



Title: Waterworks Emergency Response Plan	Policy No.: 06-01
Section: 04	Page No.: 1 of 32

Legislation Reference:	<i>Alberta Provincial Statutes</i>
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Purpose:	To establish a Plan that will be activated as required if there is a severe disruption to the normal day-to-day operations of waterworks in the Smoky Lake County.
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Policy Statement and Guidelines:

STATEMENT

The Waterworks Emergency Response Plan is a tool to assist the water operators to proactively address in an efficient and safe manner when a severe disruption occurs to Smoky Lake County waterworks.

PROCEDURES

The **Waterworks Emergency Response Plan** as outlined in *Schedule "A"* include:

- 1.0 Plan Activation and Hazard Analysis**
 - 1.1 Plan Activation
 - 1.2 Definitions
 - 1.3 Risk Hazard Analysis
- 2.0 Roles and Responsibilities**
 - 2.1 Responsibilities
 - 2.2 Dealing with the Media
 - 2.3 Command Post
- 3.0 Initial Response**
 - 3.1 Emergency Telephone Numbers
 - 3.2 Written Reporting
 - 3.3 Equipment Failure / Shutdown Reporting
 - 3.3.1 Verbal Reporting
 - 3.3.2 Written Reporting
 - 3.3.3 Equipment Failure / Shutdown Reporting
 - 3.4 Response / Procedures for Specific Conditions
 - 3.4.1 Evacuation
 - 3.4.2 Spills / Leaks
 - 3.4.3 Loss of Power
 - 3.4.4 Water Contamination includes Boil Water Advisory
 - 3.4.5 Weather Warning
 - 3.4.6 Computer / Instrumentation Failure
 - 3.4.7 Safety
 - 3.4.8 Unauthorized SCADA Access
 - 3.4.9 Vandalism / Sabotage / Unauthorized Access
 - 3.4.10 Waterworks System Inoperable / Alternate Supply
 - 3.4.11 Chemical Overdose
 - 3.4.12 Distribution System – Break, Repair, Restoration
- 4.0 Emergency Support**
- 5.0 Training and Exercise**
- 6.0 Distribution and Maintenance of Plan**
 - 6.1 Distribution
 - 6.2 Maintenance
 - 6.3 Updating the Plan

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WATERWORKS EMERGENCY RESPONSE PLAN

SCHEDULE "A"

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Plan Activation and Hazard Analysis1.1 **Plan Activation**

The Plan is to be activated as required if there is a severe disruption to the normal day-to-day operations.

Refer to various sections of the plan as required. Wherever practical, note deficiencies and use these to continuously update the plan.

1.2 **Definitions**

Command Post: a location near the site of the incident where emergency operations can be coordinated.

Site Coordinator: the person in charge of coordinating emergency operations. This is a senior person who has the authority to make decisions.

Disaster: a disruption caused by man or nature that can impact people or property in terms of safety, operations, or environment.

First Responder: the first person on the scene who discovers the incident.

Hazard: exposure or vulnerability to injury or loss.

Hazard Analysis: a method to identify potential emergencies.

Local Authority: The council of a city, town, village, hamlet, county or Municipal District.

Municipality: the area encompassing a city, town, village, hamlet, county, Municipal District, improvement district, or special area that has local self-government.

NFPA: National Fire Protection Association.

OH and S: (Canadian Centre for) Occupational Health and Safety.

PPE: Personal Protective Equipment.

SCBA: Self-Contained Breathing Apparatus.

WCB: Workman's Compensation Board.

1.0 Plan Activation and Hazard Analysis - *Cont.*

1.3 Risk Hazard Analysis

A risk hazard analysis should be completed at least once a year, or whenever there is a change to processes, or situations that affect rankings.

The basic steps involved to successfully determine and prioritize risk are as follows:

1. As a group, if possible, compile a list of all possible hazards, whether natural or man-made. This is a “wide-open” brainstorming session – there are no restrictions or criticisms. What may first appear as an insignificant hazard may trigger discovery or another hazard. *List in Table 1.*
2. From this list, determine the probability of the events occurring, *using Table 2.*
3. Determine the severity of the consequences if each event occurred, *using Table 3.*
4. *Using Table 4* matrix, determine what the risk level would be based on the selection in steps 2 and 3 above. For example, an “Occasional” probability with “Critical” severity would be a “Medium” risk level.
5. Sort these risks according to High, Medium, or Low. Concentrate on methods to remove, reduce, or mitigate the high risks first.

When these methods are successfully completed, subsequent years’ reviews should indicate a change in the Probability and/or Severity of the original risks. This should change a “High” risk to a “Medium” or “Low” risk.

TABLE 1: RISK LIST

#	RISK	PROBABILITY	SEVERITY	RISK RANKING
1	Tank Rupture	Remote	Critical	Low
2	Low Chlorine	Occasional	Marginal	Low
3	Unauthorized SCADA access	Remote	Marginal	Low
4	Power Failure	Probable	Marginal	Medium
5	Line Freeze up	Occasional	Marginal	Low
6	Vandalism	Occasional	Critical	Medium
7	Equipment Breakdown	Probable	Marginal	Medium
8	Sabotage	Remote	Critical	Low
9	Chemical Overdose	Occasional	Critical	Medium
10	Contamination – Reservoir	Occasional	Critical	Medium
11	Contamination – Distribution	Remote	Critical	Low
12	Loss of raw water/well pumps	Occasional	Critical	Medium
13	Distribution main break	Occasional	Critical	Low
14	Fire	Remote	Critical	Low

