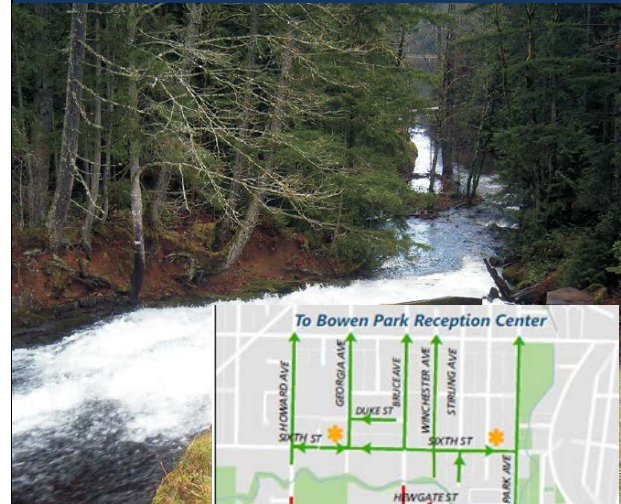


MIDDLE AND LOWER CHASE RIVER DAMS

EMERGENCY ACTION PLAN

OCTOBER 2013 (updated October 2014)

*City of Nanaimo
Emergency Management Division*



Middle and Lower Chase River Dams

EMERGENCY ACTION PLAN for Evacuation

Introduction

The City of Nanaimo developed this Emergency Action Plan (EAP) to address a potential failure of Middle and Lower Chase River Dams as a result of an initial engineering study that has identified the structures as being at risk for failure. The original study identified two specific threats, including a severe seismic event and extreme rainfall situation. While it was difficult to determine the specific potential of such event occurring, it clearly established that failure on one or both dams could have significant consequence, specifically the potential loss of life and damage to properties within the inundation area. Extensive public outcry to the report and potential removal of the dams ensued and as a result a new study was commissioned utilizing a different method of analysis, a risk based analysis which was not an accepted method of analysis by Dam Safety Branch when the first report was released.

The 2014 Engineering Report completed by Golder and Associates has reduced the priority impact area while providing responders and residents with ample time for evacuation purposes. A seismic event is lesser of a concern based on the Golder and Associates report as the release of water would be gradual compared to a 12 minute inundation from the first engineering report. Flooding is of greater concern according for Responders and the Public as the area may have to be evacuated in an extreme storm event. In addition, the Golder report estimates the potential death toll of 1 to 11 people compared to the estimate of up to 150 people in the first report.

This *Emergency Action Plan* is intended to supplement the City of Nanaimo *Response & Recovery Plan*, Dam Failure Checklist providing specific information at both the site level and site support level to ensure life safety when adverse conditions exist. It also provides a specific 'Incident Action Plan' for the site level response. In addition, it works in parallel with the *Public Works Department Operations Plan for Middle and Lower Chase River Dams*. Where the DOC Plan focuses on initial call out, technical responsibilities, monitoring, water flow thresholds, and response actions of Public Works staff, This *PLAN* coordinates specific actions in the response phase from the point in time when the threat is identified to the point where evacuation is complete. It reflects some of the measures that would be involved in monitoring, assessing and organizing the evacuation of specific areas affected from failure. Finally, this plan also coordinates the evacuation process outlined in the John Barsby Community School Evacuation Plan.

Evacuation is the process of removing persons from an area of imminent or actual threat to an area of safety. Depending on the nature and scope of the event, evacuations may be limited to a single building or group of buildings, affect a large area such as a whole community. The "Three Stage Evacuation Process", approved by the provincial Interagency Emergency Preparedness Council (IEPC), provides a common policy and format for ordering evacuations in local jurisdictions. This plan also follows those guidelines and coordinates the resources necessary to expedite an evacuation. A number of mechanisms to increase public awareness have taken place. Individuals were informed through printed matter, the internet, social media

and door-to-door visits in an effort to educate residents how the City will notify individuals in the inundation zone on self evacuation, siren notification, evacuation alerts and orders as well as the specific actions they should take. These concerted public information efforts are intended to assist in the orderly evacuation. With the Golder report communications effort through traditional media and social media will occur as per initial procedures in the area potentially impacted.

Dam & Risk/Impact of Failure

The Chase River Dam Risk Assessment Study by Golder identified a smaller impact area than the 2013 report. The study indicated that the potential for abrupt failure in a seismic does not exist, rather, the lower dam would experience a slow failure due to cracking. There is still concern outlined in the study that the spillway capacity is not sufficient for weather related events and overtopping could result in erosion thereby creating a slow failure and flooding down-stream. The impacted area is smaller for water depths due to flooding.

| | |
|-----------------------------------|---|
| <i>Official Dam Name:</i> | Middle and Lower Chase River Dams |
| <i>Dam Owner/Operator:</i> | City of Nanaimo |
| <i>Mailing Address:</i> | 455 Wallace Street Nanaimo, British Columbia, V9R 5J6 |
| <i>Type of Dam:</i> | Each dam has an internal concrete core with a shell of fill material placed on either side of the core. |
| <i>Dam Height</i> | Middle Dam – 13M Lower Dam - 24M |
| <i>Crest Length</i> | Middle Dam – 50M Lower Dam – 77 M |
| <i>Crest Width</i> | Middle Dam – 5M Lower Dam – 10M |
| <i>Volume of Water</i> | Lower Dam – 112,000 cubic metres Middle Dam – 110,000 cubic metres |

Emergency Action Plan (EAP) Focus

The Purpose of this Emergency Action Plan (EAP) is to reduce the risk of injury or loss of life in the event of a potential failure of the Chase River Middle and Lower Dams. The EAP defines responsibilities and provides procedures designed to:

- provide guidance in an emergency or unusual event
- Identify conditions that may endanger the dam(s)
- Begin remedial actions to prevent or minimize the downstream impacts
- Notify emergency personnel and effectively communicate conditions
- Warn downstream residents
- Establish pre-determined incident management procedures including an incident action plan for responders
- Establish evacuation procedures.
- Conclude the response to the unusual or emergency event.

To put this plan into context, adequate preparation time has permitted the development of a 'contingency plan' specific to the Middle and Lower Chase River Dams for a pre-planned evacuation. It coordinates actions to be taken by all agencies involved in response. The Public Works & Engineering Department has defined safety aspects under the *Dam Safety Act* and developed a Department Operational Plan accordingly. From that document, this plan coordinates all response functions of the various agency responders and links into the Emergency Coordination Centre procedures. It is intended to drive and coordinate the potential escalation from when a potential problem is identified to the completion of the evacuation in the response phase, working in conjunction with the ECC, Response & Recovery Plan and Departmental Plans of the Public Works & Engineering Department, the RCMP plans and the Nanaimo Fire Rescue Departmental Plan.

As the responsible City Department for dam operations, the *Public Works Department Operations Plan for Middle and Lower Chase River Dams* identifies the conditions required for the activation of the ECC. It also provides for resource assignment for response objectives.

Event Levels

The Response & Recovery Plan outlines 3 specific levels of events where the ECC may be activated. In the emergency management community, these event levels are established to identify the associated level of response necessary. This *Emergency Action Plan* uses these levels and provides specific guidance to manage the related situation.

Level 1 – Unusual Event, Slow Developing – Normal Operations

Level 2 – Potential Dam Failure Situation Rapidly Developing

Level 3 – Urgent – Dam Failure appears to be Imminent or is In Progress.

DETERMINING THE RESPONSE LEVEL:

After an unusual situation or emergency event is determined, the situation shall be classified into one of the following three emergency levels. Response will correspond with the appropriate level.

Emergency Level 1 – Unusual Event, Slowly Developing

This event is unusual but has yet threatened the operation or structural integrity of the dam. This event could affect the structural integrity of the dam if left unchecked. Unusual or emergency events can be detected by:

- Observations made at or near the dam. Reports can be made by hikers, law enforcement, staff on site, or from a variety of other sources.
- Earthquakes felt or reported.
- Other conditions that can cause an unusual or emergency event at the dam, for example, forecasts of a severe weather event, a flash flood, upstream dam concerns or excessive runoff from upstream sources.

It is important to evaluate all reports that are received as part of ‘normal operations’. The Public Works Department will implement the Department Operations Plan, Middle & Lower Chase River Dams in all cases and provide the required notification outline in the plan.

Emergency Level 2 - Potential Dam Failure, Rapidly Developing

This event may eventually lead to dam failure and potential flooding downstream, but there is not an immediate threat of dam failure. This emergency level also applies when uncontrolled flow through the dam’s spillway has or is likely to result in flooding of downstream areas, but is not yet affecting buildings or roads, or posing a significant risk to health, safety, or welfare.

Emergency Level 3 – Urgent, Dam Breach Appears Imminent or is in Progress

This is an urgent event, where a dam breach is occurring or is clearly about to occur and cannot be prevented. Flash flooding will occur downstream of the dam. The amount of flooding and resulting damage will be dependent upon several factors, such as the nature of the event, which dam is breaching, and the time of year and associated inflow. If a breach occurs affecting the integrity of both dams the entire area shown on the inundation map will be flooded. This event level is also applicable when flow through the dam's spillway is flooding buildings or roads.

5 Step Emergency Action Plan

A five step emergency action plan has been developed based on the three 'response levels' and to provide a guide to the necessary response actions. (see diagram on following page) The following outlines individual phases of the action plan:

DETECT EVENT

The first phase of the plan is the recognition that a problem exists and the assessment of the potential threat to the immediate community. The activation of this plan is contingent on various circumstances.

