

# Decision Making in Uncertainty

## Economic Recovery and Flood Mitigation after the 2018 Boundary Freshet



# Acknowledgment & Gratitude

Recognize and acknowledge this work is undertaken in the traditional territories of the Syilx (Okanagan) and Sinixt peoples.

Grateful for the ongoing relationship and with Osoyoos Indian Band and other regional First Nations with knowledge and responsibility in our area.

Thankful for the leadership of the Grand Forks Council and our funders (Canada and British Columbia) for supporting the work.

Indebted to our Flood Mitigation Program team at the City of Grand Forks and all the participants and contributors to Boundary Flood Recovery in 2018-2019.

Grateful for the irreplaceable contributions from engineering, economic, planning and environmental consultants supporting our work.

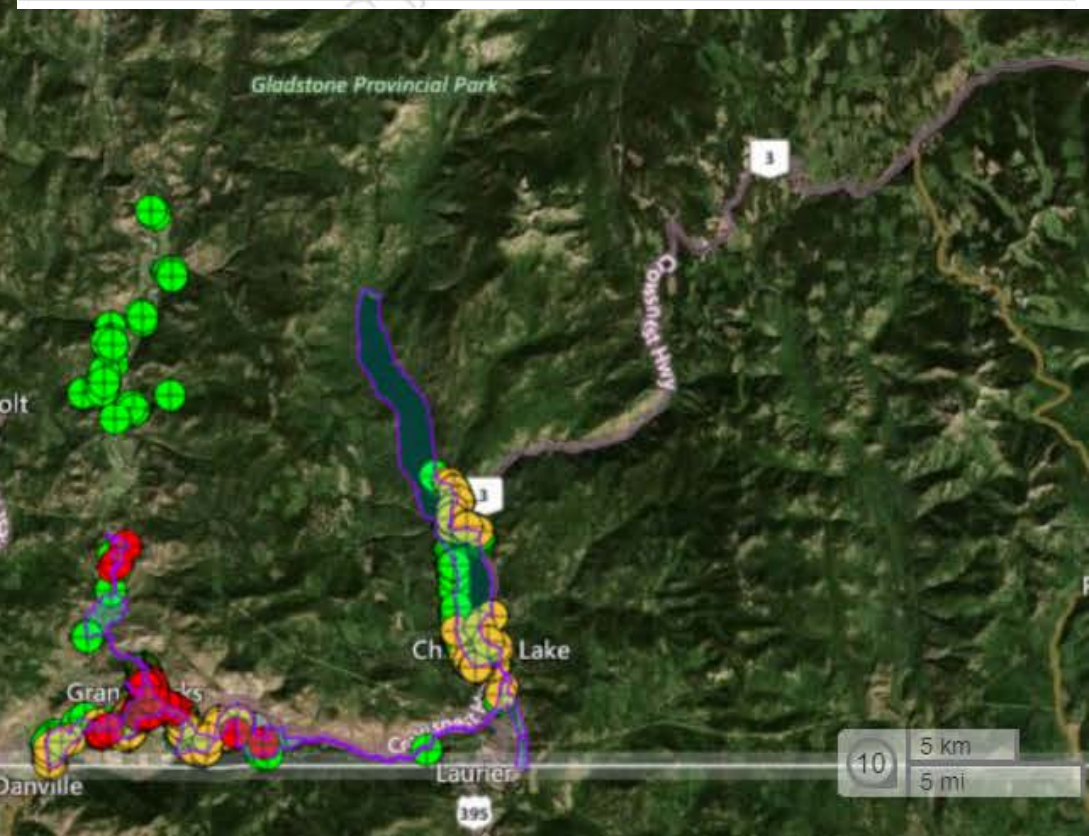
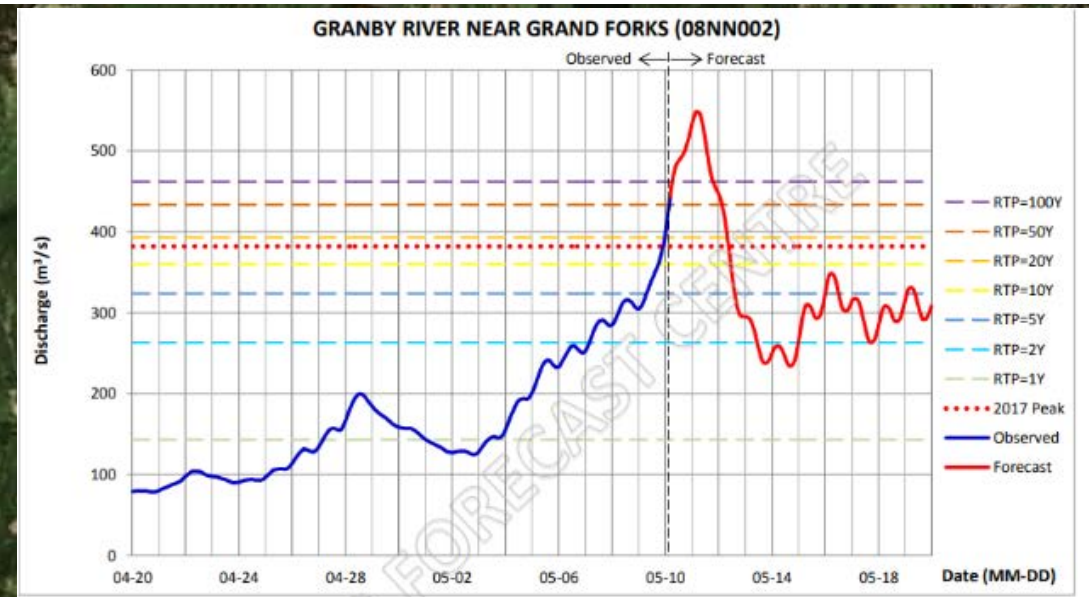
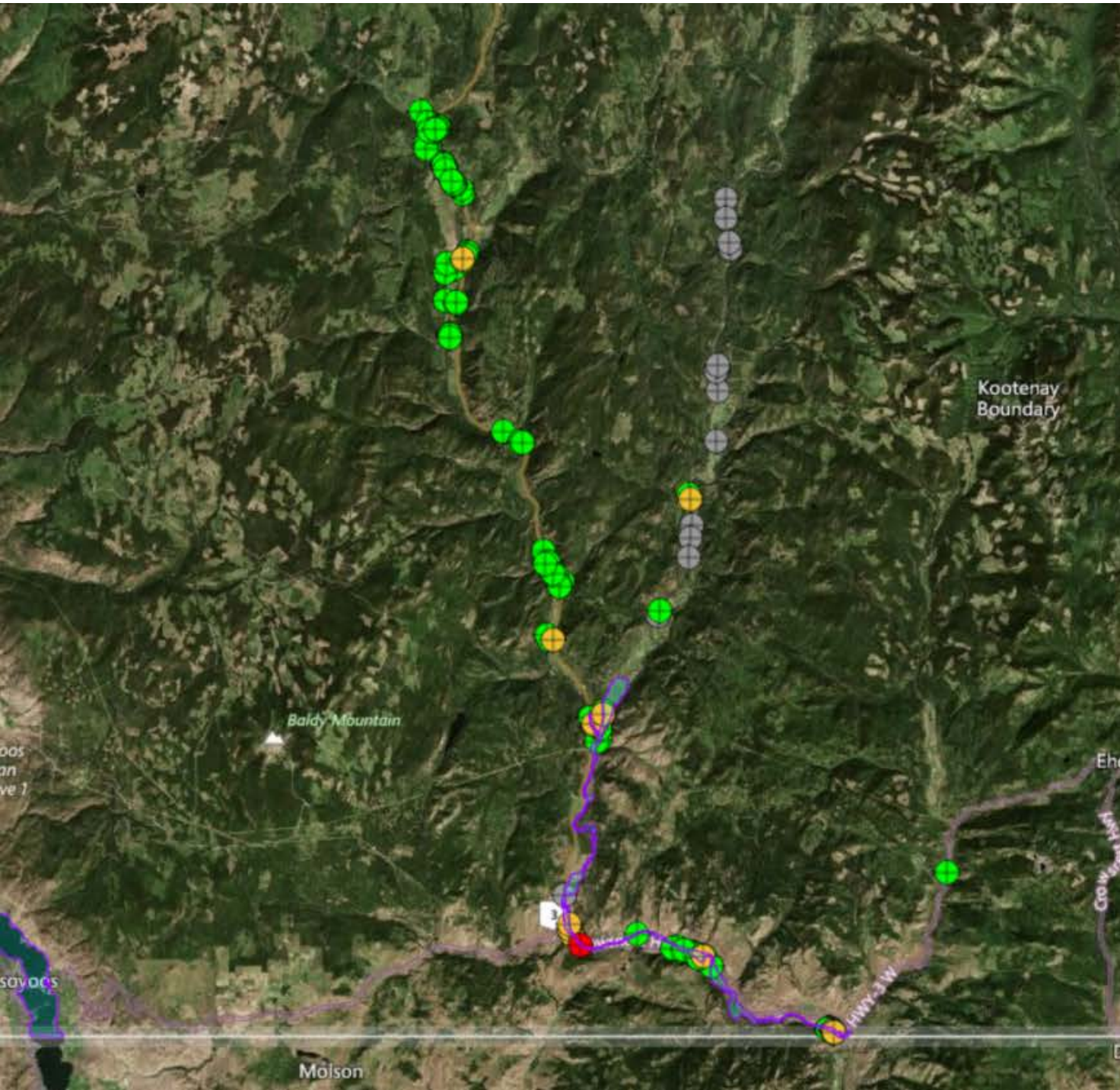