1.0

Plan Activation and Hazard Analysis - *Cont.*

TABLE 1: RISK LIST – *Cont.*

#	RISK	PROBABILITY	SEVERITY	RISK RANKING
15	Chemical Spill	Remote	Critical	Low
16	Shortage of Operators (flue)	Occasional	Critical	Low
17	Sump (pump) failure	Occasional	Marginal	Low
18	Weather – storm	Probable	Critical	Low
19	Lightning	Occasional	Critical	Medium
20	Disgruntled employee	Occasional	Critical	Medium
21	Unauthorized operation	Remote	Critical	Low
22	Loss/lack of chemical(s)	Occasional	Critical	Low
23	SCADA failure	Occasional	Marginal	Low

TABLE 2: PROBABILITY

DESCRIPTOR	DESCRIPTURE
Frequent	Likely to occur numerous times
Probable	Likely to occur several times
Occasional	Likely to occur sometimes
Remote	Likely to occur
Improbable	Extremely unlikely to occur

TABLE 3: SEVERITY

DESCRIPTOR	HEALTH/INJURY	BUSINESS IMPACT	ENVIRONMENTAL IMPACT	ATTENTION/CONCERN
Catastrophic	Fatality	Affects entire locality	Major, long term impact (many years)	Nationwide attention
Critical	Permanent or serious injury/illness	Affects numerous facilities or businesses	Medium impact (a few years' maximum)	Provincial attention
Marginal	Injury requiring medical assistance (reportable)	Affects localized areas	Minimal impact	Local attention
Negligible	First Aid – minor injury or illness	None	None	Plant /Single Person/none

TABLE 4: RISK LEVELS

PROBABILITY VS SEVERITY	FREQUENT	PROBABLE	OCCASIONAL	REMOTE	IMPROBABLE
Catastrophic	High	High	High	Medium	Low
Critical	High	High	Medium	Low	Low
Marginal	Medium	Medium	Low	Low	Low
Negligible	Low	Low	Low	Low	Low

2.0

Roles and Responsibilities

2.1 Responsibilities

Site Coordinator (may also be the Emergency Response Planner)

- Responsible for maintaining, updating, exercising, and activating the emergency response plan.
- Work with internal and external personnel, agencies, etc. under normal operating conditions and during emergencies.
- Responsible for dealing with the media and providing information as required during emergency incidents.

Personnel and Visitors

- Work with the Site Coordinator to ensure that the plan is kept current.
- Be aware of potential safety or emergency conditions during daily operations.

2.2 Dealing with the Media

In the event of an emergency involving the water treatment and/or distribution system, it may be necessary to provide information to various groups, including the media. To maintain accurate and timely dialogue, consider the following points:

- Collect and disseminate information through a single person. This could be the Site Coordinator, but it would be preferable to communicate through the Smoky Lake County Council. This will “free up” the Site Coordinator to handle the emergency. If any form of emergency services is on site, e.g. RCMP, Fire Department, etc., then they could also be a media contact.
- Do NOT allow the media, or any unauthorized personnel, on site. This is a safety issue.
- The media contact dictates where and when an interview will be held. If the contact is not available, he should give them a time and place when he will be available.
- If you’re being interviewed, you should provide the following information:
 - Who you are and what you do.
 - What happened, and when it occurred.
 - Present status-any immediate danger or effect on the public (water supply).
 - Casualties, if any. Do NOT provide names or seriousness of injury.
 - When you (or someone else) can update them again.
- If you’re not the person being interviewed, you may have to provide this information to the person who is in contact with the media.
- Stay away from any questions regarding fault, cause, costs, or personal opinions. Instead, say that you are focusing on the immediate problems, and your first concern is for the safety and welfare of the people involved.
- Also decline any questions that are hypothetical. They would start “What if this happens...”, or “Suppose that...”.
- IF you don’t have an answer for a question, tell them that. However, try to get the answer, or find someone else who knows. Then get back to them.
- Talk in plain language and don’t be dramatic with your explanations. Most people will not know the technical details of your operation.

2.0**Roles and Responsibilities - *Cont.***

- “Off the Record” doesn’t exist. If you don’t want something repeated, don’t say it.

2.3 Command Post

If it becomes necessary to activate a Command Post to deal with a water related emergency, it will be set up at the water treatment plant. Its purpose is to:

- Provide a focal point for communication and to deal with all involved entities, including (but not limited to) the village council, the media, internal and external emergency response teams such as fire and ambulance, and the public.
- Assess the extent of the emergency and maintain records of all activities.
- Obtain materials and equipment as required to control the emergency.

To function properly, the Command Post should have basic equipment, including:

- Communication-telephone landline, cell phone, radio, fax, and photocopier.
- Networked computer (SCADA connection?), TV, radio.
- First Aid kit.
- Basic safety equipment for each person involved with the Command Post-hard hat, safety boots and glasses, vest.

3. Initial Response

3.1 Emergency Telephone Numbers

Group or Contact Person	Nature of Emergency	Phone Number(s)
Emergency Response: Fire or Ambulance	Fire, explosion, chemical spill, loss of (fire) pressure	911 Fire: Cell:
RCMP	Intrusion, threat, complaint	911
Alberta Environment	Approval violation, spill, contamination, or chlorine equipment failure	1-780-422-4505, or 1-800-222-6514 (both are 24 hour numbers)
Hospital	Medical	780-656-3034
Poison Center	Poisoning	1-800-332-1414, if busy 1-403-944-1414 (Calgary)
(Canadian Center for) Occupational Health and Safety	Injury or fatality related to work or worksite	1-800-263-8466, or 1-780-427-8848
Transportation of Dangerous Goods (TDG)	Loss or leakage of substance during Handling, transport, or unloading	1-800-272-9600
Workers' Compensation Board-Alberta	Injury reporting	310-0000, then 1-780-498-3999
ATCO (Power Company)	Loss of power	780-656-4133
Telephone company (Telus)	Loss of communication	611 or 310-7353 (toll free)
Smoky Lake County Natural Gas Alberta One-Call	<ul style="list-style-type: none"> ■ Loss of gas service, leak or gas fire ■ Pipe locating 	780-656-3037 (daytime) (24 hr emergency)
Chlorine supplier	Leak or loss of chlorine	Cleartech: (780)452-6000 24hr emergency: 1-306-664-2522
Potassium Permanganate supplier	Leak or loss of potassium permanganate	Cleartech: (780)452-6000 24hr emergency: 1-306-664-2522
Water/Wastewater Manager	General reporting	Dave Franchuk Daytime: 780-656-3730 After hours: 780-650-1800
Water Treatment Plant WTP Operator(s)		Terry Bodnar Daytime: (780)656-3730 After hours: (780) 656-8856

