

IA 5 – Dam Failure (Clackamas River)

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Tasked Agencies	
Primary County Agency	Sheriff's Office (CCSO) Clackamas County Disaster Management (CCDM)
Supporting County Agencies	Clackamas County Fire Defense Board (FDB) Health, Housing, and Human Services (H3S) Department of Transportation and Development (DTD)
Community Partners	Estacada Police Department Oregon City Police Department Estacada Rural Fire Protection District Clackamas Fire District #1 (CCFD#1) Gladstone Fire Department American Medical Response, Incorporated Cities: Estacada, Oregon City, Gladstone, West Linn, Lake Oswego, Milwaukie, Portland Utility Providers
State Agency	Oregon Office of Emergency Management (OEM)
Federal Agency	United States Forest Service (USFS)

1 Introduction

1.1 Purpose

The purpose of this annex is to establish procedures for warning, evacuation and sheltering of the affected population¹ who would be endangered in the event of the failure of one of the Portland General Electric Company (PGE) dams along the Clackamas River. This annex provides guidance for all stakeholders in the affected area. It also addresses similar emergency response actions which might be required in the event of flooding caused by emergency releases from one of the PGE dams along the Clackamas River.

1.2 Scope

There are multiple PGE dams and projects along the Clackamas River covered in PGE's Emergency Action Plans. Failure of dams will occur in different manners and impact time will vary. Maps have been created to reflect both a Sunny Day (best case) and Probable Maximum Flood (worst case) scenario.

For the purpose of this annex, these have been divided into three main sections which impact residents, business and recreational areas along the Clackamas River.

- River Mill
- North Fork (including the Faraday Diversion Dam)

¹ For the purpose of this annex, the "affected population" is defined as: "Any resident and/or business in need of evacuation that is located within or adjacent to the inundation zone, including anyone who could be at a park or public access point below the impacted dam."

- Timothy Lake (part of the Oak Grove Development Project)

1.3 Policies and Agreements

The designated On-Scene Incident Command (Leading Fire or Law Agency) or Emergency Operations Center (EOC) Command both have authority to order evacuation for the affected population should one of the dams along the Clackamas River fail for any reason.

- Oregon Revised Statutes (ORS) 401.309 gives counties and cities the authority to evacuate persons from a designated emergency area.
- ORS 401.309 authorizes a county or city to order mandatory evacuation only after an Emergency Declaration has been declared and only when necessary for the public safety
- Clackamas County Code, Emergency Regulations, 6.03.060 authorizes the Board of County Commissioners (BCC) to order and enforce evacuation as an emergency measure.
- H.R. 3858 [109th]: Pets Evacuation and Transportation Standards Act of 2006 requires state and local to include evacuation, transport, and care of household pets and service animals in their disaster or emergency plan.

2007 HB 2371 requires operators of care facilities to develop plans and train employees to evacuate clients/residents to a place of safety when conditions of imminent danger require relocation.

2 Situation and Assumptions

2.1 Situation

PGE maintains multiple dams along the Clackamas River. There are three main projects as outlined in Section 1.2, above; the situation is summarized below.

- The River Mill Dam is located on the Clackamas River just outside of the City of Estacada. The River Mill Dam was constructed in 1911 and holds approximately 1,200 acre feet of water within its reservoir. The River Mill Dam is the furthest downstream dam on the river.
- The North Fork Dam and Faraday Diversion Dams are located on the Clackamas River just 4.7 and 6.4 miles, respectively, southeast of the City of Estacada. A failure on the North Fork Dam will cause the failure of the River Mill Dam. The North Fork Dam was completed in 1958 and creates a reservoir of approximately 6,300 acre feet of water used primarily for daily regulation. The North Fork Dam has three spill gates and very little storage or hold back capabilities. The Faraday Diversion Dam was constructed in 1965 and holds an estimated 100 to 200 acre feet of water used primarily as a spillway for the North Fork Dam. Due to the interdependencies of both the North Fork and Faraday Dams, the consequences of failure or large release for the North Fork are more severe than those of Faraday.
- The Timothy Lake Dam is part of a larger Oak Grove Development Project, which also includes Harriet and Frog Lake Dams. The Timothy Lake Dam is located approximately 28 miles southeast of Estacada. The Timothy Lake Dam was completed in 1958 and has a reservoir of approximately 69,000 acre feet. Harriet and Frog Lake Dams serve as catchments for Timothy Lake. Due to the interdependencies of all three dams, the consequences of failure or large release from Timothy Lake are more severe than those of Harriet or Frog Lake.
- Recent studies indicate that these dams are in an area that could be affected by a Cascadia Subduction Zone earthquake event. For further information on the earthquake hazard, see the Clackamas County Hazard Vulnerability Analysis.

