

2021 Extreme Weather and Flooding Survey Report



FRASER VALLEY REGIONAL DISTRICT
EMERGENCY MANAGEMENT PROGRAM
March 2022

Introduction

The extreme weather and flooding events that occurred in the Fraser Valley Regional District (FVRD) from November 14 to December 2, 2021 were, and in many cases continue to be, a significant challenge for many residents, property owners, and businesses.

Some areas of our regional district are outside first responder services and require communities to be prepared and resilient in emergencies. During the storm event, residents in the FVRD's eight electoral areas banded together to help those impacted by evacuation orders and alerts, road closures and detours.

Social media featured many stories of neighbours helping family and friends. We were heartened by these stories of community resiliency and understand the road to recovery is still a process for many.

Thank you to all those who supported their neighbours.

"Due to road closures and being isolated we could not count on any emergency services. As a community we know the people and we pool our resources to protect our community. Examples like excavators, boats and pumps." (Survey respondent)



Thank You to Our First Responders

We are thankful for the many first responders who responded to calls for assistance during last year's events. We are especially grateful for FVRD's seven fire departments which operate 24 hours a day, 365 days a year on a volunteer basis through 11 fire halls.

These volunteers, many whose own families were impacted by the events, showed bravery, skill, and compassion to assist those in need.

Thank you!

Rural Resilience

re-sil-ient
/rəˈzilyənt/

(Of a person) able to withstand or recover quickly from difficult conditions.

Living in our electoral areas requires a certain level of resilience.

Residents have told us how proud they are to live in the beautiful, rugged, and tranquil rural areas of our regional district. But with this freedom comes a greater level of responsibility to learn about the hazards and risks where you live. Making your home in a rural area comes with a responsibility to prepare your own family for potential emergencies.

To give context, it's important to remember that the FVRD covers a vast land mass with complex floodplains, rivers, streams, and mountain slopes. Our eight electoral areas cover 13,336 km² with a population of 11,692 (2021 Census Canada) that is dispersed throughout the area.

Electoral area lands include:

- » Major rivers (Fraser and Harrison) with extensive floodplains.
- » Three separate and autonomous diking improvement districts, orphan flood protection structures, and extensive undiked lands.
- » High energy, largely undiked mountain rivers such as the Chilliwack, Coquihalla, Sumallo and Nahatlatch rivers.
- » Thousands of mountain streams capable of producing flooding, debris floods and debris flows.
- » Innumerable steep slopes subject to various kinds of slope movements.
- » Close proximity to Crown resource lands subject to forestry, roadbuilding and other activities that influence slope stability and hydrology.

Limitations of local services:

Electoral areas have a small tax base, unlike a municipality with larger populations, and each electoral area pays for its own specifically funded and localized services i.e. water, sewer, garbage, flood and fire protection. Some electoral areas do not have fire protection services and are not served by a volunteer fire department. In an emergency, help may take longer to reach these areas. It is up to residents to build their rural resilience to prepare for emergencies.

Build rural resilience:

- » Know the natural hazards and risks on your property and in your community.
- » If you are new to the area, talk to your neighbours about past emergencies.
- » Contact the FVRD Planning department to help assess hazards and risks on your property.
- » Make a family emergency plan and store supplies like water and food.
- » Be aware of changing weather conditions.
- » Get the **Alertable** app at fvrld.ca/alerts and sign up for emergency notifications via app, email, landline, text, and smart speaker (i.e. Alexa).
- » Download the FVRD [Emergency Preparedness Handbook](#)

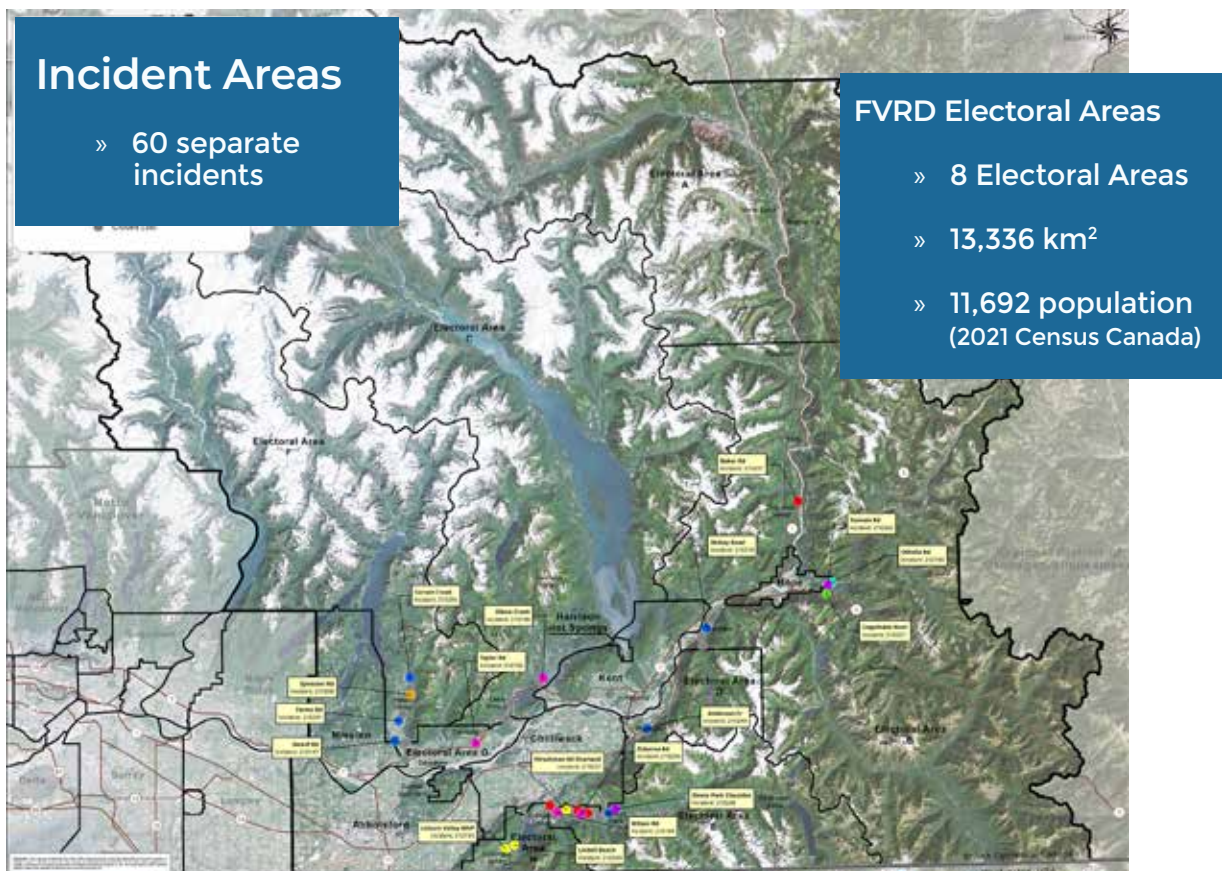
Summary of Events

November 14 - December 2, 2021

Extreme rainfall from three separate atmospheric rivers from November 14 to December 2, 2021 caused overland flooding and mudslides, and affected all eight electoral areas.

On November 14, 2021 the FVRD Emergency Operations Centre (EOC) was activated and a State of Local Emergency was issued for the region.

During this time period, there were more than 60 confirmed incidents of overland flooding and mudslides spread across the 13,336 km² of the FVRD. First responders (Fire, RCMP, and Search and Rescue), as well as many residents reported incidents to the EOC public inquiry line. A total of 27 evacuation orders and alerts were released, impacting over 2,000 properties. The orders and alerts affected an estimated 5,610 people, which is nearly half of our electoral area population of 11,692. (2021 Census Canada)



The FVRD is responsible for providing emergency management services to the electoral areas, while each member municipality (Abbotsford, Chilliwack, Kent, Hope, Mission and Harrison Hot Springs) and First Nations are responsible for providing these services to their residents.

Public Survey

In January 2022, as the FVRD's Emergency Operations Centre transitioned from emergency response into a recovery phase, the FVRD surveyed electoral area residents, property and business owners to learn how:

- » Individuals, families, businesses or communities were impacted
- » People received information
- » We can improve emergency response communications in the future

The survey was available on the Have Your Say FVRD website and social media from January 9, 2022 – February 6, 2022.

The survey received:

- » 764 visitors to the survey page
- » 351 responses to survey

This report includes consolidated survey results. These results will be shared with FVRD staff to help improve how information is shared during an emergency.

Questions about the survey?

Contact

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FVRD Emergency Management Specialist
tcolledge@fvrd.ca

FVRD Information Channels

When the Emergency Operations Centre was activated on November 14, 2021, Information Officers began posting updates to fvrld.ca, social media channels and the Alertable emergency notification system.

Posts to the website and social media included public safety related alerts (FVRD evacuation orders and alerts), updates for utilities (septic, sewer and water), road and parks closures, and weather advisories.

FVRD social channels also shared information from government agencies and non-government organizations (NGO) including Red Cross, Prepared BC, Drive BC, and Team Rubicon (NGO offering clean-up assistance).



Fraser Valley Regional District

Nov 29, 2021

An earlier Evacuation Alert has been UPGRADED to an Evacuation ORDER for 12 properties on Laidlaw Road and McKay Road near Laidlaw, BC, Electoral...

[Read more](#)



Statistics for Nov 14 – Dec 2, 2021

Facebook

- » 185,128 people reached (viewed content)
- » 13,461 page visits
- » 1,129 new likes and followers
- » 93 Facebook posts
- » 95 Twitter posts

Twitter

- » 1 million impressions (number of times users saw a tweet)
- » 1.3K retweets
- » 783 new followers

Media requests

- » 15+ requests from local and BC media (CBC, CTV, Global, Black Press)

Web updates

- » 212 updates to fvrld.ca
- » 72 stories

Alertable

- » 36 advisory alerts issued
- » 4 critical alerts issued
- » Subscribers grew by 129% to 16,224



FVRD Emergency Operations Centre

FVRD's Emergency Operations Centre (EOC) is responsible for tracking incidents and coordinating response with the Provincial Regional Emergency Operations Centre (PREOC), and Emergency Management BC (EMBC) the Province's lead coordination agency.

The EOC liaised with first responder agencies including FVRD fire departments, RCMP, utility companies like BC Hydro, FortisBC and government agencies like the Ministry of Transportation and Infrastructure (MOTI).

