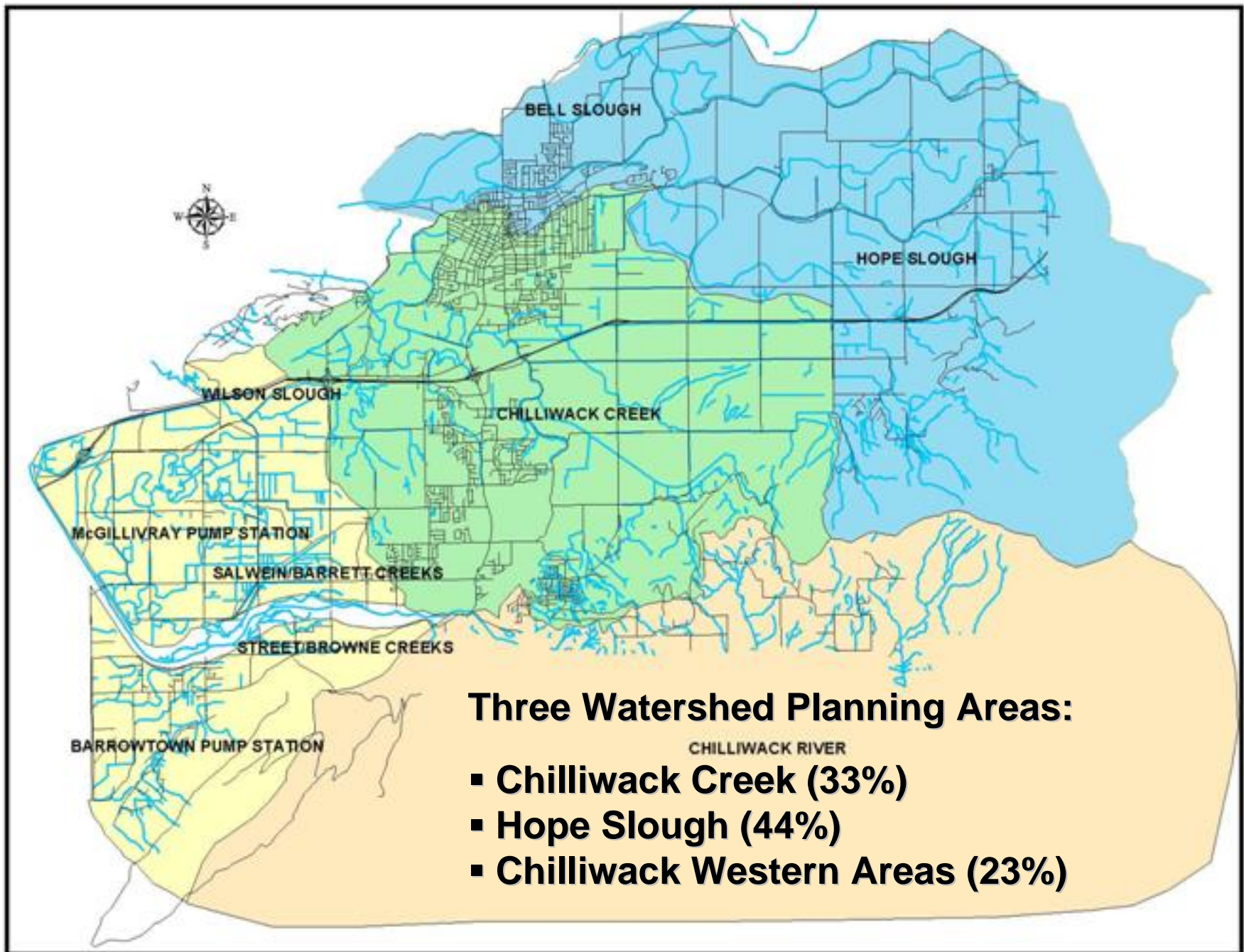


An aerial photograph of a suburban development. The central focus is a large, rectangular area with a grid-like road pattern, possibly a new subdivision or a large commercial/industrial site. This area is surrounded by established residential neighborhoods with houses and trees. In the background, there are green fields and a range of mountains under a clear blue sky. A date stamp '31.1.1995' is visible in the bottom right corner of the image.

Co-Presentation by Dipak Basu and Kim Stephens on:

Surface Water Management and
Sustainable Subdivision Design:
Creating a Legacy

31.1.1995

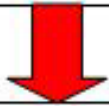


Presentation Road Map

- 5 BUILDING BLOCKS
- 5-YR ACTION PLAN



#1 – Strategic
Data Collection



#2 – Policy & Design Criteria
Manual



#3 – Sustainable Subdivision
Design



#4 – Integrated Master
Drainage Plans



#5 – Performance Monitoring
Program

The Goal - Solutions that:

- Are Integrated
- Solve Problems
- Achieve Multiple Objectives
- Promote Liveability
- Are Affordable