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- Were either of the PGE dams along the Clackamas River to suffer a catastrophic failure, human lives and property in the flood pathway would be endangered. This danger would be relative to the amount of water stored behind the dam and released at the time of the failure.
- PGE has developed inundation area maps showing the extent of flooding and expected flood wave arrival times following a failure of the dam to help inform planning efforts. For the purposes of this Annex, Clackamas County Geographic Information Systems (GIS) has developed detailed maps that also include structure locations (private, business and critical infrastructure), street names, river miles, egress/ingress routes, assembly areas and other pertinent information identified by stakeholders. Each scenario has a series of their own maps, which can be viewed in the Clackamas County EOC library, “eocshare” drive and via stakeholder agencies.
- The inundation areas are estimates only and actual time and water depths will vary greatly depending on the time of year, the depth of water behind the dam at the time of dam failure, the Clackamas River depth, and debris and other obstructions in the river.
- The inundation area includes unincorporated areas of Clackamas County, multiple parks and recreational areas as well the cities in of Estacada, Oregon City, Gladstone, Milwaukie, West Linn, Lake Oswego and Portland.
- Many people live in the identified catastrophic failure inundation area. Additionally, there are several popular recreational areas operating year round and seasonally including campgrounds, recreational vehicle parks, boating and day use areas.
- PGE constructed and retains ownership of all dams along the Clackamas River.
- PGE monitors and controls the amount of water stored behind the dam according to Federal Energy Regulatory Commission regulations. These regulations provide safety for those below the dam and maximize water storage capacity for use throughout the year.
- The Clackamas County Sheriff’s Office (CCSO) has jurisdiction over the Clackamas River and all waterways in the county which include elements of the Water Rescue Consortium.
- Estacada Rural Fire Protection District #69 (ERFPD) and Clackamas Fire District #1 have primary response for residents and properties within the boundaries of their jurisdictions.

2.2 Failure Conditions

Dam failure conditions, based on the 2016 PGE Emergency Action Plan, are as follows:

- Condition 1/C/High Flows - Non-Failure Emergency: No Danger of Dam Failure (example such as a minor earthquake or high reservoir levels)
- Condition 2/B/Warning – Potential Failure situation is developing and could lead to a dam failure (example is a major earthquake, flood, piping of material out of the dam)
- Condition 3/A/Evacuation – Imminent or Actual Dam Failure has occurred

2.3 Assumptions

Certain conditions might develop at any of these dams that would require the warning and evacuation of the “affected population” —specifically, people located within the dam failure inundation area downstream from the dam.

- Numerous circumstances can impact the ability to provide adequate notification of an emergency or failure.
 - Not all dam failure scenarios allow ample warning, e.g., a Cascadia Subduction Zone earthquake, or a human caused/adversarial attack may cause the dam to fail rapidly, before authorities have time to issue a warning.
 - Proximity to the dam will affect the timeliness of warnings in relation to the timing of impacts. Residents or recreationists within close proximity to any of these dams might

