

Information Archive

Colliery Dams Technical Committee Public Information Update May 26 2014

The attached public information update is provided by the Colliery Dams Technical Committee.

Colliery Dams Technical Committee Public Information Update

May 26 2014

Risk Classification of Colliery Dams Reduced Following Phase One Work of Technical Committee

Work undertaken by Golder Associates on behalf of the Technical Committee during Phase One of its mandate included detailed site testing, analysis and risk assessment of the Colliery Dams. That technical analysis indicated that there is an extremely low risk of sudden or rapid failure of the dams in an earthquake that would cause a large wave of water or debris to impact the neighbourhood below the dams.

That work has been a significant factor contributing to the replacement of the "Extreme" consequence classification of the dams by lower classifications, as described in this public update.

Analysis is continuing to determine the best option to increase spillway capacity, which must be expanded to meet flow requirements in a prolonged heavy rainfall. A further report will be issued in approximately 4-6 weeks on the remediation work to be undertaken, the schedule, the status of signage in place, and the timing for release of the consultants' reports.

Background:

- An update on the status of the Technical Committee's work was last provided on March 24 2014. This update provides information about the physical state of the dams that has emerged through Phase One of the work of the Committee.
- The mandate of the Committee is to focus on options for remediating the existing dams that will satisfy the requirements of the BC Dam Safety Regulation, which is administered by Dam Safety Section (DSS) of the Ministry of Forests, Lands and Natural Resource Operations
- As part of Phase One of its work under that mandate, the Committee was tasked with reviewing existing data and collecting additional data with the objective, among other things, of "potentially reducing the hazard rating of the dams through better understanding of the dam structures, failure rates and methods/probability of events that would result in failure of the dams." (In the Regulation, the term used for "hazard rating" is "consequence classification.")

Risk assessment approach:

- In its approach to the Phase One work, the Committee endorsed a "risk assessment" approach to assessing the physical state of the dams (engineers Golder Associates were selected by the Committee to undertake this work based on their high level of expertise in this area and their recommendation that a risk assessment approach be used to develop the most appropriate remediation options in due course).
- Why has the Committee taken this approach?
 - Changes to the Canadian Dam Association Dam Safety Guidelines made in October 2013 provided the Technical Committee with the opportunity to employ this approach to evaluate the dams and their hazard rating (consequence classification), and develop the most appropriate remediation options to achieve acceptably low public safety risk.
 - This is a technical and complex undertaking, but worth understanding as it has made a significant difference to the outcome of the Committee's work. Without the ability to use this approach, the Committee would have been limited to only considering remediation options that would meet the design standards associated with dams with "extreme consequence" ratings, which likely would require more extensive remediation.
 - Risk, in this context, is a measure of the likelihood and severity of adverse consequences from potential dam failure under various conditions, such as an earthquake or prolonged heavy rainfall, and is usually expressed in terms of life-safety and economic impacts.
 - Understanding the extent of the risk assists with the selection of remedial options to address deficiencies in the dams in a way that will meet Dam Safety Section requirements. In the case of the Colliery Dams, the priority is to ensure that any work done on the dams is essential to meet life-safety requirements while meeting the Committee's other objectives as outlined at its first meeting (attached to this update).
- As part of the risk assessment process, Golder has undertaken detailed testing and analysis of the dams over the past six months. That new information was required to support a case to reduce the hazard ratings or consequence classifications of the dams and to establish the appropriate level of remediation required.

- Golder therefore undertook physical site investigations, and core samples of the dams, as well as hydrological, hydraulic, structural, geotechnical and earthquake analyses, to ensure that the Committee had complete information.

Results of risk assessment:

- Until now, both of the dams have been classified by Dam Safety Section as "Extreme consequence" in the event of a severe storm or earthquake, which is the highest consequence rating under the Regulation.
- The Extreme rating was based on a previous perception that the dams were very vulnerable to serious damage and potential sudden failure in the event of an earthquake or severe storm, and therefore posed a serious risk to public safety.
- Golder's extensive site investigation work and comprehensive analysis of the results and risks associated with the dams indicates that risks related to the dams are in fact significantly lower than previously believed.
- The dams appear to be in the same condition they were when remediation work was done on them in 1980. Testing has shown that the concrete walls are in good condition with very limited signs of deterioration.
- Earthquake: The results of the analysis indicate that given the current physical state of the dams, there is an extremely low probability of a dramatic rupture in an earthquake that would put public safety at risk. It was established that the dams are very unlikely to fail during an earthquake in a manner that would result in loss of life. If the dams were to be damaged by an earthquake, it would most likely be manifested through slow leaking through cracks in the dam walls rather than a sudden failure of the walls.
- Severe storm: The results of the analysis also indicate that risks of serious damage resulting from a severe storm are lower than previously thought. However, spillway capacity must be addressed to reduce the risk further to the level required by dam safety standards.
- The Committee is pleased to report that, based on this new information, the Dam Safety Section has decided to reduce the hazard rating, or consequence classification of the dams, from their current "Extreme" rating to "High" for the Middle Dam and "Very High" for the Lower Dam. Those new classifications will be put in place as soon as Dam Safety Section has received and reviewed all of the detailed reports currently being completed by Golder.

What does this mean in practical terms?

- These rating reductions represent an acknowledgement by Dam Safety Section that the dams carry significantly lower risks than an Extreme rating suggests.
- The Committee is now able to develop remediation options that will satisfy public safety standards, consistent with these lower classifications. These include options to increase spillway capacity at the Lower Dam, as Golder has determined that this improvement would be of benefit in a severe storm.
- Any remaining incremental risk (due to dam failure) to the public downstream of the dams, after remediation is in place, will fall within generally acceptable societal norms for exposure of the public to risks (similar to that associated with the likelihood of a fatality due to an auto accident).
- Golder's detailed risk assessment report will be publicly available when it is finalized later this summer.

Next steps:

- The Committee remains engaged in the review of remediation options generated by Golder, based on the outcome of the risk assessment and in discussions with Dam Safety Section and expects that detailed information will be provided in this regard in the next 4-6 weeks.
- The City is also reviewing its current short term emergency mitigation plan in light of this new information about the risk associated with the dams, recognizing that this plan was taken into account in the risk assessment.

Mandate of Technical Committee

As described in October 21 2013 report approved by Nanaimo City Council

Focus on outcomes that only involve remediating the existing dams, using the following phased approach:

- Phase 1: Review the existing data and direct additional data collection as necessary.
- Phase 2: Develop option(s) for remediating the existing dams that will satisfy the requirements of the Dam Safety Section of the Ministry of Forests, Lands and Natural Resources.
- Develop plans for short-term physical alterations to the dams in 2014 to provide the necessary time to carry out the long-term strategy (if required).

Objective of Technical Committee

As set out by Committee at its first meeting

Development of an environmentally minimally invasive, cost- and time-effective solution while satisfying required safety standards - i.e. a solution that addresses:

- The safety of downstream residents and workers;
- Dam Safety Section requirements;
- The respective objectives of the City, Snuneymuxw First Nation, the Colliery Dam Park Preservation Society and the community;
- Environmental concerns, including fisheries habitat and ecology; Cost-effectiveness; and
- Having a timely permanent solution in place in 2014 if possible, but no later than 2015, with shorter term mitigation in place if required in 2014.

Colliery Dam Technical Committee Public Information Update: March 14, 2014

The Colliery Dam Technical Committee's mandate is to identify an environmentally minimally invasive, cost- and time-effective remediation solution for the Colliery Dam system that meets safety standards and the respective objectives of the City of Nanaimo, Snuneymuxw First Nation, the Colliery Dam Park Preservation Society and the community.

Good progress has been made toward identifying viable remediation options to address the requirements of the Dam Safety Section of the provincial Ministry of Forests, Lands and Natural Resources. In early March, the Committee received preliminary remediation options from Golder Associates.

Golder's proposed options take advantage of new (2013) Canadian Dam Association (CDA) Dam Safety Guidelines that apply a risk assessment methodology, which defines the situation for options that focus remediation of the Colliery Dam system on the Lower Dam to withstand a seismic event or peak flood conditions. Golder has determined that its proposed options can be completed by November 2014 if work begins by early summer 2014. Furthermore, the options under consideration may not require in-stream work and may not require Department of Fisheries and Oceans Canada (DFO) authorization.

Golder has taken core samples of the Lower Dam and the downside berm. While Golder has not completed its analysis, preliminary findings are that the concrete in the dam is observed to be in very good condition with no signs of deterioration, voids, or honeycombing. The wall has steel reinforcement and is founded on bedrock.

While this assessment is important to know, the analysis is only partially completed. Golder has informed the Committee that further work and analysis is still required to identify viable options for remediating the dams to meet regulatory standards and the objectives of the Technical Committee.

Golder is scheduled to report back to the Committee by the end of April, at which time it is hoped the most viable option can be identified and approved, followed by determining a schedule for design, permitting and construction.

An Information Report to City Council is tentatively scheduled for 2014-Mar-24, which will provide further information on the status of the Colliery Dams.

Colliery Dams Technical Committee: Status Update February 5 2014

The Colliery Dams Technical Committee is pleased to provide the following public progress update, also available on the City of Nanaimo website. All of the Committee members remain focussed on supporting the work that needs to be done to develop a remediation plan for the dams that will meet their collective objectives.