# Overview

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- 2018 Boundary Freshet
- Economic Impacts
- Mitigation Decision-Making
- Lessons Learned















Our objective is to build back better by following these seven strategic objectives:

Protect Public Safety

Foster and Improve Health and Wellness and Support Housing Recovery

Deliver Permanent Solutions

Facilitate Economic Revitalization

Facilitate Environmental Resilience & Adaptation

Engage Community and Stakeholders

Ensure Equitable, Fair and Reasonable Decisions

- 
- 2018 Boundary Freshet
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# Community Led Economic Recovery

Community Futures' Role in Disaster Recovery in the Boundary

Contract with the Regional District to provide **Economic Recovery Services** – approved for one year

**What the....does this mean?**



# Community Led Economic Recovery

What did we learn?

| Geographic Area        | Percentage |
|------------------------|------------|
| Grand Forks - downtown | 65         |
| Area D                 | 15         |
| Area C                 | 7          |
| Area E                 | 13         |
|                        | 100%       |

\* Data collected by BCEDA – “Business Assessments Boundary Region”

# Community Led Economic Recovery

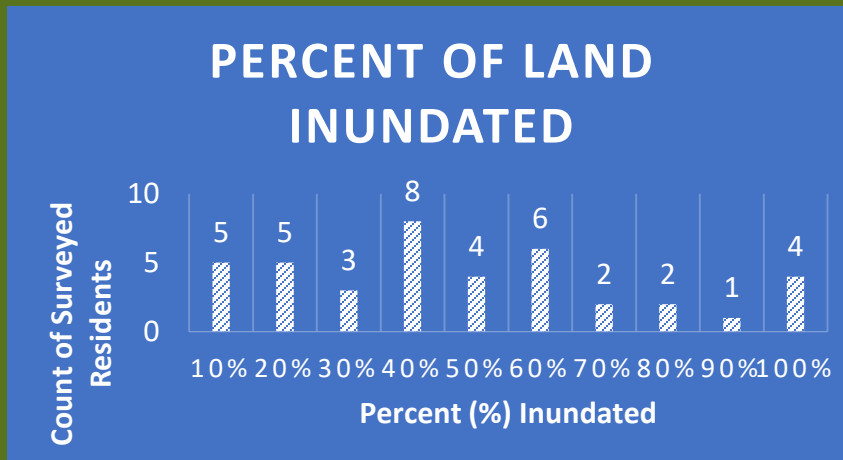
## Immediate Estimated Economic Losses

| <b>Responses</b>                          | <b>Value</b> |
|---|--------------|
| <b>Structure/foundation damage/repair</b> | \$10,302,400 |
| <b>Inventory/product</b>                  | \$826,478    |
| <b>Equipment/Office/Assets</b>            | \$1,275,820  |
| <b>Sales/Revenues</b>                     | \$6,581,165  |
| <b>Other</b>                              | \$7,169,731  |
| <b>Total</b>                              | \$26,155,594 |

\* Data collected by BCEDA – “Business Assessments Boundary Region”

# Community Led Economic Recovery

## The nuances of the Ag Sector



From the 41 respondents reporting land inundation, 1760 acres were inundated with floodwaters, with an average of 44% per property.



Of the 19 respondents reporting crop losses, the total sum of crop losses was \$637,208 the average loss was \$33,537.26 and the median loss was \$8,989 per property.

\* Data collected by Boundary Flood Recovery

# Data Informed Community Led Economic Recovery

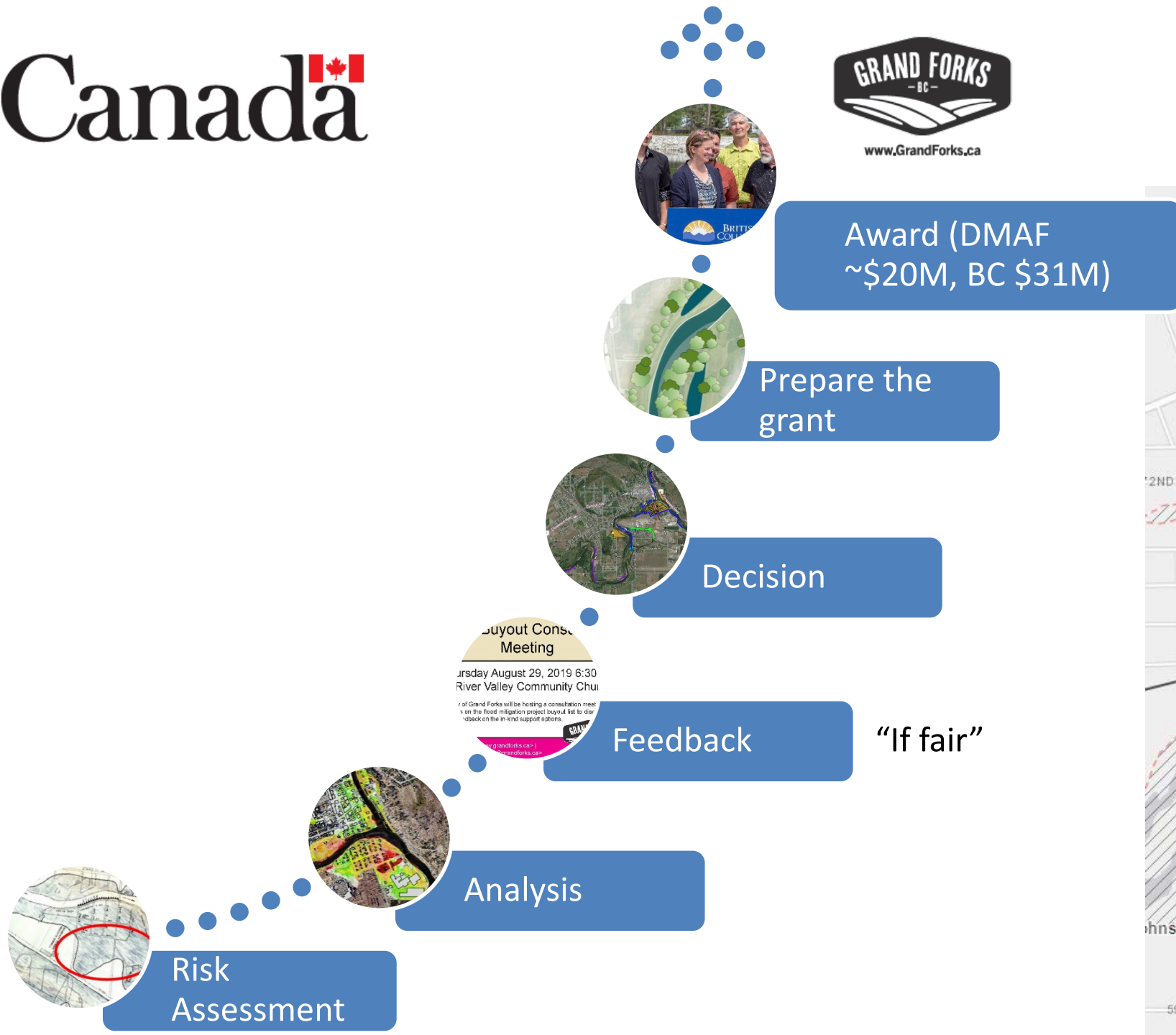
**From the data collection work, we were able to develop multiple funding requests. Specifically :**