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- have only minutes to get to high ground, while those further downstream may have several hours based on their distance from the dam and the anticipated speed of the flood.
- If a dam failure is caused by a major earthquake, damage to the public telephone system, both landline and cellular, and the Internet may hinder efforts to warn those in the path of the flood.
 - Damage to bridges and roads, as well as other issues created by a major earthquake could also complicate efforts to notify and/or evacuate the public.
 - A significant earthquake may cause such damage to the entire county that local response resources will be overwhelmed leaving very little response capability to deal with a potential dam failure.
- Sufficient local resources will be available to conduct the basic operations outlined in this annex. This assumption may not be valid if a dam emergency is associated with a significant earthquake.
 - Once an evacuation order is given, many evacuees will seek shelter with relatives or friends, or arrange other accommodations. Others will need emergency shelter provided for them.
 - Most evacuees will be able to self-evacuate out of the inundation area, while others will need evacuation assistance.
 - Evacuation assistance will be required by some pet and livestock owners.
 - Most evacuations are limited to a defined geographic area and coordinated by law enforcement and/or fire responders at the scene.
 - Most instances that would require a medium-to-large scale evacuation will have some warning and therefore some pre-event activities accomplished which may include establishing an Evacuation Planning Team, activating the Joint Information Center (JIC), and using pre-developed evacuation plans for a limited number of high or frequent at-risk areas.
 - The County has primary responsibility to plan and conduct evacuations that occur in unincorporated areas.
 - Cities have primary responsibility to provide support and assistance for localized evacuations occurring within their municipal boundary.
 - If requested, Clackamas County Disaster Management (CCDM)/EOC Command can assist On-Scene Command and/or cities with evacuation planning and coordination.
 - Evacuations present special challenges because of the time limitations that may exist for planning and implementation; significant interdependencies among the affected population; transportation difficulties; special needs considerations and other variables.
 - On-scene Command decides whether evacuation is the most appropriate protective measure, and ensures appropriate implementing actions are taken.
 - CCDM will activate the EOC as needed to support planning and coordination for a major evacuation involving large numbers of people and/or a large geographic area.
 - Evacuation operations include:
 - Safe movement of people and pets/service animals from the at-risk area;
 - Shelter and mass care for evacuees;
 - Security of evacuated areas; and
 - Return of evacuees when it is safe to do so.
 - If given advance warning, residents will frequently leave the at-risk area (self-evacuate) before told to do so; other residents may refuse to evacuate when instructed to do so.
 - The County or any city may order mandatory evacuation if it is authorized as an emergency measure by an Emergency Declaration.
 - Residents may refuse or delay evacuation unless they can take their pets with them.
 - On-Scene Command may need additional resources for safe evacuation, transport and sheltering people with disabilities and access and functional needs (DAFN) (e.g., children; the elderly;

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- individuals with physical impairments, disabilities or other medical conditions; homeless or transient populations; and individuals with limited English proficiency).
- All participating agencies will need to closely coordinate and cooperate during an evacuation that crosses jurisdictional boundaries to ensure evacuee safety and welfare are not compromised.

3 Roles and Responsibilities of Tasked Agencies

All agencies tasked under this annex will develop and maintain written internal operating plans and implementing procedures, and will train employees in their use.

3.1 On-Scene Incident Command

Incident Command may be fire or law enforcement with jurisdiction over the impacted area

- Coordinate evacuation planning with County EOC and/or city.
- Designate boundaries of evacuation area and implement evacuation plan.
- Request County/city authority if evacuation is mandatory.
- Designate evacuee destination(s).
- Establish and operate evacuation routes.
- Develop evacuation instructions for residents.
- Develop and implement evacuation notification plan.
- Ensure evacuation plans include DAFN populations, as well as pets and service animals.
- Ensure evacuee safety and welfare (unless responsibility has been transferred)
- Secure the evacuated area and establish criteria/procedures for re-entry
- Get Oregon Emergency Response System (OERS) number

3.2 Law Enforcement Agencies

- Primary responsibility for planning, coordinating and conducting evacuations
- Coordinate evacuation route planning and related logistical and operational support
- Direct and coordinate evacuation of jail and other detention facilities
- Provide traffic and crowd control
- Secure evacuated area and key facilities
- Stage and brief incoming personnel who have been assigned to conduct evacuation including mutual aid resources
- Assist, as needed and if time and resources allow evacuation of DAFN populations
- Provide security for shelter and mass care operations as resources allow
- Conduct water rescue operations

3.3 Fire Agencies

- Primary responsibility for coordinating and conducting rescue operations in a hazardous environment
- Assist law enforcement in planning and conducting evacuation
- Assist with evacuations of DAFN populations requiring transportation
- Conduct decontamination operations if required

3.4 EOC Command

- Identify On-Scene Incident Commander for the evacuation

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- Coordinate planning and support for evacuations that occur in unincorporated areas
- Provide planning support and coordinate activities for evacuations affecting multiple jurisdictions within the County or with neighboring jurisdictions
- Respond to requests for evacuation assistance from cities or On-Scene Command
- Ensure the state the BCC and the Oregon Office of Emergency Management (OEM) is notified of the emergency, so it can make proper notifications and keep officials apprised of the situation
- Get OERS number if not already not already obtained by Incident Command
- Coordinate resource requests and Emergency Public Information activities
- Coordinate with the Department of Health, Housing, and Human Services (H3S) and the Red Cross to provide and manage shelter and mass care operations
- Coordinate with Dog Services and EOC Operations to ensure that pet shelter is established
- Answer questions pertaining to evacuation and other subjects through activation of the County Public Inquiry Center.
- Activate hazard evacuation pre-planning team if time permits
- Initiate re-entry into evacuated areas
- After the emergency has ended, coordinate the following activities:
 - Advise the public and the media of the termination of the evacuation directive and the lifting of the security perimeter (as appropriate)
 - Provide the information necessary to facilitate an orderly return to the evacuated area including any special constraints, conditions, or health and safety concerns for return