Monitoring:

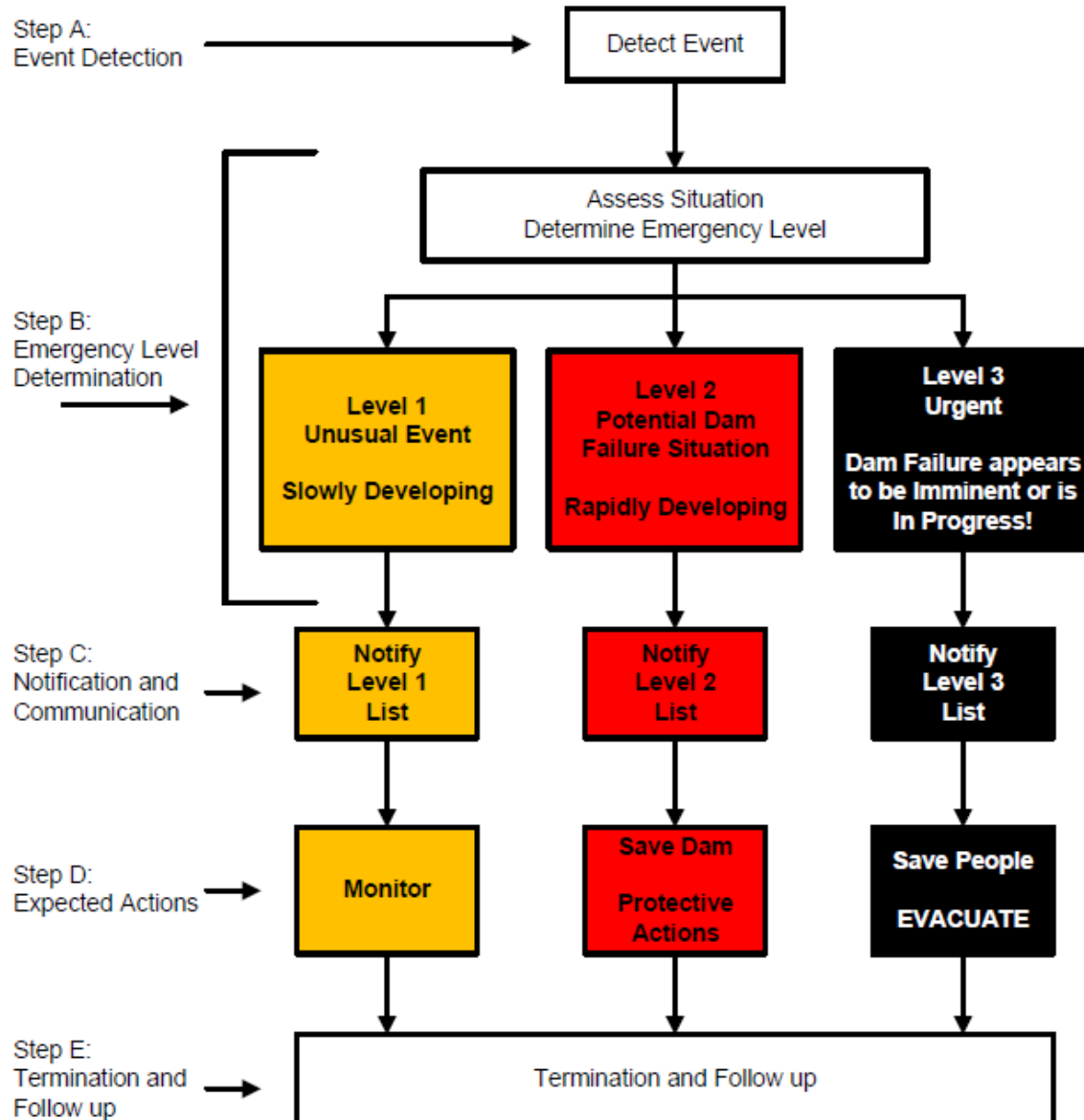
In the majority of cases, detection and the appropriate response will be governed by the *Public Works Department Operations Plan for Middle and Lower Chase River Dams*. Dam water level monitoring and related on-site inspection will reside within Public Works & Engineering Department. The SCADA System provides 24/7 water level information providing alerts for staff. Public Works crews will also provide physical inspection and monitoring at the dam site. The general public may also identify an issue to which the Public Works and Engineering Department would investigate.

Upon inspection, the status is communicated back to the Public Works Department Operations Centre where it is classified into one of three levels as described in the previous section. Public Works staff will request ECC activation when the level of the reservoirs is at **0.8 metres**. The Emergency Program Manager (or Duty Chief as backup) will be notified and they will direct FireComm to activate the ECC.

In contrast, the detection of the event may be the actual failure created by a seismic event. Automatically, this will establish a Level 3 event and ECC activation will be the initial action. SCADA water level information can also be monitored. If water levels are residing, this may be indicative of a breach of the dam and public notification procedures shall commence. Public communications information requires residents to evacuate immediately after shaking from the earthquake resides.

The Five Step Emergency Action Plan

Emergency Action Plan Overview



EMERGENCY LEVEL 1 – SLOW OCCURRING EVENT

| Category | Emergency Level 1 Events |
|---------------------|--|
| Monitoring | Dam water level at 0.6 metres |
| Spillways | Principal spillway severely blocked with debris or structurally damaged Principal spillway leaking with muddy flows |
| Flooding | Weather Service issues a flood warning for the area |
| Seepage | New seepage areas in or near the dam |
| Embankment Cracking | New cracks in the embankment greater than 1/2 inch wide and greater than two feet deep |
| Embankment Movement | Visual movement/slippage of the embankment slope |
| Earthquake | Measurable earthquake felt or reported within 100 km of the dam |
| Sabotage/ Vandalism | Damage to the dam or appurtenances with no impacts to dam functions |

EXPECTED RESPONSE ACTIONS

- Implement *Public Works Department Operations Plan for Middle and Lower Chase River Dams*
- Trained Observers from Public Works shall respond to inspect dams
- Immediately Contact Emergency Program Manager.
- Activation of the ECC (virtual or actual) to monitor and advise situation status
- Emergency Evacuation Alert issued to community at level 0.9
- All information, observations, and actions taken is recorded on the **Event Log Form** and reported to the Department Operations Centre
- Public Works takes remedial actions where possible under normal operations
- Note the times when the conditions change and, if possible, document the situation with photographs and/or video
- Continually inspect the Dam. Assess and monitor conditions
- Contact Dam Safety Division and your dam engineer as necessary
- Complete the recommended actions and continue to monitor conditions until risk has ended.
- Implement Emergency Contact List if required by situation (John Barsby School, RDN, Southern VI Rail) for awareness & maintain reports.

EMERGENCY LEVEL 2 – POTENTIAL EVENT, RAPIDLY DEVELOPING

| Category | Emergency Level 2 Events |
|----------------------------|---|
| Monitoring | Dam water level at 0.8 metres |
| Flooding | The reservoir elevation reaches the predetermined notification trigger elevation of 0.9 m above spillway invert of the Lower Chase River Dams |
| Flooding | Weather Service issues a flood warning for the area |
| Sinkholes | New seepage areas with cloudy discharge or increasing flow rate |
| Embankment Cracking | Cracks in the embankment with seepage emerging |
| Embankment Movement | Sudden or rapidly proceeding slides of the embankment slopes |
| Earthquake | Earthquake resulting in visible damage to the dam or appurtenances |
| Sabotage/ Vandalism | Damage to the dam that has resulted in seepage flow |

EXPECTED RESPONSE ACTIONS

- Partial or Full Activation of the ECC
- Situation is assessed with technical assistance as necessary
- State of Emergency Ordered when conditions worsen, and
 - Emergency Evacuation Alert issued to community at level 0,9
 - Emergency Action Plan activated. Resources Mobilized through Emergency Coordination Centre – Resources are staged, activated and mustered to mobilize for alert and potential evacuation.
 - Emergency Evacuation Ordered to community at level 1.2
 - Area is Evacuated
 - Reception Centres Opened
 - Emergency Information communicated via radio, city website, twitter, face book and Television, Fire Trucks/Police travelling through affected areas sounding sirens and general public announcements over megaphone while driving through
 - Implement Emergency Contact (John Barsby School, RDN, Southern VI Rail) for awareness & maintain reports

EMERGENCY LEVEL 3 – IMMINENT THREAT

| Category | Emergency Level 3 Events |
|---------------------|---|
| Flooding | The reservoir elevation reaches the predetermined notification trigger elevation of 1.2 m above spillway invert of the Dams Spill flow is over flooding and river levels are high downstream |
| Sinkholes | Rapidly enlarging sinkhole in reservoir area or embankment |
| Seepage | Cloudy flow and one or more of the following (with constant reservoir level) accelerated rate of flow, expanding flow at exit point, or buildup of soils. |
| Earthquake | Earthquake resulting in visible damage to the dam or appurtenances |
| Sabotage/ Vandalism | Damage to the dam that has resulted in seepage flow |

EXPECTED RESPONSE ACTIONS

- ECC – Full Activation
- Emergency Evacuation Alert/Order issued, State of Emergency Called
- Residents to **immediately self evacuate**. Dependent upon threat may be little time to muster resources – self evacuation to Assembly Areas or Reception Centres.
- Emergency Information communicated via radio, city website, twitter, Face book and Television, Fire Trucks/Police sounding sirens and general public announcements over megaphone. Emergency Vehicles will not go into inundation area. If time permits, the dam owner or a representative will inspect the dam. If piping, increased seepage, erosion, cracking, or settlement is observed, immediately report this to the Emergency Manager Inspect the full length of the upstream slope, crest, downstream toe, and downstream slope of the dam. Check the reservoir area, abutments, and downstream channel for signs of changing conditions. Take emergency remedial actions, if appropriate **Be aware of roads and highways in the path of floodwaters. See Inundation map for locations and approximate time that floodwaters will reach the roadways.**

TERMINATION & FOLLOW UP

The final phase of the 5 Step Action Plan is termination and follow up. The Emergency Coordination Centre will manage this phase of the incident in accordance with ECC procedures.

