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engineering · environment · infrastructure



Town of Sussex Flood Risk Analysis

Public Presentation of Results Oct. 26, 2016



Objectives

- Quantify the risk of flooding along major watercourses, and
- Identify and evaluate potential flood risk mitigation measures.



Level of Detail

- Use existing information
- At a conceptual level of detail
- Results will guide future analysis and work



Scope of Work 1

Collect & review information on:

- historic flooding
- existing & future development
- local topography
- local hydrology



Scope of Work 1 - Results

Collected & reviewed information:

- 1982 ADI & 2011 AMEC flood studies
- 1985 provincial flood risk mapping
- Climate and hydrometric data
- Topographic (Lidar) and development data

Good quality information

Surface & through-ground flooding

Scope of Work 2

Update hydrologic information

- existing data is pre-1985
- bring up to date
- anticipated effects of climate change
- existing & future level of development



Scope of Work 2 - Results

Increases in flood flows (year 2100)

- level of development: +0.1% to +1.2%
- climate change: +14.4% to +16.2%
- combined: +14.5% to +16.6%

Scope of Work 3

Review & update flooding dynamics

- based on existing information
- at a conceptual level of detail
- flood risk & levels as changes from 1985



Scope of Work 3 - Results

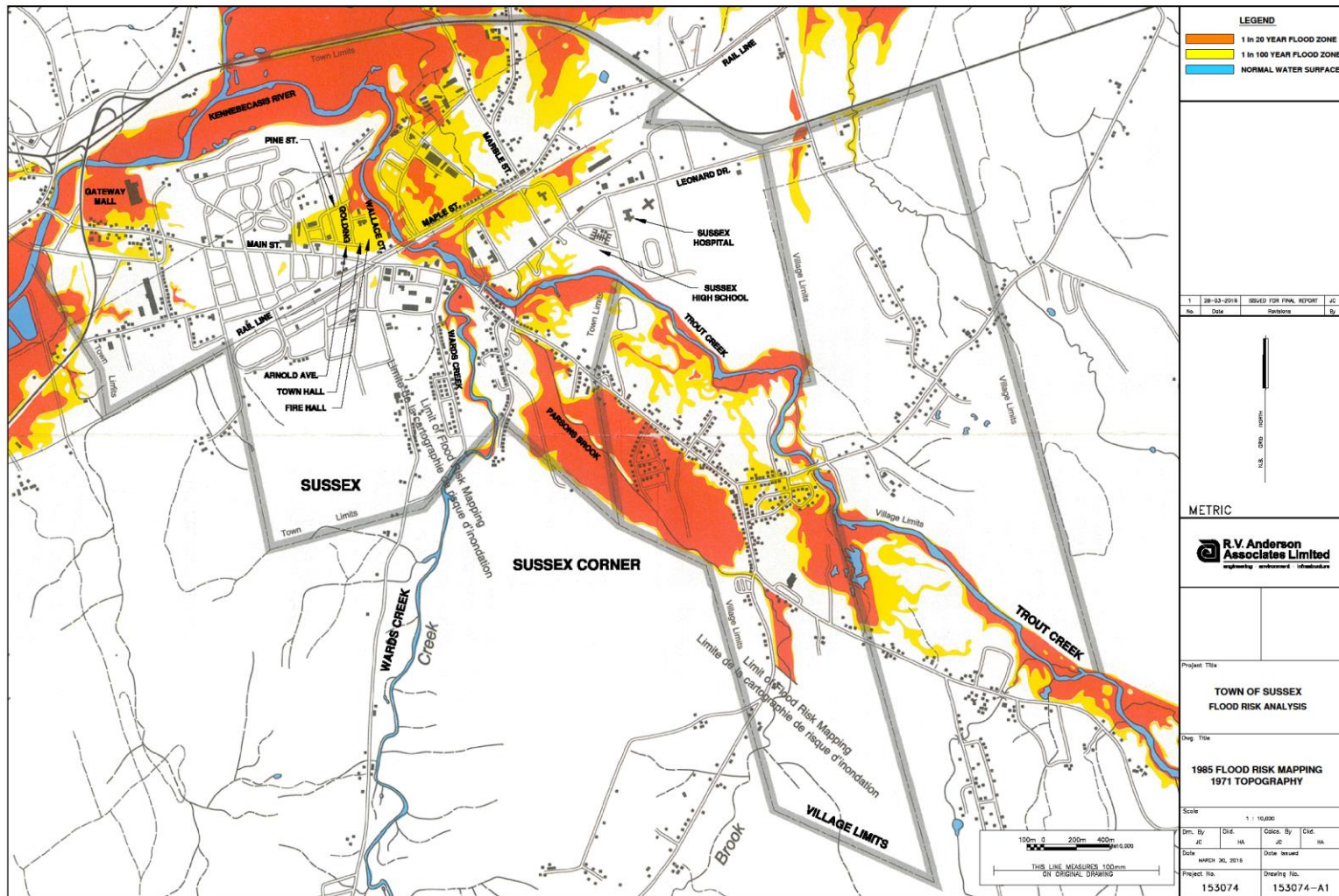
Update flooding dynamics

- Reduced ice jam flooding
- Reduced winter and spring flooding
- Increased fall flooding

Increases in flood levels (year 2100)