3.5 American Medical Response

- Primary responsibility for providing emergency medical services (EMS) and transportation for medically fragile evacuees.
- Provide EMS at evacuation staging areas and along evacuation routes
- Assist law enforcement and fire in planning and conducting evacuation

3.6 United States Forest Service

- Primary responsibility for planning, coordinating and conducting evacuations.

3.7 Clackamas County 9-1-1 Communications

- Receive initial notification from PGE.
- Make emergency notifications as pre-identified in the 'INFO DAM' procedure in CAD.
- Activate any other alert and warning method in coordination with CCDM and the Incident Command.

3.8 Disaster Management

- Receive notifications from Clackamas County Communications (CCOM).
- Notify stakeholders of situation and establish and sustain information pathway.
- Assist On-Scene Command.
- Activate the Clackamas County EOC.
- With CCOM coordination make Clackamas County Public Alert System notifications as needed via the Everbridge System.
- Declare an emergency.
- Consult with BCC or County Counsel on other emergency actions.
- Request support from the State.

3.9 Fire Defense Board

- Staff EOC.
- Coordinate countywide fire and rescue response.
- Request mutual aid.
- Potentially invoke Mobilization Act.

3.10 Cities

- Provide support for evacuations within municipal boundary (e.g., law enforcement, public works, shelter and mass care services).
- Coordinate evacuation activities and assistance requests with the County EOC.

3.11 Health, Housing and Human Services

- Provide an H3S liaison to the EOC to coordinate shelter and mass care services.
- Provide interim assistance to evacuees at gathering points and evacuation routes.
- Coordinate transfer of responsibility for evacuee safety and welfare with On-Scene Command, cities, service agencies, shelter operators.
- Work with Red Cross Liaison for sheltering and mass care needs.

3.12 Transportation and Development/Public Works

- Coordinate evacuation routes, detour options and enroute resource requirements with stakeholder transportation agencies.
- Assist law enforcement to establish at-risk area perimeter.
- Provide signs, barricades, personnel and equipment along evacuation routes and at designated replenishment stations.
- During any warning phase, pre-position resources near bridges to monitor and be ready to close them immediately should signs of damage or failure be exhibited.
- Maintain clear evacuation routes by removing debris and other obstructions.
- (Dog Services) Coordinate with EOC Operations to ensure pet sheltering needs are addressed.
- Assist in finding transportation for evacuees with pets or service animals.
- Conduct post-incident road and bridge inspections.
- Assist with evacuating livestock.

3.13 Utility Providers

- Secure own assets and protect staff.
- Establish and maintain communication with EOC.
- Coordinate evacuation routes, detour options and enroute resource requirements with stakeholder transportation agencies.

4 Concept of Operations

4.1 General

This annex is designed to follow the basic protocols set forth in the Emergency Operations Plan (EOP). The EOP describes general roles and responsibilities in response to a major emergency or disaster that would include evacuations. It also describes how resources are coordinated within the County.

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Dam Failure response and evacuation actions include:

- Community-wide warning and public instructions such as notifying all affected populations of the threat and the need to evacuate.
- Safe movement and control of individuals, pets and service animals out of the threatened area, including evacuation routes, traffic control and evacuee instructions.
- Transportation support for DAFN populations requiring assistance (e.g., people with disabilities, elderly, persons without vehicles).
- Shelter and mass care for evacuees, pets, livestock and service animals.
- Security of the evacuated area, including access control.
- Safe and orderly re-entry to evacuees when it is safe to do so.
- Activation of the EOC to coordinate resource management, information management and policy coordination.

4.2 Alert and Warning

Communicating risks to the public in a clear, consistent (i.e., non-conflicting) and timely manner is essential for orderly evacuations. The operation of the JIC in the EOC will be activated at the earliest opportunity to coordinate and ensure messaging is effective to support orderly evacuations.