The Technical Committee was struck on October 21 2013 by the City of Nanaimo, with a mandate to develop remediation options to present to the City of Nanaimo and Snuneymuxw First Nation for consideration before a final decision is made. Mayor John Ruttan says: "I'm very pleased to hear that the Technical Committee is making substantial progress on the work that has to be done, and working collaboratively together on developing options for remediation of the Colliery Dams. We have a good short-term emergency plan in place in the meantime, and I'm looking forward to seeing the options and making progress very soon on a permanent solution."

Objective of Technical Committee

Development of an environmentally minimally invasive, cost and time-effective solution while satisfying required safety standards - i.e. a solution that addresses:

- The safety of downstream residents and workers;
- Dam Safety Section requirements;
- The respective objectives of the City, Snuneymuxw First Nation, the Colliery Dam Park Preservation Society and the community;
- Environmental concerns, including fisheries habitat and ecology;
- Cost-effectiveness; and
- Having a timely permanent solution in place in 2014 if possible, but no later than 2015, with shorter term mitigation in place if required in 2014.

Meetings of Committee

An update on the status of the Committee's work was last provided on January 10, 2014. On January 21 and 22 2014, the Technical Committee met again to discuss the status of engineering work on Phases 1 and 2 of the Committee's mandate (reviewing the existing data and collecting necessary additional data, and development of option(s) for remediating the existing dams that will satisfy the requirements of the Dam Safety Section of the Ministry of Forests, Lands and Natural Resources). As noted in the previous update, the Committee's work is focussed solely on options for remediating the dams. Engineers Golder & Associates are undertaking their review and investigative work with that focus on development of options for the Committee's review in due course.

Representatives of the Dam Safety Section have been supporting the Committee process by attending all of its meetings, in order to ensure they remain fully informed and are able to contribute to the progress of technical discussions.

Continuing investigative work

Golder Associates continues to review existing data and collect additional data as required. Physical site investigations and surveys are also under way, as are hydrological, hydraulic, structural, geotechnical and seismic analyses, all to ensure that the engineers have complete information in planning for remediation.

At the same time, as mentioned in the previous update, changes to the Canadian Dam Association Dam Safety Guidelines made in 2013 are permitting Golder to employ a comprehensive technical approach to their analysis of that information and development of potential remediation options. This new approach is focussed on satisfying Dam Safety Section requirements in a way that applies a risk assessment methodology to the development of satisfactory rehabilitation options. Dam Safety Section staff have indicated that they are willing to work with this new approach. It is an approach that both governments and industry are increasingly moving towards in developing cost-effective strategies to address risk issues and the objective is to ensure that any work done on the dams is necessary to meet safety requirements.

Updated timelines

Technical options for remediation that have been developed based on the approach described above, and their estimated costs, will be brought back to the Technical Committee as soon as possible. The engineers estimate they will be in a position to do so by the middle of April. The Committee hopes to be in a position to make those options known and to develop recommendations on the next steps within a very short time following their review of the options and other relevant information.

Communications and public information

The Committee will not have much further to report until early March, when it expects to receive a progress report on the work from Golder. If any of the onsite investigative work will have a temporary effect on public access to the Park, the City has advised it will provide timely public notice to that effect.

In the meantime, all of the parties represented on the Committee remain focussed on supporting the work that needs to be done to develop a remediation plan for the dams that will meet their collective objectives.

Low volume siren testing scheduled for this Wednesday February 5th, 2014

(Nanaimo BC, February 4th, 2014) – The Sirens, installed as part of the Colliery Dam Short Term Risk Mitigation Strategy will be undergoing some low level sound tests on Wednesday February 5th at 10am for 30 seconds. It is the start of the monthly tests which are scheduled for the first Wednesday of each month beginning at 10 am. The tests will consist of automated voice and siren sound. The siren sound will be at 50% of volume. There is no action required by residents in the area.

If you have any questions or concerns please contact the City of Nanaimo at 250-754-4251.

Update #4 2014-Jan-28

Colliery Dams (Middle and Lower Chase River Dams)

City staff are writing this update to provide information on the current status of the Middle and Lower Chase River Dams, located in Colliery Dam Park. The purpose of the update is to provide a summary on key issues regarding the dams. The following update provides information for the timeframe since November 5.

1. Numerous reports have been developed by consultants and City staff regarding the Colliery Dams. Following is a list of information that can be accessed by clicking the link to the highlighted document.
 - [Staff Report for Long-Term Strategy](#)
 - [Staff Report for Short-Term Mitigation Plan](#)
 - [Dam Safety Management Program](#)
 - [Emergency Action Plan](#)
 - [Update #1 2013-Sep-20](#)
 - [Update #2 2013-Oct-11](#)
 - [Update #3 2013-Nov-05](#)
 - [Update #4 2014-Jan-28](#)

2. Roll out of the Short-Term Mitigation Plan was complete, with the exception of the operation of the sirens. The following steps took place during November:
 - Starting 2013-Nov-06 approximately 600 information packages were delivered to properties downstream of the Colliery Dams. These packages were delivered by firefighters and RCMP auxiliary staff and provided information regarding evacuation plans, sirens, public meetings, call alert, etc. These packages are available on the City website.
 - Public information meetings were held Nov. 20 and 25 to update the public on the short-term mitigation process and answer questions the public may have. Unfortunately, only a small number of people attended these sessions. The Colliery Dam Park Preservation Society (CDPPS) held a public meeting 2013-Nov-26, which was attended by approximately 110 people. Staff attended this session and made a presentation on the Short-Term Mitigation Plan, and jointly with the CDPPS on the Technical Committee that has been established to provide the next steps for remediating the existing dams that will satisfy the Provincial Dam Safety Section.
 - A staff exercise was held 2013-Nov-28, which allowed people to understand what steps they need to take if evacuation is required and allow emergency response staff to carry out a practice exercise. Approximately 80 – 100 participants were involved, including City staff, provincial agencies and volunteers.
 - As part of the City of Nanaimo's Short-Term Mitigation Plan to address public safety concerns resulting from the identified risks associated with the Middle and Lower Colliery Dams, City officials conducted a sound test of the recently installed evacuation siren on 2014-Jan-09.
 - In conjunction with the siren test, students and staff attending John Barsby Community School scheduled an evacuation drill which commenced once the siren test was completed.
 - Following the sound test, City officials will continue to test the siren on a scheduled basis on the first Wednesday of each month from 10 a.m. to 10:05 a.m., during which the sirens will sound at 50% volume for approximately 30 seconds.

Installation and testing of the siren was originally planned for October 2013, however shipping challenges and equipment vandalism delayed this schedule.

3. Mandate of Technical Committee
On 2013-Oct-21, the City of Nanaimo struck the Technical Committee with a mandate to focus on outcomes that only involve remediating the existing dams, using the following phased approach:
 - Phase 1: Review the existing data and direct additional data collection as necessary.
 - Phase 2: Develop option(s) for remediating the existing dams that will satisfy the requirements of the Dam Safety Section of the Ministry of Forests, Lands and Natural Resources.
 - Develop plans for short-term physical alterations to the dams in 2014 to provide the necessary time to carry out the long-term strategy (if required).

Composition of Technical Committee

The Committee is comprised of representatives of the City; Snuneymuxw FirstNation; the Colliery Dams Park Preservation Society; and engineering firm Golder Associates. Committee facilitator Katherine Gordon was appointed on November 26. Both Golder Associates and Gordon were appointed by the Committee after review of a number of candidates.

Katherine Gordon will act as the contact person in relation to any questions about these updates or the work of the Committee.

Role of Technical Committee

The Committee is tasked with making viable recommendations on rehabilitation options to be reviewed by the City, Snuneymuxw First Nation and the Dam Safety Section. Those recommendations are to be made by 2014-Feb-28 to the Executive Committee, which is comprised of City senior staff and Snuneymuxw advisors directed by the Chief. The Executive Committee oversees the Technical Committee and if necessary, provides guidance and advice to the Technical Committee.

Decision-making process

In due course the Executive Committee will provide commentary and recommendations to the Policy Group (Mayor and Council/Snuneymuxw Chief and Council) for consideration and discussion. As owner of the dams, City Council must make the final decision on which rehabilitation option to pursue and any short-term mitigation options required before permanent remediation takes place.

Meetings of Technical Committee

The Technical Committee met on 2013-Dec-05 and -13, and 2014-Jan-21 and -22 to discuss communications and risk assessment approaches and technical options being developed by Golder Associates for committee consideration. Representatives of the Dam Safety Section attend meetings in order to ensure they are fully informed and are able to contribute to the progress of technical discussions.

Objective of Technical Committee

The Committee has agreed on the following overarching objective for its work:

Development of an environmentally minimally invasive, cost- and time-effective solution while satisfying required safety standards - i.e. a solution that addresses:

- the safety of downstream residents and workers;
- Dam Safety Section requirements;
- the respective objectives of the City, Snuneymuxw First Nation, the Colliery Dam Park Preservation Society and the community;
- environmental concerns, including fisheries habitat and ecology;
- cost-effectiveness; and
- having a timely permanent solution in place in 2014 if possible, but no later than 2015, with shorter term mitigation in place if required in 2014.

Approach to development of rehabilitation options

Investigation work

The Committee is combining work on Phases 1 and 2 of its assigned tasks. Golder Associates is in the process of reviewing the existing data and collecting additional data as required. The Committee has provided Golder with copies of historical and other relevant documents and reports and City staff are working with Golder to provide whatever support is required in order to conduct any additional physical site investigation of the Lower and Middle Dams.