- 20 year event: 0.29 m to 0.18 m
- 100 year event: 0.36 m to 0.25 m

1985 Flood Risk Mapping



2100 Flood Risk Mapping 20 Year Event



2100 Flood Risk Mapping 100 Year Event



Scope of Work 4

Identify & rank flood risk mitigation measures

- assess practicality
- assess effectiveness
- conceptual costs



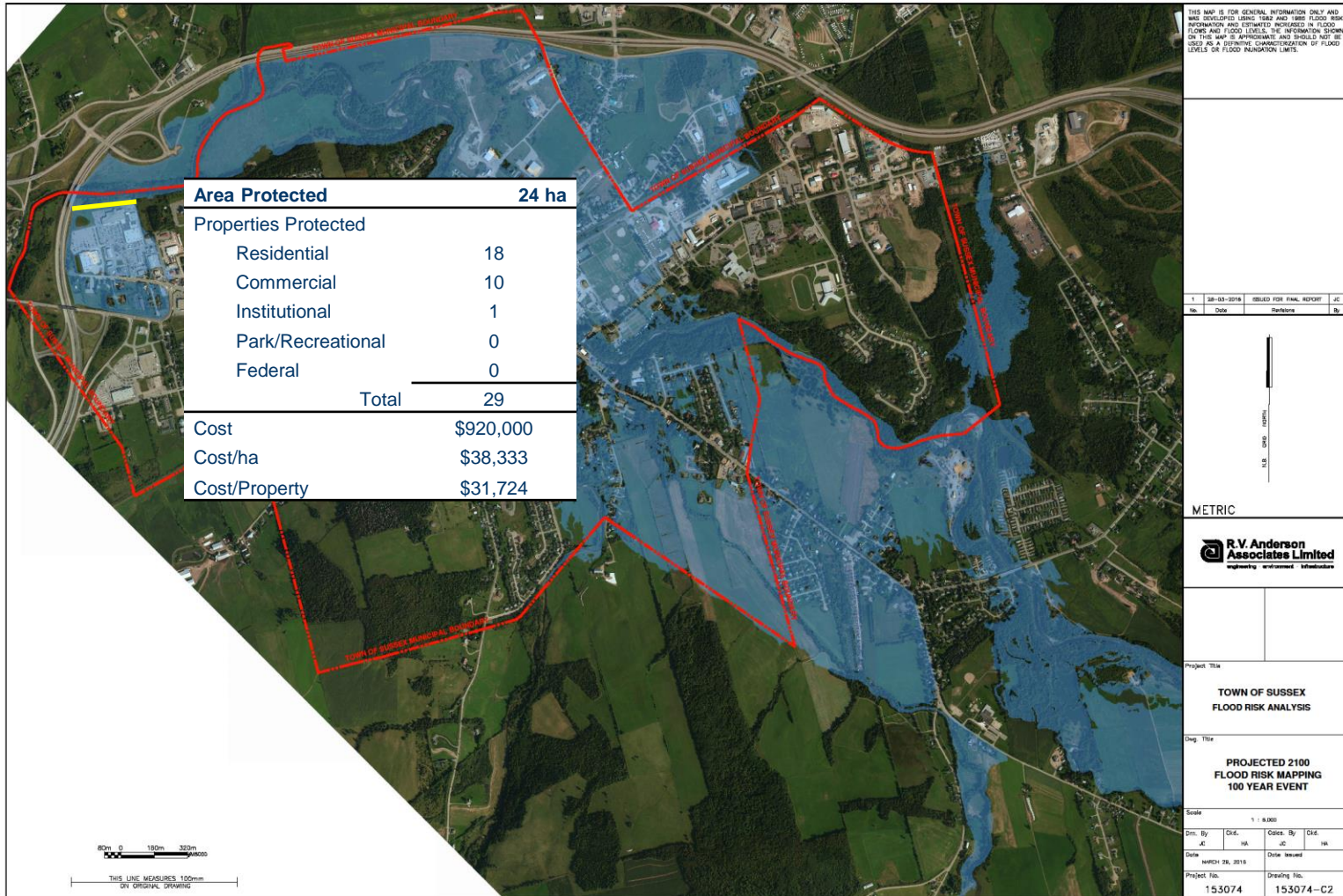
Scope of Work 4 - Results

Mitigative Measure	Area (ha)	Properties Protected	Cost	Cost/ha	Cost/Property
Gateway Mall flood berm	24	29	\$920,000	\$38,333	\$31,724
Wallace Court flood berm	15	113	\$840,000	\$56,000	\$7,434
Holman Ave./McLean St. flood berm	68	127	\$1,560,000	\$22,941	\$12,283
East town limit flow diversion channel**	119	214	\$3,630,000	\$30,504	\$16,963
East town limit channel realignment**	0 (5)	0 (5)	\$640,000	n/a	n/a
Parsons Bk. flood storage (@ Main)*	15	33	\$1,150,000	\$76,667	\$34,848
Parsons Bk. flood storage (@ Newline)*	8	19	\$1,496,000	\$187,000	\$78,737
Main Street flood berm	36	27	\$1,600,000	\$44,444	\$59,259
Dredging of Trout Creek*	4	14	\$30,000/year	\$7,500/year	\$2,143/year
Local drainage improvements	n/a	n/a	\$x00,000	n/a	n/a
Development controls	n/a	n/a	\$10,000	n/a	n/a

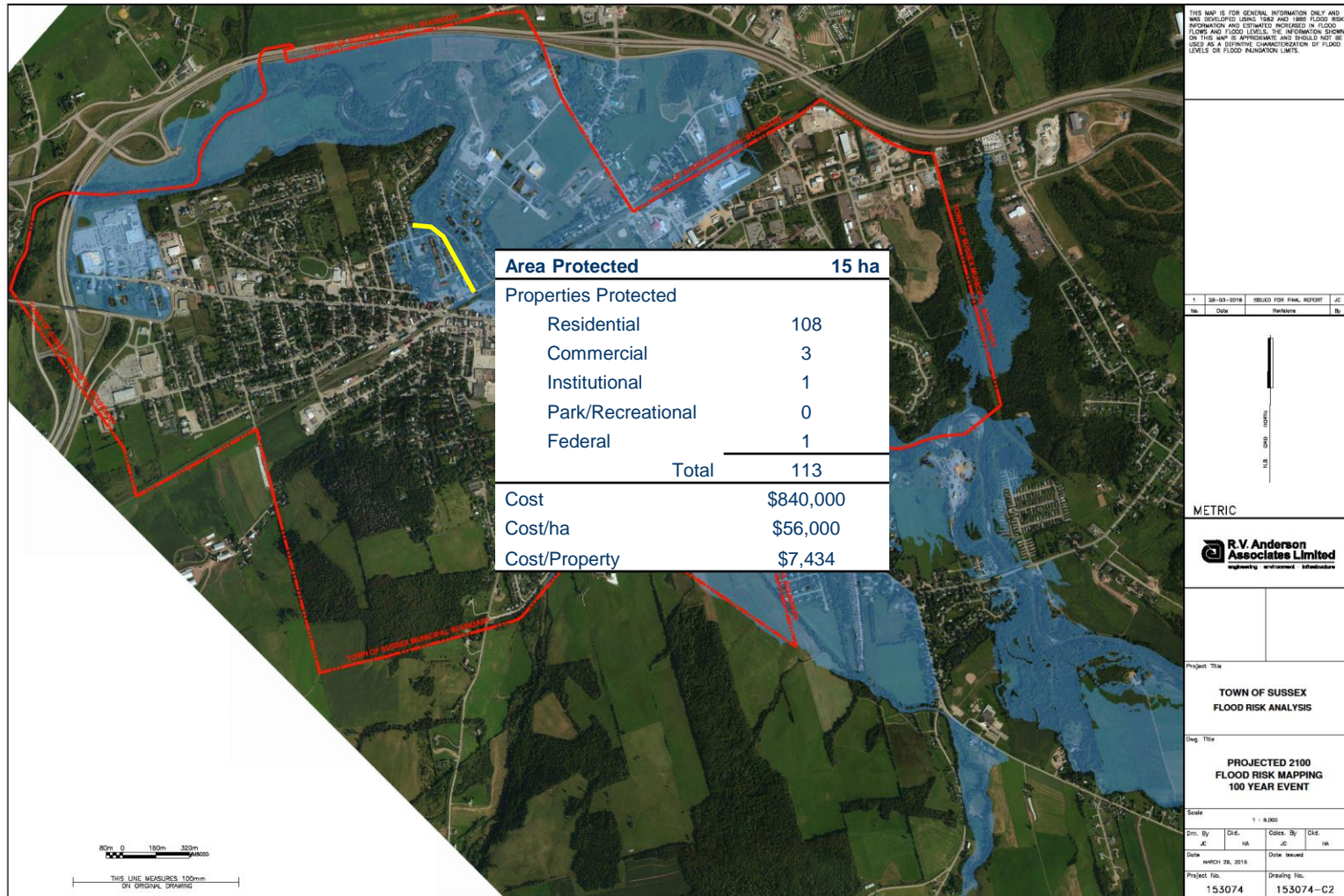
* Limited effectiveness

** Outside Town of Sussex limits

Gateway Mall Flood Berm



Wallace Court Flood Berm



Area Protected 68 ha

Properties Protected	
Residential	117
Commercial	10
Institutional	0
Park/Recreational	0
Federal	0
Total	127