Emergency Coordination Centre

ACTIVATION

The Emergency Coordination Centre (ECC) coordinates and supports the site operations and is responsible for declaration of local state of emergency, evacuation alert, evacuation order and evacuation rescind. The ECC, being responsible for an evacuation order, will also direct public notification systems. The ECC will also support evacuees through the Community Assistance Program (formerly known as ESS). A representative from SD68 will attend the ECC to facilitate the needs of evacuated students.

ECC activation will occur if the following situations:

Seismic Events: In seismic events, the ECC will activate **automatically** to manage all resulting event issues, the dams. Should immediate site action be necessary, a tactical evacuation will commence. (Note: in seismic events the residents are directed to self evacuate prior to public notification)

Extreme Weather: Events: In extreme weather events, the ECC activation will be contingent to predetermined dam flow thresholds and procedures outlined in the *Public Works Department Operations Plan for Middle and Lower Chase River Dams*. Public Works staff will request ECC activation of the ECC shall be when the level of the reservoirs is at **0.8 metres**. In addition, in rapid water level buildup situations, activation may occur prior at the discretion of the Director of Engineering and Public Works (or designate).

RESPONSE & RECOVERY PLAN

The Emergency Response & Recovery Plan addresses the organization and specific hazard checklists to assist in managing emergencies at Emergency Coordination Centre. There are 5 functions in the ECC that are responsible for supporting site operations; Management, Operations, Logistics, Planning and Finance/Administration.

A specific Dam Failure Checklist (see below) outlines the general considerations for each ECC Section to support site level operations.

In addition to the Response and Recovery Plan, this plan will also provide specific guidance in relation to Chase River Middle and Lower Dams. There is also supplemental contact lists and other pre-established materials to assist in the ECC's role.

In case of an imminent dam failure:

Policies

1. The dam owner is responsible under Provincial legislation to provide warning and notification of potential and actual dam failure to downstream persons at risk.
2. The Dam Safety Branch of the Forests, Lands and Natural Resources Operations (FLNRO) is the regulatory agency.
3. It is our policy to provide support to the Dam Safety Branch as needed and requested.

Hazard Specific Checklists

ECC Director

- ☐ Upon notification of a potential or real dam failure, activate full ECC call-out.
- ☐ Ensure safety of all responders.
- ☐ Select Police or alternate as Operations Section Chief.
- ☐ Notify PEP that ECC is activated.
- ☐ Make contact with dam owner and request attendance at ECC.
- ☐ Staff Liaison Officer, Information Officer, and Risk Management Officer positions.
- ☐ Establish news release system (Information Officer).
- ☐ Establish public inquiry system (Information Officer).

Operations

- ☐ Ensure warnings to evacuate as needed are provided to all downstream persons.
- ☐ Establish a Registration and Inquiry Centre (ESS / Red Cross).
- ☐ Support Incident Commander in defining working area, establishing control perimeter, and securing the scene for subsequent investigation (Police Branch).
- ☐ Coordinate routes for emergency vehicles (Police Branch & Planning Section).
- ☐ Coordinate traffic control (Police Branch).
- ☐ Notify hospitals of casualties, including number and type (BCAS Unit).
- ☐ Establish temporary morgue (Police Branch, Coroner Unit).
- ☐ Coordinate the elimination of hazards from damaged utilities (Utilities).

Planning

- ☐ Prepare and provide inundation area information to ECC and Incident Commanders in the field.
- ☐ Consider possible major effects (Advance Planning Unit):
 - Injuries and fatalities

- Damage to property
- Involvement of dangerous goods, e.g., propane tanks
- Disruption of traffic and communications
- Disruption of utilities
- Convergence of media, photographers, politicians

Logistics

- ❑ Anticipate need for heavy equipment and sandbags.
- ❑ Prepare to support long-term recovery and investigation operations.
- ❑ Identify potential temporary morgue facilities (Facilities Unit).
- ❑ Consider equipment needs and sources (Supply Unit):
 - Communication equipment PEP / RCMP / Ham Radio
 - Equipment for constructing Engineering / Industry
dikes
 - Heavy equipment (bulldozers, Engineering / Industry
etc.)
 - Auxiliary lighting Engineering / Utilities
 - Auxiliary power facilities Engineering / Utilities
 - Medical and health supplies Health
 - Food and lodging Emergency Social Services
 - Pumps Engineering
 - Storage facilities for equipment Province
furnishings and livestock
 - Mobile public address system RCMP / Fire / Radio
 - Chemical Response Team PEP / Fire / Industry

Administration

- ❑ Establish Compensation and Claims Unit and Cost Accounting Unit.

In addition to the Response and Recovery Plan the ECC will also utilize this plan to direct specific actions required for an evacuation of the area.

DECLARATION OF LOCAL STATE OF EMERGENCY

The ECC will coordinate the declaration of local state of emergency. Declaring a state of local emergency enables the City to exercise the emergency powers listed in the Emergency Program Act. The emergency powers are utilized by the local authority to order the evacuation of residents from their homes, prohibit travel and enter private property when an emergency threatens lives, property, or the environment within the local authority's jurisdiction, specifically within the inundation area. Should a failure of the Chase River Dams be pending or imminent, a State of Emergency would be declared at a Level 2 or Level 3 as necessary. (See Appendix 1) In addition, the ECC Liaison Officer will ensure notification of EMBC.

EVACUATION ALERT, ORDER and RESCIND

The ECC will coordinate evacuation, alerts and rescind orders. The EMBC "Three Stage Evacuation Process" is used for pre-planned evacuations during events that provide adequate warning and preparation time. Evacuation Alerts, Orders and Rescind are pre-established and the expedited evacuation of the area impacted by dam failure and the required documentation required by the Emergency Program Act is presented in Appendix 3 and 4.

Evacuation Alert: An Evacuation Alert shall be issued at Level 1 and Level 2 severe weather or extreme flood flow and seepage incidents occur or dam water levels are at **0.9 metres** informing residents that they may be required to evacuate in the near future.

Evacuation Order: An Evacuation Order would be issued at Level 2 when it is determined that potential failure may be imminent. Resources will be assigned in accordance with the Site Operations section.

Evacuation Rescind: The ECC will be responsible to issue the evacuation rescind in situations where water levels have receded or the area is safe for residents to return.

Self Evacuation: In the event of a seismic event impacting the dams where no time is permitted to mobilize an incident action plan to evacuate, residents have been directed to self-evacuate. The dams will be inspected. The role of initial responders may be to assist traffic flow out of the inundation area.

Tactical Evacuation:

In such an event that forces immediate action, allowing little or no warning and limited preparation time and during the evacuation order signing process, a tactical evacuation and may be ordered at the site level by the Incident Commander prior to approval of the ECC through an Evacuation Order. The same principles and organization shall apply as outlined in the Site Operations / Incident Action Plan section of this plan.

PUBLIC INFORMATION / NOTIFICATION

Public information will be centralized within the ECC within the initial operational period. An Information Officer may also be established at the dam site if media requests exist and it is safe to do so. A news release system shall be established. The evacuees and public will kept informed on hazard conditions, evacuation activities and the status of the emergency.

The ECC maintains an Emergency Contact List to provide early notification in the event of a pending or actual emergency. Once the ECC is activated for level 1 and 2 situations, notification shall begin to provide situation status. A notification list shall be maintained with those directly impacted and include John Barsby Community School, Regional District of Nanaimo Transit Authority, Southern Railway, Ministry of Transportation and Infrastructure, Emcon Maintenance Contractor, as well as other secondary sources.

In addition, the ECC will implement the following methods to notify residents within the inundation area when the situation requires awareness, alerts or evacuation. Residents should utilize several methods to be notified without reliance on a single notification source:

- Emergency Evacuation Siren – activation coordinated at the ECC upon the issue of an Evacuation Order only. The siren may be activated by order from a Public Works foreman or manager should it be evident of a breach from a seismic event.
- Emergency Call Alert – residents have been requested to sign up as a second means of evacuation notification. Activation is coordinated at the ECC upon an Evacuation Alert and Order.
- Door-to-Door Notification – Response agencies provide follow up notification to residents in the inundation area as outlined in the Site Operations, Incident Action Plan section below.
- Radio Broadcast – Wave 102.3, Wolf 106.9 – The Station will provide broadcasts upon notification from the ECC for evacuation alerts and orders. Normally this will be performed by use of ECC telephone, however, a backup using a fixed radio link is also established in the ECC and radio station.
- Television – CHEK 6 and CTV2 will require interviews and footage of the emergency.
- Twitter @Nanaimo Fire
@City of Nanaimo
- Face Book City of Nanaimo
- Website – www.nanaimo.ca or www.fire.nanaimo.ca – Provide situation updates as the occur. Coordinated by the Information Officer in the ECC.
- Recovery Centre – Established to inform public of status and developments.

Site Operations/Incident Action Plan

The following provides an overview of the pre-determined 'incident action plan' to facilitate an evacuation. The incident action plan represents the first operational period required to complete an evacuation alert and/or order. It does not represent the required operational period of post dam failure.

INCIDENT COMMAND

The Incident Command function shall be unified and include agency and jurisdictional representation from Fire, RCMP, and Public Works & Engineering Department. BC Ambulance Service shall be represented at the incident command post as the Medical Branch to facilitate communications should they be deployed into the area.

An Incident Command Post will be established in the apparatus floor of Fire Station 1 and support materials shall be maintained. Agency Command Vehicles will be taken into the station, front to rear, side by side, to establish the necessary radio communications and support.

