



Corporate Report

NO: R032

COUNCIL DATE: March 10, 2008

REGULAR COUNCIL

TO: Mayor & Council DATE: March 3, 2008
FROM: General Manager, Engineering FILE: 5225-10
General Manager, Planning & Development
SUBJECT: Proposed Policy to Regulate Development Within the Serpentine and Nicomekl River Floodplains

RECOMMENDATIONS

The Engineering and Planning and Development Departments recommend that Council:

1. Endorse the attached policy (Appendix I) to restrict development within the Nicomekl and Serpentine River floodplain areas in accordance with the approach and evaluation criteria described in the report; and
2. Authorize staff to bring forward further policies and regulations for the Bridgeview, South Westminster, Crescent Beach and Little Campbell River areas to regulate development in floodplain and flood-prone areas based on the direction provided in this report.

INTENT

The intent of this report is to bring forward a policy for Council's consideration to restrict development in Serpentine-Nicomekl floodplain areas in order to address the potential cumulative impacts of such development in the City.

BACKGROUND

At the June 11, 2007 Council-in-Committee meeting, Council considered Corporate Report No. C013 (Appendix II), which dealt with development within agricultural floodplains and Flood Prone Areas, and adopted the following recommendations:

1. Endorse in principle the policy of limiting future urban and suburban development in agricultural floodplains and flood prone areas based on information provided in this report;

2. Authorize staff to proceed with further work, including liaison with appropriate agencies, stakeholders and Committees, to develop and bring forward for Council consideration a policy and corresponding By-law amendments to restrict development in agricultural floodplains and flood prone areas;
3. Direct staff to continue to process in-stream development applications in the floodplain but to ensure that such encroachment on the floodplain is minimized and that any impacts to the floodplain are mitigated; and
4. Direct that any development applications for sites in floodplains or flood prone areas received after the date of Council's consideration of this report be held in abeyance until a City Policy on development and filling in floodplains and flood prone areas is adopted by Council." (RES.R07-2062).

This report builds on the directions provided by Council by introducing a new policy to restrict and regulate development in the Serpentine and Nicomekl Floodplains for Council consideration, establishing a criteria to evaluate development applications within the floodplain, and recommend future detailed actions to address other flood-prone areas of the City.

DISCUSSION

Background

The various floodplain areas throughout Surrey are subject to periodic flood risks associated with high tides (Crescent Beach, Mud Bay, Colebrook Road), the Fraser River freshet (Port Kells, Port Mann, Bridgeview, South Westminster), or local winter rainstorms (Serpentine, Nicomekl, Little Campbell River lowlands). Each of these floodplains is addressed with different flood protection strategies. In particular, the Mud Bay, Colebrook, Serpentine, Nicomekl, and Campbell River floodplains are primarily in agricultural areas within the Agricultural Land Reserve (ALR), and as such, flooding is expected to occur on a regular basis but the duration and extent of flooding in these areas is controlled so that agricultural uses remain viable.

In general, limiting the intensity of land use in agricultural floodplain areas of the City has been a long standing principle that has been followed because filling in the floodplain has the following issues and implications:

1. Impacts on drainage;
2. Undermines the effectiveness of Municipal infrastructure;
3. Causes the loss of important habitat;
4. Creates a financial burden to the broader community;
5. Results of ground subsidence and climate change;
6. Impact of the large volumes of fill and associated trucking; and
7. Expectations of new residents respecting flood protection may not be met.

In the case of floodplain areas within the ALR, protection of these lands from development is achieved jointly by the City and the Agricultural Land Commission (ALC). This protection for agricultural purposes is complementary to the floodplain

protection objectives. However, there have recently been a number of development applications on properties within the floodplain but outside the ALR that require fill to be placed in the floodplain to facilitate development. While such proposals are few, the overall issues and concerns related to floodplain development are critical. On the other hand, the amount of floodplain land outside the ALR is miniscule relative to the overall City land base. As a result, a policy to limit development in the floodplain would impact very few properties, but would generate significant broader benefits, and is therefore warranted.

