



FOREWARNED AND FOREARMED

The Calgary Emergency Management Agency and the 2013 Flood.



Forewarned and Forearmed: The Calgary Emergency Management Agency and the 2013 Flood

Ruben Vroegop

Preface

In late 2013, the City of Calgary, through the Calgary Emergency Management Agency (CEMA), asked The Conference Board of Canada to conduct an independent review of its overall performance during the Southern Alberta floods of earlier that year. To obtain a comprehensive perspective, our researchers interviewed 40 representatives from the public and private sectors, many of whom were present at the CEMA Emergency Operations Centre (EOC) during the emergency or held critical positions across the affected region. In addition, we examined internal documentation and risk assessments, and conducted a literature review that focused on lessons learned from other emergencies. Specific attention was paid to the role played by the CEMA EOC and its level of success in putting those lessons into practice. The EOC had become operational in the fall of 2012.

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Foreword

At the end of October 2013, I visited Calgary for a meeting and took the opportunity to have a stroll around the city. It was nearly impossible to tell that just three months before, the City of Calgary had experienced the worst flood in its entire history. I remembered news footage of entire neighbourhoods under water and I was struck by how quickly the city had recovered. In terms of human casualties, only one death in Calgary was directly attributed to the flood. And despite the rising water's devastating effects, the city still managed to hold its annual Stampede, starting just a day after the state of local emergency (SOLE) had been lifted.

The ability of the City of Calgary to bounce back has been impressive. There are a number of factors that contributed to its resilience: learning lessons from previous disasters; investing in emergency preparedness; and having a good grasp of communications and social media use, a unified leadership, and a strong sense of community. However, what particularly impressed me was the fact that, despite the plaudits that the City of Calgary has received, city officials have asked the question, How can we do better next time? It is this desire to continue improving the city's resilience that led to The Conference Board of Canada carrying out an independent assessment of the city's response to the 2013 flood.

Hindsight always provides an opportunity to see how we can do better. But it is just as important to learn about what we did well and not let those lessons go to waste. The success of the City of Calgary in dealing with the 2013 flood provides a number of lessons in terms of best practices that need to be maintained and can be built upon. There certainly are areas for improvement too, but we have to ensure that we do not erode the solid base that is already in place.

I hope that the best practices and recommendations for improvement in this report will help the City of Calgary to continue building its resilience to a variety of emergencies. Though the report was created for the city specifically, the insights generated could have a much broader impact. Calgary's response to the 2013 flood stands out in terms of what can be achieved in building resilience. Perhaps the lessons learned can help us all build a more resilient Canada.

Dr. Satyamoorthy Kabilan
Director, National Security and Strategic Foresight
The Conference Board of Canada
June 2014

EXECUTIVE SUMMARY

Forewarned and Forearmed: The Calgary Emergency Management Agency and the 2013 Flood

At a Glance

- The City of Calgary's strong Emergency Operations Centre (EOC) capacity and its commitment to continuous training enabled it to effectively manage the flood response. Tying the media into the EOC underlines the media's indispensable role in crisis management.
- Starting recovery immediately and matching its intensity to response efforts forms part of the Calgary Emergency Management Agency (CEMA) model. This was vital to getting Calgary back on its feet and maintaining community support.
- Aspects where CEMA and the City of Calgary should focus attention going forward include augmenting private sector preparedness and developing a comprehensive volunteer framework.

In late 2013, the City of Calgary, through the Calgary Emergency Management Agency (CEMA), asked The Conference Board of Canada to conduct an independent review of its overall performance during the Southern Alberta floods of earlier that year. In June 2013, Calgary had been hit by the most destructive flood in recent memory, costing the city over half a billion dollars in flood repair expenses. With the Bow and Elbow rivers peaking at 1 in 100 and 1 in 500-year flow rates, the massive response and recovery effort tested authorities to their limit.

Over the two-week state of local emergency (SOLE), from June 20 until July 4, CEMA would coordinate and oversee the efforts of 29 business units, 12 external members, 7 invited partners, and some 10,000 city staff. The CEMA Emergency Operations Centre (EOC), which had become operational in the fall of 2012, functioned as a strategic coordination centre. It developed a common operating picture, facilitated personal relationships between stakeholders, and enabled city leadership to speak with one unified voice.

Our research approach for evaluating the City of Calgary's performance during the 2013 flood consisted of three aspects:

1. Review the City of Calgary's performance against the challenges and lessons learned that had been identified in previous large-scale emergencies, such as hurricanes Katrina and Sandy and the Slave Lake/Lesser Slave Lake fires.
2. Analyze the recommendations from the City of Calgary's 2005 flood report and compare these with internal CEMA documentation and media coverage during the 2013 flood.

3. Interview 40 officials from the public, private, and non-governmental organization sectors—many of whom had been present at the EOC during the 2013 flood or held critical positions across the affected region—to develop a broad perspective on the flood response and recovery efforts.

As a result of this approach, our report is structured around five key topics:

1. The Emergency Operations Centre and the Incident Command System (Chapter 2)
2. Crisis Communications (Chapter 3)
3. Social Media¹ (Chapter 4)
4. Volunteerism (Chapter 5)
5. Preparedness and Resilience (Chapter 6)

Chapter 7 of the report identifies best practices and presents recommendations for improvement.

Our report identifies the following eight best practices that the City of Calgary employed:

1. Having a strong EOC capacity is crucial for enhancing strategic coordination, developing a common operating picture, and facilitating line-of-sight communications among stakeholders.
2. The success of tying the media into the EOC underlines the media's indispensable role in crisis management. During the 2013 flood, this enabled CEMA and the City of Calgary to leverage its strong leadership, speak with one voice, and effectively reassure the public.
3. Starting recovery immediately and matching its intensity to response efforts forms part of the CEMA emergency management model. This outcome-focused approach was vital to getting Calgary back on its feet and maintaining community support.²

1 Note that because of social media's distinctive nature, it is treated separately from crisis communications in this report.

2 This stands in contrast to other large-scale disasters that saw much slower recoveries, such as Hurricane Sandy in New Jersey and New York. See Light, *Hurricane Sandy One Year Later*.

4. Working toward the quick repatriation of evacuees and enabling their self-recovery fosters a positive mindset, builds civic pride, and turns the evacuees into responders.
5. Crisis is the mother of innovation, and grassroots organizations, such as YYCHelps, were instrumental during the flood in building “on-the-fly tools” that empowered citizens to clean up their communities. Collaborating with these innovative teams in a flexible fashion can speed up crisis recovery.³
6. The remarkable unity of effort during the 2013 flood was facilitated by all stakeholders working toward a common long-term objective and strong leadership that championed outcomes, transparency, and the public’s immediate needs over bureaucratic process.⁴
7. CEMA’s successful response to the 2013 flood was enabled by a commitment to continuous training and exercising. Although an emergency never unfolds by the book, preparedness puts people two steps ahead once a real emergency scenario starts to unfold.⁵
8. Although quantifying the return on investment for emergency preparedness is difficult, research shows that for flood defence initiatives it can be as high as 8:1.⁶ In light of Calgary’s geographic vulnerabilities and the financial damage incurred during the 2013 flood, continuing investments in preparedness would make for sound risk management.

3 Partnerships with volunteer organizations to spark innovation have been a trending topic in the emergency management community. See Canton, “Are Your Policies.” FEMA’s successful use of field innovation teams (FITs) during the response to Hurricane Sandy in 2012 further underlines the imperative of thinking outside the box. See The National Preparedness Leadership Initiative, *Hurricane Sandy*, 5.

