

PUBLIC EMERGENCY RESPONSE PLAN

Neskowin Regional Water District

Tillamook County, Oregon

January, 2020



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INTRODUCTION

INTRODUCTION

Neskowin is a small unincorporated community located on the North Coast of Oregon, in South Tillamook County. Neskowin has a population of approximately 200 permanent residents, which can grow to over 4000 during the summer months. The town hosts a general store, 2 restaurants, Inn, Condos, Golf Course, and numerous single family homes. Neskowin is located about 90 miles Southwest of Portland.

Weather

Neskowin can average around 80 inches of rain a year with about 150 sunny days. July highs can reach into the 70's, with January lows in the 30s.

History of Emergencies

The Neskowin area is prone to Earthquakes, Tsunamis, Fires, Landslides, and communications disruptions. To the east is the Coast range and to the west the Pacific Ocean. There are many steep canyons and bridges in the area that could cut Neskowin off for weeks in the event of a major event. High Winds, Heavy Rain and Flooding are common natural emergencies.

Geologists think there was a vast forest of Cedar and Sitka Spruce trees in Neskowin. In 1700 they believe a massive earthquake struck the area, burying the towering trees deep in mud and eventually the ocean.

On November 2nd, 2002 flooding was reported in Neskowin. Flood waters submerged roads and lapped at houses as workers punched through a massive deposit of sand blocking the confluence of Hawk Creek and Neskowin Creek in an effort to reduce hazards.

On January 18th, 2018, Parts of the community of Neskowin were underwater, with the local golf course and roads crossing into the residential areas covered by high tides and flood waters. In addition, the rest area next to the Neskowin Trading Company along Highway 101 suffered flooding from Hawk Creek and the large high tides. According to a member of the Nestucca Fire Department, Hawk Creek has backed up over its banks.

During 1922 Marshfield was partially destroyed by a wildfire. (Today, Marshfield is known as [Coos Bay](#).)

During 1933 an immense [forest](#) fire, now known as "The Tillamook Burn," consumed almost a quarter million acres of forested land along the [North Coast](#). Additional burns followed in the same area in 1939, 1945 and 1951.

And during 1936 the town of [Bandon](#) was virtually destroyed by a massive coastal fire.

Neskowin Regional Water District:

In 1976, the Neskowin Regional Water District was formed and the various water system components in the area were purchased, condemned, or abandoned. The various municipal and group domestic water rights became District assets. In 1977, the District prepared a document titled "A Comprehensive Development Plan for Water System Improvements. This helped with organizing the conglomeration of system components, complying with standards and regulations, and planning for future development.

Today, the NRWD is remains a small coastal water district with about 750 service connections. The goal of the NRWD is to continue to provide the community with a safe and dependable supply of drinking water. The NRWD works to continually improve the water treatment process and to protect the community's water resources. We are pleased to report that our drinking water is safe and meets all Federal & State requirements.

NRWD's infrastructure:

- Water Rights in the Hawk Creek Watershed
- Water Treatment Facility
- Approximately **19.2** miles of pipe,
- 5 Booster Pump Stations
- 6 water reservoirs

PURPOSE

The purpose of this Emergency Response Plan (ERP) is to provide the public with information about the [Neskowin Regional Water Districts \(NRWD\)](#) and its response and recovery protocols during an emergency. By doing this, we hope to educate the public about the services the NRWD provides during a disaster. By providing this plan, the NRWD hopes to prevent, minimize, and mitigate injury and damage resulting from emergencies or disasters of man-made or natural origin in the community.

GOALS

- Minimize negative impacts on public health and employee safety.
- Assist the community with equipment and resources.
- Communicate information concerning water availability.
- Let the community know how to obtain drinkable water during an emergency.

- Restore water service as quickly as possible after an emergency.
- Ensure adequate water supply for fire suppression.
- Minimize water system damage.
- Minimize impact and loss to customers.

PLANNING PARTNERSHIPS

NRWD has established emergency planning partnerships with other parties who have agreed to help the utility in an emergency situation. A list of these agencies and a brief description of their emergency capabilities is provided below.

Agency	Capability
Tillamook County Sheriff's Department Oregon State Police	Respond to emergencies in the Neskowin Area Assist with response to emergencies as required.
Tillamook County Health Department	Respond to public health emergencies within the County
Tillamook County Emergency Management Department	Respond to, coordinate, and administer emergency response on a County-wide level.
Nestucca Rural Fire Protection District	Respond to all emergencies in the area including those that affect the water system.
South County Emergency Volunteer Corps	Community Emergency Response Team

MUTUAL AID AGREEMENTS

The NRWD has currently established the following mutual aid agreements with the following Water Districts. Works continues to identify additional regional opportunities.

Organization	Nature of Agreement
ORWARN	Mutual Aid Agreement
Cascade Head Ranch Water	Mutual Aid Agreement
Beaver Water District	Mutual Aid Agreement

NOT INCLUDED IN PUBLIC PLAN

For security reasons, some details are not included in this document. This includes, but is not limited to:

- Treatment Plant O&M Manual

- Water District's Plans and Specifications
- System As-Builds
- Master Plans and other engineering studies
- Regulatory documentation
- Threat Assessments and Action Plans

CORE ELEMENTS

ROLES AND RESPONSIBILITIES

The NRWD uses the *Incident Command System (ICS)* for its command structure during an emergency. Being a small water utility, in many cases, a single person is responsible for many of the positions in the ICS structure. As the NRWD grows and adds staff, these positions and responsibilities will be further distributed to other staff.

During an incident, the Chain of Command will be based on the order of seniority of the staff, their availability, and their ability to get to the district.

