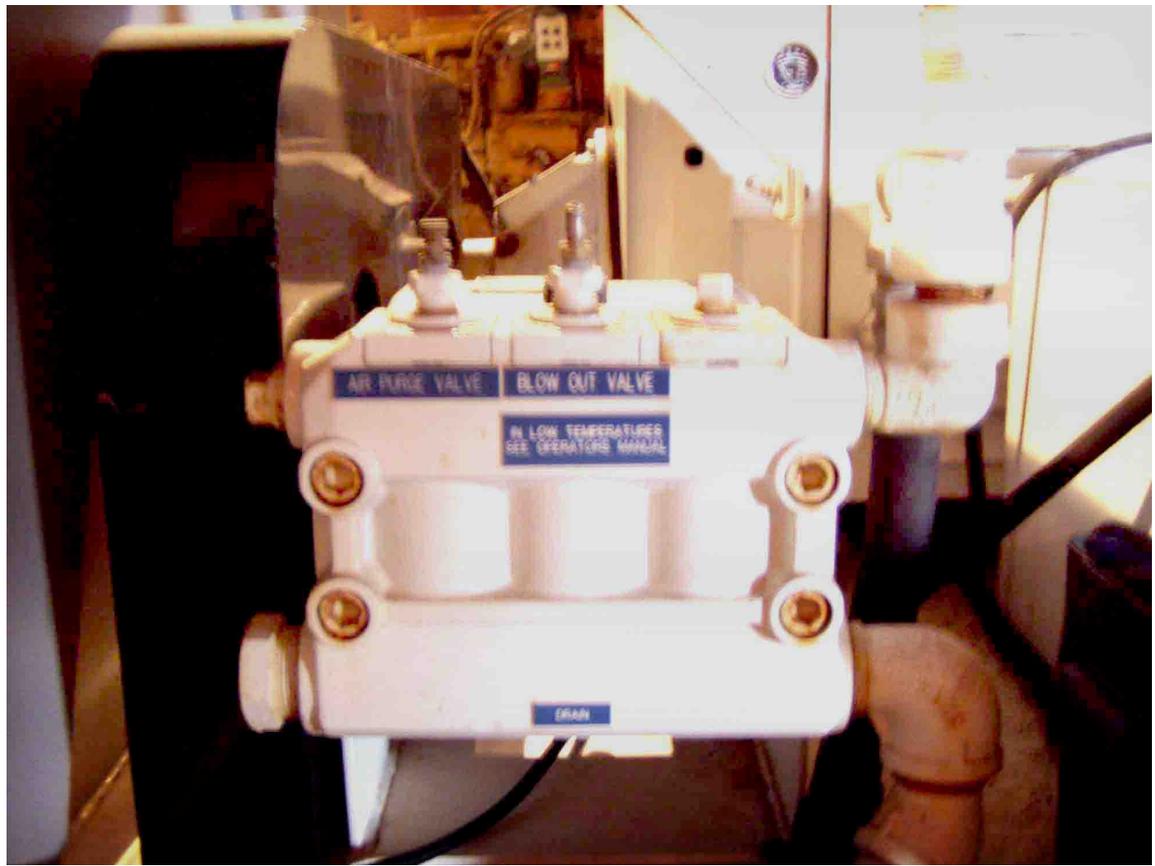
- Aquatech SJ600P
 - 600-gallon polyethylene water tanks
 - Engine throttle
 - Water flow control valve
 - Engine oil pressure gauge
 - Engine water temperature gauge
 - Water pressure gauge
 - Ammeter
 - 180-degree hose reel assembly
 - 400 feet of 3/4-inch I.D. hose
 - Electric Brakes
 - Emergency break-away switch
- General Pump Model KLS40
- Rockford Power Take-Off over-center clutch

Operational Description

The jetter is used to flush out the sewer mains and outfall. This is a useful routine maintenance procedure. This is also good if there is an unexpected blockage in one of the mains.

Keep your jetter clean and in good working order, so that it will perform for you in case of an emergency. Order replacement parts as they are needed. Read the manufacturer's literature for this unit carefully, and make sure you have extra copies available.





Controls

- The engine throttle controls the engine rpm speed.
- The water flow control valve turns the water flow on and off.

Start-Up Procedures

See your manufacturer's literature.

Routine Maintenance and Inspections

For winter storage

Drain ALL the water from the tanks. Add RV anti-freeze to prevent any remaining water in the system from freezing. See your manufacturer's literature for quantity and specific procedures.

Common Operational Problems

See your manufacturer's literature for troubleshooting procedures.

6. EMERGENCY PLAN

A. Manhole Overflow

If the septic tanks or part of the piping is blocked or partially blocked, manholes will start to overflow.

If you cannot solve the problem, call one of the numbers listed below. If sewage is backing up into the homes or running out of the manholes, call ADEC.



Contacts to call if you cannot figure out why the wet well is clogged

<p>Doug Abbas RMW Aleutian/Pribilof Island Association, Inc. 907-222-4218 1-800-478-2742</p>
<p>Paul Gabbert Utility Operations Consultant DSO at ANTHC, DEHE 907-729-3560 1-800-560-8637 ext 3560</p>
<p>Floyd Murphy Utility Operations Specialist DSO at ANTHC, DEHE 907-729-4086 1-800-560-8637 ext 4086</p>

B. Sewage Spill

If sewage moves into an area where the public could be exposed (that is, anywhere outside of the wastewater system), you must call ADEC. This situation is most likely to occur if a main is blocked or if a spill occurs during the sludge pumping process.

Have hydrated lime or quick lime available in case of a sewage spill.



Contacts to call if the public might be exposed to sewage

ADEC, Anchorage 1-800-510-2332 907-269-7650 fax

7. CONTACTS

If	Call	At
You need Information about training and operator certifications	ADEC Operator Certification	907-465-5143
You need to order parts	AUSC	1-866-800-2872 Fax 907-729-3584
You need assistance with maintenance	RMW	907-222-4218 Doug Abbas
	DSO	1-800-560-8637 ext. 3560 Paul Gabbert ext. 4086 Floyd Murphy
Work must be done in a confined space	Regional Health Corporation Environmental Programs Coordinator	907-222-4217 Michael Brubaker
	DSO	1-800-560-8637 ext. 3560 Paul Gabbert
You need updated record forms	DSO	1-800-560-8637 ext. 3560 Paul Gabbert
You need assistance with business or financial issues	RUBA	907-269-4569
	ADEC VSW	907-465-5137 907-465-5180 907-465-5177 fax

Alaska Department of Environmental Conservation (ADEC)

Drinking Water/Wastewater Program

555 Cordova Street

Anchorage AK 99501

1-800-510-2332

907-269-7650 fax

<http://www.state.ak.us/local/akpages/ENV.CONSERV/deh/water/drinking.htm>

Alaska Native Tribal Health Consortium

Division of Environmental Health & Engineering

1901 S. Bragaw St

Suite 200

Anchorage AK 99508

907-729-3600

1-800-560-8637

Paul Gabbert, Utility Operations Consultant

DSO at ANTHC, DEHE

1901 S. Bragaw St

Suite 200

Anchorage AK 99508

907-729-3560

1-800-560-8637 ext. 3560

907-729-4506 fax

pgabbertt@anthc.org

Floyd Murphy, Utility Operations Specialist

DSO at ANTHC, DEHE

1901 S. Bragaw St

Suite 200

Anchorage AK 99508

907-729-4086

1-800-560-8637 ext. 4086

907-729-4506 fax

fmurphy@anthc.org

Alaska Utility Supply Center (AUSC)

6130 Tuttle Place #2

Anchorage AK 99507

1-866-800-2872

907-729-3525

907-729-3584 fax

ausc@anthc.org

Alaska Water and Wastewater Management Association

3201 C. Street Suite 406

Anchorage AK 99502

561-9777

563-3447

<http://www.awwma.org>

Aleutian/Pribilof Island Association

201 3rd Ave.

Anchorage AK 99501

1-800-478-2742

907-276-2700

907-279-4351 fax

<http://www.apiai.com>

Doug Abbas, Remote Maintenance Worker

Aleutian/Pribilof Island Association, Inc.

201 E. 3rd Ave

Anchorage AK 99501

907-222-4218

1-800-478-2742

907-222-4273 fax

douga@api.ai.com

Michael Brubaker, Environmental Programs Coordinator

Aleutian/Pribilof Island Association, Inc.

201 E. 3rd Ave

Anchorage AK 99501

907-222-4217

1-800-478-2742

907-279-4351 fax

mikeb@api.ai.com

Rural Energy Enterprises, Inc.

7930 King St

Suite B

Anchorage AK 99518

907-868-7952

8. GLOSSARY OF TERMS

The following are some terms that are commonly used in the sewage and wastewater industry. A brief explanation of these terms is given to help understand some of the unfamiliar terminology.

ALASKA UTILITY SUPPLY CENTER (AUSC)

See Appendix A.