Cost	\$1,560,000
Cost/ha	\$22,941
Cost/Property	\$12,283

Town of Sussex Flood Protection Boundary

Town of Sussex Municipal Boundary

Scale: 1 : 8,000

0m 80m 160m 320m

THIS LINE MEASURES 100mm ON ORIGINAL DRAWING

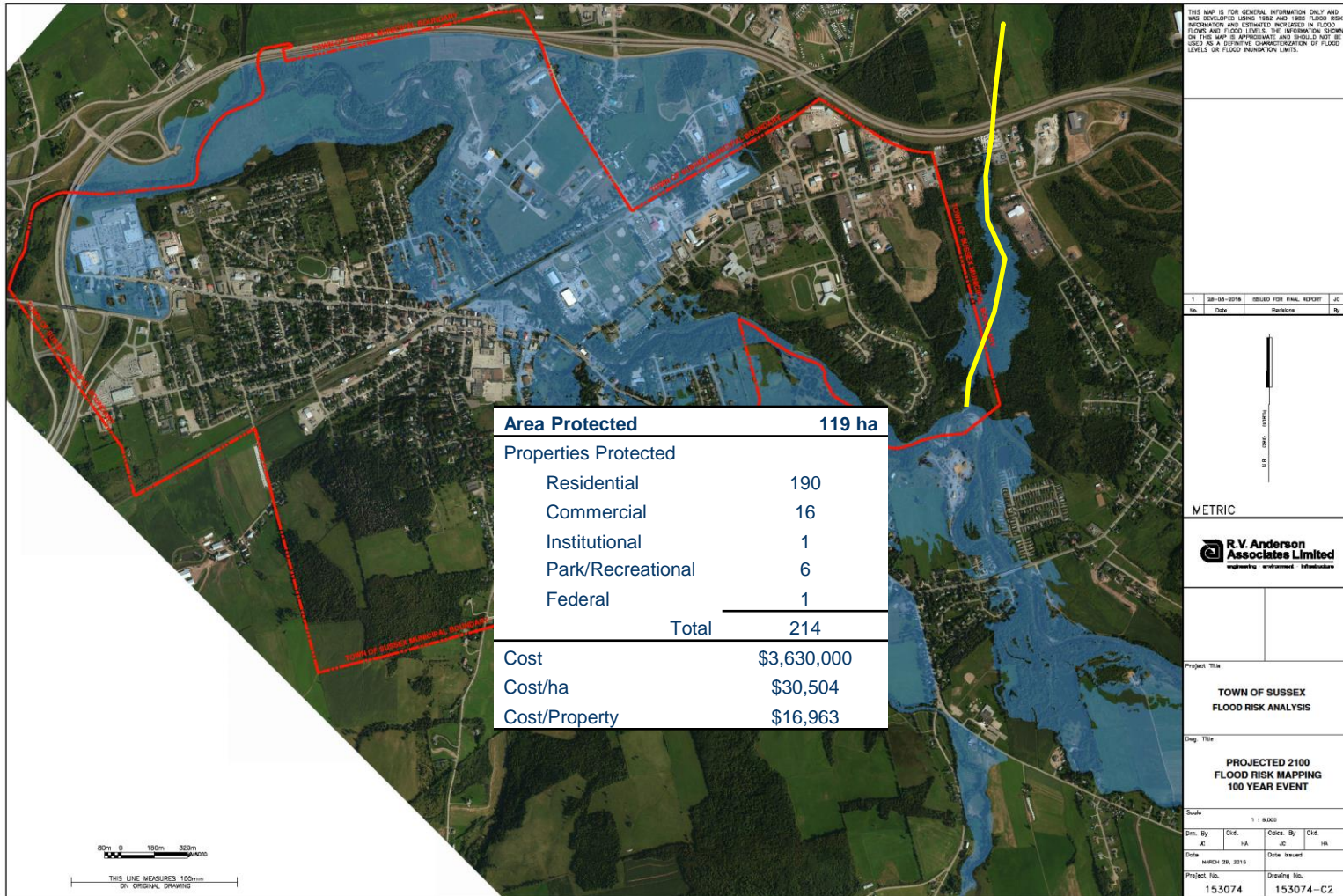
TOWN OF SUSSEX FLOOD RISK ANALYSIS

PROJECTED 2100 FLOOD RISK MAPPING 100 YEAR EVENT

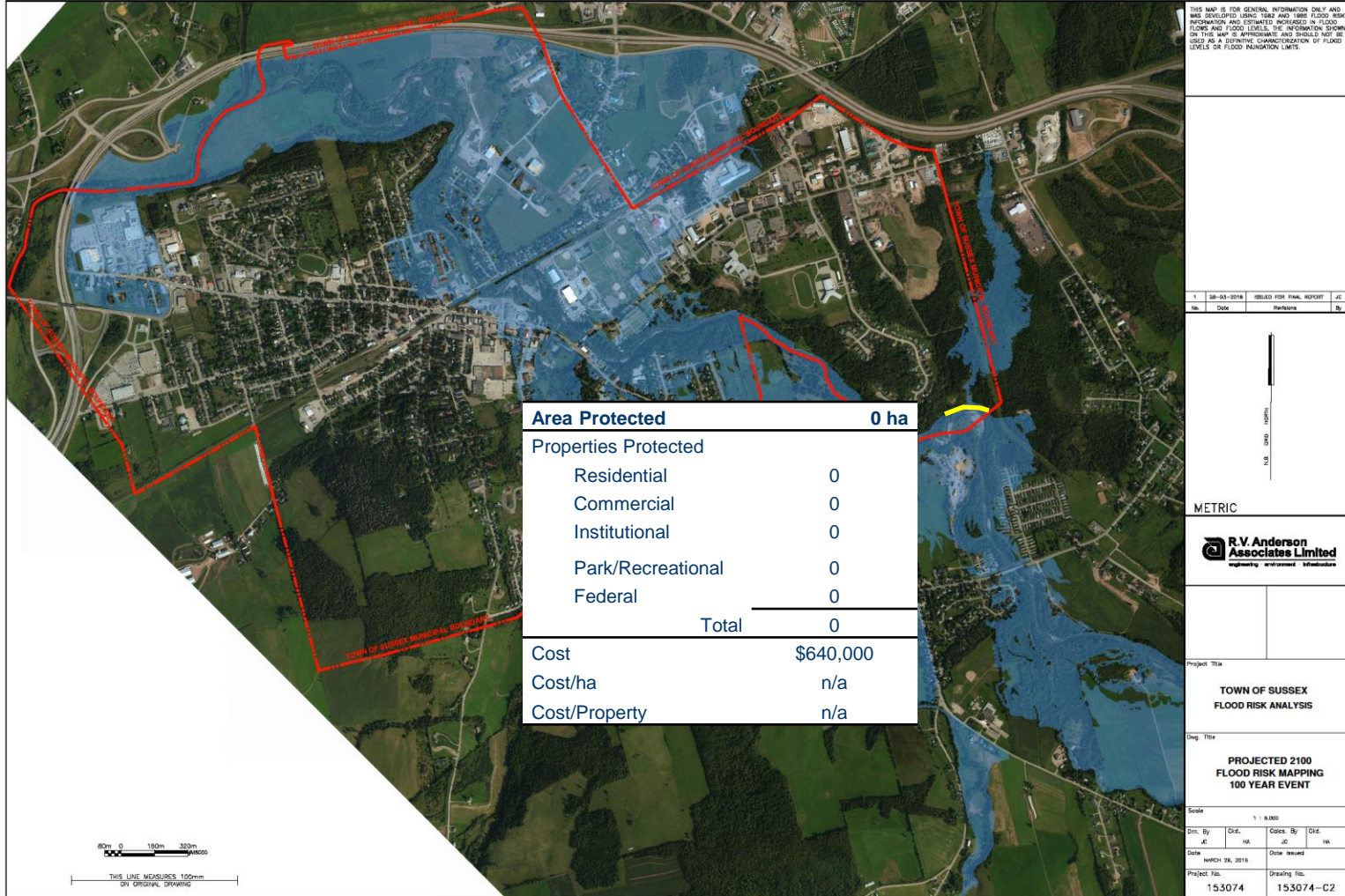
Scale: 1 : 8,000

Drawn By: JC, Checked By: HA, Colours By: JC, Date: MARCH 26, 2015, Date Issued: 153074, Drawing No: 153074-C2

