



WATER UTILITY EMERGENCY RESPONSE PLAN



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District of Summerland File No. 5600-73

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1.0 EMERGENCY RESPONSE PLAN – INTRODUCTION

1.1 Emergency Plan Objective

The objective of the District of Summerland (DOS) Emergency Response Plan (ERP) is to provide staff and regulatory agencies with a guideline for addressing a wide range of potential water-related emergencies that Summerland may face.

Summerland has the responsibility to provide adequate fire flows, an adequate supply of irrigation water, and clean, safe drinking water to our customers, and make every effort to maintain this when an emergency occurs. Proper preparation allows a utility to react more thoughtfully and thoroughly when an emergency occurs.

Information from the following documents was utilized in the preparation of this plan:

- 2021 – Water Master Plan
- *Drinking Water Protection Act*
- AWWA Manual M19, Emergency Planning for Water Utilities
- DOS Policies and Procedures Manual (current as of present date)
- Interior Health (IH) Documentation on Water Quality events
- Ministry of Health - Provincial Turbidity Decision Tree
- Watershed Mapping for Trout Creek

No two emergencies are exactly the same. This ERP is a guideline for dealing with a wide range of emergencies. Each emergency is set out with a description, a general chronological order regarding how to deal with the emergency and how to document the works in a consistent manner. The task list for each emergency is also a check list that will serve staff with a reminder of items to be checked off or considered through the course of an emergency event. This document includes items specific to the DOS water supply system.

Sections 3 through 7 set out the potential emergency scenarios. For each scenario, an order for addressing the emergency with a checklist is included. The objective is to ensure that key items have been considered in the emergency response and obvious items have not been overlooked.

1.2 Operational Resiliency

Operational resiliency is the ability of the operation to adjust, adapt, and continue to provide service under emergency conditions. The objective for the Summerland Water Utility is to have a high operating resiliency. Operational resiliency indicators include the following:

Emergency Response Plan: Having a thorough and well-thought-out ERP is the first step in developing resiliency in operations so that emergencies can be better handled. This document is a part of the process for developing resiliency.

Regional Agency Coordination: This ERP must be circulated and available to the greater regional emergency response agencies. The Summerland Fire Department is the local agency for staging for the Provincial Emergency Program.

Mutual Agreements for Aid: For certain emergencies, DOS may have to rely on other water utilities for assistance and support. The City of Penticton, the Regional District of Okanagan Similkameen and the District of Peachland are the three local adjacent water utilities that DOS may require assistance from at some date in the future. The District will work toward a formal mutual aid agreement, based on the principles in protecting a community;

Emergency Power: Gravity supply with back-up power generation to run the disinfection equipment is possible for the DOS water system if there were a catastrophic failure in the power supply grid.

Ability to Meet Water Demands: The capacity of the DOS water system is substantial and, if needed in an extreme emergency, could benefit areas beyond the limits of the current service area.

Critical Parts Inventory: A listing of critical parts or where they are available is provided in Appendix C of this document. Contact names for those support agencies in the Okanagan that may have specialty parts or services are listed in Section 11 of this document.

Critical Staff Resiliency: The ability of staff to react and maintain composure during an extreme event is not known until tested. Training and positive reinforcement of decision-making by staff at all levels will assist to cover off what might occur during an emergency.

1.3 Staff Priorities

During any emergency, DOS are to follow the general operating principles provided within this section.

Safety of DOS Staff is Paramount: If DOS does not maintain safe working conditions, they may compromise their own safety and may not be able to assist the public if the emergency conditions escalate. DOS staff are to be aware of their personal safety first, so that they will be able to be of assistance to the greater public.

- Identify the hazards and their severity
- Determine who might be harmed and how
- Evaluate the risks and decide on precautions to be taken
- Determine if the risks can be removed
- Determine who are the appropriate people to contact for assistance
- Record any significant findings
- Always wear appropriate collective or personal protective equipment
- If working alone, ensure use of Working Alone monitoring system and procedures

Safety of Public: Protection of the health and well-being of the citizens of our community is equivalent to the first principle.

Safety of Public and Private Assets: This includes protection of the integrity of public and private physical assets including roads, buildings, homes, and other assets of value. The intent is to take reasonable measures to protect all assets, but not at the risk of personal or public injury.

Safety of Environment: This includes protection of slopes, stream banks, and items that might become damaged with the flow of water.

Inform Media and Communicate: This issue can occur prior to, during, or after an event. The communication to the public is important but falls after the preceding items.

Reporting of Event: The reporting of work falls under the responsibility of the person in charge during the emergency. Support staff may assist; however, documentation of the events is now required for reporting and quality control.

The Distribution List for the ERP is located at the back of this document. Sufficient numbers of the ERP have been printed to have one in each staff truck and one at each major facility location including the Works and Infrastructure Office and Water Treatment Plant (WTP).

1.4 Emergency Planning Definitions

The concepts and emergency planning definitions utilized in this document are listed in this section. Definitions are in accordance with AWWA Manual 19, Emergency Planning for Water Utilities.

Emergency: An unforeseen or unplanned event that may degrade water quality or impact quantity of domestic water, irrigation water, and fire flow supply available to the community.

Minor Emergency: A routine, common or localized event that affects a minimal number of customers. Examples include a small diameter pipe break, motor vehicle incident involving a hydrant, a short power loss, or a service repair. A minor emergency should be able to be easily handled by the utility without special equipment or materials. Minor emergencies, if dealt with effectively can be controlled so they do not become major emergencies.

Major Emergency: A disaster that affects a major part of the water system and their customers in terms of either water quality or water quantity. A major emergency can place the health and the safety of a community at risk. Major emergencies occur infrequently.

Natural Disaster: Natural disasters are caused by natural forces or events that cannot be controlled by humans. These can include wildfire, earthquake, flooding, tornadoes, heat domes, freezing or other severe weather-related events.

Human Caused Disaster: A disaster caused intentionally or non-intentionally by human actions. It may be the result of human error, transportation accidents, employee work stoppages or lack of attention, vandalism, sabotage, terrorism, biological contamination, chemical spills, etc.

Hazard: Is a source of potential damage or danger associated with a disaster. Examples are unstable slopes due to a creek wash-out, ground shaking from an earthquake:

Lifeline Supply: The concept of Lifeline services is where the infrastructure for a community provides the essential services for health, safety, and sustenance. Lifeline utilities include water, wastewater, electricity, and natural gas in colder climates. Certain transportation networks, communication systems, hospital systems, and emergency operation centers can be considered lifeline services.

1.5 Emergency Reporting Form

Type of Event: _____

Date and Time: _____

Location: _____

Contributing factors: _____

Notes: _____

Photos Taken? Yes / No - download to DOS Record file

<\\SRV-FS2\Master District\5200-5799 Engineering and Public Works\5600 Water Supply and Distribution\5600-04 Water Mains\Watermain Breaks Reporting>

Recorded by: _____

2.0 EMERGENCY SCENARIOS

2.1 Introduction

This section provides a listing of possible water system emergencies that are related to the physical components of water supply. The quality of the water delivered is addressed in Section 3 of this ERP.

2.2 Emergency Scenario Format

This page sets out the format for all emergency scenario descriptions within this Emergency Response Plan.

Description of Event: Title of each potential emergency is provided so that the information can be located in the area of district work. Events in Section 2 describe the physical aspects of providing water service. Events in Section 8 describe the water quality issues that may become an issue.

Indicators: Means of how the emergency is or can be recognized is provided for each emergency. The emergency may be indicated by either DOS staff or external contacts.

Actions: Actions for how DOS staff is to react to the emergency are listed generally in order of expected approach. This list is only a guideline and, during an emergency event, if time permits, the list should be reviewed to ensure that all foreseeable actions are taken. The boxes listed on the right-hand side of the numbered scenarios form a checklist for the lead Water Operator to review that all appropriate actions are being taken.

Contacts: Contact agencies are listed after actions. The specific contact persons are listed within the Communications Section of this Emergency Response Plan.

Event Record: This checklist at the page bottom provides a summary of the event, whether photos were taken and a listing of the reporting of the emergency.

All emergency events, even including service repair leaks and small water main breaks are to be documented and issued to the DOS Office for electronic filing. Events are to be recorded by date. Folders are to be set up for large events and to contain photos and data. The Folders file name protocol to be as follows:

3.0 DAM SAFETY EVENTS

See Dam Emergency Plan located here: <\\SRV-FS2\Master District\5200-5799 Engineering and Public Works\5600 Water Supply and Distribution\5600-12 Reservoirs - Dams - Dykes\Dam Emergency Plans 2022>

4.0 WATERSHED EMERGENCIES

4.1 Contamination - ALGAE Bloom in Watershed Reservoirs

Description: Algae Bloom is found within one of DOS Upper Watershed Reservoirs.

Indicators: Noted algae bloom reported in upper reservoirs by public, DOS staff. Causes may include warmer temperatures and elevated nutrient levels.

Actions: Steps to be taken by DOS staff.

1. Document Incident: Record location of bloom (reservoir), distance to DOS Intake, climatic conditions in past couple weeks, is reservoir low level outlet (LLO) currently open.
2. Notify Supervisor
3. Notify Management
4. If bloom is significant, collect water samples and send to Larratt Aquatic Consulting for species ID and discuss importance of findings.
5. Consider closing of LLO until bloom is over or until water quality improves, if deemed necessary.

Note: Historically speaking, it has been rare that a bloom in the upper reservoirs has contributed to a bloom in the Summerland Reservoir and even when it has the treatment plant has been effective at removing the organics. Some algae species produce toxins in which case the treatment plant process may not be effective in full removal and consultation with IH would occur.

6. Communication: Begin public notification if required and follow Water Quality Notification Procedures. <\\SRV-FS2\Master District\5200-5799 Engineering and Public Works\5210 E&PW - General\5210-01 Standard Documents\Policies and Procedures\Water>
7. Continue monitoring and sampling if event progresses or recommended by consultant or Interior Health.
8. Treat Reservoir: Contact aquatic biologist. Review and consider ways in which to treat reservoir for algae bloom.

Event Record: Record of incident details for future reference and evidence of events and actions taken.

4.2 Watershed: Extreme Runoff Event in Trout Creek Watershed

Description: Extreme flow events increases turbidity and the risk of damage to DOS physical structures and to the community.

Indicators: Alarm indication from DOS supervisory control and data acquisition (SCADA) system on Trout Creek intake (not yet in place, will be with new intake); Phone call from main DOS office or from a resident; Extreme weather statement issued by Environment Canada or other forecaster; Direct call from staff members noticing heavy rainfall event visually or from media; or call from Dam Safety

Actions: By DOS crew member upon receipt of notification.

1. Determine Magnitude of Creek Flow:

- Visually drive to Trout Creek Intake to witness flow and see if flow is contained by the creek banks and the condition of bridges. Contact Management to inform them of condition. Provide them with photos or videos if possible.
- Consider throttling down Intake gate if event is considered short lived to reduce the amount of high turbid water from entering the Summerland Reservoir. Ensure WTP staff are aware of changing water quality conditions.
- Inform Fire Department and if risk of overtopping the banks of Trout Creek, advise Fire Department to consider declaring a state of local emergency and evacuations along Trout Creek.

