

February 27, 1997

SUBJECT: KERSLAND RESERVOIR CHLORINATION STATION, QUEEN ELIZABETH PARK

RECOMMENDATION:

- A. THAT the Board approve the construction of a chlorination station at the Kersland Reservoir within the existing GVRD right-of-way with construction details including landscape treatment subject to the approval of the General Manager.**
- B. THAT the Board approve the GVWD's use of the area noted on enclosed Figure 2 at the Kersland Reservoir on a temporary basis for construction purposes, with details subject to the approval of the General Manager.**
- C. THAT the Board approve granting 2 metre wide rights-of-way for injection and sampling pipes to the 37th Avenue main injection chamber and the Capilano mains No. 4 and 5 injection chambers generally as shown on Figures 2 and 4 of this report with details subject to the approval of the General Manager.**

BACKGROUND

The GVWD is planning the construction of several projects for the improvement of water service for the region. One of those projects is the reconstruction of the Kersland Reservoir in Queen Elizabeth Park. The Board in its meeting of October 28, 1996 approved the following motion:

THAT the Board approve the GVWD's use of the area at Queen Elizabeth Park noted on Schedule A on a temporary basis for the reconstruction of the Kersland Reservoir with details subject to the approval of the General Manager.

As part of the upgrade to drinking water facilities, the GVRD plans to install an underground chlorination station and related works, such as pipes and injection chambers.

DISCUSSION

The Greater Vancouver Water District (GVWD), a division of the Greater Vancouver Regional District (GVRD) has a number of facilities at Queen Elizabeth Park, including the Little Mountain Reservoir and Pumping Station,

the Kersland Reservoir and Pumping Station and numerous underground water mains. These facilities are an important 'hub' in the GVWD system, providing storage for water supplied to residents and businesses in Vancouver, Richmond and Delta.

Over the next five years, drinking water facilities in Queen Elizabeth Park will be upgraded and new facilities added. Planned projects include seismic upgrading of the Kersland (currently underway) and Little Mountain Reservoirs, upgrading of Little Mountain Pumping Station, construction of a Secondary Disinfection Station, and construction of a pipeline to connect the Central Park Reservoir in Burnaby to the Little Mountain Reservoir. These projects are part of the GVWD's Long Range Water Supply and Drinking Water Treatment Programs to better serve residents in the region.

The GVWD has prepared its plans in consultation with Park Board staff for the proposed construction in Queen Elizabeth Park. The GVWD is now seeking approval to proceed with construction of an underground Secondary Disinfection Station within the existing right of way on the south side of the Park off Kersland Drive (Site Plan, Figure 1). The proposed location is currently open space near GVWD water mains.

The proposed Queen Elizabeth Park Secondary Disinfection Station is one of five new stations planned by the GVWD at various locations throughout the lower mainland. The City of Vancouver currently operates three secondary disinfection facilities, and the GVWD operates one in Surrey. All of these facilities have been in operation for five or more years. Queen Elizabeth Park was chosen for a new Secondary Disinfection Station because of its proximity to major water supply mains.

Presently, Greater Vancouver's drinking water is disinfected with chlorine at the three North Shore source reservoirs. However, as the water flows through the distribution system, the chlorine gradually dissipates creating the potential for bacteria to grow, a condition which is contrary to current drinking water regulations. Adding sodium hypochlorite (equivalent to double strength household bleach) to the water supply at strategic locations throughout the District will increase the chlorine residual and thus provide a barrier to bacteria growth. The five Secondary Disinfection Stations will comprise the first phase of the GVWD's Secondary Disinfection project. Upon completion of this phase, chlorine residuals and bacteria levels will be monitored with a view to determining where additional stations will be required both within the GVWD transmission system and member municipality distribution systems.

Station Design Specifications

The Secondary Disinfection Station will be a 9 metre x 12.5 metre buried concrete structure with a surface access hatch. The building will house: day tanks for the storage of sodium hypochlorite fed from the buried bulk storage tanks; pumps to feed the sodium hypochlorite solution into the water mains; and various instrumentation including chlorine residual analysers to measure the chlorine concentration in the water. The existing entrance driveway to the nearby pumping station will be expanded slightly and upgraded and will

include a sloped containment pad for the sodium hypochlorite delivery truck.

There will be two buried bulk storage tanks with a capacity of 16,000 litres each. The tanks will be constructed of double walled fibreglass reinforced polyester. Two hatches at the surface above each tank would be installed for tank access (for a total of four hatches for the tanks).

Every consideration has been made for the existing trees in the park in the design process resulting in a plan that should ensure that no trees will be removed, and only one (5 inch trunk diameter) tree will require relocation. A landscape architect has been retained by the GVWD as part of the design team to help ensure that the site is visually buffered from local residents and park users after construction is complete. Except for the access hatches and two vents and one air supply unit above grade, the ground covering the station and the buried storage tanks will be restored to the same condition it was in prior to construction, and additional trees and shrubbery will be planted by the GVWD to minimize the visual impact of the access hatches. The site could be used as open space after construction, but the five metal access hatches, air supply unit and vent pipes would preclude any other use of those areas. The landscape design will consider grass cutting and other grounds maintenance requirements to ensure ease of maintenance. The landscape architect retained by GVWD will consult with Park Board representatives in developing a plan that is mutually acceptable. "Before and after" architectural renderings of the site will be provided to the Park Board at the March 10 meeting.