4 In this regard, the response in Calgary stands in contrast to those in New Orleans (Hurricane Katrina) and New York and New Jersey (Hurricane Sandy). Also see Munn-Venn and Archibald, *Tough Times in the Big Easy*.

5 The crucial nature of preparedness and training was most recently acknowledged by Harvard University in its after action review of the 2013 Boston Marathon bombings. See Leonard and others, *Why Was Boston Strong?*

6 The United Kingdom Environment Agency, *Flood and Coastal Risk Management Outcome Measures*. Note that this source, like this report, uses a broad definition of the term *preparedness* that includes mitigation efforts.

Our report makes the following five recommendations:

1. To ensure an effective crisis response, EOC officials need to have strong, pre-existing relationships that go beyond a single point of contact. The EOC also needs to enhance communications on why certain agencies are brought in, what their mandate is, what they bring to the table, and what they can and cannot do.
2. Information flows with the province need to be further calibrated in terms of municipal versus provincial crisis responsibilities. A better information-sharing conduit with the private sector on available resources is also recommended.⁷ In terms of the EOC communicating with the field, equipping front-line staff with smart phones would enable them to use information in a wider variety of formats.
3. The City of Calgary should continue to advance private sector preparedness through business education and the formalizing of business continuity plans (BCPs) and emergency response plans (ERPs). Although most companies engage in some form of business continuity planning, substantial differences exist between them and crucial information, such as points of contact, is often missing.
4. The City of Calgary should move ahead with developing a comprehensive volunteer framework that can build a skill inventory and ensure that it matches people's skill sets with the right jobs. This does not mean that the city should control the volunteering process; rather, it should frame the process for optimal use. Authorities are currently looking at options for building a volunteer network.
5. The City of Calgary should further prioritize the mental health and well-being of EOC officials and first responders. During the flood, frayed nerves, "tired personalities," and extreme stress had a negative impact on the overall work environment. This recommendation was first made in the 2005 after action report.⁸

7 2005 Report Recommendation #26. Internal CEMA documentation.

8 2005 Report Recommendation #4. Internal CEMA documentation.

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CHAPTER 1

Introduction

Chapter Summary

- In late 2013, the City of Calgary asked The Conference Board of Canada to conduct an independent review of the city's overall performance during the Southern Alberta floods of earlier that year. Our research approach consisted of analyzing internal Calgary Emergency Management Agency (CEMA) documentation, researching lessons learned during previous large-scale emergencies, and interviewing senior officials who held critical positions across the affected region.
- During the 2013 flood, CEMA coordinated and oversaw the efforts of some 10,000 city staff. CEMA and its agency members also managed the full or partial evacuation of 32 communities, representing about 80,000 citizens, within a 15-hour period.
- Under the terms of the provincial *Emergency Management Act* and the City of Calgary emergency bylaw, CEMA coordinates stakeholders in all phases of emergency management through a Comprehensive Emergency Management Model. This model sets out a foundation of preparedness combined with a mindset that assigns the same urgency to the recovery phase as to the initial response.

The Emergency Context

The watersheds around the City of Calgary often see heavily saturated soil conditions during the month of June as a result of precipitation and snowmelt. However, the 200 millimetres of rain that fell in the Bow River watershed and the almost 300 millimetres in the Elbow River and High River watersheds between June 19 and June 22 contributed to the rapid melting of a relatively high snowpack that had accumulated over the winter. The convergence of heavy rains, melting snow, and the ensuing saturated soil created ideal conditions for widespread flooding in Calgary and Southern Alberta.¹ (See Exhibit 1, and charts 1 and 2.)

Although most Calgarians remember the 2005 flood, the events of late June 2013 were of a different magnitude. Following flood warnings by Environment Canada and alarming reports from the utilities company TransAlta in the early hours of June 20, Calgary Emergency Management Agency (CEMA) personnel staffed the Emergency Operations Centre (EOC) at around 2:00 a.m., activated the Municipal Emergency Plan (MEP) at 8:28 a.m., and declared a state of local emergency (SOLE) at 10:16 a.m.

The early hours of the emergency saw such rapid increases in water level estimates that they at times had to be adjusted upward before they could be acted upon, thereby challenging the timely evacuations of communities. Over the next several days, Calgary was hit by the most destructive flood in recent memory, costing the city over half a billion dollars in flood repair expenses.² With the Bow and Elbow rivers peaking

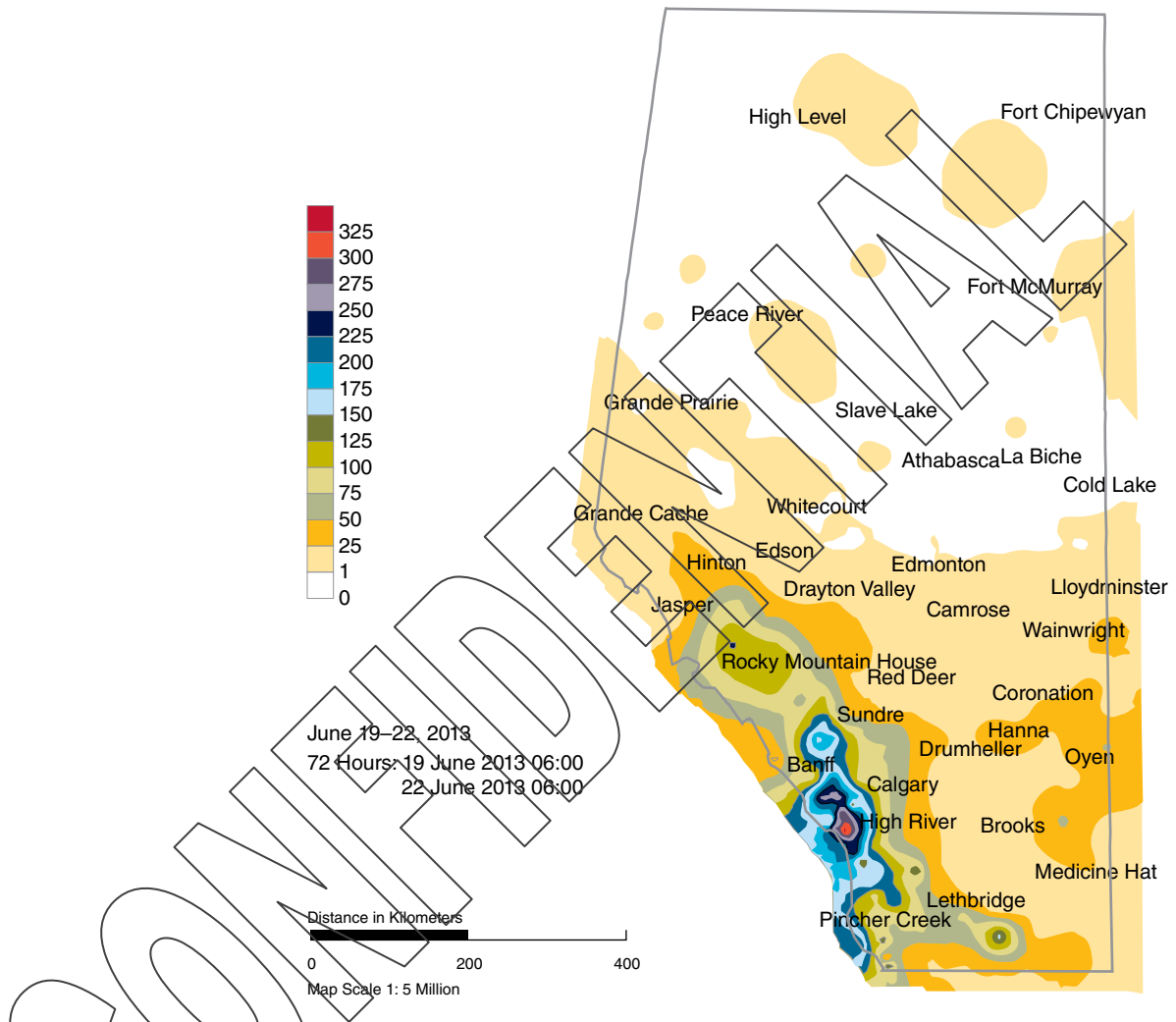
1 Internal CEMA documentation.