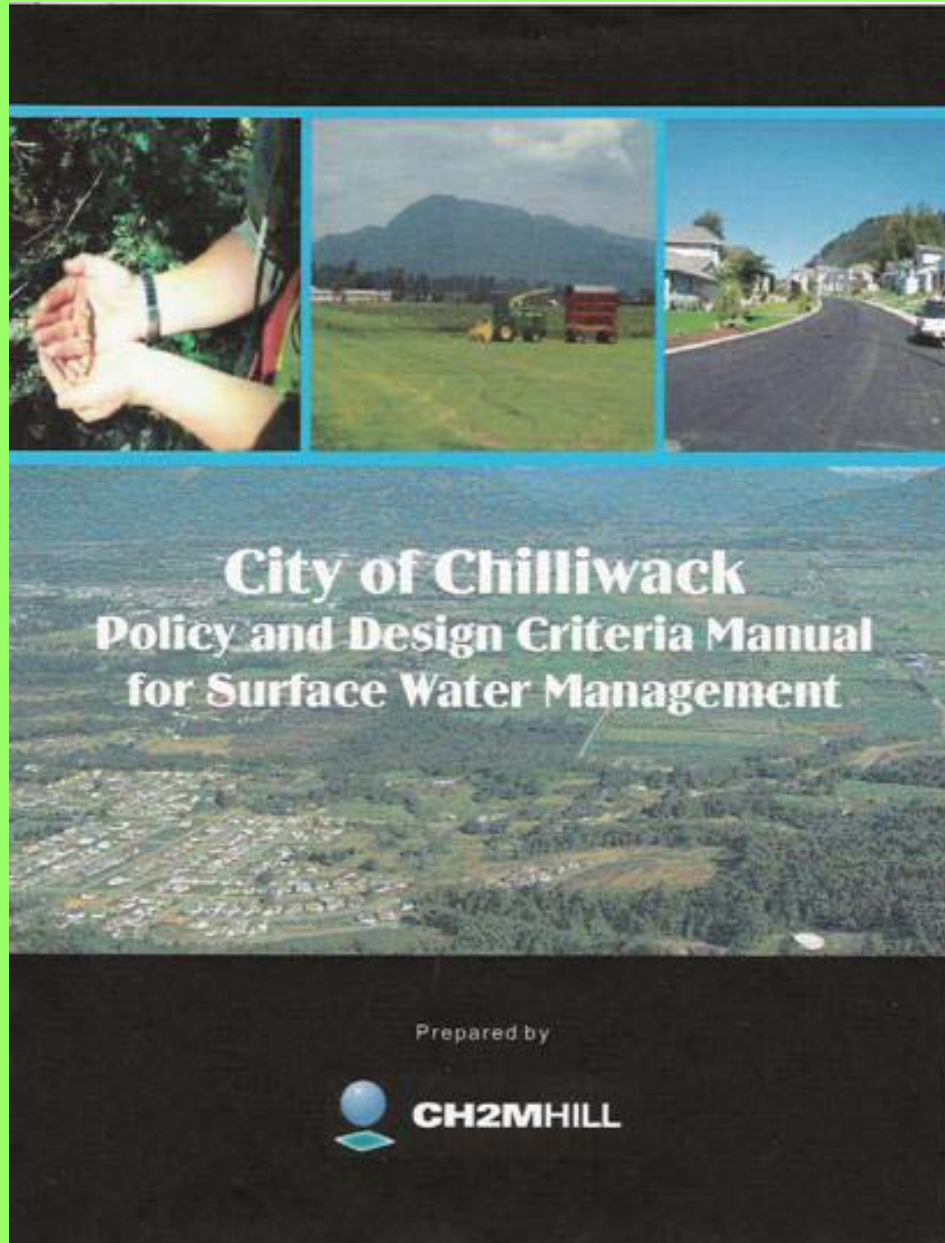


Building Block #1:

**“Streamflow Monitoring Has Established
The Natural Runoff Rate from a Forested Watershed”**



Chilliwack is a landscape of streams, more than 600 kilometers



Building Block #2:

“Performance Targets and Step-by-Step Procedures Have Provided Developers With Guidance for Design Of Infiltration Systems”

Providing Developers with Guidance

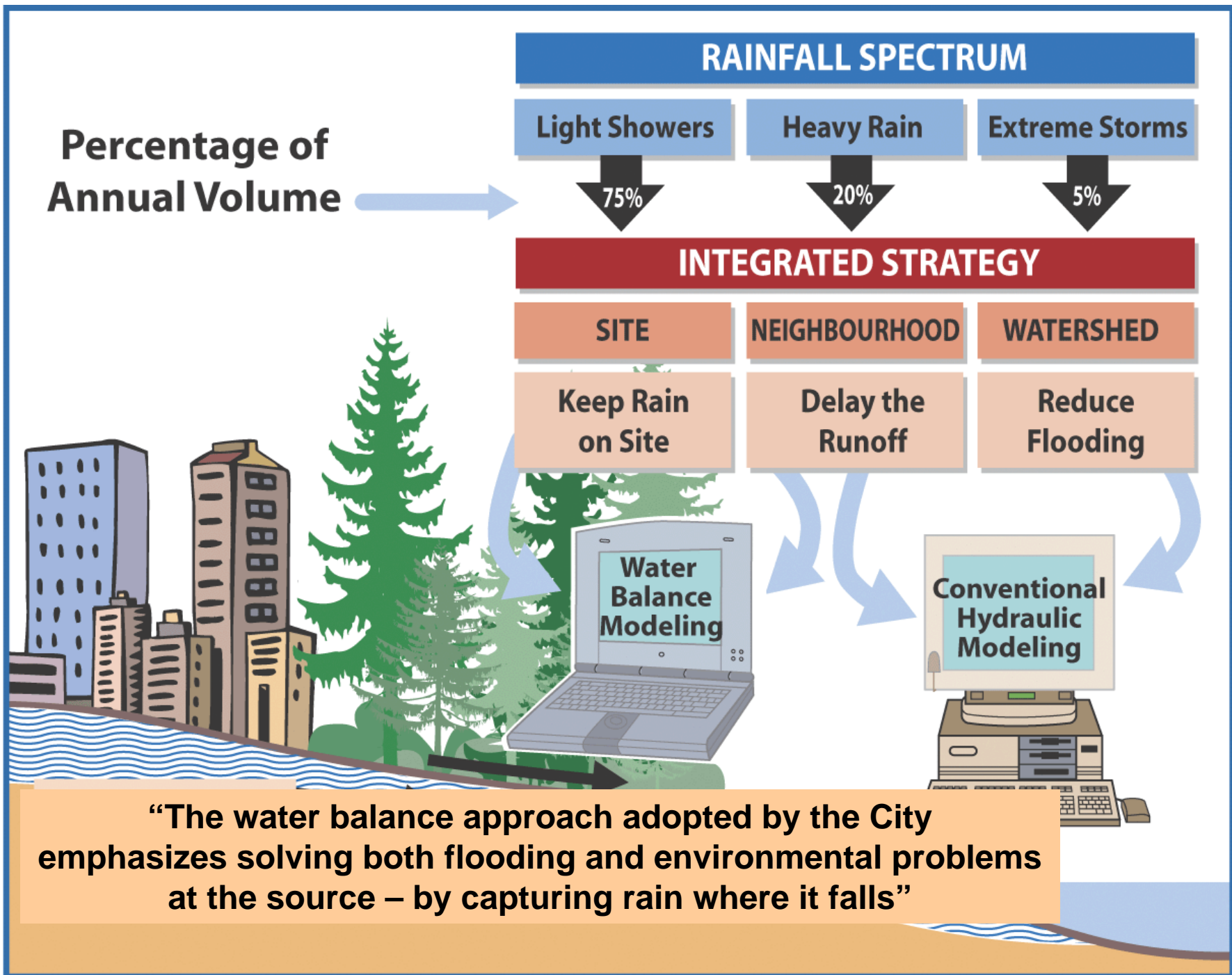
***Stormwater Planning:
A Guidebook for BC***