Name and Title	Responsibilities during an Emergency	
Water District General Manager (GM)	Emergency Response Manager Information Officer Safety Manager Technical Specialist Water System Operator Liaison Officer Security Officer	Overall management and decision making for the water system. Lead for managing the emergency and contacting the regulatory agencies. Approves all communications to external parties.
Board Members	Assist the General Manager and staff as needed and as available during an emergency	
Office Administrator	Responsible for administrative functions in the office and communications with Customers and the Public.	Provides and delivers a standard carefully pre-scripted message for customers. Maintains website's Emergency Posts.
Technical Specialist Water System Operator	In charge of operating the water system.	Performs inspections, maintenance, sampling of the system and relaying critical information to the Emergency

Name and Title	Responsibilities during an Emergency	
		Response Manager. Assess facilities and provides recommendations to the Emergency Response Manager.
Technical Specialist Field Staff	Delivers water quality notices or door hangers. Provides backup to water system operator.	Conducts site inspections of all facilities.
Community Auxiliary Volunteers	Assist the Water District as directed by the Emergency Manager	Trained to shut off Neighborhood Reservoir valves

COMMUNICATIONS

The type and extent of an event will dictate which methods of communication will be available. It is reasonable to assume that some methods of communication will either be unavailable or limited during an emergency.

Telephones

The NRWD utilizes standard land-based telephones which may be available for communication with their facilities during an emergency. Cellular telephones are also utilized by the district and key personnel have cellular phones with them at all times.

Business Band VHF Radio Communications

Each Water District Vehicle and Facility is equipped with a Business Band VHF Radio for direct line of sight communications across the Water District.

It is anticipated that radios will be of limited use during an emergency unless there is a loss of power or other event affecting the land-based and cell phone service.

GMRS Radio Communications

The NRWD is partnering with the efforts of the Tillamook South County Emergency Volunteer Corps. Purchases of GMRS hand held radios and a 40 watt GMRS transceiver is planned and will allow the Water District to communicate with the community communications network during an emergency.

If all other communications fail, the community communications network will provide a method for the Water District to communicate with the Neskowin Community as well as other Tillamook County Agencies such as the Tillamook EOC or the Nestucca Rural Fire District.

Website

The NRWD Website is: <http://neskowinwater.com/>

If the internet is available during an emergency and based upon the direction of the GM, the NRWD will use their Website to update the community about the emergency.

Signage

Depending upon the emergency, The NRWD may place signs at different locations in the district to communicate information.

Emergency Telephone Calling

The NRWD has implemented an emergency Telephone calling system. If Telephone service is available, this process can be adapted to notify customer about different emergencies.

Individual or Group Welfare Call or Visit

Based upon the emergency, the NRWD may initiate an onsite visit or individual call to a customer or group of customers. Groups of customers can include; Critical Care Customers, Large volume Water Users and any other groupings of customers that would be impacted.

External Notification

The table below contains external contacts for the local and national agencies that NRWD may need to notify. The Information Officer will make the decision as to which of these agencies needs to be notified, when the agencies need to notified, and what information needs to be communicated.

Local Agencies	Contact Information
Tillamook County Sheriff	(503) 842-2561
Tillamook People's Utility District	(503) 842-2535 and 800-842-2122
Troy Trute, General Manager	(503) 392-3966 (541) 992-1655 cell
Tillamook County Emergency Management Department	(503) 842-3412
Neskowin Volunteer Fire And Rescue	(503) 392-3478
Nestucca Rural Fire Protection District	(503) 392-3313
CenturyLink (phone)- Repair Local	800-786-6272 (503)-842-4811

Local Agencies	Contact Information
Neskowin Regional Sanitary District	Plant(503) 392-3257, cell(503) 801-1104, cell (503) 801-1724, office(503) 392-3404
Suburban Propane	503-639-8691
Carson oil Company - diesel	541-336-2512 or (503) 842-9115 Tillamook

State Agencies	Contact Information
Oregon Health Authority Drinking Water Program	Oregon State Drinking Water Program Evan Hofeld Office: (971) 673-0410
State 24-hr Emergency Communications Center	Oregon Emergency Response System: 1-800-452-0311 503-378-2911
State Department of Homeland Security	(971) 302-1489
State HAZMAT	Oregon Emergency Response System: 1-800-452-0311
State Police – Tillamook Salem Headquarters	(503) 842-4433 (800) 452-7888

Federal Agencies	Contact Information
FBI	Portland, Oregon: (503) 224-4181
EPA	(800) 424-8802 or (202) 272 0167
Department of Homeland Security (DHS)	(202) 282-8000 or (503) 584-3985
Health and Human Services (HHS)	(877) 696-6775
ATF	Seattle(206) 204-3205 D.C.(202) 648-8410
Federal Aviation Administration	(866) 835-5322
US Federal Protective Service	Same as DHS.

Vendors / Contractors	Contact Information
Internet Service Provider	
Fuel Supplier (backup generator)	
South County Emergency Response Team	
District Engineering Consultant	

Media Notification

NRWD personnel have been instructed to direct all media questions or information requests related to an emergency situation to NRWD's Information Officer. The IO is the official spokesperson for NRWD, and is the only NRWD employee who is authorized to speak directly to public media representatives.

The table below provides the various media agencies that NRWD IO might use to disseminate information to the public.

Media Type	Contact Information
Headlight Herald	(541) 842-7535
KDEP FM - KSHL FM Lincoln City	(541) 842-4422
KNPT AM (1310) Newport	(541) 265-2266
KCUP Newport	(541) 265-5000
KCRF Lincoln City	(541) 765-2183
KTIL Tillamook	(503) 842-4422
KGW (NBC)	(503) 226-5000
KOIN (CBS)	(503) 484-0600
KATU (ABC)	(800) 777-5288
KWBP (WB)	(503) 644-3232
KOPB (PBS)	(888) 293-1982
KBCH AM (1400) Lincoln City	(541)-994-2181

NRWD has prepared a series of press releases for use during various emergency situations.

SAFETY

The safety of NRWD staff, emergency responders, and the public is paramount during an emergency. This section provides basic safety information and procedures followed by the NRWD in the event of an emergency. This section covers Sheltering in Place, Evacuation and First Aid procedures.

Sheltering-in-Place Protocol

Evacuation during emergency incidents is sometimes, but by no means always, necessary. The emergency situation can escalate so rapidly that there would be no time to evacuate personnel. For hazardous weather conditions, a prudent course of action, for the protection of the potentially affected employees/personnel, would be to remain inside with the doors and windows closed.