2 Dormer, "Calgary Flood Costs."

Exhibit 1

Precipitation Map for Alberta, June 19–22, 2013

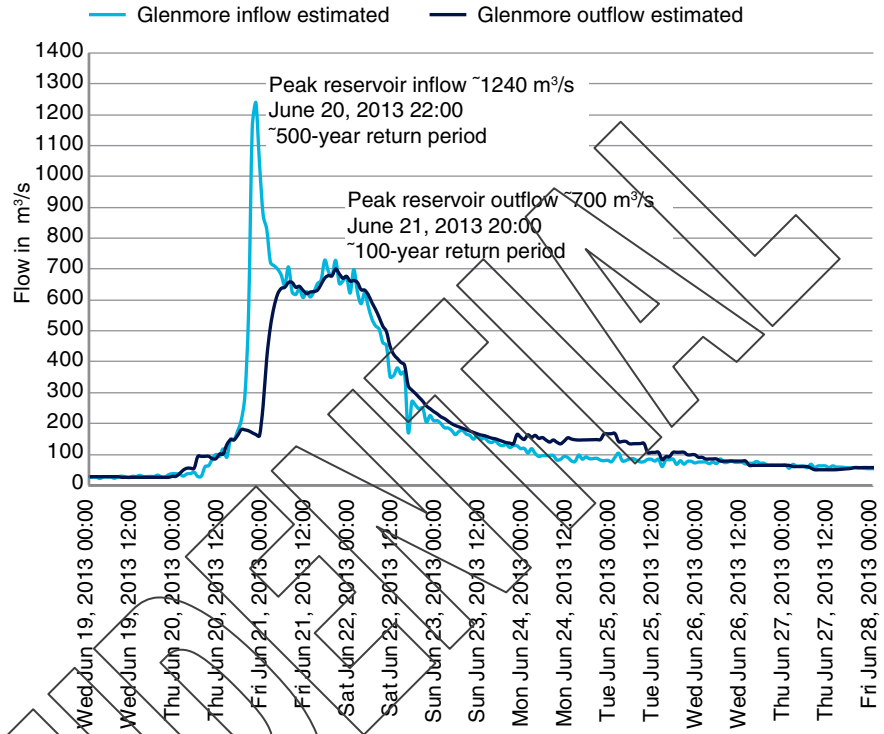
(contour interval 25mm)



Source: Alberta Environment and Sustainable Resource Development.

at 1 in 100 and 1 in 500-year flow rates, the massive response and recovery effort tested authorities to their limit. Exhibit 2 shows details of the flood, the fallout, and the response.

Chart 1
June 2013 Flood Event Hydrograph—Elbow River at Glenmore Dam



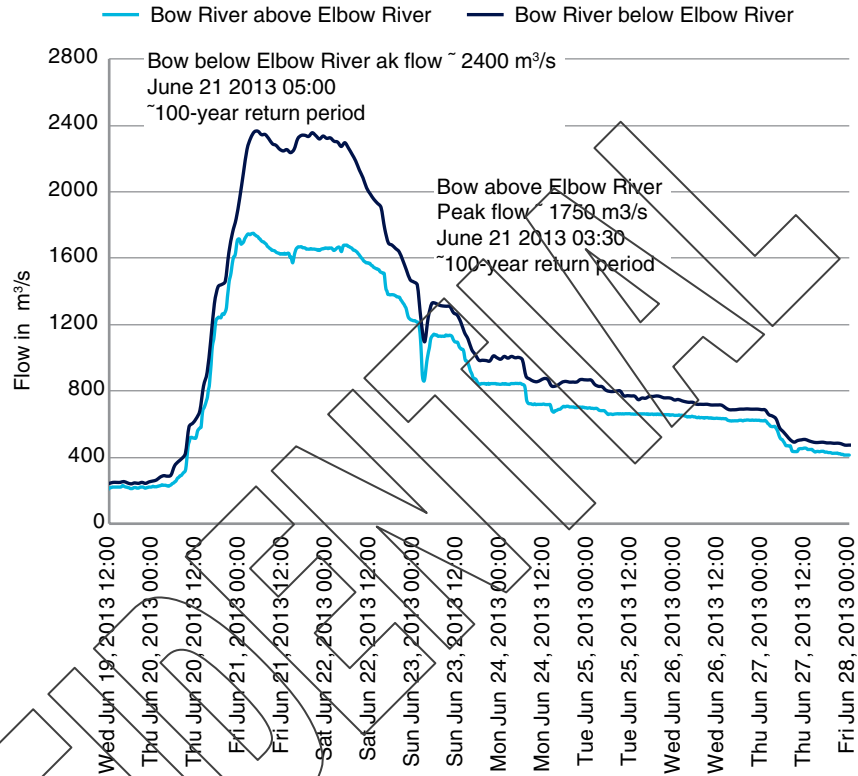
Note: The presented data has yet to be verified by external sources and must therefore be treated as preliminary in nature and subject to change. Due to the preliminary nature of the data, this information cannot be relied upon and is not being warranted or confirmed by the City of Calgary.
Source: CEMA.

Over the course of the SOLE, CEMA would come to coordinate and oversee the efforts of 29 business units, 12 external members, 7 invited partners, and some 10,000 city staff during the response to this unprecedented challenge. CEMA and its agency members also managed the full or partial evacuation of 32 communities, representing about 80,000 citizens, within a 15-hour period, and the Calgary Fire Department performed over 400 water rescues within the first day following the evacuation notice.³

3 In contrast, note that during the 2005 flood, approximately 1,500 citizens were evacuated. CEMA internal documentation. See also Dippel, “City Report Breaks.”

Chart 2

June 2013 Flood Event Hydrograph—Bow River

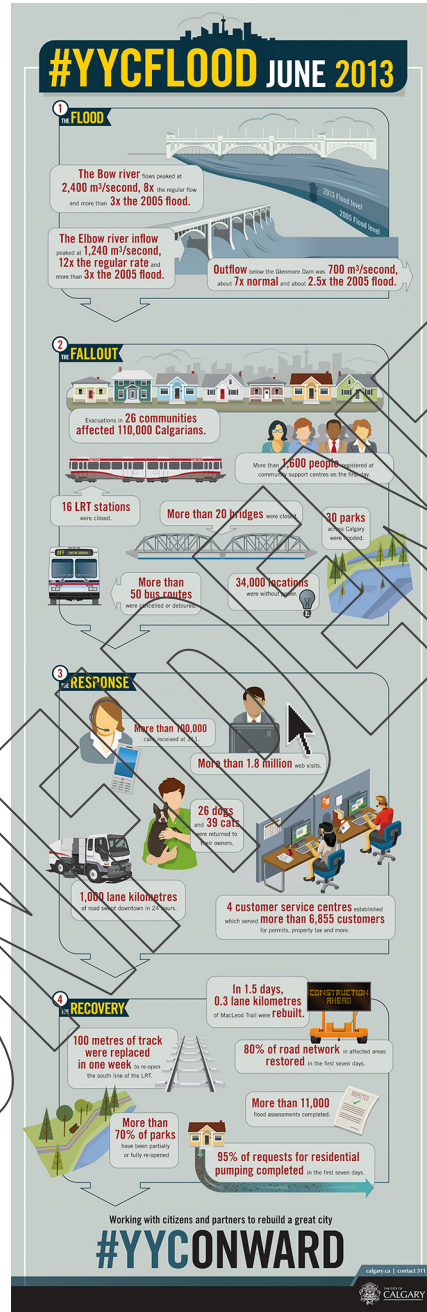


Note: The presented data has yet to be verified by external sources and must therefore be treated as preliminary in nature and subject to change. Due to the preliminary nature of the data, this information cannot be relied upon and is not being warranted or confirmed by the City of Calgary.
Source: CEMA.