ALGAE

Simple primitive plants that grow in liquids (usually green). Often algae cause bad taste and/odors in water.

ANNUALLY

Every year.

AQUASTAT

A component that measures water temperature and has a switch that opens or closes when the liquid reaches a preset temperature. Aquastats are used to operate boiler systems, hot water pumps, and water temperature alarm systems.

ARCTIC PIPE

Pipe that has a thick coat of insulation and a shell (usually aluminum culvert). Water will not freeze easily in this type of pipe. Arctic pipe is used predominantly in arctic region water and sewer systems.

BACKWASHING

The process of cleaning filters by forcing water backwards through the filter.

BACTERIA

Tiny primitive plants. Many types use sewage for food, breaking down the organic matter into more stable compounds.

BOILER

Equipment that burns fuel (usually fuel oil or natural gas) to heat water or a glycol water mixture used for heating potable water and buildings.

BRITISH THERMAL UNIT (BTU)

BTU is a measure of heat. One BTU is the amount of heat energy needed to heat one pound of water - one degree centigrade.

BURNER

The component on a heating appliance such as a boiler that provides the heat. The burner includes a motor, fuel pump, nozzle, blower fan, ignition electrodes, and an ignition transformer.

CALIBRATE

To adjust or tune a measuring instrument so that it works according to a standard.

CAPACITY

The amount or ability of equipment for holding or storing something.

CAVITATION

The formation and resulting collapse of gas pockets and bubbles on the blade of an impeller or the gate of a valve. The collapse can be so forceful that it drives the water hard enough to create a pit in the gate or valve surface.

CHECK VALVE

A valve in a pipe or duct that allows flow to move in one direction and closes with reversal of flow.

CLARIFIER (settling tank)

A tank that allows settleable solids to settle out of the water to produce relatively clear water.

COLIFORM ORGANISM

Any number of organisms (bacteria) that are common to the intestinal tract of man or animals. The presence of coliform organisms in water is an indicator of pollution and of potentially dangerous bacterial contamination.

COMPONENT

One part of a system. A piece of equipment that works with other pieces of equipment.

CONDUIT

Tubes or pipes that are to contain wires for an electrical system.

CONFINED SPACES

Spaces that are not intended for humans to be in for very long. Usually, there is only one way in/out. These spaces may be hazardous because of toxic or flammable gases. These spaces should not be entered. Contact your regional environmental health manager.

COUPLING

A device to join pipe, tubing, conduit etc.

CRYPTOSPORIDIUM

A microscopic parasite (an organism that depends on another organism to live) found in water that can cause diarrhea, cramps, weight loss, vomiting, and fevers. Symptoms usually appear 2 to 25 days after contact and may last up to one month.

DIELECTRIC COUPLING

A special fitting on plumbing installations where certain dissimilar metals are joined. The dielectric coupling prevents the passage of electrical currents that will corrode or eat away one of the metals.

DIFFUSER

A porous disk of tube through which air is forced and divided into minute bubbles for diffusion into liquids.

DISSOLVED OXYGEN (DO)

The amount of oxygen available in water or sewage. Bacteria use oxygen to decompose the sewage.

DRAWER ASSEMBLY

The component of the burner unit that includes the electrodes, nozzle, fuel and air diffuser, which are located in the blast tube of the burner.

ELECTRODES

The electrodes in a burner unit are wires used to conduct a high voltage to an air gap that the high voltage jump across creating a spark that ignites the fuel.

EFFLUENT

The final liquid coming out of a plant of system. Common effluents are filter effluents or effluents from a sewage treatment plant or lagoon.

ELECTROMAGNETISM

Magnetism developed by and electric current. Motors and relays are run by electromagnetism.

EVAPORATE

To convert from a liquid to a gas.

FILTER

A device that is porous and through which matter (usually liquid or gas) is passed to removed solids from it.

FLEX COUPLING

A variety of flexible couplings that are used to join plumbing and mechanical connections. Flexible couplings are used on pump systems to isolate the pump vibrations from the plumbing system.

FLOAT SWITCH

An electric switch that is turned on or off by a change in water level. Some use a mechanical arm that flips a switch on or off. Others use liquid mercury inside of the float to bridge the contacts from two wires, depending on the float position.

FLOC

Small jelly-like masses formed in a liquid by a biochemical process or by a simple joining of particles in water.

FLOW SWITCH

An electric switch that turns on or off by the flow of water or air in a pipe.

FUNGI

Organisms that grow in decaying material. These can cause lung problems and ear infections.

GATE VALVE

A valve that by turning the handle on it causes a gate to raise or lower, to let water flow through it or stop it.

GIARDIA

A microscopic parasite (an organism that depends on another organism to live) found in water that can cause diarrhea, cramps, weight loss, vomiting, and fevers. Symptoms usually appear 6 to 16 days after contact and may last up to one month.

GLOBE VALVE

A type of valve opened or closed by a rising or falling stem which fits into a valve seat.

GLYCOL

This substance contains a type of alcohol and can be added to water to keep it from freezing.

GRAVITY FLOW

The process by which matter flows downhill.

HAZARD

Something that could cause injury.

HEAD

A measure of pressure on water. Head of water can be measured in feet, meters, pounds per square inch (psi), or kilo-Pascal (kPa).

HEAT EXCHANGER

A piece of equipment that converts the heat from one medium to another. The most common heat exchanger is a water vessel with tubes running through it. Hot water in either the tank or the tubes heats the water adjacent to it through the walls of the tubes.

HEAT TAPE

Plastic tape with wires inside. The wires produce heat by resistance to electrical flow and protect water from freezing.

HYPOCHLORITES

Compounds containing chlorine that are used for disinfection.

IMPELLER

The moving part of a water pump that forces water through the pump.

INFLUENT

The water coming into a treatment process; raw water from a well or stream.

KILO

Prefix meaning 1000. Example; one kilowatt equals 1000 watts.

KILOWATT

A measurement of electrical power. Kilowatts power can be roughly calculated by multiplying volts times amps and dividing the result by 1000.

MANUFACTURER'S LITERATURE

Documents produced by the manufacturer of each piece of equipment that offer instructions for how to use the equipment and actions to take if the equipment does not work correctly.

METER

A device that measures the amount of liquid or gas that flows through it. Water meters are used in the water plant to show the rates of flow or the amount of water being supplied to different parts of the system.

MICROORGANISM

A very tiny organism normally visible only under a microscope.

MILLIGRAMS PER LITER (mg/L)

A widely used term in chemical dosage calculations. Essentially it is equivalent to parts per million (ppm), which means one part in one million parts. An example would be one lb. of chlorine in one million lbs. of water = one mg/L.

MOST PROBABLE NUMBER (MPN)

The approximate number of microorganisms in a sample of 100 milliliters of water.

MOTORIZED VALVE

A valve that is controlled by an electric motor. The motor is usually controlled by an automatic switch, such as an Aquastat, float switch, flow switch, or etc.

MSDSs

Material Safety Data Sheets – these forms are provided by the manufacturer of each chemical and list the properties of a chemical, its dangers, and what precautions you should take when using this chemical.

NOZZLE

A device which converts a liquid stream into a fine spray and into a desired spray pattern. An example is the fuel nozzle in a burner unit which converts a stream of fuel oil into a fine mist that is easily ignited.

ORGANIC

Substances which contain carbon compounds. Fuel oil is an example of a organic substance or compound.

PARASITES

Microorganisms that survive by feeding on other living organisms. Parasites can cause diarrhea and fever.

PER CAPITA

For each person.

PERCOLATION

The downward flow (infiltration) of water or a liquid through the pores or spaces of a rock or soil.

PITORIFICE

A special type of corporation stop used on circulating water systems in the Arctic. The pitorifices are used in pairs on the water main; one to flowing water in the main and a second to return the flowing water from the service to the main.

PPE (Personal Protective Equipment)

Safety equipment such as goggles, gloves, and respirators.

PPM (PARTS PER MILLION)

See milligrams per liter.

PRESSURE RELIEF VALVE

The pressure relief valve opens and releases water and pressure when the upstream pressure reaches a set level. The pressure relief valves protects the piping from over-pressurization, which can cause considerable damage.

PRESSURE SWITCH

A pressure switch is an automatic switch that turns on or off with changes in pressure of a liquid or gas. As part of the water system, they are used to operate pressure pumps, air compressors, or high or low-pressure alarms.

PRESSURE TANK

Also called a hydro-pneumatic tank on water systems. Compressed air forces water in the tank to move faster, creating a steady stream to the tap or distribution system.

PROCESS

An action.

RESIDUE

Something that remains after part is taken away.

ROTOR

The inside spinning part of an electric motor.

SANITARY

Free of disease causing organisms. Clean.

SCUM

The film-like floating residue that forms on top of the wastewater in the septic tank.

SEDIMENT

The matter that settles to the bottom of a liquid.