Efforts should be made to prioritize notifications to those who are likely to be inundated by the flood waves first. Therefore, three separate evacuation/notification zones have been identified. Pre-scripted messages for the affected populations and stakeholders have been loaded into the Everbridge System for timely notification of each zone. Pre-scripted messages include specific information about the risk and protective actions that should be taken.

A team of stakeholders has identified gaps in the current notification methods and capabilities. The group of stakeholders is actively exploring additional warning methods in order to address these gaps.

4.2.1 Public Alert and Warning

If a dam failure should occur, PGE will notify CCOM using their Emergency Action Plan procedures. CCOM will conduct notification as directed in the INFO DAM instructions in CAD. There are three situations where Public Alert notifications are made:

- Condition 3/A: Imminent or Has Occurred Dam Failure results in an automatic Public Alert notification.
- Condition 2/B: Potential Failure may result in notification and will be coordinated through the Primary Response Agencies.
- High Flows Emergency: Notification may be made to affected population and will be coordinated through the Primary Response Agencies

4.2.2 Stakeholder Alert and Warning

Upon receiving notification of a dam failure from CCOM, the CCDM Duty Officer will notify stakeholders should a dam failure occur. Message information will include:

- Type of failure condition and affected dam
- Time notification was received
- Contact information for CCDM and follow on instructions

4.2.3 Message Responsibility

- CCOM notifies CCDM for all levels of dam failure conditions. The EOC will be activated as needed to support evacuation planning, coordination and operations
- On-Scene Command is responsible for conducting Alert and Warning notification above and beyond automatic Public Alert notification
- The EOC JIC has primary responsibility for developing and coordinating the evacuation Alert and Warning message

4.2.4 Notification Methods

The Everbridge/Public Alert System can directly notify households with landline and registered cell phones in the designated evacuation area using a “Reverse 9-1-1 type” capability.

- Emergency Alert System (EAS)
- Social media
- County web site
- Mobile public address systems such as police vehicles and fire apparatus
- Radio and television
- Door-to-door notification
- The Public Inquiry Center can be used to disseminate alerts and warnings to citizens who call in requesting evacuation information
- Alert and warning for some populations may require special considerations

4.2.5 Alert and Warning Content (if needed beyond initial Public Alert notification)

- Specific instructions about what to do (e.g., take 72 hours of medications with you; lock your home; bring household pets and service animals; take food, water and emergency kits).
- Clear directions and procedures for evacuation routes.
- Public transportation options and locations.
- Specific information about the potential consequences of not evacuating.

4.3 Initial Response Actions

The following describes actions to be considered for all response levels depending on the situation. Since the inundation zone crosses jurisdictional boundaries, between fire districts and County and cities, the County will activate its EOC and coordinate the countywide response. Local jurisdictions within the flood inundation zone need to be ready to protect their residents and visitors through emergency notification, establishing command structures, and organizing and conducting evacuations. An Incident Commander at any level has decision-making authority to take action described in this annex as the responsibility of an Incident Commander. When multiple Incident Commanders are operating concurrently, each should coordinate those actions with the other Incident Commanders.

4.3.1 Establish Command

- Due to the length of the Clackamas River and the extent of the impact area from a catastrophic failure of any of the PGE dams, the inundation area has been divided into three emergency evacuation zones. The zones are defined as specific segments of dam failure flood inundation areas downstream from dam failure that:
 - Define the potential area of impact

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- Allow response personnel to prioritize evacuation activities based on the population at risk in proximity to the dam in terms of distance downstream and in flood wave arrival times.
- The three emergency evacuation/planning zones are designated as:
 - **Primary/Immediate (0 to 30 minutes before first wave impact).**

This zone is identified as the ERFPD boundary. This zone ends at the Feldheimer Floating Launch on the west side and the Eagle Creek Golf Course on the east side of the river. This zone includes all of the City of Estacada and the following recreational areas:

 - Milo McIver State Park
 - Promontory Park (for Timothy Lake Dam only)
 - Timber Park
 - **Secondary (30 to 60 minutes before first wave impact).**

This zone starts at the Clackamas Fire District #1 boundary where it meets the ERFPD boundary and ends at the Carver Bridge. This zone includes unincorporated Clackamas County and the following recreational areas:

 - Bonnie Lure State Recreation Area
 - Barton Park
 - Clackamas River Scenic Waterway
 - **Tertiary (60+ minutes before first wave impact).**