SAFETY OFFICER

A Safety Officer will be immediately assigned to the Dam site and consult with the Water Technicians on scene. The Incident Commander will be notified immediately where conditions indicate that a potential breach is imminent. Each agency will use a "Mayday" alert to remove responders from the inundation area.

INCIDENT ACTION PLAN

A detailed Incident Action Plan pre-established for the initial operational phase of an evacuation provides information to implement the LIFE SAFETY Priority, Objectives, Strategy and Tactics. (Note: Conditions may require modifications)

Problems: Potential or immanent failure of one or more dams causing excessive force of water and debris to flow downstream to a defined inundation area.
Probable occupants in residences and public areas are subject to debris and flooding conditions resulting in structural collapse.

Priorities: The priority for emergency response within the first Operational Period is Life Safety

Objectives: 1. Evacuate residents in a timely manner
2. Secure and control access to the inundation area.

Strategies: Evacuate occupants of the inundation area using a combination of first responders in the affected area, public broadcasting, and electronic media.

Establish perimeter and control access.

- Tactics:**
1. Police and Fire Rescue resources enter predetermined divisions within the inundation area, travel each street within their assigned division and implement alert or evacuation procedures.
 2. Public Information Officer will activate and initiate communications for evacuees and the general public.
 3. Manned emergency vehicles to initially block 10th and 5th Streets to prevent entry into the inundation area.
 4. Public Works resources to block all traffic and pedestrian entry points into the inundation area.

INCIDENT ORGANIZATION

To mobilize the Incident Action Plan it is necessary to organize resources and make assignments to efficiently manage the evacuation in a coordinated fashion. The evacuation effort and related Incident Action Plan requires significant organization to implement. An ICS Organizational Structure below is provided to coincide with the evacuation area Division assignments. The following ICS organizational structure is pre-established for rapid intervention.

Command Staff: As discussed above, a Safety Officer will be assigned to the dam site. At this operational period an Information Officer will be assigned in the ECC.

Sections: Three sections will be established for the evacuation operational period, Operations, Planning and Logistics.

Branches: Five Branches will be established; three geographical; the Dam Site, the North/West Branch and South Branch for evacuation purposes, and two functional branches; Perimeter Control Branch and a Medical Branch.

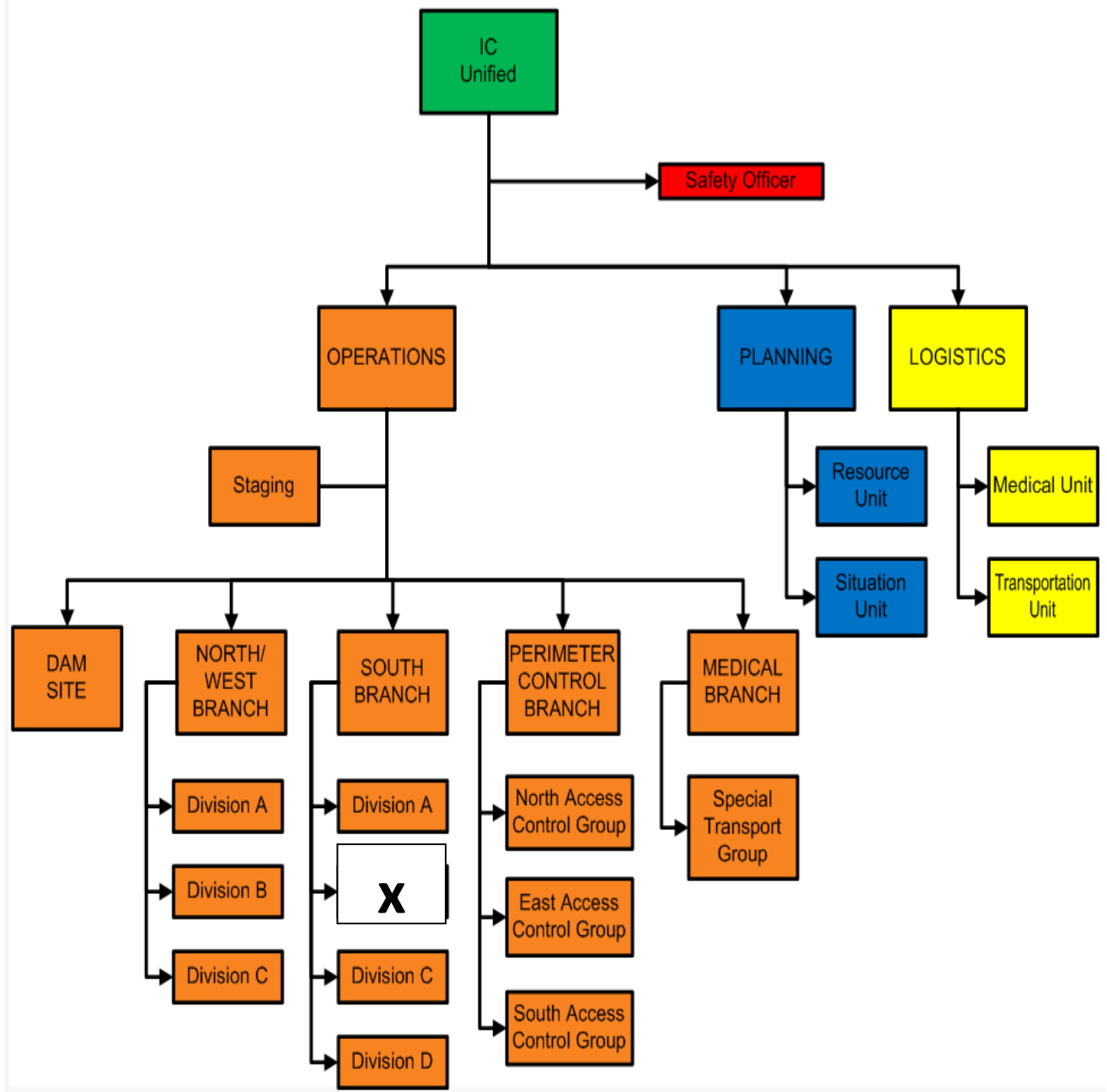
Divisions/Groups: To achieve the evacuation objective in an organized and timely fashion, the geographical area will be divided into 7 different Divisions. Three divisions will be in the North/West Branch and 3 will be in the South Branch. Each Division will have pre-determines street and house address assignments. Checklists are provided to track and document notification or other pertinent information. (see Appendix 6) Progress reports should be provided. All documentation is maintained for post incident analysis.

Three Access Control Groups will be established on the north, east and south areas to control access into the evacuated area.