Existing Policies and Regulations

The City has a number of regulations and policies in place to address specific aspects of floodplain development (Appendix II), including but not limited to the following:

- Policy objectives in the Official Community Plan (OCP);
- Neighbourhood Concept Plan (NCP) and Local Area Plan (LAP) designations;
- Zoning By-law Floodproofing regulations;
- Soil Conservation and Protection By-law regulations to address soil removal and deposition.

A summary of existing flood plain regulations and policies is shown in Appendix III. While these policies and regulations have generally been effective to limit development in the floodplain, they do not currently provide a comprehensive framework to evaluate and regulate development in the floodplain, particularly for properties outside the ALR. In response to Council's direction, staff have brought forward the attached policy to establish evaluation criteria to address the various concerns identified with development in the floodplain, and to formally confirm the long-standing City practice of limiting development in the floodplain.

PROPOSED POLICY AND IMPLEMENTATION

Based on a review of the overall issues and concerns associated with development in floodplains, and in consideration of the existing policy and regulatory framework to regulate development in the floodplain, a proposed Policy to limit development in the Nicomekl and Serpentine River floodplains is attached as Appendix I.

The proposed policy will restrict development within the Nicomekl and Serpentine floodplain areas, except where current zoning or approved Local Area/Neighbourhood Concept Plan designations allow development or redevelopment to occur. The Policy also establishes criteria to evaluate development proposals in the floodplain, in order to ensure that these proposals properly address the many implications of such development. This approach is consistent with existing plan designations and would also clarify the long held overall City principle that the Serpentine-Nicomekl floodplains should remain undeveloped or contain low-impact uses, such as agriculture or open space.

For floodplain and flood prone areas outside the Serpentine and Nicomekl floodplains such as Bridgeview, South Westminster, Crescent Beach, and the Campbell River other policies will be introduced, as necessary, to deal with the specific opportunities and constraints associated with development.

Implementation

The following general approach is recommended for the evaluation of existing and future development applications in the floodplain, on the basis of the proposed policy:

1. New development within the Nicomekl and Serpentine floodplains is not permitted, except where development complies with existing zoning or Local Area/Neighbourhood Concept Plan designations, and will be subject to a review of the proposal based on the evaluation criteria (Appendix I); and
2. Development within South Westminster, Bridgeview, Crescent Beach, and portions of Cloverdale floodplains will continue to be considered based on existing regulations and processes for these areas. New policies will be developed as new technical information is made available for these areas.

CONSULTATION

City Engineering staff discussed the matter of floodplain development with the Development Advisory Committee (DAC) on June 28 and September 27, 2007. DAC members were in general agreement with the policy and understood the need to limit the City's long-term exposure to potential problems associated with developments in flood prone areas as well as the need to set realistic expectations within the development industry.

The floodplain development issue and proposed controls were also presented for discussion at the Surrey Agricultural Advisory Committee (AAC) meetings on July 5 and September 6, 2007 and the Surrey Environmental Advisory Committee (EAC) meeting on June 20, 2007. Both committees were in agreement and were very pleased with this initiative and commented that these policies would help protect important environmental resources as well as the City's farmlands. An important comment was made at the AAC that the City must also ensure that upland development does not adversely impact on the viability of lands within the flood plains. Both committees further stated that the issues highlighted in Corporate Report C013 were important and need to be taken into consideration when reviewing development applications and overall City plans.

IN-STREAM APPLICATIONS

A number of applications were in-stream on June 11, 2007 when Corporate Report No. C013 was endorsed by Council. Each of these applications has been evaluated based on a number of issues, including but not necessarily limited to floodplain concerns.

It is noted that the floodplain issues for these applications have now all been addressed by staff and are either completed, concluded or withdrawn, or are being assessed through implementation of the evaluation criteria proposed in the Policy attached to this report (Appendix I). Therefore, there are no further In-Stream applications to deal with from Council's June 11, 2007, recommendations.