This boundary starts west of the Carver Bridge and continues through the remainder of the Clackamas River within Clackamas County. This zone includes inundation areas on the Clackamas River as well as the Willamette River. This zone includes much of the following incorporated Clackamas County cities and recreational areas:

 - Oregon City
 - West Linn
 - Lake Oswego
 - Gladstone
 - Milwaukie
 - Sa-Hah-Lee Golf Course
 - Riverside County Park
 - Clackamette Park
 - Maddax Woods
 - Mary S. Young Park
 - Cedar Island Park and Boat Ramp
 - Foothills Park

4.4 Evacuation

On-Scene Command will assess the need for public and special needs transportation and request resources through the EOC staff or directly with public transit agencies. Some of the major roads will be impacted; therefore, emergency egress and ingress routes as well as meeting points have been pre-identified in the associated maps.

4.4.1 Evacuation Levels

Evacuation response should be designated according to the following levels and based on consultation with OEM.

- **Evacuation Level 1** – A Level 1 Evacuation means “Be Ready” for potential evacuation. The affected population should be aware of the danger that exists in their area, and

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monitor local media outlets for information. The affected population with special needs or those with pets or livestock should make preparations and begin making precautionary movement.

- **Evacuation Level 2** – A Level 2 Evacuation means “Be Set” to evacuate. The affected population must be prepared to leave at a moment’s notice. This level indicates a significant danger to the area, and the affected population should either be told to voluntarily relocate to a shelter or with family/friends outside the affected area, or if choosing to remain, to be ready at a moment’s notice. The affected population may have time to gather necessary items, but doing so at their own risk.
- **Evacuation Level 3** – A Level 3 Evacuation means “Go” Evacuate NOW. Danger to the area is current or imminent, and people should leave immediately. The affected population should not delay leaving to gather belongings or make efforts to protect their home.
- If a Level 1, 2 or 3 evacuation is implemented, resources should be deployed first to areas with the highest and earliest risk. Even in the unlikely event of a sudden catastrophic failure of the dam, initial flood wave waters will take several hours to travel to the furthest point along the Clackamas and into the Willamette River, so focusing resources on those areas that will be inundated early will provide the biggest benefit.
- Direct the affected population to assembly areas. When considering sites for assembly areas, the following criteria should be considered: sites that have sufficient parking, access, and/or open space such as schools, churches, the county fairgrounds, or parks.
- The evacuation of some populations may require special coordination and logistical support.
- DAFN populations within the county which may need assistance during evacuations include:
 - Senior citizens
 - People with functional needs
 - Students in public and private schools
 - People with pets
 - Transient and people experiencing homelessness
- While most facilities with DAFN populations, including schools, are required to have evacuation plans in place, most do not, or are unable to carry them out without assistance from first responders. Public safety officials may be required to facilitate or initiate the evacuation internal to the facility.

4.4.2 Evacuation Response

Evacuation takes time and may be complicated by available resources and the condition of evacuation routes due to time of day, weather, type of event triggering the evacuation (e.g., earthquake), and rising flood waters. Even in a Level I incident, the potential for escalation to Level II or III requires that planning begin immediately for a possible mandatory evacuation.

An evacuation will require many resources and support from multiple agencies to achieve. Consider that:

- Evacuation may be necessary even if individuals don’t live in the inundation zone as ingress/egress from their property may be blocked by flood waters or damaged roads and bridges.
- Transportation resources and other physical assistance may be needed.

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- Assembly areas may be needed to direct people to prior to the establishment of shelter sites.
- Shelters may need to be established to house and feed evacuees.
- Animals may need to be evacuated.
- Clear and concise information will need to be provided to the public about:
 - Who needs to evacuate
 - Evacuation timeframe
 - What routes to use
 - Location of assembly areas and/or shelters
 - The need to avoid high water
- Potential evacuation routes, their capacities, and vulnerability to the hazards that exist at the time of the dam failure have been pre-identified on the associated maps, but additional (if they exist) may need to be identified during the time of evacuation.
- People who are located in the inundation area at the time of an incident should be directed to go to higher ground.
- Traffic may need to be re-routed to minimize congestion as people evacuate affected portions of Clackamas County.
- Roads may need to be blocked at restricted area control points to keep people from intentionally, or inadvertently, entering the inundation zone.
- Similarly, if resources allow, during any warning phase, resources should be pre-positioned near bridges to be ready to close them immediately should signs of damage or failure be exhibited.
- Rail traffic may need to be temporarily suspended.
- When determining the "time needed for evacuation" consider these time factors:
 - Time from receipt of initial notification of a dam failure to the decision to evacuate
 - Time needed to alert and instruct the public
 - Time needed to mobilize the population once warned
 - Time required for evacuees to leave the hazard area using the designated evacuation routes with consideration for overcoming obstacles related to earthquake losses, damage, and debris
- Weather Conditions
 - If ambient or forecasted conditions present a hazard (e.g., extreme cold or heat, ice, rain) evacuees may need assistance, including:
 - Shelter from the elements
 - Evacuation routes cleared of obstacles/hazards (e.g., debris, snow, ice)