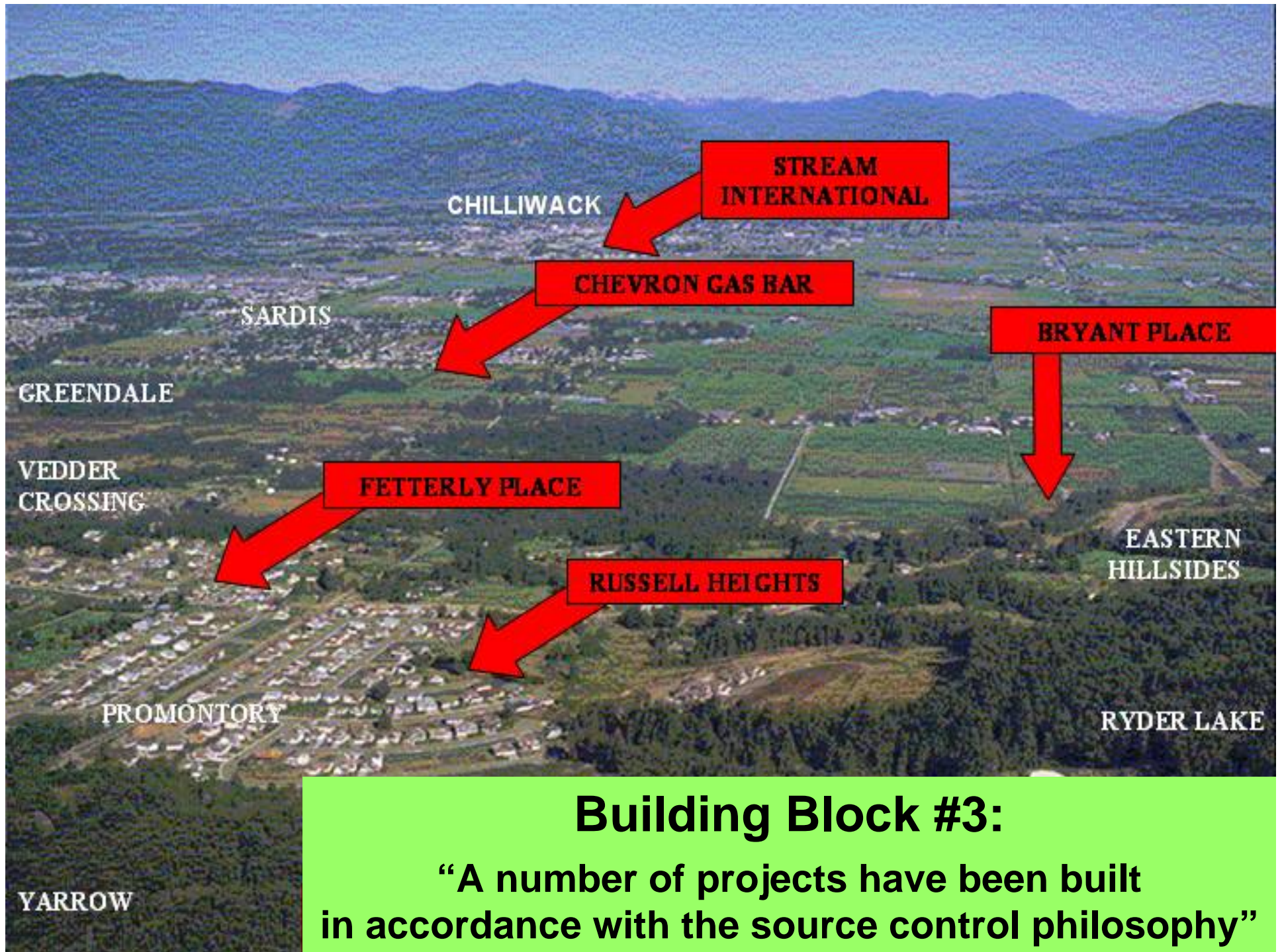


***Chilliwack Manual for
Surface Water Management***



Design Guidelines for Developers







The Design Objective is to Infiltrate the First 30mm of Rainfall

age at Sardis Park



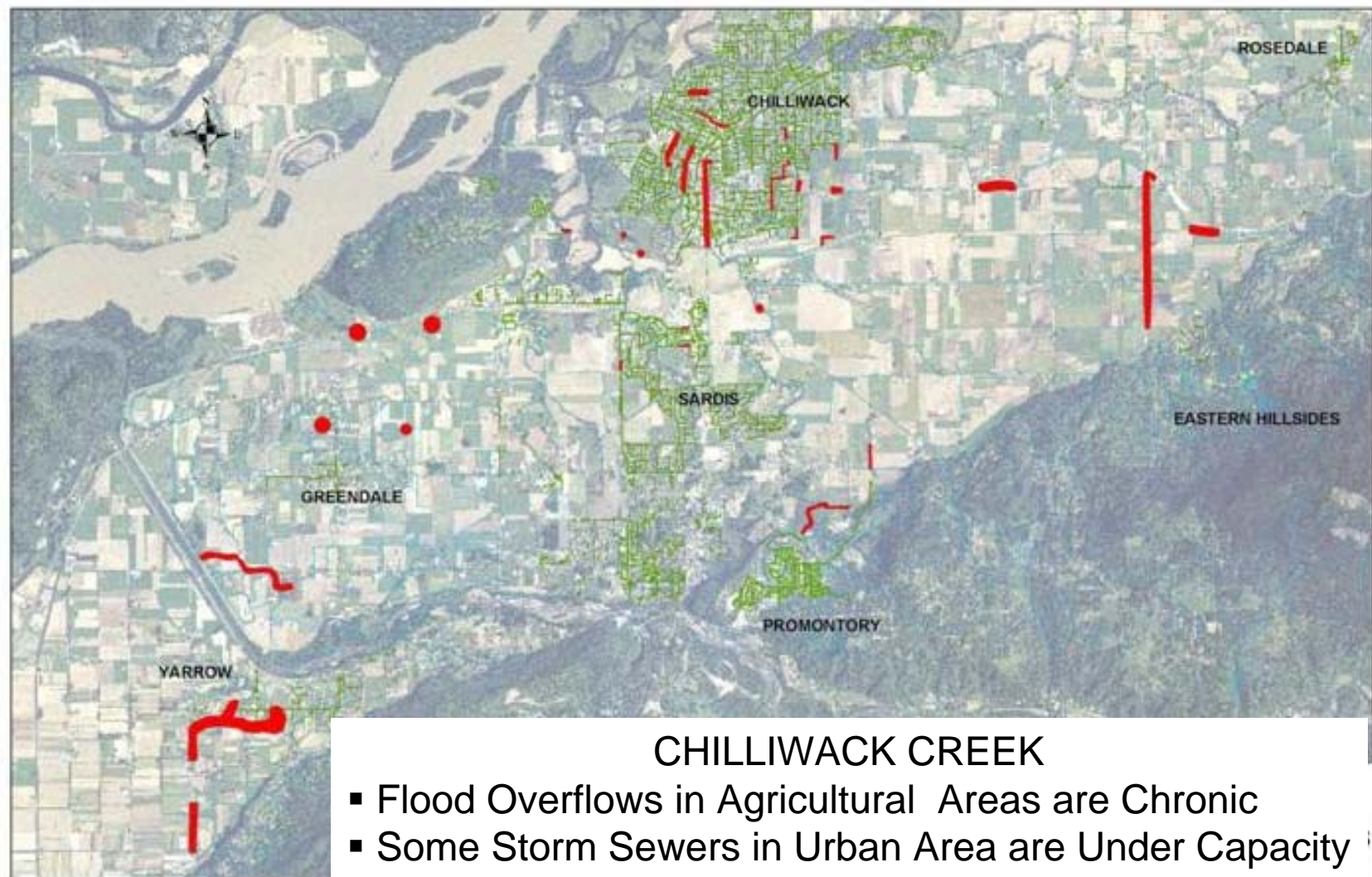
11. 2. 2002



11. 7. 2002

Building Block #4:

“Problem areas have been identified and solutions proposed; and computer modeling has shown that rainwater runoff volumes and rates can be reduced through infiltration”



Flooding Solutions

- Flood Protection for the Downtown
- Conveyance Improvements at Promontory
- Restoration of Semiault Creek