SEEP

When water moves into something it is not supposed to. The opposite of a leak.

SERVICE SADDLE

A saddle shaped clamp used to hold the service lines onto the main lines. Used on both water and sewer services.

SETTLABLE SOLIDS

the amount of solid material that settles out of a liquid (sewage) in a half-hour. Usually measured in ml/L.

SIGHT GLASS

A glass or plastic tube mounted on the side of a tank to show the level of the liquid inside of the tank.

SNAKE

A device or piece of equipment used to unclog and/or clean out sewer lines. Snakes are made in several different sizes and configurations. Snakes may be operated by hand or by motor.

SLUDGE

The semi-solid and solid residue that collects on the bottom of the septic tank.

SOLENOID VALVE

A globe valve that is operated by on electromagnet.

STATOR

The stationery part of an electric motor that has the electromagnetic charge.

STERILIZATION

The complete destruction of all life in water or sewage.

SUBMERSIBLE

Equipment that is able to work under water.

SUPERNATANT

The liquid that floats above the solids that have settled from it.

SUSCEPTIBLE

Able or likely to be acted upon. For example, if something is susceptible to leaking, there is a good chance it might leak.

SUSPENDED SOLIDS

Small particles of solids that will not settle by ordinary means, and contribute to the cloudiness (turbidity) of water.

SWEATING

Soldering copper pipe joints together; using a heat source (usually a propane torch) with wire solder and flux.

THERMOMETER

A device used to measure the temperature of air or water.

THERMOSTAT

A switch that operates with a change in air temperature. Used to turn on heat when the environment gets too cold; or to operate a low or high temperature alarm.

TOXIC

Poisonous.

TRANSFORMER

An electrical device used to change the voltage of an electrical current. Transformers can be used to step up or step down the voltage to suit the user.

TROUBLESHOOTING

Finding and repairing a problem.

UNIT HEATER

A heat exchanger that transfers the heat from hot water or glycol to heat the air.

VALVE

A device that stops the flow of water in a pipe when closed. The most common valve is the gate valve.

VELOCITY

Speed.

VENTURI

A small tube that is tapered toward the middle. A tube of this shape increases liquid velocity and decreases pressure. Venturis are used to measure fluid flow or create suction.

VIRUSES

Microorganisms that are coated with protein. They can cause diseases like Hepatitis A or the Flu.

VOLTAGE

Voltage is a measure of electrical pressure or potential on an electric circuit.

WEIR

A vertical blockade, such as a wall or plate, places in an open channel and calibrated in order to calculate flow rate.

WEIR TROUGH

A v-shaped waterway that moves treated water from a settling tank (clarifier)

WYE

A section of pipe made to join two incoming pipes into one outgoing pipe; shaped like a letter "Y".

REPLACEMENT PARTS

The Alaska Utility Supply Center (AUSC)

The AUSC has been in operation since January, 2001, with orders coming in daily. The AUSC stocks and expedites parts and supplies needed to operate and maintain your water and sewer systems. We have agreements with many vendors for buying large quantities at reduced prices, and pass these savings on to member communities. Presently there are over 120 items in stock at the RSSC, and we are planning to add more as we determine the needs of the member communities. We can supply you with virtually anything needed for your water and sewer system, whether or not we have it in stock.

To order supplies from the AUSC you must be a federally recognized Alaska Native Tribe; a City with a resolution from a federally recognized Alaska Native Tribe operating a water and or sewer system, or a community with a native population of 50% or greater, as documented by the State of Alaska, Department of Community and Economic Development.

To become a member community, fill out the Member Agreement Form, agree to the terms of the Agreement, have the manager of your utility sign the agreement, and mail it to AUSC.



Address to which you mail your AUSC application

Alaska Native Tribal Health Consortium
Alaska Utility Supply Center
6130 Tuttle Place #2
Anchorage AK 99507
1-866-800-2872
FAX 907-729-3584

If you need a new member application form contact an AUSC representative at **1-866-800-2872** or **907-729-3525**. As a member community of the AUSC you will be able to place orders a number of ways. You can order by phone by calling the toll free number listed above. You can fax your order to us at **907-729-3584**, or e-mail jthein@anthc.org

When ordering items from the catalog, list the AUSC item#, quantity needed, and a complete description of the item. When ordering an item not listed in the catalog, indicate the quantity needed and a complete description of the item. NOTE: The prices listed in the catalog are subject to change as they change from our suppliers. If you would like to find the latest price, please contact us on our toll free number, listed above.

The AUSC is an affiliate of the Alaska Native Tribal Health Consortium (ANTHC). Personnel at AUSC includes:
Ed Lohr, Manager – Department of Sustained Operations
John Thein, AUSC Manager
Tonia McWilliams, Inventory Management
Michaela Straughn, Program Assistant
John Spriggs, Association Coordinator



ALASKA NATIVE TRIBAL HEALTH CONSORTIUM

Alaska Utility Supply Center (AUSC) Program



Membership Agreement

Community: _____ Date: _____

Address: _____ Billing Address: _____

Contact Person: _____ Contact Person: _____

Phone No.: _____ Phone No.: _____

Fax No.: _____ Fax No.: _____

Email: _____ Email: _____

Authorized Procurement Personnel: _____

For ANTHC Office Use Only:

Region: _____

Account No. _____

Nature of Service

The purpose of the Alaska Utility Supply Center (AUSC) Program is to offer Alaskan communities with a convenient method for ordering various parts and supplies required for the safe and efficient operation of community utilities. Through this Program, the Alaska Native Tribal Health Consortium (ANTHC) will maintain an inventory of essential replacement parts and supplies at a central location to ensure quick response to communities in the event of emergency situations, but will also offer the convenience of centralized ordering, procurement and shipment of parts and supplies needed for routine utility operations. It is anticipated that this Program will enable communities to realize cost savings through a cooperative business venture that consolidates the procurement process statewide and takes advantage of the purchasing power of the ANTHC.

Membership Eligibility

The ANTHC, a statewide nonprofit health services organization, is owned by Alaska Native tribal governments and the regional Alaska Native health services organizations they serve. Therefore, a community will be eligible to become a member of the Alaska Utility Supply Center Program if it meets the following criteria:

- The community utility is operated by a '*Federally Recognized Alaskan Tribe*' (as acknowledged by the Bureau of Indian Affairs) or the community utility is operated by the local City or Municipal government, through a formal resolution from the '*Federally Recognized Alaskan Tribe*.'
- The community has a Native population of 50% or greater, as documented by the State of Alaska, Department of Community and Economic Development (DCED) or other census information.
- If the community has a '*Federally Recognized Alaskan Tribe*' within its jurisdiction, but does not meet the 50% Native Population criteria, then the Tribal organization can formally request that the community be accepted as a member.

Procedures for Ordering and Invoicing

Once a community becomes a member of the AUSC Program, a catalog of available parts and supplies and price list will be provided, along with more specific information on the ordering process. Eventually, this catalog will be maintained on a website to make updates and ordering easier and quicker. However, orders can always be placed by phone, fax or email correspondence. Please refer to the Contact Information Section of this form for ordering information

Once an order is placed, the ANTHC will coordinate with vendors on the procurement, packaging and shipping of the order directly to the customer. In the event of an emergency, local inventory will be used to expedite immediate shipment of parts or supplies. Within one (1) month after the order has been shipped, the ANTHC will send an invoice to the Billing Address provided above. The invoice will itemize the actual costs for materials and shipping, and will include a 5% markup on material costs only for overhead and operating costs related to the Program.

The ANTHC has a limited revolving fund established for purchasing a minimum inventory for emergency parts and supplies, and for procuring materials from vendors for members. As a result, the maximum amount of allowable credit extended to a member utility will be limited to \$2,500.00, unless otherwise approved by the ANTHC Program Manager. Because this fund is limited, it is important that communities make prompt payments on their invoices.

Member Obligations

Members are encouraged to make payment to the ANTHC within 30 days after the invoice date. If a community is unable to make payment within 30 days of the invoice date, the

community will need to contact the ANTHC to establish a longer-term credit account for repayment of outstanding debt.

A member community is required to notify the ANTHC if it is unable to meet its financial obligations within the defined timeline. The ANTHC is willing to work with communities and consider alternate repayment methods, on a case-by-case basis, as may be required. However, if a member community fails to make repayment within 30 days of the invoice date and also fails to notify the ANTHC regarding alternate repayment options, then the community's membership in the AUSC Program may be temporarily suspended or terminated.

Finally, members are also encouraged to provide routine updates on address changes, primary contact information and authorized procurement personnel. These updates will assist in maintaining efficient communications between the ANTHC and the community.

ANTHC Obligations

The ANTHC will work with both members and vendors to develop an efficient supply and shipping service for the benefit of communities. More importantly, the ANTHC will be a resource for emergency situations where community systems may have failed or critical components become inoperable. In an effort to reduce costs for members, the ANTHC will implement a competitive procurement process with vendors, but may allow a preference for Alaskan suppliers wherever possible. If preferences are implemented, there will be an explicit agreement with the Alaskan vendors to ensure there is value and benefit to the ANTHC and ultimately to the AUSC Program Membership.