Rationale

In late 2013, the City of Calgary, through the Calgary Emergency Management Agency, asked The Conference Board of Canada to conduct an independent review of its overall performance during the Southern Alberta floods of earlier that year. In collaboration with CEMA representatives, who functioned as liaisons and ensured full access to documentation, the Conference Board interviewed key officials and examined internal documentation and risk assessments. We also

Exhibit 2
Flood Overview: City of Calgary Infographic



Source: City of Calgary.

conducted a literature review that focused on lessons learned from other emergencies such as the Calgary flood of 2005, New Orleans' experience with Hurricane Katrina in 2005, the Slave Lake/Lesser Slave Lake Fires of 2011, New York City's experience with Hurricane Sandy in 2012, and the Boston Marathon bombing of 2013.

Specific attention was paid to the role played during the flood by the CEMA Emergency Operations Centre and its level of success in putting into practice lessons learned in previous crises. The EOC had become operational in the fall of 2012. To obtain a comprehensive perspective of the response efforts, the Conference Board interviewed 40 representatives from the public and private sectors, many of whom had been present at the EOC during the emergency or held critical positions across the affected region.

Scope

As the repercussions of the June 2013 flood are still being felt across the City of Calgary, and indeed the Province of Alberta, it was not feasible to conduct an exhaustive evaluation of the entire crisis and its impacts. As such, this report limits itself primarily to the two-week state of local emergency that was announced on June 20, 2013, and ended July 4, 2013.⁴ This is not to say that events outside this period were ignored; many of the observations, challenges, and recommendations incorporated in this report speak to aspects across the different phases of the emergency.

The author also wishes to emphasize that the geographical focus of this report reflects our mandate for the project. Calgary's overall experience during the flood was markedly different from that in other parts of Alberta. We are mindful of the destruction the floods caused in the greater Province of Alberta—which resulted in a 55,000-square-kilometre disaster zone and an estimated overall cost exceeding \$1.7 billion in

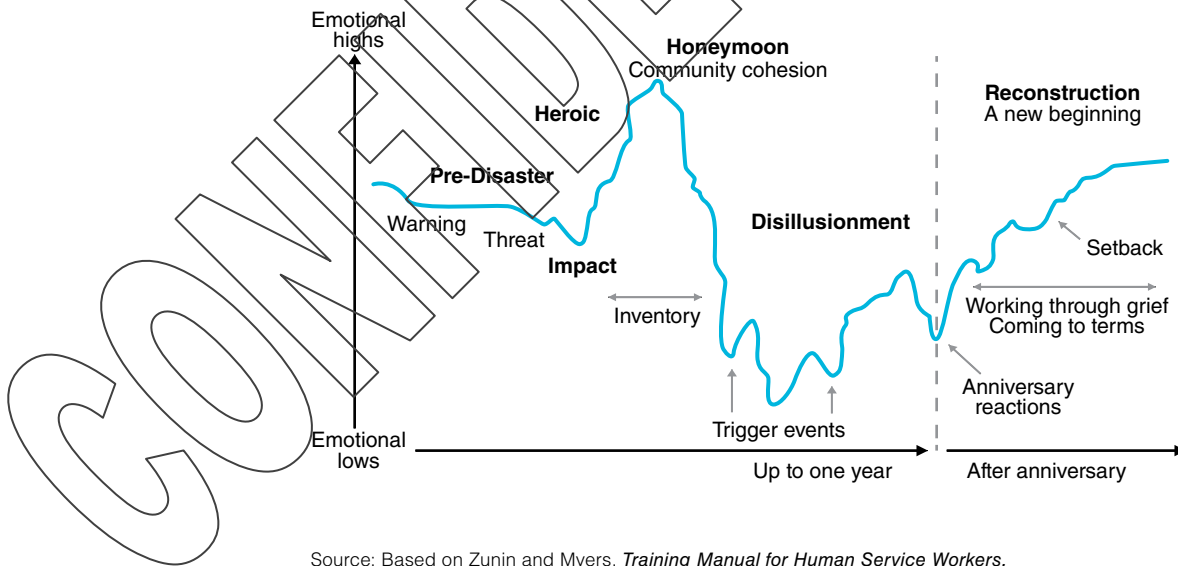
⁴ During the flood, the CEMA EOC was activated from June 20 until July 7, 2013.

insurable damages.⁵ It is not our intent to downplay or deflect attention away from the needs of those areas that were much more profoundly affected than Calgary.

Timing

Large-scale disasters create a constantly changing, emotionally charged, and politically challenging context that emergency management professionals must navigate during the response. However, even in the wake of an emergency, the wider context is never value neutral. Much has been written in academic terms about the various phases that the public goes through during a crisis, and some researchers believe that emotional reactions have predictable patterns, as illustrated by Exhibit 3.⁶

Exhibit 3
The Phases of a Disaster



Source: Based on Zunin and Myers, *Training Manual for Human Service Workers*.

- 5 Insurance Bureau of Canada, "June Alberta Floods Are Costliest."
- 6 See McMahon "The Psychology of Disaster," for a good overview of the phases mentioned.

For example, the immediate aftermath of a disaster can be characterized as a honeymoon period that sees increased community cohesion as a result of the altruism shown by responders and everyday citizens alike. However, as the new normal sets in and the full impact of the disaster becomes clear, certain trigger events can expose new frustrations and disillusionment. Calgary is no different, as the collaborative mindset that caused such an emotional high has shown recent signs of fracture. One example is the issue of civic leaders questioning the overtime pay for city management during the flood.⁷

Emotional patterns aside, the timing of a review of any disaster is critical for another reason. Although an early snapshot may paint too optimistic a picture, waiting too long could see the energy and lessons learned during the emergency go to waste. With the first anniversary of the Southern Alberta floods at hand, the timing of our interviews in January to March of 2014 ensured that officials have had time to consider outstanding areas for improvement with the event still fresh in their memories.