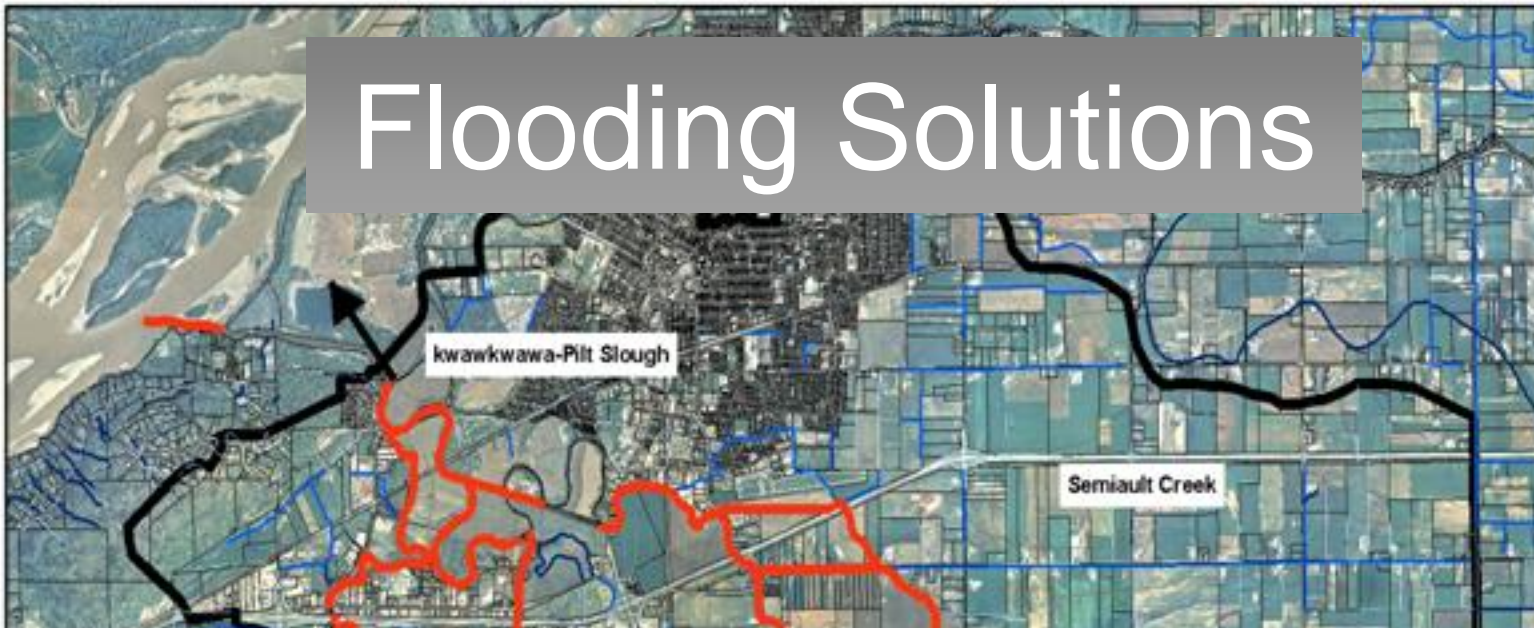
CITY
OF
CHILLIWACK

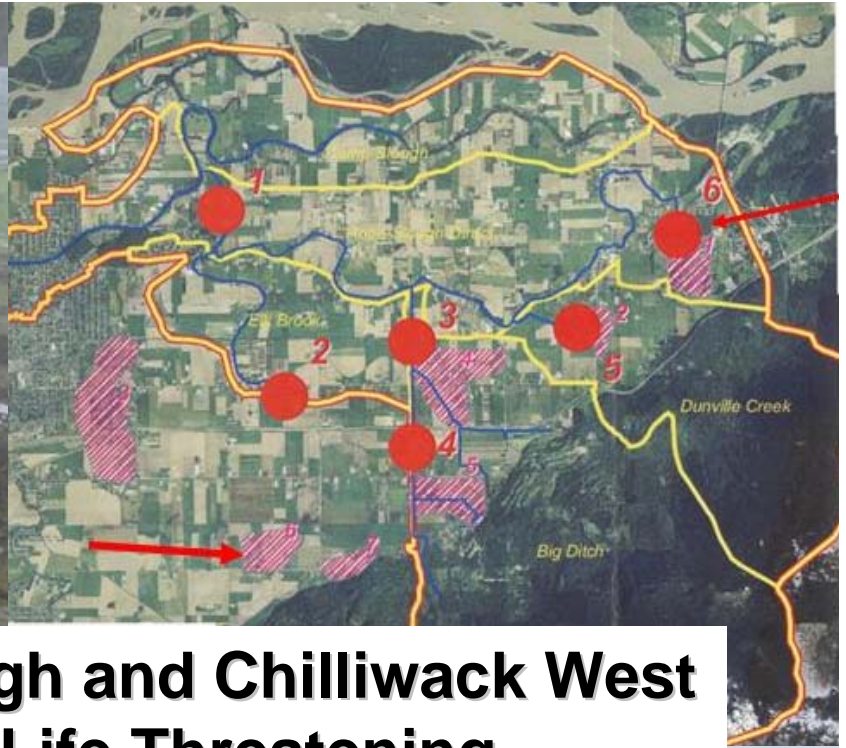
LEGEND

-  CHILLIWACK CREEK
-  SUB-WATERSHED BOUNDARY
-  CATCHMENT BOUNDARY
-  WATERCOURSE MAIN STEM
-  DRAINAGE OUTLET

CHILLIWACK CREEK
WATERSHED

Printed: December 2, 2002





Flood Overflows in Hope Slough and Chilliwack West are Infrequent and Non-Life Threatening