CONCLUSION

In order to formally confirm and re-enforce the long-standing City practice of limiting development in floodplains and flood prone areas, the attached Policy is being proposed for the Nicomekl and Serpentine River floodplains.

Future policies will be brought forward to address the Bridgeview, Crescent Beach, South Westminster and the Campbell River flood plain areas. Until these policies are approved, applications in these areas will continue to be dealt with using existing by-laws and policies while considering the issues outlined in this report.

Jean Lamontagne
General Manager
Planning and Development

Paul Ham, P.Eng.
General Manager, Engineering

VL/RD/JB/rdd/brb:kd

Appendix I - Proposed Policy to Limit Floodplain Development

Appendix II - Corporate Report C013 (June 11, 2007)

Appendix III - Summary of Existing Floodplain Policies, Regulations and Plan Designations



CITY POLICY

APPENDIX I

No.

REFERENCE:	APPROVED BY:	CITY COUNCIL
REGULAR COUNCIL MINUTES	DATE:	
PAGE	HISTORY:	NEW

TITLE: DEVELOPMENT WITHIN THE NICOMEKL AND SERPENTINE RIVER FLOODPLAINS

A. BACKGROUND:

Development and associated filling in the floodplain has the following issues and implications:

1. Impacts on drainage;
2. Undermines the effectiveness of municipal infrastructure;
3. Causes the loss of important habitat;
4. Creates a financial burden to the broader community;
5. Results in ground subsidence and will have implications related to future climate change;
6. Creates Geotechnical and Haulage of Fill impacts; and
7. Creates uncertainty for new development in the floodplain with respect to drainage.

B. APPLICABLE AREA BOUNDARY:

This policy applies to areas within the 200-year floodplain of the Nicomekl and Serpentine Rivers as defined by Provincial Floodplain Mapping and associated updates to the mapping.

C. POLICY:

To address the City's overall objectives and mitigate potential impacts of development in floodplain areas, the City will limit future development within floodplain areas, subject to the following guidelines:

1. Development proposals (including rezoning, subdivision, Building Permit) within the Nicomekl and Serpentine 200-year floodplains will not be supported unless they comply

This policy is subject to any specific provisions of the Municipal Act, or other relevant legislation or Union agreement.

with existing zoning or Local Area / Neighbourhood Concept Plan designations.

2. Development proposals that comply with existing zoning or Local Area / Neighbourhood Concept Plan designations will be evaluated by the criteria as set out in Section C.

C. CRITERIA TO EVALUATE FLOODPLAIN DEVELOPMENT

Where floodplain development may be considered as noted in Section B above, developments shall be evaluated on the following criteria and associated assessment requirements:

1. Drainage Impact

- Development on the existing floodplain shall not impact other lands, in terms of flood conveyance and storage capacity such that there is no increase in flood elevation to neighbouring properties or flood cells due to the proposed development.
- The developer is required to conduct a detailed engineering assessment of the potential impacts and implement mitigation measures to ensure that there is no increase in flood elevation.

2. Municipal Infrastructure

- No new City or private infrastructure will be permitted to be constructed within the floodplain, including roads, sanitary trunks, storm mains, water mains, and pump stations.
- The developer must identify how services will be provided to the proposed development without compromising the City's responsibilities to operate and maintain it, including a review of life cycle costs of the infrastructure.

3. Environmental Impact and Habitat Loss

- Development shall minimize the impact on the existing local natural environment, including wildlife and aquatic habitat, riparian areas, and areas used on a seasonal/temporary basis such as ephemeral watercourses and migration corridors, as determined through consultation with senior environmental agencies.
- Assessment of impacts shall include effects on ecotones and biodiversity of the local environment.
- The developer is to identify and assess the environmental impacts, and obtain required approvals from agencies, such as DFO and BC Ministry of Environment, as necessary, including implementation of compensatory or mitigative measures as appropriate.