EOC Response and Recovery

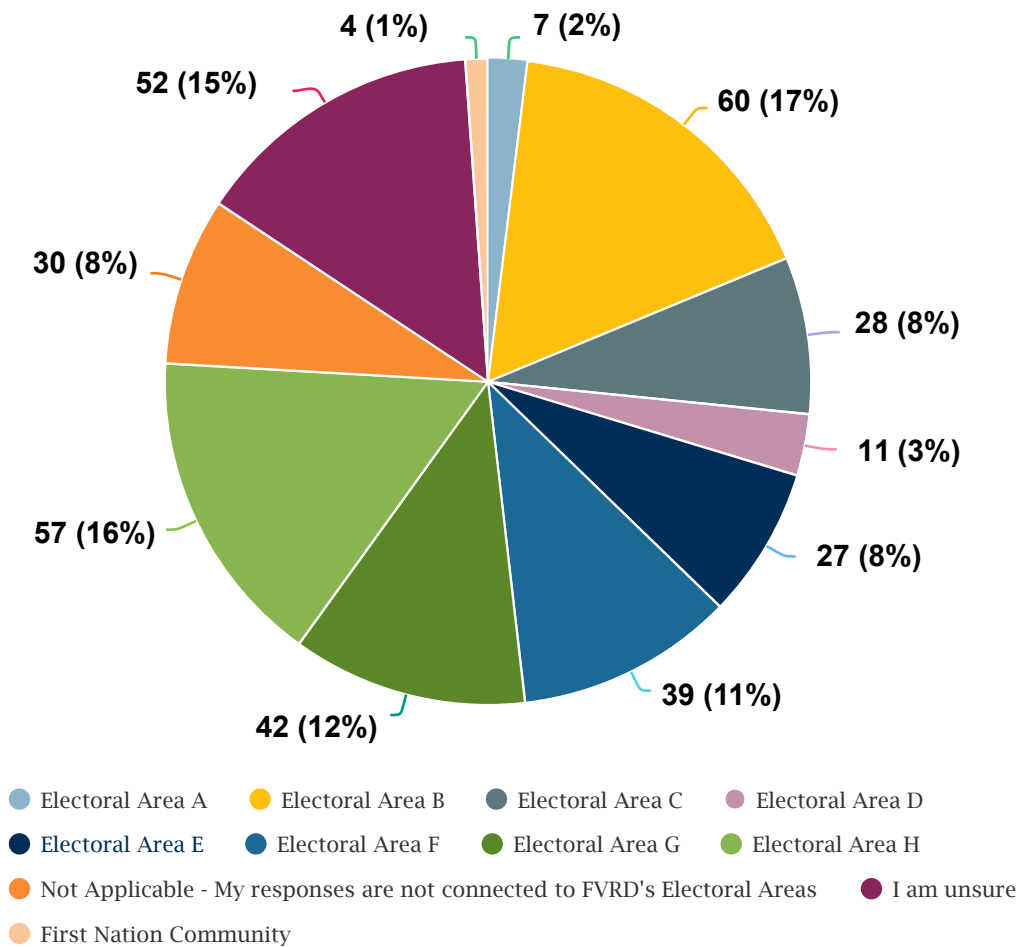
During last year's events, the FVRD EOC followed a process to evaluate hazards related to flooding, landslides, and mudslides incidents across 13,361 km². We considered the impact on public safety before issuing evacuation orders or alerts. Before rescinding evacuation orders or alerts, the EOC worked with staff and partners in the field to assess changing conditions and determine if it was safe for residents to return to their homes.

The EOC liaised with EMBC to secure emergency funding for projects related to storm damages (i.e. dike repairs, debris removal) as these repairs were outside of the electoral area service areas budgets. The EOC escalated any concerns from the public that were outside the FVRD's jurisdiction to the appropriate government agencies, partners and stakeholders (i.e. repairs to MOTI etc.)

When funding was approved by EMBC, the FVRD EOC contracted hydrotechnical and geotechnical engineers to survey impacted creeks and landslide areas. Once these professionals and FVRD's planning and engineering staff determined an area was safe to re-enter, evacuation orders or alerts were rescinded. Contractors were then hired to assist with emergency projects including debris removal from public lands and dike repairs.

SURVEY QUESTIONS

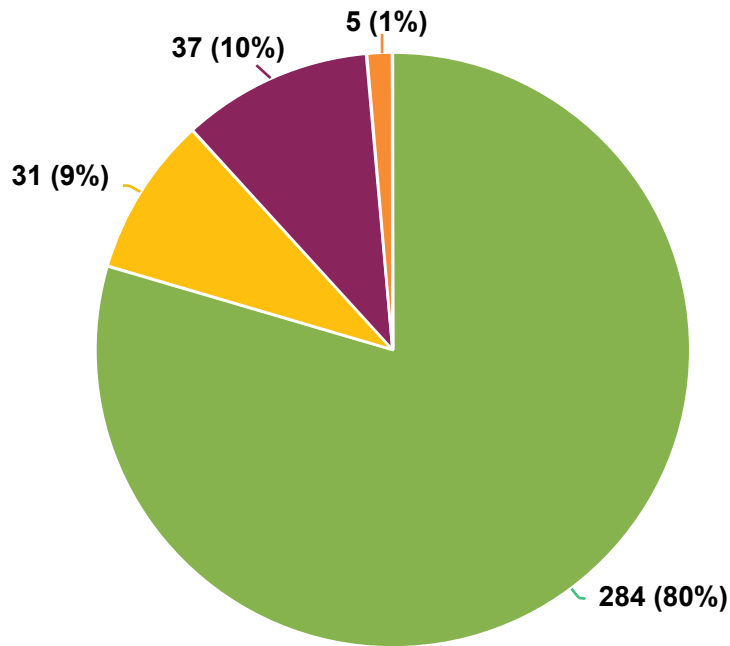
Q1 | The above map illustrates the municipalities and electoral areas within the Fraser Valley Regional District. Which Electoral Area in the FVRD are your responses connected to?



The largest number of the 357 respondents were from:

- » Electoral Area B (60) - Yale, Laidlaw, and Sunshine Valley
- » Electoral Area H (57) - Cultus Lake, Columbia Valley, and Lindell Beach
- » Electoral Area G (42) - Deroche, Dewdney and Hatzic Lake
- » Electoral Area F (38) - McConnell Creek and Hatzic Prairie
- » 52 respondents were unsure of their location

Q2 | Are your responses related to your primary residence, secondary residence or place of business located within the FVRD's electoral areas?

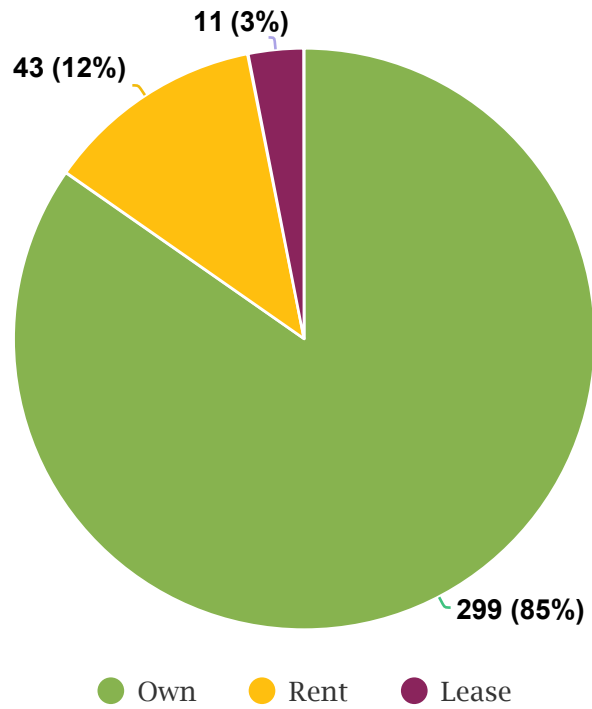


- Primary residence
- Secondary residence
- Both residence and place of business
- None of the above, I own property here but do not reside or do business here
- Place of business

The majority of the 357 respondents (80%) indicated their responses were related to their primary residences.

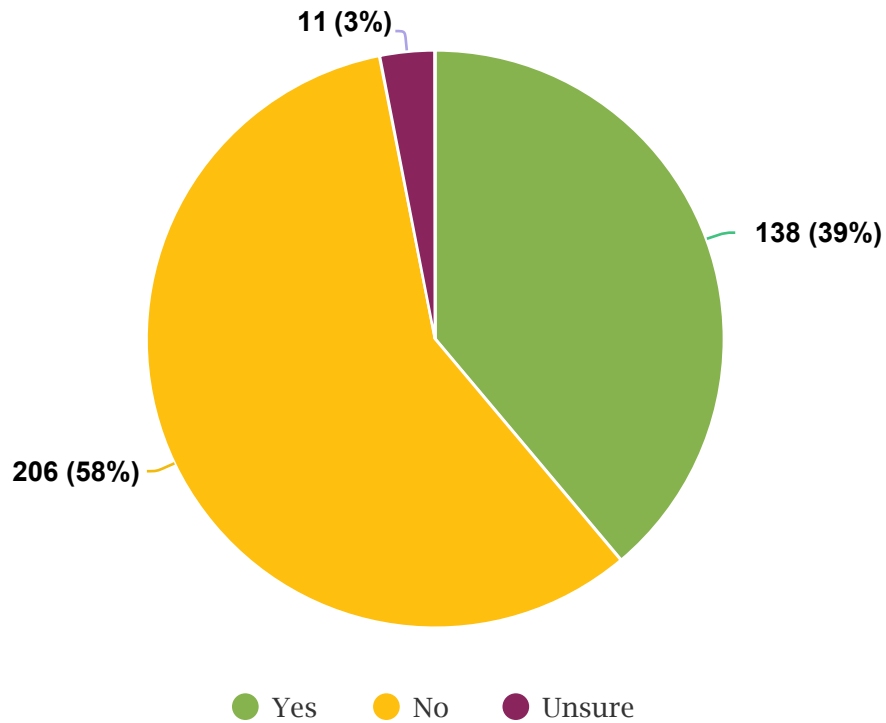
- » 10% Both residence and business
- » 9% Secondary residence

Q3 | Do you own, rent or lease this property?



The majority of the 353 respondents indicated they owned their residence (85%) while others rented (12%), or leased (3%) their homes.