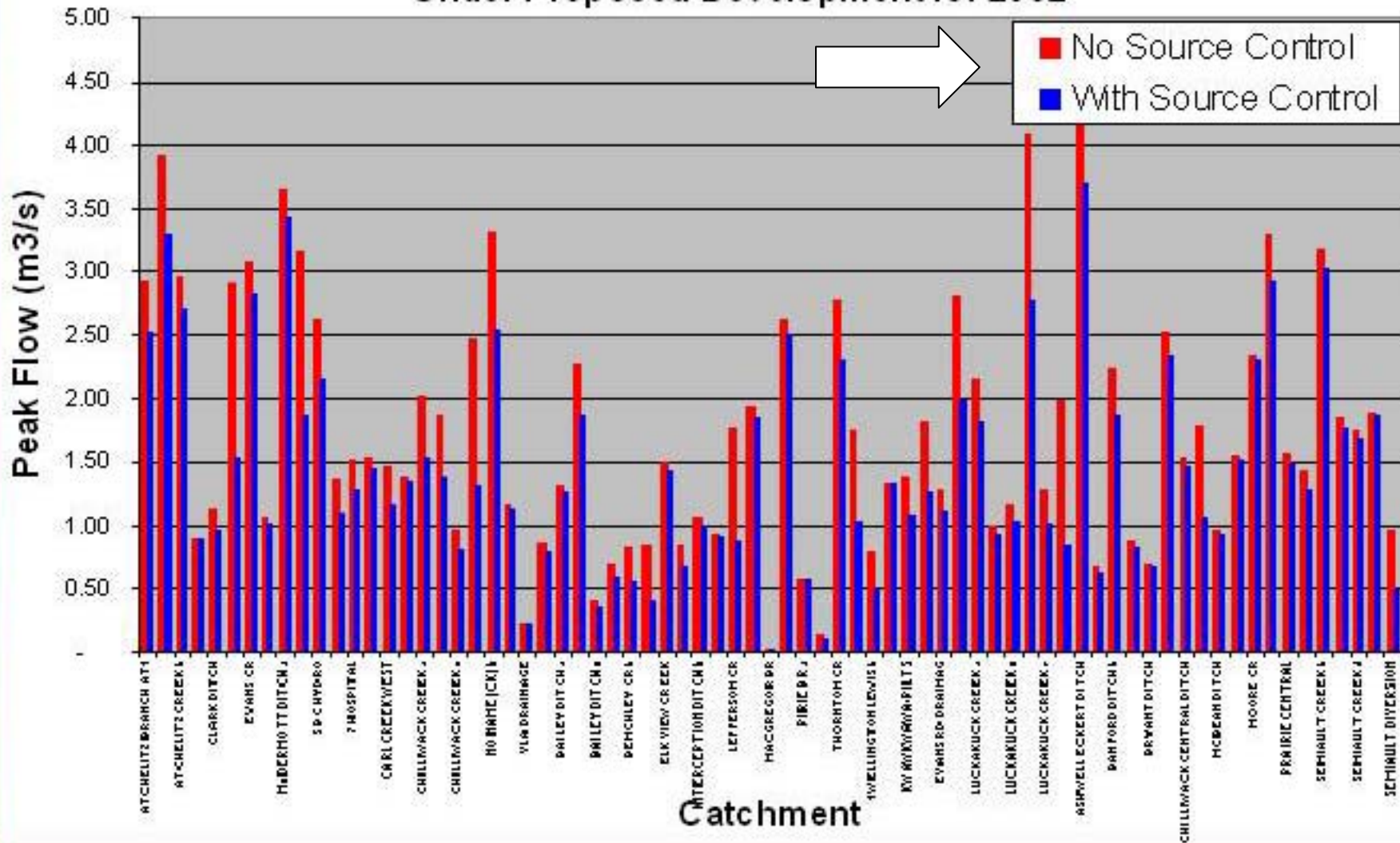




“Sustainable Subdivision Design is Part of the Flooding Solution”

“Computer modelling illustrates the benefits at a catchment scale by reducing rainwater runoff volume at the site scale.”

Peak Flows By Catchment
Under Proposed Development for 2032



City's Current Landscaping Requirements Can Also Accommodate Infiltration

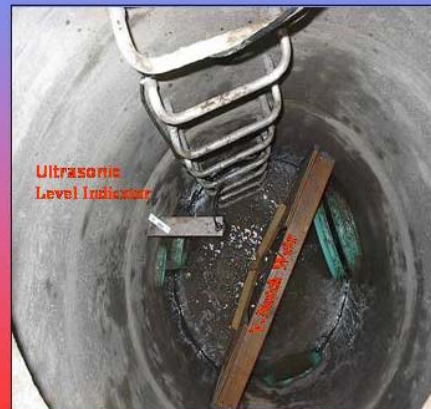
Land Use Little area is needed for source control infiltration. The galleries can be installed under landscape or asphalt parking.	Percentage of Land Needed for Infiltration	
	Deep Infiltration Systems	Shallow Infiltration Systems
Commercial / Industrial	2.5%	6.7%
Institutional	2.2%	5.3%
Residential – Low Density	1.4%	3.1%
Residential – Medium/High Density	2.3%	6.3%

Building Block #5:

“Rainfall and Flow Monitoring for the First Two Demonstration Projects Has Confirmed That Infiltration Systems Do Work”



“Fetterly Place and Bryant Place Are Among the First To Be Monitored in BC for the Purpose of Assessing Source Control Measures”