The physical site investigation involving a limited geophysical examination of the two dams took place during the week of January 13. This is a non-invasive way to survey a large area of the dams with hand-held equipment that can be used in areas that are difficult to access with conventional drilling equipment and minimize disturbance to the dams and watercourses.

The objectives include providing information related to the internal dam fill zoning of the two dams, gathering information about the water table, underlying foundations and reinforcement (such as rebar) within the concrete wall, collecting information which may help to establish whether a low-level-outlet may exist, and gather any other geophysical information, including seismic velocities, that will help in developing suitable remediation options.

The work was carried out on land, is non-invasive and is not expected to have adverse environmental impacts as the radar and seismic signal sources are all very low energy.

A second phase of site investigation will likely take place in the first half of February and involve investigative drilling in the embankments and concrete core of the dams. The geophysics work may provide information that will influence the scope of the drilling.

Risk Assessment

At the same time, Golder has adopted an approach which includes the revised (2013) Canadian Dam Association Dam Safety Guidelines to satisfy Dam Safety Section requirements. This approach applies a risk assessment methodology to the development of satisfactory rehabilitation options. Dam Safety Section staff have indicated that they are willing to work with this new approach. It is an approach that both governments and industry are increasingly moving towards in developing cost-effective strategies to address risk issues.

Following Technical Committee meetings in January, Golder Associates will work towards completing options for remediating the dams in place.

The above information is not a conclusive list of all processes that are underway, but rather is provided to identify key issues at this time. Future updates will provide additional information on the short-term and long-term mitigation plans and new developments that occur. If anyone wishes additional information, please call 250-754-4251 and a representative from the City will speak with you.

Colliery Dams Site Investigation Scheduled for January / February 2014

(Nanaimo BC, January 14, 2014) – Golder Associates Limited, who is working with the Colliery Dams Technical Committee to determine options to remediate the Colliery Dams, will carry out site investigations in January / February 2014.

These investigations are scheduled as follows:

- The week of January 13-17 – Non-invasive surveys of the Middle and Lower Dams using handheld equipment. Short-term disruptions to park users may be necessary during this period. It may be necessary to limit access during the seismic survey, which would only be for one day.
- Mid-February – This phase of the investigation will involve investigative drilling on the dam embankments and the concrete portions of the dams. Given that drilling equipment will be brought into the park, portions of the park, access, and trails may be blocked off to meet WorkSafeBC safety requirements. The duration of this work is unknown; however, efforts will be made to limit disruption to park users.

Colliery Dams Technical Committee: Status Update January 10 2014

The Committee is providing the following public progress update, also available on the City of Nanaimo website.

Background

Mandate of Technical Committee:

On October 21, 2013 the City of Nanaimo struck the Technical Committee with a mandate to focus on outcomes that only involve remediating the existing dams, using the following phased approach:

- Phase 1: Review the existing data and direct additional data collection as necessary.
- Phase 2: Develop option(s) for remediating the existing dams that will satisfy the requirements of the Dam Safety Section of the Ministry of Forests, Lands and Natural Resources.
- Develop plans for short-term physical alterations to the dams in 2014 to provide the necessary time to carry out the long-term strategy (if required).

Composition of Technical Committee:

The Committee is comprised of representatives of the City; Snuneymuxw First Nation; the Colliery Dams Park Preservation Society; and engineering firm Golder Associates. Committee facilitator Katherine Gordon was appointed on November 26. Both Golder Associates and Gordon were appointed by the Committee after review of a number of candidates.

Katherine Gordon will act as the contact person in relation to any questions about these updates or the work of the Committee.

Role of Technical Committee:

The Committee is tasked with making viable recommendations on rehabilitation options to be reviewed by the City, Snuneymuxw First Nation and the Dam Safety Section. Those recommendations are to be made by February 28 2014 to the Executive Committee, which is comprised of City senior staff and Snuneymuxw advisors directed by the Chief. The Executive Committee oversees the Technical Committee and if necessary provides guidance and advice to the Technical Committee.

Decision-making process:

In due course the Executive Committee will provide commentary and recommendations to the Policy Group (Mayor and Council/Snuneymuxw Chief and Council) for consideration and discussion. As owner of the dams, City Council must make the final decision on which rehabilitation option to pursue and any short-term mitigation options required before permanent remediation takes place.

The parties involved at the table agree that this is a fair, credible process to follow.

Meetings of Technical Committee

The Technical Committee has met twice, on December 5 and 13, and three meetings are scheduled for January to discuss communications and risk assessment approaches and technical options being developed by Golder Associates for committee consideration. Representatives of the Dam Safety Section attend meetings in order to ensure they are fully informed and are able to contribute to the progress of technical discussions.

Objective of Technical Committee

The Committee has agreed on the following overarching objective for its work:

Development of an environmentally minimally invasive, cost- and time-effective solution while satisfying required safety standards - i.e. a solution that addresses:

- The safety of downstream residents and workers;
- Dam Safety Section requirements;
- The respective objectives of the City, Snuneymuxw First Nation, the Colliery Dam Park Preservation Society and the community;
- Environmental concerns, including fisheries habitat and ecology;
- Cost-effectiveness; and
- Having a timely permanent solution in place in 2014 if possible, but no later than 2015, with shorter term mitigation in place if required in 2014.

Approach to development of rehabilitation options

Investigation work

The Committee is combining work on Phases 1 and 2 of its assigned tasks. Golder Associates is in the process of reviewing the existing data and collecting additional data as required. The Committee has provided Golder with copies of historical and other relevant documents and reports and City staff are working with Golder to provide whatever support is required in order to conduct any additional physical site investigation of the Lower and Middle Dams.

The physical site investigation involves a limited geophysical examination of the two dams that will take place during the week of January 13. This is a non-invasive way to survey a large area of the dams with hand-held equipment that can be used in areas that are difficult to access with conventional drilling equipment and minimize disturbance to the dams and watercourses.

The objectives include providing information related to the internal dam fill zoning of the two dams, gathering information about the water table, underlying foundations and reinforcement (such as rebar) within the concrete wall, collect information which may help to establish whether a low-level-outlet may exist, and gather any other geophysical information, including seismic velocities, that will help in developing suitable remediation options.

The work will be carried out on land, is non-invasive and is not expected to have adverse environmental impacts as the radar and seismic signal sources are all very low energy. However, it may be necessary, during one day of seismic surveying, to limit public access in order to minimize vibration noise during the seismic recordings. If this is the case, notices will be posted at entrances to the Colliery Dams Park and on the City of Nanaimo website, as well in local newspapers.

A second phase of site investigation will likely take place in the first half of February and involve investigative drilling in the embankments and concrete core of the dams. The geophysics work may provide information that will influence the scope of the drilling.

Risk assessment

At the same time, Golder has adopted an approach which includes the revised (2013) Canadian Dam Association Dam Safety Guidelines to satisfy Dam Safety Section requirements. This approach applies a risk assessment methodology to the

development of satisfactory rehabilitation options. Dam Safety Section staff have indicated that they are willing to work with this new approach. It is an approach that both governments and industry are increasingly moving towards in developing cost-effective strategies to address risk issues.

Over the next few weeks, Golder will be undertaking a risk assessment of the dams and concurrently developing technical remediation options. The preliminary work will be presented to the Committee in late January.

Reminder: Colliery Dam Public Safety Information Sessions – Nov 20 and Nov 25

(Nanaimo BC, November 19, 2013) – Members of the public whose homes or businesses are located in the [impacted area](#) below the Lower and Middle Colliery Dams are reminded of two upcoming information sessions to be held at:

- **The Nanaimo Aquatic Centre, Room B, November 20th and 25th from 7 p.m. through 9 p.m.**

City prepares to install evacuation signs for area below Colliery Dams

(Nanaimo BC, November 19, 2013) – As part of its campaign to promote public safety to those Nanaimo residents living within the [identified inundation](#) area below the Colliery Dams, this week City staff will install approximately 40 to 50 evacuation route signs designed to assist residents in quickly leaving their neighbourhood should an evacuation of their homes or businesses be ordered.

The [new blue and white signs](#) – featuring graphics and wording – provide residents, drivers and pedestrians with the following information:

- 1) notice that you are following the official evacuation route
- 2) notice that you are entering a flood hazard zone
- 3) notice that you are leaving a flood hazard zone
- 4) notice that you have arrived at a pedestrian marshalling area

The installation of the evacuation signs support [other steps](#) the City has recently taken as part of its [Short-term Mitigation Plan](#) to address the identified risks associated with the Lower and Middle Colliery Dams in the event of a significant earthquake or extreme rainfall event. The signs will remain in place until a decision regarding the future of the dams is determined through consultation and subsequent actions are taken to address the identified risks.

For more information on public safety or for additional details on the Lower and Middle Colliery Dams, please visit the following websites, www.nanaimo.ca/goto/publicsafety or www.nanaimo.ca/goto/dams .

Update #3 2013-Nov-5 Colliery Dams (Middle and Lower Chase River Dams)

City staff are writing this update to provide information on the current status of the Middle and Lower Chase River Dams, located in Colliery Dam Park. The purpose of the update is to provide a regular summary on key issues regarding the dams. The following update provides information for the timeframe since October 11.