3. Initial Response – *Cont.*

3.2 Notification Procedures

The following should be contacted as required, in the order shown if possible: (This should be coordinated with the Town/Village Municipal Emergency Plan.)

ACCIDENT/OCCURRENCE	CONTACT NUMBER
Site Coordinator: Dave Franchuk	Cell: 780-650-1800 Home: 780-656-3887
Water Employees: Terry Bodnar	780-656-8856
Emergency Services-Fire, Ambulance	911
Health Authority: Ian McDougall	780-656-5157
Alberta Environment: Dean Litzenburger	780-623-5236
County CAO: Cory Ollikka	Cell: 780-650-5005 Home: 780-383-2148
Plant Location (address):	12368 Township 595A
Directions to the Water Treatment Plant:	From the Hamlet of Spedden travel 0.3 km North, then go 1.4 Km West. The Water Treatment Plant is on the North side of the road.

3. Initial Response – *Cont.*

3.3 Reporting of Approval Violations or Environmental Releases

3.3.1 Verbal Reporting

Condition:

- A violation of the Approval to Operate (or Code of Practice), or an environmental release occurs.

Notify:

- Co-workers and other employees.
- Alberta Environment (verbal initially).
- Smoky Lake County personnel.
- Public Health Authority.

ITEM	ACTION BY:
Notify a co-worker. Do not work alone.	First responder
Notify others as per the telephone listing in Section 3.1 (within 2hrs of the incident.)	First responder
If safety conditions permit, isolate the cause of the violation or leak.	First responder if qualified (operator)
Confirm a Site Coordinator to handle the collecting of information and reporting as required.	First responder
Set up response review meeting (quickly).	Site Coordinator
Notify Alberta Environment- Enforcement and Monitoring Division. The 24- hour toll free and industrial reporting numbers are listed in Section 3.1. This covers any terms or conditions of the Approval that have not been met, or the failure of any disinfection equipment. Include date, time, location, and nature of violation. Include any mitigation if it has been done.	Site Coordinator
Alberta Environment will issue a reference number. Use it with all future correspondence. They will likely also request a (7 day) written report. (See Section 3.3.2).	Site Coordinator or higher
Notify the Health Authority if: <ul style="list-style-type: none"> ■ The chlorine residual reaches 0.5 mg/L. ■ Other conditions? Provide specific information on occurrence and expected duration to Health Authority. See also Section 3.1 for phone numbers.	Site Coordinator or higher.

3. Initial Response *Cont.*

As per the Code of Practice, reporting is required if any of the following limits are exceeded.

Waterworks Limits

PARAMETER	LIMIT	SAMPLING LOCATION
Volume of Treated Water	Sum of the most current Water Resources Diversion License for each well	Entering the distribution system/ treated water reservoir
Volume of Raw Water	Sum of the most current Water Resources Diversion License for each well.	Entering water treatment plant
Total Cl ₂ Residual-treated	≥ 0.1 mg/L	At random locations within the water distribution system
Iron in treated water	≤ 0.3 mg/L, based on weekly average of all samples taken	At a location in the waterworks system prior to any chemical addition or treatment unit
Manganese in treated water	≤ 0.05 mg/L, based on weekly average of all samples taken	At a location in the waterworks system prior to any chemical addition or treatment unit

Waterworks Monitoring Requirements

PARAMETER	TYPE/FREQUENCY	DESIGNATED SAMPLING LOCATION
Raw water iron	Grab/once/week	At a location in the waterworks system prior to any chemical addition or treatment unit
Raw water manganese	Grab/once/week	At a location in the waterworks system prior to any chemical addition or treatment unit
Treated Water Volume	Continuous/once/day	Entering water distribution system/ treated water reservoir
Raw water volume	Continuous/once/day	Entering treatment plant
Combined Chlorine residual of treated water	Grab 5 days/week	At random locations within the water distribution system
Name, concentration and dosage of chemicals added	Once/day	
Iron in treated water	Grab/5 days/week	After treatment, at the point of entry into the water distribution system.
Manganese in treated water	Grab/ 5 days/ week	After treatment, at the point of entry into the water distribution system
Bacteria in treated water (Bacteriological examination)	4 samples/month	At random locations within the water distribution system

Note: Monitoring is not required if the plant is not operational that day, but the monthly report must indicate that that plant was off line.