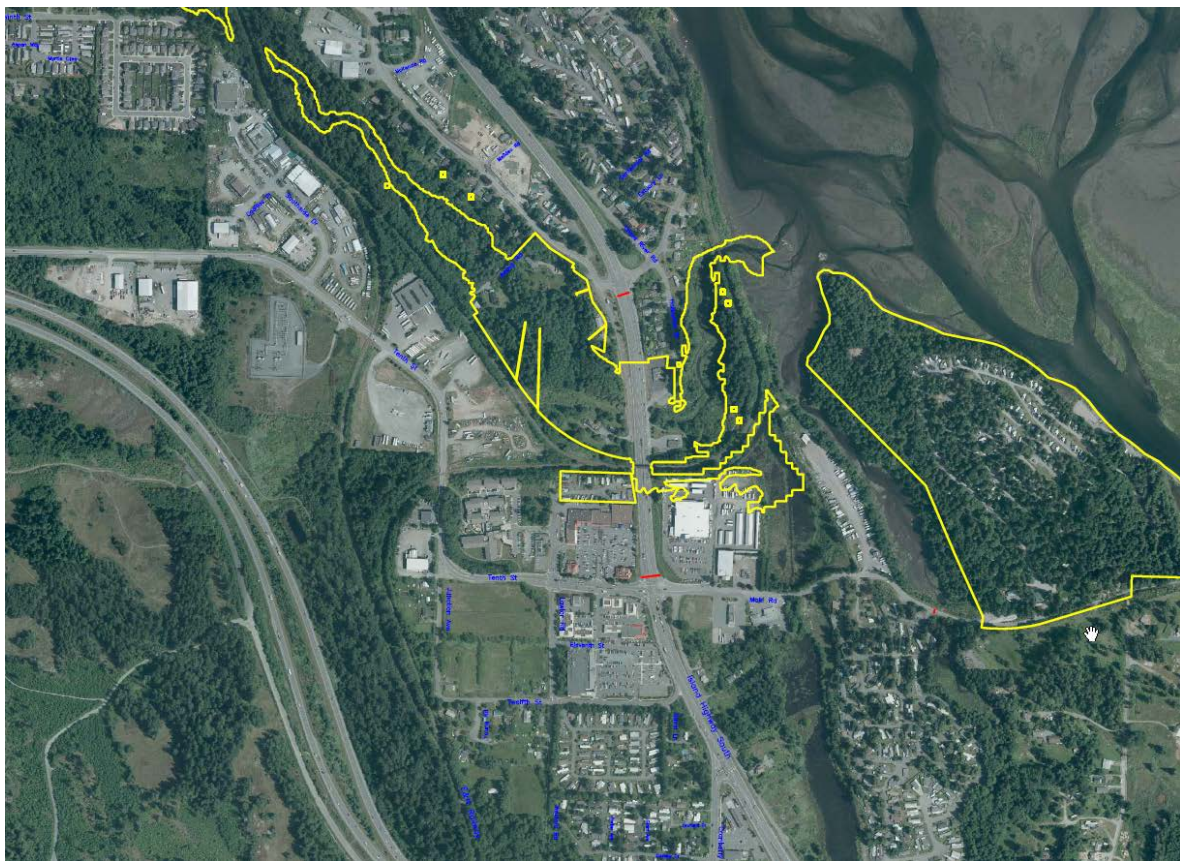
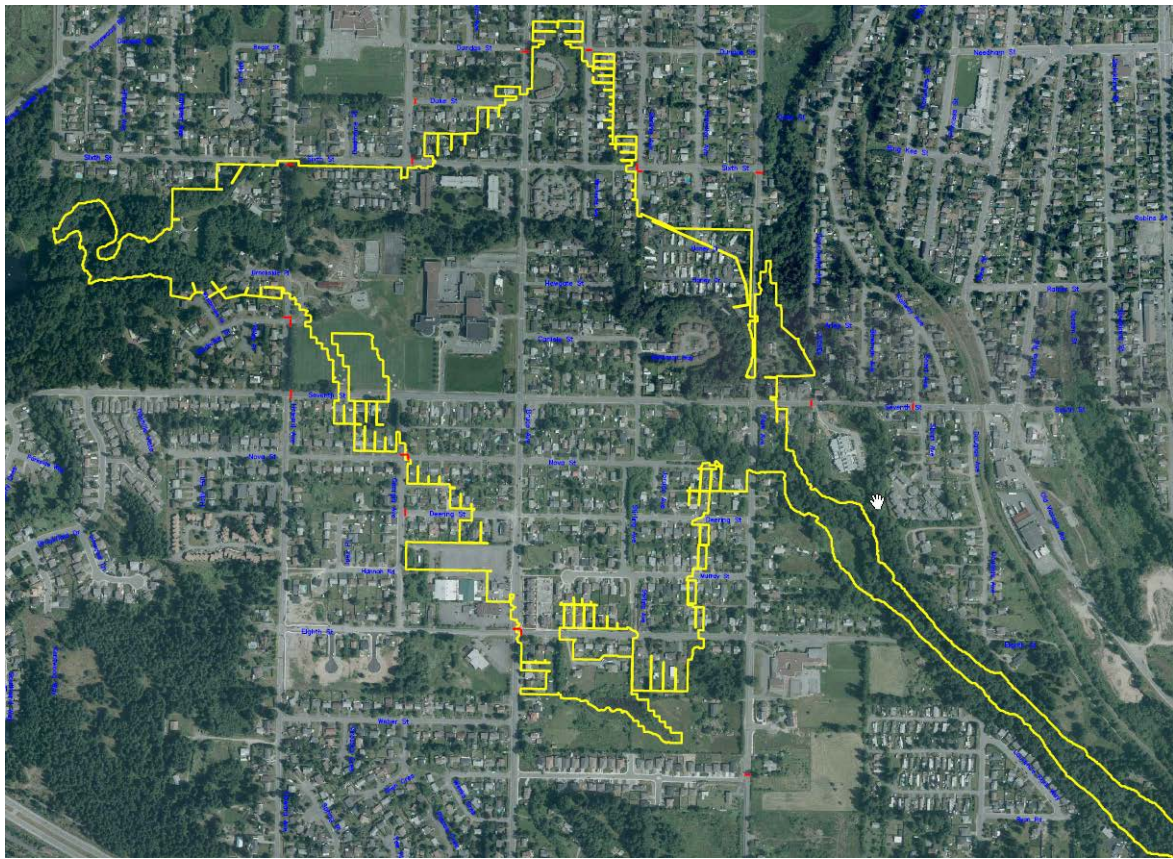
The Medical Branch will establish a Special Transport Group to evacuate those with disabilities.

Units:

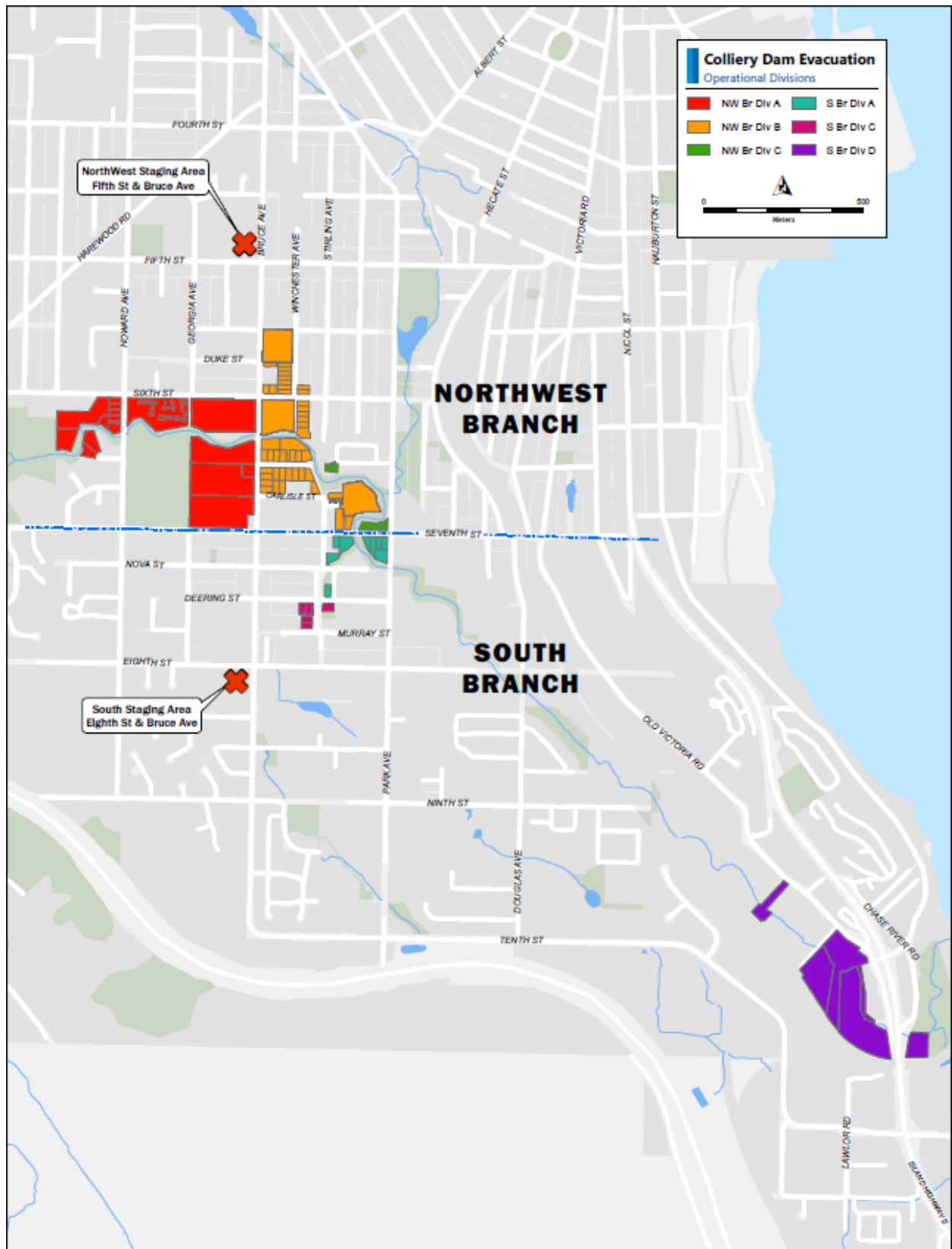
The Planning Section will establish two units, Resource to track responders committed to the incident and Situation to display evacuation information. Logistics Section will have two Units; Transportation to remove evacuees from Assembly Areas and Medical Unit to provide for medical assistance to responders.



Road Closures



Branches and Division Assignments for Specific Addresses.



ASSIGNMENT OF RESOURCE

The assignment of resources will vary depending upon the time of day.

1. OPERATIONS

- *Dam Site Branch* – Public Works, Utilities Division
- *Northwest Branch (Divisions A, B,C)* – RCMP South Patrol TBD by Watch Commander
- *South Branch (Divisions A, C, D)* – Fire Rescue E1, L1, E4, T4 (crews to split)
- *Perimeter Control Branch* – Public Works, Roads Div.
- *Medical Branch* – BC Ambulance

Note: Nanaimo Search & Rescue may also be deployed if required.

2. PLANNING

- Assignment of quickest available resource to respond, consider Fire Overhead Team

3. LOGISTICS

- *Medical Unit* –BC Ambulance
- *Transportation Unit* - Assignment of quickest available resource to respond

COMMUNICATIONS PLAN

The premise of organizing radio communications rests with agency assignment. Implementing Unified Command centralizes each responding agency's radio frequency in one spot, at the Incident Command Post (ICP). Thereafter, agency response resources are assigned by agency to Branches and thereafter Divisions or Groups outlined as follows:

4. OPERATIONS

- *Dam Site Branch* – Public Works, Channel 1
- *Northwest Branch (Divisions A, B,C)* – RCMP, Channel _Nanaimo 1K2_
- *South Branch (Divisions A, C, D)* – Fire Rescue, Channel 2
- *Perimeter Control Branch* – Public Works, Channel 1
- *Medical Branch* – BC Ambulance, Channel Tactical Channel as assigned

5. PLANNING

- Face-to-face communication in the Incident Command Post with agency representatives.

6. LOGISTICS

- *Medical Unit* – Face-to-face in ICP, BC Ambulance Channel as assigned and cellular as necessary.
- *Transportation Unit* – Cellular to transportation provider, Provider radio network.

Authority for Evacuation

The legal authority for City of Nanaimo to order an evacuation rests within the *Emergency Program Act (1993)* Section 12(1). Under this section the head of a local authority (Mayor) or designate is permitted to declare a state of local emergency giving legal power to:

“cause the evacuation of persons and the removal of live stock, animals and personal property that is or may be affected by an emergency or a disaster and make arrangements for the adequate care and protection of those persons, livestock, animals and personal property”

Under section 9(1) of the *Emergency Program Act* the Solicitor General is authorized to declare a provincial state of emergency. Under a provincial declaration the Solicitor General has the authority to order evacuations as deemed necessary.