- A request for 2.5 million dollar trust fund to assist business and the ag sector in the region
- A request for funds to assist with downtown revitalization
- A request for funds to create focused economic development
- A request for funds to continue to explore Community Centre/EOC
- Ongoing and individual requests for support to the Ag Sector (fencing, costs related to the movement of livestock)

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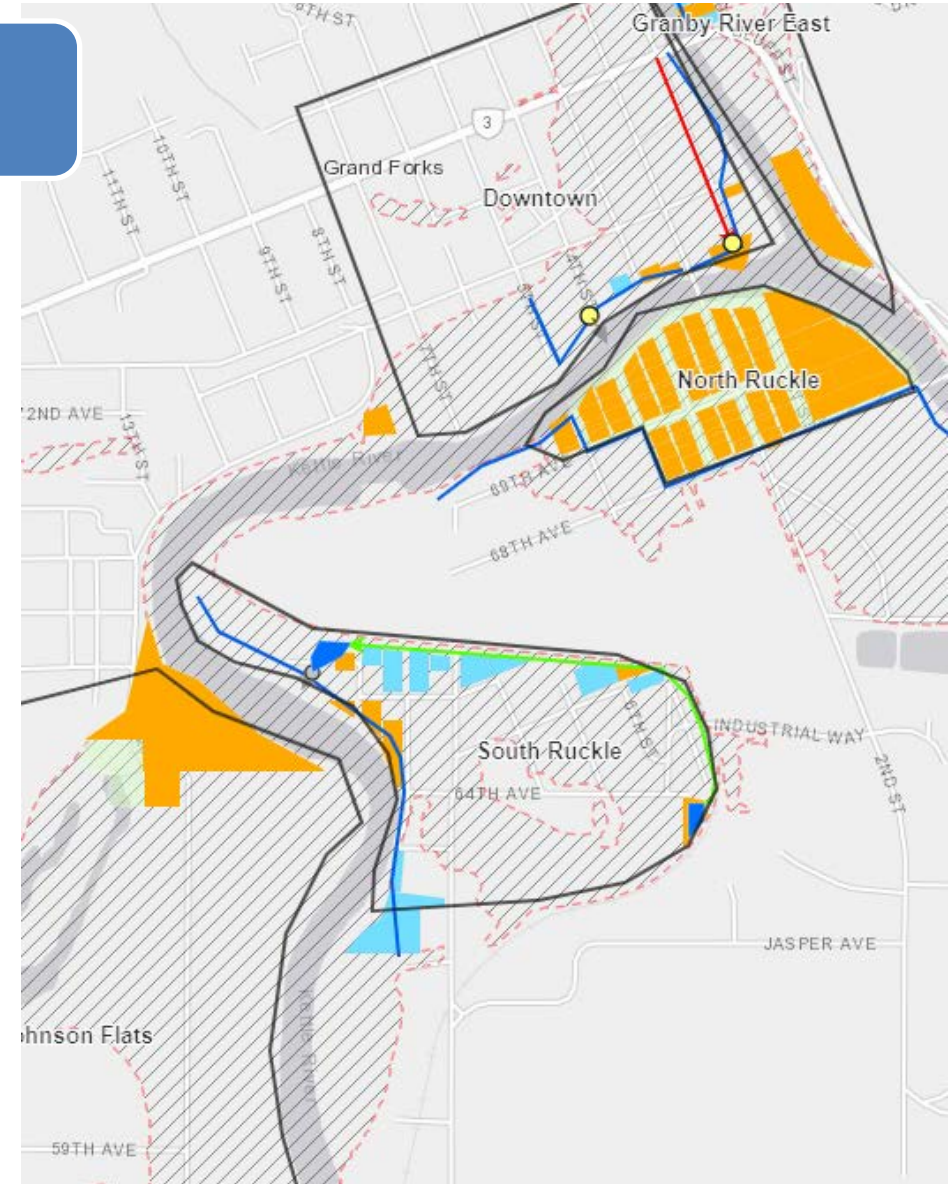