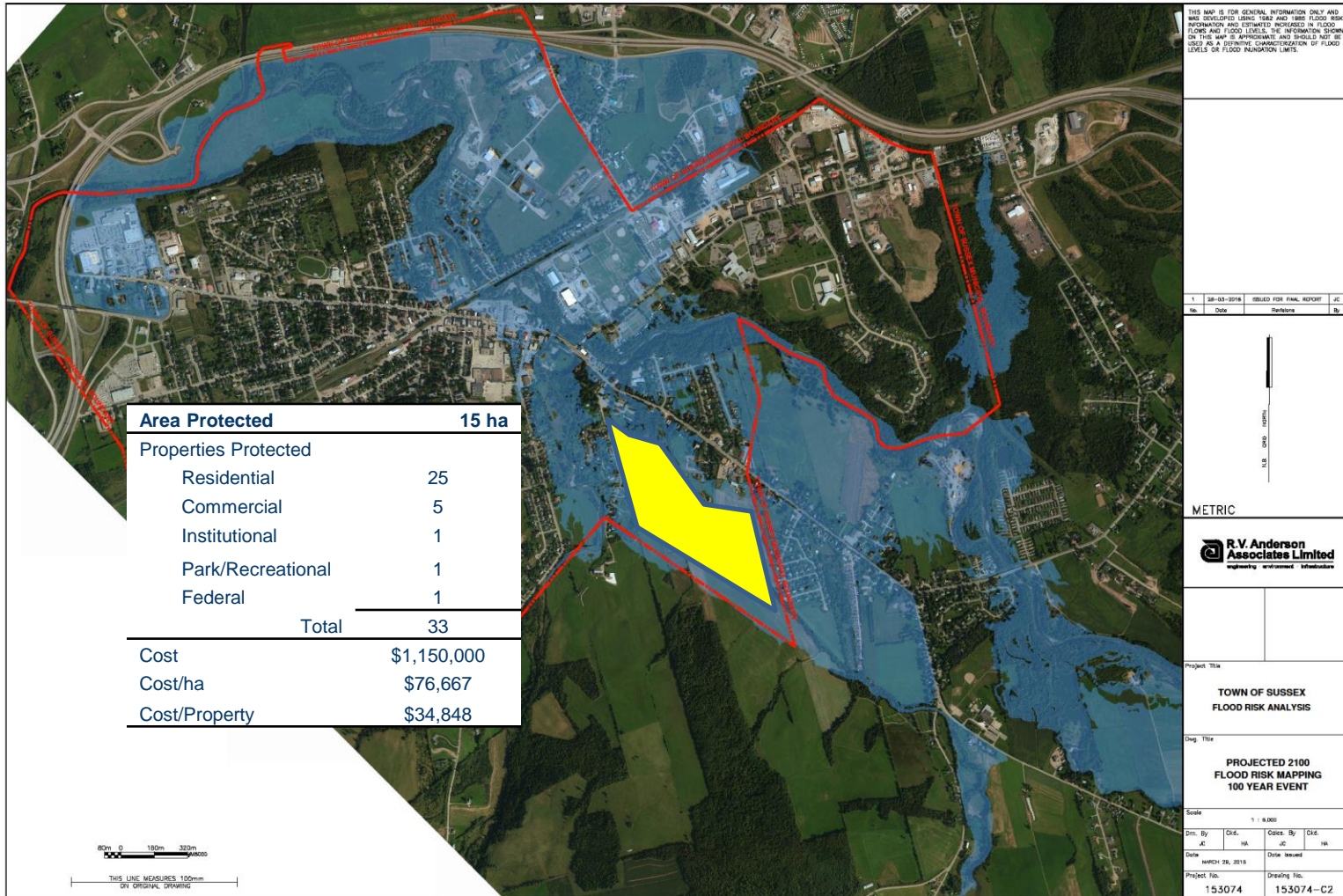
East Town Limit Flow Diversion



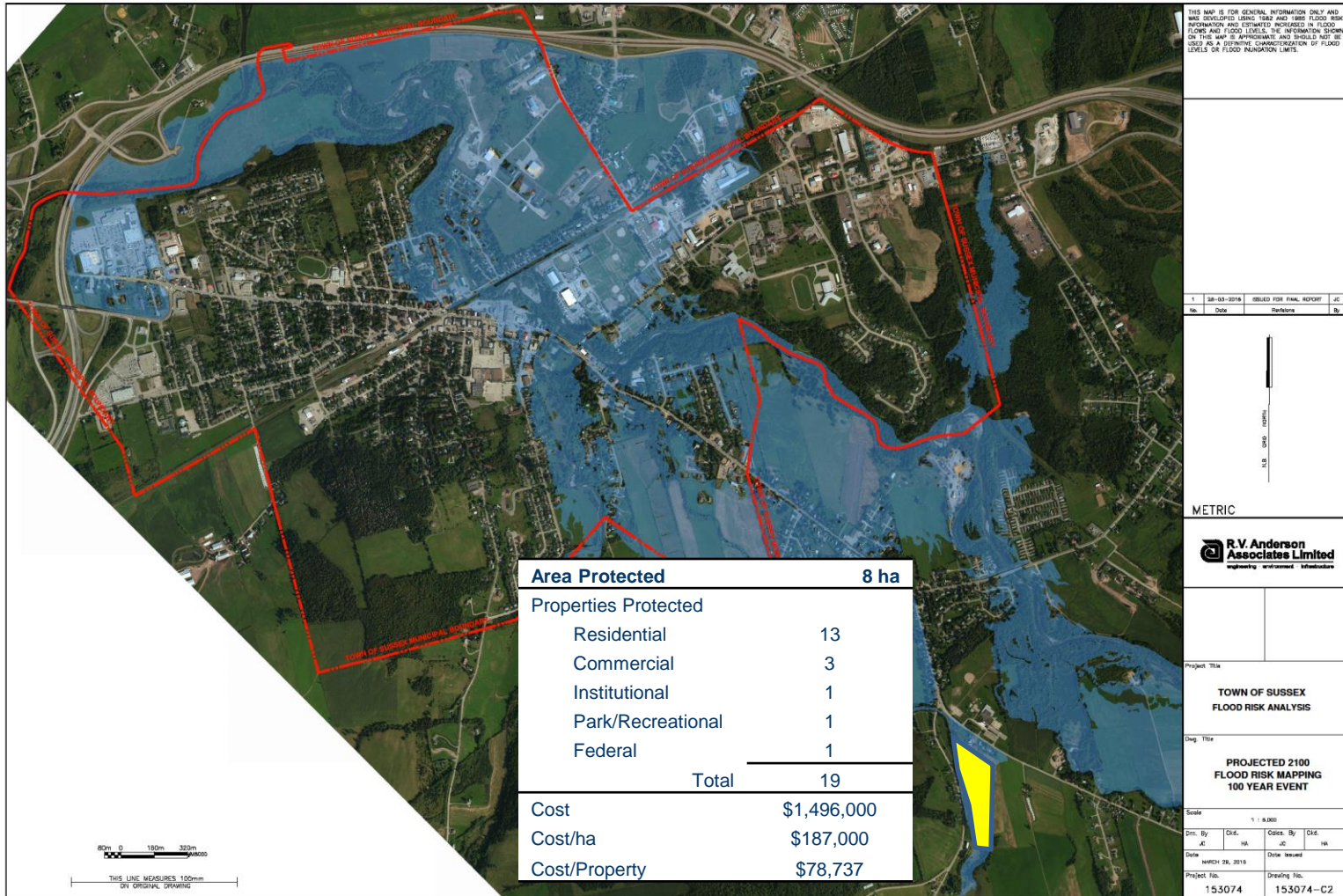
East Town Limit Chanel Realignment



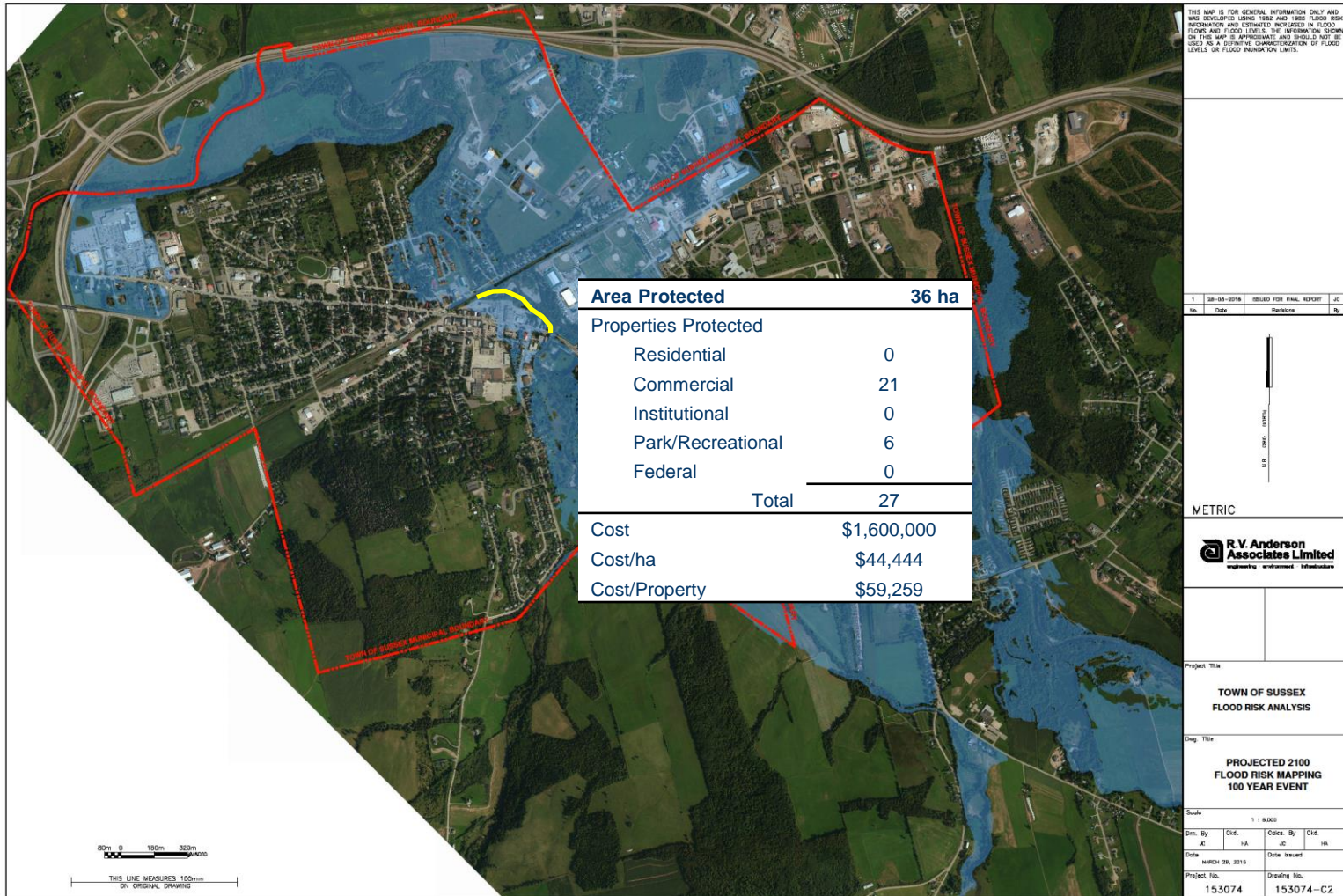