4. Community Plans & Impact on Local Residents

- Impact of filling and development of the floodplain on existing local residents, including an assessment of the volume of truck traffic required to infill the proposed development area and mitigation of such impacts.

5. Long Term Risk (Ground Subsidence and Climate Change)

- In order to minimize anticipated risks associated with Climate Change and Regional Ground Subsidence, the developer will be required to evaluate the impact of up-to-date forecasted changes on the level of service to the proposed development. Risk mitigation measures will be required to account for forecasted changes over a fifty year horizon from the anticipated date of development. Local settlement, regional subsidence, ocean level rises (and associated 200 year flood elevations) will need to be accounted for at the development site as well as on municipal infrastructure proposed to service the development.



Corporate Report

CITY OF SURREY
DEPARTMENT

APPENDIX II

NO: CO13

COUNCIL DATE: June 11/07

COUNCIL-IN-COMMITTEE

TO: Mayor & Council DATE: June 6, 2007

FROM: General Manager, Engineering FILE: 5225-10
General Manager, Parks, Recreation & Culture
Acting General Manager, Planning & Development

SUBJECT: Development Within Agricultural Floodplains and Flood Prone Areas

RECOMMENDATIONS

It is recommended that Council:

1. Endorse in principle the policy of limiting future urban and suburban development in agricultural floodplains and flood prone areas based on information provided in this report;
2. Authorize staff to proceed with further work, including liaison with appropriate agencies, stakeholders and Committees, to develop and bring forward for Council consideration a policy and corresponding By-law amendments to restrict development in agricultural floodplains and flood prone areas;
3. Direct staff to continue to process in-stream development applications in the floodplain but to ensure that such encroachment/impact on the floodplain is minimized and that any impacts to the floodplain are mitigated; and
4. Direct that any development applications for sites in floodplains or flood prone areas received after the date of Council's consideration of this report be held in abeyance until a City Policy on development and filling in floodplains and flood prone areas is adopted by Council.

INTENT

The City's current by-laws and strategies do not adequately address the potential impacts of development in the floodplains and flood prone areas of the City. This report highlights these concerns and makes recommendations for Council's consideration.

BACKGROUND

Large portions of the City of Surrey lie within floodplains. Most of these areas are zoned agricultural and in the Agricultural Land Reserve (A.L.R.). The map attached as Appendix 1 illustrates the location of the City's major floodplain areas.

Flooding that occurs from time in the City is related to 3 separate causes. These are:

Area:	Cause:
Crescent Beach, Mud Bay, Colebrook Road Area	- High tides and on-shore winds
Port Kells, Port Mann, Bridgeview, South Westminster	- Fraser River freshet
Serpentine, Nicomekl, Little Campbell River Lowlands	- Local winter rainstorms

Each of these floodplain areas is addressed with different flood protection strategies. Crescent Beach, South Westminster and Bridgeview are protected by dykes with the intention that flooding would only occur under extreme circumstances. In the Port Mann and Port Kells area, properties are filled to an elevation above projected flood levels, with the intention of protecting habitable areas of the dwellings from floods (i.e., 1 in 200 year flood). The Mud Bay, Colebrook, Serpentine and Nicomekl floodplains are primarily designated agricultural, with the Little Campbell River Floodplain being primarily in the Semiahmoo Indian Reserve. It is not practical to flood protect these agricultural areas to the same level as residential and industrial areas and, as such, flooding occurs on a regular basis in these areas but the duration and extent of the flooding is controlled so that agricultural uses remain viable.

Agricultural floodplains provide natural hydraulic storage and conveyance opportunities for large volumes of water that either naturally flow through or collect in these areas. Floodplains also provide important habitat that contribute to the City's biodiversity. The Province sets flood protection levels to ensure habitable floor areas are flood protected to the 1 in 200 year return storm elevation (i.e., in any given year there is a 0.5% chance that flood waters will reach an elevation higher than the flood protection elevation). Although it is rare, flooding of these areas can never be fully avoided. The loss of floodplain areas through filling contributes to the creeping up of flood levels on properties that remain in the floodplain and environmental impacts.