1. Numerous reports have been developed by consultants and City staff regarding the Colliery Dams. Following is a list of information that can be accessed by clicking the link to the highlighted document.
 - [Staff Report for Long-Term Strategy](#)
 - [Staff Report for Short-Term Mitigation Plan](#)
 - [Dam Safety Management Program](#)
 - [Emergency Action Plan](#)
 - [Update #1 2013-Sep-20](#)
 - [Update #2 2013-Oct-11](#)
2. Roll out of the Short-Term Mitigation Plan is underway. The following steps will take place during November:
 - Starting 2013-Nov-06 approximately 650 information packages will be delivered to properties downstream of the Colliery Dams. These packages will be delivered by firefighters and RCMP auxiliary staff and will provide information regarding evacuation plans, sirens, public meetings, call alert, etc. A copy of these packages will be available on the City website 2013-Nov-07.
 - Work is underway on installing sirens adjacent to John Barsby Community School, which will provide notification to area residents if evacuation is required. Sirens will be installed and tested from Nov. 12 - 22.

- Public information meetings will be held Nov. 20 and 25 to update the public on the short-term mitigation process and answer questions the public may have.
 - An exercise, including sounding of sirens, will be held 2013-Nov-28, which will allow people to understand what steps they need to take if evacuation is required and allow emergency response staff to carry out a practice exercise.
3. On 2013-Oct-21, Council approved a Long-Term Strategy (click link in item 1. above) that outlines a process to evaluate remediating the Colliery Dams in place. Evaluation and eventual physical improvements to the dams will take up to two years and will involve the Snuneymuxw First Nation, Colliery Dam Preservation Society, City staff, Dam Safety Section, engineering, environmental and facilitation consultants participating on a Technical Committee to determine methods to remediate the dams.

The above information is not a conclusive list of all processes that are underway, but rather is provided to identify key issues at this time. Future updates will provide additional information on the short-term and long-term mitigation plans and new developments that occur. If anyone wishes additional information, please call 250-754-4251 and a representative from the City will speak with you.

City set to distribute public safety information to properties below Colliery Dams

(Nanaimo BC, November 6, 2013) – Starting Thursday evening, November 7th, uniformed members of the RCMP and Nanaimo Fire Rescue will begin a door-knocking campaign to distribute public safety information to residents and businesses located below the Lower and Middle Colliery Dams.

The packages being distributed detail public safety information that will assist residents in preparing for the potential need to evacuate in the event of a significant earthquake or extreme rainfall event affecting the dams. Approximately 650 properties will be visited by City officials from November 7th through to November 10th.

In addition to the door-knocking campaign, the City will also host two information sessions, November 20th and November 25th from 7 p.m. to 9 p.m. at the Nanaimo Aquatic Centre, Room B. Individuals seeking additional information on how to prepare their households or businesses are encouraged to attend either session. Information is also available on the City's website at www.nanaimo.ca/goto/publicsafety

The actions being taken this week to promote public safety support the objectives outlined in the City's Short-term Mitigation Plan for the Colliery Dams, presented to Council September 9, 2013.

Council to receive report detailing long-term risk mitigation strategy for Colliery Dams

(Nanaimo BC, October 17, 2013) – At its upcoming Committee of the Whole meeting scheduled for October 21, Council will receive an administrative report detailing a multi-phased approach for addressing the identified public safety risks associated with the Middle and Lower Colliery Dams.

Key aspects of the report include:

- In close association with Snuneymuxw staff and Colliery Dam Park Preservation Society representatives, selecting qualified consultants with local knowledge to participate on a Technical Committee.
- Conducting additional studies, reviews and designs identified as necessary by the Technical Committee.
- Developing option(s) for remediating the existing dams that will satisfy the requirements of the Dam Safety Section of the Ministry of Forests, Lands and Natural Resources.
- Developing plans for short-term physical alternation to the dams in 2014 to provide the necessary time to carry out the long-term strategy (if needed).
- Keeping the public updated on the steps being taken to address the identified public safety risks while providing avenues for public engagement and feedback.

Members of the public seeking additional information on the Colliery Dams, including monthly updates and important public safety information are encouraged to visit the City's Colliery Dam information page, www.nanaimo.ca/goto/dams

Update #2 2013-Oct-11

City staff are writing this update to provide information on the current status of the Middle and Lower Chase River Dams, located in Colliery Dam Park. The purpose of the update is to provide a regular summary (bi-monthly) on key issues regarding the dams. The following update provides information for the timeframe of September 23 to October 11.

1. Numerous reports have been developed by consultants and City staff regarding the Colliery Dams. Following is a list of information that can be accessed by clicking the link to the highlighted document.
 - [Staff Report for Short-Term Mitigation Plan](#)
 - [Dam Safety Management Program](#)
 - [Emergency Action Plan](#)
 - [Update #1 2013-Sep-20](#)

2. City staff are in the process of completing a number of tasks, as defined in the Short-Term Mitigation Plan. During the next 4 weeks, the following steps will take place and be communicated to people who occupy buildings below the Colliery Dams:
 - Approximately 80 signs will be installed in the neighbourhood, identifying inundation areas, excavation routes and hazard warnings.
 - An information package will be delivered to area residents and building occupants identifying testing processes for sirens to be installed and scheduled community exercises that will identify what to do if sirens are sounded.
 - An information meeting will be held identifying details of the short-term mitigation plan and process for emergency evacuation plan. Dates for the above-noted processes will be identified in future updates, bulletins and media advertisements.
3. A public information meeting was held 2013-Sep-26 for parents, staff and students attending John Barsby Community School (JBSC) identifying how emergency evacuation processes that JBSC and the City has in place in the event the area below the Colliery Dams had to be evacuated due to heavy rainfalls or a seismic event.
4. City staff and Snuneymuxw First Nation (SFN) met with the Dam Safety Section (DSS) of the Provincial Government on 2013-Oct-02 to discuss the status of short-term and long-term mitigation plans for the Colliery Dams. The Dam Safety Section identified the following key issues in the meeting:
 - requested an update on the dam remediation schedule for long-term mitigation for the Colliery Dams; and
 - advised that if the dams were not going to be fully mitigated in 2014, they recommended that short-term physical improvements to the dams take place in 2014.
5. City staff are preparing a report to be considered by Council at its meeting of 2013- Oct-21. This report will provide the following:
 - establish a Technical Committee that will involve a number of groups, City staff and consultants to review technical solutions to move ahead;
 - also establish an Executive Committee (SFN and City) and a Decision-making Committee (City Council, SFN Council and DSS); and
 - outline the process the Technical Committee will follow, as well as a proposed schedule for the long-term dam remediation.

The above information is not a conclusive list of all processes that are underway, but rather is provided to identify key issues at this time. Future updates will provide additional information on the short-term and long-term mitigation plans and new developments that occur. If anyone wishes additional information, please call 250-754-4251 and a representative from the City will speak with you.

Update #1 2013-Sep-20

City staff are providing this update to provide information on the current status of the Middle and Lower Chase River Dams, located in Colliery Dam Park. The purpose of the update is to provide a weekly summary on key issues regarding the dams. The following update provides information for the week of September 16 - 20.

1. On 2013-Sep-09 Council directed staff:
 - To revise the City Dam Safety Policy to include the [Dam Safety Management Program](#) and [Emergency Action Plan](#).
 - Proceed with a Short-Term Mitigation Plan, which involves completion of numerous steps to monitor and mitigate dam related issues for the safety of the people in the area, to be completed by 2013-Oct-31.
 - Communicate with Snuneymuxw First Nation (SFN), the Colliery Dam Preservation Society (CDPS), School District #68 (SD#68) and the public regarding the Short-Term Mitigation Plan.
2. Following Council's direction to implement a Short-Term Mitigation Plan, the following steps are underway:
 - Order sirens (to be installed in Centennial Park) to provide a warning system that can be activated in the event area residents need to evacuate below the dams.
 - Provide automated monitoring of the water levels on the spillways of the Upper, Middle and Lower Colliery Dams, as well as one upstream location on the Chase River.
 - Establish dam flow thresholds that will trigger various steps up to and including evacuation.
 - Investigate the feasibility of monitors that would identify ground movements in an earthquake that may lead to evacuation.
3. Staff have developed an operational plan to coordinate specific steps in various potential emergency conditions. If emergency conditions materialize, the City's Emergency Coordination Centre (ECC) would be activated and the steps in the Emergency Action Plan would commence, up to and including evacuation of the area residents.
4. City staff are assembling an information package for distribution to all area residents to advise them of the various steps they need to take in the event of an emergency situation. An information package was previously

delivered to area residents in the fall of 2012. The new information package will build on the information provided in 2012, with the goal to have this information delivered to area residents by 2013-Oct-15. Plans are being developed to have a practice exercise scheduled in late October, in order to inform residents of the emergency evacuation process. This exercise would include sounding of alarms at a specified time, which would allow area residents to confirm they are prepared for an emergency evacuation situation and understand the steps they need to take in the event evacuation of the area is needed. In this exercise, it is not expected the area residents will physically move to Reception Centres at Bowen and Beban Parks; however, the goal would be that residents will be well versed in the need to respond to the alarm and quickly exit the area.