2. Determine Origin of High Flows:

- Determine which creek stem is generating majority of flows, Isintok or Thirsk.
- DOS staff to investigate watershed and to photograph/video confluence of Trout Creek with Meadow Valley Creek and the flows coming into Thirsk Dam and throughput at Isintok.
- If single stem is causing high flow, consider that dam integrity may be compromised.
- Carry satellite communication device and review condition of dams.
- If any dam is experiencing uncharacteristic like conditions, ongoing monitoring may be advised. If there is potential for a dam safety condition to develop refer to Summerland's DEP for the appropriate structure.
- District will consider rental of a helicopter to review the damage and origin of the high flows and to check creek stability.
- Check storm cell radar on internet site to see if flows are storm related. Link below or Google Silver Star Radar. http://www.weatheroffice.gc.ca/radar/index_e.html?id=xss

3. Site Review at Intake and Flume:

- Travel to Intake if safe to do so.

- Check integrity of structure, then banks along Trout Creek and flow to Summerland Reservoir.
 - Stay well clear of creek if it is flowing at high level. If any portion of works appears compromised, begin throttling back of gates and control flow between sites.
 - Call for assistance if structural support is required for earthwork berms or sand bagging to keep uncontrolled water from entering the flume.
4. **Stability of WTP Intake:**
- If known to be a restriction in creek flow, review level of creek in relation to top of gates
 - prepare sandbags to keep creek flow within banks.
 - Check integrity of retaining walls.
5. **WTP Operations:**
- To be closely monitored to determine expected conditions and make appropriate changes to on-line treatment at plant.
 - Treatment of water up to 100 Nephelometric Turbidity unit (NTU) is possible, however, diversion of high turbid water is desired.
6. **Any damage noted to be assessed:**
- Repairs to involve appropriate engineer.
 - If work is within wetted perimeter of Trout Creek, water licensing and approvals (Section 9) through the Water Sustainability Act (WSA), and environmental monitoring may be required.

Event Record: Record of incident details for future reference and evidence of events and actions taken.

5.0 WATER SUPPLY AND INTAKE

5.1 Toxic Substance in Trout Creek Above Intake

Description: Elevated levels of known or undetermined contaminant in source water (Trout Creek).

Indicators: Vehicle accident in Trout Creek or other tributaries, notification by Ministry of Transportation and Infrastructure, the public, Fire Department or Provincial Emergency preparedness agency.

Actions:

1. Notify Water Operator
2. Notify Supervisor
3. Notify Manager
4. Determine estimated time of incident and when flow will reach intake gates. Determine if Contaminant has entered Trout Creek Flume. Ensure corrective action is taken to rectify source of problem.
5. Close Gates: Water Division staff to close Trout Creek intake gates before contaminant reaches this diversion
6. Sampling in Trout Creek and Summerland Reservoir as required
7. See section 5.3 if contaminant has possibly entered the Trout Creek Intake
8. Collaboration with industry experts and regulators
9. Reduce Customer Demand as per Appendix B if necessary.
10. Sampling Program: If required, discuss with Engineer, Biologist/Chemist and Drinking Water Officer to develop a reasonable and representative sampling program. Consider sampling in creek and reservoirs affected. If contaminant is known, sample for specific parameter. If not known, sample and test for full parameters as required.
11. Environmental Contamination Containment: Communicate with Ministry of Environment staff regarding containment of spill and impact on environment.
12. Assess Water Demand: Review system water demands and determine water quantity for minimal domestic needs. Contact Drinking Water Officer (DWO) if DOS cannot provide these levels.

Event Record: Record of incident details for future reference and evidence of events and actions taken.

5.2 Failure of The Trout Creek Flume

Description: The 1400m concrete flume line carries all of Summerland's water to the Summerland Reservoir which directly feeds the Summerland WTP and the separated irrigation system for the upper Prairie Valley area. A failure in this structure would be difficult to repair quickly, a disruption in this line could result in loss of water to all of Summerland.

Indicators: Alarms, Low water at Summerland Reservoir; or at WTP clearwell; phone call from public

Actions: Steps to be taken by DOS staff

1. Notify Water Operator
2. Notify Supervisor
3. Notify Manager
4. Verify and record notification contact, name and phone number
5. Water operations to close or throttle down intake gate to a point where water is no longer exiting the flume at break point.
6. Open winter line if possible.
7. If reservoir continues to drop, reduce customer demand as per Appendix B.
8. Call appropriate engineer re: slope stability, method of stabilization and repair and bringing in equipment and materials.

Event Record: Record of incident details for future reference and evidence of events and actions taken.

Contacts: Senior staff contact IH

- Contact Works Foreman or Manager who will call-in all available staff as required to repair the structure to a degree in which water can flow and maintain some level of service.
- City Hall, Media, IH, MOE

5.3 Contamination of Summerland Reservoir

Description: Contamination has been detected or possible contamination is present

Indicators: Public notification (taste, odour or colour observations), poor water sample results, visible observations made by Water Operators, accident near flume at roadway crossing with potential contamination.

Actions: Steps to be taken by DOS staff

1. Notify Water Operator
2. Notify Supervisor
3. Notify Manager
4. Water Operations staff to investigate site, inform Chief Operator and contact management of possible situation. Management or Senior operations staff to contact IH.
5. Confirm that the source of contaminant is mitigated.
6. If chemical contamination confirmed or highly suspected to be present:
 - Discuss with Engineer, Biologist/Chemist (Lab) and DWO to develop a reasonable and representative sampling program. Contact Lab and arrange bottles if required and collect samples for rush analysis.
7. In an extreme situation of contamination and water cannot enter WTP, consider closing the Screening Works Slide gates. If this were to occur the WTP would shut off, all pump stations would shut off, and irrigation systems would be closed and "Do Not Use" notices would be provided to the public. DOS Senior management would make this call.
8. Office staff to be called in
9. Communication: Begin public notification if required and follow Water Quality Notification Procedures. <\\SRV-FS2\Master District\5200-5799 Engineering and Public Works\5210 E&PW - General\5210-01 Standard Documents\Policies and Procedures\Water>
 - Continue discussion with appropriate experts for moving forward
 - Discussions with Works and Infrastructure to consider alternate water source if needed.
 - Continue monitoring until water quality is back to normal and IH gives approval to lift advisory or notice.

Event Record: Record of incident details for future reference and evidence of events and actions taken.

5.4 Loss of flow from Summerland Rodeo Well

Description: Loss of flow from the well sites can be a result of a power failure or problems specific to the well site. There are three wells located on the Rodeo grounds property, one is in use for Rodeo facilities and KVR property; the other two wells act strictly as a backup for providing raw water to the Summerland Reservoir and are currently not in use.

Indicators: Situation applies only to the Summerland Rodeo well; Notification from customers reliant on Rodeo Ground well; Phone call from public using the facility or DOS staff working at site.

Actions: Steps to be taken by DOS staff

1. Notify Water Operator
2. Notify Supervisor
3. Notify Manager
4. Water staff to investigate well area.
5. Check flow from tap, confirm pressure gauge at bottom of pressure tank is reading (normal pump cut in pressure is approximately 30 psi and off at approximately 60 psi. If problem appears to be the switch, contact DOS electrician.
6. If Power Failure, Contact Summerland Electrical Department to obtain information on duration of power failure.
7. Inform Chief Water Distribution Operator
8. Contact certified well driller and pump installer (Aquatech's # found in contact list) if problem is thought to be with submersible well pump or the inability of the well to recharge.
9. A hydrogeologist may need to be consulted if the problem is with the aquifer.
10. Complete investigation and recording of incident details for future reference and evidence of events and actions taken.
11. If it is thought the aquifer is low and failing to recharge, contact hydro geologist for support and advice on groundwater wells.

Event Record: Record of incident details for future reference and evidence of events and actions taken.

6.0 WATER TREATMENT PLANT (WTP) EMERGENCIES

6.1 WTP - Cannot Meet Water Demands

Description: This type of emergency is typically caused by extreme weather events that place a very high irrigation demand on the WTP, or any other situation where water demands are high and WTP equipment reduces the ability to maintain maximum output.

Indicators: Visual Observations by Water Operators. Failure of WTP equipment as identified by SCADA and alarms.

Actions: Steps to be taken by DOS staff.

1. Document Situation: Note date, time, location and means of event recognition.
2. Notify Water Operator
3. Notify Supervisor
4. Notify Manager
5. WTP Site Investigation: Historically this problem has been caused by high flows and overheating raw water pump VFD's.
 - Check motor control center (MCC) room raw water pump temperatures on variable frequency drive (VFD) displays.
 - Check all SCADA pages and trends to determine what is operational, what has failed, or what is at risk of failure in the WTP.
 - Note status of chlorine disinfection, clearwell levels, raw water pump temperatures, chemical dosing status, and raw water flows from the Summerland Reservoir.
 - Check all necessary WTP equipment to confirm proper functionality
 - Switch – Adjust Equipment: The WTP has built in redundancy on certain critical pieces of equipment such as mixers, dosing pumps, raw water pumps, chlorine supply pumps, and has a spare parts inventory for other critical pieces of equipment.
 - Check WTP shelving and inventory lists for available parts & pieces that may be available to aid in necessary repairs.
 - If the issue stems from the raw water VFD's, switch to stand-by raw water pump and restart the Actiflo.
 - Call District electrician if necessary.

6. If Flow Issue:

- If the raw water flow from the screening works, Summerland reservoir, or intake is reduced or somehow compromised, determine which part of the infrastructure is the issue and take steps to correct.
- If there's a low or high reservoir level, adjust the intake slide gate accordingly.
- If the raw water flow to WTP is reduced, clean the screening works chamber one side at a time.
- If Trout Creek level is too low, notify Water Distribution Chief Operator and open appropriate dam to allow more water as soon as possible.
- If there's a raw water line main break between the Summerland reservoir and the WTP, refer to section 7.1 of this ERP.

7. Contact Contractors:

- Contact additional support as needed. District electrical/instrumentation technician, other Water Operators, or any necessary process equipment suppliers & distributors for advice or help.

8. **First response** - If WTP cannot provide water for demand, reduce customer demand as per Appendix B.

9. **Second response** – Open supplemental line

- If staff identify that an 8-hour outage of the High Irrigation Users (HIC), is not long enough for the WTP to recover
- Notification to Manager, Director, CAO, and Council
- Operator or Manager to notify Interior Health of the situation and the Boil Water Notification
- Prepare and open the Supplemental Line and Hypochlorite System with procedures: [\\SRV-FS2\Master District\5200-5799 Engineering and Public Works\5700 Water Treatment Plant\5700-02 Safety\Procedures WTP](#)
- Turn-on HIC from step 8 above.
- Verify Supplemental Line is operating suitably, and chlorine residual is sufficient at Pump House #2

10. Turn WTP back on and turn Supplemental line off once the clearwell level is stable, and WTP can supply adequate volumes for demand and customer demand can be returned to normal.

Event Record: Record of incident details for future reference and evidence of events and actions taken.