For an Earthquake and potential Tsunami, a prudent course of action would be to evacuate to high ground, once the shaking stops.

The GM is responsible for determining whether sheltering-in-place is the most appropriate response to protect the staff. If the decision is to shelter-in-place, then the affected employees will be advised to follow the Shelter in Place guidelines to reduce the chance of being injured:

Evacuation Procedures

Evacuation Routes and Assembly Areas are posted in each facility. Except for the Village, there is an evacuation and assembly area at the high point within each of the neighborhoods. The Decisions and method used to accomplish the evacuation will be determined by the

Incident Commander and will be incident and site specific. The evacuees should be told to report to their designated assembly areas and wait for further instructions.

Each manager/supervisor shall be responsible for head counts, assembly security and safety, and will communicate with the [Incident Commander](#) to obtain support for various needs, such as food, water, medical aid, or transportation.

Automobile Emergency and Safety Supplies List

Automobile

The following supplies are located in each of the district's 3 vehicles; Jumper cables, Flashlight, Toolkit, Fix-a-flat, Road flares, Auto distress flag, Tire pressure gauge, Safety vest, Fire extinguisher, Hand wipes and latex gloves, First aid kit, Blanket, Triangle reflectors, Bee sting syringe/relief pads, Tow rope, Poncho, Tie-down chord/Bungee cord, Two-way radio, shovel and other hand tools, Go-Bag, Emergency Radio

Facilities

The following supplies are located in each of the district's facilities, Office and Water Plant; Go Bag, Two-way Radio, First Aid Kit and Fire Extinguisher.

Personnel Protective and Other Emergency Equipment

[NRWD](#) has established written procedures for using and maintaining emergency response equipment. These procedures apply to any emergency equipment relevant to a response involving a toxic chemical, including all detection and monitoring equipment, alarms and communications systems, and personnel protective equipment not used as part of normal operations.

PROPERTY PROTECTION

In the event of a real or potential malevolent event, the [GM](#) will make the determination as to what water system facilities should be "locked down", including the implementation of specific access control procedures and the establishment of a security perimeter.

WATER SAMPLING AND MONITORING

The [NRWD Technical Specialist – Water Quality Manager](#) will have the primary responsibility for all water sampling and monitoring activities during an event.

The **NRWD** has a basic water treatment plant laboratory capable of allowing measurements of raw and finished water as required by State law (turbidity, pH, chlorine residuals, and temperatures).

If outside laboratory assistance is needed and is available, the **NRWD** will contact the following laboratory facilities:

Outside Laboratory Name	Contact Number	Capabilities
Analytical Laboratory & Consultants, Inc. 361 West Fifth Ave. Eugene, OR 97401	1-800-262-5973	All practical laboratory needs.
Umpqua Research Company PO Box 609 626 Division St. Myrtle Creek, OR 97457	(541) 863-5201	All practical laboratory needs.

EMERGENCY PLANNING CAPITAL IMPROVEMENT PLAN

The NRWD may not have the funds available at this time to undertake the recommendations that have been developed as part of the Emergency Management Plan. However, as funding becomes available, the capital improvements will be developed to reduce the risk and vulnerability to the water system.

The table below provides a summary of the recommended improvements along with estimated costs for each improvement. The final column is intended to allow the District to prioritize the improvements.

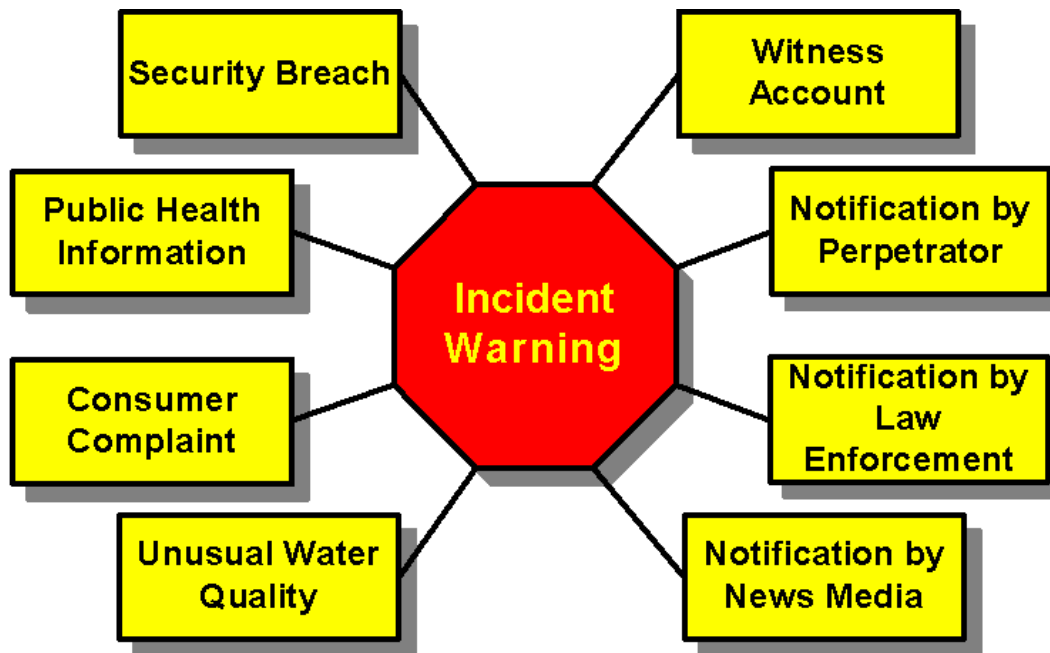
Recommendation	Description	Estimated Cost (in 2020 dollars)	Priority Rating (High, Medium, Low)
Backup key documents	Copies of plans, as-built drawings, specs, contracts, SOPs, ERP, other key documents placed in secure, off-site, but accessible location or locations in case originals are destroyed by fire, explosion, etc.		High
Distribution of alternative drinking water	Ability to quickly distribute bottled water, point-of-use		Medium