3. Initial Response - *Cont.*

TRANSPORTATION OF DANGEROUS GOODS (TDG) IMMEDIATE REPORTING TABLE

CLASS AND DIVISION	REPORTING QUANTITY
1 Explosives	Any
2.1 Flammable Gases	More than 100 L (based on container capacity)
2.2 Non-flammable, Non-poisonous, Non-corrosive Gases	More than 100 L (based on container capacity)
2.3 Poisonous Gases	Any
2.4 Corrosive Gases	Any
3 Flammable Liquids	More than 200 L
4.1 Flammable Solids	More than 25 Kg
4.2 Spontaneously Combustible	More than 25 Kg
4.3 Dangerous When Wet	More than 25 Kg
5.1 Oxidizers	More than 50 Kg or 50 L
5.2 Organic Peroxides	More than 1 Kg or 1 L
6.1 Poisonous	More than 5 Kg or 5 L
6.2 Infectious	Any
7 Radioactive	Any discharge of radioactive material. Radiation level exceeding 10mSv/h at the package surface and 200 uSv/h at 1 m from the package surface.
8 Corrosive	More than 5 Kg or 5 L
9.1 Miscellaneous	More than 50 Kg
9.2 Environmentally Hazardous	More than 1 Kg
9.3 Dangerous Wastes	More than 5 Kg or 5 L

3. Initial Response - *Cont.*

The chemicals listed below are in use at the water treatment facility:

PRODUCT	IDENTIFICATION	CLASS#
Chlorine	UN1017	2.3 (8)
Sodium Hypochlorite	UN1791	8 (9.2)
Potassium Permanganate	UN1490	5.1 (9.2)
DPD Total Chlorine Reagent	N/A *	N/A
FerroVer Reagent	N/A	N/A
Alkaline Cyanide Reagent	2922	8 (6.1)
Ascorbic Acid	N/A	N/A
Pan Indicator Solution, 0.1%	N/A	N/A

*N/A: Not applicable

3.3.2 Written Reporting

As mentioned previously, Alberta Environment may request a written report, in addition to the verbal one presented initially. A written report **MUST** be submitted to Alberta Environment within seven (7) days of the occurrence.

ITEM	ACTION BY:
Approval violation requires: <ul style="list-style-type: none"> ■ AENV reference number ■ Date, time, and location of violation ■ Type and duration of violation ■ Concentrations (max/min) ■ Quantity of water affected (including flow rate) ■ Cause ■ Measures take to stop the violation ■ Mitigation to prevent a repeat occurrence 	Site coordinator or person who was most closely involved with the incident.
Environmental Release requires: <ul style="list-style-type: none"> ■ AENV reference number ■ Date, time and location (point of release) ■ Release flow rate, and duration ■ Breakdown of the release contents – concentration, weight, or quantity of each component ■ Description of events that caused the release ■ Measures taken to stop/control the release ■ Mitigation to prevent a repeat occurrence. 	Site coordinator or person who was most closely involved with the incident.
The report should be sent to: Environmental Service Response Center Alberta Environment – Northern Region Suite 111 Twin Aria Building Edmonton, Alberta T6B 2X3 Fax: (780) 427-7824 Phone: (780) 427-7617	Send copies of the violation report to: Julie Wang (name of AENV rep.) Alberta Environment – Northern Region Suite 111 Twin Aria Building Edmonton, Alberta T6B 2X3 Manager, Smoky Lake County Dave Franchuk

3. Initial Response - *Cont.*

3.3.3 Equipment Failure/Shutdown Reporting

Failure or shutdown of any equipment used for disinfection must be reported. (See Section 3.1 for phone numbers).

ITEM	ACTION BY:
Shutdown or failure of disinfection equipment to be reported as per section 9.2 of Approval to Operate, and Sections 3.3.1 and 3.3.2 of this manual.	Site Coordinator or higher.
<p>Operate under <i>Section 4.4 – Emergency Operation</i> of Approval to Operate, until all parameters are back within specified limits.</p> <ul style="list-style-type: none"> ■ If the total chlorine residual of water entering the distribution system is <1.5 mg/L, increase the disinfection until the total residual at least 1.8 mg/L. ■ Increase monitoring frequency to once/hour until the residual has returned to at least 1.8 mg/L. ■ If the total chlorine residual of water entering the distribution system is < 0.5 mg/L, stop water production and increase disinfection until the total chlorine residual is at least 1.8 mg/L. ■ Increase monitoring frequency to once/hour until the residual has returned to at least 1.8 mg/L. ■ Undertake Emergency Reporting as per Section 9.3 of the Approval to Operate. 	Site Coordinator or higher.

3.4 Response/Procedures for Specific Conditions

Hazards that were ranked “High” in the Risk Hazard Analysis should be in this section.

3.4.1 Evacuation

ITEM	ACTION BY:
Notify all other people on site. Activate the fire alarm.	
If you are safe, call the fire department and any emergency service with details of the incident- what and where. If not safe, start evacuation.	
<p>Procedures for all staff:</p> <ul style="list-style-type: none"> ■ STOP everything. 	<ul style="list-style-type: none"> ■ All

3. Initial Response- *Cont.*

- Take your coat if applicable.
- Close doors behind you, but do NOT lock them.
- Proceed to your pre-determined evacuation meeting point.
- If you suspect smoke or fire behind a closed door that you need to get through, open it cautiously, just a crack. Be prepared to close it again quickly.
- Check for people in other areas that are on your way out.
- Check windsock for direction (chemical leak or smoke). Direct everyone upwind of the incident.
- Ensure that everyone is accounted for.
- Provide details and work with Emergency teams as required.

- First Responder
- First Responder
- First Responder or higher

The **EVACUATION MEETING POINT** is located at the gates entering the site; 40 meters South of the Water Treatment Plant.

3.4.2 Spills/Leaks

A spill has occurred at the water treatment plant or in the distribution system due to escape of a (treatment) chemical, fluids from the engine, or other substances.

ITEM	ACTION BY:
Report the specific details of the spill. This would include other operators, Alberta Environment, TDG if required, Village Manager.	First Responder or Site Coordinator.
Evaluate the spill. Can it be contained and cleaned up by staff, or does it require outside assistance? IF YOU ARE UNCERTAIN, DO NOT ATTEMPT.	Site Coordinator.