Parsons Brook Flood Storage #1



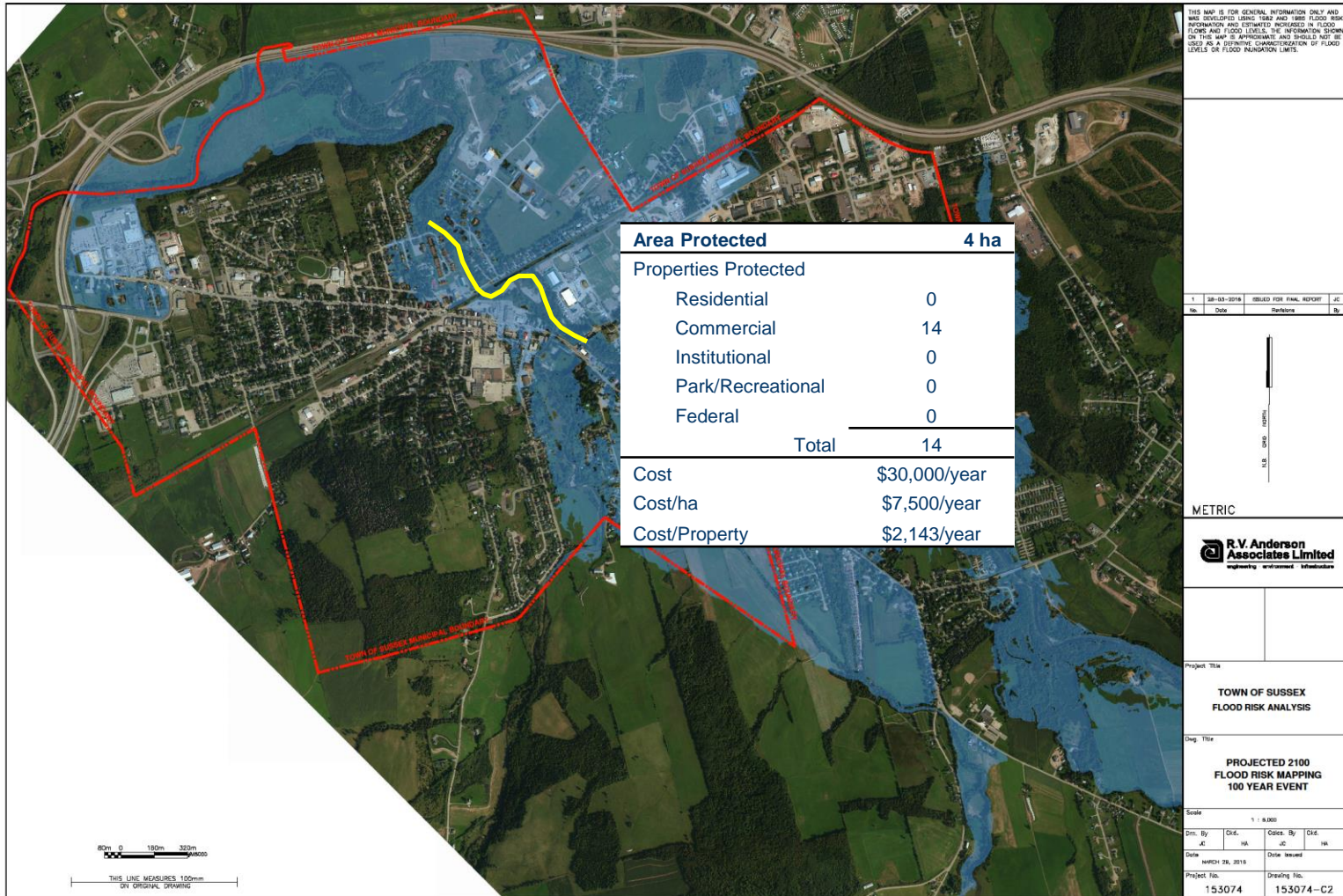
Parsons Brook Flood Storage #2



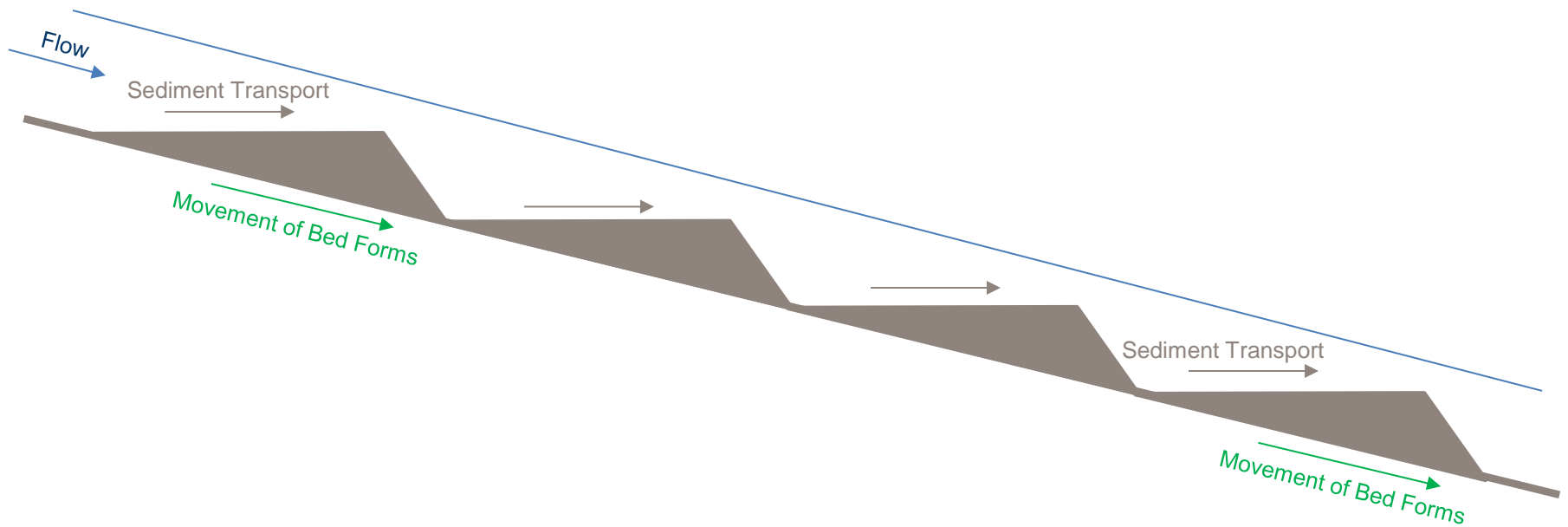
Main Street Flood Berms



Dredging of Trout Creek