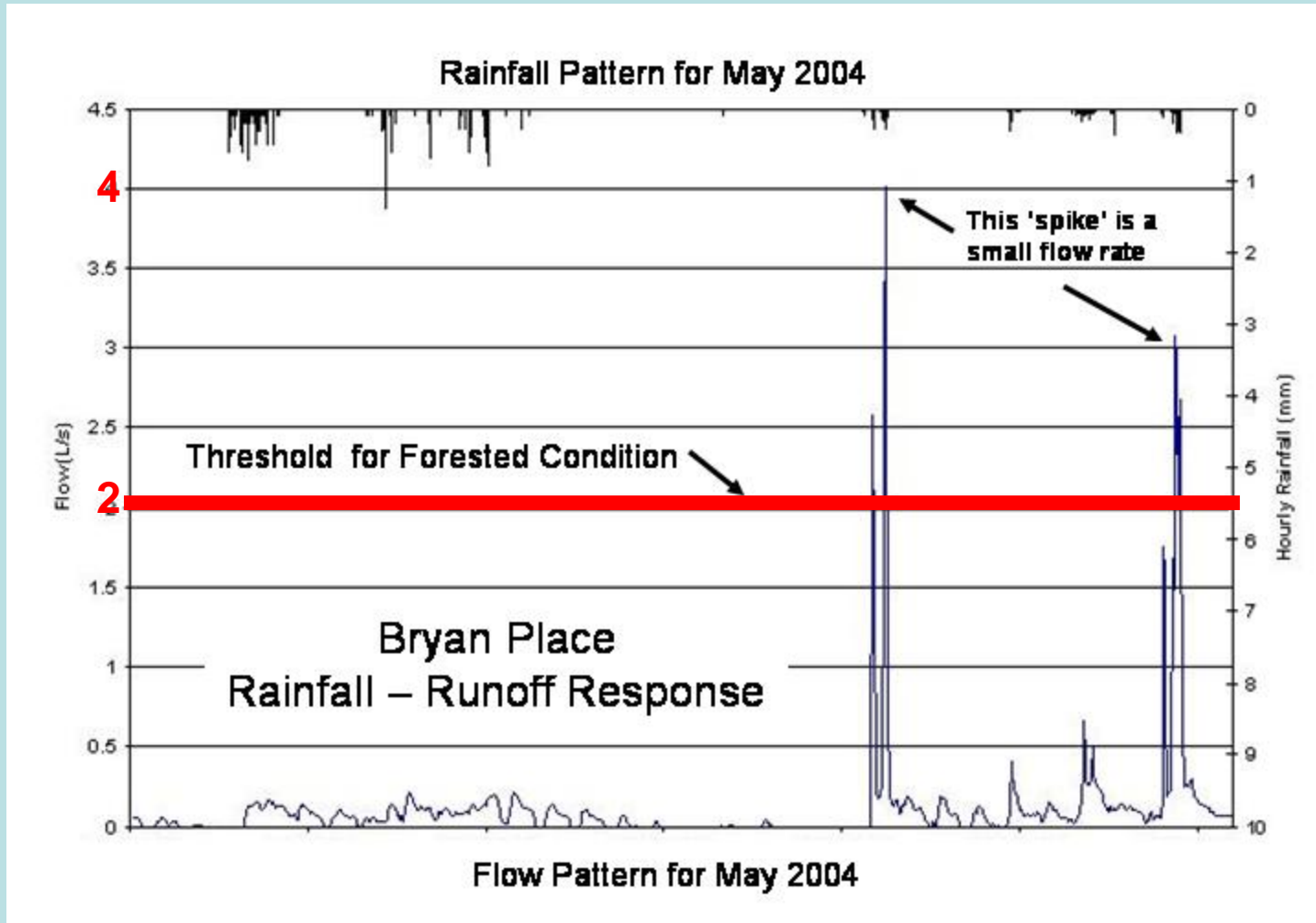


Site 1 - Fetterly Place

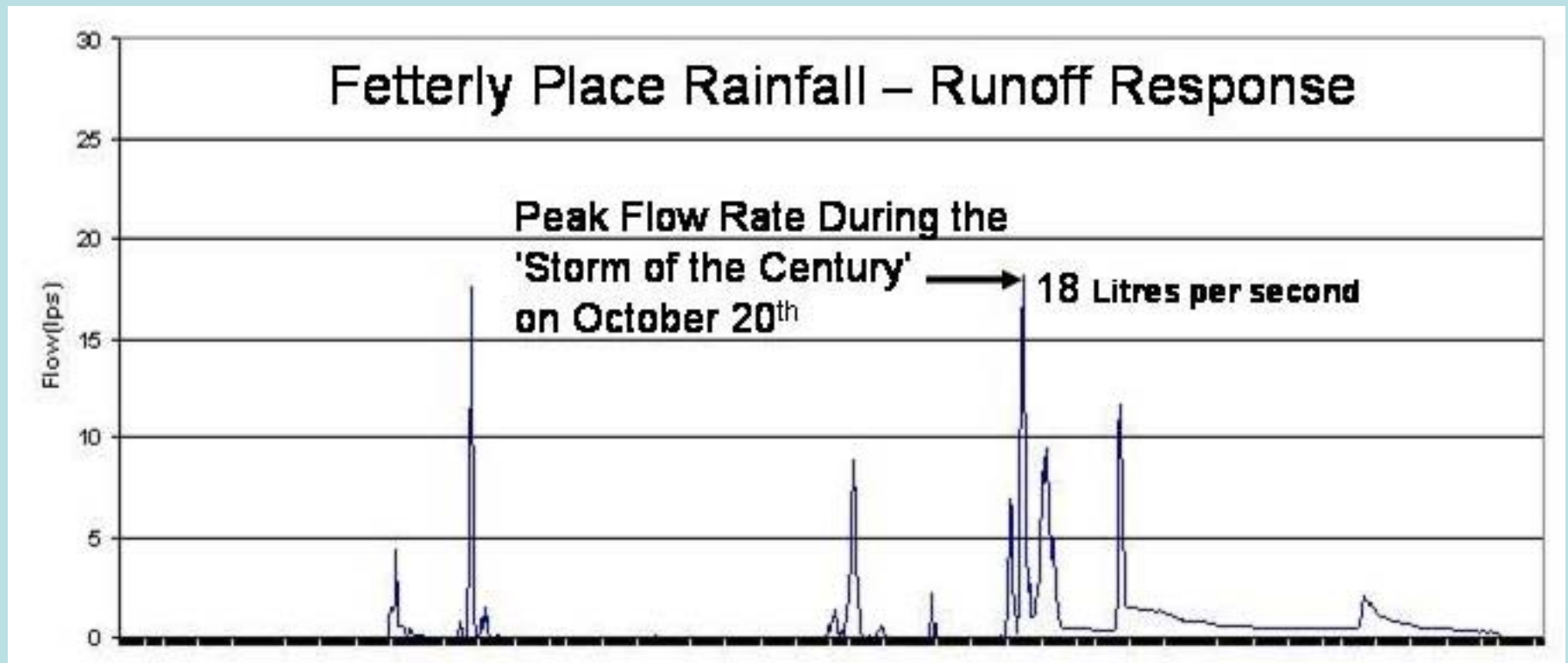


Site 2 - Bryant Place

“A High Degree of ‘Runoff Control’ is Being Achieved in Both Subdivisions”



“October 2003 - The Storm of the Century”



Lessons Learned?