Limiting the intensity of land use in floodplain areas of the City has been a long standing principle that has been followed in many areas. The City's Official Community Plan (OCP) and Neighbourhood Concept Plans (NCPs) reflect these principles by keeping the floodplain as agricultural land or by designating it as green space that was not to be developed.

Recently there have been a number of development applications that require fill to be placed in floodplain areas to maximize lot yield. This situation has occurred where the

ALR boundary does not come to the edge of the floodplain. This report primarily addresses the implications of placing fill in the floodplains.

DISCUSSION

Filling in the floodplain has the following issues and implications:

1. Impacts on Drainage;
2. Undermines the effectiveness of Municipal Infrastructure;
3. Causes the Loss of Important Habitat;
4. Creates a Financial Burden to the Broader Community;
5. Results in Ground Subsidence and Climate Change;
6. Geotechnical and Haulage of Fill, Impact of Large Fill Requirements;
7. Expectations of New Residents; and
8. Impact to the Development Industry.

Each of these areas is addressed in the following discussion.

Impact on Drainage

To date, most of the City's floodplain in the Serpentine and Nicomekl Valley is used for agricultural purposes with the majority of properties held in the Agricultural Land Reserve (ALR). The City's lowland drainage strategy was developed to control flooding in support of agricultural purposes. The main goal of the strategy is to limit the duration of surface flooding to minimize damage to agricultural lands and crops. The objectives related to flood proofing in urbanized areas are different from the objectives in agricultural areas. In general, owners in new urban or suburban developments do not view recurring surface flooding of their property as an acceptable standard regardless of the duration of such flooding.

The current approval process for proposed development within the floodplain includes a review by Engineering Department staff of the technical implications of filling the property to achieve ground elevations above the 1 in 200 year flood level. By raising lowland properties, the conveyance and storage capacity in the floodplain is reduced. The Engineering review is focused on ensuring that no adverse impacts occur to the local drainage system and adjacent properties as a result from the development. The detailed assessment of the impact often leads to a quantified loss of storage and a small increase to the flooding of surrounding properties. Issues surrounding flooding in the lowlands are often incremental in nature. In other words, an increase of 1 or 2mm by one development does not seem like much but when there are multiple incremental impacts of 2mm, a significant impact is created.

Municipal Infrastructure

Urban and suburban development in the floodplain requires services such as roads, sanitary sewers (including pumps), water systems and drainage. Failure or poor performance of infrastructure in floodplains is common in comparison to non-floodplain areas. For example, road closures are common in floodplain areas as floodwaters inundate the road and create unsafe conditions. In new urban and suburban areas, this

would result in isolating residential areas and possibly limit access by emergency vehicles. Erosion and structural deterioration of the road occurs much more rapidly if the road is inundated with flooding on a regular basis.

The City's sanitary sewer and water systems are also more prone to failure due to flooding. Flood inflow into the sanitary system frequently leads to sanitary overflows. This may result in uncontrolled discharges of untreated sewage to the ground surface at manholes or sewer backups into buildings and properties. Flooding can also cause pipe breaks in the water distribution system resulting in cross-contamination of the water system. Infrastructure can be designed specifically for lowland flood prone areas to minimize these failures, but ultimately it will still be more susceptible to failure and require more maintenance than in other higher non-flood prone locations.

Loss of Important Habitat

Most floodplains in the City are considered to be environmentally sensitive areas and include significant wildlife habitat. Habitat, such as seasonal wetlands and marshes, are decreased as development encroaches into the floodplain and as floodplains are filled. Seasonally flooded areas are essential habitat for migratory and wintering waterfowl and are forage areas for mammals. Although there is much floodplain habitat in Surrey, the fringe areas often contribute to rare and unique environmentally significant areas called ecotones. Ecotones exist where distinctly different habitats are juxtaposed. Two examples of ecotones in Surrey are along the Serpentine and Nicomekl Rivers where upland forests are adjacent to floodplain grasslands. These forest and floodplain interfaces are critical for all wildlife including deer that graze in the meadows and raptors that nest and roost in the forests and feed in the floodplain. This situation often occurs in fringe areas between farmland and suburban areas.