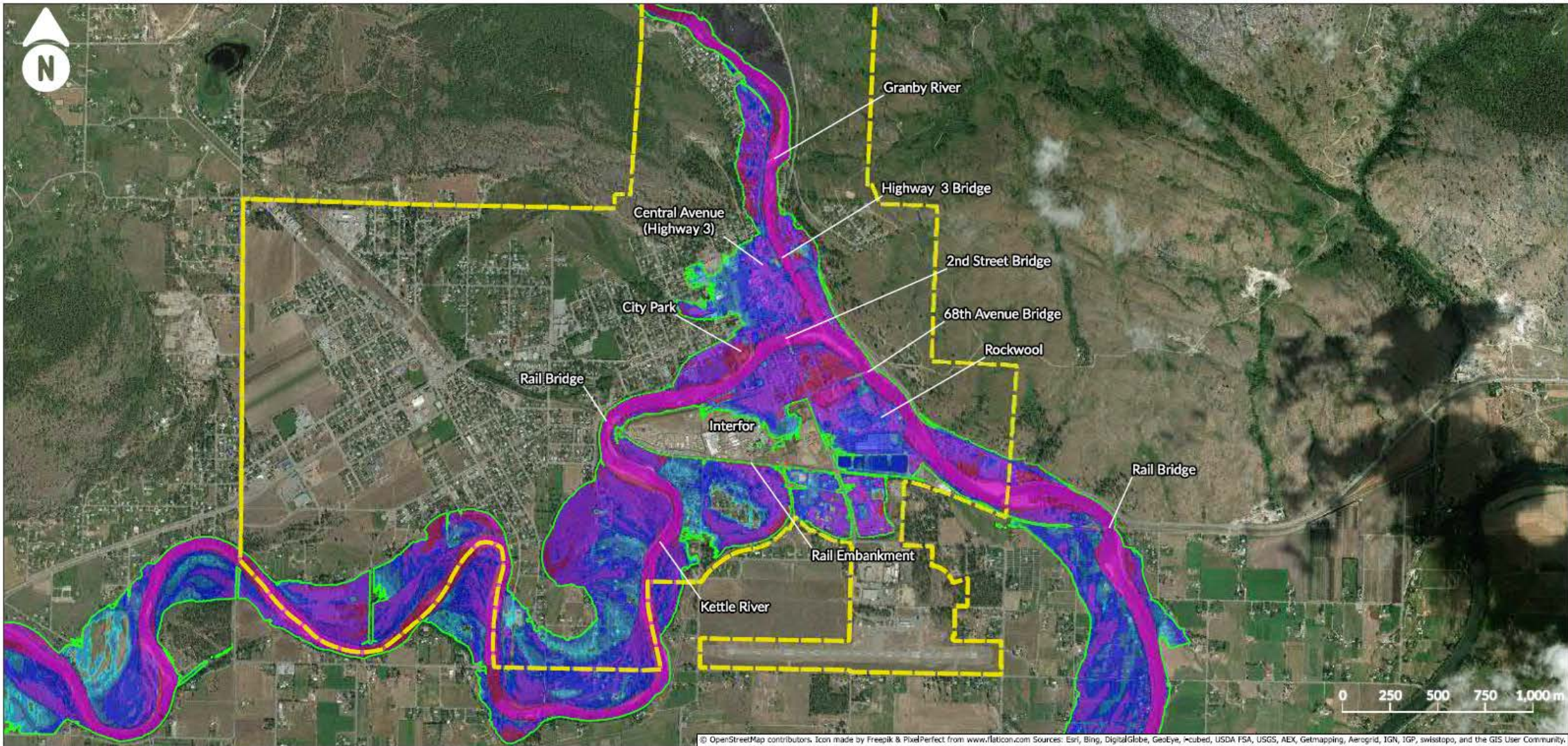




Layout Consultation Meeting  
Thursday August 29, 2019 6:30  
River Valley Community Church

Grand Forks will be hosting a consultation meeting on the flood mitigation project layout. We will be looking for feedback on the in-kind support options.





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## Flood Mitigation Program Schematic Design