The *Emergency Action Plan* has identified the areas requiring evacuation from engineering studies and provides pre-established Evacuation Alerts and Evacuation Orders consistent with the *Act* to expedite the evacuation if necessary. (See Appendix 3 and 4)

Evacuation Procedures

COMMUNITY ASSISTANCE PROGRAM / ESS

Upon the issue of an Evacuation Alert (or Evacuation Order due to immediacy) the Community Assistance Program will be notified for full activation and establishing Reception Centres to provide short-term assistance to those forced from their homes. The Reception Centres will be established as outlined below. The population analysis outlined Dam & Risk section above will provide an estimate to the number of people that will require ESS services and special care.

EVACUATION OF JOHN BARSBY COMMUNITY SCHOOL

Should an event occur within school hours, the John Barsby Community School has an established Rapid Evacuation Plan to ensure for the safety of students. The Salvation Army Church site is identified as the off-site refuge area. The facility will be used for short-term comfort of students and serve as a triage for those that can be released to parent or guardian care. For the remaining students who will likely live in the affected area, the ECC Logistics Section will plan/alert buses from SD 68 and/or Regional District of Nanaimo to transport students to the Beban Reception Centre. Once registered at the Reception Centre. The list will be reconciled with the school record system.

EVACUATION – DIRECTION TO THE PUBLIC

Police and Fire operating in the defined ICS Divisions will be the primary agencies managing the on-the-ground aspects of the evacuation plan. The evacuation area is pre-determined based on engineering studies should the ‘worst case’ failure occur.

The community has been notified of the hazard and personal preparedness including maintaining ‘Grab and Go Kits’ has been encouraged. In addition, a ‘Public Directive’ containing information on the evacuation siren, pre-determined evacuation routes, emergency evacuation

methodology (alerts and orders) and reception centres has been provided. As such, it is expected that human behavior associated with evacuation and emergency procedures will enhance the evacuation process.

Door-to-Door Evacuation Process:

In cases where there is time for responders to go door-to-door to ensure evacuation, the Division, street and house number checklist shall be used to record the conditions found and action taken. The following direction shall be provided to residents:

- There is an imminent threat of dam failure and you must evacuate.
- Take all valuables, pets, medications, eyeglasses
- Drive to the designated Reception Centre

The forms, once completed post-evacuation, shall be forwarded through the ICS chain of command to the Emergency Program Manager.

Once residences are checked and determined clear, house marking protocols shall be tying 'emergency line' tape on the front door.

Imminent Threat Evacuation Process:

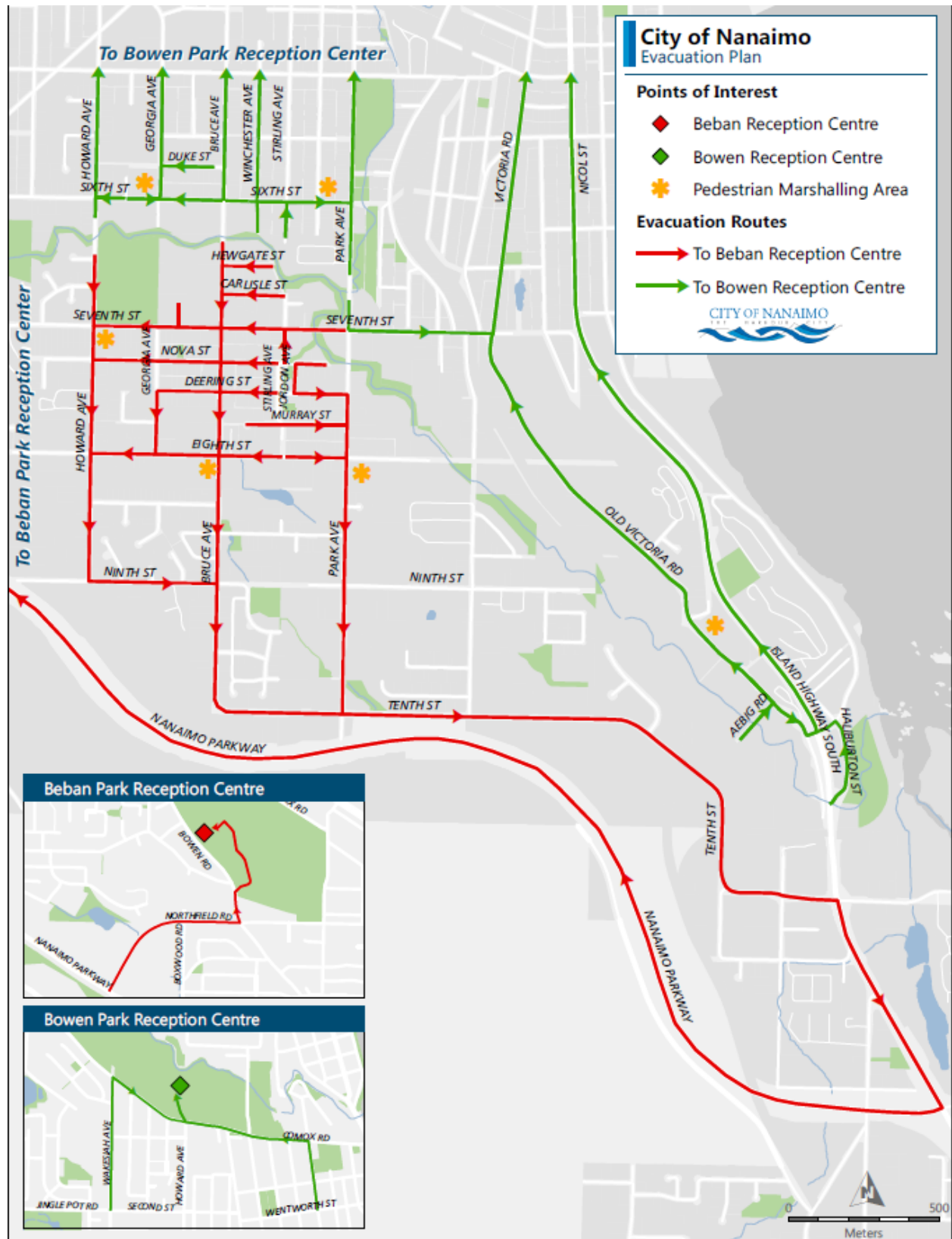
Police and Fire Rescue resources will enter predetermined Divisions within the inundation area, travel each street within their assigned division, and continuously repeat the following alert to occupants: **sound siren for 5 seconds, broadcast over public address system "Evacuate, Evacuate, Evacuate. This is an emergency. Evacuate the area and report to Assembly Area at high ground"**. Responders exit inundation area after each street has been travelled and alerted.

ASSEMBLY AREAS

Designated Assembly Areas are established to provide a safe area for individuals to congregate while waiting for transport to Reception Centres. (See Evacuation Routes below) Transportation from these areas will be organized and directed by the ECC. Upon completion of evacuation tasks, division resources should be reassigned to these Assembly Areas to maintain control and provide information. Assembly Areas are located at:

- Sixth Street at Georgia Avenue
- Sixth Street at Park Avenue
- Seventh Street at Howard
- Eighth Street at Bruce Avenue
- Eighth Street at Park Avenue
- Old Victoria Road at McKenzie

Evacuation Routes – Public Directive



TRAFFIC CONTROL POINTS

The transportation network may be challenged by the potential high traffic outflow from the inundation area. There are potential areas of congestion or “choke points” on the evacuation routes. A number of intersections on Bruce Avenue as well as traffic lights on Pine and Third Street are high potential. Traffic control resources operating under the Perimeter Control Branch may be required to control the traffic and manage the potential backlog out of the inundation area. North directional traffic will receive the highest priority during evacuation.

ACCESS CONTROL & SECURITY

The *Public Works Department Operations Plan for Middle and Lower Chase River Dams* organizes resource assignments to control access and provide security to the evacuated area. The Access Control Groups Objectives shall be as follows:

- To provide a controlled area from which an emergency evacuation will take place,
- To prevent entry to the evacuated area by unauthorized persons,
- To protect lives by controlling entry into evacuated area, and
- To maintain security, law and order in the evacuation area.

Access points will be staffed and barricaded around the perimeter to eliminate access into the inundation area and to prohibit the public from entering the closed area. If the situation is warranted, such as a resident coming home during the evacuation, Command may authorize access on a controlled basis from the Bruce Avenue location.

TRANSPORTATION & PLANNING

The Emergency Coordination Centre (Logistics Section) will be responsible to access and organize transportation resources for assisting evacuees. Primary bus service will be provided by RDN Transit. Backup buses as required will be requested from School District 68.

Buses will be dispatched to the designated Assembly Areas. Primary evacuation routes should be avoided where possible. The Seventh & Howard and Eighth and Bruce Assembly areas shall be accessed using Wakasiah, Nanaimo Lakes Rd., Harewood Mines Rd to Seventh.

Once evacuees in Assembly Areas are on board busses, they will proceed to the designated Reception Centre outlined below.