5. Various signs will be installed in the area below the Colliery Dams to inform the public on the short-term mitigation process. Initially, signage ([Attachment A](#)) will be placed in the Colliery Dam Park to ask park visitors to inform the City if they see any problems developing in and around the Colliery Dams (i.e. debris blocking spillways, unfamiliar water seepage, etc.).
6. SD#68 has asked City staff to hold an information meeting on 2013-Sep-26 at the John Barsby Community School (JBCS). This meeting would provide information on the coordination of emergency response processes that SD#68 and the City of Nanaimo has in place and provide additional information respecting the Short-Term Mitigation Plan. An information meeting for all area residents will be held in mid-October, to provide a further update and information on the Short-Term Mitigation Plan, including information packages, timing of practice exercises to be held, signage that will be installed throughout the neighbourhood, and any other issues for which the public requests information. The time and location of this meeting will be provided in future weekly updates.
7. Once the multiple steps required to implement the Short-Term Mitigation Plan have been developed and communicated, City staff will proceed with developing a long-term plan for the Colliery Dams. This process will involve the SFN, CDPS, SD#68 and the public. The process and schedule for the long-term plan will be provided in future weekly updates from the City.

The above information is not a conclusive list of all processes that are underway, but rather is provided to identify key issues at this time. Future updates will provide additional information on the Short-Term Mitigation Plan and new developments that occur. If anyone wishes additional information, please call 250-754-4251 and a representative from the City will speak with you.

ATTACHMENT A
Preliminary signs that will be mounted in Colliery Dam Park
(Middle and Lower Chase River Dams)

LOWER CHASE RIVER DAM DAM SAFETY ISSUES	MIDDLE CHASE RIVER DAM DAM SAFETY ISSUES
<p>IF YOU SEE ANY DAM SAFETY CONCERNS</p> <p>PLEASE CONTACT:</p> <p>City of Nanaimo, Public Works Yard at 250-758-5222 (24 hrs)</p>	<p>IF YOU SEE ANY DAM SAFETY CONCERNS</p> <p>PLEASE CONTACT:</p> <p>City of Nanaimo, Public Works Yard at 250-758-5222 (24 hrs)</p>

Update: Details on Colliery Dam short-term mitigation plan available on City website
(Nanaimo BC, September 20, 2013) – At its September 9th meeting, members of Council received a [staff report](#) outlining the intended short-term mitigation strategy for addressing the identified flooding risks associated with the Middle and Lower Colliery Dams.
Members of the public wishing to review key elements of the strategy are encouraged to download the following documents off the City's website:

- [Dam Safety Management Program](#)
- [Emergency Action Plan](#)

Additional information concerning the Colliery Dams can be accessed via the City's Colliery Dam information page at – www.nanaimo.ca/goto/dams

Update: Council approves recommendation to cancel Colliery Dam removal tender
(Nanaimo BC, August 8, 2013) – At a Special Meeting held Wednesday, August 7, Nanaimo City Council voted in favour of a staff recommendation to cancel a proposed tender (1445) to remove the Middle and Lower Colliery Dams during the summer construction season. In addition to this recommendation, Council also voted in favour of:

- Directing staff to transfer the proposed \$2.5 million to be used to remove the dams from the 2012 surplus to a special Reserve to be used in the future for work associated with the risk mitigation of the Colliery Dams;
- Staff preparing Short Term Risk Mitigation Plan at the first available opportunity;
- Continuing to engage the Snuneymuxw First Nation and the public and return at the first opportunity to Council to adopt a new strategy to deal with the long term mitigation of risks associated with the dams.

The tender was originally [brought before Council July 8th](#) but was later deferred following a delegation presentation from Snuneymuxw First Nation Chief, Douglas White III who requested Council hold off on any further decisions regarding the future of the Colliery Dams until [the conclusion of a 30-day consultation](#) "exhausting all possible options and considerations" had been carried out. Council subsequently agreed to support the proposed 30-day consultation process. Members of the community seeking information about the Colliery Dams, including details regarding public safety, are encouraged to visit the City's Colliery Dam information webpage at www.nanaimo.ca/goto/dams.

Update: Colliery Dam 30-Day Process Report, now available for review

(Nanaimo BC, August 8, 2013) – A report containing the findings of the Colliery Dam 30-Day Process held in Nanaimo through the month of July / early August has been posted to the City's website.

The report, prepared by a contracted facilitator, Katherine Gordon, was initiated as a joint solution between the City of Nanaimo and the Snuneymuxw First Nation as a means to gather relevant information, hear perspectives and work to build on common interests towards a collaborative outcome on the future of the Middle and Lower Colliery dams.

To review the report, please click on the following link.

- [Report to the City of Nanaimo and Snuneymuxw First Nation on the Colliery Dams 30 Day Process](#)

Update: Progress on Colliery Dams 30-day Consultation

(Nanaimo BC, August 4, 2013) – The 30-Day consultation process initiated July 8th to explore all possible options and considerations regarding the future of the Middle and Lower Colliery Dams before awarding a tender to remove both structures has allowed all parties involved in the process to consider new information and agree to a proposed alternative path forward.

The Province's Dam Safety Section, in conversations with the City of Nanaimo and the Snuneymuxw First Nation, has acknowledged they are open to discussing a mitigation strategy that would allow both dams to remain in place over the winter months while discussions surrounding the future of the dams, including whether or not to remove, rebuild or remediate both structures, continues.

"The acknowledgement by the Province's Dam Safety Section that they will not be issuing an order this year requiring the City to remove the Middle and Lower Colliery Dams effectively provides all parties engaged in the current discussion about the dams more time to arrive at a mutually agreed to solution concerning their future", said Nanaimo City Mayor, John Ruttan. "Public safety nevertheless remains critical through the upcoming winter months, therefore the City will work closely with all required stakeholders to build on the public safety awareness campaign and risk monitoring program introduced last fall".

"We are happy to see this outcome, and glad Snuneymuxw could play a productive role on this matter working in conjunction with the City and the public", said Snuneymuxw First Nation Chief, Douglas White III. "I thank Mayor Ruttan, his Council, and staff for the positive leadership and diligent effort shown since the re commencement of the 30 day period".

A recommendation outlining this proposed alternative path forward is scheduled to appear before Council at a special meeting set for August 7th.

Update: Progress on Colliery Dams Discussions

(Nanaimo BC, July 30, 2013) – Since reconvening the 30-day process to exhaust all possible options and considerations for the Middle and Lower Colliery Dams before awarding a tender for removal of both structures, the City of Nanaimo and the Snuneymuxw First Nation have been working closely together to make progress.

As part of that work, all parties, together with the facilitator, have met with officials from the Department of Fisheries and Oceans (DFO) and the Province's Dam Safety Branch to ensure they are aware of the discussion process and seek their commitment to working together collaboratively as a high priority.

"I'm pleased to say that thanks to the intensity of our efforts with both DFO and the Dam Safety Branch we have secured their commitment," said Snuneymuxw Chief Douglas White III. "We feel those discussions are opening up positive new pathways to viable solutions."

"We are very delighted that officials from the Dam Safety Branch have indicated that they are prepared to work with us as we examine various mitigation solutions, should we all agree at the end of the process that the best short-term path forward is to leave both dams in place for the winter", said Nanaimo City Mayor, John Ruttan. "Throughout our discussions, public safety has remained a priority for all parties; the need for a good mitigation solution is therefore critical".

Both the City of Nanaimo and the Snuneymuxw First Nation are continuing to work actively on gathering additional technical information on all of the options for the dams before August 8, when the 30-day period ends. The City has instructed its staff and consultants to review and re-examine the various studies and reports, along with the underlying assumptions in them, to ensure that all considerations are exhausted.

As part of this work, standards that were used during the original cost estimates to rebuild both dams will be revisited. These estimates – either for rebuilding or repair – were based on a "no maintenance" standard that would see the dams remain in good condition without need for repair following a catastrophic seismic event. Such a standard is higher than what is required by the Dam Safety Branch, which demands only that the dams not fail. To help inform the discussions, consultants are now comparing the potential costs and requirements of building to that standard.

Engagement with interested citizen groups continues to be identified as an important part of the process. Members of the public are invited to submit their views on the options for the dams to collieryfacilitator@shaw.ca before August 8th. The facilitator will be reporting to the City of Nanaimo, the Snuneymuxw First Nation and various community groups on the information received. Once briefed, all parties hope to be on a joint pathway concerning the future of the dams.

30 Day Colliery Dam discussion between Snuneymuxw First Nation and City resumes

(Nanaimo BC, July 22, 2013) – A Council to Council meeting held this morning between the Snuneymuxw First Nation and the City of Nanaimo has resulted in the continuation of discussions exploring means to reduce the identified risks associated with the Middle and Lower Colliery Dams. Talks between the Snuneymuxw First Nation and the City of Nanaimo were stopped last week due to concerns that the process being followed was unfavourable for maintaining an effective dialogue.

"I am pleased to report that the City of Nanaimo is once again engaged in conversation with the Snuneymuxw First Nation to explore risk mitigation options for the Lower and Middle Colliery Dams", said Nanaimo City Mayor, John Ruttan. "I believe our time together this morning proved beneficial for everyone in attendance and I'm confident the challenges our two governments encountered with our dialogue last week have been addressed, and that we are moving forward with more talks."

"I appreciate the open and constructive dialogue this morning between our Councils, and to carrying on with the 30 day process laid out in the City Council resolution of July 8," said Chief Douglas White III of the Snuneymuxw First Nation. "This matter remains complicated and not easy for any of us. But I appreciated the leadership shown by everyone this morning, and look forward to next steps," he added.

Snuneymuxw and the City expect to have further updates over the next few days about how the remaining time in the 30 day process will be focused, the role of the facilitator, and opportunities for public input.