City of Grand Forks

April 2021

Existing Conditions Scenario  
200-Year Flow with Climate Change

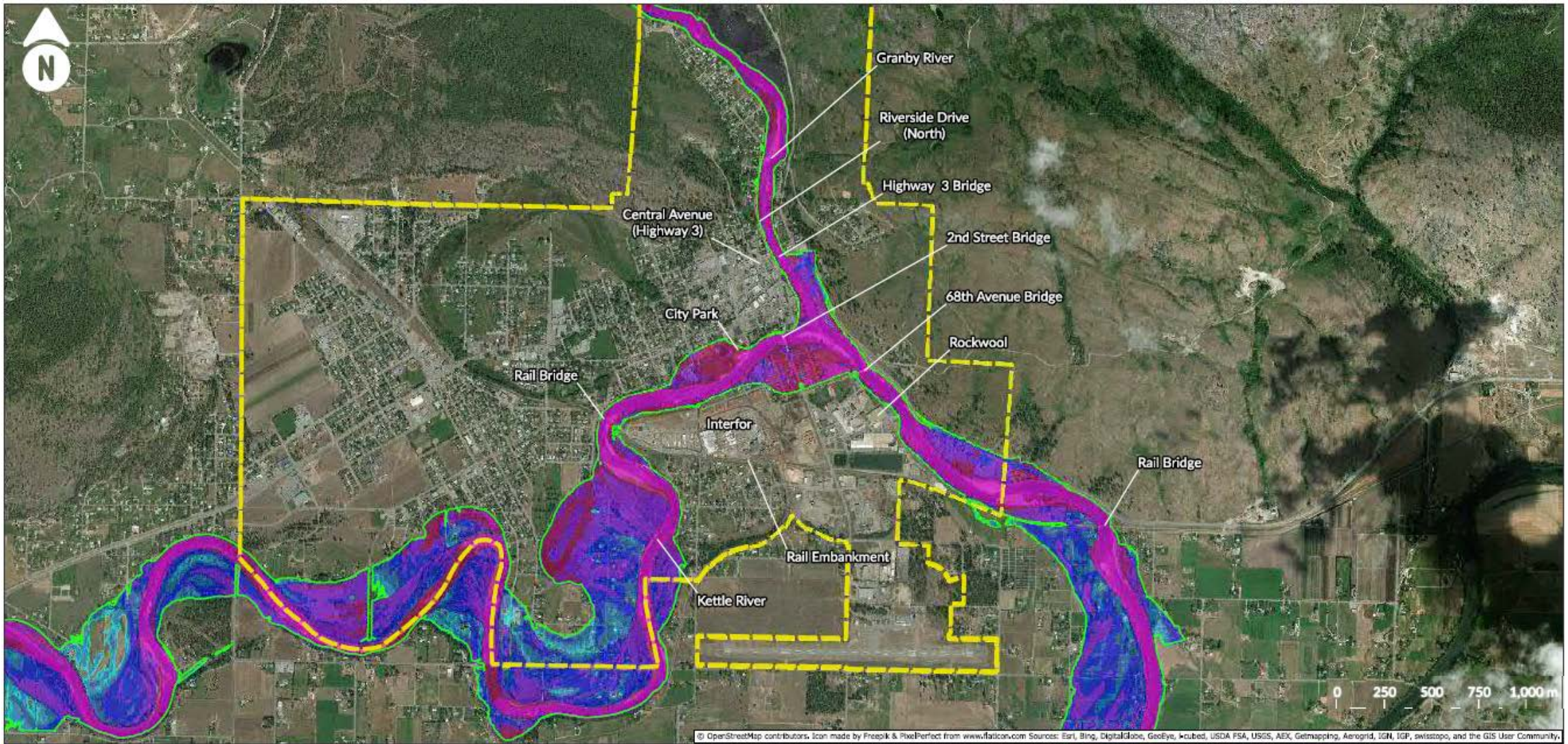


### Legend

- City Boundary
- Flood Extents
- Depth (m)
  - 0.0 - 0.1
  - 0.1 - 0.3
  - 0.3 - 0.6
  - 0.6 - 1.0
  - 1.0 - 2.0
  - 2.0-3.0
  - >3.0

1. This map shows HEC-RAS hydraulic modelling results for existing conditions (i.e., undefended) and the design flow event (200-year plus 10% climate change).  
2. For further details, please refer to Work Package 1.1 - Program Schematic Design Report (Associated Engineering, 2021).

Project No. 20202967  
Approved by G. Cahill, P.Eng.  
Drawn by S. Haley & N. Van Der Mark



## Flood Mitigation Program Schematic Design

City of Grand Forks

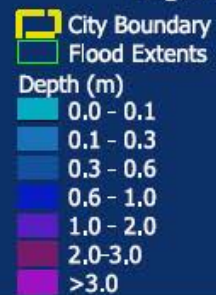
April 2021

Design Scenario No.1

200-Year Flow with Climate Change



### Legend



1. This map shows HEC-RAS hydraulic modeling results for schematic design conditions (i.e., defended) and the design flow event (200-year plus 10% climate change).
2. For further details, please refer to Work Package 1.1 - Program Schematic Design Report (Associated Engineering, 2021).
3. Please note that flood protection works are required at Riverside Drive (North) to ensure that the downtown area is defended.

Project No. 20202967

Approved by G.Cahill, P.Eng.

Drawn by S. Haley & N. Van Der Mark

Estimated cost of damages on a yearly basis =  $\frac{\text{Total estimated cost of damages}}{\text{Frequency of the main natural hazard events}}$

Cost of damages during the asset life cycle =  $(\text{Estimated damages in a yearly basis}) \times (\text{No. of years of the remaining life span of the funded assets})$

ROI =  $\frac{\text{Cost of damages during the asset life cycle}}{\text{DMAF project total eligible cost}}$