6.2 WTP - Failure of Components in Sludge Handling Process

Description: Backwash water & Actiflo wastewater are pumped into two on-site HDPE lined residual holding ponds from the WTP waste tank via two submersible pumps. These two holding ponds are used to settle out sludge and recycle 10% the supernatant back to the WTP raw water tank to be re-processed. The settled-out sludge is ultimately pumped from the holding ponds to the landfill drying beds by a single submersible pump in the bottom of each pond.

Indicators: Visual observation by Water Operator of a pond leak, line break, or overflow. Pond sludge pump or waste tank pump failure. Main break between WTP and Landfill. Phone call from public.

Actions: Steps to be taken by DOS staff.

1. Notify Supervisor
2. Notify Manager
3. Document Situation: Note date, time, location and risk. If sludge or water is over-flowing from the residual holding ponds to the WTP area, or down the residual holding ponds driveway, notify Water Treatment Chief Operator immediately, notify Manager or Director.
4. Review Impact Area:
 - Locate the issue.
 - Turn on/off waste tank or pond sludge pumps as required to either stop or increase the flow depending on the issue at hand.
 - Plan to address the impacts of the sludge/water accumulation, depending on the physical location of the sludge/water.
5. Spill Containment:
 - If a spill or overflow exists, shut down all necessary pumping equipment if it is contributing to the problem.
 - Turn on necessary equipment ONLY if it will help draw down the pond levels and help stop the overflow.
 - Contain the spill using native soils, sandbags, clay-based material, or hay bales.
 - Once contained the sludge is to be cleaned up and taken to the sludge disposal area at the landfill
6. Contact Agencies:
 - If a significant spill exists on public lands or neighboring properties, advise MOE of the situation.
 - Document all data, times and actions taken to address the issue.

7. If WTP cannot provide water for demand, call a Summerland wide 'Reduce Water' notification to be advertised immediately
 - Office staff to be called in to conduct communication
 - Communication: Begin public notification of Reduced Water and follow Water Quality Notification Procedures. <\\SRV-FS2\Master District\5200-5799 Engineering and Public Works\5210 E&PW - General\5210-01 Standard Documents\Policies and Procedures\Water>
8. **First response** - If WTP cannot provide water for demand, reduce customer demand as per Appendix B.
9. **Second response** – Open supplemental line
 - If staff identify that an 8-hour outage of the High Irrigation Users (HIC), is not long enough for the WTP to recover
 - Notification to Manager, Director, CAO, and Council
 - Operator or Manager to notify Interior Health of the situation and the Boil Water Notification
 - Prepare and open the Supplemental Line and Hypochlorite System with procedures: <\\SRV-FS2\Master District\5200-5799 Engineering and Public Works\5700 Water Treatment Plant\5700-02 Safety\Procedures WTP>
 - Turn-on HIC from step 8 above.
 - Verify Supplemental Line is operating suitably, and chlorine residual is sufficient at Pump House #2
10. Turn WTP back on and turn Supplemental line off once the clearwell level is stable, and WTP can supply adequate volumes for demand and customer demand can be returned to normal.

Event Record: Record of incident details for future reference and evidence of events and actions taken.

6.3 WTP – Power Failure – Emergency Power Operation

Description: For extended power failures, the WTP has a backup diesel generator which is sufficient to run the entire WTP for extended periods of time. In the event of a power outage the generator will automatically start and transfer power from utility to generator. It is possible for multiple alarms to occur at the WTP when this happens.

Indicators: Generator run alarm to stand-by phone, other WTP alarm.

Actions: Steps to be taken by DOS staff.

1. Notify Water Operator
2. Notify Supervisor
3. Notify Management
4. Document Situation: Note date, time, location and means of recognition of event. Check SCADA to see if backup generator is online at WTP
5. WTP Site Investigation:
 - Ensure that WTP chlorine disinfection system remains operational and check all necessary SCADA pages and trends to confirm all equipment and instrumentation is functioning correctly.
 - Clear/reset any alarms and restart WTP if it has shut itself off on alarm during the power transfer.
 - Contact DOS Electrical Utility staff to determine if the power event will be for an extended period of time, and if there's an ETA on utility power restoration.
 - Check fuel levels in the WTP diesel generator.
6. Media Alert: Summerland Electrical Utility will notify customers via social media possibly media release regarding outage.
7. If water quality at the WTP is compromised due to a power outage that results in equipment failure, inform Water Treatment Chief Operators and management. Water Treatment Chief Operator will determine whether a BWN is required.
8. Call administrative staff to begin public notification if required and follow Water Quality Notification Procedures. <\\SRV-FS2\Master District\5200-5799 Engineering and Public Works\5210 E&PW - General\5210-01 Standard Documents\Policies and Procedures\Water>

Event Record: Record of incident details for future reference and evidence of events and actions taken.

6.4 WTP – Failure of Critical WTP Process Equipment

Description: This type of WTP emergency would be caused by a failure of critical process or control equipment. The equipment could include the SCADA system, pumps, mixers, valves, actuators, electrical, instrumentation, flowmeters, software, PLC's, chemical dosing equipment, level meters etc. The WTP is designed to operate on two separate process trains, converging at the filters. If one process train were to fail, it is still possible to run the WTP at half capacity, as long as no critical equipment has failed that is common to both trains.

Indicators: Visual Observation by Water Operator. Failure of equipment as identified by SCADA alarms. Alarms to stand-by phone.

Actions: Steps to be taken by DOS staff.

1. Notify Supervisor
2. Notify Management
3. Document Situation: Note date, time, location and means of identifying the event.
4. WTP Site Investigation:
 - Ensure chlorine disinfection systems, WTP clearwell levels, chemical dosing pumps, raw water pumps, raw water flow from Summerland Reservoir are all operational, and functioning correctly.
 - Check all SCADA pages and trends to confirm what is functioning, what has failed, or what is at risk of failing.
5. Switch – Adjust Equipment: The WTP has built in redundancy on certain critical pieces of equipment such as mixers, raw water pumps, chemical dosing pumps, chlorine supply pumps, chlorine disinfection systems, and also has a spare parts inventory for other critical pieces of equipment.
 - If possible, shut down the affected Actiflo process train and run on the secondary (lag) Actiflo train as long as it is functioning correctly.
 - If both Actiflo trains have failed, identify the source of the problem and make necessary changes/repairs.
 - Reset and clear all alarms on SCADA, ensure Actiflo's are both in auto, and restart the WTP if safe to do so.
6. Flow Issue:

- If the raw water flow from the screening works, Summerland reservoir, or intake is reduced or somehow compromised, determine which part of the infrastructure is the issue and take steps to correct.
- If there's a low or high reservoir level, adjust the intake slide gate accordingly.
- If the raw water flow to WTP is reduced, clean the screening works chamber one side at a time.
- If Trout Creek level is too low, notify Water Distribution Chief Operator and open appropriate dam to allow more water as soon as possible.
- If there's a raw water line main break between the Summerland reservoir and the WTP, refer to section 6.0 of this ERP.

7. **Support Contractors:**

- Contact additional support as needed. District electrical/instrumentation technician, other Water Operators, or any necessary process equipment suppliers & distributors for advice or help.

8. **First response** - If WTP cannot provide water for demand, reduce customer demand as per Appendix B.

9. **Second response** – Open supplemental line

- If staff identify that an 8-hour outage of the High Irrigation Users (HIC), is not long enough for the WTP to recover
- Notification to Manager, Director, CAO, and Council
- Operator or Manager to notify Interior Health of the situation and the Boil Water Notification
- Prepare and open the Supplemental Line and Hypochlorite System with procedures: [\\SRV-FS2\Master District\5200-5799 Engineering and Public Works\5700 Water Treatment Plant\5700-02 Safety\Procedures WTP](#)
- Turn-on HIC from step 8 above.
- Verify Supplemental Line is operating suitably, and chlorine residual is sufficient at Pump House #2

10. Turn WTP back on and turn Supplemental line off once the clearwell level is stable, and WTP can supply adequate volumes for demand

Event Record: Record of incident details for future reference and evidence of events and actions taken.

6.5 WTP – Chemical Storage Tank Failure

Description: The WTP chemical storage tanks are located within containment areas inside the facility. The storage capacities of the containment areas are sufficient for the operating volumes of the tanks. There are twin caustic soda tanks, twin coagulant tanks, and (future) twin sodium hypochlorite tanks.

Indicators: Visual observation by Water Operator. Level alarm from WTP SCADA.

Actions: Steps to be taken by DOS staff.

1. Notify Supervisor
2. Notify Management
3. Safety Issue:
 - Primary concern is Water Operator safety.
 - Always wear full PPE when handling or dealing with ANY type of chemical spill.
 - If necessary, turn on ventilation fans and open doors to promote fresh air within the building.
 - For Chlorine Gas release, see Chlorine Gas Exposure Control Plan.
4. ID Chemical & Site Assessment:
 - Identify which tank has ruptured and assess the situation.
 - Determine how much volume of chemical has spilled into the containment area.
 - If possible, close the interconnecting ball valve between the dual tanks with the extended key from the catwalk to prevent both chemical holding tanks from draining.
5. Contact Chemical Supplier:
 - Notify chemical supplier and refer to SDS for information on the specific chemical spilled, and chemical handling recommendations for safe clean-up.
6. Clean-up
 - Clean up tank spill as per chemical supplier and SDS recommendations. It may be possible to use a temporary containment tank (totes) to store spilled chemical. Determine whether chemical is reusable in the water treatment process.
7. Check Adjacent Equipment:
 - Check condition of nearby equipment such as, chemical dosing pumps, valves, piping, hoses, and structural components to verify that their integrity has not been compromised.

Event Record: Record of incident details for future reference and evidence of events and actions taken.

6.6 WTP – Chemical Truck Spill

Description: A chemical spill could originate from damage to the tanker truck equipment, damage to the chemical offloading lines & fittings, or faulty/improper connections made to the offloading cam-lock connections while the truck is transferring chemical product from the trailer to the WTP chemical storage tanks inside the building. To avoid a spill situation, a Water Operator is required to be present during the chemical offloading process.

Indicators: Visual. Driver notification.

Actions: Steps to be taken by DOS staff.

1. Ensure all Persons are Safe:
 - Primary concern is Water Operator safety.
 - Full PPE is required while hose connections are being made to the WTP and for the duration of the chemical offload.
 - The WTP chemical offloading checklist must be completed. This includes chalking the wheels to prevent truck and trailer from rolling away and breaking connections.
2. Contain Spill:
 - If a spill is due to a failed valve, fitting, or chemical hose, have the driver immediately close the trailer offloading valve and stop the pressurized air supply into the trailer.
 - Replace/repair failed valves, fittings, or chemical hoses.
 - If necessary, contain the spill within the chemical truck offloading area in the driveway using sand, gravel, or bags of granular absorb-all. Call Public Works foreman for heavy equipment aid if needed.
3. Notify Supervisor
4. Notify Management
5. Disposal of Spilled Materials:
 - Contact chemical suppliers and consult the SDS for means to safely clean up and dispose of spilled chemical.
6. Event Record: Record of incident details for future reference and evidence of events and actions taken.

6.7 WTP - Road Access Failure to WTP

- Description: Road failure or road instability to the WTP due to washout, slide, water main break, or another situation.

Indicators: Phone call from local resident or visual recognition by staff.

Actions: Steps to be taken by DOS staff.