- Provide Minimum Soil Depth
- Promote Landscaping / Rain Gardens
- Control Driveway Drainage

Fetterly Place

Presentation Road Map

- 5 BUILDING BLOCKS
- 5-YR ACTION PLAN





■ First 5-Yr Plan:

- Produced Policy Framework, Design Criteria and Tools for Sustainable Subdivision Design
- Developed Plan for Chilliwack Creek

■ Second 5-Yr Plan:

- Implement Chilliwack Creek Program
- Focus on Streetscape Design

31.1.1999

An aerial photograph of a city, likely Vancouver, showing a mix of urban development and green spaces. The city is nestled in a valley with mountains in the background. The foreground shows a residential area with houses and trees. A date stamp '31. 1. 1999' is visible in the bottom right corner.

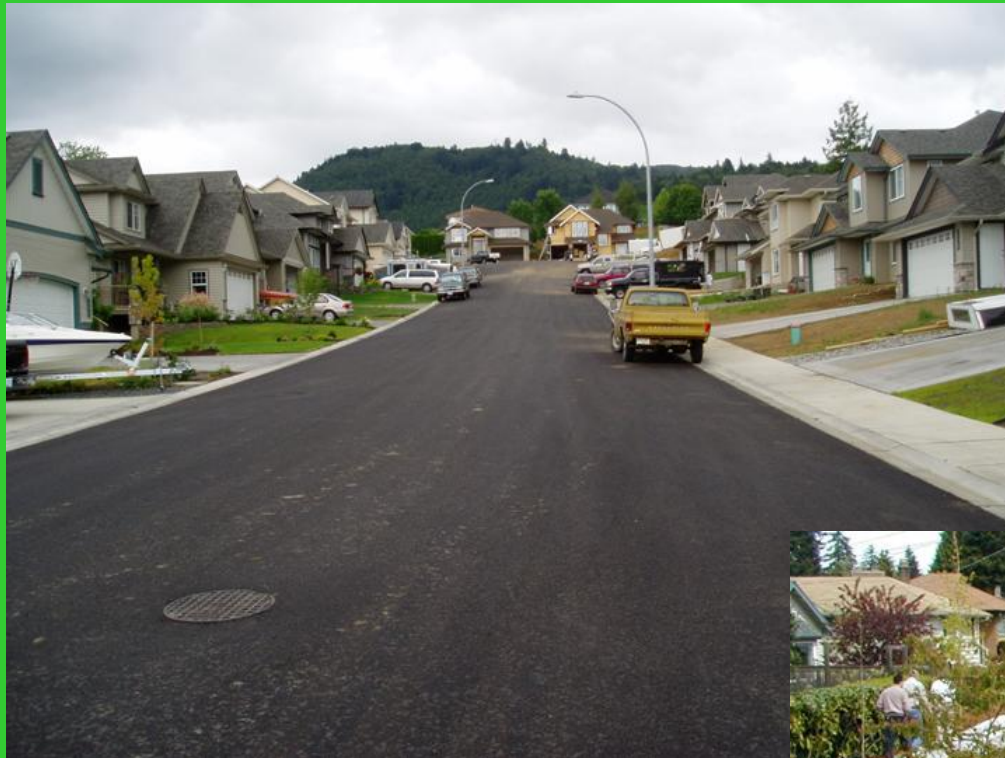
OCP Vision Statement

“The City shares the goal of sustainable development, and believes that good ecology is fundamental to ...preserving the City’s vision of an urban community in a sea of green.”

31. 1. 1999

“Sea of Roofs”





Livability and Streetscape Design: We Have Choices

**Will Streets Be
Sterile and Uninviting,
Or Green and Inviting?**



**City of Seattle
Street Edge Alternatives Program**

Second 5-Year Action Plan

For Surface Water Management & Sustainable Subdivision Design

Year	Top Priorities	Budget
2005	<ul style="list-style-type: none">▪ Implement Chilliwack Creek Year 1 Program▪ Integrate Streetscape Design & Rainwater Mgmt	\$200,000
2006	<ul style="list-style-type: none">▪ Implement Chilliwack Creek Year 2 Program▪ Full Implementation of Water Balance Model	\$350,000
2007	<ul style="list-style-type: none">▪ Implement Chilliwack Creek Year 3 Program▪ Implement Environmental Monitoring Program	\$395,000
2008	<ul style="list-style-type: none">▪ Implement Chilliwack Creek Year 4 Program▪ Implement Stormwater Financing Utility	\$630,000
2009	<ul style="list-style-type: none">▪ Implement Chilliwack Creek Year 5 Program▪ Reassess and Develop Third 5-Year Plan	\$120,000
	GRAND TOTAL	\$1.7 M

Next Steps

- **OCP Vision:** Promote a 'Design with Nature' Approach to Subdivision Design
- **Second 5-Year Action Plan:** Endorse in Principle
- **Action Plan Implementation:** Provide Funding for Year One
- **Streetscape Design:** Encourage the Greening of Urban Streetscapes
- **Water Balance Model:** Reaffirm City's commitment to Proactive Involvement in the Inter-Governmental Partnership

A photograph of a tree-lined street with a green text overlay. The text is in yellow with a black outline. The background shows a paved road, trees, and a building in the distance.

And in Conclusion...

***Implementation of the Second 5-Year Plan
will result in higher levels of
flood and stream protection,
and savings in capital costs***