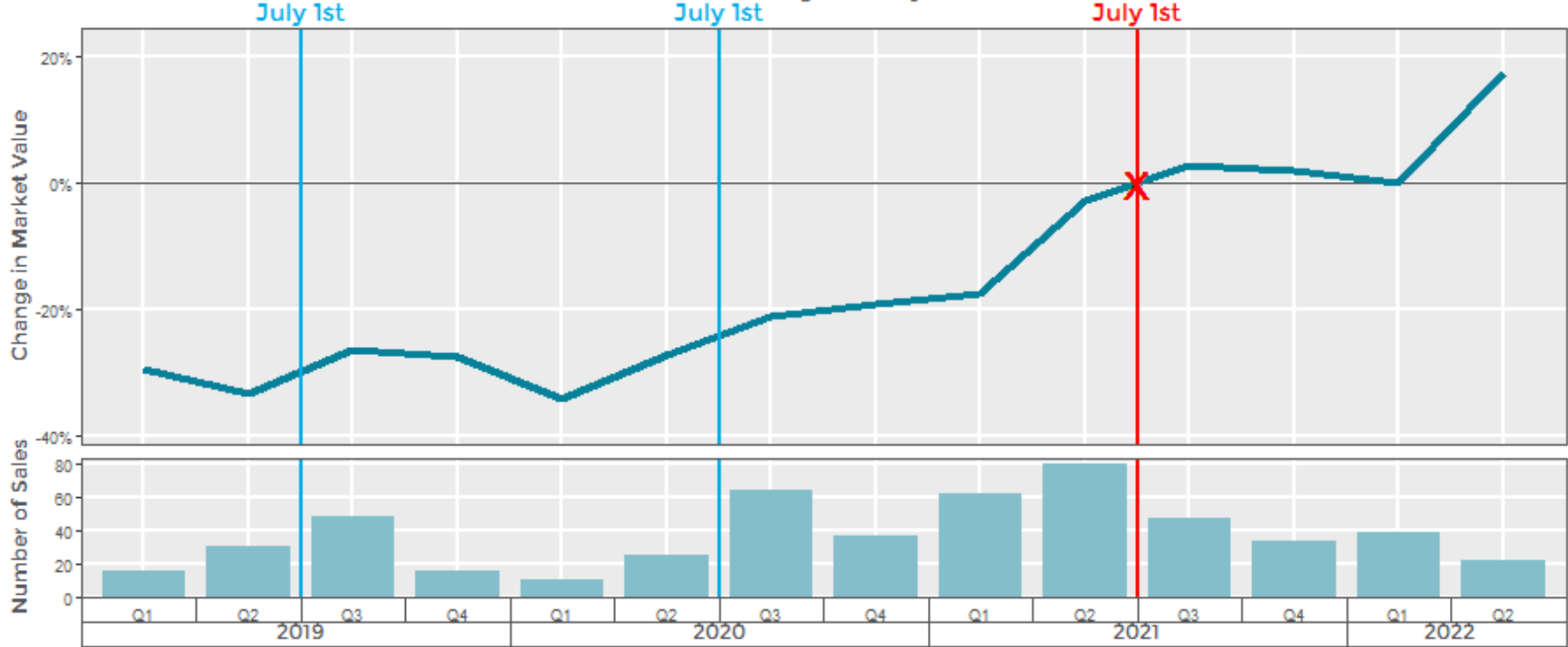
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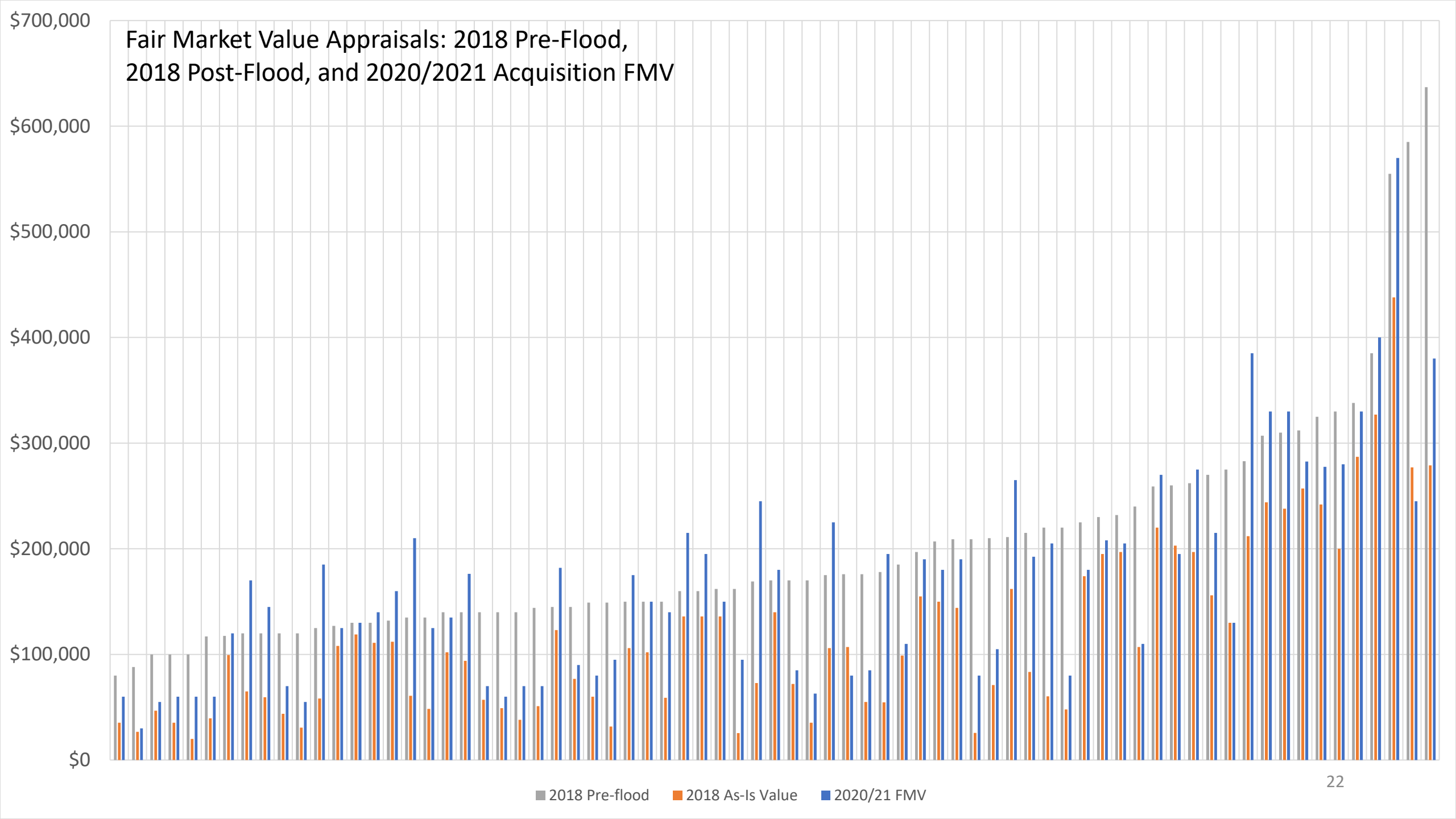
Source: BC Assessment

### Grand Forks Rural - Single Family Residential



| Measure         | 2019 Q1 | 2019 Q2 | 2019 Q3 | 2019 Q4 | 2020 Q1 | 2020 Q2 | 2020 Q3 | 2020 Q4 | 2021 Q1 | 2021 Q2 | 2021 Q3 | 2021 Q4 | 2022 Q1 | 2022 Q2 |
|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Number of Sales | 16      | 30      | 48      | 16      | 10      | 25      | 64      | 37      | 62      | 79      | 47      | 33      | 39      | 22      |
| Change in Value | -29.5%  | -33.3%  | -26.3%  | -27.4%  | -34.3%  | -27.2%  | -21.1%  | -19.1%  | -17.4%  | -2.8%   | 2.8%    | 2%      | 0.1%    | 17.5%   |