3. Initial Response- *Cont.*

<p>If you CAN control the spill with your own staff:</p> <ul style="list-style-type: none"> ■ Determine the substance that has escaped and obtain the personal protective equipment (PPE) required as stated in the Material Safety Data Sheet (MSDS). Table 5 provides some minimum requirements based on the specific chemical. ■ Ensure that there are at least two qualified people present to attempt the clean up. ■ Once you (both) have donned this equipment, isolate the area with flagging, tape, cones, etc. ■ Make sure none of the chemical can enter any storm drains, sewers, etc. Sandbag the area if required. ■ If accessible, isolate the leak at the source. This includes closing valves and stopping pumps. ■ Neutralize the chemical if possible. Follow directions in the MSDS. Additional information is available in Table 6. ■ Clean up area and any contaminated equipment or clothing. ■ Disposal must conform to all applicable bylaws and approvals. 	Site Coordinator.
<p>If you CANNOT control the spill with your own staff:</p> <ul style="list-style-type: none"> ■ Contact your local Fire Department/Emergency Response Team/Dangerous Goods Team. ■ Contact local police (RCMP). ■ This is MANDATORY, as it is a TDG requirement. ■ Contact provincial authority (TDG – Phone # is in Section 3.1). ■ Assist response teams as required. Note conditions, procedures, and responses for Alberta Environment report if required. 	Site Coordinator.

3. Initial Response- *Cont.*

TABLE 5: PERSONAL PROTECTIVE EQUIPMENT AND HAZARD GUIDELINES

CHEMICAL	HAZARD	BREATHING	CLOTHING
Chlorine (gas or liquid)	Poisonous, acidic, corrosive gas.	SCBA.	Body suit, gloves, boots.
Sodium hypochlorite	Corrosive, alkaline.	Minimum respirator. SCBA required at higher concentrations.	Body suit, gloves, boots, goggles.
Potassium Permanganate (Crystals or in solution)	Oxidizer. Keep away from organics.	Not needed if there is adequate ventilation. If not, use cartridge respirator.	Apron, gloves, boots, goggles.
DPD Total Chlorine Reagent	Incompatible with oxidizers.	Not needed if there is adequate ventilation.	Safety glasses, gloves, lab coat.
FerroVer Iron Reagent	Reacts with water organics, strong oxidizers, and Al. compounds.	Not needed if there is adequate ventilation. If not, use dust mask.	Safety glasses, gloves, lab coat.
Alkaline Cyanide Reagent - NOTE: Emergency response to cyanide exposure should be planned and practiced prior to work with cyanides.	Acute poison. Corrosive, alkaline. Contact with acid forms toxic fumes.	Laboratory fume hood.	Goggles, neoprene gloves, lab coat. Avoid ingestion, inhalation, and contact with eyes, skin, and clothing.
Ascorbic acid	Acidic. Reacts with oxidizers.	Not needed if there is adequate ventilation. If not, use NIOSH approved respirator.	Goggles, rubber or PVC gloves, body suit or apron. Avoid contact with eyes skin, clothing.
Pan Indicator Solution	Reacts with acids, oxidizers, alkali metals, and halogens.	Not needed if there is adequate ventilation. If not, use laboratory fume hood.	Goggles, neoprene gloves, lab coat. Avoid contact with eyes, skin and clothing.

3. Initial Response- *Cont.*

TABLE 6: NEUTRALIZATION INFORMATION

CHEMICAL	NEUTRALIZATION METHOD
Chlorine (gas or liquid)	Neutralize into alkaline solutions of caustic soda, lime, or soda ash. Avoid spraying with water as it creates hypochlorous and hydrochloric acids.
Sodium hypochlorite (liquid)	First, neutralize chlorine with sodium sulphite. Next, neutralize with hydrochloric acid until reaching pH of 7.
Potassium Permanganate (Crystals or in solution)	Neutralize with one of: Sodium sulphite, sodium metabisulphite, sodium bisulphate, or sodium thiosulphate.
DPD Total Chlorine Reagent	Dilute 3-5 times the volume with cold water. Flush to drain. Rinse empty container 3 times with appropriate solvent.
FerroVer Iron Reagent	Sweep up material. Dilute with large excess of cold water. With alkali (e.g. soda ash), adjust pH level to between 6 and 9. Decontaminate the spill area with a soap solution.
Alkaline Cyanide Reagent	Absorb spill with non-reactive sorbent material. Cover spilled material with alkali (soda ash or sodium bicarbonate). Mist area with bleach until saturated. Scoop slurry into large beaker. Oxidize with 50% excess of bleach containing at least 5% sodium hypochlorite. Allow to react for 24 hours in a fume hood. Flush to drain with a large excess of water. Decontaminate the spill area with a bleach solution.
Ascorbic acid	Deactivating materials not available.
Pan Indicator Solution	Cover with inert material, such as sand. Sweep up. Incinerate at hazardous waste facility. Decontaminate the spill area with a soap solution.

3.4.3 Loss of Power

ITEM	ACTION BY:
Contact the power company to find out what caused the outage, and how long they expect it to be out. If it expected to be out for an extended period of time, notify Town/Village personnel. Notify Alberta Environment if monitoring requirements in the Approval to Operate cannot be met.	First responder or site coordinator.
Monitor operation of engine driven pump. If reservoirs are full, and pump is running at design flow, there is approximately 72 hours' storage available. This assumes NO fire storage.	First responder or site coordinator
Re-start plant once utility power has been restored.	Operator
Re-start distribution pumps and stop engine driven pump.	Operator

3. Initial Response – *Cont.*

3.4.4 Water Contamination

Contamination is discovered in one of the following:

- Raw water source
- Treatment plant
- Storage reservoir
- Distribution system

Contaminated water must not be allowed to reach the consumers.