1. Secure site.
2. Ensure DOS truck blocks off road and calls for additional assistance. Have DOS staff bring up barricades and signage to block off affected areas. Inform neighbors that may be impacted by the road closure.
3. Notify Supervisor
4. Notify Management
5. Contact Works & Infrastructure management and Fire Department to barricade area for public safety.
6. WTP Operations:
 - Walk into the WTP if safe to do so and ensure that everything is functioning correctly. If a vehicle is needed on-site at the WTP, use the secondary access located off Bathville Road that enters the residual holding pond area at the north end of the WTP compound.
7. Contact Geotechnical Engineer:
 - Notify manager who can decide when/if to call a geotechnical engineer to coordinate a site visit and possible means of road remediation and repair.
 - Management to make decisions on road repair plan/strategy.

Event Record: Record of incident details for future reference and evidence of events and actions taken.

7.0 DISTRIBUTION EMERGENCIES

7.1 Break of Primary Transmission Main Leading out of the Water Treatment Plant

Description: The large diameter transmission main downstream of the WTP is a critical supply main and would be difficult to repair quickly, a disruption in this line could result in loss of water to a very large portion, if not all, of Summerland.

Indicators: Alarms, Low water at Summerland Reservoir, or at WTP clearwell, phone call from public

Actions: Steps to be taken by DOS staff

1. Close the closest upstream valves to isolate the leak, maybe within the WTP so Water operations would perform this task.
2. Notify Supervisor
3. Notify Management
4. Contact Works Foreman or Manager who will call-in all available staff.
5. Water Operations Staff to throttle down or close intake gate at intake to ensure Summerland Reservoir is maintaining its normal operating level.
6. Public Works Crew to coordinate repair of main.
7. Notify Management who will notify IH.
8. Arrange for alternate water source. Depending on break location, re-routing of water may be possible to keep large areas of town in water.
9. Issue Public Notification to reduce/restrict all water consumption.
10. Call administrative staff to begin public notification if required and follow Water Quality Notification Procedures. \\SRV-FS2\Master District\5200-5799 Engineering and Public Works\5210 E&PW - General\5210-01 Standard Documents\Policies and Procedures\Water
11. If during high demand time of year, in order to maintain minimum domestic flows, irrigation must be shut off throughout the entire District.
 - Start with connections that are irrigating at the time and then those that are not at the time. Some may turn irrigation on in the coming days.
12. Contact Critical Customers
 - Administrative staff to be called in
 - Contact all irrigators to give advance notice

- Contact other critical customers, answer public enquiries, and utilize direct e-mail notification list to inform customers of loss of supply. (other forms of communication in the future)
13. Contracting equipment to be brought in to expose area of break and determine repair required. Call Engineering if support is required for design of the repair. Timeline for bringing lines back in service to be determined at this time. Repair techniques and materials to be assembled and repair works to begin.

Event Record: Record of incident details for future reference and evidence of events and actions taken.

7.2 Water Main Break

Description: Small breaks are considered manageable emergencies. Large breaks have the capacity to cause larger areas of DOS to be out of water, they are more difficult to repair and the damage from a large pipe break is orders of magnitude more dangerous than a small break. Public health risks must be considered for these and for large breaks.

Indicators: Phone call from main DOS office or on-call service; Alert provided by public; Direct call to staff member

Actions:

1. Public Works to isolate main break/service line leak. Throttle nearest line valves. Close gate valves at safe speed so as not to cause pressure spikes and water hammer in the distribution system. Once main is isolated, inform other DOS staff. Call for assistance to repair main. Public safety takes priority over minimizing property damage;
2. Advise Fire Department, Public Works to call and provide street names if hydrants are out of service, and/or hydrant number. Phone No. (250) 494-7211 or after hours at (250) 490-2305
3. Notify Water Operator
4. Notify Supervisor
5. Notify Management
6. Flush out mains, consider flushing to the nearest hydrant on the pressurized side of the closed valves to wash out contamination if it's believed to have entered system.
7. Excavate Utilize DOS Hydro-Vac to excavate hole to below the leak point, maintaining a void under the pipe to prevent further materials from entering.
8. Assess Break Magnitude: Identify if positive pressure was maintained.
9. Coordinate Repair Materials Determine size of main, materials, diameter, class of pipe, repair couplings and fittings, etc.
10. Contact Water Division. Once information is gathered and particularly if positive pressure has not been maintained. Discussions to follow with Water Division determine if a WQA or BWN is required.
11. Water Division to begin public notification if required and follow Water Quality Notification Procedures. \\SRV-FS2\Master District\5200-5799 Engineering and Public Works\5210 E&PW - General\5210-01 Standard Documents\Policies and Procedures\Water

12. Repair water main Utilize proper fittings, procedures, and disinfection protocol (AWWA C651, Disinfecting Water Mains).
13. Reloading the water main
 - Contact Water Division when reloading is to commence if Pump Stations or PRVs are within loading zone or will be affected in any way.
 - Fill water main slow and bleed air from high points during and after the main is loaded up to normal pressures.
 - Flush water main in area downstream of where break occurred to remove contaminants and help bring water quality to normal standards.

Event Record: Record of incident details for future reference and evidence of events and actions taken

Water Quality: Water Division to conduct appropriate sampling. Most common parameters include E.coli, Total Coliforms, turbidity and chlorine residuals.

Removal of BWN or WQA can occur after water quality parameters have returned to normal and approval from IHA is granted.

7.3 Canyon View Slide Zone Water Main Break

Description: This area is subject to ground movement resulting from the perpetual slide just West of Simpson Road. Due to possible property and home damage in this area extra precautionary measures have been put into place in order to ensure the water flow from a break is stopped or reduced to manageable levels as to where damage is no longer occurring. Public health risks must be considered for this as with other breaks.

Indicators: Text to select DoS staff phones from PH #6 that a high flow alarm or pressure alarm has been activated, Phone call from main DOS office or on-call service; Alert provided by public.

Actions:

1. Not all leaks in this area will be large but because of the sensitive area and extensive damage that may occur, it is imperative that staff respond and stop water flow ASAP. Water breaks that are large enough will send a text message to:
 - PW Standby phone, PW Foreman, PW Manager, Water Operations Standby phone; if Water Operations Standby Water Operator doesn't acknowledge the alarm it will continue to Water Distribution Chief Operator then the Water Treatment Chief Operator.
 - The Water Operations Division has the ability to shut the pumps off remotely, if instructed to by PW personnel on site that have responded to a leak.
2. Notify Water Operator
3. Notify Supervisor
4. Notify Management
5. Public Works to isolate main break. Approach site with caution. Due to the hillside location and sand/silt materials it is possible that water on the road surface can hide a large ground excavation large enough to engulf an entire vehicle.
 - Throttle nearest line valves. Close gate valves at safe speed to prevent pressure spikes and water hammer in the distribution system. Once main is isolated, inform other DOS staff. Call for assistance to repair main. If closing of the isolation valve is not practical because excess flow through the valve, PW employee to notify Water Division to shut down Pump House #6, remotely if not yet on site.
 - If pump house is shut down it can be turned back to normal operation after the isolation valve is off, discuss with PW before doing so.
6. Advise Fire Department: Public Works to call and provide street names if hydrants are out of service, and/or hydrant number. Phone No. (250) 494-7211 or after hours at (250) 490-2305

7. Excavate Utilize DOS Hydro-Vac to excavate hole to below the leak point, maintaining a void under the pipe to prevent further materials from entering.
8. Assess Break Magnitude: Identify if positive pressure was maintained.
9. Coordinate Repair Materials Determine size of main, materials, diameter, class of pipe, repair couplings and fittings, etc.
10. Contact Water Division. Once information is gathered and particularly if positive pressure has not been maintained. Discussions to follow with Water Division determine if a WQA or BWN is required.
11. Water Division to begin public notification if required and follow Water Quality Notification Procedures. \\SRV-FS2\Master District\5200-5799 Engineering and Public Works\5210 E&PW - General\5210-01 Standard Documents\Policies and Procedures\Water
12. Repair water main Utilize proper fittings, procedures and disinfection protocol (AWWA C651, Disinfecting Water Mains).
13. Reloading the water main
 - Contact Water Division when reloading is to commence.
 - Water Operator to monitor flow meter at PH #6 and relay info to Public Works personnel loading the line so a slow, safe rise in pressure can be achieved.
 - Actual loading of the main downstream of the isolation valve will be done by Works and Infrastructure staff through the valve once the rest of the system is at normal operating pressure, in most circumstances this will already be the case.
 - Fill water main slow and bleed air from high points during and after the main is loaded up to normal pressures.
 - Flush water main in area downstream of where break occurred to remove contaminants and help bring water quality to normal standards.

Event Record: Record of incident details for future reference and evidence of events and actions taken.

Water Quality: Water Division to conduct appropriate sampling. Most common parameters include E.coli, Total Coliforms, turbidity and chlorine residuals.

Removal of BWN or WQA can occur after water quality parameters have returned to normal and approval from IH is granted.

7.4 Water Distribution - PUMP / Motor Failure (Any Pump Station)

Description: Pump motor failure will result in loss of supply capacity to the pumped elevation service areas. Either redundant supply and alternative pumps, or alternate feed is required to maintain service capacity.

Indicators: Alarm condition, Alarm, pump alarm condition, Power Failure, Low flow condition, only one pump showing run times, Phone call from public of no or low pressures;

Actions: Steps to be taken by DOS staff.

1. Confirm alarm condition for pump / motor failure:
2. Review flow trends at pump station, pressures, and condition before pump stop.
3. Look for surges or irregularities. If undetermined, and pump appears to have only tripped out, reset pump and try restart. If pump stops again, shut pump down and take off-line. If possible, allow station to run on other pumps.
4. Check System Flow Rates: Determine if pump can be left off-line overnight or until next day when pump can be serviced.
5. If necessary, call Senior Water Operator and Fire Department
6. Notify Water Operator
7. Notify Supervisor
8. Notify Management
9. Contact Support Persons: Call appropriate trade i.e. Instrumentation, Electrician, and Pump repair service for support assistance.
10. Insufficient Water Supply: If this results from condition:
 - communicate with residents regarding consumption reduction
 - Shut down irrigation on the served pressure zone only if absolutely necessary, with assistance from Public Works.
11. Contact Critical Customers
 - Administrative staff to be called in
 - Contact all irrigators to give advance notice
 - Contact other critical customers, answer public enquiries, and utilize direct e-mail notification list to inform customers of loss of supply. (other forms of communication in the future)

12. If pressure continues to be low, consider additional notification and further restrictions.

Event Record: Record of incident details for future reference and evidence of events and actions taken.

7.5 Water Distribution, PRV High Pressure / Low Pressure Alarm

Description: High pressure may stress the local in-home PRV valves that should be in each residence. Hot water tanks may be damaged if there is higher pressure and the in-home PRVs are not operating properly.

Indicators: SCADA alarm, Water Operator observation, calls from public on low or high pressures.