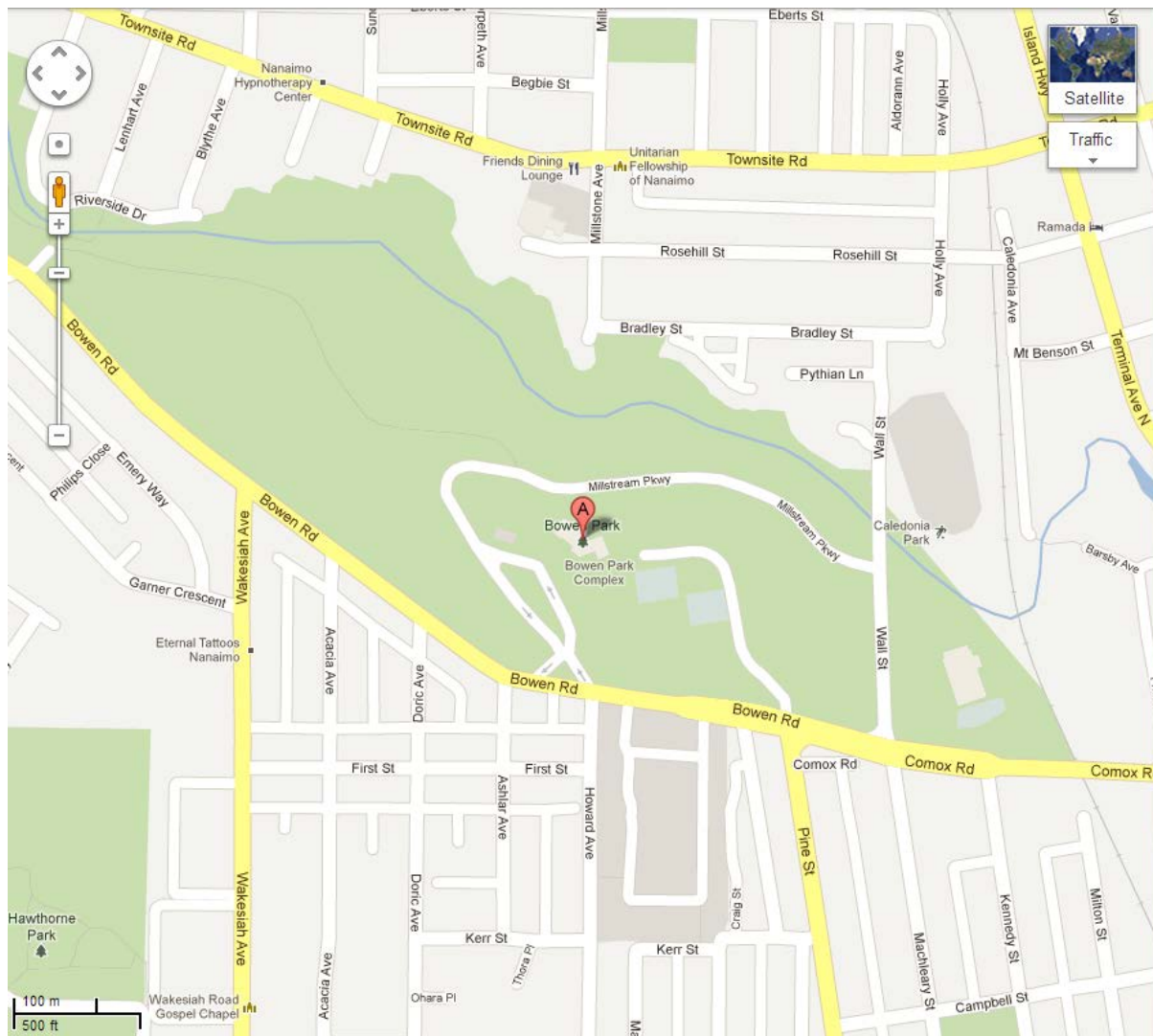
Designated Reception Centres

In the event of an evacuation of the area affected two Reception Centres will be activated to provide a safe gathering place for those displaced from their homes. Services are provided to preserve the emotional and physical well being of evacuees. Residents should be aware of the centres and emergency personnel in the event of a slow occurring situation will direct them to the centres. All evacuees will be requested to go to the reception centres in order to register them. Reception Centre guidelines shall be implemented. The Reception Centre will also

become the primary information source as the event unfolds. In failure situations, the demands on the Reception Centre may be reduced by performing a damage assessment and releasing those evacuees who's properties have not been impacted. and the area is safe for residents to return.

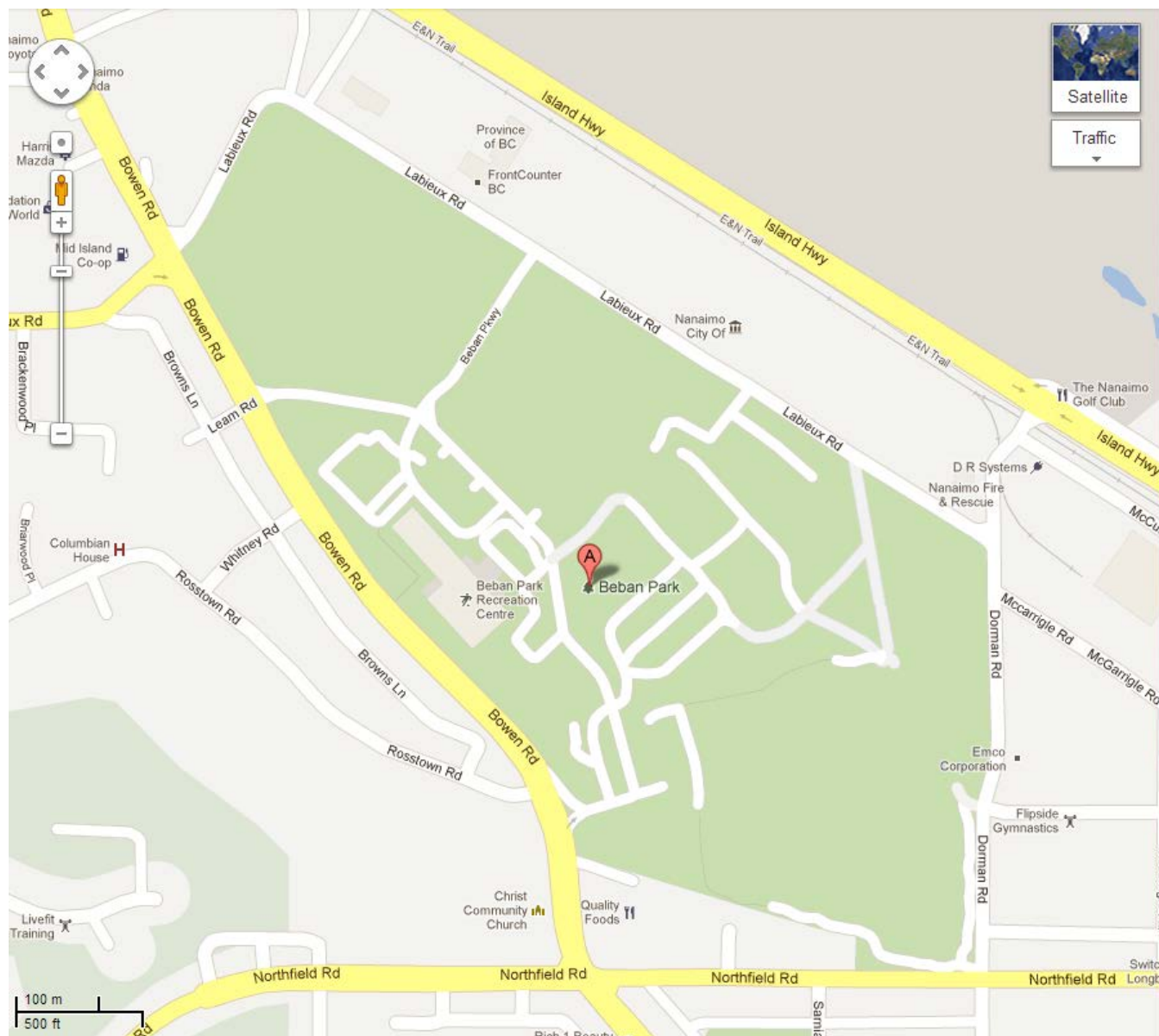
Reception Centre 1 – Bowen Park – 500 Bowen Road

Residents NORTH OF CHASE RIVER including 7th Street East of Park Ave. who are evacuated should go to Bowen Park Reception Centre via Wakesiah Avenue, Bruce Avenue or Terminal Avenue.



Reception Centre 2 – Beban Park, 2300 Bowen Road

Residents SOUTH OF CHASE RIVER and West of Park Avenue who are evacuated should go to Beban Park Reception Centre via 10th St. and the Nanaimo Parkway.



JOHN BARSBY STUDENT CARE

The John Barsby Community School's Evacuation Plan provides for an initial assembly area in the field corner by 7th and Howard. From there a Refuge Area will be established at the Salvation Army facility on 8th and Bruce. A SD68 representative will be in attendance at the ECC. The ECC will provide the necessary support.

Throughout the duration of the Refuge Area operation, the School is responsible for the care of students until they are released to parents or guardians. Students will be released in accordance with their procedures (Student Release, 1701 Emergency Contact Information Form). It is expected that some students who either live within the inundation area or those not able to reconnect will need to be taken to a Reception Centre to reunite with parents. The ECC will arrange transportation in concert with the School District representative.

DOMESTIC ANIMAL CARE

Often homeowners prefer not to evacuate due to the issues around the care of pets and refusal to leave them behind. Responders performing evacuation duties should expect that pets will be evacuated. They should be encouraged to bring kennels if they have them as well as a short-term food supply. The Community Assistance Program coordinates pet services with assistance from local animal shelters. Designated areas are established in reception centres and agreements are in place with the SPCA and Nanaimo Animal Shelter to provide assistance in such events.

RECOVERY CENTRES –

The ECC will be responsible for establishing Recovery Centres for residents to access information about services available to them in the community. This will include for example Private Insurance Companies, City Representatives, Counselling and a number of community resources. These Centres act as a one stop resource for the impacted residents to begin the process of Recovery.