The OCP attempts to protect natural and environmentally sensitive areas. Conserving areas containing significant natural features and wildlife as open space, and protecting the quality and integrity of ecosystems, including air, land, water, vegetation and wildlife, are key components of the OCP policy. Prohibiting the conversion of agricultural floodplain land uses to more dense urban or suburban uses assists in preserving these areas. These areas are often identified as green space in the City's NCP's and are often identified for preservation through the development process as parkland dedication, parkland acquisition, and/or through the use of "no disturbance" restrictive covenants.

Financial Burden to the Rest of the Community

Homes can be constructed on fill to reduce the risk of flooding. However, access and services may be limited or not available during periods of flooding of the surrounding land. In these cases some homes can be isolated during floods. Emergency services are not typically available to these homes during flood events. Similarly, water and sewer service is difficult to maintain to these homes during flood events.

Although these homeowners realize they live in a floodplain, they still expect the City to resolve these types of inconveniences. The City is often not capable of providing expected levels of service after a development proceeds in areas where the floodplain has been filled, especially when it involves further capital expenditures and becomes a

burden to other Surrey taxpayers. In many cases, there is no way to provide additional flood proofing without further negatively impacting neighbouring properties.

Currently, certain areas of Cloverdale experience flooding during rain events exceeding a 1-in-10-year return period. Current research predicts flood levels in lowland areas to rise in the future due to climate change. The continuing development of floodplain areas is expected to result in increasing costs to the local environment, the property owners, and the City of Surrey. One of the tools available to limit these potential consequences is the City's Zoning By-law, No. 12000, which could be amended to prohibit future urban and suburban development within the floodplain. Alternatively Council may, by policy, not rezone the floodplain area for urban or suburban development.

Ground Subsidence and Climate Change

Predictions of long-term ground subsidence in the lowland areas and global climate change may place floodplain developments at even greater risk. Current research predicts rising sea levels due to climate change. The current boundaries of the City's Floodplains are based on the 1 in 200-year flood elevation as determined by the Ministry of Environment in 1994. In view of recent climate change studies and subsidence concerns, the floodplain boundary elevation may require adjustment to better reflect current conditions.

Geotechnical and Haulage of Fill, Impact of Large Fill Requirements

Intensification of land use in floodplain leads to large-scale soil depositing requirements. Low intensity uses such as farmhouses or agricultural buildings are acceptable in the floodplain in support of agricultural uses. However, for more intense urban or suburban land uses large scale filling is required. This type of filling has a large impact to flood water storage capabilities and leads to many geotechnical challenges and uncertainties. There are often loading failures in the lowlands as a result of the placement of fill.

A collateral impact of filling is related to the hauling of fill material to the fill site. Residents often complain of the long periods of disruption associated with thousands of trucks delivering material to specific site. The heavy loads associated with fill operations cause the rapid deterioration of roads, particularly in the floodplain where the soils underlying the roads is often soft and unable to withstand the heavy traffic.

Expectations of New Residents

In areas that are prone to flooding habitable floor areas of buildings must be above the design flood elevation. The current flood proofing requirements within the floodplain may not adequately reflect the future home owner's expectations for their residence since the elevation of the residence is set so that the habitable area of the dwelling is not flooded for a design event. These houses are constructed such that bottom of the floor joists are just above the flood elevation, leaving the crawlspaces, garages, or surrounding yards susceptible to flooding. In many cases the municipal services required for the property are prone to flooding. The flooding of these non-habitable areas is often unsatisfactory to new residents. The situation cannot be easily changed or remediated since it is inherently part of the design of the building and surrounding areas.