ITEM	ACTION BY:
<p><u>Raw Water Contamination (suspected or confirmed):</u></p> <ul style="list-style-type: none"> ■ Shut down the well pumps. Shut off the distribution pumps as well if the contaminated water has reached the plant. ■ If reservoir is OK, continue pumping into distribution system. ■ Visually monitor and sample raw water to determine when quality has improved to an acceptable level. 	<p>First responder or site coordinator</p>
<p>Notify:</p> <ul style="list-style-type: none"> ■ Alberta Environment ■ County Council ■ Health Authority ■ Emergency Services (Fire Dept.) 	<p>Site coordinator or higher</p>
<p><u>Treatment Plant Contamination:</u></p> <ul style="list-style-type: none"> ■ Attempt to determine the nature of the contaminant. ■ This will determine if the flow needs to be stopped, and whether the system can treat the contaminant. ■ Drain, flush, and disinfect the affected sections of the treatment plant. Based on the nature of the contaminant, flush to sanitary or storm sewer, or store as hazardous waste. ■ Continue testing until water returns to an acceptable level. 	
<p>Notify:</p> <ul style="list-style-type: none"> ■ Alberta Environment. ■ Town/Village council ■ Health Authority ■ Emergency Services (Fire Dept.) 	<p>Site Coordinator or higher.</p>

3. Initial Response – <i>Cont.</i>	
ITEM	ACTION BY:
<p><u>Storage Reservoir or Distribution System Contamination:</u></p> <ul style="list-style-type: none"> ■ Isolate, drain, flush, and disinfect the reservoir and affected sections of the distribution system. Based on the nature of the contaminant, flush to sanitary or storm sewer, or store as hazardous waste. 	
<p>Notify:</p> <ul style="list-style-type: none"> ■ Alberta Environment (Violation or non-compliance reporting). ■ County Council. ■ Health Authority. ■ Emergency Services (Fire Dept.). ■ Public if required. Depending on the nature and extent of the contaminant, additional flushing, or a Boil Water Advisory may be required. (See below). 	Site coordinator or higher.
<p><u>Boil Water Advisory:</u> (Note: Information in this section is based on a document titled “Guidance for Issuing and Rescinding Boil Water Advisories”, which is part of the “Guidelines for Canadian Drinking Water Quality: Supporting Documentation”).</p> <p>The decision to issue a boil water advisory is a serious one, and must be made jointly with the Town/Village, the Health Authority, and Alberta Environment.</p> <p>Communication:</p> <ul style="list-style-type: none"> ■ A team consisting of the Town/Village, the Health Authority, and Alberta Environment should be in existence, and have procedures in place to be able to quickly communicate with the general public, the Town/village Council, and the news media. ■ This communication would cover the issuing of a Boil Water Advisory, as well as the rescinding of the notice when the situation is corrected. 	

3. Initial Response – *Cont.*

ITEM	ACTION BY:
<p>Issuing a Boil Water Advisory An advisory may be issued if any of these conditions exist:</p> <ul style="list-style-type: none"> ■ Noticeable deterioration in raw water quality. ■ Failure of disinfection or distribution equipment. ■ Very low (negative?) pressure in the distribution system, e.g. pipe breaks. ■ Poor microbiological quality (presence of E.coli). ■ High turbidity. ■ Any situation where it is suspected/confirmed that the drinking water may be responsible for an outbreak. <p>What is involved in a boil Water Advisory:</p> <ul style="list-style-type: none"> ■ Any water that may be used for drinking, brushing teeth, washing food, ice cubes, etc. must be brought to a rolling boil for a minimum of one minute to inactivate the contaminant. ■ Usually it will be OK to shower, bathe, or do laundry without the need for boiling, but this will be evaluated on an individual basis. ■ Additional measures may be necessary if there is an outbreak. A dilute bleach solution (20 drops of bleach/liter of water) should be used for hand washing. Allow the solution to sit for ten minutes before using it. 	<p>Site coordinator or higher</p>
<p>Rescinding a Boil Water Advisory The advisory can be called off after:</p> <ul style="list-style-type: none"> ■ Testing of two or more consecutive samples indicates that the water quality has returned within Approval limits. ■ The source of the contamination has been corrected, and there has been enough treated water moved to flush the distribution system. ■ Once the advisory has been cancelled, it will still take a few days to monitor and obtain the necessary samples to ensure the quality is back to acceptable limits. 	<p>Site coordinator or higher</p>

3. Initial Response – *Cont.*

ITEM	ACTION BY:
<p>Other Advisories There may be certain situations where the contaminant is NOT inactivated by boiling. In this instance, water in the distribution system may only be used for fire flow. This would remain in effect until the problem is corrected at the source, and the entire distribution system flushed and tested</p>	<p>Site coordinator or higher</p>

3.4.5 Weather Warning

Weather may play a factor in the operation of the treatment plant and distribution system. It is possible to lose power and/or communication.

ITEM	ACTION BY:
For loss of power, see Section 3.5.3	First Responder or Site Coordinator
For communication failure, monitor and operate the facilities locally until communication is restored.	Operator

3.4.6 Computer/Instrumentation Failure

Internal control systems within the plant or distribution system may malfunction.

ITEM	ACTION BY:
Computer has failed. Reboot according to software instructions.	First responder or operator
PLC has failed-pinpoint source of failure if possible. Restart as per manufacturer’s information in Operation and Maintenance (OandM) manual. Replace card(s) if required.	First responder or operator
Individual pieces of equipment – Refer to O and M manual for specific instructions for equipment troubleshooting.	First responder or operator
Operate the affected portions of the plant manually/locally until the problem is corrected. Ensure that reporting as per Approval to Operate is maintained.	Operator

3. Initial Response – *Cont.*

3.4.7 Safety

This section covers numerous situations, including injury, sickness, vehicles accident, cave in, etc. Each situation would have its own unique response. Listed below is a general response procedure that would cover most instances.