Actions: Steps to be taken by DOS staff,

1. Notify Water Operator
2. Notify Supervisor
3. Notify Manager
4. Identify effected location: Confirm that pressure variation is localized and not out to a larger service area. Check adjacent downstream, upstream and adjacent pressures at stations. Where available, review SCADA for assessing district-wide impact.
5. Site Visit: If near station, go immediately to station prior to SCADA review unless confined space equipment is required. If at WTP first, then proceed to station after review of SCADA screens and trends. Look at downstream and upstream PRV stations for service area. Contact other staff required for entry, if PRV is confined space.
6. Troubleshoot station: Check pressure gauges, pressure transmitter connections, look for leaks, flush Y-strainers, and signs that all components are functioning properly.
7. Watermain Break: If low pressure leaving the PRV is present and all indications that systems are operating properly then look for water leak, check out roadways in the service area. Look for water seepage across roads, water main break. Call Works on-call phone to investigate further.

Event Record: Record of incident details for future reference and evidence of events and actions taken.

7.6 Contamination within the distribution system

Description: Contamination has been detected or possible contamination is present

Indicators: Public notification (taste, odour or colour observations), poor water sample results, water repair crews notice unusual water characteristics, known backflow from cross connection, backflow from large main break.

Actions:

1. Isolate contaminated area if known
2. Notify Water Distribution Chief Operator
3. Notify Supervisor
4. Notify Management
5. Determine source of contamination
6. Take corrective actions to prevent further contamination
7. Determine water Notice or Advisory type. Eg. If Biological contamination a Boil Water Notice maybe required but Chemical contamination will most likely require a Do Not Drink notice.
8. Communication: Begin public notification if required and follow Water Quality Notification Procedures. <\\SRV-FS2\Master District\5200-5799 Engineering and Public Works\5210 E&PW - General\5210-01 Standard Documents\Policies and Procedures\Water>
9. Determine area to sample, collect and send to lab for analysis (indicate “rush” results if needed)
10. Begin water main flushing if required.
11. Arrange for alternate water source if needed.

Event Record: Record of incident details for future reference and evidence of events and actions taken.

7.7 Reservoir (Balancing Tank) Intrusion (Hunter's Hill, Trout Creek Tank, Lower Town Tank, Deer Ridge Tank)

Description: Unauthorized access

Indicators: Public notification (taste, odour or colour observations), Broken lock on reservoir access lid, poor water sample results, SCADA intrusion alarm, contamination has been detected

Actions:

1. Notify Water Distribution Chief Operator
2. Notify Supervisor
3. Notify Management
4. Contact RCMP
5. Look around site for evidence of contamination: eg. Containers that may have contained a substance.
6. Isolate water tank if possible and it makes sense to do so.
7. Communication: Begin public notification if required and follow Water Quality Notification Procedures. <\\SRV-FS2\Master District\5200-5799 Engineering and Public Works\5210 E&PW - General\5210-01 Standard Documents\Policies and Procedures\Water>
8. In consultation with IH or Testing Laboratory, collect appropriate water samples in the tank and in the Distribution System downstream for rush analysis.
9. If possible, dump water in tank, pressure wash and disinfect.
10. Consider hydrant flushing to remove potential contamination.
11. Arrange for alternate water source if needed.

Event Record: Record of incident details for future reference and evidence of events and actions taken.

7.8 Chlorine Gas Leak

Garnett Valley Chlorination (See Chlorine Gas Exposure Control Plan)

7.9 Earthquake

Description: Summerland is just outside the high subduction zone of the west coast; however moderate earthquakes can occur. If an earthquake is felt, then actions are to be taken to ensure that system integrity is not compromised.

Indicators: Earthquake felt at local residence in Summerland area, information broadcast of event through the media, radio, TV or other. Auto info bulletin e-mailed by Natural Resources Canada (NRC).

Actions: Steps to be taken by DOS staff.

1. Confirm the seismic event through the Government website at:
 - <http://earthquakescanada.nrcan.gc.ca/index-eng.php>
2. Notify Water Distribution Chief Operator
3. Notify Supervisor
4. Notify Management
5. Check emails and site within 30 minutes of the event. Note:
 - The District of Summerland has submitted an e-mail address to NRC. If an event occurs NRC will generate an auto e-mail to Water Staff Personnel (CHECK E-MAILS AND SITE – UPDATE) within 10-30 minutes of the event. This e-mail is generated for any event within Canada measuring a magnitude of 4.0M or greater so most will not initiate any action by staff.
 - According to NRC, seismic events having a magnitude of less than 3.5M are generally not felt and events measuring 3.5-5.4M rarely cause damage. Events that have a magnitude of <3.5M are still reported on the NRC website.
 - Because ground conditions vary from site to site, any earthquake epicenter that falls within 50km of any water infrastructure owned and or operated by the DOS and is either felt or measures of 3.0M or greater will initiate action by staff. In addition, if a large event occurs outside this 50km zone and is felt or reported in our area, action by staff will be taken.
6. When an event occurs document: date, time, magnitude and any other relevant information.
7. Begin visual inspections of any DOS water infrastructure effected.
 - Dams – see DEP for additional information.

- Water Treatment Plant for signs of concrete cracking or any other structural deformities or damage.
 - Distribution system
 - All water storage (balancing tanks – Hunters hill, Deer Ridge, Lower Town, Trout Creek).
 - Start at intake, flume, Summerland Reservoir and work through system checking Pump Stations and PRVs.
8. If considerable damage is found
- Consider throttling valves back
 - Consider reducing customer demand as per Appendix B if there are breaks and overland water flow from broken water mains.
9. If watermain valves must be throttled back or turned off:
- Contact Critical Customers
 - Administrative staff to be called in
 - **Communication:** Begin public notification if required and follow Water Quality Notification Procedures. <\\SRV-FS2\Master District\5200-5799 Engineering and Public Works\5210 E&PW - General\5210-01 Standard Documents\Policies and Procedures\Water>
 - Contact all irrigators to give advance notice
 - Contact other critical customers, answer public enquiries, and utilize direct e-mail notification list to inform customers of loss of supply. (other forms of communication in the future)

Major Incident: If major earthquake is experienced, then Emergency protocol procedural to be followed. Work is in conjunction with other emergency preparedness agencies. Fire Department number is to be called, watershed issues to be coordinated through them. Contact Senior Summerland Staff and they will work with Provincial agencies.

Direction by Director of Works and Infrastructure

Event Record: Record of incident details for future reference and evidence of events and actions taken.

8.0 PROTOCOL AND PROCEDURES

This section provides a summary of DOS Procedures to be followed during emergencies located in the following links.

<\\SRV-FS2\Master District\5200-5799 Engineering and Public Works\5210 E&PW - General\5210-01 Standard Documents\Policies and Procedures\Water>

- Confined Space Entry Program
- Water Quality Update – Website
- Emergency Water Supply Interruption Notification during Office Hours or After Hours
- Water Quality Telephone Message
- Cross Connection Control
- Polymer Handling Safety
- Water Quality Notification Procedures

<\\SRV-FS2\Master District\5200-5799 Engineering and Public Works\5700 Water Treatment Plant\5700-02 Safety>

- Chlorine Gas Exposure Control Program
- Respirable Silica Exposure Control Plan
- Backup Hypo Manual Operation
- Supplemental Line Procedure
- Lockout procedures
- Silica Exposure Control Plan
- Fire Safety Plans

9.0 COMMUNICATIONS

9.1 Introduction

This section provides contact information for staff and support resource persons during an emergency.

The communications section is broken down into the following sections.

Section	Event
9.2	Emergency Contact Numbers
9.3	Mayor and Council
9.4	Watermain Break Call List
9.5	Contractors / Equipment
9.6	Specialty Services
9.7	Consulting Advisors
9.8	Suppliers
9.9	Interior Health (Regulator) Contact List
9.10	Government Agency Contacts
9.11	Other Water Suppliers
9.12	Watershed Contacts – Organizations
9.13	Media Contacts
9.14	Critical Customers List

9.2 Emergency Contact Numbers

Event	Agency	Phone No.	Cellular/Fax
Major Event	Provincial Emergency Program	911	911
Injury – Safety	Penticton Regional Hospital	911	911
Ambulance	BC Ambulance Service	911	911
Fire	Summerland Fire Department	911	911
Fire	Penticton Fire Department	911	911
Dam Failure	Provincial Emergency Program	800-663-3456	n/a
Forest Fire	Kamloops Forest Centre Penticton Forest Centre	250-554-5500 250-770-3700	n/a
Watershed Damage	Provincial Offender Line	877-952-7277	n/a
Computer/Network Issues	Summerland IT Department helpdesk@summerland.ca	250-404-4099	Roland Grombach: 486-6668
SCADA Failure	Turnkey SCADA Integrators Centrix – Brad Anderson	717-8813	469-0580 469-0583
Radio Failure	Centrix - Garth Ink Centrix – Ken Hansen Omega – Warren Saari Service Mngr	860-8016	469-0577
Break Numbers			
Electrical Utility Division	On-Call Cell	250-490-6818	
Wastewater Division	On-Call Cell	250-809-7141	
BC One Call	Caller ID No. 1792	800-474-6886	
Fortis BC Gas Emergency		800-663-9911	
Shaw Emergency Locates		866-344-7429	
Telus		611 or 250-310-2887, Option 2/7	
Aim Road Maintenance		866-222-4204	
CITC Ltd.	Flagging	250-488-0860	

9.4 Watermain Break Call List

Company and Service	Name/Contact	Bus. /Res. / Cell	Comments
Works & Infrastructure		250-494-0431	
Works Division	On-Call Cell	250-490-7617	
After Hours Answering Service		250-490-2305	
Works Foreman	Dave Sandrelli	250-490-6525	
Manager of Works	Maarten Stam	250-809-7737	
Works Administration	Deb DeFerro	250-488-9576	
After Hours Support	Alt: Heather Martin	250-462-5343	

9.5 Contractors / Equipment

Organization	Person	Office	Cellular	(R)Residence/(F)Fax	Support Role
Clay Resources Ltd.	Kevin Clay		486-7725		Excavation and Trucking
NRG Excavating	Pascal		488-3400		Excavation
H&M Excavating Ltd.	Marv	493-4677			Excavation
BTN Excavating	Bill Miller		488-5203		Excavation
Sawchuck Developments	Larry Sawchuk	765-3838	470-3448		Concrete work, building, PManagmt
Maple Reinders	Tom MacDonald	765-8892	470-8400	765-8832	Concrete work, Building PManagmt
Winn Rentals	Kelly Robertson	491-1991	470-7752	491-1992	Rental Equipment
Summerland Rentals		494-6916			Rental Equipment
Mearl's Machine Shop	Greg Anderson	763-0109	212-4806	860-7229 (R)	Pumps – Process

Organization	Person	Office	Cellular	(R)Residence/(F)Fax	Support Role
Rock Welding Ltd.	Peter Vaisanen		462-1578		Welding and piping
EMPS	Bob Grantham Dennis Malashewsky	765-4998	470-8963	764-8772 (R) 765-3998	Motors & Pumps
Aquatech Services	Randy Woods	765-4730	470-8869		Augering – Boring
TCG The Company	Richard Bachand	573-7814	371-1042	573-7815	Augering – Boring

9.6 Specialty Services

Organization	Person	Office	Cellular	(R)Residence/(F)Fax	Support Role
Alpine Helicopters	Sam Civers	769-4111	768-3189	769-2040	Helicopter
Canadian Helicopters	Peter Koster	492-0637	490-6811	492-6544	Helicopter
Kokanee Helicopters		238-2284			Helicopter
Divers – Aquability Projects	Neal Klose		826-2967		Diving services, submerged gates and screens
Diving Dynamics	Vern Johnston	861-1848			Divers

