Item	09
Manager's Report No.	03
Council Meeting	01/01/22

TO: CITY MANAGER **DATE:** 2001 01 17

FROM: DIRECTOR ENGINEERING **FILE:** 40-02-09

SUBJECT: **STONEY CREEK FLOODING EVENT - 2000 DECEMBER 16**

PURPOSE: To provide Council with the information on the flood event of 2000 December 16 and the actions taken by the GVRD, SAR and the City.

RECOMMENDATIONS:

1. **THAT** Council receive this report for information.

2. **THAT** a copy of this report be forwarded to the Environment & Waste Management Committee for information and to the following:

   a) Jennifer Atchison, Stoney Creek Environment Committee
   b) David van Rensburg, SAR
   c) John Eastman, RTPO
   d) Tom Heath, GVRD

REPORT

1.0 INTRODUCTION

Council, at the regular meeting of 2001 January 8, received a presentation from Mrs. Jennifer Atchison, Stoney Creek Environmental Committee, regarding the erosion and flooding problem that occurred in the Stoney Creek corridor north of Lougheed Highway as a result of a storm/snow event on 2000 December 16. Arising from Council discussion of the subject matter, staff were requested to provide a full report on the incident. This report is to provide Council with the requested information and to outline actions that were or will be taken to correct the erosion problem.

2.0 BACKGROUND

Stoney Creek is one of the many significant streams in Burnaby that supports a rich and diverse ecosystem. The presence of Chum, Steelhead and Cutthroat in Stoney Creek is significant because of their rare occurrence in urban streams. The City, in partnerships with other stakeholders in the Stoney Creek watershed, developed an integrated stormwater management plan in 1999 and received an Environmental Award from the Association of Professional Engineers & Geoscientists of British Columbia. Since the adoption of the plan by Council, the recommended stormwater management elements have been applied to new development within and beyond the Stoney Creek watershed boundary including the new Burnaby Mountain Secondary School, the proposed SFU/Burnaby Mountain development and other major development projects in the Lake City industrial area. The Stoney Creek watershed management will also be used by staff in 2001 to develop a comprehensive manual on Best Management Practices for city wide application.

The protection of streams and their natural environment is one of the City's environmental goals and the City has been working with many stakeholders in the implementation of stormwater management projects. Presently, the GVRD is responsible for the maintenance of Stoney Creek as part of the Brunette River system. All drainage facilities within the stream corridor including the culverts under the Lougheed Highway and the new access bridge built in Tributary 1 (designed for 100 year flow) are maintained by the GVRD. The City is responsible for stormwater management planning within the watershed including the implementation of City policies and bylaws for the protection and preservation of streams. The Federal Department of Fisheries and the Provincial Ministry of Environment are responsible for the protection of fish and wildlife habitat under the provisions of existing legislation.

3.0 CONSTRUCTION WORK IN AND AROUND STONEY CREEK AT LOUGHEED HIGHWAY

Under the SkyTrain construction project, Rapid Transit Project Office (RTPO) has been granted a permit by the Department of Fisheries to work within Stoney Creek for the period from 1999 November 15 to 2001 December 1. The guideway column works were completed by RTPO's contractor SAR during the fisheries in stream period in 2000. The remaining outstanding works near Stoney Creek include the removal of the construction access road and re-vegetation of the areas disturbed during the column construction will be conducted in 2001.

As part of the construction sedimentation plan, SAR has installed a silt fence along the perimeter of the construction access area to prevent migration of soils from the construction area to Stoney Creek and the fence will be removed after the decommissioning of the construction access road later this year.

4.0 RAINFALL EVENT - 2000 DECEMBER 16

In the morning of 2000 December 16, members of the Stoney Creek Environment Committee reported a high flow situation in Stoney Creek at Lougheed Highway and an erosion problem on the north side of the highway embankment. The erosion on the embankment had exposed approximately a 2m section of the GVWD watermain. Based on a review of the video taken by the Stoney Creek committee members, the erosion may be attributed to a combination of excessive surface water (combined rainfall and snow melt run-off) from the road, snow covered drainage outlets and the incomplete SkyTrain guideway drainage system. The silt fence installed along the bank of Stoney Creek was able to intercept most of the sediments released from the embankment area. However, due to high run-off rate, sediment laden water overtopped the silt fence at two locations and entered Stoney Creek. Upon notification by the Stoney Creek environment committee members, on-call GVRD and SAR staff responded to the call around noon on December 16 and undertook action on-site to remove debris from the trash racks to improve the stream flow and to remediate the washout area.