In an effort to create value to the Program Membership, the ANTHC will solicit feedback from communities on additional products, level of service received and suggestions for improvement.

Rights of Termination

Both the ANTHC and the members have a right to terminate the membership agreement as may be warranted by either party.

The ANTHC may decide to terminate the membership of a community if that community has an outstanding debt and has not taken the necessary steps to notify the ANTHC and work cooperatively to resolve the debt. The ANTHC recognizes the financial hardships that may occur during community emergencies and is willing to coordinate with communities on seeking effective and agreeable solutions to problems.

If a community's membership is terminated by the ANTHC, the community will no longer be able to order parts or supplies through the AUSC Program. However, the community can reapply for membership after any outstanding debt is cleared or a payment plan established to clear its debt. In addition, the ANTHC reserves the right to require full payment at the time of ordering after a member community has been readmitted into the AUSC Program. This probationary period, where full payment is required at the time of

ordering, may extend up to one (1) year after re-admittance into the AUSC Program, at the discretion of the Program Manager.

A community may also choose to terminate its membership in the Program. If the community chooses to do so, it will notify the ANTHC in writing and make arrangements to clear up any outstanding debt.

Contact Information

The following ANTHC Departments are responsible for the management, operations and financial aspects of the Community Supply Center.

<p>Management: <u>DEHE Sustained Operations</u> John Spriggs, Association Coordinator 6130 Tuttle Place #2 Anchorage, AK 99507 Phone: (907) 729-4088 1 (800) 560-8637 Fax: (907) 729-3584 Email: jspriggs@anthc.org</p>	<p>Financial: <u>Administrative Offices</u> Glenn Buchta, Staff Accountant 4141 Ambassador Drive Anchorage, AK 99508 Phone: (907) 729-2877 Fax: (907) 729-2890 Email: gbuchta@anthc.org</p>
<p>Operations: <u>TSS Regional Supply Service Center</u> Joe Miljure, Acting Director 6130 Tuttle Place #2 Anchorage, AK 99507 Phone: (907) 729-2990 Fax: (907) 729-2995 Email: hsquarts@anthc.org</p>	<p>Ordering: <u>Alaska Utility Supply Center</u> John Thein, AUSC Manager Tonia McWilliams, Inventory Management Phone: 1 (866) 800-AUSC 1 (866) 800-2872 (907) 729-3525 Fax: (907) 729-3584 Email: jthein@anthc.org</p>

Formal Consent to Terms and Conditions:

As an authorized representative of the community of _____,

I agree with the terms and conditions listed above.

Signature: _____ Date: _____

AUSC Catalog

ALASKA NATIVE TRIBAL HEALTH CONSORTIUM (ANTHC)

ALASKA UTILITY SUPPLY CENTER (AUSC)

Stock Catalog



Date: 12/10/2002

Stocked Items

This catalog is a listing of items that are normally stocked in the ALASKA UTILITY SUPPLY CENTER (AUSC) section of the ANTHC-REGIONAL SUPPLY SERVICE CENTER warehouse in Anchorage. These are parts and supplies that normally have a good turnover to the communities, or they are items that are not normally available on the shelf in Anchorage.

The prices listed in this catalog are subject to change without notice. The prices are FOB origin. For items that are shipped in from out of state, there may be an added shipping charge. If you need to know the exact price for a certain item, please call 1-866-800-2872 (toll free), or 907-729-3525.

To place an order by phone: 1-866-800-2872
907-729-3525

To place an order by fax: 907-729-3584

To place an order by e-mail: jthein@anhc.org, jspriggs@anhc.org, or tmcwilliams@anhc.org

In the near future we hope you will be able to order from the AUSC on the internet.



ALASKA REGIONAL SUPPLY CENTER WAREHOUSE

Table of Contents

Chemicals & Reagents	4-5
Chemical Pumps & Components	6-7
Heating System Parts & Supplies	8-10
Pipe Fittings & Repair Clamps	11
Electrical Equipment	12-13
Safety & Personal Protective Equipment	14-15
Testing Equipment	16-17
Water Treatment Equipment & Supplies	18
Tools & Maintenance Equipment	19



CHLORINE, GRANULAR CALCIUM HYPOCHLORITE

ITEM# 801800, 25# PAIL	\$42.00
ITEM# 801805, 100# DRUM (SURFACE SHIPPING ONLY)	\$97.50

DEIONIZED WATER

HACH CAT # 272-56, 4 LITER BOTTLE, ITEM# 800315	\$14.82
HACH CAT # 272-49, 500 ML BOTTLE, ITEM # 800414	\$6.15

ALUMINUM SULFATE, (ALUM), 50 LB. BAG

ITEM# 800310	\$18.50
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DPD REAGENT DISPENSER. HACH SWIFTEST, FREE CHLORINE REAGENT
10 ML SAMPLE, DISPENSER/WITH 250 TEST CARTRIDGE

ITEM# 800370	\$53.99
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POTASSIUM PERMANGANATE, 55# PAIL

ITEM# 801118	\$98.38
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SODIUM FLUORIDE, COURSE CRYSTAL, 50 LB. BAG

ITEM# 801812	\$52.75
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FLUORIDE STANDARD SOLUTION, 1.00 MG/L, 500 ML

HACH CAT # 405-08 ITEM# 806749	\$10.70
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To Order Call: 1-866-800-2872

Chemicals & Reagents



FLUORIDE REAGENT, SPADNS SOLUTION, 1000 ML BOTTLE

ITEM# 802291

\$17.05

DPD FREE CHLORINE REAGENT, 10 ML SAMPLE

HACH CAT # 21055-69
ITEM# 800706, 100/PK PP

\$15.08

HACH CAT # 21055-28
ITEM# 800708, 1000/PK PP

\$140.90

DPD FREE CHLORINE REAGENT, 5 ML SAMPLE

HACH CAT # 14077-99
ITEM# 800749, 100/PK PP

\$11.48

DPD FREE CHLORINE REAGENT, 25 ML SAMPLE

HACH CAT # 14070-99
ITEM# 800810, 100/PK PP

\$16.30

DPD FREE CHLORINE REAGENT, 25 ML SAMPLE

HACH CAT # 14070-28
ITEM# 800730, 1000/PK PP

\$133.50



FLUORIDE REAGENT, ACCU-VAC AMPULES, 25/PK

HACH CATALOG# 25060-25
ITEM# 800390

\$15.53

To Order Call: 1-866-800-2872



LMI PUMP, MODEL A151-398S1 0-1 GPH FEED RATE @ 110 PSI MAX.

ITEM# 800926 \$487.00

LMI FOOT VALVE ASSEMBLY, 3/8" P/N 28276

ITEM# 800970 \$31.61

LMI DIAPHRAGM, P/N 30917

ITEM# 800975 \$32.00

LMI SPARE PARTS KITS, includes diaphragm, ball check valves, seats & springs

ITEM# 800950, SP-U1	\$48.00
ITEM# 800952, SP-U2	\$47.00
ITEM# 800986, SP-U3	\$54.00
ITEM# 800954, SP-U4	\$47.00
ITEM# 800958, SP-U8	\$48.00
ITEM# 800862, SP-U9	\$52.90
ITEM# 800961, SP-U11	\$45.00
ITEM# 800978, SP-151-FS	\$51.00



LMI PUMP HEAD, FOR LE 151S

ITEM# 800230 \$70.00



LMI FOUR-FUNCTION VALVE

ITEM# 800751, P/N 27048	\$50.00
ITEM# 801966, P/N 25690	\$41.00
ITEM# 801968, P/N 25700	\$41.00
ITEM# 807742, P/N 28010	\$43.40