Re-entry into the Evacuated Area

The re-entry of evacuees shall occur in a coordinated manner. There are two separate scenarios; first, evacuation was precautionary and dam failure has been avoided or controlled; and second, failure has occurred resulting in property damage and/or loss of life. Each is presented below:

PRECAUTIONARY / FAILURE AVOIDED

In cases where the evacuation was ordered in accordance with a potential breach, flow and dam water levels must be returned to safe limits without pending adverse weather in the immediate future prior to evacuees being permitted to return to their homes. In such cases and prior to re-entry, the Operations Section shall:

1. Complete a dam inspection with water levels and seepage to acceptable limits, and

2. Organize an assessment to determine if any damage has occurred along the Chase River and low lying areas.

All information will be provided to the Emergency Coordination Centre. The ECC will issue an Evacuation Rescind Order (Appendix 5) and include all areas not affected.

FAILURE WITH RESULTING LOSSES

In the case of a dam breach, the phase of operations will enter into subsequent operational periods with response goals of life safety and incident stabilization. Recovery portion of the Response and Recovery Plan should also be implemented. Within that phase, a detailed assessment of affected areas shall be completed before a return to evacuated areas can be considered. The assessment shall include:

- properties not impacted,
- need for security for any unsafe structures,
- utility restoration,
- secondary hazards.

All infrastructure shall be assessed including the transportation network (bridge assessment), water, sewer and storm systems. Damaged areas shall be secured.

All information will be provided to the Emergency Coordination Centre. The ECC will issue an Evacuation Rescind Order (Appendix 5) and include all areas not affected for residents to return to their homes.

ORDERLY RETURN

One or more Evacuation Rescind may be issued by the ECC defining areas that are safe for residents to return. The Advanced Planning Unit shall develop a plan to outline the provisions for an orderly return of evacuees. The plan will be based on a damage assessment and prioritizing return. A priority continuum for return shall be used based on individual property impact, from releasing those evacuees who's properties have not been impacted to those with property destroyed and being part of the debris at the later stages of recovery. The priorities for return will be based on:

- non-impacted areas/addresses on peripheries where residents can safely return
- minor impacted areas/streets where residents can safely return
- damaged properties where the living components are not affected
- damaged properties where living components are compromised and re-entry is only permitted with support to recover valuables
- property has been destroyed – only debris remains.

Other considerations include:

- provision of security for unsafe structures
- support for those recovering valuables

- notification and public messaging for orderly and effective re-entry
- awareness for the potential for another evacuation
- Routes for re-entry.

The plan will be communicated to ECC Operations and to Incident Command at the site level. Evacuees shall be coordinated at the Reception Centre and/or the Information Centre.



ORDER

Declaration of State of Local Emergency

ORDER

WHEREAS *[type of hazard]* in *[name of local authority]*;

AND WHEREAS *[explanation of ongoing or imminent threat to life or property]*;

AND WHEREAS this *[type of hazard]* emergency requires prompt coordination of action or special regulation of persons or property to protect the health, safety or welfare of people or to limit damage to property;

NOW THEREFORE:

IT IS HEREBY ORDERED pursuant to Section 12 (1) of the *Emergency Program Act* (RS, 1996, Chap 111) that a state of local emergency exists in *[specific geographic boundaries of designated area]* due to *[short hazard description]* and *[short consequence statement]*;

IT IS FURTHER ORDERED THAT the *[name of local authority]*, its employees, servants and agents are empowered pursuant to Section 13 (1) of the *Emergency Program Act* to do all acts and implement all procedures that are considered necessary to prevent or to alleviate the effects of the emergency.

ORDERED by the *[head of local authority]* this date *[date]* to remain in force for seven days until *[date]* at midnight unless cancelled by order of *[name of local authority]* or the Minister responsible.

(Head of local authority)



Declaration of State of Local Emergency

CANCELLED

Date: *[date]*

WHEREAS *Dam Failure(Chase River – Middle and/or Lower Dams)* in the City of Nanaimo;

AND WHEREAS this *Failure of the Dam will cause large scale flooding, loss of life and significant impact to infrastructure* emergency no longer requires prompt coordination of action or special regulation of persons or property to protect the health, safety or welfare of people or to limit damage to property;

NOW THEREFORE:

IT IS HEREBY ORDERED pursuant to Section 14 (2) (ii) of the *Emergency Program Act* (RS, 1996, Chap 111) that a state of local emergency no longer exists in *Sixth Street to Eighth Street, north to south, and Howard Avenue to Park Avenue, west to east. The river then passes under the Esquimalt and Nanaimo (E&N) railway embankment via a concrete arch culvert, and then a culvert at Aebig Road. A large concrete box structure is encountered at the Island Highway, and a small trestle on the E&N spur line to Wilcox due to Failure of Dam (Colliery Dam) and will cause loss of life, damage to residential dwellings and impact to critical infrastructure.*

and is therefore cancelled effective this date at *[time]*.

Printed Name

Signature



EVACUATION ALERT

An Evacuation Alert has been issued by the City of Nanaimo at the Emergency Coordination Centre (ECC).

Middle and Lower Chase River Dams Because of the potential danger to life and health, the City of Nanaimo has issued an Evacuation Alert for the following areas:

• *Sixth Street to Eighth Street, north to south, and Howard Avenue to Park Avenue, west to east. The river then passes under the Esquimalt and Nanaimo (E&N) railway embankment via a concrete arch culvert, and then a culvert at Aebig Road. A large concrete box structure is encountered at the Island Highway, and a small trestle on the E&N spur line to Wilcox*

An Evacuation Alert has been issued to prepare you to evacuate your premises or property should it be found necessary.

Residents will be given as much advance notice as possible prior to evacuation; however you may receive limited notice due to changing conditions.

WHAT YOU SHOULD DO WHEN AN ALERT IS IN EFFECT

Upon notification of an **ALERT**, you should be prepared for the evacuation order by:

- Locating all family members or co-workers and designate a Reception Centre outside the evacuation area, should an evacuation be called while separated.
- Gathering essential items such as medications, eyeglasses, valuable papers (i.e. insurance), immediate care needs for dependants and, if you choose, keepsakes (photographs, etc). Have these items readily available for quick departure.
- Preparing to move any disabled persons and/or children.
- Moving pets and livestock to a safe area.
- Arranging to transport your household members or co-workers in the event of an evacuation order. If you need transportation assistance from the area please call **250-753-7311**
- Arranging accommodation for your family if possible. In the event of an evacuation, Reception Centres will be opened if required.
- Monitoring news sources for information on evacuation orders and locations of Reception Centres.

Further information will be issued at *(insert time or meeting location)* or should the situation change or visit www.nanaimo.ca

For more information contact:

City of Nanaimo, Fire Rescue Department, Emergency Management Division 250-753-7311

(Signature of Board/Chair or Designate, Mayor or Designate).

City of Nanaimo, 455 Wallace Street Nanaimo, BC V9R 5J6



EVACUATION ORDER ISSUED
(DATE AND TIME)

Pursuant to *Emergency Program Act* (1993) Section 12(1) an Evacuation Order has been issued by the City of Nanaimo due to immediate danger to **life safety** due to Flood from failure of the Middle and/or Lower Chase River Dams. Members of the *Nanaimo Fire Rescue, RCMP Nanaimo, BC Ambulance and other volunteer agencies* will be expediting this action.

The Evacuation Order is in effect for the following areas:

- *Sixth Street to Eighth Street, north to south, and Howard Avenue to Park Avenue, west to east. The river then passes under the Esquimalt and Nanaimo (E&N) railway embankment via a concrete arch culvert, and then a culvert at Aebig Road. A large concrete box structure is encountered at the Island Highway, and a small trestle on the E&N spur line to Wilcox*

WHAT YOU SHOULD DO:

- You must leave the area **immediately**.
- Follow the travel route provided and register at Bowen Park if you reside or are located north of North of 7th street or Beban Park if you reside or are located south of 7th Street
- If you need transportation assistance from the area please advise the individual providing this notice or call **250-753-7311**.
- Close all windows and doors.
- Shut off all gas and electrical appliances, other than refrigerators and freezers.
- Close gates (latch) but do not lock.
- Gather your family: take a neighbour or someone who needs help.
- Take critical items (medicine, purse, wallet, and keys) only if they are immediately available. Take pets in pet kennels or on leash.
- Do not use more vehicles than you have to.
- Do not use the telephone unless you need emergency service.

YOU MUST LEAVE THE AREA IMMEDIATELY

For more information contact:

City of Nanaimo, Fire Rescue Department, Emergency Management Division
250-753-7311

(Signature of Board/Chair or Designate, Mayor or Designate) .

City of Nanaimo
455 Wallace Street Nanaimo, BC, V9R 5J6



EVACUATION RESCIND
(DATE AND TIME)

The Evacuation Order, pursuant to Emergency Program Act (1993) Section 12(1) issued *(date and time)* to the area(s) *Sixth Street to Eighth Street, north to south, and Howard Avenue to Park Avenue, west to east. The river then passes under the Esquimalt and Nanaimo (E&N) railway embankment via a concrete arch culvert, and then a culvert at Aebig*

Road. A large concrete box structure is encountered at the Island Highway, and a small trestle on the E&N spur line to Wellcox is rescinded. *(indicate if Evacuation Alert is in place)* .

An Evacuation Order may need to be reissued: however if that is deemed necessary the process will re-commence.

For more information contact:

City of Nanaimo , Fire Rescue Department, Emergency Management Division
250-753-7311

(Signature of Board/Chair or Designate, Mayor or Designate) .

City of Nanaimo

455 Wallace Street,

Nanaimo BC

V9R 5J6