The Calgary Emergency Management Agency

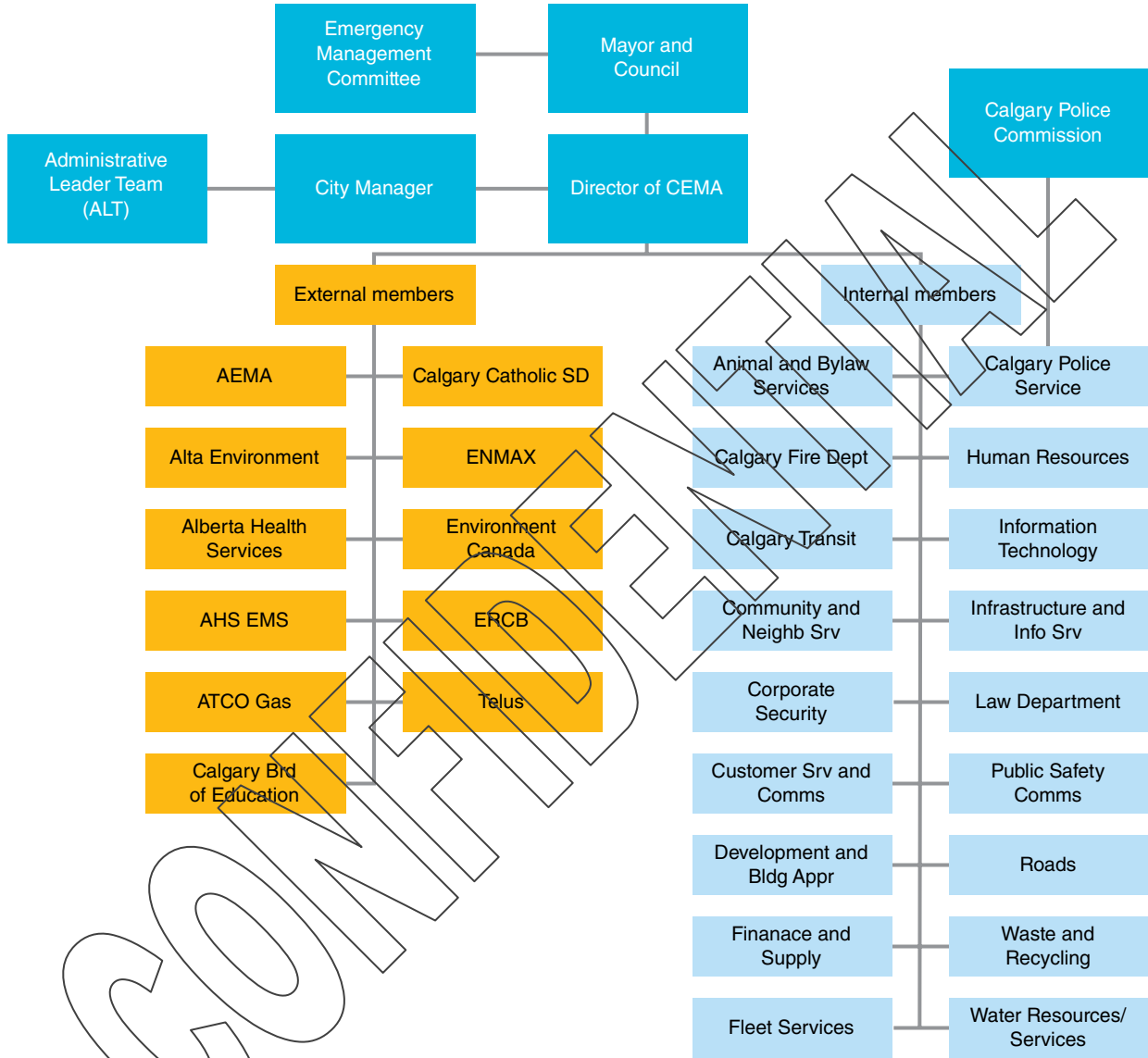
In the event of an emergency or crisis situation, the Calgary Emergency Management Agency's role is to facilitate the coordinated response and communication efforts of multiple agency members and external partners. CEMA also provides various levels of support and direction in the preparedness and mitigation of potential risks in Calgary.

CEMA was formed as a result of Section 11.2 of the Province of Alberta's *Emergency Management Act*, which directs that a municipality will establish an emergency management agency to act as the agent of the local authority in exercising the local authority's powers and duties under the Act:

There shall be a Director of the Emergency Management Agency, who shall prepare and co-ordinate emergency plans and programs for the municipality; act as director of emergency operations on behalf of the

7 Markusoff, "Thorny Overtime Report."

Exhibit 4
Governance Structure During MEP Activation



Source: CEMA internal documentation.

emergency management agency; co-ordinate all emergency services and other resources used in an emergency; and perform other duties as prescribed by the local authority.

CEMA's roles and responsibilities flow from the Municipal Emergency Management Plan, the main policy document that identifies when and how a state of local emergency is declared. An activation of the MEP shortens the chain of command and has the director of CEMA, designated by the City of Calgary as the fire chief, directly reporting to the mayor and council. As per Emergency Management Bylaw #25M2002, CEMA membership comprises appointed members and those invited by the director. The governance structure during a MEP activation is illustrated in Exhibit 4.

Methodology

Our research approach for evaluating the City of Calgary's performance during the 2013 flood consisted of three aspects:

1. Review the City of Calgary's performance against the challenges and lessons learned that had been identified in previous large-scale emergencies, such as hurricanes Katrina and Sandy and the Slave Lake/ Lesser Slave Lake fires.
2. Analyze the recommendations from the City of Calgary's 2005 flood report and compare these with internal CEMA documentation and media coverage during the 2013 flood.
3. Interview 40 officials from the public, private, and non-governmental sectors—many of whom had been present at the EOC during the 2013 flood or held critical positions across the affected region—to develop a broad perspective on the flood response and recovery efforts.

It should be noted that the interviewees spoke with our researchers on the condition of strict non-attribution, to ensure that candid opinions could be shared. Questions ranged from the effectiveness of the CEMA EOC as an information fusion centre and the delineation of roles and responsibilities between stakeholders to social media, volunteerism, and

future challenges. An overview of interviewees is included in Appendix A. As a result of this approach, our report is structured around five key topics:

1. The Emergency Operations Centre and the Incident Command System (Chapter 2)
2. Crisis Communications (Chapter 3)
3. Social Media⁸ (Chapter 4)
4. Volunteerism (Chapter 5)
5. Preparedness and Resilience (Chapter 6)

Chapter 7 of the report identifies best practices and presents recommendations for improvement.

CEMA held an internal flood debriefing in October 2013 and has processed and incorporated the outcomes in its own after action review. This report should be regarded as a complementary, fully independent review at the strategic level. Its objective is not merely to point out challenges, but also to emphasize lessons that can be drawn from the successful aspects of the response.

The CEMA Model

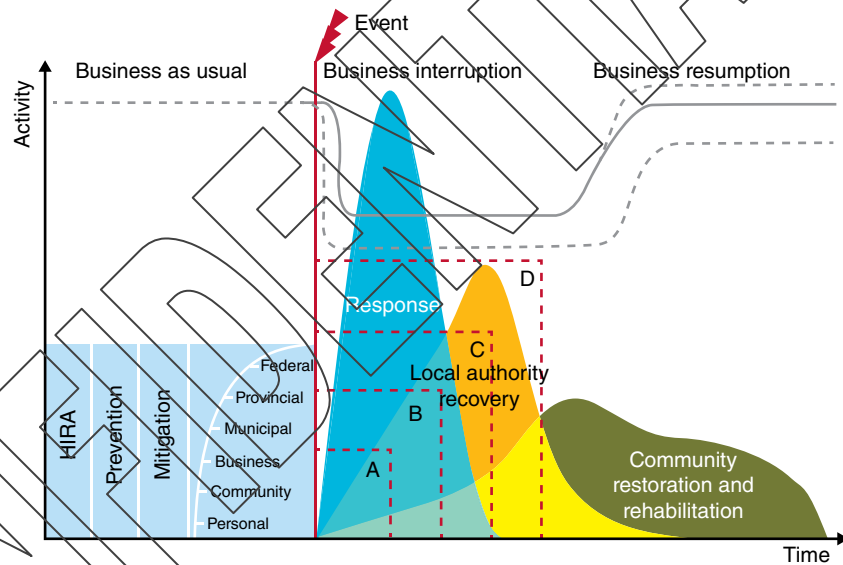
Under the terms of the provincial *Emergency Management Act* and the City of Calgary emergency bylaw, CEMA coordinates stakeholders in all phases of emergency management through a comprehensive emergency management model. This all-hazards model was refined in-house to coordinate the efforts of all those involved, including internal CEMA staff, other City of Calgary employees, and external members and invited partners. Especially during a large-scale emergency such as the 2013 flood, this means that the EOC will house a substantial number of officials. The significantly larger footprint of the

8 Note that because of social media's distinctive nature, it is treated separately from crisis communications in this report.

new CEMA EOC building, which had only been fully operational for several months when the 2013 flood hit, reflected this rationale.⁹

The CEMA model depicted in Exhibit 5 sets out a foundation of preparedness combined with a mindset that assigns the same urgency and 24-hour operational cycle to the recovery phase as to the initial response. A reflection of this during the 2013 flood was that a recovery operations centre (ROC) was up and running two days into the emergency.