To Order Call: 1-866-800-2872

Chemicals Pumps & Components



LMI INJECTOR ASSEMBLY, 3/8", P/N 25178

ITEM# 800780

\$30.00

LMI SOLENOID, EPU ASSEMBLY,

ITEM# 800731, P/N 26897

\$256.00

ITEM# 800733, P/N 26865

\$406.00

ITEM# 800735, P/N26893\$

\$256.00



LMI PULSE TRANSMITTER, P/N 26006

ITEM# 800740

\$37.00

GRUNDFOS CHEMICAL PUMP

DME12-6/0-3.17 GPH FEED RATE @ 87 PSI MAX. INJECTION PRESSURE

ITEM# 800940 \$725.28

DMS4-7/ 0-1.05 GPH FEED RATE @ 101 PSI MAX. INJECTION PRESSURE

ITEM# 800930 \$508.00



GRUNDFOS PUMP INSTALLATION KIT

ITEM# 800935

\$60.00

To Order Call: 1-866-800-2872

BURNER NOZZLES: \$3.50 EA

ITEM #	GPH X ANGLE/SPRAY
ITEM #818015	0.40 X 80/ A
ITEM #818020	0.60 X 80/ A
ITEM #818025	0.75 X 80/ B
ITEM #818030	0.85 X 80/ A
ITEM #818035	0.85 X 80/ B
ITEM #818040	1.00 X 60/ A
ITEM #818045	1.00 X 80/ A
ITEM #818050	1.00 X 80/ B
ITEM #818055	1.10 X 80/ W
ITEM #818060	1.10 X 80/ A
ITEM #818065	1.20 X 70/ W
ITEM #818070	1.25 X 70/ B
ITEM #818075	1.50 X 45/ B
ITEM #818080	1.50 X 70/ B
ITEM #818085	1.50 X 70/ A
ITEM #818090	1.75 X 30/ B
ITEM #818095	1.75 X 45/ B
ITEM #818100	1.75 X 60/ B
ITEM #818105	2.00 X 30/ B
ITEM #818110	2.00 X 45/ B
ITEM #818115	2.00 X 60/ B
ITEM #818120	2.00 X 70/ A
ITEM #818125	2.00 X 70/ B
ITEM #818130	2.00 X 80/ B
ITEM #818135	2.25 X 60/ B
ITEM #818140	2.25 X 60/ W
ITEM #818145	2.25 X 70/ B
ITEM #818150	2.50 X 30/ B
ITEM #818155	2.50 X 60/ B
ITEM #818160	2.50 X 80/ B
ITEM #818165	3.00 X 30/ B
ITEM #818170	3.00 X 45/ B
ITEM #818175	3.00 X 45/ R
ITEM #818180	3.00 X 45/ B
ITEM #818185	3.00 X 80/ B
ITEM #818190	3.50 X 45/ B
ITEM #818195	4.00 X 45/ B
ITEM #818200	4.00 X 60/ B



To Order Call: 1-866-800-2872

**Heating System
Parts & Supplies**

**BOILER TEMPERATURE/PRESSURE GAUGE
FRONT MOUNT**

ITEM # 800515

\$20.00



**PRIMARY CONTROL, PROTECTORELAY
HONEYWELL RS184-4009
ITEM#800426**

\$52.91

**CAD CELL FLAME DETECTOR,
HONEYWELL C554A-1463**

ITEM # 807509

\$13.72



PRESSURE RELIEF VALVE, 3/4", 30#, WATTS 174A

ITEM #800500

\$34.02

PRESSURE RELIEF VALVE, 1", 125#, WATTS 40XL-4

ITEM #800505

\$114.72



**MUSTANG WATER HEATERS, INLINE
MODEL J 450**

ITEM # 806934

\$1339.33

To Order Call: 1-866-800-2872

DRIVE COUPLING END: 5/16"
ITEM# 807510

\$1.30 EA

DRIVE COUPLING END: 7/16"
ITEM #807511

\$1.30 EA

DRIVE COUPLING END: 1/2"
ITEM #807512

\$1.30 EA

DRIVE COUPLING TUBE
ITEM #807515

\$4.41 EA



FUEL SOLENOID VALVE, 120V, DELAY

ITEM #800450

\$35.00

IGNITION TRANSFORMERS:

ITEM #800415 WEBSTER 313-25AB78

\$44.00

ITEM #800417 FRANCEFORMER 5LAY-02

\$38.50

ITEM #818702 FRANCEFORMER 5LAY-04

\$43.58

ITEM #818704 FRANCEFORMER LA4V

\$63.91



FUEL FILTER, WESTWOOD S-254, 3/8" inlet/outlet

ITEM #800522

\$16.12



FUEL FILTER REPLACEMENT CARTRIDGE

ITEM #800521

\$1.78

PROPYLENE GLYCOL, 55 GALLON DRUM, 60/40

ITEM #801780

\$360.25

AUTOMATIC AIR VENTS, 1/2" MPT CONNECTION

ITEM# 800512

\$7.93

AUTOMATIC AIR VENTS, 1/2" MPT CONNECTION HOFFMAN #79

ITEM# 807752

\$62.84



To Order Call: 1-866-800-2872

**Pipe Fittings
& Repair Clamps**

REPAIR CLAMP, STAINLESS STEEL, ROMAC 2", SS1-2.63" X 12" ITEM# 818316	\$71.22
ROMAC 3", SS1-3.70-12" ITEM# 818319	\$74.35
ROMAC 4", SS1-4.85-8" ITEM# 818320	\$42.15
ROMAC 4", SS1-4.85-12" ITEM# 818322	\$73.85
ROMAC 6", SS1-6.35-12" ITEM# 818325	\$79.95
ROMAC 6", SS1-7.00-12" ITEM# 818327	\$86.20
ROMAC 6", SS1-7.00-16" ITEM# 818328	\$99.66



SPRING WASHERS, ROMAC 1/2" (FOR REPAIR CLAMP ON HDPE PIPE) ITEM# 818323	\$2.25
SPRING WASHERS, ROMAC 5/8" (FOR REPAIR CLAMP ON HDPE PIPE) ITEM#818324	\$2.80



VICTAULIC COULING, STYLE 995 ITEM# 818330, 4-INCH	\$85.50
VICTAULIC COULING, STYLE 995 ITEM# 818335, 6-INCH	\$118.47

POLYETHYLENE TUBE, 0.375" O.D. FOR CHEMICAL PUMP SUCTION OR DISCHARGE ITEM# 807140	\$0.90 / ft
POLYETHYLENE TUBE, 1/2" O.D. FOR CHEMICAL PUMP SUCTION OR DISCHARGE ITEM# 800057	\$5.63 / 100 ft

To Order Call: 1-866-800-2872

Electrical Equipment

**MULTIMETER, FLUKE MODEL 10,
VOLTS AC- DC, OHMS, DIGITAL**

ITEM# 803161

\$77.42



**MULTIMETER, FLUKE MODEL 733,
VOLTS AC-DC, OHMS, AMPS AC-DC, DIGITAL**

ITEM# 803165

\$138.72

**MULTIMETER, FLUKE MODEL 334, CLAMP-ON
VOLTS AC-DC, OHMS, AMPS AC-DC, DIGITAL**

ITEM# 803166

\$139.99



**MULTIMETER, AMPROBE MODEL FS3L
VOLTS AC-DC, OHMS, AMPS AC-DC, ANALOG**

ITEM# 803162

\$56.00

GENERAL PURPOSE RELAY, 120VOLT COIL

DPDT, ITEM# 800419

\$18.00

3PDT, ITEM# 800418

\$20.00



**TIMING RELAY, 0N-DELAY, TIMEMARK 98A00322-03
120 VOLT, 8 PIN, ADJUSTABLE TIME**

ITEM# 800410

\$45.00

**ALTERNATING RELAY, TIMEMARK P/N 261DT120
120 VOLT,**

ITEM# 800422

\$85.50

To Order Call: 1-866-800-2872

Electrical Equipment

VOLTAGE MONITOR, TIMEMARK P/N AC260B160 208 VOLT, HI-LO ADJUSTABLE		
ITEM# 800423		\$81.00
<hr/>		
FLOW SWITCH, McDONNELL MODEL FS4-3		
ITEM# 800431		\$76.59
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	FLOW SWITCH, McDONNELL MODEL FS8-W	
	ITEM# 800432	\$124.85
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FLOW SWITCH, McDONNELL, MODEL FS7-4		
ITEM#800433		\$201.84
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FLOAT SWITCH, MERCURY, N.O., PUMP DOWN		
ITEM# 800440		\$27.76
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BATTERY, FIRE ALARM, 6 VOLT PANASONIC PS1250F1		
ITEM# 816020		\$13.60
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PRESSURE SWITCH, SQUARE-D CLASS 9013 TYPE FYG2J21		
ITEM# 816021		\$22.35

To Order Call: 1-866-800-2872



FACE SHIELD, PREMIUM QUALITY

ITEM# 800023 \$24.48

FACE SHIELD, ECONOMY

ITEM# 800025, & 800023 \$9.35

EAR PLUGS, WITH CORD, BX/200

ITEM # 800027 \$36.97



EAR MUFFS, HEAVY DUTY

ITEM# 800028 \$7.52

COVERALLS, DISPOSABLE

SIZE M, ITEM# 800560 \$7.79
 SIZE L, ITEM# 800234 \$7.79
 SIZE XL, ITEM# 800874 \$7.79

COVERALLS, CHEMICAL RESISTANT

SIZE M, ITEM# 800690 \$33.03
 SIZE L, ITEM# 800692 \$33.03
 SIZE XL, ITEM# 800698 \$33.03



GOGGLES, CHEMICAL SAFETY

ITEM# 800250 \$8.18

APRON, RUBBER, HEAVY DUTY

ITEM# 800286 \$7.38

To Order Call: 1-866-800-2872

**Safety & Personal
Protective Equipment**



RESPIRATOR, DUAL-FILTER, HALF MASK

ITEM# 800441

\$9.16

RESPIRATOR FILTER CARTRIDGES, OV/AG, 2/PK

ITEM# 800448

\$8.10



GLOVES, DISPOSABLE LATEX, 5 MIL, PK/100

SIZE M, ITEM# 801723

\$12.00

SIZE L, ITEM# 801724

\$12.85



SAFETY GLASSES, INDOOR/OUTDOOR

ITEM# 809023

\$6.99

GLOVES, 13" NITRILE, NON-POWDERED, 11 MIL

SIZE L, ITEM# 806240

\$16.00/DOZ.