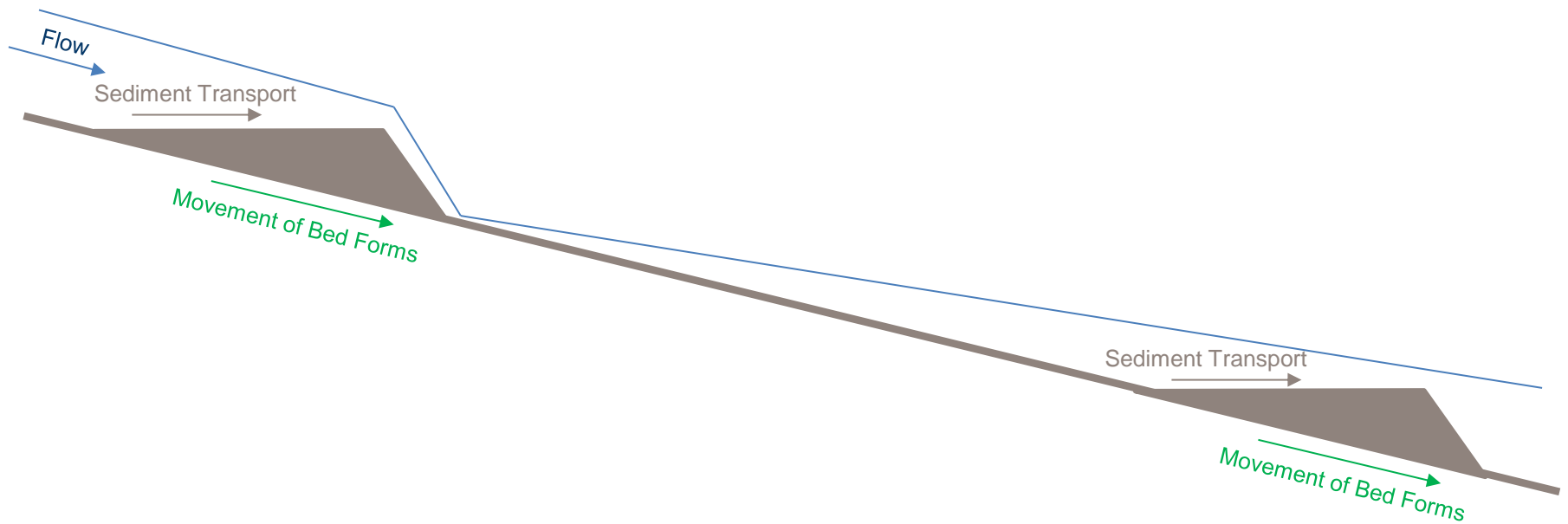


Dredging of Trout Creek



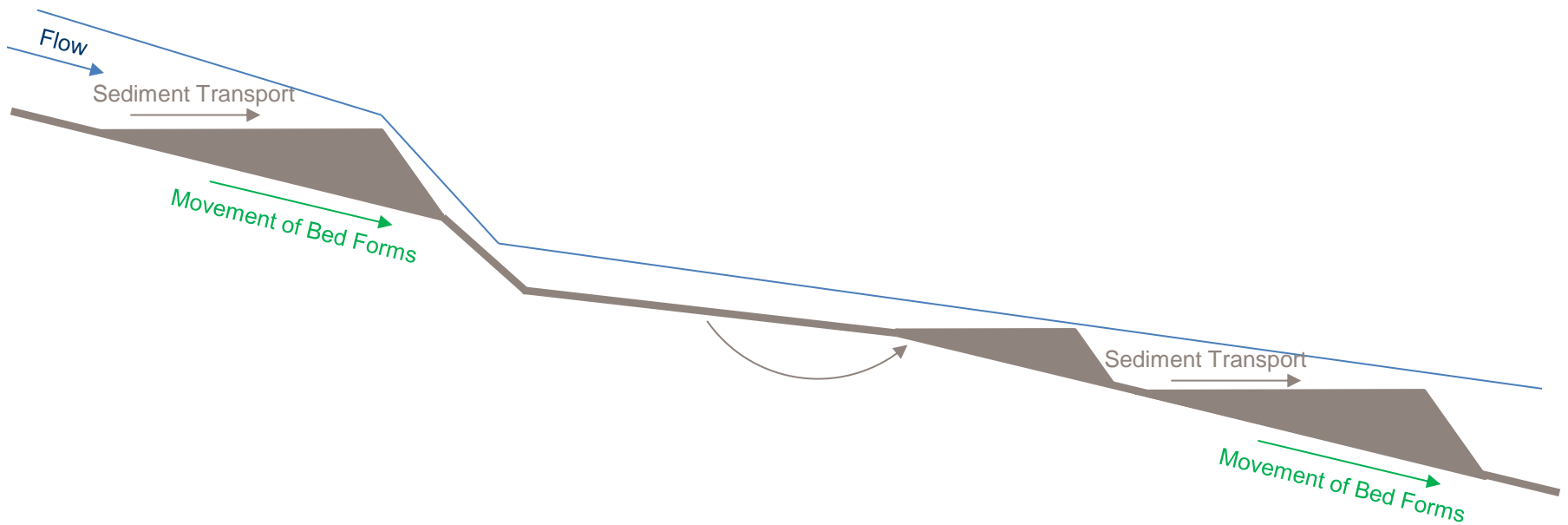
Natural Channel Morphology

Dredging of Trout Creek



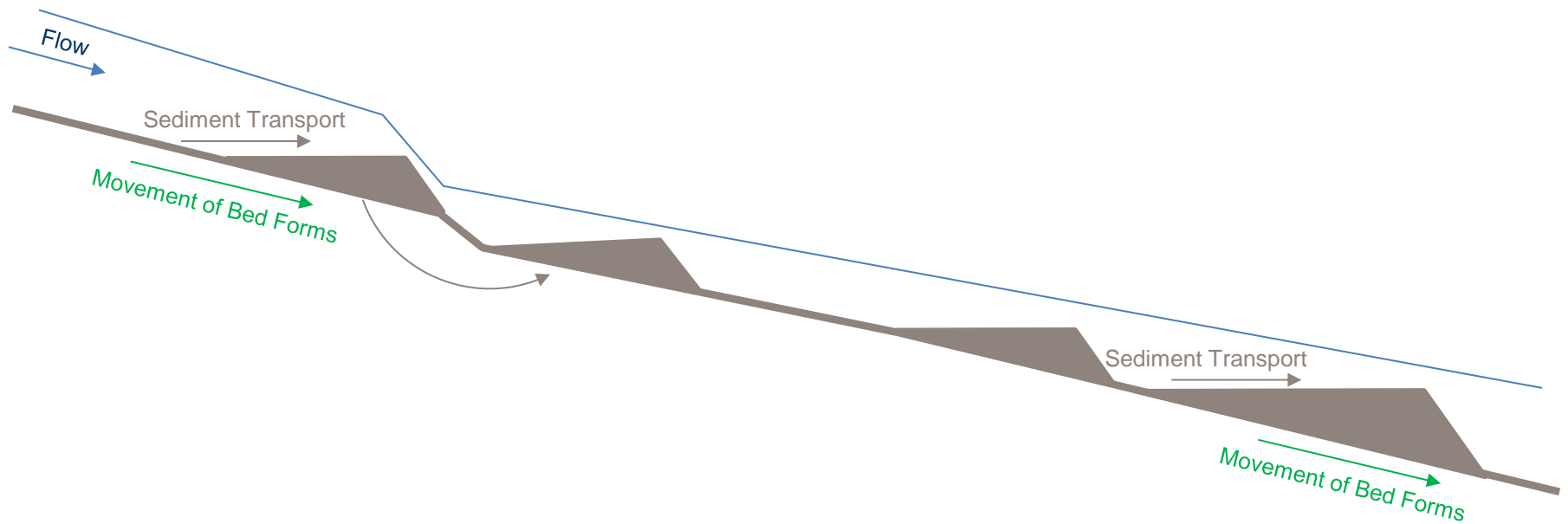