Construction is scheduled to begin in the Spring of 1997 and should be complete in about six to eight months.

Safety Issues:

Public and environmental safety are important considerations in the design and operation of Secondary Disinfection Stations throughout the region. Examples of similar operations include the three stations operated by the City of Vancouver and one in Surrey operated by the GVWD. Sodium hypochlorite used in the stations is the same as that used in recreation centre pools. The following are some additional safety features:

The underground bulk storage tanks will be double lined with the latest in leak detection technology using a vacuum detection device to signal any loss in pressure. The concern of a subsurface leak is mitigated by the fact that sodium hypochlorite (bleach) is oxidized (neutralized) when in contact with soil.

Alarms will be in place for such things as leakage, flood, and intruder entry. All alarms will be automatically relayed to the GVWD Lake City Operations Centre in Burnaby using a telemetry system. The Operations Centre is staffed 24 hours a day.

The truck delivery pad will have a perimeter curb to contain spillage should any occur during the filling operation. If a spill were to occur, it would drain to a central sump located within the disinfection station where it can be

neutralized and disposed.

Land Acquisition Requirements:

During the predesign process, a number of different locations were considered with a view to minimize the amount of space that would be required and in an effort to remain within the existing GVWD Kersland right of way. A critical requirement was that the station be located so as to minimize the distance between it and all of the present and future (possible) injection points. It is planned to rechlorinate the Cambie-Richmond Main (downstream from the outlet from the Kersland Reservoir) immediately upon completion of the station and the 37th Avenue Main upon completion of the 44th Avenue Main (to minimize park disruption and consolidate construction work). Additional mains that may require rechlorination are the 44th Avenue, Capilano No. 4 and (future) Capilano No. 5. However, GVWD will only be able to determine whether rechlorination of these latter mains will be required after monitoring the water for some time after the first phase of the Secondary Disinfection Project is complete.

The GVWD considered locating the station closer to the Kersland Reservoir but that did not prove practical due to structural considerations and potential future long term changes that could be required to the reservoir, pumping station and water mains to accommodate future population growth.

To accommodate the proposed underground facility, the GVWD will require:

Approximately 0.164 hectares for a temporary construction parking and lay down area adjacent to the existing Kersland Reservoir. Upon completion of construction, the permanent area that will be occupied by the station including the underground storage tanks will be approximately 0.0568 hectares. All of this property is within the existing GVWD statutory right of way for the Kersland Reservoir as shown in Figure 2. According to the Statutory Right of Way Agreement (LTO Number GB101503A) clause 7, "the District may construct additional facilities within the statutory right of way provided the City gives its written consent to do so".

A two metre right-of-way for underground injection and sampling lines for the 37th Avenue Main and for Capilano No. 4 and (future) Capilano No. 5 Mains as shown generally in Figure 4. Wherever practical, existing water main easements/rights of way will be put to use. (Please note that the injection chambers shown on Figure 4 are not to scale. They will be buried structures measuring about 2 m by 3 m by 3 m deep with only a standard manhole for surface access. It should be possible to build them within existing easements/rights of way, so no additional land should be required for them save for temporary construction areas while they are being built.)

Public Consultation:

The GVWD has conducted a communications and consultation program to ensure that local residents and park users are aware of the projects proposed for Queen Elizabeth Park and to identify potential issues. The focus of the consultation was on an open house held on December 4, 1996 at VanDusen

Botanical Gardens. In preparation for the open house, the following steps were taken to inform the public:

Park user groups and community groups were contacted directly by the GVWD and information provided on the projects and the open house.

An information package was distributed to approximately 160 residences within a two block radius of the park.

Posters advertising the open house were displayed at Riley Park Community Centre, Douglas Park Community Centre and Little Mountain Library.

The open house was advertised in the Vancouver Courier one week in advance.

Approximately 35 people attended the open house, most of which were residents living near the Park. The majority of comments focused on clarifying aspects of the proposed projects. Comments raised about the Secondary Disinfection Station focused mainly on the visual impact of the structure and landscaping. The GVWD responded to these issues noting that the building will be below ground and the site will be landscaped with trees to improve the view from residents living along Kersland Drive. The GVWD is continuing to keep local residents and park users aware of the projects through on-site signage and direct information updates. The GVWD will hand deliver notices about the chlorination station prior to the Board meeting. Information about the GVWD drinking water projects at Queen Elizabeth Park will also be posted at the Douglas Park Community Centre.

CONCLUSION

The GVWD' s Secondary Disinfection Project is part of a regionwide drinking water treatment program approved by the GVRD Board. The project is required to ensure that the water supply that serves Vancouver meets current drinking water quality standards.

The underground location in the Park will minimally impact park use with construction of five access hatches above grade. Landscaping of the site will ensure that the project will not impair the views of those residents living along Kersland Drive.

Prepared by:
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