	devices, have bulk water trucked in, or provide other emergency source of drinking water upon detection of contamination of finished water supplies.		
New Backup power generation on-site	One of the critical interdependencies nearly all water utilities have is with the electrical power supply system. Disruption of power supply could have significant impacts on source, treatment and distribution systems.	\$50,000	High
Secure Water in each neighborhood's Reservoir	Train volunteers in each neighborhood to shut off the valves to contain as much water in the reservoir.	0\$	High
Develop Water Distribution Stations		\$2,000	Medium
Install Earthquake valves into other key reservoirs		\$200,000	Medium
Identify alternate Water Sources	Identification of alternative water sources in case there are problems with the Hawk Creek Water Shed		Low
Provide training to the community for purifying water			Low
Temporary methods to create bulk water for the community			Low
Temporary Water Storage Containers	Purchase Storage Containers that can be filled and moved to a neighborhood		High
GMRS Handhelds and 40 watt base station, antenna and wiring			High

ERP ACTIVATION

The “Incident Warning” is the initial occurrence that triggers an evaluation of whether or not to activate the NRW Emergency Response Plan. A description of the possible warnings that may be encountered is provided below. If any of the conditions are met, then a Warning will be issued by the [GM](#).

Figure 1. Summary of Potential Warnings



ERP ACTIVATION

Once a warning is issued by the [GM](#) or his designee, the decision process begins. The [GM](#) will evaluate and determine if the ERP should be activated. If yes, the GM will activate the Plan.

EMERGENCY OPERATIONS CENTER

[NRWD's](#) Emergency Operations Center (EOC) is located at the districts Water Plant. This is a pre-designated facility that can be used to coordinate the overall response and support for an emergency.

PLAN APPROVALS AND TRAINING

NRWD APPROVAL AUTHORITY

This plan is intended to be a living document that is reviewed and updated yearly to ensure that the information it contains is correct. The ERP is approved yearly by the **NRWD GM** and Board.

TRAINING, EXERCISES, AND DRILLS

Exercises, drills and training sessions are conducted annually or more frequently if the **GM** deems it necessary. The **GM** is responsible for the organization and management of the training program.

All **NRWD** personnel receive initial and refresher training on this ERP. The training will be conducted annually or when any of the following occurs:

- New employees are hired.
- Special emergency assignments are designated to operations staff.
- New equipment or materials are introduced.
- Procedures are updated or revised.

Types of Training

Orientation Sessions: The Orientation Sessions will include basic instruction and explanation of the ERP and Action Plan Procedures. Written tests may be used to ensure some level of comprehension by the attendees.

Table Top Workshop: Table Top Workshops involve developing scenarios that describe potential problems and providing certain information necessary to address the problems. Employees will be presented with a fabricated major event. Next they will verbally respond to a series of questions and then evaluate whether their responses match what is written in the ERP.

Functional Exercises: The Functional Exercise is designed to simulate a real major event. A team of simulators is trained to develop a realistic situation. By using a series of pre-scripted messages, the simulation team sends information in to personnel assigned to carry out the ERP procedures. Both the simulators and personnel responding to the simulation are focused on carrying out the procedures to test the validity of the ERP.

Full Scale Drills: Emergency Response Personnel and equipment are actually mobilized and moved to a scene. A problem is presented to the response personnel, and they respond as directed by the ERP and the Incident Commander or [WUERM](#) at the scene.

OBTAINING WATER IN AN EMERGENCY

A supply of clean water is a top priority in an emergency. A normally active person needs to drink at least two quarts of water each day. Hot weather doubles the amount of water your body requires. Children, nursing mothers and ill people need even more water.

Water Plant

The NRWD's Water Plant is expected to be above the Tsunami flooding. The Hawk Creek Hills water shed is also expected to remain intact as the NRWD's primary source of water during an emergency. The district plans on evaluating alternate and independent raw water sources, but none have yet been identified.

If the Water Plant is damaged, the Water District is evaluating alternative ways that fresh water can be created in bulk.

Interconnects and Agreements with Other Utilities

The NRWD has Mutual Aid agreements with the Cascade Head and Beaver Water Districts. Depending upon the emergency, these Water Districts may be able to provide treated water.

Primary Reservoir Water Distribution Station:

Depending upon the event, the GM may choose to setup a Water Distribution Station.

The NRWD has installed an Earthquake valve into the Main Reservoir. If the reservoir continues to hold water after an event, once the access road is cleared, and Route 101 is passable, temporary piping will be run down to Route 101, and a Water Distribution station setup. This station will be located just north of the entrance to the village.

Residents will need to bring water containers to the water stations. The water stations will be operational 24 hours a day until the event is over and water is available through the system.

Neighborhood Reservoirs:

The NRWD plans on installing Earthquake valves into other strategic reservoirs. Until that time, the NRWD is working with the community to try and secure the water in each Reservoir. If successful, and water remains in the reservoir after an event, a water distribution station will then be setup for the neighborhood. This concept is currently being developed.

Residents will need to bring water containers to the reservoirs. The water stations will be operational 24 hours a day until the event is over and water is available through the system.

NRWD Temporary Reservoirs:

The NRWD is developing a process where temporary storage containers can be filled and moved into the different neighborhoods. Depending upon the event, the GM may choose to distribute these small reservoirs.

Residents will need to bring water containers to the reservoirs. The water stations will be operational 24 hours a day until the event is over and water is available through the system.

Water Sources in Your Home:

Do you know the location of your incoming water valve?

Residents should know the location of incoming water valve to be able to shut the valve and stop contaminated water from entering their home during a Water emergency. This will ensure that the water in your homes pipes and hot water tank remains usable.

To use the water in your pipes, let air into the plumbing by turning on the faucet in your house at its highest level. A small amount of water will trickle out. Obtain water from the lowest faucet in the house.