It is advisable that at least 1/3 of the operations’ staff has Standard First Aid training.

ITEM	ACTION BY:
<ul style="list-style-type: none"> ■ Before attending to victim, ensure that the area is safe to enter. 	First responder
<ul style="list-style-type: none"> ■ Provide First Aid to the extent possible. 	First responder
<ul style="list-style-type: none"> ■ If another rescue person is present, have him/her contact emergency services. If alone, contact them yourself. Do not leave victim if possible. ■ Notify Site coordinator. ■ Document everything for upcoming reports. 	First responder
<ul style="list-style-type: none"> ■ Notify authorities, OH & S, WCB and begin required paperwork. 	Site Coordinator

3.4.8 Unauthorized SCADA Access

Unauthorized internal or external access to the SCADA control systems for the plant or distribution system may result in disruption to treatment or distribution of potable water.

ITEM	ACTION BY:
Locally log-off the HMI whenever the plant is unoccupied.	Operators
Access to the system requires- knowledge of the phone number, a computer with the proper software (pcAnywhere), and usernames and passwords.	
Don't choose simple, obvious passwords. Change them regularly. Limit who has access to the user names and passwords.	Operators

3. Initial Response – *Cont.*

3.4.9 Vandalism/Sabotage/Unauthorized Access

ITEM	ACTION BY:
Contact RCMP. Do NOT put yourself in danger.	First Responder
Clean up any vandalism quickly. Don't "provide and audience" for his handiwork.	Operator
Repair/replace locks as soon as possible. Strengthen security, add additional locks if necessary. Ensure security system is enabled, and autodialer is functional.	Operator
Discuss situation with police. Is there anyone upset with Public works, any water quality or quantity issues, or the operator(s) personally?	Operators/RCMP

3.4.10 Waterworks System Becomes Inoperable/Provision of Alternate Supply

ITEM	ACTION BY:
Notify County Council, Health Authority, Alberta Environment, and emergency services as required.	Water/Wastewater Manager
If there are existing Mutual Aid agreements, contact person or company who can provide an alternate supply – e.g. water tanker.	Water/Wastewater Manager
Notify residents of situation, and inform them of temporary provisions. Keep them informed when service will be restored.	County Council
Perform manual dosage calculations for chlorine and/or potassium permanganate if required.	Operators

3.	Initial Response – <i>Cont.</i>	
3.4.11 Chemical Overdose		
ITEM	ACTION BY:	
Determine cause and source of overdose and isolate chemical feed. Is “No Use” or “Boil Water Advisory/Notice” required?	Manager/AENV/Health Authority	
<ul style="list-style-type: none"> ■ Isolate feed into the distribution system if the concentration in the treated water is out of range. 	Operator	
<ul style="list-style-type: none"> ■ For excess KMnO₄, ensure that manganese in the treated water does not exceed 0.05 mg/L. ■ Drain reservoir level and blend/dilute with treated water at lower concentration. Ensure that turbidity of treated water does not rise. ■ For excess KMnO₄ in the system, begin flushing via fire hydrants. 	Operator	
<ul style="list-style-type: none"> ■ Excess chlorine- “Maximum residual disinfectant concentration, measured as free chlorine shall not exceed 4.0 mg/L, or as combined chlorine shall not exceed 3.0 mg/L, anywhere in the system. (AENV, 06 – Section 1.3.2.1) ■ Dilute in the treated water storage if possible by feeding lower chlorine concentration. Not that the concentration of the water must be ≥0.1 mg/L. Shutting off the chlorine feed entirely to increase dilution is not permitted. ■ Drain reservoir. Environmental discharge regulations will require dechlorination. This requires prior approval from AENV. ■ Sodium thiosulphate or bisulphate feed will be required. If it is drained into a backwash waste holding pond, the pond discharge must be monitored, as the flow is sent to the sanitary sewer, and ultimately to the wastewater treatment facilities. ■ Hydrant flushing requires the same precautions. 	Operator (AENV as required)	

3. Initial Response – *Cont.*

3.4.12 Distribution System – Break, Repair, and Restoration

ITEM	ACTION BY:
Isolate, repair, and disinfect affected section of system. <ul style="list-style-type: none"> ■ ■ ■ ■ 	Operator
Re-route flow if alternate piping is available.	Operator
Provide alternate potable source – e.g. tanker truck, hydrant hook-up, etc.	Operator

4. Emergency Support

In the event of an emergency, it is necessary to have (access to) adequate materials and manpower. This includes items such as communication, first aid kits, SCBA equipment, standby power, and specialty companies or resources.

It is important to check this list on a regular basis, especially if the potential hazards change. "Change" can be the addition or deletion of a hazard, or a "Low" risk suddenly becoming a "High" risk.

Not only is it important to confirm the specific items and quantities, but it is also necessary to inspect and exercise the equipment regularly. A generator that won't start or a fire extinguisher with no pressure is of little value.