# Fair Market Value Appraisals: 2018 Pre-Flood, 2018 Post-Flood, and 2020/2021 Acquisition FMV



■ 2018 Pre-flood ■ 2018 As-Is Value ■ 2020/21 FMV

## Fair Market Value Factors

Appraisal: range  
-> most likely value

+ 5%  
Disturbance

+ Estimated moving, legal and closing

## Goodwill

+7.5% of Fair Market Value

Over and above any required / typical expropriation costs

## Hardship

+Adjustment for negative equity (\$10,000-\$30,000)

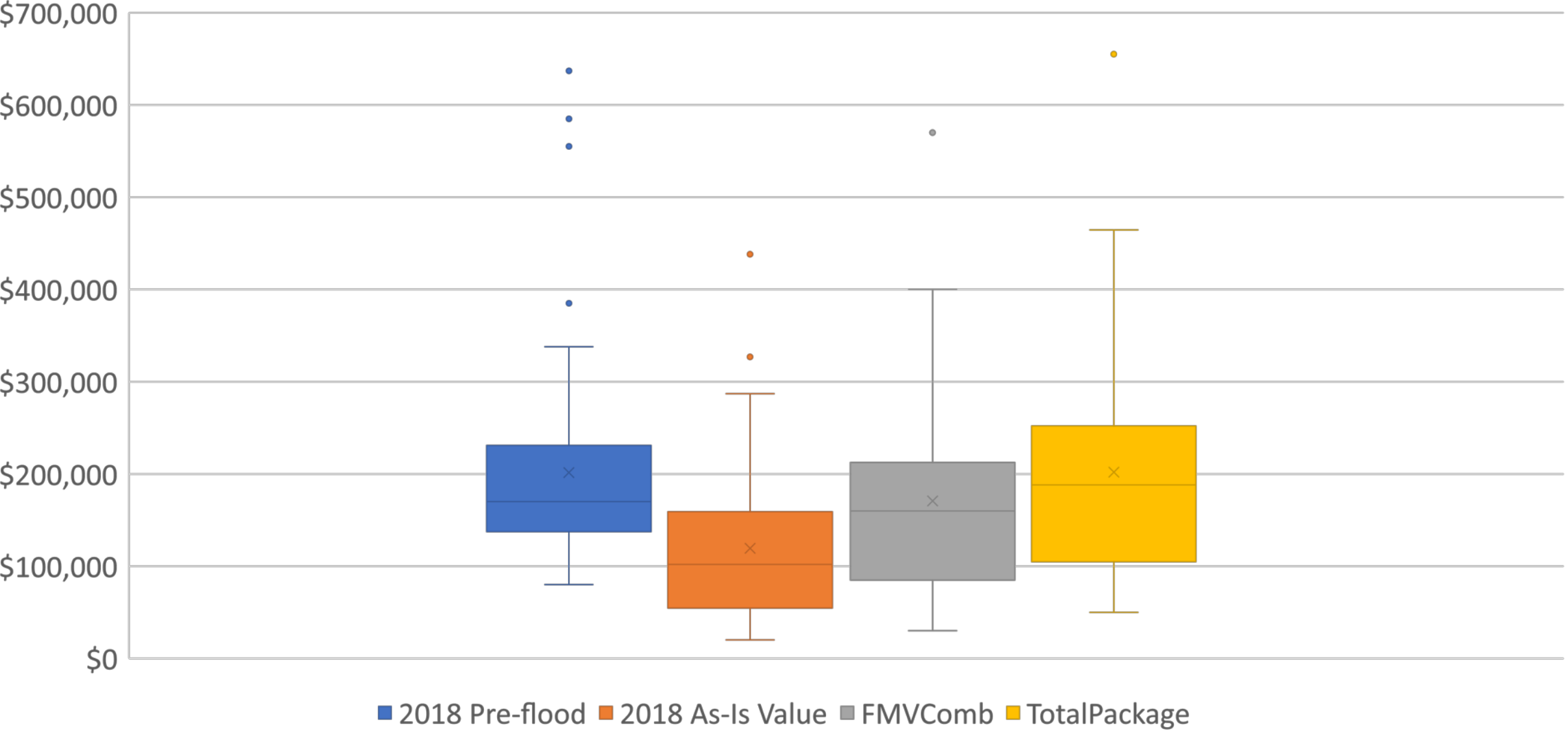
$\geq$ \$20,000  
Minimum Total Additional Compensation

## Fact-Based Adjustments

Increase to higher end of range with evidence (not negotiation)

Allowance of higher additional compensation with evidence

# Fair Market Value Appraisals: 2018 Pre-Flood, 2018 Post-Flood, and 2020/2021 Acquisition FMV + Additional Compensation





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## Understand Hazard, Risk and Vulnerability

- Inform risk assessment with climate lens
- Align risk assessment across community boundaries
- Incorporate risk reduction directly in Long-Range Planning

## Economic

- Manage Expectations – A no is better than a maybe
- Preparedness is key (insurance, business continuity)
- Data and the Dollars and Cents of things is key

## Evergreen Pre-Disaster Recovery Plans

- Develop community capacity, funding and partnerships
- Translate emergency and long-range objectives to recovery processes
- Initiate recovery role as soon as planning section open in EOC



# Questions?

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Graham Watt [gwatt@grandforks.ca](mailto:gwatt@grandforks.ca)

(JESSE WINTER/ STAR METRO)