Update: Colliery Dam 30 Day consultation - contact details

(Nanaimo BC, July 12, 2013) – Members of the public wishing to participate in, or seek information about, the 30 Day consultation period regarding the Colliery Dams are invited to submit ideas on options and supporting information to collieryfacilitator@shaw.ca where they will be received by Katherine Gordon, the facilitator appointed by the City of Nanaimo and the Snuneymuxw First Nation to work with the community to bring resolution to the dialogue that has taken place surrounding the future of the Colliery Dams. A public meeting is scheduled to be held July 25 –further details to follow.

City of Nanaimo and Snuneymuxw First Nation Announce Appointment of Facilitator to Assist on Colliery Dams

(Nanaimo BC, July 11, 2013) – The City of Nanaimo and Snuneymuxw First Nation are happy to announce the appointment of Katherine Gordon as a facilitator to assist with the 30 day consultation period regarding the Colliery Dams. Ms. Gordon

is an experienced facilitator who has worked on matters for the City of Nanaimo and Snuneymuxw First Nation previously, and has a wide-range of knowledge on local matters.

"We are very pleased Katherine is available to assist us with this matter," said Mayor John Ruttan of the City of Nanaimo. "We think her expertise will help bring clarity and transparency to this complex matter," he added.

"The appointment of a facilitator is an important step in trying to bring some resolution to the public dialogue that has taken place," said Chief Douglas White III of the Snuneymuxw First Nation. "I look forward to working with Katherine as she reaches out to the public, the Province, and DFO," he added.

The goal of the facilitation will be to gather relevant information, hear perspectives, and work to build on common interests towards a collaborative outcome. Both the City of Nanaimo and Snuneymuxw hope to be on a joint pathway concerning the future of the Colliery Dams by the end of the process. An important part of the process will be engagement with interested citizen groups, and Ms. Gordon will be reaching out to local stakeholders in the near future.

Update – Colliery Dam removal project

(Nanaimo BC, July 11, 2013) – At its Monday July 8, 2013 meeting, Council adopted the following motion concerning the Colliery Dams:

- *"Whereas, Council has received new information that the Department of Fisheries and Oceans have confirmed the requirement to perform "works" at the Colliery Dams can be performed outside the July 15 – September 15th timeframes, and;*

Whereas, The Province has not ordered that the Colliery Dams be removed by a deadline of September 15th, and; Whereas, in an effort to show Council's complete and total respect of the Snuneymuxw First Nations, who have asked for further consultation surrounding the technical aspects and recognition of their Douglas Treaty rights; Therefore, be it resolved that the City of Nanaimo will seek to conduct further discussions, over a 30 day period ending 2013-AUG-08, with the Snuneymuxw First Nations, exhausting all possible options and considerations before awarding a contract for the removal of the Colliery Dams."

Council and City staff will now take steps to begin the required discussions. Updates will be provided as additional information is made available.

Members of the public seeking further information on the risks associated with the Colliery Dams and/or public safety information are encouraged to visit the City's website at www.nanaimo.ca/goto/dams

Contractor to remove Colliery Dams set to be recommended

NOTICE: for an update on this announcement, please click [here](#)

(Nanaimo BC, July 8, 2013) – At tonight's public meeting, Council will receive an administrative report recommending that Milner Group Ventures Inc. be retained by the City of Nanaimo to drain and remove the Lower and Middle Colliery Dams this summer.

Milner's bid totals \$2,904,591.00, just less of the original projected estimated cost of \$3 million.

Council instructed staff to proceed with tendering the removal of both the Lower and Middle Colliery Dams June 14, 2013. Tender submissions closed July 4th. A total of two tenders were received. Milner's bid - the lowest of the two bids – falls within the City's capital budget for this project.

If Milner is authorized by Council, they will work in accordance with permits outlined in the project's Environmental Management Plan. As general contractor, Milner will have a qualified environmental professional work with the City's environmental monitor in implementing, checking and maintaining the requirements of the Environmental Management Plan, including water quality testing.

The key tasks to be carried out during the project include:

- Development of an environmental protection plan outlining how the contractor will meet the objectives of the Environmental Management Plan.
- Mobilization and construction of the perimeter fence for the work area.
- Installation of temporary environmental protection structures, including erosion and sediment controls, which will be ongoing throughout the project.

- Salvage of fish, reptiles and amphibians to the Upper Colliery Reservoir or another suitable location nearby.
- Establishing a temporary river diversion system to divert flow from the Chase River upstream of the middle dam lake.
- Dewatering lower and middle lakes to enable dam removal and to allow the lake-bottom to dry out.
- Clearing and grubbing over the dams as needed.
- Removing the dams by excavating the earth and rock fill, and demolishing the concrete dam walls and other concrete structures. The lower dam spillway will be preserved.
- Rebuilding the river channel on lake-bottoms by removing topsoil/sediment and placing the rock fill and broken concrete from the dam to line and armour the river channel.
- Building berms along the new river channel using excavated materials from the dams.
- Restore the Chase River below the lower dam to the spillway outlet.
- Installing check dams or other sediment control structures in tributary channels or wherever concentrated drainage may potentially occur across the reservoir bottoms.
- Providing mulch cover and hydro seed on the lake-bottoms and areas disturbed by the project.

City granted 24 hour notice to secure an injunction against efforts to delay dam removal project

(Nanaimo BC, July 5, 2013) – Justice Thompson of the Supreme Court of British Columbia gave his judgement at court this morning that an injunction would be granted to the City of Nanaimo within 24 hours notice to appear before court should actions be taken that prevent City staff or its agents from carrying out work to remove two unsafe dams located in Colliery Dam Park.

"Today's decision by Justice Thompson will assist the City of Nanaimo in eliminating the risk to public safety associated with the Middle and Lower Colliery Dams", said Mayor John Ruttan. "Council understands the controversy surrounding its decision to drain the lakes and remove both structures this summer; similarly the City respects our residents' rights to lawful assembly and freedom of speech; however, the fact remains that both dams are currently ranked by the Province's Dam Safety Section as being the two highest risk dams in BC. The decision made in court today allows the City to proceed forward on a necessary project, unimpeded by any efforts to delay it".

At its May 13, 2013 meeting, City Council passed a motion that staff proceed with the immediate removal of the Lower and Middle Colliery Dams and take the necessary steps to build replacements for both dams while also preparing the lower dam for future hydro generation. Members of the public seeking further information on the risks associated with the present Colliery Dams, public safety information or next steps for the rebuilding of the new dams are encouraged to visit the City's website at www.nanaimo.ca/goto/dams

Targeted park space closure aims to balance safe working conditions with continued park use

(Nanaimo BC, June 20, 2013) – At its May 13, 2013 meeting, City Council passed a motion that staff proceed with the immediate removal of the Lower and Middle Colliery Dams and take the necessary steps to build replacements for both dams while also preparing the lower dam for future hydro generation. In preparation for that work to commence in July, the City has identified those areas of Colliery Dam Park that will remain open during the planned construction, along with those sections of the park that will be designated closed.

"The removal of the Lower and Middle Colliery Dams will involve the use of heavy equipment and machinery, so keeping people out of harm's way during the removal and replacement process is important", said Nanaimo City Mayor, John Ruttan. "With the exception of those areas where construction is occurring or hazardous conditions are present, at this time our intention is to keep as much of the park open as possible".

Designated areas of the park will be marked closed with signage and fencing while other areas will remain available for continued use. Two viewing areas are planned for park users interested in observing construction associated with the dam's removal and replacement. In addition, the park's parking lot on the corner of Sixth Street and Wakesiah Ave will be made available as a space for public gatherings.

"While the dams are being removed and replaced on account of the identified threat they currently present to public safety, the City respects our residents' rights to lawful assembly and freedom of speech. Our construction plan therefore contains designated areas that enable gatherings to occur. Two marked locations allowing direct lines of sight to the construction areas are also planned."

See [Construction Zone Site Map](#)

What is the current status of the Colliery Dams?

At its May 13, 2013 meeting, City Council passed a motion that staff proceed with the immediate removal of the Lower and Middle Colliery Dams and take the necessary steps to build replacements for both dams while also preparing the lower dam for future hydro generation.

The Lower and Middle Colliery Dams are owned by the City of Nanaimo and were constructed in 1911. Engineering studies have concluded that the dams do not meet current dam safety standards. Under the Water Act, the Province has the authority and responsibility to order dam owners, in this case the City of Nanaimo, to immediately address hazardous conditions.

The Dam Safety Section of the Water Management Branch, Ministry of Forests, Lands and Natural Resource Operations, has informed the City that the Province has assigned the Lower and Middle Colliery Dams its highest classification level – extreme risk – which requires that corrective action be taken. They stated that the dams, in their current condition, are a public safety hazard. The Dam Safety Section accepts Council's decision to mitigate the hazard by draining the reservoirs and removing the dams in 2013.

What is the process for removing the dams?

Removal of the Lower and Middle Colliery Dams will take place in accordance with the Department of Fisheries and Oceans fish protection requirements. The first step involves a temporary diversion of the Chase River followed by draining both reservoirs, which is expected to take place in July. An environmental management plan, including erosion and sediment control, has been prepared. Concrete and rock material will be used to stabilize the river channel along the empty reservoirs. This step is required in order to prevent the siltation of the Chase River until the planned replacement of the dams, targeted for the summer of 2014, is completed. All in-stream work related to dam removal must be completed by late fall. Work outside of the river bed will continue until early winter.

The process of removing the dams involves the use of heavy construction equipment and will include hauling material offsite. This work is planned for August.