9.7 Consulting Advisors

Organization	Person	Office	Cellular	Support Role
General Water Eng.	Bob Hrasko	250-212-3266	250-212-3266	General Water Engineering
Larratt Aquatic	Heather Larratt	769-5444	717-6289	Aquatic Biology
Dams	Dwayne Meredith	250-503-5817	550-6762	Dam and Water Engineering
Dams	Aaron Hahn	778-480-6063	250-718-9087	Dam Engineering

Organization	Person	Office	Cellular	Support Role
CENTRIX	Ken Hansen	717-8813	469-0577	Instrumentation
Anderson	Brad Anderson	717-8813	469-0580	Instrumentation
CENTRIX (elect eng.)	Linda Bie	717-8813	469-0583	Instrumentation
Ecoscape Environmental	Kyle Hawes Jason Schleppe	491-7337	469-3474 808-3474	Environmental permitting for work in sensitive areas
GeoPacific Consultants	Tyler Smith	801-8536		Geotechnical

9.8 Suppliers

Company	Product	Person	Office	Cellular	(R)Residence/ (F) Fax
Iconix	Pipe materials	Dave Houghton	765-8668	212-0178	765-6036
Wolseley Waterworks	Pipe materials	Jake Jackson	765-5186	250-300-1708	765-5187
Others					
Canada Pipe	Ductile Iron Pipe	John Braun	604 737-1279	604 649-4265	604733-0465
Mearl's Machines	Pumps, process piping	Greg Anderson	763-0109	212-4806	763-5894
CENTRIX	Instrumentation Equipment	Garth Ink Brad Anderson	717-8813	469-0583 469-0580	717-8814
Waterhouse Enviro	WTP Chemicals	Mark Carey	604 921-3317	604 970-8900	
Clartech	Chlorine	Chris Henry	306 664-2522	24 hr Emergency No. Trucking phone Number	
Brenntag	Caustic Soda	Sanj Mudaliar	604 513-9009	604 679-1404 E1-855-273-6824	604 513-9010
Safety Equipment	Canadian Safety Equipment	Louis Santos	763-5005	250-826-5847	863-3473
Turnkey	SCADA	Dallas Labelle	250-549-4701		
Summerway Locks	Locksmith	John Waycott	250-494-7377		

9.9 Interior Health (Regulator) Contact List

Interior Health Authority	Contact	Cell	Email
Judi Ekkert	250-469-7070 #12274 After Hours: 1-866-457-5648	C: 250-808-3444	judi.ekkert@interiorhealth.ca

Emergency Response Number Medical Health Officer 1 (866) 457-5648

The following is meant to assist water suppliers to reach their Interior Health representative in the event of a water quality problem as part of their Emergency Response Plan protocol. If you are not able to reach your primary contact cellular phone, please contact the 1 (866) 457-5648.

9.10 Government Agency Contacts

Organization	Person	Office	Cellular	(R)Residence/ (F) Fax	Support Role
Provincial Emergency Program (call 911)		800 663-3456			Emergency
Summerland Fire Department (Local Authority and Regional PEP Coordinator)					Emergency
Ministry of Forests & Range	Rob Dinwoodie	250-558-1700		250-549-5485	Cattle Issues
Ministry of Forest & Range	John Trehwitt	490-8249			W/shed damage
Ministry of Environment	Shaun Reimer	490-8200	250-809-7762 250-490-8229	250-490-2231	Watershed protection
Forest Fires		800-663-5555			Emergency Fire Line
BC Water Management	Conrad Pryce	490-8200	250-809-6949	250-490-2231	Licensing
Dam Safety Officer,	Mike Noseworthy	490-2291			MOE
Dam Safety, Officer	Robert McLean	250-952-6805	250-896-0648	250-356-0605	MOE
Dam Safety Officer,	Scott Morgan	250-387-3265	250-380-8849		MOE
Ministry of Transportation	Scott Lain	712-3668	250-212-4896	712-3669	Access
AIM Roads (Maintenance)		866-222-4204			
Caro Environment	Sarah Gulenchyn	765-9646	250-859-2660	765-3893	WQ Testing

9.11 Other Water Suppliers

Organization	Person	Office	Cellular	Fax	Support Role
Local Water Utilities					
District of Peachland	Shawn Grundy	250 767-2647	250-212-2926	767-3433	Public Works Manager
City of West Kelowna	Rob Hillis	778 797-8850			
	Chris Anderson	778 797-8850	250 215-4785		
	After Hours	778 797-1000		778-797-1001	
City of Penticton	Len Robson	490-2543	250-328-8017	490-2557	PW Manager
	Michael Firlotte	490-2564	250-809-4036		Chief WTP Operator
RDOS	Andrew Reeder				
Black Mountain Irrigation District	Bob Hrasko Bryan Vig		250-212-3266		Water Engineering
Penticton Indian Band		493-0048			

9.12 Watershed Contacts – Organizations

Name	Phone	Cell	Description - Role
Rob Dinwoodie	250-558-1700	250 558-1769	Ministry of Forest and Range Lead Contact Rob.Dinwoodie@gov.bc.ca
Heather Larratt	250-769-5444		Aquatic Biology Consulting
Range Tenure Holders			
Forestry Companies			
Ron Gorman	768-5131	250-870-1950	Gorman Brothers Logging
Mike Dorion	762-3411	870-7195 (C) 470-4375 (F)	Tolko – Forest Planner
Murray Wilson	762-3411	550-0387	Tolko – Woodland Manager BC Timber Sales
Provincial Enforcement			
Front Counter BC	1-844-676-8477	www.frontcounterbc.ca for abandoned or unauthorized building or other structures – for removal	
Randal Kohlhauser (MoFR)	250-490-2278	Randal.Kohlhauser@gov.bc.ca for Off-road vehicle damage in the South Okanagan region	
Kyle Beadman (Compliance and Enforcement Supervisor) MoFR	250- 260-4612	549-5485 (F)	Kyle.Beadman@gov.bc.ca Supervisor for Provincial enforcement actions

9.13 Media Contacts

Radio			
Bell Media, Penticton	250-494-0333 or 250-860-8600	grant.scott@bellmedia.ca bcnews@bellmedia.ca	Summerland
Stingray Radio Okanagan (New Country 100.7 and Kelowna Classic Rock K96.3)	250-493-6767	250-469-9963 / info@newcountry1007.ca	Penticton / Kelowna
CBC Radio, Kelowna	250-861-3781	250-861-6644 daybreakkelowna@cbc.ca or radiowest@cbc.ca	Okanagan Valley
Newspapers			
Penticton Herald	250-492-4002	sales@pentictonherald.ca	Tuesday to Saturday
Penticton Western News / Black Press Media	250-492-3636	editor@pentictonwesternnews.com warren.smith@pentictonwesternnews.com	Wednesday and Friday
Summerland Review	250-494-5406	250-494-5453 class@summerlandreview.com Distribution: Thursdays a.m.	Deadline: Monday by 9:00am
Castanet	250-860-5050	news@castanet.net	
Info News	250-488-3065	dwalton@infonews.ca news@infonews.ca	
Television			
Shaw TV Okanagan (Channel 11)	250-492-5940	250-979-6550	
Global Okanagan (CHBC News)	250-762-4535	viewercontactokanagan@globalnews.ca After Hours Only: okanagan@globalnews.ca or 250-861-8233	
Mail Out			
Summerland Post Office	250-494-6106	3,675 copies for unaddressed ad-mail	

9.14 Critical Customers List

Schools			
Giant's Head Elementary School	250-770-7671	250-770-7672 / giantshead@sd67.bc.ca	10503 Prairie Valley Road
School District # 67 Board Office	250-770-7700	250-770-7730 / sd67@sd67.bc.ca	425 Jermyn, Penticton
Summerland Middle School	250-770-7685	250-770-7684 / sms@sd67.bc.ca	13611 Kelly Avenue
Summerland Secondary School (SSS)	250-770-7650	250-770-7656 / sss@sd67.bc.ca	9518 Main Street
Trout Creek Elementary School	250-770-7665	troutcreek@sd67.bc.ca	5811 Nixon Road
Unisus International School	250-404-3232	beverley.vonzielonka@unisus.ca/info@unisus.ca	7808 Pierre Drive
South Okanagan Montessori School / Preschool	250-494-7266	250-494-7286	10317 Prairie Valley Road

Care Homes			
Dr. Andrew Pavilion Residential Care	250-404-8020	250-404-8024	12815 Atkinson Road
Parkdale Place Housing Society (PPHS)	250-494-1161	250-494-1137 / admin@parkdaleplace.ca	
- Angus Place			9302 Angus Street
- Parkdale Lodge			9700 Brown Street
- Parkdale Manor			11811 Sinclair Road
Prairie Valley Lodge	250-404-0203	250-404-0113 / prairievalleylodge@gmail.com	10312 Prairie Valley Road
Summerland Memorial Health Centre	250-404-8000	250-404-8005 Jim Popoff 250-488-1193 Fax: 250-404-8004	12815 Atkinson Road
Summerland Seniors Village	250-404-4400	250-404-4399 Warren Klett 250-486-3611	12803 Atkinson Road

Day Cares and Preschools			
Fox and Fairy Child Care	250-488-9233		12219 Saunders Crescent
Fun Factory Playcare	604-722-9540		10312 Dale Meadows Place
Jodi's Place	250-494-1787	please call to advise	2, 11310 Dunsdon Crescent
Little Bear Daycare			8611 Pierre Drive
Little Chicks Childcare Centre	250-494-1200	250-494-1241 / jenchick@hotmail.com	9105 Peach Orchard Road
Okanagan Boys & Girls Club	250-809-1109		9111 Peach Orchard Road
Summerland Baptist Church	250-494-3881	info@summerlandbaptist.ca	10318 Elliott Street
Trout Creek Kids Club	250-494-7998	lmboothe@shaw.ca	5811 Nixon Road (seasonal)

Restaurants / Caterers			
711 Store	250-494-7117	250-494-7768 / frank.wruth@7-11.com	14404 Rosedale Avenue
A&W Restaurant	250-494-0077	summerlandaw@mcmurraygroup.ca	14404 Rosedale Avenue
Beijing Restaurant	250-494-1238	darcywong69@hotmail.com	9, 7519 Prairie Valley Road
Breakfast Club	250-494-1872	ritayastremski@gmail.com	918 Stonor Street
Centex, Trout Creek	250-494-1499	centexsummerland@gmail.com	6011 Highway 97 South
Circle K	250-494-0900	tdhillon@gmail.com	14405 Rosedale Avenue
Country Café	250-494-8411	darla-bill@shaw.ca	101, 13228 Kelly Avenue
Dairy Queen	778-516-5009	dqsummerland@gmail.com	13, 7519 Prairie Valley Rd
Dirty Laundry	250-494-8815		7311 Fiske Street
Endless Water Inc.	250-485-2886	matt@okanagancrushpad.com	9303A Peach Orchard Road
Giants Head Brewing	250-404-1123	stoltzr@shaw.ca	13244 Victoria Road