To use the water in your hot water tank, be sure the electricity or gas is off, let air into the plumbing by turning on a faucet in your house and open the drain at the bottom of the tank. Start the water flowing by turning off the water intake valve and turning on a hot water faucet. Do not turn on the gas or electricity when the tank is empty.

Emergency Outdoor Water Sources:

Water outside your home can be obtained from these sources. Be sure to purify the water according to the instructions listed below before drinking.

- Rainwater
- Streams, rivers and other moving bodies of water
- Ponds and lakes
- Natural springs

Avoid water with floating material, an odor or dark color. Saltwater can be used only if the water can be distilled. You should not drink floodwater. It is usually necessary to go above a flooded area to obtain a non-contaminated water source.

Contaminated water can have bad taste and odor and contain microorganisms that cause diseases such as dysentery, typhoid and hepatitis. All water of uncertain quality should be purified before it is used for drinking, food preparation or hygiene.

Ways to Purify Water

There are many ways to purify water. None is perfect. Often the best solution is a combination of methods. Two easy purification methods are outlined below. These measures kill most microbes but will not remove other contaminants such as heavy metals, salts and most other chemicals. Before purifying, let any suspended particles settle to the bottom, or strain them through layers of paper towel, coffee filter or clean cloth.

Boiling

Boiling is the safest method of purifying water. Bring water to a rolling boil for 1 minute, keeping in mind that some water will evaporate. Let the water cool before drinking. Boiled water will taste better if you put oxygen back into it by pouring the water back and forth between two clean containers. This will also improve the taste of stored water.

Boiled Water will clean the water and render it safe if these procedures are followed:

If the water from your tap is clear:

Boil it for three minutes to disinfect. This kills disease-causing bacteria and parasites, or

Add 1/8 teaspoon household bleach per gallon of water. Let it sit for a half hour.

If the water is cloudy:

Filter it by pouring it through a coffee filter and then boil it for three minutes.

If you can't boil the water, filter it through a coffee filter and add 1/4 teaspoon of household bleach per gallon of water. Let it sit for one hour.

Disinfection

You can use household liquid bleach to kill microorganisms. Use only regular household liquid bleach that contains 5.25 percent sodium hypochlorite. Do not use scented bleaches, color-safe bleaches or bleaches with added cleaners. Add 16 drops of bleach per gallon of water, stir, and let stand for 30 minutes. If the water does not have a light bleach odor, repeat the dosage and let stand another 15 minutes.

The only agent used to purify water should be household liquid bleach. Other chemicals such as iodine or water treatment products sold in camping or surplus stores that do not contain 5.25 percent sodium hypochlorite as the only active ingredient are not recommended and should not be used. While the two methods described above will kill most microbes in water, distillation will remove microbes that resist these methods and heavy metals, salts and most other chemicals.

Distillation

Distillation involves boiling water and then collecting the vapor that condenses back to water. The condensed vapor will not include salt and other impurities. To distill, fill a pot halfway with water. Tie a cup to the handle on the pot's lid so that the cup will hang right-side-up when the lid is upside-down (make sure the cup is not dangling into the water) and boil the water for 20 minutes. The water that drips from the lid into the cup is distilled.

Water Purification Device

Water filtration devices can take problem water and turns it into cleaner water that's free of odor, tastes, sediment, and contaminants. This is accomplished by physical filtration, where water is strained, often through a gauze-like membrane, to remove larger particles. Water Filters come in sizes that can support an individual, family or neighborhood. Units can filter contaminants down to .01 Microns. There are many units on the market.

Storage of Water

Water should be stored in a thoroughly washed plastic, glass, fiberglass or enamel-lined metal containers. Never use a container that has previously held toxic substances.

Plastic containers, such as soft drink bottles, are best. Food-grade plastic buckets or drums can be purchased. Seal water containers tightly, label them and keep them stored in a cool, dark place.

PUBLIC ACTION PLANS

NRWD has developed specific Action Plans to respond to 'Man Made' threats. Due to security concerns, these action plans are not available to the public.

NRWD has also considered emergencies posed by natural events and weather related phenomena. These include Fire, Flood, Winter Storms, Earthquake, Tsunami's and a general Water Supply Interruption. Parts of these plans are included below.

AP 7 – Power Outage

AP Summary:	This Action Plan applies to events that result in power outages. This Action Plan may need to be implemented in conjunction with other Action Plans (for example, severe weather) as necessary.	
Initiation and Notification:	Initiate this AP upon a loss of offsite power As required, make notifications	
I. Assess the Problem	<ol style="list-style-type: none"> 1. Contact TPUD for information on the estimated down time. 2. Estimate water requirements and determine if the utility can still meet requirements. 3. IF telephone is also down, THEN SCADA communications may be blocked. 	<ol style="list-style-type: none"> 1. IF backup generation is available, THEN assess the ability to supply fuel for extended periods. 2. Assess ability for HVAC or alternate to provide proper temperatures for SCADA, computer, and control systems.
II. Isolate and Fix the Problem	<ol style="list-style-type: none"> 3. Turn off unnecessary electrical equipment 4. Start backup generators as necessary 	
II. Isolate and Fix the Problem	<ol style="list-style-type: none"> 5. Increase disinfectant residual as a precaution to potential contamination. 6. IF not able to meet community requirements for water THEN arrange for water to be supplied by another source. 7. Notify priority customers 8. Notify users of interruption of service if not capable of maintaining supply. 9. Issue “Boil Water”, “Do not drink”, or “Do not Use” orders and Press Releases as appropriate. 	<i>Initiate back up plan for retrieval of current information from outside sources</i>
II. Isolate and Fix the Problem	<ol style="list-style-type: none"> 10. Consider initiating back-up portable pumping and generating capability to serve specific areas 11. Facilities with freezing temperatures should turn off and drain the following lines in the event of a long term power loss: <ol style="list-style-type: none"> a. Fire sprinkler system b. Standpipes c. Potable Water Lines d. Toilets 	