Channel Morphology Post-Dredging

Dredging of Trout Creek



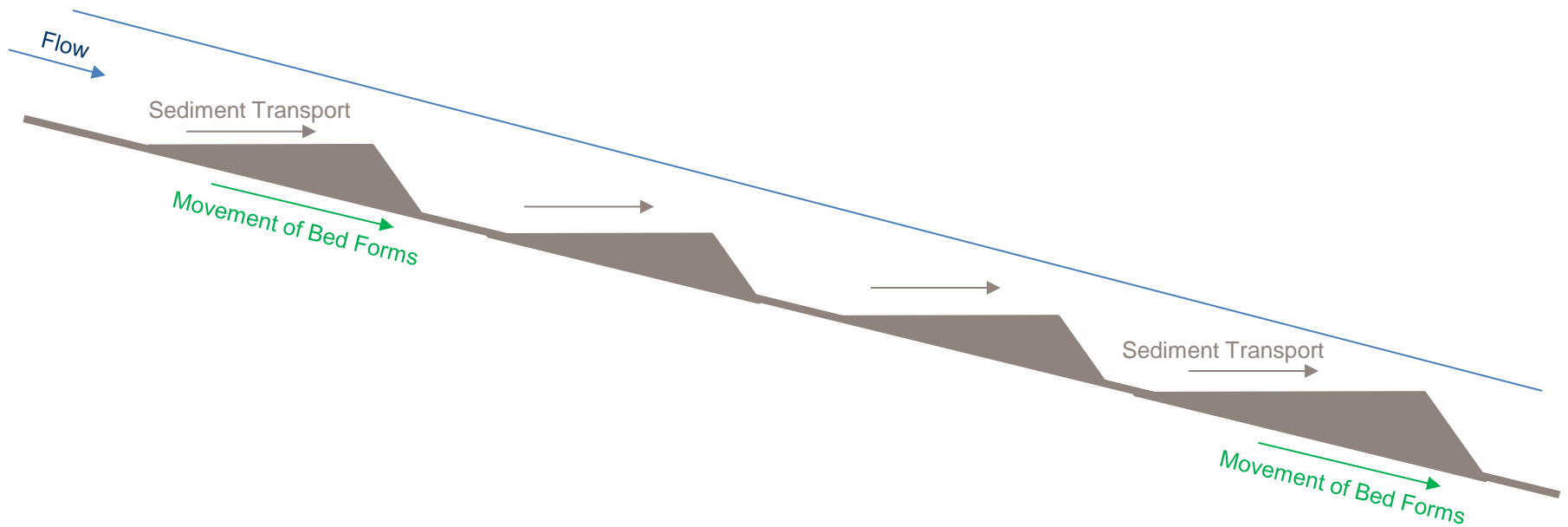
Adjusting Channel Morphology

Dredging of Trout Creek



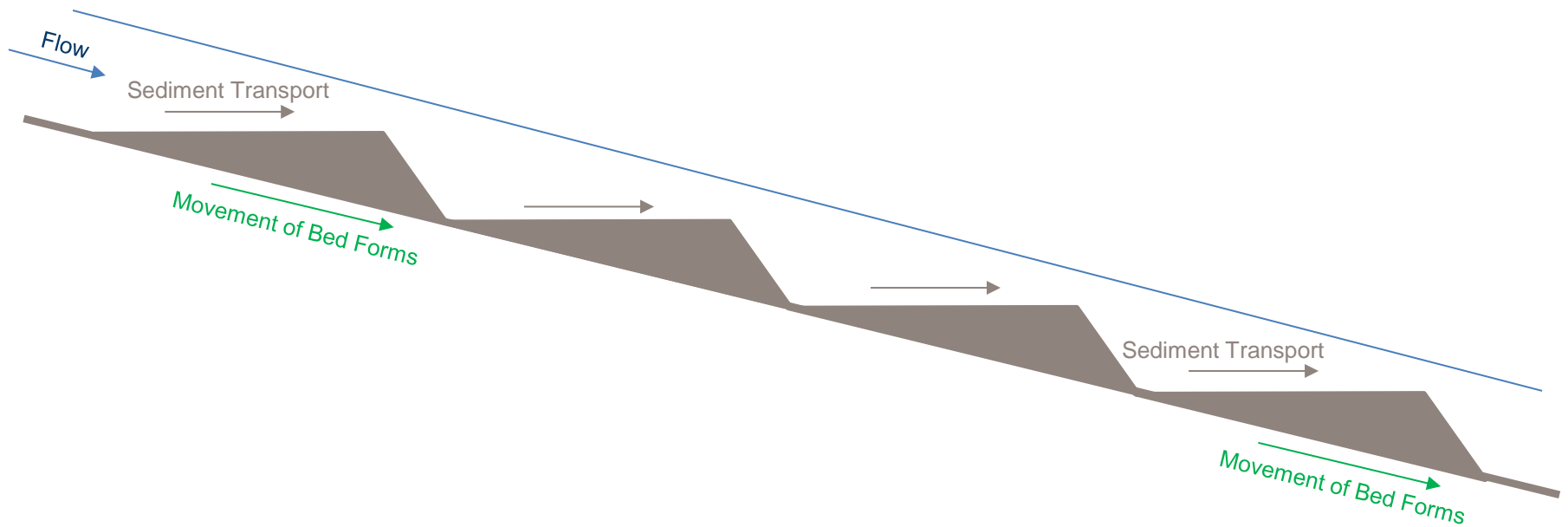
Adjusting Channel Morphology cont'd

Dredging of Trout Creek



Adjusting Channel Morphology cont'd

Dredging of Trout Creek



Restored Channel Morphology

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