Granny's Fruitstand and Bakery	250-494-7374	seasonal	13810 Highway 97 N
H2O To Go	250-490-7055	info@h2o4u.ca	7705 Prairie Valley Road
Happy House Restaurant	250-494-2521	jxusuccess@gmail.com	9912 Main Street
Husky	250-494-9810	hk3114@popmail.huskyenergy.ca	13802 Highway 97
Just Delicious Japanese Bistro	250-494-4692	justdeliciousbistro@gmail.com	1, 9914 Main Street
Just Hazel Café	250-486-7333	brilliantdelivery@gmail.com	13229 Victoria Road
Marketplace IGA	250-494-4376	250-494-8578 / iga165@igabc.com	7519 Prairie Valley Rod
Murray's Pizza	250-404-4241 / 250-486-2641	murraysoffice@yahoo.ca	1, 13604 Victoria Road N
Nesters Market	250-494-8338	250-494-7624 / dan_bigelow@loblaw.ca	13604 Victoria Road N
Ogopogo Meats and Sausages	778-516-5595	ogopogmeats@shaw.ca	102, 9504 Alder Street
Pacific Agri-Food Research Centre	250-494-7711	sandra.boel2@agr.gc.ca aaafc.bccsummaccountspayables- comptesfournisseurscbsummac@agr.gc.ca taras.pojasok@agr.gc.ca	4200 Hwy 97
Peacock's Perch	250-494-9727	perchpub@gmail.com	14218 Rosedale Avenue
Prima Pizza	250-494-1000	pick up at Municipal Hall	13204 Kelly Avenue
Royal Canadian Legion	250-494-2301 / 250-494-9781	rcl22@shaw.ca	14205 Rosedale Avenue
Second Home	250-494-7811	alison@secondhome-cafeandgrill.com	13229 Henry Avenue
Shaughnessy's Cove	778-622-3539		12817 Lakeshore Drive
Shell	250-494-8251		9507 Main Street
Subway	778-516-5678	sho7717@hotmail.com	18, 13604 Victoria Road
Sumac Ridge Golf & Country Club	250-494-3122	sumacridgegolfclub@shaw.ca	17333 Sumac Ridge Drive
Summerland Golf & Country Club	250-494-9554	250-494-3257	2405 Mountain Avenue

Summerland Indian Bistro & Pizza	250-494-0082		9915 Main Street
Summerland Yacht Club	250-494-8312	seasonal	13209 Lakeshore Drive
The Beanery & Bakery	250-494-1884	piet.aline@hotmail.com	13016 Victoria Road North
Tim Horton's	250-494-7729	southok.timmies@gmail.com	7710 Prairie Valley Road
True Grain Bread	250-494-4244	summerland@truegrain.ca	10108 Main Street
Yaki's Pizza & Subs	250-494-7600	yakispizza@gmail.com	9902 Main Street
Zia's Stonehouse Restaurant	250-494-1105	ferlizza@shaw.ca	14014 Rosedale Avenue

Municipal Buildings			
Summerland Chamber of Economic Development & Tourism (SCEDT)	250-494-2686	250-494-4039 visitors@summerlandchamber.com	15600 Hwy 97
Summerland Library	250-494-5591	summerland@orl.bc.ca	9525 Wharton Street
Summerland Museum	250-494-9395	info@summerlandmuseum.org	9521 Wharton Street
Parks & Recreation	250-494-0447	Please call if on a weekend or after hours	13205 Kelly Avenue

10.0 REVISIONS AND UPDATES

10.1 Introduction

This section provides a listing of the agencies and individuals that have a copy of the DOS Emergency Response Plan (ERP). This section also provides a historical listing of the Revisions and Updates since January of 2022.

A listing page of plan updates and recommendations is included in this section for incorporation into future plan updates.

10.2 ERP Distribution List

ERP Distribution List	
1	Director of Utilities
1	Manager of Water Utilities
2	Works Yard – Office and Library Copies
1	Water Treatment Plant
4	Water Division Work Trucks (all pick-ups)
1	Fire Department
1	Interior Health Authority – Health Officer
1	Interior Health Authority, Engineering Penticton
17	Total

Digital Copies are issued to Expert Advisors that work for DOS.

APPENDIX A - SYSTEM OVERVIEW AND KEY INFRASTRUCTURE MAPPING

Introduction

Appendix A provides an overview of the water system plus mapping of where the primary distribution system components are located and Inundation Mapping in the event of a dam breach.

System Overview

The District has three available water sources; Trout Creek, Eneas Creek, and groundwater. There is a fourth potential source in Okanagan Lake, but the infrastructure is not in place yet. Groundwater is considered a supplemental source. Eneas Creek is used only for irrigation. Only Trout Creek is used to provide water to the Summerland water treatment plant.

1. Trout Creek (92% of total flow) main system;
2. Eneas Creek (8% of flow) seasonal (summer only) irrigation supply to irrigation lands along Garnett Valley.
3. Well No. 3 Emergency well to supply water to flume (0.1% of flow) to Trout Creek flume only;
4. Well No. 5 Rodeo Grounds well to the Rodeo Grounds and the KVR (0.1 % of flow);

The entire system has well over 6,000 connections serving a population of approximately 12,000 people. There are approximately 2,900 acres of agricultural land within the District with water rights. There are another 1,700 acres of dry land within the District boundaries without water service.

Irrigation demand accounts for approximately 75% of the total use during high summer demands. Total system demands from all sources servicing domestic, irrigation and commercial use, can reach 112 ML/day (21,000,000 US gallons/day). Winter demands for the entire service area are in the range of 8 ML/d (1,500,000 US gallons/day).

Trout Creek Water Supply System

For the Summerland water system, water is drawn from Trout Creek, diverted through a 1,400m flume to Summerland Reservoir that provides balancing storage and settling of silts, and then into the headworks of the water treatment plant. Water is continuously monitored on-line for turbidity, pH, conductivity, and temperature. Chemical treatment of the water followed by filtration and disinfection with chlorination is provided.

Water Treatment Plant (WTP)

Intake - Water is drawn through the intake and water is treated through an Actiflo water treatment process followed by standard filtration and chlorination.

Clearwell - Water from the water treatment process is disinfected via gas chlorination process and then held in a 6,000 m³ clearwell. Chlorination is achieved utilizing a 2000 lb./day gas chlorinator. Four one ton chlorine containers are on line at all times with four containers on standby. Switchover takes place automatically. CT values for 3 log *Giardia* inactivation is achieved year-round.

After disinfection water enters the supply conduit which consists of a combination of 1200 and 1050mm diameter transmission main along Prairie Valley Road.

The primary distribution system consists of trunk mains ranging from 900mm diameter to 400mm diameter with the secondary distribution mains consisting of pipes of 350mm to 100mm. Pressure is controlled by a series of Pressure Reducing Stations and Pump Stations. Refer to the enclosed Figure and Table for system components and locations.

Eneas Creek Water Supply System

The Eneas Creek area is supplied with domestic water primarily from Trout Creek through a new Pump Station on Garnett Valley Road. Irrigation flow supplied to the area from Eneas Creek is chlorinated. Irrigation flow can be supplemented from the Trout Creek system through PRV No. 10 if required.

Key Infrastructure Components (KIC)- refer to Facilities Maps

Sources, WTP, Reservoirs			
I.D.	Location	Description	
S-1	Trout Creek Intake	Elevation 594 m (HWL)	
S-2	Garnett Lake	Elevation 625 m (HWL)	
WTP	Prairie Valley Road	Capacity 75 MLD	
CW	WTP Clearwell	6,043 m ³ , Twin-cell Concrete Reservoir	HWL 590.07 m
R-1	Deer Ridge Res.	423 m ³ , Concrete Reservoir.	HWL 726.0 m
R-2	Trout Creek Tank	430 m ³ , Concrete 2 cell reservoir	HWL 470.5 m
R-3	Lower Town Tank	190 m ³ , Concrete 2 cell reservoir	HWL 386.9 m

Pump Stations					
I.D.	Location	No. Hp	Flow and TDH	Pump Model	Voltage and rpm
PS-1	Dale Meadows Road	2	60 hp (48 L/s @ 54.5 m)	American Marsh	600V, 1780 rpm
PS-2	Prairie Valley Road	2	50 hp (41.3 L/s @ 54.8 m)	Aurora Model 411	208 / 460V, 1775 rpm
PS-2A	Morrow Avenue	2	25 hp (37.9 L/s @ 36.6 m)	Peerless Pump 4X4X8A PV	208V. One pump has VFD
PS-2B	Hermiston Drive	2	20 hp	Berkeley B1 – 1 ½ ZPL	208 V
PS-3	Gillard Avenue	2	10 hp (9.1 L/s @ 40.2 m)	Aurora Model 411	460V, 1740 rpm.
PS-4	Loomer Road	2	25 hp (15.1 L/s @ 79.2 m)	Aurora Model 411	460V, 3500 rpm. 1 – 5 hp winter pump.
PS-5	Simpson Road	2	75 hp (83.6 L/s @ 49.7 m)	Aurora Model 411	460V, 1775 rpm. 1 – winter pump
PS-6	Simpson Road	2	30 hp (56.5 L/s @ 32.3 m)	Aurora Model 411	460V, 1730 rpm. 1 – winter pump
PS-7	Cedar Avenue	3	5 hp (5.69 L/s @ 30.6 m)	Aurora 2Fire Pump (157.5 L/s @ 35.0 m TDH)	1 – 100 hp
PS-8	Garnett Valley	3	7.5 hp (5.67 L/s @ 62.8 m TDH)	Grundfos skid unit no fire pump	208 V
PS-9	Lakeshore	1	30 hp (30.3 L/s @ 54.9m TDH)	Oliver Pump	208V (decommissioned)
PS-10	Lower Hunters Hill	2	25 hp (16.1 L/s @ 73.3 m TDH)	Grundfos, Model CR 45-3-1	VFDs, 600 V
PS-11	Upper Hunters Hill	Proposed, 1	high flow pump	50 hp-Paco VS-50129	2 duty pumps – 10 hp Grundfos, CR 32-3-2

PRV Stations			
I.D.	Location	Main Bypass Valve Size / Type	Inlet – Outlet Pressure m (psi)
PRV-01	Garnett Valley Road	150mm Clayton / 38mm Clayton	88m (125 psi) / 63m (90 psi)
PRV-03	Trout Creek Tank	2-150mm Singers / 38mm Singer	75.6m (108 psi) / Tank Level
PRV-04	McDougal Road	100mm / 38mm Clayton	105m (150 psi) / 38m (54 psi)
PRV-05	Whitfield Road	150mm (reduced port) / 38mm Clayton	114m (162 psi) / 45.7m (65 psi)
PRV-06	Slater Road	150mm Clayton- Red. Port, 75x50mm	106m (150 psi) / 39m (55 psi)
PRV-07	Solly Road	200mm Clayton / 75mm Clayton	84.4m (120 psi) / 45.7m (65 psi)
PRV-08	Solly Road	200mm Clayton / 75mm Clayton	116m (165 psi) / 45.7m (65 psi)
PRV-09	Lower Town Tank	100mm Clayton	70.0m (100 psi) / Tank Level.
PRV-10	Prairie Valley Road	3-300mm Claytons + 100mm Clayton	98.5m (140 psi) / 66.3m (95 psi)
PRV-12	Hespeler Road	150mm Clayton / 50mm Clayton	91.4m (130 psi) / 49.2m (70 psi)
PRV-13	Clark Street	100mm Clayton / 50mm Clayton	91.4m (130 psi) / 54.1m (77 psi)
PRV-14	Harris Road	150mm Clayton / 50mm Clayton	82.3m (117 psi) / 45.7m (65 psi)
PRV-15	Hillborne Avenue	250mm Clayton / 100mm Clayton (Red-Port)	91.4m (130 psi) / 45.7m (65 psi)
PRV-16	Gartrell Road	150mm Clayton / 38mm Clayton	119.6m (170 psi) / 45.7m (65 psi)
PRV-17	Morgan Street	200mm Clayton / 63mm Clayton	112.6m (160 psi) / 63.3m (90 psi)
PRV-18	Lower Town	200mm Clayton - installation is part of Lakeshore condominium Project	