Impact to the Development Industry

The City's OCP and existing NCP's recognize floodplains with respect to their form and function, and do not show development encroaching to the floodplain. Historically this has created no expectation regarding the potential for development within the floodplains. By reaffirming the City's intent to protect the floodplain from development, development community will not have unreasonable expectations about the potential for development of such lands. Under current conditions reinforcing the City's interest to continue to protect the City's floodplains from development will not negatively impact the development industry. A few recent applications deviate from this approach and it is important that the City reinforce its position regarding development in the floodplains at this time so that expectations are aligned with reality.

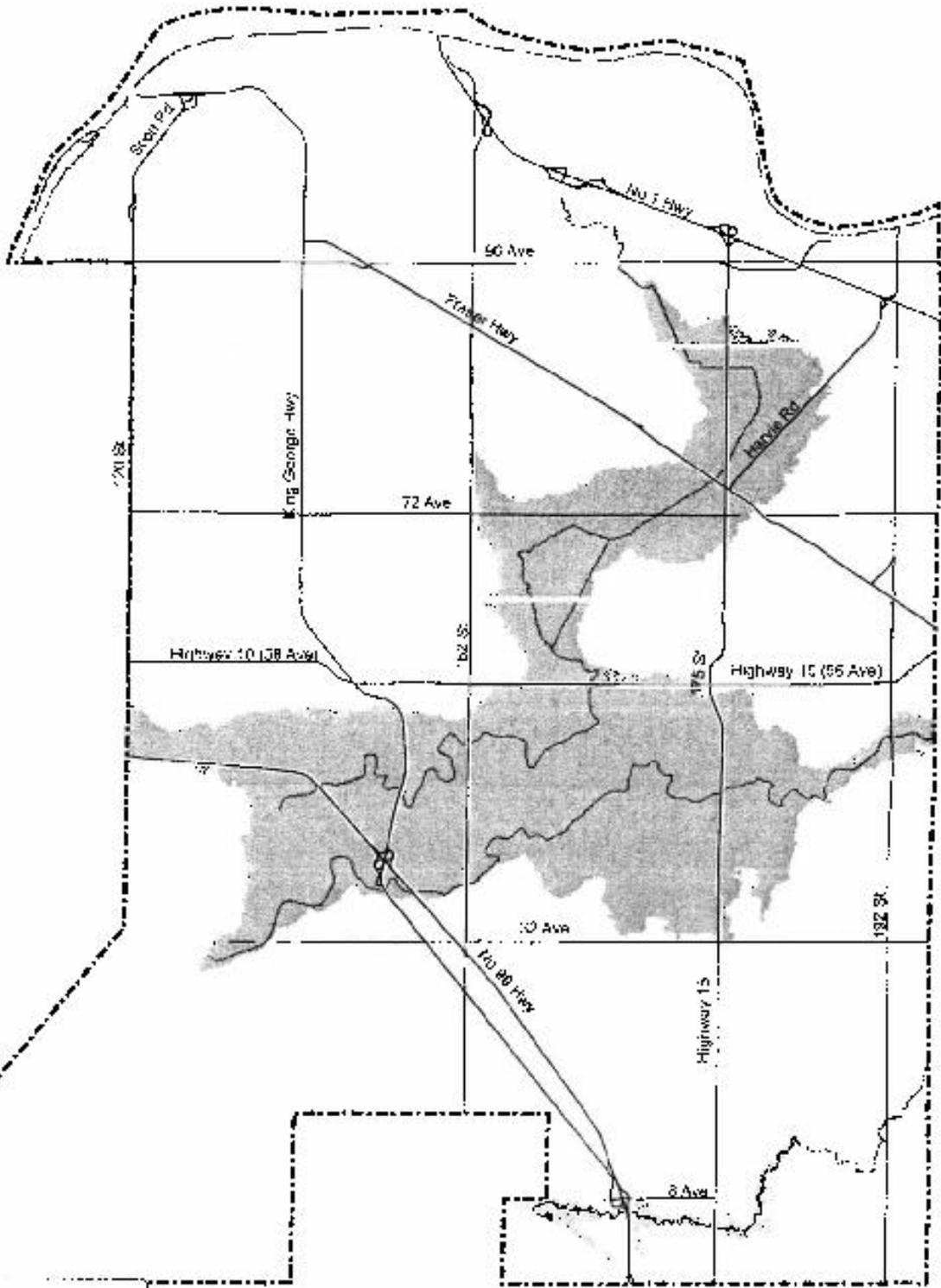
Process and Implementation

Staff recommend that a comprehensive review process be undertaken involving appropriate agencies/stakeholders and Committees, including the Environmental Advisory Committee, Agricultural Advisory Committee, and the Development Advisory Committee with a view to developing a comprehensive City Policy related to development and filling in the City's flood plains and flood prone areas. The review could also lead to amendments to By-laws in support of the Policy.

CONCLUSION

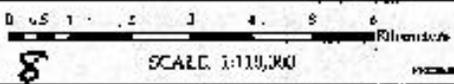
Based on the above discussion, it is recommended that Council:

- Endorse in principle the policy of limiting future urban and suburban development in agricultural floodplains and flood prone areas based on information provided in this report;
- Authorize staff to proceed with further work, including liaison with appropriate agencies, stakeholders and Committees, to develop and bring forward for Council consideration a policy and corresponding By-law amendments to restrict development in agricultural floodplains and flood prone areas;
- Direct staff to continue to process in-stream development applications in the floodplain but to ensure that such encroachment/impact on the floodplain is minimized and that any impacts to the floodplain are mitigated; and



Legend
 Agricultural Floodplain Areas

AGRICULTURAL FLOODPLAIN AREAS



APPENDIX III