SIZE XL, ITEM# 806243

\$16.00/DOZ.



GLOVES, CHEMICAL, 13", 26 MIL

SIZE M, ITEM# 806239

\$17.13/DOZ. PR

SIZE L, ITEM# 806242

\$17.13/DOZ. PR

SIZE XL, ITEM# 806243

\$17.13/DOZ. PR

GLOVES, CHEMICAL, 18" NEOPRENE, 30 MIL,

SIZE L, ITEM# 806244

\$12.00/PAIR



EYEWASH STATION, WALL MOUNT

ITEM# 800265

\$18.50



To Order Call: 1-866-800-2872

POCKET COLORIMETER, CHLORINE HACH CATALOG # 46700-00

ITEM# 800617

\$333.00



BATTERY ELIMINATOR, FOR HACH 2100P / 120V

ITEM# 800855

\$42.00



TURBIDIMETER, HACH MODEL 2100P

ITEM# 800854

\$775.00

WHIRL PAK BAGS, WITH 10 MG SODIUM THIOSULFATE

ITEM# 800620, 25/PK

\$ 6.00

ITEM# 800622, 100/PK

\$22.55



OIL COMBUSTION TEST KIT, BACHARACH # 10-5022

ITEM# 800630

\$524.30

To Order Call: 1-866-800-2872

Testing Equipment

CHLORINE TEST KIT, COLOR WHEEL HACH MODEL CN-66, FREE & TOTAL CL2

ITEM# 800615 \$38.95



COLORIMETER, HACH MODEL DR890

ITEM# 800684 \$899.00

COLORIMETER, HACH MODEL DR850

ITEM# 800686 \$749.00

SAMPLE CELL, HACH DR800 SERIES COLORIMETER, 6/PK

ITEM# 807772 \$25.00

SAMPLE CELL, FOR POCKET COLORIMETER

6/PK, ITEM# 807774 \$18.50

SAMPLE CELL, FOR HACH 2100P TURBIDIMETER, 6/PK

ITEM# 807776 \$21.00



To Order Call: 1-866-800-2872

MICRON FILTER, STRING WOUND, 5 MICRON, 10" NOMINAL

ITEM# 800537 \$4.46

MICRON FILTER, STRING WOUND, 5 MICRON 30" NOMINAL

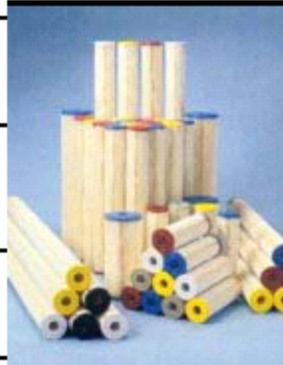
ITEM# 800558 \$5.00

MICRON FILTER, OSMONICS # SXD-40-EHS

ITEM# 800550 \$39.25

MICRON FILTERS, 40", 1-MICRON

ITEM# 800563 \$19.65



MICRON FILTER, HARMSCO 801-1, 1 MICRON, 9-3/4"

ITEM# 800579 \$5.40

MICRON FILTER, HARMSCO 921-1, 1 MICRON, 19-1/2"

ITEM# 800581 \$13.75

BAG FILTER, STRAINRITE HPM97-GC-2SS

ITEM# 801574 \$49.98

BAG FILTER, STRAINRITE HPM97-GC-2SS

ITEM# 802013 \$49.98

BAG FILTER, STRAINRITE SW18TP2S

ITEM# 800530 \$24.85



Note:

Micron Filters in other sizes and types are available on demand. Contact us for price and availability.

To Order Call: 1-866-800-2872

Tools & Maintenance Equipment



JETTER, MYTANA MAX BLAST M30

ITEM# 801230

\$3595.00

JETTER HOSE,
1/4" X 100', HI-TEMP HOSE
ITEM# 802083

\$180.00

JETTER, HOTSY POWER WASHER
GAS POWERED 2000 PSI, 3 GPH, 32-284 °F ADJUSTABLE TEMP.

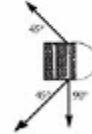
ITEM # 806697

\$2995.00

JETTER NOZZLES, 1/2" PENETRATING THRUST

ITEM# 807175

\$30.00



MYTANA HOT BOX , FOR USE WITH MUSTANG OR MYTANA JETTERS
ITEM# 801235

\$2000.00

MUSTANG IN-LINE WATER HEATER, FOR USE WITH MUSTANG OR MYTANA JETTERS
ITEM# 806934

\$1339.00



HYDRANT OPERATING WRENCH, ADJUSTABLE

ITEM# 800080

\$35.00

To Order Call: 1-866-800-2872

ALASKA NATIVE TRIBAL HEALTH CONSORTIUM (ANTHC)

Alaska Utility Supply Center

John Thein

6130 Tuttle Place #2

Anchorage, AK 99507

Phone: 907-729-3500

1-866-800-2872 (toll free)

Fax: 907-729-3584

Email: jthein@anthc.org



EQUIPMENT LIST

Standard Equipment

Emergency Equipment

Safety Equipment

Standard Equipment

ITEM	PRICE	SUPPLIER
HAND TOOLS		
Flat tip screwdriver 10" x 1/4 "	2.00	Sears Craftsman
Phillips screwdriver 3" x #1	.80	Sears Craftsman
Phillips screwdriver 7" x #2	4.60	Sears Craftsman
Flat tip offset screwdriver	1.60	Sears Craftsman
Phillips offset screwdriver	1.50	Sears Craftsman
Socket set, 3/8" drive 8 size to 3/4"	67.90	Sears Craftsman
1/2" drive, 11 sizes to 1-1/8"	52.90	Sears Craftsman
Box/open end wrenches (5/16 to 1")	97.8	Sears Craftsman
12" Adjustable wrench	13.1	Sears Craftsman
8.5" Adjustable wrench	8.3	Sears Craftsman
6.5" Adjustable wrench	7.8	Sears Craftsman
Allen Wrench Set, English, folding, 8 piece	2.3	Sears Craftsman
Allen Wrench Set, Metric, 7-piece	2.0	Sears Craftsman
pliers, slip joint, 12", coarse teeth off	10.3	Sears Craftsman
pliers, slip joint, 8", w/cutter, combination	4.4	Sears Craftsman
Slipjoint pliers 16", offset jaw	5.3	Sears Craftsman
Pliers, long nose, 5.5", w/cutter	6.3	Sears Craftsman
Diagonal pliers (7-1/2") side cutter, "dikes"	6.7	Sears Craftsman
Snap ring pliers (6")	5.3	Sears Craftsman
Vice Grip, 7" straight jaw	4.0	Sears Craftsman
Vice Grip, 8-1/2" curved jaw	6.7	Sears Craftsman
Metal shears Right cutting 10"	5.1	Sears Craftsman
Metal shears(12" straight cut)	5.6	Sears Craftsman

ST. GEORGE WASTEWATER SYSTEM O&M MANUAL

ITEM	PRICE	SUPPLIER
Crowbar 49", pinch point		
Steel Chisels-punches:	10.3	Sears Craftsman
Pin punch set of 9, sizes 1-9	7.2	Sears Craftsman
Drill bits, metal(1/16" - 1/4")	6.6	Sears Craftsman
Hack saw frame 10-12" blade	2.9	Sears Craftsman
Hack Saw Blades, 12" 24 teeth per inch, 10/bd.	4.0	Sears Craftsman
Mill bastard cut file(12" long, 1-3/16" wide)	2.5	Sears Craftsman
Round bastard cut file (8" x 5/16")	1.2	Sears Craftsman
Half Round 2nd cut file (8 x 3/4")	3.0	Sears Craftsman
Valve Key	30.0	Sears Craftsman
Hydrant key	15.0	Sears Craftsman
Tool box	20.0	Sears Craftsman
Tool pouch	9.8	Sears Craftsman
PLUMBING TOOLS		
8" pipe wrench	7.0	Sears Craftsman
10" pipe wrench	8.5	Sears Craftsman
18" pipe wrench	14.1	Sears Craftsman
12' Tape Measure	2.9	Sears Craftsman
Pipe Reamer(1/4"-2")	7.0	AK plumbing
Cutter Flaring kit (1/8" to 1-1/8")	36.0	Sears Craftsman
Propane torch w/propane	25.0	AK plumbing
Solder, Hi Silver, no lead	5.0	Big 3 Linc.
Flux , Welco 5 liquid 6 oz.	4.9	Big 3 Linc.
Pipe Dope	5.0	Big 3 Linc.
Plumber's Grit (Sandpaper)		AK plumb
Striker	1.6	Big 3 Linc.

