



## COMMUNITY & ECONOMIC DEVELOPMENT OFFICE

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November 7, 2008

Mike Adams  
USACOE New England Division  
8 Carmichael Street, Suite 205  
Essex Junction, Vermont 05452

Dear Mike,

The City of Burlington seeks USACE approval for the demising of sluiceway (“flume”) openings at the Moran Generating Plant which was decommissioned in 1986. This will permanently separate the waters of Lake Champlain from the Moran basement. Since the subsurface flume system is at 89 feet above sea level elevation, it is now part of the waters of Lake Champlain and subject to USACE jurisdiction. With 2,422 square feet impacted, we request that this be considered to be covered under the General Permit.

### Expedited Request:

This work needs to commence on an expedited basis due to adverse environmental conditions that will be resolved once the sluiceways are demised. Moreover, the work must be completed this construction season, based on the attached letter from Vermont Department of Environmental Conservation (VT DEC). Due to the current seasonal low level of Lake Champlain and the upcoming winter, the timing is now ideal to complete the work before freezing conditions prevent the work to take place.

If the City waits through the winter to act, water will be reintroduced into the basement, mobilizing more contaminants, then freezing over: last year, the basement water did not fully thaw until mid-June. Furthermore, a delay would place the City in violation with the VT DEC and create potential risks to human health and the environment.

### Building Description

The Moran building, a steel frame and masonry structure, was constructed on fill that was placed between the 1850’s and 1950’s. The building was constructed in 1953-4, with the base slab poured in 1953, and the rest of the concrete and construction completed in 1954. Structural engineering analyses performed this year confirm that the concrete is sound and has not degraded. Drawings of Moran provided for this application utilize the original blueprints as a base, which have been verified in the field.

The Moran building has intake and outflow sluiceways that allow water from Lake Champlain to occupy the sub-basement chambers that were part of the cooling process for the former power generating operations. The water flow was controlled by manually operated sluice gates which were demised in 1986. Based on investigations to date the sluice gates appear to be in the closed position, but are leaking as evidenced by the infiltration of water into the building.

With the annual mean lake water elevation at approximately 96 ft and the basement floor elevation at the same 96 ft elevation, the basement floor is dry for brief periods during the year. However, spring lake levels often rise above above 100 ft, allowing for flooding of the basement through the sluiceway gates.

The City was already committed to dewatering the basement and permanently closing off the sluiceways as part of the redevelopment of the building. In anticipation of this process, the City contracted with Waite Environmental Management (WEM) to characterize the water and sediment inside the building to better understand interior contaminant levels, and to prepare a plan to for interior water and sediment disposal. Subsequent data found high levels of lead in the basement water, prompting the Vermont Department of Environmental Conservation (VT DEC) to instruct the City to provide separation between Lake Champlain and the basement of the Moran building.

#### Summary of Contaminants found in Basement Water and Sediments

In May, 2008, WEM took samples from the basement and Lake water, as well as from the basement sediments. The investigation indicated the presence of select VOCs, PAHs, PCBs, and metals in various samples of basement water and sediments. According to WEM's July, 2008 report:

“The VOCs are present at trace levels only in sediment and have not resulted in any significant contamination of surface water by VOCs either inside or outside (Lake water) the building. The magnitude of VOC results suggests that the interior material is not the source of VOCs detected in the groundwater outside the building. The PAH results in the sediment are above federal standards for soil, and have resulted in interior surface water contamination by select PAHs inside the building. The same is true for select PCB results. Lastly, metals are present in both interior surface water and sediment above state/federal standards, with very high concentrations of lead noted in both. WEM suspects that the presence of PAHs, PCBs and metals in the interior water and sediment are directly attributed to the former presence of coal and machinery inside the building compounded by rusting/degrading metal and painted concrete which has been submerged or flaking into the base level for many years.”<sup>1</sup>

#### Separation of Building from Lake Champlain Required

In response to the WEM report findings, the VT DEC Waste Management Division indicated that the extent of contamination now known to exist in the basement water and sediment “raises the priority for action” regarding the proposed separation of the building from the Lake. In a July 29 letter to the City, DEC directed the City to proceed with the “proposed dewatering and permanent closure of the pathway to the Lake, to occur by the end of the current construction season.”

The City is therefore now required by Vermont DEC mandate to move forward with the plan to permanently close the sluiceways, and dewater the basement.

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<sup>1</sup> See: “Semi-Annual Groundwater Monitoring & Pre-Dewatering Characterization; Moran Generating Plant;” Waite Environmental Management, LLC. July 21, 2008.

### Approach

After considering several different approaches, a viable plan has been developed in consultation with the City Engineer, Miles Waite of WEM, KAS Inc (environmental, geological, and industrial hygiene consulting), and ESPC Civil and Environmental Consultants. While the approach has been finalized, it will be a design-build project due to possible adverse conditions during the project.

### Scope of work (refer to attached drawings):

In general, the inlet and outlet sluice openings to the building are to be closed permanently by concrete using the following conceptual procedure:

- Cut the concrete floor above the screen room and former control room directly above the inside 4' x 3' sluiceway openings.
- Clean the concrete surfaces that are underwater that will come into contact with the new concrete. Remove marine growth, sediment, and debris. This can be done with brushes and waterjets with extensions in order to complete the cleaning without any personnel entering the water.
- Construct concrete forms inside the screen room pits, immediately around the sluice inlet, and in the channel of the outlet sluice. The forms can be constructed of metal or wood. Wood forms will need to be anchored to prevent flotation and with enough weight to resist the submerged weight of the new concrete.
- Backfill with a sub-aqueous concrete mix. The underwater concrete will be applied by tremmie pipe or pump in accordance with US Army Corps of Engineers recommendations (Publication EM 1110-2-2000). The mixture will be specific to this application containing anti-washout admixtures, aggregate mixture, and water to cement ratio to increase the cohesiveness of the concrete and minimize washout.
- Once the barriers are constructed and properly cured, dewater the basement if necessary to further reduce any chance of infiltration of contaminated water back into the Lake. The Department of Public Works has agreed to allow the water to be pumped into the City's municipal treatment system, done in a manner that minimizes pumping sediment. At this point of the season, the basement is dry, so pumping is not anticipated until Spring 2009
- Characterize the extent of sediment and debris in the building, work with VT DEC on mitigation of any remaining hazards.

All work will be completed within the building structure. According to conversations with Steve Hanna of the VTDEC Lakes and Ponds Division, no permit is required from them due to the fact that all work will be completed within the building footprint, and the need for a Water Quality Certification is being waived.

Sincerely,

  
Larry Kupferman, Director