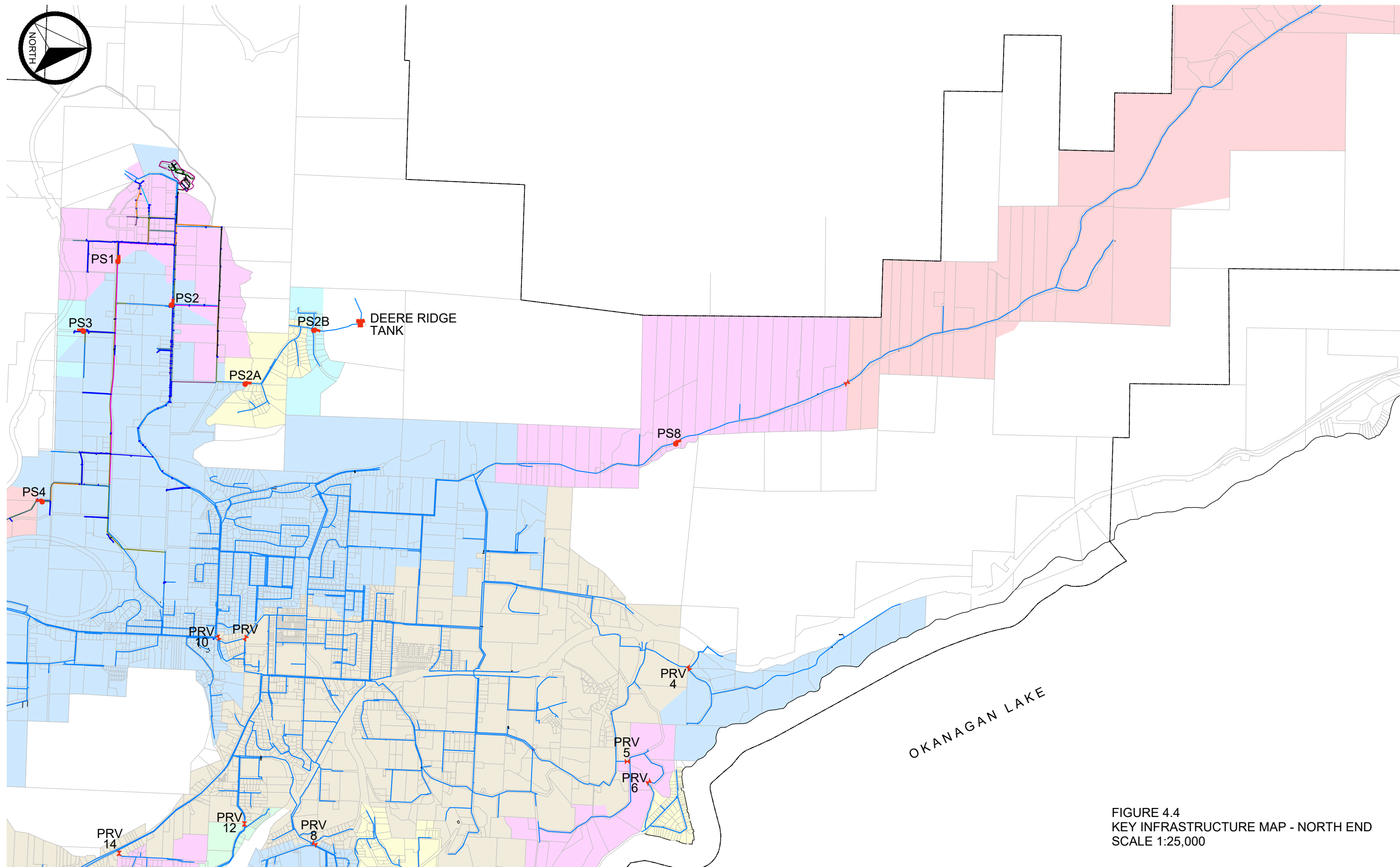
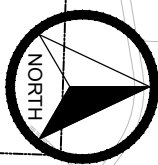


FIGURE 4.4
KEY INFRASTRUCTURE MAP - NORTH END
SCALE 1:25,000

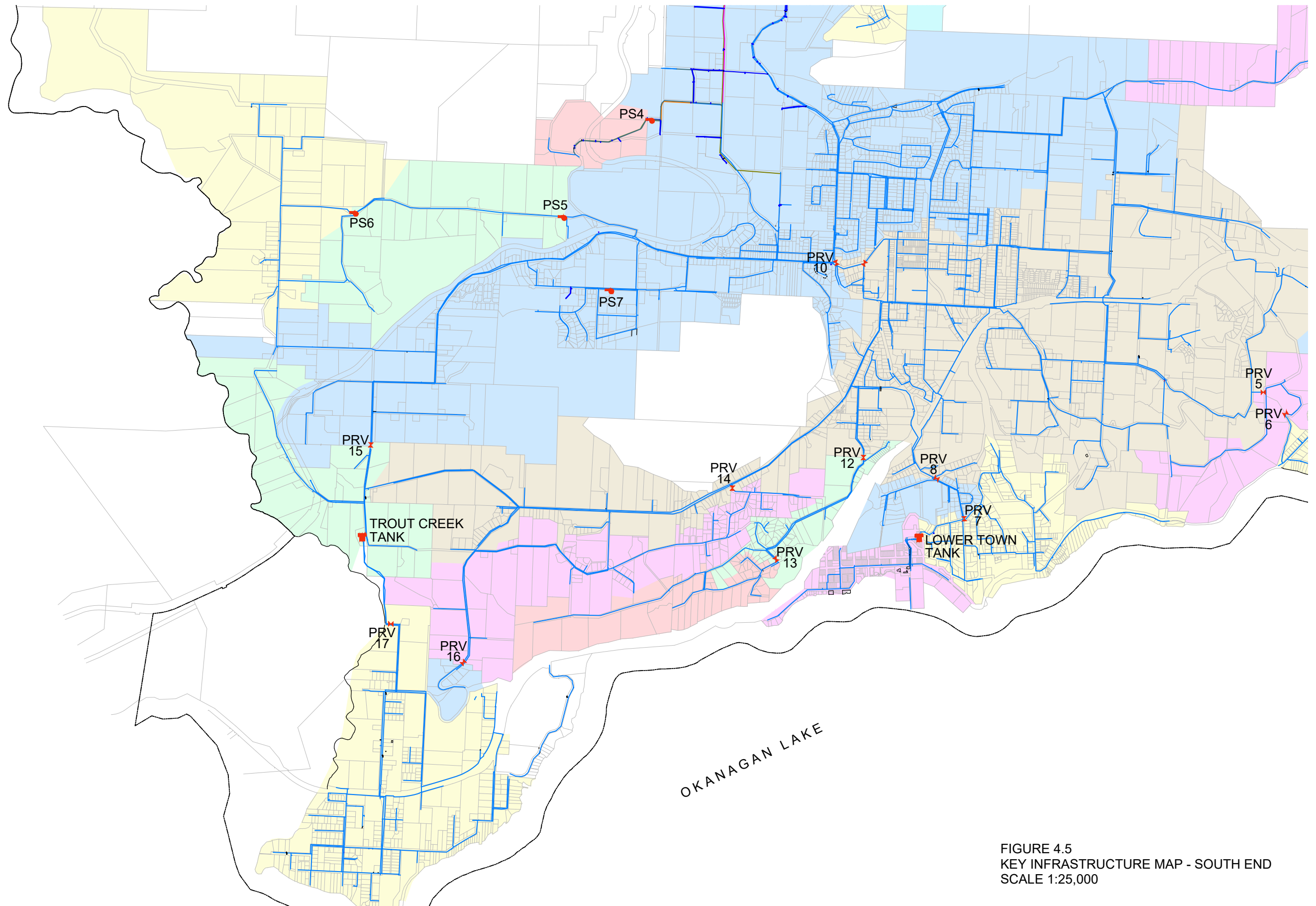
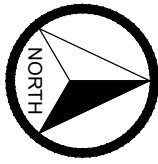


FIGURE 4.5
KEY INFRASTRUCTURE MAP - SOUTH END
SCALE 1:25,000

APPENDIX B – REDUCE CUSTOMER DEMAND

This appendix provides a step-by-step guide for reducing customer demand for various emergencies.

Step 1 – Community Wide Voluntary Usage Reduction

Using the Water Quality Notification Procedures (link below) communicate to all residents a request for reduced water use. Methods and forms are available in the Water Quality Notification Procedures including media releases, social media posts, email notifications, posting on electronic sign, etc.

<\\SRV-FS2\Master District\5200-5799 Engineering and Public Works\5210 E&PW - General\5210-01 Standard Documents\Policies and Procedures\Water>

Step 2 – Voluntary Usage Reduction by Highest Irrigation Users

- Utility Manager and/or Water Operators to contact Voluntary Highest Irrigations Users (VHIC) list and request irrigation timing adjustments or irrigation turn offs.

VHIC List: This list is to be updated annually by Water Utility staff. Metering data is collected for the 20 highest use irrigators. Irrigators are given the choice to be on the voluntary list to help during emergencies. Contact information is updated annually, and each customer agrees to best method of communication (email, phone, text, physical door knock).

Step 3 – Mandatory Highest Irrigation Users Turn-Off

- Utility Manager to contact Works and Infrastructure (W&I) On-Call number and notify of emergency and the level of urgency for irrigation turnoffs. W&I admin staff to also be called in.
- Provide W&I On-Call and W&I admin staff with High Irrigation Users (MHIC) list.
- W&I admin staff begin communicating with customers on the MHIC List and answer inquiries. Internal notification via email to all stakeholders to be sent.
- W&I On-Call staff to systematically turn off customers on MHIC List.
 - Place “turned-off” tag on blue box.
 - Physically record each customer turned off on MHIC List and the time of turn-off.
- W&I On-Call to provide copy of MHIC List record to Water Distribution System Operator.

MHIC List: This list is to be updated annually by Water Utility staff. Metering data is collected for the 15 highest use irrigators. Those customers are contacted and informed they are on the list and the possible circumstances that the HIC list may be used. Contact information is updated annually, and each customer agrees to best method of communication (email, phone, text, physical door knock).