ITEM	PRICE	SUPPLIER
Plumber's Force Cup (Plunger)	3.0	Sears Craftsman
Wire Brush	5.0	Big 3 Linc.
ELECTRICAL TOOLS		
Lineman pliers, 6-1/4", w/cutter, scored tip	5.8	Sears Craftsman
Wire Stripper and crimping tool	4.6	Sears Craftsman
Screwdriver set (two flat tips, one No. 1, and one No. 2)	4.8	Sears Craftsman
Electrical Tape 3/4" WIDE BLACK	1.7	Sears Craftsman
Electrical Tape 3/4" WIDE red	1.7	Sears Craftsman
Multimeter, fluke, model 23 Series II	169.0	Grainger
Building Wire		STUSSER
Wire Nuts, blue	3.5	Grainger
Wire Nuts, Yellow	5.3	Grainger
Wire Terminal kit		
GENERAL CARPENTRY		
Square, carpenter	7.1	SPENARD
Square, tri	5.6	SPENARD
Crow bar (48")	9.8	Sears Craftsman
Pry bar (15"-flat)	4.9	Sears Craftsman
Hand saw, 26", 8 pts./inch	7.0	Sears Craftsman
Skill Saw(Worm Drive 7 1/4")	150.0	?
Drill Bits, wood 1/2" - 1-1/4" set	8.0	Sears Craftsman
Hammers, claw 16 oz, 13" long, curved claw)	8.1	Sears Craftsman
Hammers, ball peen, 12 oz, 13" long, fiberglass handle	7.1	Sears Craftsman
Skill Saw Blades 30 teeth, 8"	24.5	Sears Craftsman

ST. GEORGE WASTEWATER SYSTEM O&M MANUAL

ITEM	PRICE	SUPPLIER
SHOP ACCESSORIES		
3-way outlet Extension chord, 25 ft.	12.9	
Extension chord, Arctic	60.0	
Flashlight, waterproof	2.5	Sears Craftsman
Grease Tool	15.0	
Bench Grinder(1/2HP- 6")	65.0	
Grinding Wheels	5.0	
Drill motor, 1/2"	60.0	
Bench Vice(4-1/2" Jaw)	100.0	
Space heater (Reddy, 50k BTU)	250.0	
Trash Pump(diaphragm-Gas Power)	1,300.0	
Sledge Hammer-(8-lb)	10.0	
Electric Thaw Unit(Buzz Box)	800.0	
Sewer Cleanout Snake(power)	1,500.0	
Oxy/acetylene Regulating Set		
Oxy/acetylene Torch Set		
JANITORIAL SUPPLIES		
Broom	6.4	Sears Craftsman
Dust pan	1.4	Sears Craftsman
Wet Mop-head	3.5	Sears Craftsman
Mop Handle, 72", w/plastic screws	10.1	Sears Craftsman
Mop Bucket(26 qt)	17.5	Sears Craftsman
Mop Wringer	38.3	Sears Craftsman
Cellulose Sponge	1.0	Sears Craftsman
Plastic Pail: 12-qt	1.5	Sears Craftsman
Plastic Pail: 5-qt	1.5	Sears Craftsman
Garbage Can w/cover(32 gal)	14.0	Sears Craftsman

ITEM	PRICE	SUPPLIER
Heavy Duty Plastic Bags(20 gal)	16.3	Sears Craftsman
Scouring Powder (with Bleach)	0.5	Sears Craftsman
Scouring Powder (with out Bleach)	0.4	Sears Craftsman
Industrial Cleaner:21 oz	3.5	Sears Craftsman
Industrial Cleaner:1 Gal	7.4	Sears Craftsman
General Purpose Disinfectant Detergent	3.0	Sears Craftsman
Latex rubber glove: light duty	1.0	Sears Craftsman
Toilet Bowl Brush		
Airwick A500 Dry Powder Detergent (90-1/2oz)	20.0	Alaska paper
Shop Vac	70.0	

Emergency Equipment

ITEM	PRICE	SUPPLIER
Aquatech Jetter Model 1503 with accessories	3,000.00	Aquatech Co.
Aquatech inline heater	1,600.00	Aquatech Co.
Wash Wand Detergent Kit	280.00	Aquatech Co.
Hot Water Thaw Unit	2,500	
Portable Generator (2 to 4 kw)	1,000.00	
Thaw Unit, Electric (trindle)	600.00	
Sewer Snake (rotary power type)	2,500.00	
Sewer Snake (flat bar 150')	250.00	
Sewer Fire Hose Hydro-Jets	300.00	
Fire Hose (white, high pressure, 50')	45.00	
Fire Hose (yellow, high pressure, 50')	45.00	
MSA Air Pack (Safety Item for CI, MH)	800.00	

Safety Equipment

ITEM	PRICE	SUPPLIER
First Aid Kit, general purpose	37.90	Sears Craftsman
Neoprene Laboratory Apron	15.80	Sahlberg
Industrial Goggles	1.50	Sahlberg
North respirator, medium	18.00	Sahlberg
Cartridges for the North respirator	7.50	Sahlberg
Best Neoprene gloves	7.30	
Aspirator		
Fire Extinguisher		
Black Knight glove; rough finish 12"	2.00	Safety and Supply 77R
Full Body Harness	55.00	Rose Body Harness 502006
Lanyard (1/4" x length)	30.00	S&S
Portable Blower (Fasco Power Cat)	260.00	Garner Ind., ITM:4c734, 2 sp, 120v 450 CFM
Exhaust Duct Assembly (10x6)	81.00	
Combustible Gas and Oxygen Detector	1,600.00	
Hard Hat	15.00	
Safety Boots	60.00	
Garden Hose 50 ft.	10.90	Sears Craftsman

MSDSs

Lime/Quicklime

Lime/Quicklime

LIME, QUICKLIME, BURNT LIME, CALX

Section 1 - Product and Company Identification	Section 9 - Physical & Chemical Properties
Section 2 - Composition/Information on Ingredients	Section 10 - Stability & Reactivity Data
Section 3 - Hazards Identification Including Emergency Overview	Section 11 - Toxicological Information
Section 4 - First Aid Measures	Section 12 - Ecological Information
Section 5 - Fire Fighting Measures	Section 13 - Disposal Considerations
Section 6 - Accidental Release Measures	Section 14 - MSDS Transport Information
Section 7 - Handling and Storage	Section 15 - Regulatory Information
Section 8 - Exposure Controls & Personal Protection	Section 16 - Other Information

The information in this document is compiled from information maintained by the United States Department of Defense (DOD). Anyone using this information is solely responsible for the accuracy and applicability of this information to a particular use or situation. Cornell University does not in any way warrant or imply the applicability, viability or use of this information to any person or for use in any situation.

Section 1 - Product and Company Identification LIME, QUICKLIME, BURNT LIME, CALX

Product Identification: LIME, QUICKLIME, BURNT LIME, CALX

Date of MSDS: 01/01/1987 **Technical Review Date:** 04/08/1999

FSC: 6810 **NIIN:** 00-964-0105

Submitter: D DG

Status Code: C

MFN: 01
Article: N
Kit Part: N

Manufacturer's Information

Manufacturer's Name: SPECTRUM CHEMICAL MFG CORP(CONTR:CHEM
COMMODITY)
Manufacturer's Address1: 14422 SOUTH SAN PEDRO STREET
Manufacturer's Address2: GARDENA, CA 90248-2027
Manufacturer's Country: US
General Information Telephone: 213-516-8000
Emergency Telephone: 213-516-8000
Emergency Telephone: 213-516-8000
MSDS Preparer's Name: N/P
Proprietary: N
Reviewed: Y
Published: Y
CAGE: 63415
Special Project Code: N

Item Description

Item Name: CALCIUM OXIDE,ANALYZED REAGENT
Item Manager:
Specification Number: NK
Type/Grade/Class: NK
Unit of Issue: BT **Quantitative Expression:** 10000000025KG
Unit of Issue Quantity: 6
Type of Container:

Contractor Information

Contractor's Name: SPECTRUM CHEMICAL MFG. CORP.
Contractor's Address1: 14422 SOUTH SAN PEDRO STREET
Contractor's Address2: GARDENA, CA 90248-2027
Contractor's Telephone: 310-516-8000
Contractor's CAGE: 63415

Section 2 - Composition/Information on Ingredients
LIME, QUICKLIME, BURNT LIME, CALX

Ingredient Name: CALCIUM OXIDE
Ingredient CAS Number: 1305-78-8 **Ingredient CAS Code:** M
RTECS Number: EW3100000 **RTECS Code:** M
=WT: =WT Code:

=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: >99.
% Environmental Weight:
Other REC Limits: N/P
OSHA PEL: 5 MG/M3 OSHA PEL Code: M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: 2 MG/M3; 9192 ACGIH TLV Code: M
ACGIH STEL: N/P ACGIH STEL Code:
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical: N

Section 3 - Hazards Identification, Including Emergency Overview
LIME, QUICKLIME, BURNT LIME, CALX

Health Hazards Acute & Chronic: N/P

Signs & Symptoms of Overexposure:

DUST, MIST ARE IRRITATING TO EYE, SKIN, RESPIRATORY PASSAGES, MAY CAUSE SEVERE BURNS.