Describe the process for replacing the dams

The process of designing and replacing the dams will start this summer with the selection of a qualified engineering consultant using an advertised request for proposals process. Additional topographic, geotechnical, geological and any other investigations required by other levels of government will also be conducted. And finally, the conceptual level cost estimates will be further developed following which a financing strategy for the project (based on either short-term or long-term borrowing) will be prepared. Prior to starting construction, the City will commence dialogue with Snuneymuxw First Nation, residents and stakeholders and obtain all necessary approvals to ensure the new dams meet the standards for an extreme classification.

Users of Colliery Dam Park are advised that sections of walking pathways and trails will be closed with marked signs during the removal and replacement of the dams. Similarly, construction within the Park will also require the installation of fencing around work areas.

What environmental precautions are being taken?

In the past the Lower and Middle Colliery Dam reservoirs were annually stocked with rainbow trout. Fishing in both reservoirs is encouraged up until the time the removal of the dams begins. Prior to the Lower and Middle Colliery Dam reservoirs being drained, any remaining stocked trout will be relocated to the Upper Colliery Dam Reservoir which will remain stocked with fish and available for fishing.

In addition to moving trout, all other aquatic or semi-aquatic amphibians and reptiles that require relocating to a safe water body will be transported to the Upper Reservoir. A pre-construction sweep for terrestrial amphibians and reptiles will take place prior to the arrival of heavy equipment. Any terrestrial amphibians and reptiles that require relocation will be transported to safe habitat next to Harewood Creek. As a further measure of environmental mitigation, Vancouver Island University Fisheries and Aquaculture Program will be engaged to collect 2,000 Coho salmon fry, which is about 10% of the estimated population in the Chase River. VIU will maintain the fry in their hatchery on the upper Chase River.

Tell me about the land surrounding Colliery Dam Park

In addition to the work taking place in Colliery Dam Park, new recreational opportunities for City owned land located on the west side of the Nanaimo Parkway along Nanaimo Lakes Road are being explored. One example includes the use of the soon to be decommissioned open air reservoir. This reservoir will no longer be used for the City's water supply system when the new water treatment plant begins operations in the spring of 2015, making it an ideal City owned asset to expand recreation amenities.

What are some of the key timelines for this project?

- June - staff will release the tender for the removal of both dams
- July – reservoir draining is planned to begin in accordance with summer low water flow rates and Department of Fisheries and Oceans fish protection requirements

- August – dam removal is planned to start
- Summer 2013 through Spring 2014 - commence the design and approval process to build replacement dams
- Summer 2014 – planned construction targeted for new dams

City seeks preventative injunction to assist in removal of Colliery Dams

Public life safety remains top priority

(Nanaimo BC, June 5, 2013) – To support the May 13th motion passed by Council to immediately remove the Lower and Middle Colliery Dams while taking the necessary steps to replace both structures, the City of Nanaimo is seeking an injunction before the BC Supreme Court to stop person(s) or groups from allowing the identified life safety risk to remain in place through deliberate efforts to delay or halt the removal of either dam.

The decision to pursue this preventative injunction follows public statements from individual(s) outlining their intentions to prevent the City from carrying out its legal responsibility to uphold public safety by conducting acts of civil disobedience.

At this time, no date has been set for the City to appear in court.

Updates regarding the Colliery Dams can be accessed on the City's main website. Information can also be received by calling 250-754-4251. The City encourages the public to continue to visit the Colliery Dam Information webpage – www.nanaimo.ca/goto/dams - to obtain important public safety information and emergency preparedness tips and procedures.

Colliery Dams – Letter from Dam Safety Section, Water Management Branch, Ministry of Forests, Lands and Natural Resource Operations available on City website

(Nanaimo BC, May 17, 2013) – In response to reports stating the Province's Dam Safety Section, Water Management Branch would have been "happy to keep the dams for another year" despite City Council's May 13 decision to drain the Colliery Dam Park lakes and remove the lower and middle dams this year, the Dam Safety Section has clarified their position in a letter sent May 16 to the *Nanaimo Daily News*.

[Click here](#) to view a copy of the Dam Safety Section's letter

Middle and Lower Colliery Dams to be removed and replaced

NOTICE: for an update on this announcement, please click [here](#)

(Nanaimo BC, May 14, 2013) – At its May 13th public meeting, Council passed a motion that staff proceed with immediate removal of the Lower and Middle Colliery Dams and take the necessary steps to build replacements for both dams, while also equipping the Lower dam to ensure it can be used for future hydro generation.

In response to the passed motion, City staff will now carry out the following steps:

- **Early June** – staff will release the tender for the removal of both dams
- **July** – dam removal is planned to begin in accordance with summer low water flow rates and Department of Fisheries and Oceans fish protection requirements
- **Summer 2013 through Spring 2014** – commence the design and approval process to build replacement dams
- **Summer 2014** – construction begins on new dams

Users of Colliery Dam Park are advised that, during the removal of the old dams and rebuilding of the new dams, sections of walking pathways and trails within the park will be closed with marked signage. Similarly, construction work within the park will also require the installation of fencing in some areas.

Information and updates regarding dam removal and construction progress will be available on the City's main website. Information can also be received by calling 250-754-4251. The City also encourages the public to continue to visit the Colliery Dam Seismic and Flood Risk Mitigation Project website – www.nanaimo.ca/goto/dams - to obtain important public safety information and emergency preparedness tips and procedures.

Colliery Dam conceptual cost estimate study to be received by Council

(Nanaimo, May 2, 2013) – Conceptual cost estimates concerning the remediation or replacement of the Lower and Middle Colliery Park Dams will be presented to Council May 6th. Preparation of the estimates occurred in accordance with Council's direction to staff December 17th, 2012, to engage professional engineers to undertake conceptual level cost estimates for rehabilitating or rebuilding the dam structures.

Klohn Crippen Berger (KCB) was retained by the City to complete the conceptual level cost estimates for the remediation and replacement of the dams and to provide the basis for comparison of the options on a consistent cost, feasibility and safety basis. A follow-up peer review study of the work performed by KCB was undertaken by Hatch Ltd. The Hatch Ltd. peer review also considered a variety of ideas presented by the community based *Colliery Dam Preservation Society* regarding proposed alternatives to removing the dams.

The KCB and Hatch Ltd. study confirmed that the removal of both dams and the renaturalization of both lakes is the lowest cost option overall, at an estimated cost of \$6.3 million, including contingency. Conceptual level cost estimates, including contingency for rebuilding both dams, is \$11.2 million while the estimate to replace only the lower dam is \$9.5 million. The conceptual level cost estimates including contingency for remediation of either one or both dams, were in the \$17.5 million to \$30.7 million range.

City Council's current direction is to proceed with the removal of the dams and to renaturalize this section of the Chase River Valley. Council may consider further decisions regarding the Colliery Park Dams at their May 13th public meeting.

Members of the public wishing to read either the KBC or the Hatch Ltd. reports can download copies off the City's website. The City also encourages the public to visit the Colliery Dam Seismic and Flood Risk Mitigation Project website (www.nanaimo.ca/goto/dams) to obtain important public safety information and emergency preparedness tips and procedures.

Westwood Lake Dam and the Colliery Dams – Key Differences

The following information has been prepared to help explain key differences between the Westwood Lake Dams and the Colliery Park Dams.

Both Westwood Lake Dam, along with the Middle and Lower Colliery Dams were identified in the [2003 Dam Safety Review](#) as needing further seismic assessment. The three dams also shared concerns regarding their seismic capacities. And lastly, concerns involving the capacity of Colliery Dam's spillway during a flood were also identified.

Can you explain the process by which the Westwood Dam was rehabilitated?

In 2003 Westwood Lake Dam was identified in the Dam Safety Review as having a higher priority than the Colliery Dams. Various studies followed, including in 2004, Water Management Consultants Ltd. conducted an Inundation Study for Westwood and in 2005 EBA Engineering Consultants conducted a seismic study for Westwood Lake Dam. From these studies it was determined that the consequence rating for the Westwood Dams is – in the event of a failure – *High*, i.e.) Loss of life of 10 or fewer people; significant loss or deterioration of important fisheries or wildlife habitat; high economic losses affecting infrastructure, and some destruction of scattered residential buildings. As a result, a rehabilitated Westwood Lake Dam must be able to withstand a 1 in 3000 year event earthquake and its design flood (one third of the way between one in 1,000 year flood and the probable maximum flood PMF) in order to fall within the acceptable risk band. In 2007 the dam rehabilitation design was completed and in 2008 construction was completed at a cost of approximately \$600,000. This series of events is identical to the process of studies completed for the Colliery Dams.

Will the City be required to consider removing the Westwood Dam in the future?

This year a new Dam Safety Review will be conducted that assesses all of the City's dams. The Westwood Dam will be assessed against the current standards which were updated in 2011 and the review will determine, based on its rehabilitated condition and design, whether further improvements are required. Unless there is a decline in the condition since 2008, it is not likely that significant work will be required on this dam as a result of this review, and even less likely that it will need to be removed. However, two things could occur in the future that may cause the situation to change: firstly, an earthquake that exceeds the design capacity could damage the structure, and secondly, an increase in the Dam Safety Regulation standards. Changes in standards present an ongoing risk to all of the City's dams.