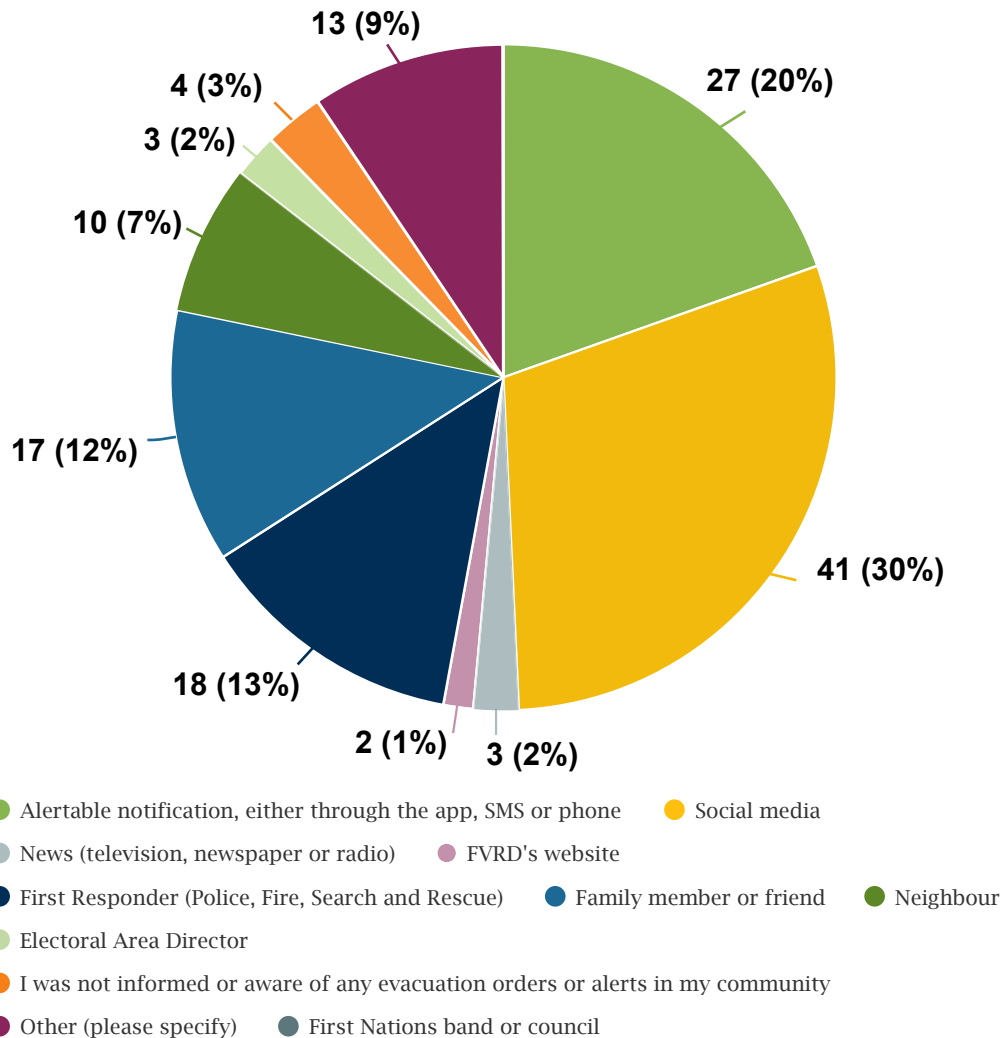
Q4 | Was your property, residence or business included in an evacuation order or alert issued by the FVRD?



Of the 355 respondents, the majority (58%) indicated their property or residence was not included in an evacuation order or alert issued by the FVRD.

A little over one third of respondents (39%) indicated they were included in an evacuation order or alert issued by the FVRD.

Q5 | How did you FIRST become informed of the evacuation alert or order issued by the FVRD?



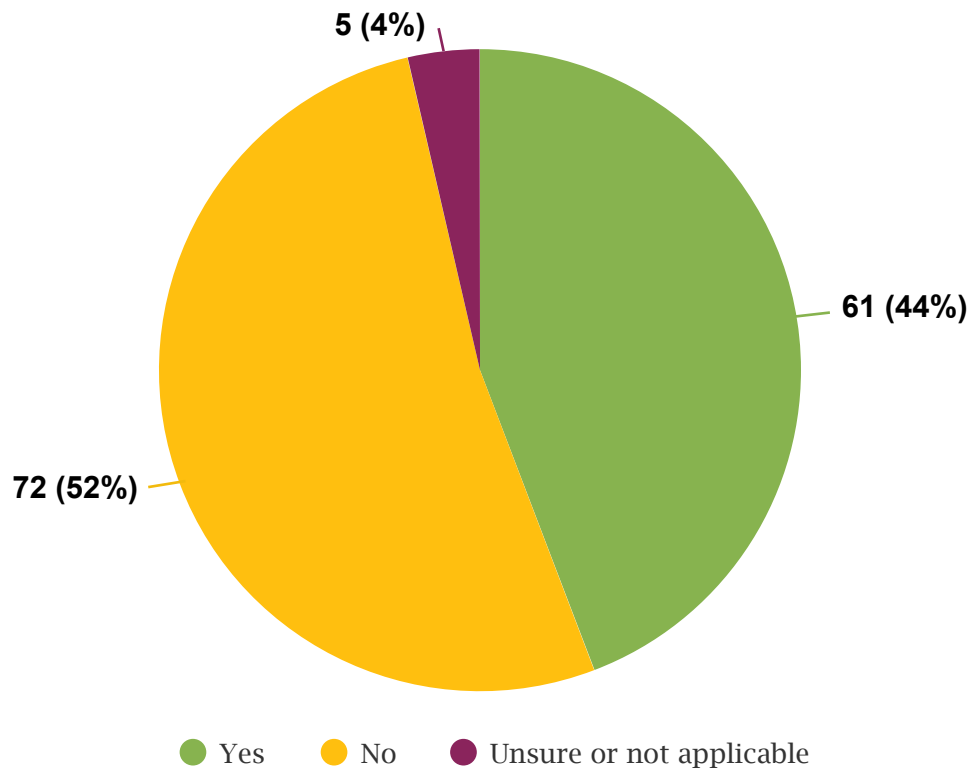
Nearly 1/3 of the 138 respondents said they first became informed of evacuation orders and alerts through social media. During the storms, the FVRD posted regularly to its official social media channels including Facebook and Twitter. Neighbourhood Facebook groups were especially helpful in sharing information.

Other ways people were informed included:

- » Alertable 20%
- » First responder (Fire, RCMP, Search and Rescue) 13%
- » Family/neighbour 12%

Responses to the “other” category being included informed by a strata management company, the City of Abbotsford and the Abbotsford Police social media.

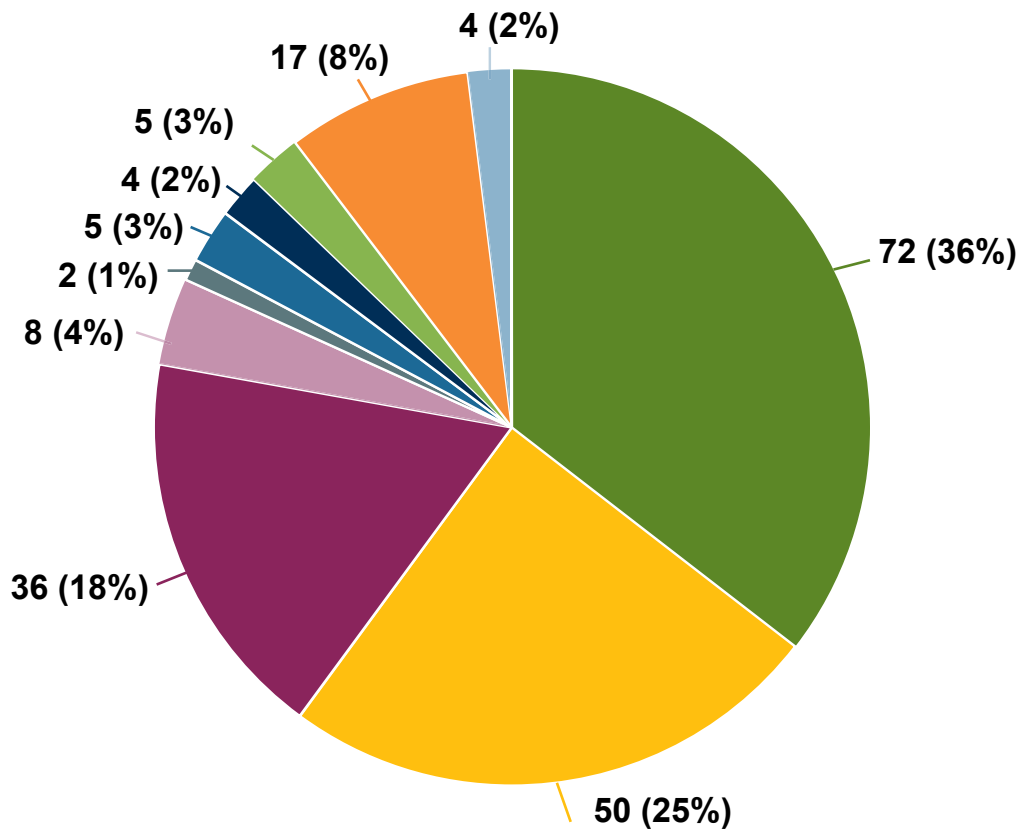
Q6 | Upon receiving an evacuation order or alert issued by the FVRD, did you know where to find further information to determine your next steps?



Of the 138 responses, the majority (52%) indicated they didn't know what to do after receiving an evacuation order or alert issued by the FVRD.

This is a lesson learned for the Emergency Operations Centre (EOC) to include clear directions in the messaging shared on social media and other channels.

Q7 | How did you hear about evacuation orders or alerts issued by the FVRD?