ITEM	QUANTITY	LOCATION
Telephone (Land Line)	1	Spedden Store
Cellular Phone	1	Individuals
Wireless Radio	1	WTP and individuals
As-built Drawings of Plant and System	3	WTP and individuals
Maps	3	WTP and individuals (shop)
Chemical Spill Kit	3	Fire Department
First Aid Kit	1	WTP + shop
First Aid Kit	1	Individual (vehicle?)
Self-contained Breathing Apparatus	1	Shop
Respirator (Cartridge)	1	Shop
Eye Wash Unit	1	WTP
Fire Extinguisher/Fire Hose Cabinet	2	WTP
Fire Extinguisher	1	Individual
Portable Generator		
Pumps and Hoses: __ H.P. – gas driven __ H.P. – electric, sump Miscellaneous Hoses		Shop Shop Shop
RESOURCE	SPECIALTY	LOCATION/CONTACT NUMBER
<ul style="list-style-type: none"> ■ Electrical/Instrumentation specialist ■ Hazardous material clean-up ■ Mechanical/plumbing contractor ■ Rental company ■ Food supply (restaurant/caterer) 	<p style="text-align: center;">Controls</p> <p style="text-align: center;">Water Plants</p> <p style="text-align: center;">Spedden Inn</p>	

Note: For a resource that is a specific company or municipality, it is recommended that a **MUTUAL AID** agreement be pre-arranged to ensure that the support service will be adequate and reliable for both parties.

4. Emergency Support – *Cont.*

This would include those companies listed above under “Resources.”

To ensure continued/uninterrupted service or rapid recovery of essential services, formal agreements should be set up with the following:

Power Company

- ATCO electric 780-656-4133
- Senior serviceman Randy Kaban 780-656-6127
- **Gas company**
- Smoky Lake County Gas 780-656-3037
- Gas Manager John Malysh 780-650-1500

Phone Company

- Telus 310-3100

5. Training and Exercises

Having an Emergency Response Plan sitting on a shelf collecting dust, or being used as a doorstop, will not make it an effective tool. It is important that it be reviewed regularly, so that all employees are familiar with its location and contents.

One method to help with this is to perform regular training and exercises based on the “High” ranked risk hazards.

Training can be as simple as discussing a section of the Emergency Response Plan, to simulate a disaster, complete with equipment and response by all parties that would be involved in an actual event.

The following is a list of possible exercises, based on their complexity. The complex exercises require much more time to plan and execute, so they should be designed with critical risks in mind. A discussion or fire drill requires a ½ hour of time, and can be done more frequently if desired.

IT IS IMPORTANT TO NOTE:

- **All exercises, regardless of complexity, should be designed to succeed. They are intended to build confidence, and are never directed at individual responses.**
- **Safety must NEVER be compromised during an exercise.**
- **Ensure that all staff is told in advance when an exercise is scheduled, so that they know it is not a real emergency.**

Discussion

This is the simplest exercise. It is designed to ensure that personnel are comfortable with the Emergency Response Plan and are familiar with its contents.

Pick a section and step through each item to make sure it's realistic. If it isn't, then revise it as required, and update that section of the plan.

Tabletop

This is similar to a discussion, but it adds an additional step.

Determine a realistic situation, and create a series of probable events within it. The employees then “role play” their actual responses to the simulated emergency. This provides a more in-depth analysis of the portion of the plan, and is more likely to pick up any actions that need to be modified.

Drill

This type of exercise involves actual physical participation by all individuals. They can be used to test a specific part of the plan and may be simple or very complex. Examples range from a fire drill/evacuation or fire extinguisher training to a confined space rescue or a simulated chemical spill.

These are the most realistic exercises. Even though they are only simulations, the participants usually find the stress level is raised.

5. Training and Exercises – *Cont.*

Practical Application

- Decided what type of exercise you want to perform. This should be based on what you want to accomplish (i.e. high risk mitigation).
- Confirm date, time location, participants, and resources.
- Develop an exercise to test the objectives, and step through a “dry run.”
- Complete the exercise, and debrief with all participants. This should be done as soon as the exercise is completed. The objective of a debriefing is to review a section of the Emergency Response Plan, and determine if any changes are required. As mentioned previously, focus on the actions, not the person.
- Provide written results and recommendations to all participants, as well as those who now have actions arising from the recommendations.

As a guideline, the following types and frequencies are suggested:

- Fire/evacuation drill or test of alarms- twice/year (if there is usually more than one person at the facility). This should be done for all employees.
- Fire extinguisher training – once/year. This should be done for all employees.
- Discussion, tabletop, drill – alternate one/year. This should include all employees, as well as emergency response personnel and Town/Village representatives.

6**Distribution and Maintenance of Emergency Response Plan****6.1 Distribution**

The Emergency Response Plan is not a static document. It should be reviewed and updated regularly.

There should be a minimal number of paper copies in circulation. The more copies in existence, the more likely they are to not get updated regularly.

One master copy should be kept on line. This is the version that should be accessed first in the even of an emergency.

Hard copies should exist with:

- Water Treatment Plant
- Smoky Lake County Administrative Office
- Public Works Shop
- Alberta Environment

Portions of the plan should be accessible to all employees, and kept in all Town/Village vehicles. These should include:

- Section 3.1 – Emergency Telephone Numbers
- Section 3.2 – Notification Procedures
- Section 3.3.1 and 3.3.2 – Water Quality Standards and Environment Reporting

6.2 Maintenance

Although the Emergency Response Plan will have ongoing maintenance, it is recommended that a specific review be performed annually to ensure that all the sections are up-to-date.

Section 3.1 – *Emergency Phone Numbers* should be reviewed every 3-6 months to keep the phone numbers current. Pick a few at random and call them to confirm that they are correct. If there are errors, it may be advisable to check more (all?) of the numbers.

6.3 Updating the Plan

It is important to record the date and scope of any changes that are made to the plan. Only one person should be responsible for this updating. It should be done with the input of all the employees, and a copy of the updates and tracking list kept with each manual. (See following page).

From these updates, determine if any additional training is required.

6 **Distribution and Maintenance of Emergency Response Plan- *Cont.***

REV.	DATE	DETAILS AND REASONS FOR CHANGE	TRAINING REQUIRED?
0	Aug 14/09	Draft presented and reviewed	No
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