4.4.3 Evacuation Re-Entry

Inundation from a dam failure will be short term, but impacts can result in prolonged hazards from the flood, damage to infrastructure and hazardous materials releases. The following considerations should be addressed prior to allowing re-entry:

- Conduct hazard/damage assessments to determine if additional or new hazards exist prior to allowing evacuees to return. Isolate, mark, or mitigate the hazards as appropriate. This assessment should include inspection of any water, gas, and sanitation lines.
- Provide traffic control and access control (i.e., returning evacuees only) for the return.
- Initiate return of evacuees when and where possible.

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- Re-occupation of a previously flooded area may require the same consideration, coordination, and control undertaken in the original evacuation.
- Unified Command will make the re-entry decision after the flood waters have subsided and the evacuated area has been inspected by fire, public works, law enforcement personnel and/or utility work crews for safety.
- Determine if return will be temporary (i.e., long enough to check on damages and get additional personal items, or just during daylight hours) or full return.
- Conduct inspections of buildings that were flooded and tag according to fitness for occupancy.
- Additional re-entry considerations include:
 - Determine the number of persons in shelters who will have to be transported back to their homes.
 - If homes have been damaged, determine the interim and long-term housing requirements.
 - Inform the public of proper re-entry actions, particularly cautions they should take with regard to reactivating utilities, use of appliances that came in contact with water, and any other health related issues.

4.5 Search and Rescue

When considering the need for evacuation first priorities should be placed on those areas closest to the dam. The inundation maps give a rough timeline for water to advance after a dam failure. While evacuation is one option to consider, there are certain limitations that may pose greater problems:

The CCSO is responsible search and rescue on the Clackamas River. CCSO Search and Rescue will be designated this task.

The Water Rescue Team is designated specifically with this task.

4.6 Shelter and Mass Care

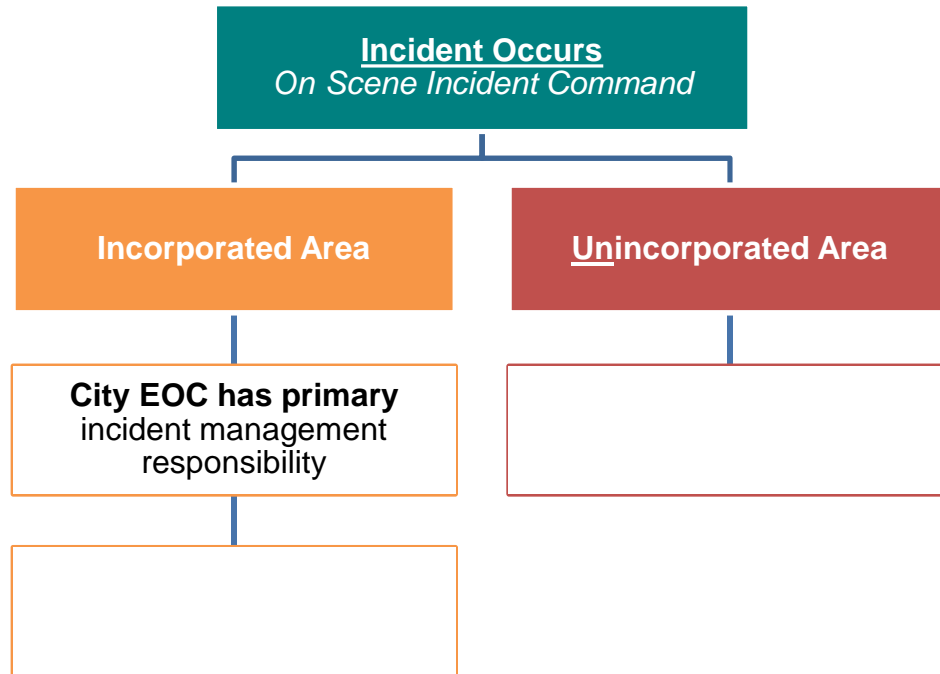
A dam failure along the Clackamas River will cause temporary flooding. This will impact most residents for several hours to one day. For those residents who are severely impacted resulting in damage or loss of housing, the EOC will coordinate temporary sheltering.