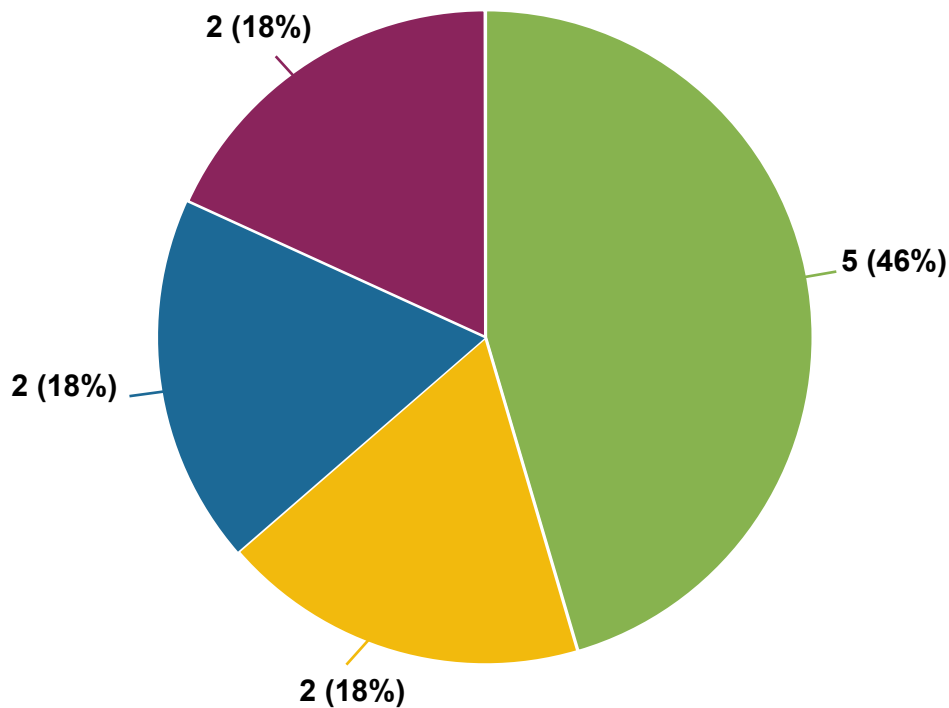


- Alertable notification, either through the app, SMS or phone
- Social media
- News (television, newspaper or radio)
- FVRD's website
- First Responder (Police, Fire, Search and Rescue)
- Family member or friend
- Neighbour
- Electoral Area Director
- I was not informed or aware of any evacuation orders or alerts in my community
- Other (please specify)
- First Nations band or council

203 responses were received for this question which asked how residents heard about evacuation orders or alerts from the FVRD. The majority indicated they heard through the Alertable notification app (35%) while others heard through social media (25%) and through news sources (television, newspaper, or radio).

Q8 | How did you hear about evacuation alerts or order issued by the FVRD?*

*For residents whose property, home or residence was NOT included in an evacuation order or alert issued by the FVRD.

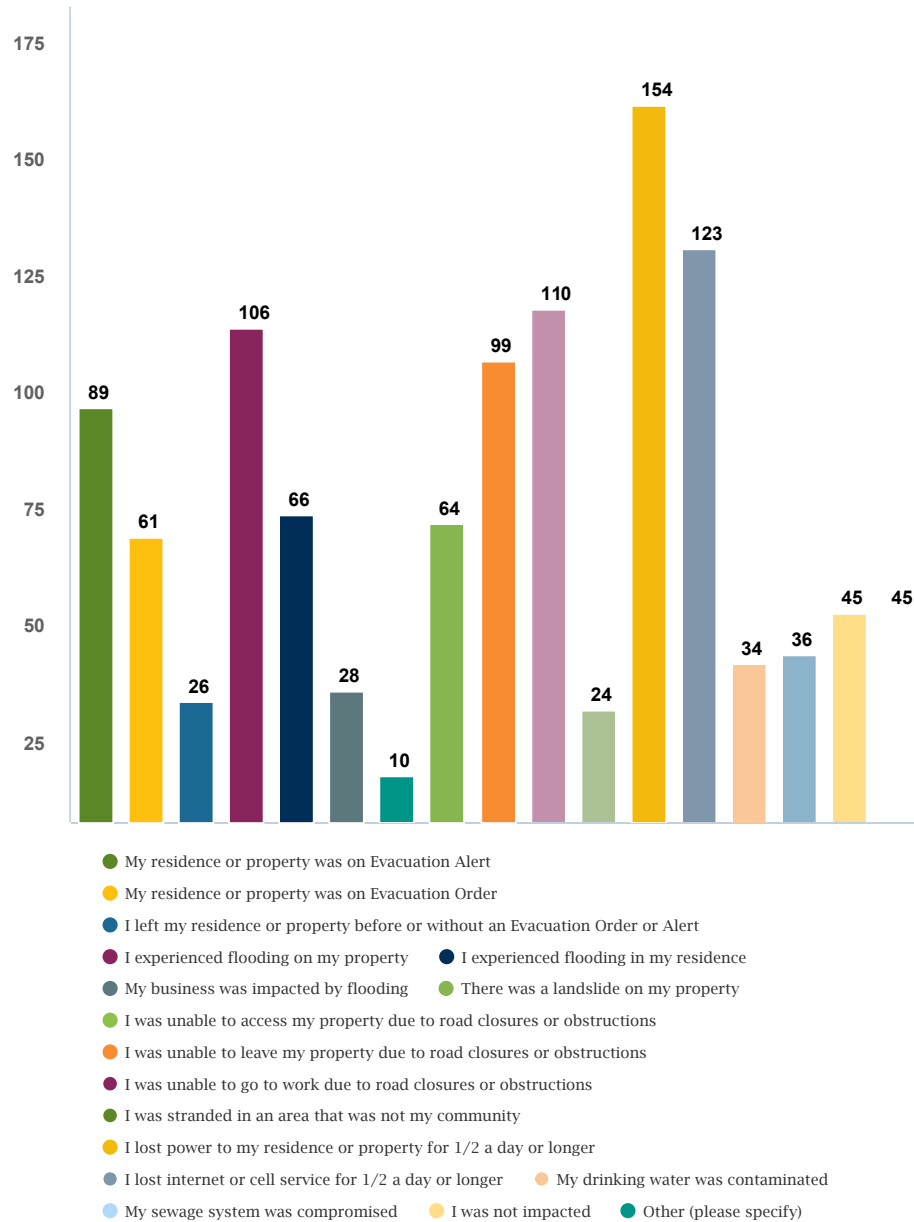


- Alertable notification, either through the app, SMS or phone
- News (television, newspaper or radio)
- Family member or friend
- I was not informed or aware of any evacuation orders or alerts in my community
- Social media
- FVRD's website
- First Responder (Police, Fire, Search and Rescue)
- First Nations band or council
- Neighbour
- Electoral Area Director
- Other (please specify)

Of the 11 responses received from residents whose property, home or residence was NOT included in an evacuation order or alert, nearly half became informed through the Alertable notification system (app, text, email, or phone message).

An equal number of residents heard about evacuation orders and alerts through news channels and family/friend networks. Several residents indicated they lost power at their homes and relied on neighbours to bring them news.

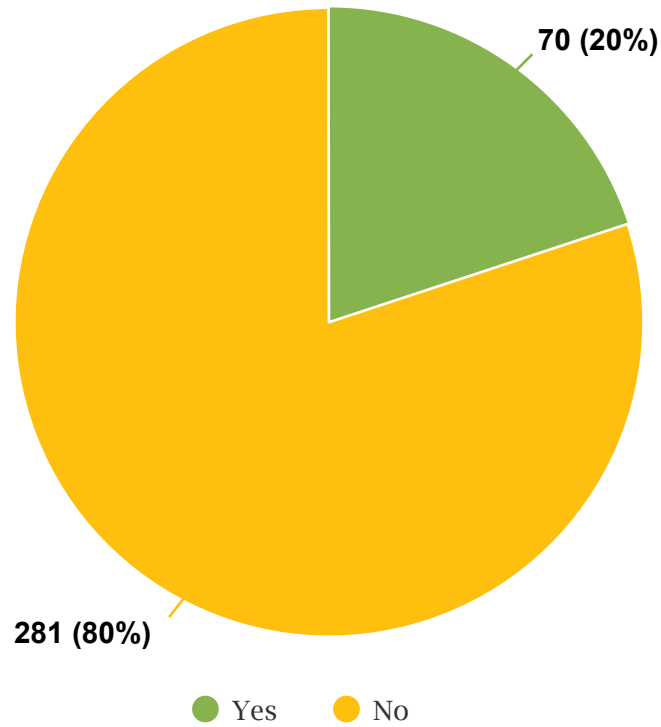
Q9 | How were you impacted by the extreme weather or flooding events that occurred between November 14 through December 2, 2021? (Check all that apply)



Of the 356 responses were received:

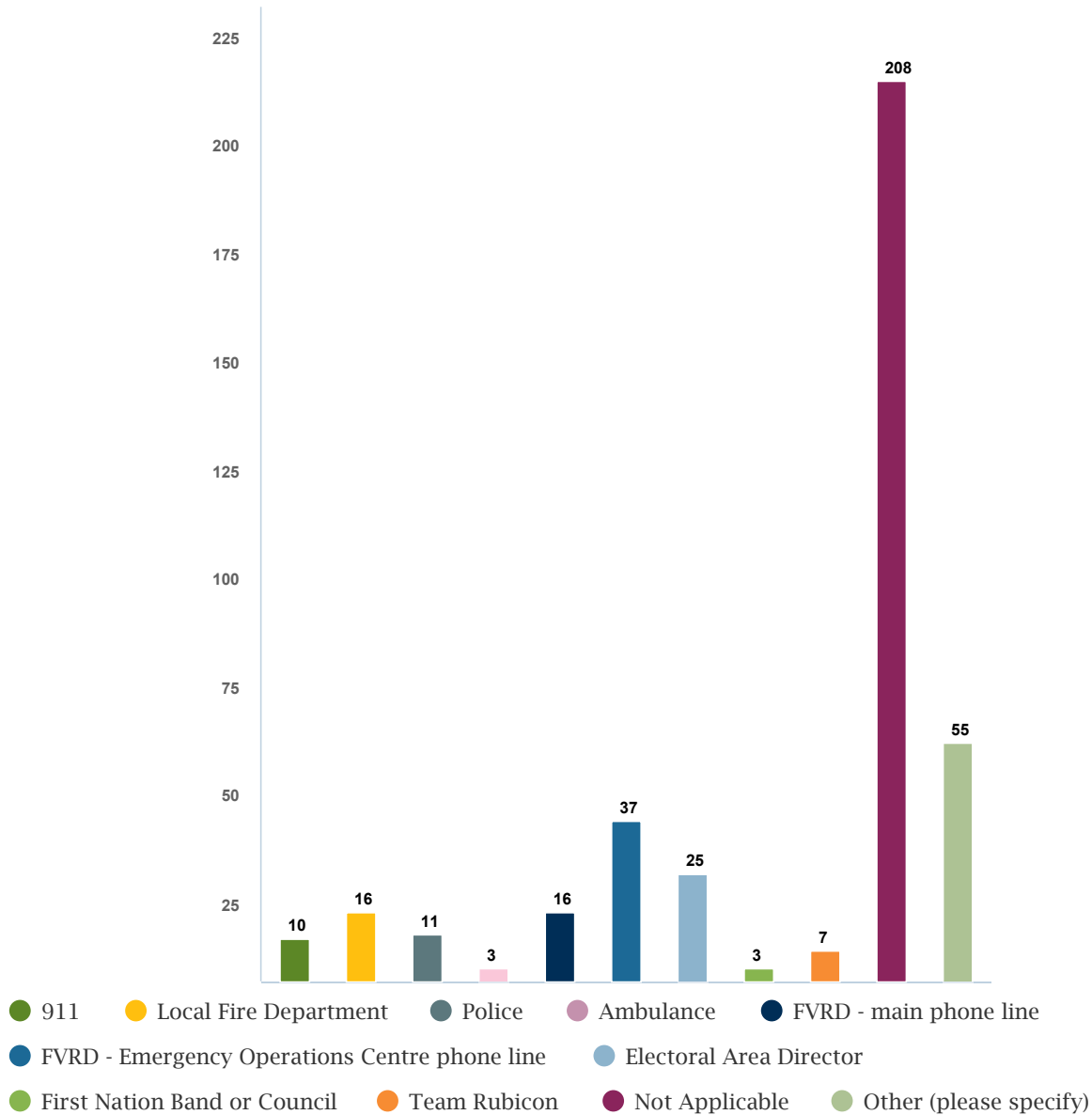
- » 43% lost power to residence for 1/2 day or more
- » 35% lost internet/cell service for 1/2 day or more
- » 31% unable to get to work due to road closures
- » 31% had flooding on property
- » 28% unable to leave property due to road closures
- » 25% under evacuation alert
- » 19% under evacuation order