**Exhibit 5
Comprehensive Emergency Management Model**



Source: CEMA.

The CEMA model is guided by a hazard identification and risk assessment (HIRA) approach. It considers all the hazards to which the City of Calgary is exposed, how frequently they occur, which ones pose the greatest threat, and

9 For example, the 2013 flood saw the EOC call on a total of 15 external members and 9 invited partners.

their potential impacts on city communities and infrastructure.¹⁰ This risk-based approach is generally adopted across the emergency management field and assists decision-makers in identifying the scenarios that need to be planned and, ideally, trained for.¹¹

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10 Internal CEMA documentation.

11 Ontario, for example, also adopts the HIRA process. See www.emergencymanagementontario.ca/english/emcommunity/ProvincialPrograms/hira/hira.html.

CHAPTER 2

The Emergency Operations Centre and the Incident Command System

Chapter Summary

- The functioning of the Calgary Emergency Management Agency's (CEMA's) Emergency Operations Centre (EOC) during the flood underlines the value of investing in preparedness, joint training, and exercising. This message needs to be reaffirmed to ensure lessons learned from the flood do not fade.
- The EOC greatly enhanced situational awareness as well as the personal relationships between EOC stakeholders. That said, external partners would benefit from a more formal process to identify newly arrived agencies and their mandates and roles.
- Not all stakeholders recognized how the state of local emergency (SOLE) affected CEMA's authority, and confusion arose over resource allocation control. Some officials were reluctant to cut through bureaucratic processes, even if doing so potentially meant speeding up the response.
- The CEMA EOC moved toward a modified incident command system (ICS) model during the crisis. Although this "on-the-fly" change created confusion in terms of operational responsibilities, it also effectively shortened communication lines and enabled a faster response.

“We used to work with flashlights; the new EOC permanently turned on the light.”

Emergency Operations Centre Background

Emergency operations centres are typically set up as multi-agency coordinating bodies in which elected and senior officials coordinate emergency responses at a strategic level. Particularly during major crises, the EOC enables decision-makers to develop a common operating picture and coordinate resource requests and policy decisions across the affected area. An important distinction here is that an EOC is not intended to make tactical decisions: this is traditionally left to a field incident commander who has a better view of the situation on the ground.

EOCs come in a large variety of sizes, depending on their geographic area of responsibility and decision-makers' perceptions of the local threat environment. In other words, bigger, more disaster-prone municipalities generally have better-equipped EOCs. But considering their costly nature, the political impetus for the required funds can often be found only on the back of a crisis.

Emergency Operations Centre (EOC)

A location from which centralized emergency management can be performed. EOC facilities are established by an agency or jurisdiction to coordinate the overall agency or jurisdictional response and support to an emergency.

Source: Blanchard, "Guide to Emergency Management," 363.

Although a crucial aspect in any large-scale crisis response, the academic literature on EOC design and operation in emergency management is surprisingly sparse.¹ This is likely indicative of EOCs being dependent on their environments, in terms of both fiscal environment and risk tolerance. Since no single design or set-up works for every municipality, there is little purpose in fully emulating what has been done elsewhere. For the City of Calgary, CEMA aimed to improve on a response and recovery model that would position it ahead of what was available elsewhere in the country.² In other words, it can be argued that with the new EOC, CEMA was writing the book on what a well-equipped EOC would look like and be capable of.

The CEMA EOC

The CEMA EOC became a reality as a result of Calgary's experience during the 2005 flood, which raised the need for the city to enhance its ability to coordinate a major emergency response. Recommendations in the 2005 after action report cited a need to construct an EOC with a larger footprint and with distinct Command, Operations and Media Rooms to maximize their usage and functionality.³

Before this increase in committed resources, CEMA was a smaller organization staffed mainly by firefighters. According to the vast majority of interviewees, CEMA's EOC would have been insufficient to deal with the 2013 flood. Following the 2005 flood, not only were senior CEMA leadership given a mandate to improve the city's emergency management model, but new legislation also provided them with increased authority during a crisis, mitigating any potential political interference and clarifying leadership and accountability.

1 See Neal, "Four Case Studies of Emergency Operations Centers," 29.

2 City of Vancouver interview #1.

3 2005 report recommendations #18 and #21. Internal CEMA documentation.

Picture of CEMA EOC
Source: CEMA.



At a cost of over \$50 million and roughly three times the size of the previous set-up, the new CEMA EOC did not receive all of its funding from the Calgary Fire Department. A substantial part was provided by other business units to support their operations in the facilities through collaborative partnerships.⁴ Given that it co-locates City of Calgary IT infrastructure, its 911 backup system, and a modern media centre, a single EOC building also represents significant costs savings. Whether through an admirable case of foresight or through sheer luck, the EOC did not sit idle for long and saw several smaller-scale activations before it was pushed to its limit during the 2013 flood.⁵

An often-heard observation about the CEMA EOC during the interviews is also one of the most straightforward: not only is it better equipped, both in technological and physical aspects, but it is also big enough to

- 4 First responders interview #1. The CEMA EOC was also supported by several tactical operations centres across town. Examples include the Emergency Water Operations Centre (H2OC), the Police Tactical Operations Centre, the Fire Department Tactical Operations Centre, the ENMAX Electrical Event Command Centre, and the Roads Operations Centre.
- 5 Note that prior to the 2013 flood, several officials within the City of Calgary voiced concern about the funding requests made by CEMA. City of Calgary interview #4.

host all partners as well as a significant media presence.⁶ This meant that, compared with the previous EOC, facilitating situational awareness and information flows with critical stakeholders and subject matter experts became more clear-cut.⁷

On a practical level, having designated breakout spaces, media briefing rooms, and areas where people could take a break from the pressure cooker environment of an EOC was vital. This sounds obvious, but it is a notable contrast with emergency sites in smaller communities where this had to be built on-the-fly, as was the case during the 2011 Slave Lake/Lesser Slave Lake fires.⁸ From one outsider's perspective, the information-sharing capacity of the new building has become a strong incentive to have a seat at the EOC.

Leveraging People ...

There was widespread agreement about the EOC's central and positive role in streamlining processes and building interpersonal relationships between stakeholders. This did not happen overnight, however. CEMA had been running a significant number of exercises, training events, and emergency scenarios as far back as 2009, underlining the fact that developing emergency management expertise takes considerable commitment.

Since the new EOC opened in October 2012, CEMA has provided training for 312 agency members, with two exercises, among its many, focusing specifically on large-scale flooding scenarios. As a result of this type of training and exercises, CEMA and private sector officials were generally well-integrated and prepared for the 2013 flood. It should be mentioned that the value of training together and the level of sustained

6 In fact, some interviewees noted that the massive scale of the flood almost made the new EOC too small and that "every square inch" of the building was being used, including its outdoor space.

7 One interviewee compared the method of triaging issues to the game of "whack-a-mole."

8 Another example would be High River, Alberta, during the 2013 flood, which saw virtually all critical infrastructure wiped out by the emergency.

investment required does not apply only to natural disasters; it has also been confirmed in the wake of other types of emergencies, such as terrorism.