- The Red Cross will assign a liaison to coordinate shelter and mass care requirements along with H3S.
- There is a County list of potential shelter facilities with American Red Cross agreements.
- The American Red Cross coordinates with the County EOC to select most appropriate sites and then follows up with their site assessment and shelter operations protocols.
- On Scene Command coordinates transfer of responsibility for evacuee safety and welfare to the American Red Cross or local jurisdiction once evacuees are safely removed from at-risk area.
- Pet shelters are set up and run by the Operations Section of the EOC. Every attempt will be made to shelter pets in areas adjacent or in close proximity to their owners.
- H3S are tasked with several functions including mass care and services for the affected population.

5 Emergency Coordination

5.1 General

The County has jurisdictional authority and primary incident management responsibility for incidents that occur in the unincorporated area and for health emergencies countywide. If the incident impacts both the unincorporated and an incorporated area, the county and the impacted city share responsibility. The county will respond to city requests for assistance, manage critical resources, and coordinate with outside agencies, adjoining counties, and OEM.



5.2 Cities

If an incident occurs in an incorporated area, the city in which it occurs has jurisdictional authority and primary incident management responsibility. Local jurisdictions will activate their own resources and EOCs for an evacuation of their communities based on the failure condition. In most cases, evacuations will require the activation of the County EOC to support the movement of evacuees due to limited local resources.

If two or more cities are impacted, the cities share responsibility for incident management and the safety and well-being of their citizens.

Cities may request county assistance through a mutual aid agreement or by submitting an Emergency Declaration.

5.3 Special Districts

Special Districts that are impacted will activate their own resources and EOCs for response, protective actions and evacuation of their facilities based on the failure condition. Special districts may request county assistance through a mutual aid agreement.

5.4 County

EOC Command along with On Scene Command exercises overall direction and control of the evacuation process.

5.5 Regional

There are many regional agreements that could provide emergency resources that would include equipment, supplies and personnel. The EOC Library has a list agreements with the terms and conditions sited.

5.6 State and Federal Assistance

The Oregon State Police and the U.S. Forest Service may help in the evacuation of threatened areas and the Governor may also provide National Guard assistance.

If an evacuation requires resources beyond those available to the county (including mutual aid resources), EOC Command will recommend an Emergency Declaration be enacted to request state assistance.

The following federal and state entities are notified and updated directly by PGE in the event of a dam emergency/failure:

- Federal Energy Regulatory Commission – Portland Regional Office; Regional Engineer
- U.S. Army Corps of Engineers
- National Weather Service
- Oregon Emergency Management Division
- Oregon Water Resources Department – Dam Safety Engineer
- Oregon Public Utility Commission

6 Support Annex Development and Maintenance

In coordination with stakeholders, Clackamas County Disaster Management is responsible for maintaining this annex. This annex will be updated according to the schedule outlined in the Basic Plan.

7 Appendices

- Appendix A – IA 5 Resources

Appendix A IA 5 Resources

The following plans and procedures to support a Clackamas River Dam Failure are currently in place:

- PGE Emergency Action Plan
 - North Fork - Copy #36
 - Oak Grove (including Timothy Lake), River Mill and Willamette Falls - Copy #36
- Duty Officer Dam Notification Instructions
- CCOM INFO DAM
- Dam Failure Map Books
 - River Mill
 - North Fork
 - Timothy Lake
 - Timothy Lake USFS
- Everbridge/Public Alerts Pre-Defined Messages - These messages are split into three evacuation/planning zones, which are activated in order: Primary/Immediate, Secondary and Tertiary.
 - North Fork Dam A Evacuation
 - North Fork Dam B Warning
 - Paradise Park and Twin Island Flood Warning
 - River Mill Dam A Notification
 - River Mill Dam B Warning
 - Timothy Lake Dam A Evacuation
 - Timothy Lake Dam B Warning
- Clackamas River Dam Failure Stakeholders Contacts in Everbridge/Public Alerts System

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