Q10 | Did you leave your home as a result of the recent extreme weather or flooding events?



Of the 351 responses, the majority (80%) indicated they didn't leave their homes as a result of the weather events.

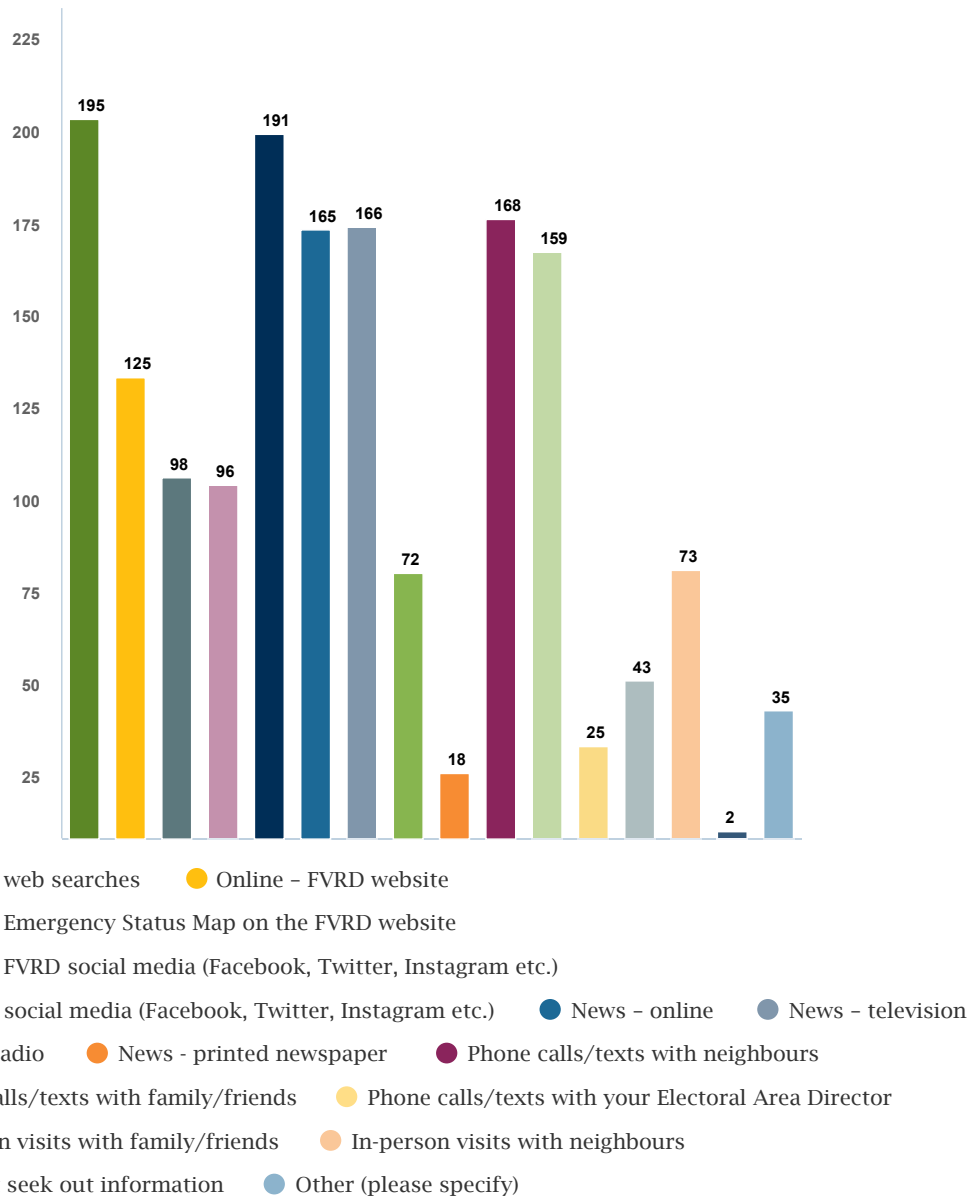
Q11 | During the extreme weather and flooding that occurred during November 14 through December 2, 2021, which of the following individuals or organizations did you contact or attempt to contact? (Check all that apply)



Of the 325 responses, the majority of respondents (64%) indicated they didn't contact any supportive organizations during the storm events. We received comments that indicated people also reached out to municipalities, Cultus Lake Parks Board, and local churches especially in Hope, BC. People reached out to the following for information:

- » 12% called FVRD Emergency Operations Centre (EOC) phone line
- » 8% called their Electoral Area Director
- » 5% contacted local fire department, 1% contacted First Nations Band or Council

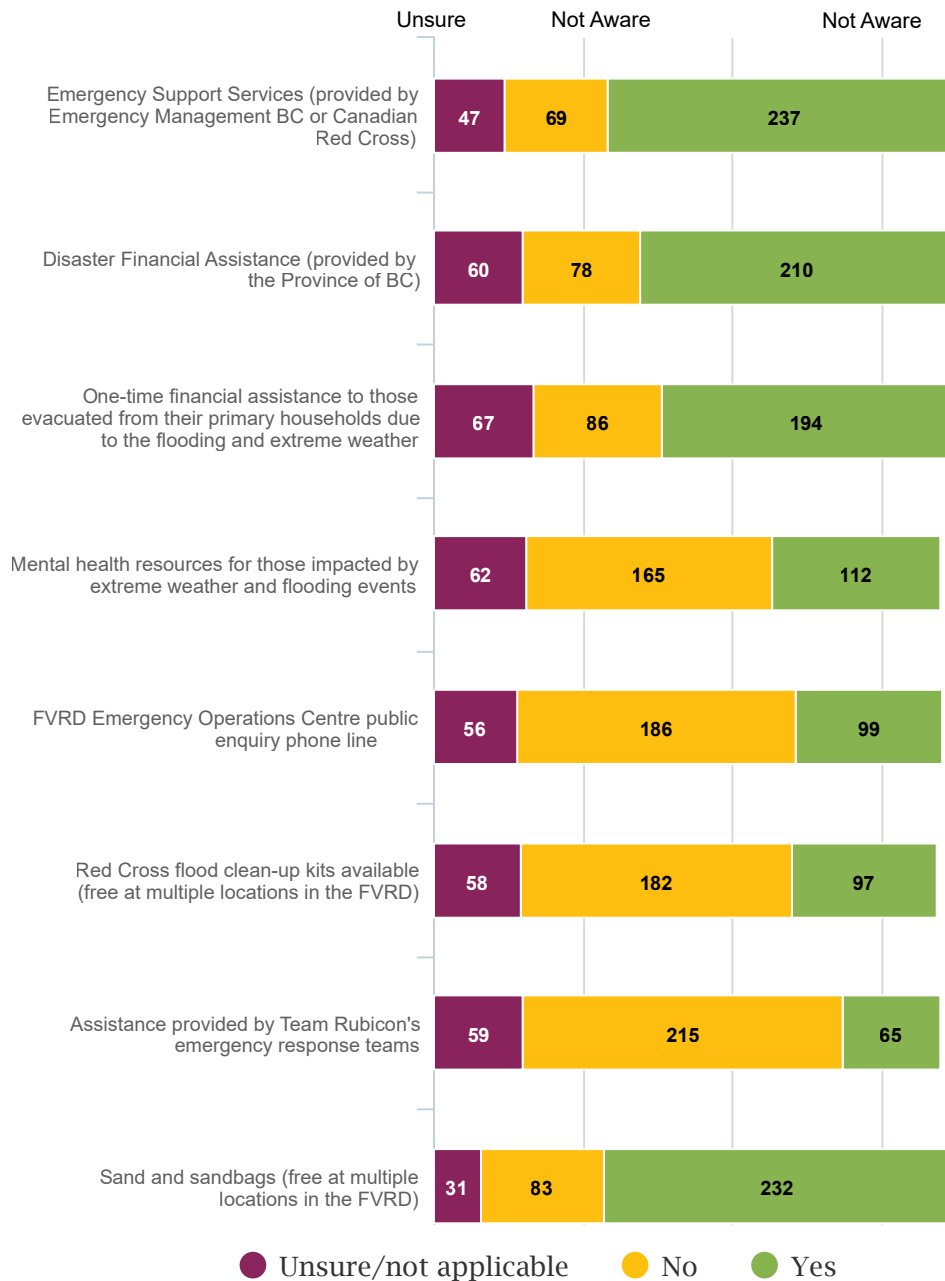
Q12 | During the extreme weather or flooding that occurred during November 14 through December 2, 2021, how did you seek out information? (Check all that apply)



Of the 356 responses, the majority (55%) received information via online sources (web and social media).