The Value of Training: The 2013 Boston Marathon Bombing

“ Boston Strong was not a chance result. It was, instead, the product of years of investment of time and hard work by people across multiple jurisdictions, levels of government, agencies, and organizations to allow command-level coordination and effective cooperation among agencies. Great effort had been expended in professional training, experience, discipline, and leadership development within the individual organizations and disciplines involved in the event.”

Source: Leonard and others, *Why Was Boston Strong?* 32.

The importance of working in close physical proximity is obvious. Working from the same picture, knowing who to (physically) turn to, and building group cohesion is vital to expediting an emergency response. As one agency representative put it, the EOC was the glue that allowed CEMA to avoid turf wars, speak with a goal-oriented voice, and manage a collection of highly competent, highly opinionated, type-A professionals.⁹

However, considering the scope and duration of the emergency, the primary points of contact were not always present at the EOC. This meant that informal communication flows deteriorated at times because newcomers to the EOC did not know who was who in the zoo.¹⁰ A recommendation would be to make identifying newly arrived agencies part of the situation report (or sitrep) process, to clearly indicate why the agency has been called in, its mandate, and its points of contact or

9 NGO and not-for-profit interview #7.

10 NGO and not-for-profit interview #6.

liaison officers for the duration of the crisis. Some officials also noted that City of Calgary officials at times lacked a full understanding of the mandate and resources that newly arrived agencies brought to the table.¹¹ This echoes a recommendation made in the 2005 after action report that underscored the need for all those present at the EOC to understand each other's roles, responsibilities, and authorities.¹²

This aspect will also be discussed in Chapter 3.

... And Leveraging Technology

CEMA also leveraged the EOC's technology to ensure that everyone was working from the same strategic picture. First responders, such as the Calgary Police Service and the Calgary Fire Department, were able to exchange information instantly and could rely on geographic information system (GIS) maps to deliver an overview of the crisis on display screens. One interviewee compared the EOC's contributions to improving situational awareness to the difference between a light bulb and a flash light. Whereas in previous emergencies, each stakeholder got only a narrow glimpse of the entire crisis, the use of the technology embedded in the EOC ensured the light was on all the time. The EOC's mapping ability successfully followed up on another 2005 after action report recommendation.¹³

While the overall use of technology by the EOC was impressive, two observations warn about the pitfalls of becoming too reliant on it. First, not all software platforms worked up to expectations. CEMA's Incident Management System (IMS), which is part of the Calgary Emergency Management System (CEMS), failed early on during the emergency, thereby requiring staff to switch to documenting and recording proceedings manually. Several interviewees mentioned that, although CEMA staff adapted quickly when technology became unavailable, some

11 First responders interview #8

12 2005 Report Recommendation #11. Internal CEMA documentation.

13 2005 Report Recommendation #38: "Increase mapping and presentation capability by providing electronic display boards and large format printer within the EOC." Internal CEMA documentation.

information may not have been properly logged as a result of the system breakdown. The software's complexity also made it difficult to quickly train officials who were unfamiliar with it.

Second, issues arose around relaying the common operating picture to front-line operators, as they did not have the same technological capabilities.¹⁴ In some instances, this meant that the CEMA EOC was too far ahead compared with responders, thereby creating a frustrating experience for on-site responders. To ensure that front-line staff can effectively use EOC information, it is recommended that they be equipped with appropriate technology such as smart phones. CEMA identified both of these issues during its flood debriefing and is working to address them.

Developing and Controlling the Plan

Another aspect that contributed to a coordinated response effort was the EOC owning both the development *and* the control of the overall plan. In previous emergencies, coordinating bodies often lacked the latter ability. This meant that they could, for example, request the fire department to respond to a specific issue, but could not control the resources involved. Although the new plan gave the EOC an effective handle on resource allocation and cut down the bureaucratic process, it also meant that some officials, especially those who were handing over resources to CEMA, were unsure about how their roles or responsibilities were affected.

This indicates a need for CEMA to ensure that all those involved at the EOC are aware pre-disaster of how their mandates, roles, and responsibilities are affected when an emergency triggers a SOLE and

14 The EM-COP software used by the EOC, for example, could not produce maps for field use.

activation of the MEP.¹⁵ Considering that many of the aspects discussed here flow from the EOC operating structure, we need to examine the use of the incident command system (ICS) during the emergency.

“The incident command system brought order to the chaos”

Using ICS principles generally facilitates a common understanding between officials at the EOC and on-site responders. During the flood, CEMA also used ICS principles to provide its EOC with a management-by-objective structure that complemented the outcome-focused leadership style championed by both the Mayor’s Office and CEMA executives. ICS is widely adopted not only across the City of Calgary but also by a number of private sector companies, particularly those in the oil and gas sector. This generally meant that most invited officials had had some ICS training, which enabled their integration into the CEMA EOC.¹⁶

The Incident Command System in Short

The incident command system (ICS) is a standardized, on-scene, all-hazards incident management approach that:

- allows for the integration of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure;
- enables a coordinated response among various jurisdictions and functional agencies, both public and private;
- establishes common processes for planning and managing resources.

Source: U.S. Federal Emergency Management Agency (FEMA).

15 This includes the increase in CEMA authorities, but also aspects that remained unchanged. For example, Calgary Police Service and Canadian Forces officials noted that the EOC lacked full understanding of how the law precluded them from engaging in certain actions, such as forced evacuation, regardless of whether or not a SOLE was in place.

16 Several interviewees argued that ICS presents a good opportunity for cross-training CEMA and private sector staff that could break down organizational stovepipes and ensure common training standards.

According to internal documentation, CEMA invoked the use of a customized ICS approach following a realization by the EOC manager on the second day of the emergency that the scope of the crisis and the lack of a single incident site necessitated a change in set-up.¹⁷ In addition, the sheer number of stakeholders involved had made a timely sitrep process—where every business unit would speak to give an update—impossible.

To shorten communication lines and speed up the overall process, CEMA decided to only have strategic sections such as Planning and Operations provide general status updates during sitreps and subsequently allow business units and subject matter experts to split off into smaller, more nimble working groups.¹⁸ As a direct result, the EOC had a reporting and updating process that was considerably faster than those observed in previous emergencies, such as the 2011 Slave Lake/ Lesser Slave Lake fires.¹⁹

Inside the EOC
Source: CEMA



- 17 Internal CEMA documentation shows that this change was made on June 22 at 3:03 p.m. (MST).
- 18 Planning and Operations are two of the five sections of a typical ICS structure. The others are: Command, Logistics, and Finance/Administration.
- 19 First responders interviews #2 and #3.

According to some interviewees, a drawback of invoking a more rigid ICS structure meant that, without a comprehensive sitrep at which all business units spoke, some stakeholders experienced a diminished situational awareness. It also caused some confusion about organizational responsibilities, especially among those outside the CEMA inner circle. This in part reflects the fact that under ICS, an official's role can differ substantially from his or her regular activities, necessitating an amount of flexibility for both those acquiring new authority and those surrendering it.²⁰

Moreover, competing command structures at times saw officials torn between their flood role and their regular role. Several interviewees stated that this was the case for Calgary Police Service officials at the EOC, who experienced difficulties coordinating their responsibilities under ICS with their internal Gold/Silver/Bronze command structure. That said, considering police officers still fall under the *Police Act* when embedded in the ICS structure of the EOC, the inevitable complications of needing to work within two different command structures needs to be recognized.²¹

Another issue concerns the EOC's decision-making process, which was reported by some as micro-managing and being overly operationally focused instead of coordinating at the strategic level. This is understandable given that ICS is first and foremost designed to be used at a tactical field coordination point instead of at a headquarters. Other operations centres around town voiced frustration that they had little clarity or feedback on what CEMA decisions were trying to achieve or where the exact lines of operational responsibility ran.