Summary of Existing Flood Plain Policies & Regulations

	Document	Designation, Policy or Regulation	Details
1.	Official Community Plan (OCP)	<p>Example Policy Objectives:</p> <ul style="list-style-type: none"> - F-1 and G-1 Protect agriculture and natural areas; - F-1.5 Manage stormwater runoff and reduce flooding of farmlands in the Serpentine-Nicomekl lowlands - G-1.1 Recognize the need to minimize hazards of floodplains on development by locating low intensity land uses (e.g. Agriculture, parks, etc.) in the floodplains. - Inclusion of a Floodplain Management Map (Figure 19) 	<ul style="list-style-type: none"> - Various policies related to protection of natural and agricultural areas, and limiting development encroachment on the floodplain.
2.	Neighbourhood Concept Plans (NCPs) and Local Area Plans (LAPs)	<ul style="list-style-type: none"> - All NCPs and LAPs acknowledge the floodplain limitations and show lands in the floodplain (within the 200-year flood) as undevelopable/green space. 	
3.	<p>Surrey Zoning By-law, 1979 (No. 5942) and</p> <p>Surrey Zoning By-law, 1993 (No.12000) (reference only)</p>	Floodproofing Regulations	<ul style="list-style-type: none"> - Prescribe regulations for lands in the floodplain - Development of new dwellings in Crescent Beach regulated through Development Variance Permits (DVPs) to zoning regulations relax floor elevations relative to required flood levels - Specific regulations pertaining to Bridgeview and South Westminster
4.	Soil Conservation and Protection By-law	<ul style="list-style-type: none"> - Establishes regulations to remove and deposit fill. 	<ul style="list-style-type: none"> - Addresses the process to deal with fill removal and deposit in sensitive drainage areas, including the floodplain
5.	City Policies	<ul style="list-style-type: none"> - Policy No. M-26 Soil Deposition & Removal 	<ul style="list-style-type: none"> - Indicates that deposition in the floodplain (Serpentine-Nicomekl) should be restricted to minimal levels.
		<ul style="list-style-type: none"> - Policy No. H-45 Storm Drainage Management 	<ul style="list-style-type: none"> - Policy indicates that a comprehensive engineering and management evaluation is being completed to define a strategy to deal with lowland flooding and drainage service in the floodplain.