- » News - online, television (47%)
- » Phone call/text with neighbours, family and friends (47%)
- » FVRD website (35%)
- » FVRD social media and FVRD emergency status map on website (28%)

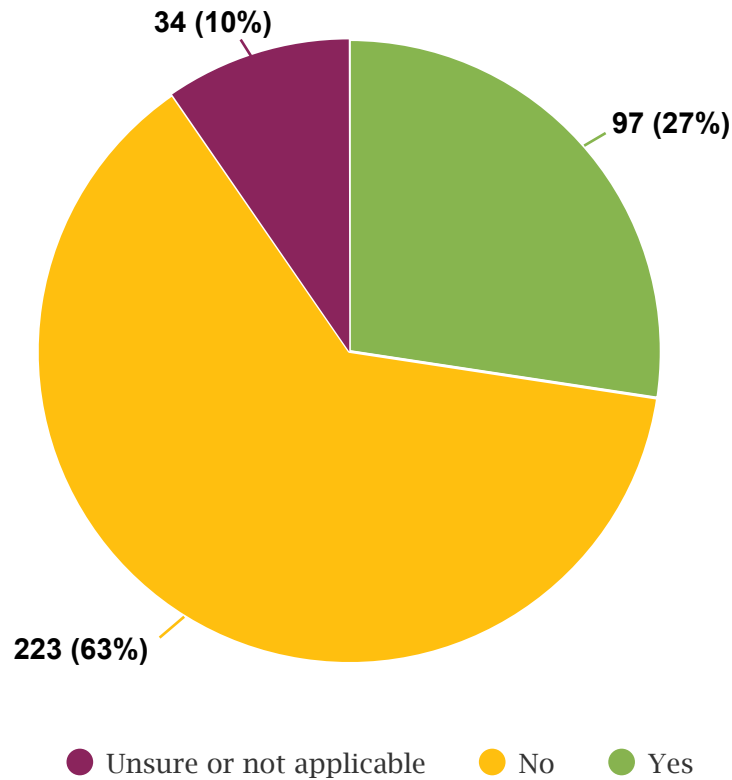
Q13 | Are you aware of the following programs or resources available to those impacted by the extreme weather and flooding events in BC?



Of the 353 responses to this question, residents indicated a high level of awareness for programs and resources from Canadian Red Cross ESS (67%), Disaster Financial Assistance from Province of BC (60%), and location of sandbags (66%).

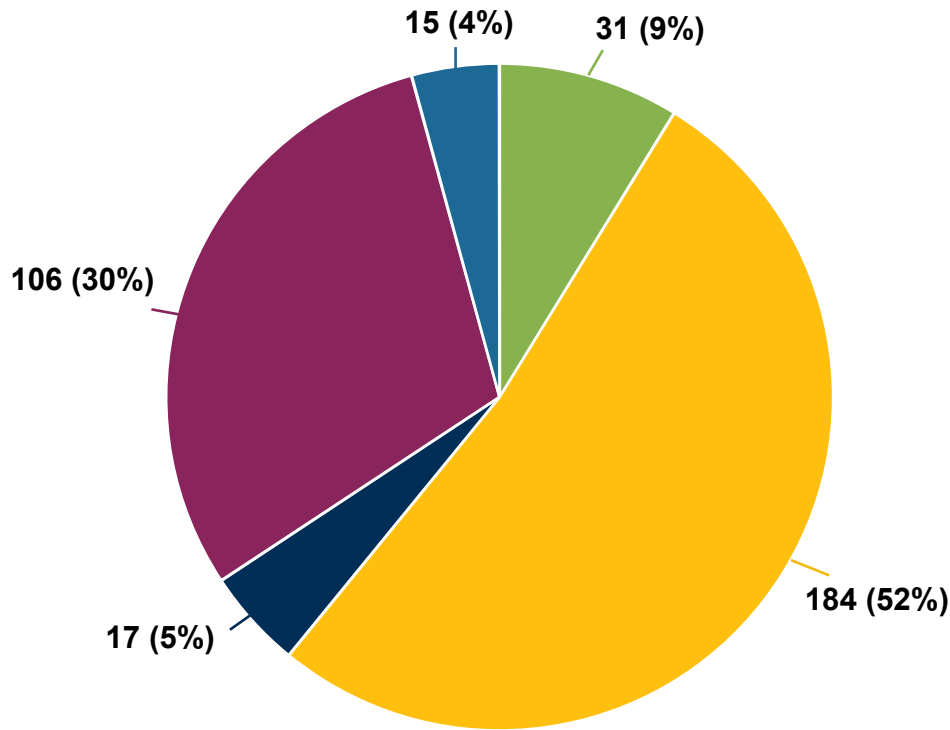
Residents indicated a lower level of awareness of programs and resources for mental health (45%), FVRD EOC public inquiry line (53%), Canadian Red Cross clean-up kits (52%), and assistance from non-government organization, Team Rubicon (61%).

Q14 | Was your ability to seek or receive critical information impacted due to a lack of phone, cell or internet service?



Of the 354 responses to this question, about one third of residents (27%) said interruptions to phone, cell or internet service impacted their ability to access critical information.

Q15 | Did you contact or attempt to contact the FVRD Emergency Operations Centre (EOC) by calling the EOC public enquiry line (778-704-0400)?



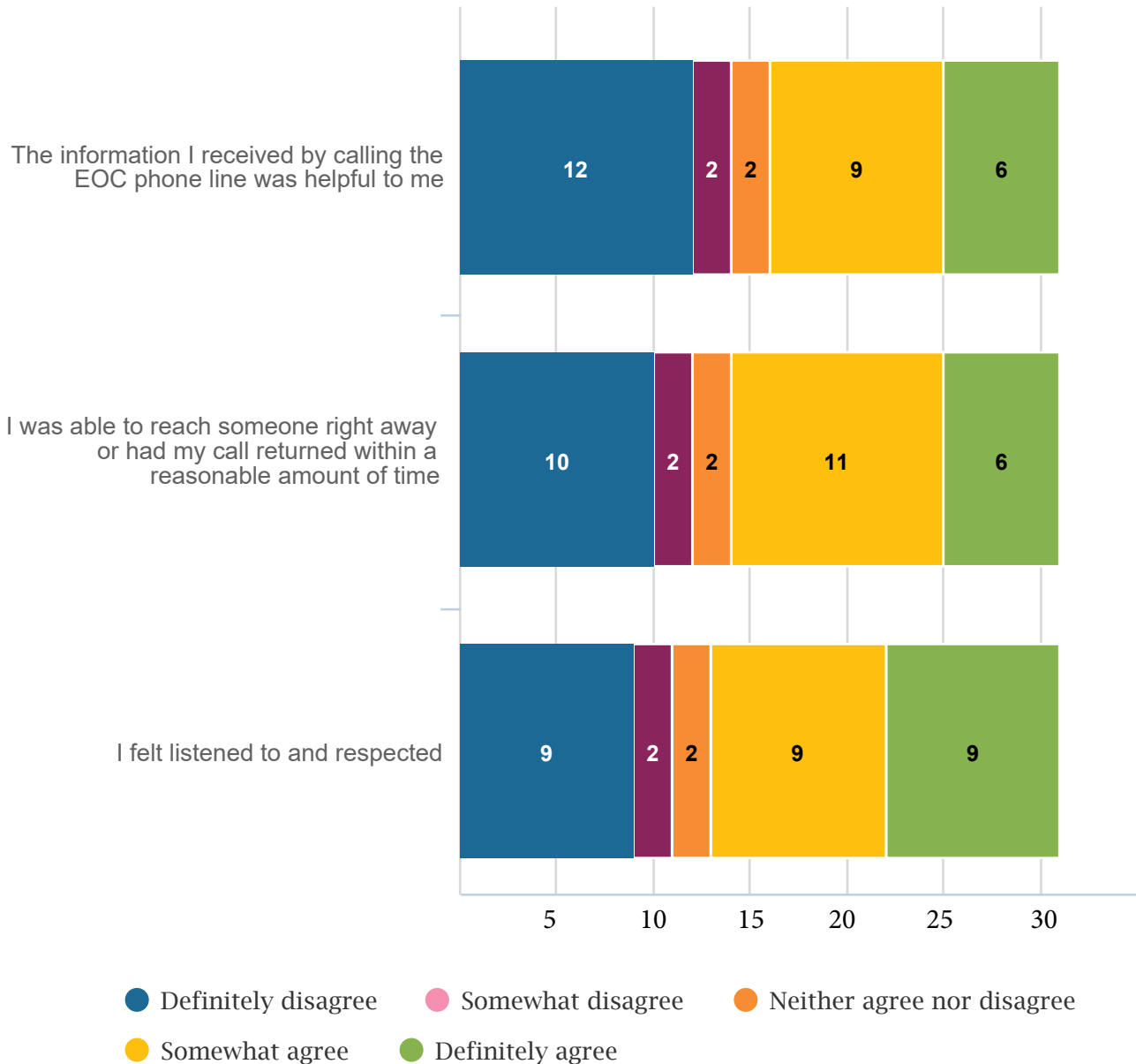
- Unsure or not applicable
- No, I was not aware of the EOC public enquiry line
- No, I could not contact the EOC public enquiry line due to no cell/phone service
- No, I did not need to contact the EOC public enquiry line
- Yes

The FVRD EOC provided a public inquiry line from November 15, 2021 through mid-January 2022. Phone calls were answered during EOC hours, usually 8:30 am to 5:00 pm, and residents were able to leave a message anytime.

Of the 353 respondents to this question, only 8% said they called the line. However, during the height of the storm, the line received dozens of calls from residents who reported incidents of overland flooding, mudslides and other issues in their communities.

FVRD staff who answered the phones provided callers with information on the latest evacuation orders and alerts, and could direct residents on where to access resources (i.e. sandbag locations, Red Cross support and Disaster Financial Assistance from the Province).