Colliery Dams Process

The process followed for the Colliery Dams is identical to that followed by the Westwood Dam, but the results of the studies were not the same. After completing the work on the Westwood Dam, in 2010 the City received a seismic assessment on the Colliery Dams that was completed by EBA Engineering Consultants. At that time, in the absence of a formal inundation study, it was assumed that the consequence rating for these dams was *High*. As recommended in the EBA report, the City then commissioned an inundation study in 2012 that was conducted by Associated Engineering. Based on the study, it was determined that the two Colliery Dams (Middle and Lower) required classification as *Extreme Consequence*, i.e. in the event that they failed there would be over 100 deaths; major loss of critical fisheries or wildlife habitat, restoration in kind is impossible; and extremely high economic losses affecting critical infrastructure and severe damage to residential areas, in this case affecting 1800 people. As a result the Colliery Dams must be able to withstand a 1 in 10,000 seismic event and pass the probable maximum flood over its spillways.

Possible Impact on Costs

Because the Colliery Dams have been classified under the Provincial Dam Safety Regulations at a higher consequence rating should they fail (*Extreme*) than the Westwood Dam (*High*), they must be able to withstand a larger flood and earthquake. The impact of this higher classification is that the "standards" for building any new or rehabilitated dam structures at Collier Dam Park will be higher and likely costlier.

Scope of Work and Cost Estimate for Dam Removal – Middle and Lower Chase Dams

This document outlines the work that Klohn Crippen Berger (KCB) will undertake in order to complete detailed design and tender documents and construction support services for dam removal and creek renaturalization. In addition to geotechnical assessments, engineering design, KCB will undertake public consultation, First Nation engagement and archeological assessment.

[Scope of Work and Cost Estimate_Redacted2.pdf](#)

Scope of Work and Conceptual Cost Estimates for Remediation or Replacement – Middle and Lower Chase Dams

This document outlines the work that a second team at KCB will undertake in order to develop conceptual cost estimates for options for either the remediation or replacement of the Colliery Dams. KCB will consult with the peer reviewers to agree on options to cost.

[Scope of Work Remediation or Replacement_Redacted.pdf](#)

Request for Proposal for Peer Review

The purpose of this Request for Proposal is to solicit submissions from qualified professional engineering firms to provide engineering consulting services for the peer review of conceptual level cost estimates for:

- a. rehabilitating OR b. replacing the Colliery Dams.

The successful proponent will be expected to meet with the citizens' interest group to receive and consider reasonable concepts that could address dam safety requirements, and then have discussion with KCB to settle on options for rehabilitation or replacement to be costed at a conceptual level, and lastly perform a peer review on the costs.

Council has retained KCB to develop concept costs for (1) rebuilding new dams, (2) rehabilitating the existing dams in parallel with ongoing engineering work for dam removal. This work will be undertaken by two teams from KCB working in parallel. The goal is to have conceptual cost estimates for rehabilitation or replacement ready by April 2013, and the peer review finished by 15 April 2013.

[1414 Peer Review RehabRenew.pdf](#)

The following statement concerning the Colliery Dams was provided by Acting Mayor Jim Kipp at the commencement of the January 28 Open Council meeting. The statement was given to the public as a summary of a meeting between the City of Nanaimo, the Save the Colliery Dam neighbourhood group and the Dam Safety Section, Water Management Branch, Ministry of Forests, Lands and Natural Resource Operations.

Acting Mayor Jim Kipp - Staff attended a meeting this morning between representatives from the Save the Colliery Dam neighbourhood group and Provincial Dam Safety Branch [officially known as Dam Safety Section, Water Management Branch, Ministry of Forests, Lands and Natural Resource Operations] employees. Staff advise me that they thought the meeting was productive and explored several issues.

In response to questions from the neighbourhood group, the Dam Safety Branch [Section] employees confirmed that if the reservoirs are retained at their present capacity the dams would be required to meet the rigors of a one in 10,000 year seismic event. This is because of the extreme consequence of a failure. This is a very high standard and has significant consequences in terms of the magnitude and cost of either remediation or replacement of the dams and is in addition to the requirements to withstand a major flood event.

The neighbourhood group presented some options for consideration i.e. removal of just one of the two dams and/or lowering of the water levels in the reservoirs behind the dams. These options can be considered as part of the engineering process that is underway to develop conceptual level cost estimates for rehabilitation of the existing dams and construction of new dams in accordance with direction already provided by Council.

What is currently taking place concerning the future of the Colliery Dams?

Following Council's direction to staff at the December 17, 2012 regular Council meeting to engage professional engineers to undertake conceptual level cost estimates for rehabilitating or rebuilding the Colliery Dams while preparatory engineering and environmental study work to remove the dams and re-naturalize the Chase River is carried out concurrently, a two-stage action plan has now been developed. The two-stage action plan is broken down as follows:

1. Klohn Crippen Berger (KCB) will be retained to do the conceptual level cost estimates. KCB has extensive experience with the assessment, design and construction of dams, are familiar with the recent studies and assessments of the Colliery Dams, and have excellent knowledge of British Columbia's dam safety regulations and standards. KCB has also been retained to carry out the design work necessary to fulfill the proposal to remove the Colliery Dams.
2. The City will issue a Request for Proposal in early January for an engineering consultant to do a peer review of KCB's work. The peer review will first involve an assessment of the concepts being considered for rehabilitation and rebuilding. Based on that initial assessment, KCB will then develop the conceptual level cost estimates. Those cost estimates will also be subject to the peer review process.

For additional details, please read the [Conceptual Cost Estimate Study press release](#).

Can the dams be filled in with material as a way of keeping the lakes?

While the City recognizes the opportunity this solution provides in terms of retaining the current appearance of the park, we'd like to highlight a number of requirements outlined in Dam Safety Legislation that prevent it from becoming a viable alternative to removing the dams.

- We agree that filling the lakes does reduce the volume of water held behind the dams and potentially reduces the impact to public safety and loss of life; however, despite this preventive measure, the City's primary objective – eliminating risks to public safety and loss of life as a result of a dam breach – is not met. In summary, adding fill to the lakes does not change the state of the dams, i.e. the dams continue to function as deteriorating load bearing water structures that will not withstand a major earthquake. This presents an unaccepted level risk to the residents of Nanaimo.
- If seismic upgrading to the dams were possible, this only protects residents living downstream during an earthquake. To protect these same residents during an extreme rainfall event, channels would need to be carved into the park to divert water around the lakes and down the Chase River. To create such a channel, the City would need to excavate a channel through the rock 10 metres deep, 11 metres wide and have it run the length of the park. Building such a channel would require the destruction of a sizable number of trees. In contrast, by removing the dams and naturalizing the Chase River, hundreds of trees will be planted. This work will occur in collaboration with the community through the Parks, Recreation and Culture Committee.
- While partially filling in the man-made lakes would retain the familiar appearance the park is known for today, the new shallow depth will influence the ecosystem the lakes can support. Shallow lakes are typically warmer

than deeper lakes resulting in a habitat that is poor for supporting fish, poor for swimming and can be expected to support algae.

The proposed solution to partially fill the lakes stems from a desire to preserve the current appearance and recreational amenities of the park. While removal of the dams will also result in changes to the park via the loss of the man-made lakes, the full intent of the restoration process will leave a naturalized, forest-lined river valley with potential pools, potential improved salmon access and an enhanced trail network while also meeting the City's primary objective of eliminating all risks to public safety and loss of life that the dams currently create.

Can we drill a lower level outlet through the bottom of the dam to help release water?

Unfortunately, this solution is not practical for the following two reasons:

1. The structure of the Colliery Dams consists of old concrete with many cold joints and no reinforcing, all buttressed by uncompacted rubble and fill. Drilling a hole would through this material would destabilize the structures and make them vulnerable to collapse.
2. The dams are required to manage water levels during an extreme weather event. This would normally be handled by the overflow spillway. While having a hole at the bottom of the dam would help keep the water levels low during seasonal periods of heavy rain, an extreme weather event would overwhelm both the low level outlet and the existing spillway. Note: the current spillway is undersized by a factor of 8-10.

Please explain the various solutions available to the City.

Build new dams – Given the public safety risks associated with any dam in this location, new dams would need to be built to an 'extreme' consequence classification level. To reduce the probability of failure to as low as reasonably practicable, any new structures would likely need to be constructed entirely of concrete. They would also need to be constructed downstream of the existing structures making them larger. And finally, the existing structures would still need to be removed. To undertake this effort, construction would be extensive, causing considerable disruption to the park. Also, the required regulatory process to build the dams would be long thereby leaving the risk to public safety in place even longer.

Rehabilitation – There are two components that need to be addressed with rehabilitation: the structure needs to be brought to a standard such that it can withstand an 'extreme' earthquake event, and it needs to be able to pass flooding from an extreme weather event. City engineers have a low level of confidence that regulatory approval could be obtained for this option, due to many uncertainties with the existing structures and underlying geology. If a seismic upgrade was feasible to reduce the risk to public life safety low enough, it would result in extensive permanent disruption to the park.

Dam removal – This is the only practical option to remove the risk to public life safety. This option also has the least permanent disruption to the park, and in fact provides for an enhancement to the park. It is true that removing the man-made lakes created by the dams will change the park; however the intent of the project is to move aggressively in replanting and restoring the natural areas left by the lakes' footprints. Initial thoughts include planting various ages of undercover and forest material (hundreds of trees) to get as close to 'nature' as quickly as possible. As well, the City will investigate the ability to incorporate pools and riffles in the restored stream course to provide for fishing and salmon passage.