AP 7 – Power Outage

III. Monitoring	<p>12. IF damage to equipment occurs, THEN contact vendor/mutual aid companies to replace/repair damaged equipment.</p> <p>13. Monitor the status of the backup power supply and regularly test whether battery levels are adequate and the backup generators are functional.</p>	
IV. Recovery and Return to Safety	<p>14. Conduct disinfection, flushing, and bacteriological sampling after repairs of equipment.</p> <p>15. IF power outage occurs during freezing conditions THEN allow electronic equipment to reach ambient temperatures before energizing to prevent condensate from forming on circuitry.</p> <p>16. Fire and potable water piping should be checked for leaks from freeze damage after the heat has been restored to the facility and water turned back on.</p> <p>17. Notify public/customers when it is safe to use the drinking water again.</p>	
V. Report of Findings	<p>18. Assemble relevant personnel to review effectiveness of action plan and reinforce lessons learned.</p>	
VI. AP-7 Revision Dates		

AP 8A – Flood

AP Summary:	<p>This Action Plan applies to flooding events. In general, these events occur with reasonable lead times, and it is possible to take proactive measures, as outlined below. Response and recovery can be time consuming during flood events, as they can involve loss of electrical power supply, damage of structures and equipment, disruptions of service, and injuries to utility personnel.</p>	
Initiation and Notification:	<p>This AP will be initiated upon official notification of either a flood “watch” (a flood is possible in your area), or a flood “warning” (flooding is already occurring or will occur soon in your area).</p> <p>The GM will make the decision to contact local response authorities to request possible assistance,</p>	
I. Assess the Problem	<p>If a Flood Watch or Warning is received:</p> <ol style="list-style-type: none"> 1. Obtain additional information on exact location and probable extent of flooding. 2. Assess location of all facilities in respect to the expected flooding 3. Determine if EOC is activated 4. Prioritize pre-flooding activities 5. If flooding has already occurred: 6. Conduct site assessment from nearest safe location 7. List equipment needed to restore water service when flood waters recede. 	
II. Isolate and Fix the Problem	<ol style="list-style-type: none"> 1. Notify neighboring utilities or other sources of emergency response support if manpower or equipment will be needed. 2. As needed, Notify customers, media, and state and local authorities that service may be disrupted and/or that demand reductions may be necessary. 3. Consider shut-down if flooding appears imminent. 	

AP 8A – Flood

III. Monitoring

Observe the following recommended practices during the flood event:

- Take pictures of the damage
- Instruct staff to avoid floodwaters whenever possible.
- If a vehicle stalls in rapidly rising waters, abandon it immediately and climb to higher ground. Vehicles can be swept away in two feet of water.
- Stay out of any building if floodwaters remain around the building.
- Avoid smoking inside buildings. Smoking in confined areas can cause fires.
- Wear sturdy shoes. The most common injury following a disaster is cut feet.
- Use battery-powered lanterns or flashlights when examining buildings.
- Look for fire hazards. There may be broken or leaking gas lines, flooded electrical circuits, or submerged furnaces or electrical appliances. Flammable or explosive materials may travel from upstream. Fire is the most frequent hazard following floods.
- Communicate current conditions to GM

AP 8A – Flood

IV. Recovery And Return to Safety	Once floodwaters recede, the following may be of relevance: <ul style="list-style-type: none">• Inspect foundations for cracks or other damage.• Check power lines for damages• Arrange for alternate source of electrical power or fuel for diesel generators, sufficient for period of outage following flood.• Throw away all food that has come into contact with floodwaters.• Inspect, clean, rebuild, replace all affected equipment as necessary• Contact state and local authorities to determine if there are any restrictions on disposal of materials and debris removed from the site or if a temporary discharge permit is needed for the water pumped from tanks and other flooded structures.	
V. Report of Findings	Assemble relevant personnel to review effectiveness of action plan and reinforce lessons learned.	
VI. AP-8A Revision Dates		

AP 8B – Winter Storm

AP Summary:	<p>This Action Plan applies to winter storm events. In general, these events occur with reasonable lead times, and it is possible to take proactive measures, as outlined below. Response and recovery can be time consuming during such events, and they can involve loss of power, damage of structures and equipment, disruptions of service, and injuries to staff.</p>
Initiation and Notification:	<p>When hazardous winter weather conditions are expected to affect the region, the National Weather Service (NWS) issues public advisories. This AP should be initiated upon official notification of a “winter storm watch” or more elevated status.</p>
I. Assess the Problem	<p>Winter storms, usually accompanied by strong winds and sometimes accompanied by icy conditions, have resulted in localized power and phone outages; closures of streets, highways, schools, and businesses. A winter storm may escalate into a catastrophic event paralyzing municipalities, and rural areas for several days.</p>
II. Isolate and Fix the Problem	<p>Snow removal capabilities will vary widely, general procedures are as follows:</p> <p>Before the storm:</p> <ol style="list-style-type: none"> 1. Activate Emergency Operations Center (EOC). 2. Monitor track of storm. 3. Release nonessential personnel, as warranted. 4. Designate duties.
II. Isolate and Fix the Problem	<p>Review specific power outage action plan.</p> <p>During the storm:</p> <ol style="list-style-type: none"> 1. Notify customers, media, and state and local authorities if service is disrupted or if significant demand management is necessary. 2. Monitor reservoirs. 3. Monitor changes in water quality. If a water quality emergency should develop, follow the appropriate procedure. 4. Provide backup power to facilities utilizing mobile generators, as appropriate.
III. Monitoring	<p>Power outages during winter weather events can pose serious problems, particularly among those communities where life-sustaining equipment (LSE) is a necessity.</p>