Staff have obtained the December 16 rainfall data from the GVRD's rain gauge located on Burnaby Mountain and determined that the subject rainfall event at its peak reached an intensity of close to a 50 year storm. On that same morning, Engineering Dispatch also received many calls from residents in different areas of Burnaby about flooded basements and Engineering crews were called in to assist the residents and to dig out catch basins on major City streets. In the midst of the busy morning, the message relayed to the Dispatch by the Stoney Creek committee member was omitted and was not forwarded to the on-call Environmental Officer for follow up.

Notwithstanding the results of a follow up inspection of the stream by DFO, SAR and City staff that indicated there was no evidence of heavy sedimentation in the creek following the December 16 event, stream flow and sedimentation control remains one of the key objectives of the Stoney Creek stormwater management plan to be addressed through the implementation of better construction and development practices.

5.0 CORRECTIVE ACTIONS TAKEN

Subsequent to the December 16 incident, City staff had been in contact with RTPO and SAR to reiterate the importance of proper drainage control system for the guideway system. Temporary drainage pipes have since been installed to better control the run-off. The design of a permanent collection and discharge system is currently underway by SAR and will be implemented later this year. In addition to the drainage pipe work, SAR had also installed a 6 inches high asphalt curb on the edge of the highway to provide better containment and conveyance of the highway run-off as part of the construction surface restoration work. A meeting was held between SAR, RTPO, Mainroad and City staff on 2001 January 15 to

reaffirm roadway snow removal and drainage control responsibilities and to ensure all parties have a full understanding of the maintenance responsibilities.

The Stoney Creek site is monitored by SAR's environmental monitor daily and will continue to be monitored after hours if significant storm event occurs. The SAR 24-hour emergency number (298-1725) was provided and will be posted in the Stoney Creek corridor. A meeting with Mrs. Atchison and SAR representatives was held on 2001 January 12 to review the corrective actions taken to date and the City's internal communication and after-hour response protocol.

6.0 FUTURE COURSE OF ACTION

The City will continue to liaise with the RTPO, SAR, DFO and the GVRD to ensure the remaining construction works in and around Stoney Creek in connection with the SkyTrain project are carried out in a sensitive manner and without creating further negative impact on the receiving stream. SAR staff will provide copies of the surface re-vegetation plan for the construction area near Stoney Creek to the City and the Stoney Creek environment committee prior to proceeding with the final restoration work. Post construction monitoring of the in-stream work and the riparian planting work will be provided under the general direction of RTPO.

The trash rack for the culverts under Lougheed Highway is functioning well for its intended purpose. GVRD staff are aware of the high maintenance requirement of the trash rack and the need to keep debris free from the stream flow through the culverts. In the short term, the GVRD will be reviewing the design of the existing trash rack with a view to improve hydraulic flow and debris capture effectiveness. In the long term, the Stoney Creek stormwater management plan identifies the replacement of the culverts with a bridge structure to improve major storm run-off conveyance and to enhance fish passage.

The City will continue to work with RTPO and the Stoney Creek committee members to ensure the fish habitat in Stoney Creek is protected. On the watershed level, the City is in the process of developing a comprehensive design standards and criteria manual for the implementation of stormwater management principles and best management practices in the City to protect and preserve the streams and the environment.

7.0 CONCLUSIONS

The 2000 December 16 storm event, as recorded by the GVRD's Burnaby Mountain rain gauge reached a peak intensity of approximately 50 year return period. The storm run-off combined with snow melts had also caused flooding problems elsewhere in the City. The prompt action of the Stoney Creek environment committee in reporting the erosion and flooding situation in Stoney Creek and the subsequent response of SAR and the GVRD had prevented further damage to the stream that may have occurred otherwise.

Since the December 16 event, meetings and discussions had been held with SAR, GVRD, RTPO, Mainroad and Stoney Creek environment committee to review actions taken and future actions to prevent occurrence of same. All parties concerned are cognizant of the environmental value and sensitivity of Stoney Creek and are committed to work together to mitigate construction impact on the stream. The City will continue to work with SAR and RTPO to ensure the environmental objective for Stoney Creek is not compromised.

It is recommended that a copy of this report be forward to the Environment & Waste Management Committee for information and to Mrs. Atchison, the GVRD, RTPO and SAR.

W.C. Sinclair, P. Eng.
DIRECTOR ENGINEERING

LSC:

cc: Director Planning & Building