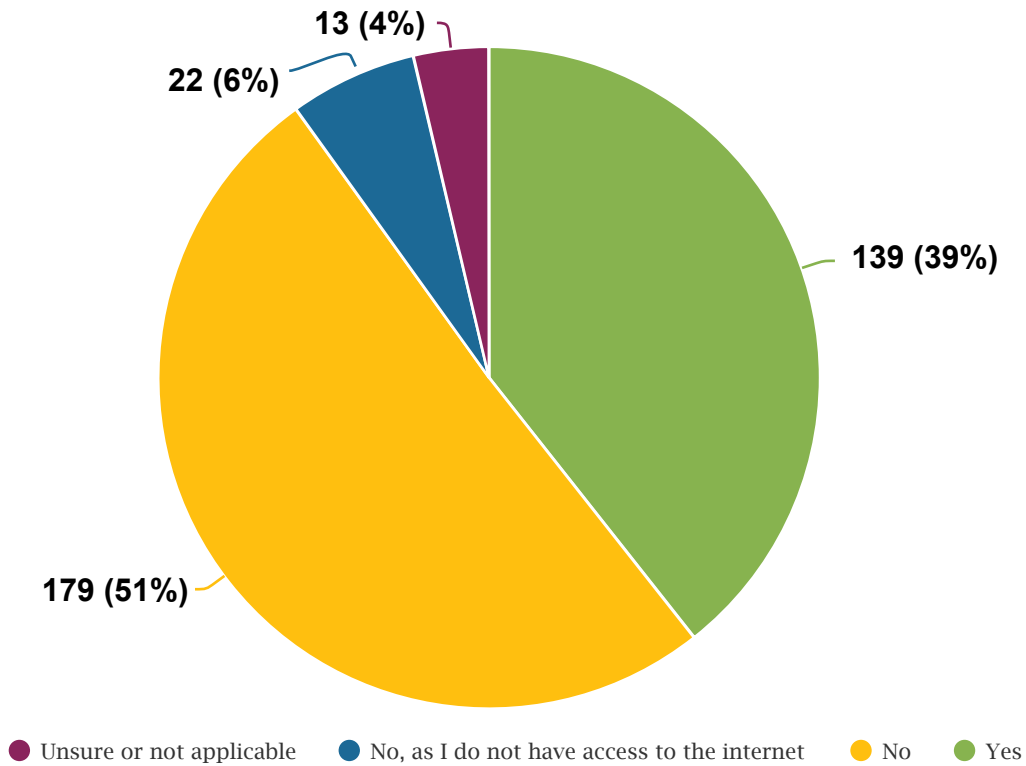
Q16 | How would you rate the following aspects of your communication with the FVRD using the EOC Public Enquiry Line (778-704-0400)?



People who reported calling the EOC Public Enquiry Line (30 respondents) had various levels of agreement on whether the line was helpful, timely, and if the FVRD call takers were good and respectful listeners.

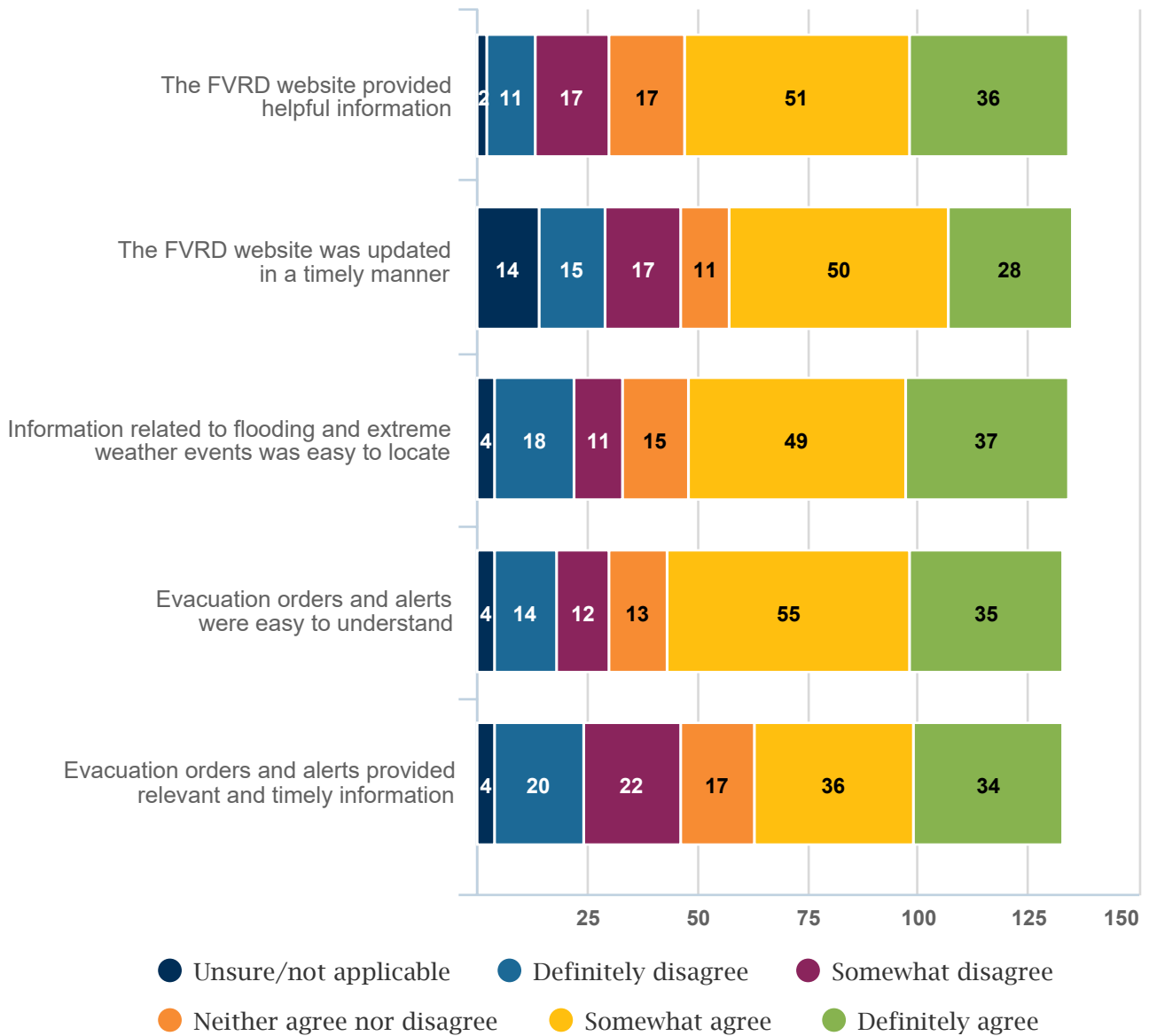
We recognize that residents may have experienced a level of dissatisfaction with the line and the help which call takers could provide. Call takers did their best to provide residents with the latest information available and some callers may have been frustrated when call takers could not provide updates before evacuation orders and alerts were officially updated or rescinded.

Q17 | Did you visit the FVRD website for more information or assistance during the extreme weather or flooding event?



Of the 353 responses, half said they did not visit the FVRD website for information. 39% of the respondents said they visited the FVRD website to find information including current evacuation orders and alerts, and emergency-related resources.

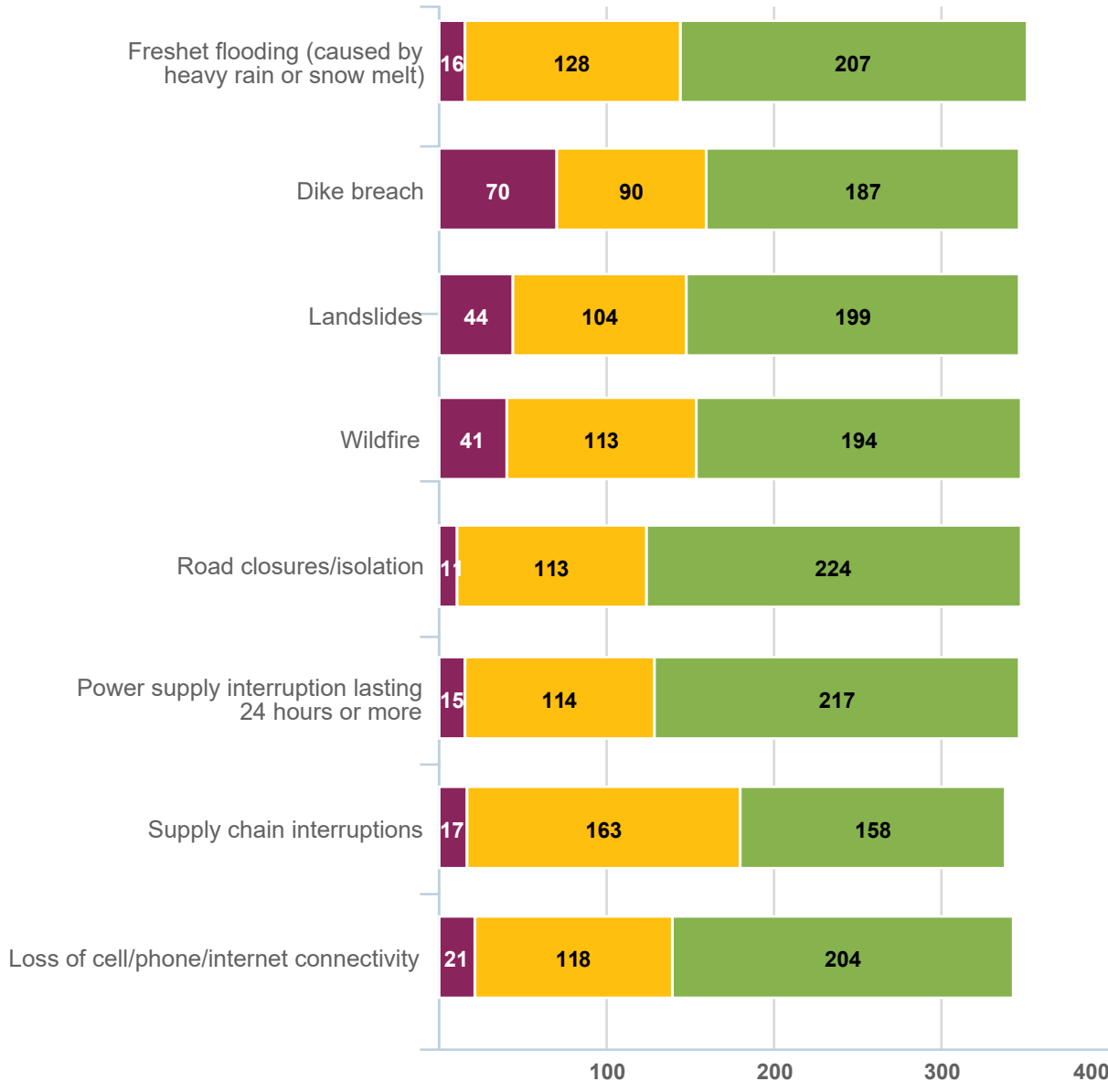
Q18 | How would you rate the following aspects of the FVRD website in communicating information related to the extreme weather and flooding events?