AP 8B – Winter Storm

<p>III. Monitoring</p>	<p>Personnel should avoid traveling by vehicle, but if necessary, it is important to communicate destinations, routes, and expected arrival times. If vehicles get stuck along the way, help can be sent along the predetermined route. If personnel do get stuck:</p> <ul style="list-style-type: none"> • Staff should stay with their car and not try to walk to safety. • Tie a colored cloth to the antenna for rescuers to see. • Start the car and use the heater for about 10 minutes every hour. Keep the exhaust pipe clear so fumes won't back up in the car. • Leave the overhead light on when the engine is running to be seen. <p>Keep arms and legs moving to keep blood circulating and to stay warm and keep one window away from the blowing wind slightly open to let in air.</p>	
<p>IV. Recovery And Return to Safety</p>	<p>It is recommended that staff observe the following safety tips in recovery from winter storm events:</p> <ul style="list-style-type: none"> • After the storm, if personnel are required to shovel snow, be extremely careful. It is physically strenuous work, requiring frequent breaks. Avoid overexertion. Heart attacks from shoveling heavy snow are a leading cause of deaths during winter. • Walk carefully on snowy, icy, sidewalks. 	
<p>V. Report of Findings</p>	<p>Assemble relevant personnel to review effectiveness of action plan and reinforce lessons learned.</p>	
<p>VI. AP-8B Revision Dates</p>		

AP 8D – Earthquake

AP Summary:	<p>This Action Plan applies to earthquake events. In general, these events occur without any lead times, making it impossible to take proactive measures. Response and recovery can be time consuming during such events, and they can involve loss of electrical power supply, damage of structures and equipment, disruptions of service, and injuries to utility personnel.</p>	
Initiation and Notification:	<p>An earthquake usually occurs without any type of warning. Due to the suddenness, all personnel should attempt to find immediate shelter and drop and cover.</p> <p>Because of the chance of a Tsunami, once the shaking stops, all staff should evacuate to the nearest evacuation point until the GM provides the all clear to return or the potential for a Tsunami passes.</p>	
I. Assess the Problem	<p>Review details in Power Outage Action Plan.</p> <p>Review specific details in Tsunami Action Plan.</p> <p>In general, the GM will organize an assessment team to undertake the following activities:</p> <ul style="list-style-type: none"> • Check on the safety of staff. • Assess all structures including pipes and valves for obvious cracks and damage • Assess condition of all electrical power feeds and switchgear • If SCADA is working, immediately review system for all types of malfunctions, including telemetry, pressure in the distribution system, and operation of pumps and other equipment. • If buildings have any sign of damage, such as cracked walls, broken windows, downed power lines, do not enter. • If buildings appear safe, cautiously inspect condition of interiors for damaged equipment, leaks, chemical spills, etc. • Communicate all findings via radio to EOC 	<p><i>Be prepared for aftershocks. Although smaller than the main shock, aftershocks cause additional damage and may bring weakened structures down. Aftershocks can occur in the first hours, days, weeks, or even months after the quake. Follow the same procedures as for earthquakes.</i></p> <p><i>See AP 7 for specific power loss procedures.</i></p>
I. Assess the Problem	<p>Earthquakes can cause significant power outages because of the impact on outside generation and transmission lines. After a major earthquake, power might be interrupted for an extended period of time over the entire operations area. In this instance, power restoration will most probably be slow and, depending upon the infrastructure damage, localized.</p>	

AP 8D – Earthquake

II. Isolate and Fix the Problem	<p>General earthquake procedures during an earthquake are as follows:</p> <ol style="list-style-type: none"> 1. Seek shelter under a deck, table, doorway, or inside wall. 2. Once the shaking has stopped, gather valuables and quickly make your way outside and to an evacuation area. 3. Avoid electric wires, poles and equipment, once outside. 4. Prepare for aftershocks. 	
III. Monitoring	<p>At all times, personnel should observe the following general steps:</p> <ul style="list-style-type: none"> • Stay calm and await instructions from the designated official. • Keep away from overturned fixtures, windows, filing cabinets, and electrical power. • Provide assistance and/or call for medical help for injured employees as needed. • Monitor the radio for instructions. • Expect aftershocks. • Use the telephone only to report life-threatening emergencies. 	
IV. Recovery And Return to Safety	<p>General earthquake procedures after an earthquake are as follows:</p> <ol style="list-style-type: none"> 1. Activate Emergency Operations Center (EOC). 2. Respond to injuries of staff. 3. Contact Water District Auxiliary to shut of Reservoir valves 4. Notify customers, media, and state and local authorities if service is disrupted or if significant demand management is necessary. 5. Inspect facilities for structural damage, including: buildings, storage tanks, pipelines, and process equipment. Consider the use of an outside engineering consultant. 6. Analyze and if determined by GM, setup water distribution stations to support the community. 7. Prioritize and repair water main leaks. 8. As appropriate initiate mutual aid agreements. 9. Respond to side effects (loss of power, fire chemical spills, etc.) 	
V. Report of Findings	<p>Assemble relevant personnel to review effectiveness of action plan and reinforce lessons learned.</p>	
VI. AP-8D Revision Dates		

AP 8E – Tsunami

AP Summary:	<p>This Action Plan applies to tsunami events, either local or distant. Local events occur with minimal lead times of 5- 10 minutes after a local earthquake. Distant earthquakes may cause tsunamis for which hours of warning are possible. Response should initially focus on employee safety. Recovery may involve response to injuries to utility personnel as well as the loss of electrical power supply, damage of structures and equipment, and disruptions of service.</p>					
Initiation and Notification:	<p>A local tsunami may follow a local earthquake, so the earthquake is the warning. If a tsunami warning has been received as a consequence of a distant earthquake, personnel should stay away from any district properties that are predicted to be in a distant tsunami zone. They may take steps prior to the tsunami's predicted arrival to fortify or remove any district properties, buildings, or equipment likely to be impacted.</p>					
Equipment Identified:	<table border="1" data-bbox="435 892 1307 1157"> <thead> <tr> <th data-bbox="441 892 873 961">Equipment</th> <th data-bbox="880 892 1300 961">Location</th> </tr> </thead> <tbody> <tr> <td data-bbox="441 970 873 1148">Go-Bags with survival supplies for each staff member.</td> <td data-bbox="880 970 1300 1148">In their primary work areas or vehicles. <i>Radios to receive warnings and notifications should be available to all personnel In their Go-Bags.</i></td> </tr> </tbody> </table>		Equipment	Location	Go-Bags with survival supplies for each staff member.	In their primary work areas or vehicles. <i>Radios to receive warnings and notifications should be available to all personnel In their Go-Bags.</i>
Equipment	Location					
Go-Bags with survival supplies for each staff member.	In their primary work areas or vehicles. <i>Radios to receive warnings and notifications should be available to all personnel In their Go-Bags.</i>					
Specific Activities:	<p>After the ground stops shaking In the event of an earthquake and local tsunami, all personnel should immediately take a go-bag and evacuate to high ground as designated on local tsunami escape route maps posted in each of the district's facilities. After tsunami waves have ceased and receded (this may take 24 hours or more), personnel should attempt to gather at the District's treatment plant, which is estimated to be out of the tsunami zone.</p>					

