

AGENDA ITEM NO: 7.3

MEETING DATE: April 18th, 2023

STAFF REPORT – COVER SHEET

SUBJECT: Bell Slough Feasibility Study – Draft Report DATE: April 11th, 2023

DEPARTMENT: Engineering PREPARED BY: T. Friesen

1. SUMMARY OF ISSUE:

The Bell Slough Feasibility Study Draft Report, containing results and recommendations for enhancement opportunities within the Bell Slough, has been submitted to the City for review. This staff report and a presentation intend to update Council on the Study progress and possible outcomes to be considered for future budgeting.

A decision to seek community input through a second round of public engagement is required to allow key stakeholders and interested parties to provide feedback to the Study before finalizing the Report.

2. RECOMMENDATION:

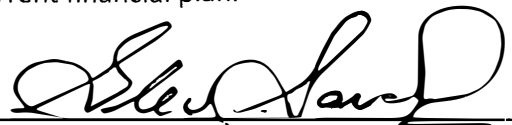
Recommendation that Council receive the draft report and presentation for the “Bell Slough Feasibility Study” for information, and authorize staff to proceed with further public engagement before finalizing the Study Report.



Kara Jefford, Director of Engineering

3. FINANCE COMMENTS:

Certain solutions and projects identified and prioritized within the Final Bell Slough Study Report may be the responsibility of the City and may be fundable within current annual budget allocations depending on cost levels. There could also be solutions identified that may be the responsibility of individual property owners. For solutions that may be more financially substantial in nature, there has been no budgetary allocation included within the current financial plan.



Glen Savard, Director of Finance

4. CHIEF ADMINISTRATIVE OFFICER'S RECOMMENDATION/COMMENTS:

Supports recommendation.



Chris Crosman, CAO

**STAFF REPORT ON
Bell Slough Feasibility Study – Draft Report**

PREPARED BY:	Kristian Biela	DATE:	March 21, 2023
POSITION:	Senior Engineering Technologist	DEPARTMENT:	Engineering

1. DEFINITION OF ISSUE:

The Bell Slough Feasibility Study Draft Report, containing results and recommendations for enhancement opportunities within the Bell Slough, has been submitted to the City for review. This staff report and a presentation intend to update Council on the Study progress and possible outcomes to be considered for future budgeting.

A decision to seek community input through a second round of public engagement is required to allow key stakeholders and interested parties to provide feedback to the Study before finalizing the Report.

2. BACKGROUND

- 2.1 The Bell Slough is a landlocked body of water located on Fairfield Island with headwaters at upstream Nelson Slough near McSween Rd, and outlet to the Fraser River across Ballam Rd (fig. 1). It is part of a network of watercourses that was originally connected to the Fraser River prior to construction of the Fraser River dike system over 100 years ago.
- 2.2 In 1991, the City installed a floodbox outlet structure at the downstream end of Bell Slough at the Fraser River. This was initiated by public concern about high water levels in the Slough due to storm runoff connections in the Montana Drive area, and greenhouse cooling water discharged to the Slough. The floodbox allows the Bell Slough to overflow into the Fraser River while still being protected during Freshet. When Fraser River levels are elevated, the gate on the floodbox is closed and water from the Slough can be pumped into the Fraser River. The Fraser River and Bell Slough are directly connected only a few days a year, if at all.
- 2.3 Over the past several decades, the public have noticed the quality of the Slough deteriorating and wildlife becoming sparse. In recent years, the deterioration has exacerbated due to hot summer droughts, resulting in less inflow of fresh water to the Slough, poor quality water, high temperatures, and an abundance of invasive plant and animal species.
- 2.4 A community group known as the “Friends of the Bell Slough” initiated discussions with the City to identify solutions for restoration of the natural watercourse and request City funding.

- 2.5 City Council allotted \$60,000 for the Bell Slough Feasibility Study to assess the existing state of the slough, identify causes of decaying health, and determine solutions to enhance the ecologic health of the Slough while still protecting nearby properties from flooding.
- 2.6 Through a competitive request for proposals process, Stantec Consulting was awarded the feasibility study.
- 2.7 A public consultation meeting with the Friends of the Bell Slough and other community members was held on September 22nd at project commencement. The goal of this open house was to inform the public of the project goals and methodologies, and acquire historic information and feedback from residents to assist in guiding the study.
- 2.8 Stantec has conducted environmental and hydraulic analyses, paired with water quality testing and anecdotal information given by the public. The results have been submitted to the City in a draft report with recommendations for enhancement.
- 2.9 The recommendations to prevent decaying ecological health and enhance the Slough are grouped into 3 categories:
 - a. Non-Physical improvement options
 - i. Annual water quality and flow monitoring
 - ii. Development of a rehabilitation and protection plan
 - iii. Education and outreach regarding legislation and encouraging best practices to reduce nutrient loading
 - b. Physical improvement options
 - i. Mechanical Aerator
 - ii. Planting of trees and shrubs and clearing algae and invasives
 - iii. Design of new habitat features in the channel
 - iv. Livestock barriers
 - v. Replacement or new installation of culverts
 - vi. Installation of a control gate at the upstream Nelson Slough
 - c. Operational improvement options
 - i. Change the floodbox and pumping operational procedure during freshet
 - ii. Pump water from the Fraser or Nelson into the Bell Slough.
- 2.10 Of the above enhancement options, livestock barriers, tree plantings, pump & flood box operating procedures, and flap gate & culvert installations were deemed to have the most advantageous value.
 - a. Staff will prioritize City asset replacements, including the failed culvert, under the drainage operational budgets. The City will work with property owners regarding private driveway culverts, livestock barriers, riparian planting and invasive removal within private property and will pursue grant opportunities, when available.

- b. Replacements of City road culverts and modifications to existing drainage infrastructure will be prioritized within the City's drainage rehabilitation program.
 - c. Stewardship, education, invasive species removal, and operating procedures will be incorporated into regular work programs and will have minimal budget impact.
- 2.11 A second public consultation is needed to inform residents and stakeholders of the preliminary outcomes identified in the Study draft report, and further, to request public input and feedback on the opportunities identified and missed before finalizing the Study report.

3. RECOMMENDATION:

Recommendation that Council receive the draft report and presentation for the "Bell Slough Feasibility Study" for information, and authorize staff to proceed with further public engagement before finalizing the Study Report.

Figure 1: Bell Slough Location