Medical Conditions Aggravated by Exposure:

N/P

LD50 LC50 Mixture: N/P

Route of Entry Indicators:

Inhalation: N/P

Skin: N/P

Ingestion: N/P

Carcinogenicity Indicators

NTP: N/P

IARC: N/P

OSHA: N/P

Carcinogenicity Explanation: N/P

Section 4 - First Aid Measures

LIME, QUICKLIME, BURNT LIME, CALX

First Aid:

USE STANDARD FIRST AIR PROCEDURES. CALL EMERGENCY MEDICAL CARE.

Section 5 - Fire Fighting Measures

LIME, QUICKLIME, BURNT LIME, CALX

Fire Fighting Procedures:

NONE

Unusual Fire or Explosion Hazard:

GENERATES HEAT WHEN COMBINED WITH WATER, IN A CONFINED AREA WITH LIMITED WATER, CAN GET HOT & BURN.

Extinguishing Media:

NONE

Flash Point: **Flash Point Text:** N/R

Autoignition Temperature:

Autoignition Temperature Text: N/R

Lower Limit(s): N/R

Upper Limit(s): N/R

Section 6 - Accidental Release Measures

LIME, QUICKLIME, BURNT LIME, CALX

Spill Release Procedures:

CAREFULLY SWEEP INTO CONTAINER. FLUSH RESIDUE WITH WATER.

Section 7 - Handling and Storage

LIME, QUICKLIME, BURNT LIME, CALX

Handling and Storage Precautions:

Other Precautions:

Section 8 - Exposure Controls & Personal Protection
LIME, QUICKLIME, BURNT LIME, CALX

Respiratory Protection:

USE APPROPRIATE FILTER ON RESPIRATOR

Ventilation:

PROVIDE MECHAN(GEN/LOCAL EXHAUST)VENT TO MAINTN <TLV

Protective Gloves:

YES

Eye Protection: SAFETY GOGGLES

Other Protective Equipment: NONE

Work Hygenic Practices: N/P

Supplemental Health & Safety Information: MSDS DATED OCTOBER 6, 1986
PROVIDED BY CHEM. COMMODITY.

Section 9 - Physical & Chemical Properties
LIME, QUICKLIME, BURNT LIME, CALX

HCC: B1

NRC/State License Number:

Net Property Weight for Ammo:

Boiling Point: =2850.C, 5162.F **Boiling Point Text:**

Melting/Freezing Point: **Melting/Freezing Text:** N/A

Decomposition Point: **Decomposition Text:** N/A

Vapor Pressure: N/R **Vapor Density:** N/R

Percent Volatile Organic Content:

Specific Gravity: 3.3

Volatile Organic Content Pounds per Gallon:

pH: N/P

Volatile Organic Content Grams per Liter:

Viscosity: N/R

Evaporation Weight and Reference: N/R

Solubility in Water: NEG.

Appearance and Odor: WHITE POWDER PELLETS OR LUMPS, ODORLESS

Percent Volatiles by Volume: N/R

Corrosion Rate: N/P

Section 10 - Stability & Reactivity Data
LIME, QUICKLIME, BURNT LIME, CALX

Stability Indicator: YES

Materials to Avoid:

ORGANIC SUBSTANCES.

Stability Condition to Avoid:

EXOTHERMIC IN WATER & ACIDS. WILL ABSORB CO*2.

Hazardous Decomposition Products:

NONE

Hazardous Polymerization Indicator: NO

Conditions to Avoid Polymerization:

WILL NOT POLYMERIZE.

Section 11 - Toxicological Information
LIME, QUICKLIME, BURNT LIME, CALX

Toxicological Information:

N/P

Section 12 - Ecological Information
LIME, QUICKLIME, BURNT LIME, CALX

Ecological Information:

N/P

Section 13 - Disposal Considerations
LIME, QUICKLIME, BURNT LIME, CALX

Waste Disposal Methods:

KEEP IN COVERED DRUMS,PENDING DISPOSAL. HANDLE & DISPOSE IN FULL COMPLIANCE WITH ALL APPLICABLE INTERNATIONAL,FEDERAL,STATE, & LOCAL REGULATIONS.

Section 14 - MSDS Transport Information
LIME, QUICKLIME, BURNT LIME, CALX

Transport Information:

N/P

Section 15 - Regulatory Information
LIME, QUICKLIME, BURNT LIME, CALX

SARA Title III Information:

N/P

Federal Regulatory Information:

N/P

State Regulatory Information:

N/P

Section 16 - Other Information
LIME, QUICKLIME, BURNT LIME, CALX

Other Information:

N/P

HMIS Transportation Information

Product Identification: LIME, QUICKLIME, BURNT LIME, CALX

Transportation ID Number: 95086

Responsible Party CAGE: 63415

Date MSDS Prepared: 01/01/1987

Date MSDS Reviewed: 04/08/1987

MFN: 04/08/1987

Submitter: D DG

Status Code: C

Container Information

Unit of Issue: BT

Container Quantity: 6

Type of Container:

Net Unit Weight: 5.0LBS

Article without MSDS: N
Technical Entry NOS Shipping Number:
Radioactivity: N/R
Form:
Net Explosive Weight:
Coast Guard Ammunition Code:
Magnetism: N/P
AF MMAC Code:
DOD Exemption Number: N/R
Limited Quantity Indicator:
Multiple Kit Number: 0
Kit Indicator: N
Kit Part Indicator: N
Review Indicator: Y
Additional Data:
IMO/IATA:GRP III

Department of Transportation Information

DOT Proper Shipping Name: SEE ADDITIONAL DATA FIELD IN HMIS FOR FURTHER INFORMATION
DOT PSN Code: XXX
Symbols: N/R
DOT PSN Modifier:
Hazard Class: N/A
UN ID Number:
DOT Packaging Group:
Label:
Special Provision(s):
Packaging Exception:
Non Bulk Packaging:
Bulk Packaging:
Maximum Quantity in Passenger Area:
Maximum Quantity in Cargo Area:
Stow in Vessel Requirements:
Requirements Water/Sp/Other:

IMO Detail Information

IMO Proper Shipping Name: CORROSIVE SOLID, N.O.S. o
IMO PSN Code: ESJ
IMO PSN Modifier:
IMDG Page Number: 8151
UN Number: 1759
UN Hazard Class: 8
IMO Packaging Group: I/II/III

Subsidiary Risk Label: -

EMS Number: 8-15

Medical First Aid Guide Number: 760

IATA Detail Information

IATA Proper Shipping Name: CALCIUM OXIDE

IATA PSN Code: EZP

IATA PSN Modifier:

IATA UN Id Number: 1910

IATA UN Class: 8

Subsidiary Risk Class:

UN Packaging Group: III

IATA Label: CORROSIVE

Packaging Note for Passengers: 822

Maximum Quantity for Passengers: 25KG

Packaging Note for Cargo: 823

Maximum Quantity for Cargo: 100KG

Exceptions:

AFI Detail Information

AFI Proper Shipping Name: CALCIUM OXIDE

AFI Symbols:

AFI PSN Code: EZP

AFI PSN Modifier:

AFI UN Id Number: UN1910

AFI Hazard Class: 8

AFI Packing Group: III

AFI Label:

Special Provisions: P5

Back Pack Reference: A12.4

HAZCOM Label Information

Product Identification: LIME, QUICKLIME, BURNT LIME, CALX

CAGE: 63415

Assigned Individual: N

Company Name: SPECTRUM CHEMICAL MFG. CORP.

Company PO Box:

Company Street Address1: 14422 SOUTH SAN PEDRO STREET

Company Street Address2: GARDENA, CA 90248-2027 US

Health Emergency Telephone: 213-516-8000

Label Required Indicator: Y

Date Label Reviewed: 12/16/1998

Status Code: C

Manufacturer's Label Number:

ST. GEORGE WASTEWATER SYSTEM O&M MANUAL

Date of Label: 12/16/1998

Year Procured: N/K

Organization Code: F

Chronic Hazard Indicator: N/P

Eye Protection Indicator: N/P

Skin Protection Indicator: N/P

Respiratory Protection Indicator: N/P

Signal Word: N/P

Health Hazard:

Contact Hazard:

Fire Hazard:

Reactivity Hazard:

OPERATOR NOTES