AP 8E – Tsunami

Recovery And Return to Safety	Once staff is confirmed safe, continue to follow the Action Plans for an Earthquake and Power Outage and Water Disruption.	
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Levels of Tsunami Alert		
<i>Information Statement</i>	<i>Minor waves at most or event in another ocean basin</i>	<i>No action suggested</i>
<i>Watch</i>	<i>Danger level not yet known</i>	<i>Stay alert for more info</i>
<i>Advisory</i>	<i>Strong currents likely</i>	<i>Stay away from the shore</i>
<i>Warning</i>	<i>Inundating wave possible</i>	<i>Full evacuation suggested</i>

Differences between local and distant Tsunami	
Local	Distant
<i>Generated by a nearby subduction zone earthquake</i>	<i>Generated by a faraway subduction zone earthquake. Closest distant source is in the Gulf of Alaska.</i>
<i>Wave run-up can exceed 100 feet</i>	<i>Wave run-up can be up to ~30 feet</i>
<i>First surge arrival time in minutes after the earthquake</i>	<i>First surge arrival time in 4 or more hours after the earthquake</i>
<i>Widespread damage from both earthquake and tsunami</i>	<i>Damage limited to coastal areas in inundation zone</i>
<i>NOAA warning is ineffective; <u>only</u> effective warning is the earthquake</i>	<i>NOAA warning is effective, if implemented by media and local responders.</i>

<i>Entire population of Oregon impacted to some extent with great threat to life safety in and near the inundation zone; severe disruption of maritime operations</i>	<i>Impacted population generally limited to inundation zone and maritime community; long warning time greatly reduces threat to life safety.</i>
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AP 9 – Water Supply Interruption		
AP Summary:	This action plan applies to water supply interruptions. These events will vary in scale from compromised incremental supply volumes to complete, catastrophic loss of water supply.	
Initiation and Notification:	Catastrophic water supply interruptions will generally be identified by other events, such as a Winter Storm, Earthquake or Tsunami. The GM will determine if the outage is a small interruption which would be managed as part of normal business or a major event which requires the activation the this Action Plan	
I. Assess the Problem	There are a number of potential levels of severity involved in a water supply interruption that will determine the direction that the GM takes.	
II. Isolate and Fix the Problem	Each stage has specific customized definitions, in terms of percent of Water Supply reduction, with appropriate actions or restrictions at each stage. These stages are: Normal Conditions – Normal conditions apply. Water is available.	

AP 9 – Water Supply Interruption

<p>II. Isolate and Fix the Problem</p>	<p>Water Alert -- A 5% or greater reduction in water usage is to meet the immediate needs of customers. Voluntary conservation encouraged. The water shortage situation is explained to the public and voluntary water conservation is requested (see standard press releases). NRWD maintains an ongoing public information campaign consisting of distribution of literature, speaking engagements, bill inserts, and conversation messages printed in local newspapers.</p> <p>Water Warning -- A 15% or greater reduction in water usage is to meet the immediate needs of customers. Water supply shortage is moderate. The utility aggressively continues its public information and education programs. Consumers are asked for a 15 percent or greater voluntary or mandatory water use reduction. Additional landscape irrigation restrictions may be implemented. Businesses may be asked not to serve water in restaurants unless requested.</p> <p>Water Crisis – A 30% or greater reduction in water usage is to meet the immediate needs of customers. Water supply shortage is severe. Additional requirements may include: Dramatic landscape irrigation restrictions; Restrictions on washing of automobiles and equipment); Restriction of flushing of sewers or fire hydrants to cases of emergency and essential operations, and; Introduction of a permanent water meter on existing non-metered services and/or flow restrictors on existing metered services at customer’s expense upon receipt of the second water violation.</p>	
<p>II. Isolate and Fix the Problem</p>	<p>Water Emergency -- A 50% or greater reduction in water usage is to meet the immediate needs of customers. Water shortage is critical.</p>	
<p>III. Monitoring</p>	<p>Communication of water supply interruption stages should be handled according to the notification procedures determined by the GM and in this document.</p>	

AP 9 – Water Supply Interruption

<p>IV. Recovery and Return to Safety</p>	<p>Staff will need to prioritize if there are multiple water disruptions. Once this is done, an analysis of the Interruption needs to be determined, and a plan to fix the water service documented.</p> <p>If the disruption is determined to be long term, alternative water supply options have been identified in this ERP. In the event of a catastrophic, immediate need, it is likely these will be utilized.</p> <p>If there have been lines with no water or negative pressures, a precautionary boil order should be issued by the utility until line tests on two consecutive days show the lines to be safe. Chlorine residuals should be increased temporarily.</p> <p>The water system may have to valve off portions of the distribution system until above ground storage tanks are refilled. Valved off areas have the potential for external contamination to enter the system through leaking joints or cracked pipe. The GM will determine the steps necessary to ensure the drinking water is safe.</p> <p>Reservoir valves may need to be opened before filling. The system should be repressurized slowly to avoid water hammer and the potential for damage to the lines.</p> <p>Air should be bled from lines as they refill since entrapped air can impede flows and may cause line damage.</p>	
<p>V. Report of Findings</p>	<p>Assemble relevant personnel to review effectiveness of action plan and reinforce lessons learned.</p>	
<p>VI. AP-9 Revision Dates</p>		