Of the 135 responses to this question:

- » 58% agreed (definitely/somewhat) FVRD website provided helpful information
- » 58% agreed (definitely/somewhat) FVRD website was updated in a timely manner
- » 64% agreed (definitely/somewhat) Information was easy to find
- » 67% agreed (definitely/somewhat) Evacuation orders and alerts were easy to understand
- » 52% agreed (definitely/somewhat) Evacuation orders and alerts provided relevant and timely information

Q19 | Please indicate your level of concern for the following types of events?

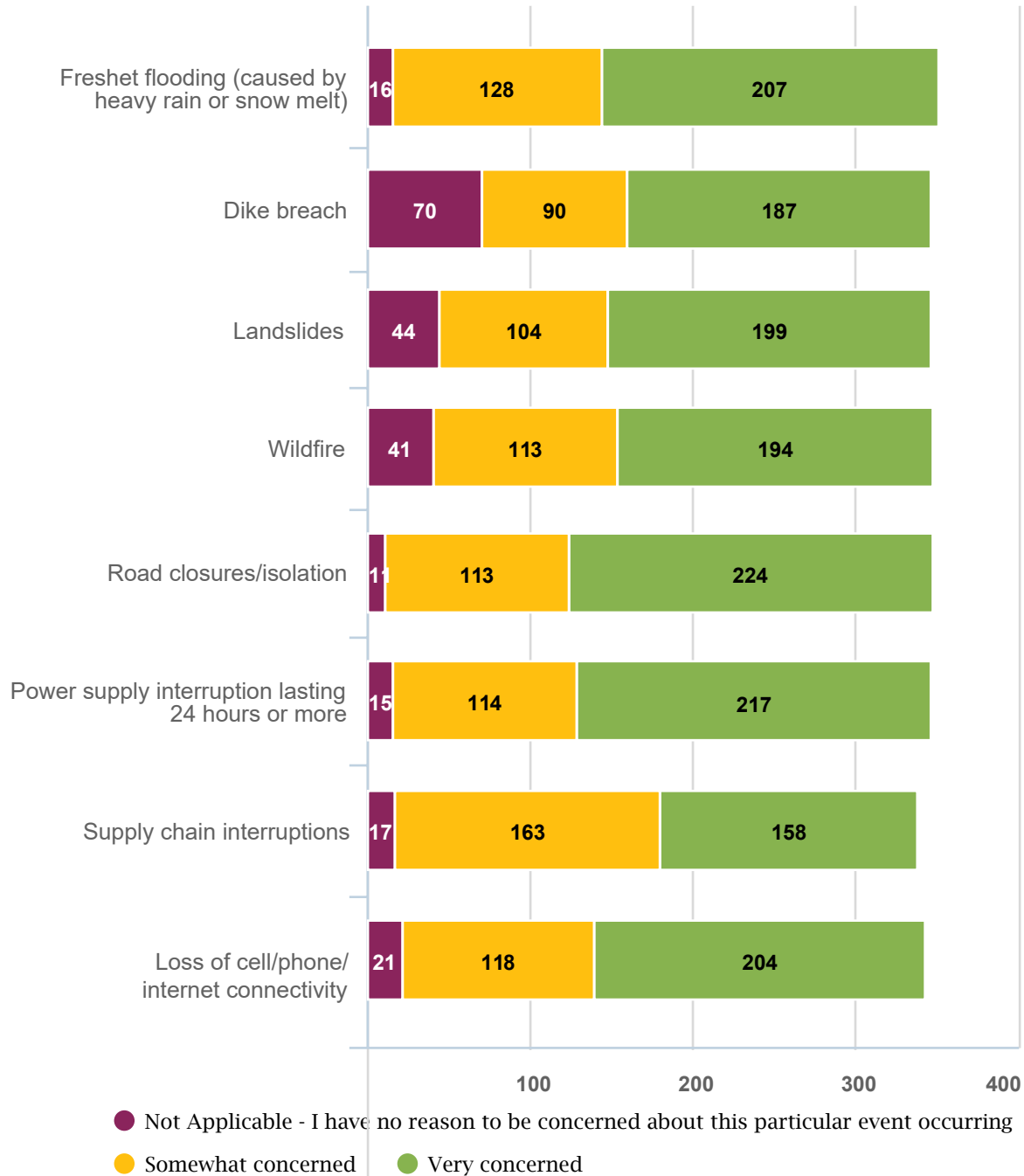


- Not Applicable - I have no reason to be concerned about this particular event occurring
- Somewhat concerned
- Very concerned

There were 354 responses to this questions indicating a high level of concern for other emergency events which could occur in the FVRD.

These events included freshet flooding, dike breach, landslides, wildfire, road closures and isolation, power supply interruption, supply chain interruption and loss of cell/phone and internet connectivity.

Q20 | Please indicate your level of preparedness for the following types of events?



Of the 355 responses to this questions, the majority indicated they were somewhat prepared for potential emergency events which may occur within the FVRD in the future.

These events included freshet flooding, dike breach, landslides, wildfire, road closures and isolation, power supply interruption, supply chain interruption and loss of cell/phone and internet connectivity.

Q21 | We invite you to share any final thoughts regarding your experiences

We received 218 responses to the final, open-ended question on the survey. A number of the comments and concerns raised were related to situations or services that are not the responsibility of the FVRD.

The FVRD will share these concerns and comments with our member municipalities and government agencies. Here are some of the top concerns we heard:

Road conditions, closures and traffic control

- » *Description of what roads were essential/non-essential was confusing*
- » *Major lack of signage around road closures*
- » *Driving and traffic safety on #7 was stressful*

The Ministry of Transportation and Infrastructure (MOTI) has authority over roads and highways in the Fraser Valley. MOTI has contracted responsibility for road maintenance in the Fraser Valley to Emil Anderson Maintenance.

During the first few weeks of the emergency, MOTI and Emil Anderson prioritized their response on the restoration of primary routes. Road interruptions created challenges for first responders in rescues and rural roads were not an immediate priority.

Emil Anderson

Report incidents by calling 1-800-667-5122 or report online at emilanderson.ca/maintenance/report-a-road-hazard

Maintenance of culverts and debris basins

- » *There should be more attention paid to clearing debris from the runoffs at Hatzic Lake*

FVRD has three separate autonomous diking improvement districts, orphan flood protection structures, and extensive undiked lands. Unlike our member municipalities, the FVRD doesn't have its own public works department. We provide dike operations and maintenance, storm drainage, and flood control as local services to certain electoral areas.

Property owners are responsible for driveway access and culverts and should have a plan to monitor and if necessary clear culverts. Emil Anderson (on behalf of MOTI) is responsible for maintaining roadside culverts.

Alertable emergency notifications

- » *Alertable was great but could be fine tuned especially with evacuation alert maps. i.e. map showing evacuation area, but only two residents in that area were directly affected.*

Alertable allowed the FVRD to issue evacuation and alert notices to thousands of residents in a timely manner as hand delivering notices to every area is challenging. The maps in the Alertable app display an area of notification and aren't detailed enough to show specific properties affected by the evacuation order or alert. Alertable notifications linked to the evacuation order or alert on fvr.ca/eoc include property addresses and guidance for residents.

Public Comments

We received a number of comments from the public. On the next page we list some of the steps we will take to improve how we communicate to the public during an emergency. Here are a few comments we heard from the public:

Evacuation Orders and Alerts

- » *Post relevant information, i.e. when could we return home, what steps are being taken and being completed to make returning home possible.*
- » *Better mapping and address information. Example, I thought Wilson Rd Dyke meant here in Yarrow rather than Cultus Lake or Chilliwack Lake, wherever it actually is.*
- » *In future, please try to provide 'official' reports on conditions that are of concern my place of residence.*

FVRD Website

- » *Make it easier to navigate. Simplify. Information needed to be share with those who do not have internet access - especially during SHAW outage - and our vulnerable (senior) population.*
- » *Should be area and community specific pages. Should show dates/times of info/updates. Should have local contacts. Should have more current info and better advance warning.*
- » *The information would be easier accessed and also easier to navigate if there was proper menus or the maps provided with the region's actually labeled roads.*

Comments on Social Media

- » *So many people were posting new information on social media, true and false, it was stressful and difficult to keep track of what was actually happening. The regional district pages had good info but often came later than community posts, causing panic.*
- » *The communication regarding warning, alert & orders was poor. Info was coming through fb quickly and unclear if fact or just paranoid/panicked people.*

A Complex Emergency

- » *I think the FVRD has done a great job with what were an unprecedented, multiple, compounded, complex and widespread emergency situations. I look forward to reading what FVRD believes went right and wrong from your end.*
- » *Weather is getting volatile. We, as a region, as a province need to be interconnected instead of our current state where it's broken up into a patchwork of regions/municipalities that have varying degrees or abilities to respond. One province, one system.*
- » *I didn't expect any of the extreme weather events. It was very shocking experience which might take a long time for recover.*
- » *Everyone did their best to assist a massive effort and emergency. Thank you.*

Next Steps

In the survey we heard your concerns about some of the ways we informed the public during the extreme weather and flooding events. We listened to your feedback and are reviewing our information-sharing practices. Here are a few changes we will put in place to prepare for the next emergency event.

Evacuation Orders and Alerts

- » Review the evacuation order and alert notices to make them easier for the public to read and understand.
- » Improve the frequency of posting evacuation order and alerts and other emergency updates to social media especially to Facebook community groups.

Reporting Incidents in your Community

- » We've developed an online reporting form that will be activated during the next major emergency event for residents to report the location of floods, landslides, and other incidents on their properties. The EOC public inquiry line will also be used.

Website & Social Updates

- » We heard that residents wanted more frequent EOC updates and that evacuated residents didn't understand when they could return home. We'll work to improve the frequency of these updates through our website and social media channels.

Emergency Preparedness

- » The survey showed that residents are concerned about future emergency events and their level of personal preparedness. The public can download useful emergency planning resources and checklists at Preparedbc.ca & Getprepared.gc.ca

Recovery Assistance

- » FVRD's recovery consultant is available to help property owners, renters, small business, farmers and chairitable organizations to find resources. fvr.ca/recovery

Stay Informed

- » Follow us @FraserValleyRD (Twitter, Facebook)
- » Sign up for Alertable emergency notifications at fvr.ca/alerts
- » Find important resources page at fvr.ca/important-resources