This was also clear from instances during the emergency where tactical operations centres felt they were being leapfrogged because CEMA's EOC reached out directly to the deployed responders.²² This suggests that, although ICS provided a framework that enabled CEMA to bring

20 First responders interview #1.

21 First responders interview #7.

22 First responders interview #3.

structure to the chaos of the emergency (particularly internally), further clarification is needed on how the response is coordinated with those on the outside. One option mentioned by the Calgary Police Service would be to move its tactical operations centre into the EOC.²³

On a final note, although CEMA ensured there was always a senior official with advanced ICS training present at the EOC, appointing a specialist with community EOC experience in the adoption of ICS principles to reinforce authorities and steer teams during an emergency merits consideration. Recent research also indicates that appointing a psychosocial worker can be beneficial in the EOC environment to monitor warning signs of mental issues, exhaustion, and burnout.²⁴ This topic will also feature more broadly in Chapter 6.

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²³ First responders interview #7.

²⁴ See Justice Institute of British Columbia (JIBC), *Exercise Winter Blues*.

CHAPTER 3

Crisis Communications

Chapter Summary

- Bringing media into the EOC provided the city's leadership with a strong connection to the public, conveyed a valuable level of reassurance, and confirmed that authorities were in control of the crisis.
- CEMA would benefit from developing better information-sharing conduits with the private sector to inform a common resource inventory for crisis response purposes.
- Communication flows with other municipalities and provincial authorities presented challenges, such as structural delays and conflicting messages, that hampered the effectiveness of the overall response effort.
- Strengthening personal relationships at the local level is vital to advancing grassroots resilience. During the flood, some community associations reported that they were not being contacted in advance for assistance and felt ignored and disrespected as a result.

“Crisis communications make or break an emergency management response.”

The role of crisis communications is increasingly acknowledged across the emergency management spectrum as a crucial ingredient for an effective response. (See Exhibit 6.) Take-away messages from several previous disasters, such as the 2011 Slave Lake/Lesser Slave Lake fires, identified media relations as essential for maintaining public support. Unlike at Slave Lake, media in Calgary were kept in the loop with timely information and had their own physical space at the EOC. This collaboration with authorities ensured that public confidence about CEMA’s handling of the flood remained high throughout the emergency.¹

Activation of the MEP automatically means that all crisis-related communication needs to be approved by CEMA as the central coordinating authority. During the 2013 flood, the City of Calgary showed that it had learned the lessons from Slave Lake and had built a strong media outreach capacity through the CEMA EOC as well as a competent, well-staffed corporate communications group.²

An example of this was the city’s timely reaction to ensure its essential communication lines with the public remained accessible. On June 20, the 311 phone lines became temporarily unavailable when the Municipal Building was flooded and the city’s website suffered a network crash. The city ensured its system was back up and running within an hour and tripled its on-call IT staff at the CEMA EOC to quickly redirect

- 1 See KPMG, *Lesser Slave Lake Regional Urban Interface Wildfire*.
- 2 At the height of the flood, approximately two dozen out of a total of 200 people at the EOC had a communications role. See first responders interview #1. This was also a direct result of the Mayor’s Office’s push for a stronger CEMA communication capacity. City of Calgary interview #4.

Exhibit 6

Top 10 Rules of Crisis Communications (Agnes + Day)



1 Communications are now a two-way street, whether you want them to be or not.

2 Real-time is not just a suggestion but an expectation of your audience - an expectation that will not turn in your favor if unmet.

3 Being informative is the only way. If you're not informative somebody else will be - on a channel that your organization has zero control over.

4 Listen, listen, listen! Listen to what others are saying and publishing to work they're not saying, and where they are and are not saying it.

5 When you properly combine real-time and two-way you get responsive. Your audience will be responsive and so must you.

6 Sincerity, honesty and meaningful apologies go a long way. But remember - actions speak so much louder than words. You have to say what you mean and prove it.

7 Humans dealing with humans. Forget the corporate and legal talk. Forget hiding behind a logo. Your audience expects to hear from the humans behind the brand.

8 Adaptability and flexibility need to be incorporated into your corporate culture - not to mention your crisis communications strategy. The digital landscape changes often and quickly. Staying stagnant will leave you vulnerable.

9 Twitter is the social media platform that dominates the dissemination of news and information in a crisis. Making your crisis communications Twitter-friendly is essential.

10 Internal communications are key to today's successful crisis management. Point final.

AGNES + DAY
<http://agnesday.com>

The Crisis Intelligence Firm®

Source: Melissa Agnes. Agnes + Day the crisis intelligence firm. See www.agnesday.com.

online visitors to the city's news blog.³ To ensure the city can handle sudden spikes in online traffic, CEMA identified the need for a website vulnerability audit following the flood. As a result, security testing is now regularly conducted on the City of Calgary website.⁴ The city has been lauded for its quick response to two of its major communication platforms going down and for keeping the information flowing to its citizens.⁵

Although these IT issues and solutions have been taken on board as lessons learned, several interviewees stated that, especially in terms of online presence, the City of Calgary could have relied more on established channels and trusted voices, such as the first responders community. Instead, they argued, the city attempted to reinvent the wheel and funnel too many crisis information updates through its own portal.

“If you do not feed the beast, it will feed itself ...”

As was mentioned in Chapter 2, the CEMA EOC was specifically designed to accommodate a substantial number of media stakeholders, which paid dividends during the 2013 flood. Through its 141 press releases, CEMA and City of Calgary leadership were instrumental in speaking with one voice. This conveyed a level of assurance to the public, showing them that work was being done around the clock and that CEMA was on top of the situation. One way in which this was facilitated operationally was by equipping media stakeholders with radios issued by the Calgary Police Service.⁶ This proactive stance on pushing information, tracking media feeds, and allowing journalists into the media room also facilitated keeping track of potential misinformation. Most

- 3 Internal CEMA documentation. The 311 service handled an estimated 100,000 calls in the first two weeks of the flood.
- 4 Communication with CEMA, March 24, 2014.
- 5 If one counts the CPS Twitter account being put in jail, that would make three communication platforms “going down.” See Agnes, *Calgary Floods*.
- 6 First responders interview #8.

importantly, it enabled a cooperative relationship with the media based on sharing information and moving toward a common goal of getting the city back on its feet as quickly as possible.⁷

Interviewees from across the City of Calgary and the private sector also reaffirmed the overall importance of collaborating with the media to ensure community support. One senior official stated that the media is as important at the EOC as police, fire, and EMS.⁸ An indication of the overall success of this was a post-flood Ipsos poll revealing that 73 per cent of Calgary's citizens strongly agreed that the city had effectively communicated with them about evacuations, road closures, transit disruptions, and loss of services. (See Exhibit 7.)⁹

Sharing With the Private Sector

External partners invited into the CEMA EOC agreed that the level of situational awareness that came with being on the inside was invaluable. Unfortunately, the flipside of this held true as well, as several partners mentioned falling into a black hole upon leaving. This reinforces the notion that the prowess of the EOC in developing full situational awareness has made it more important for CEMA to identify the right invitees and for the right outside agencies to obtain a seat at the table. CEMA bases decision-making on which new partners to invite from lessons identified during previous emergencies.¹⁰

Even with the increased size of the EOC, however, the scope of the flood was such that space was always at a premium. Therefore, several interviewees argued that CEMA could consider an improved conduit for

7 This cooperative relationship was facilitated further by smaller gestures, such as CEMA providing food for members of the media.

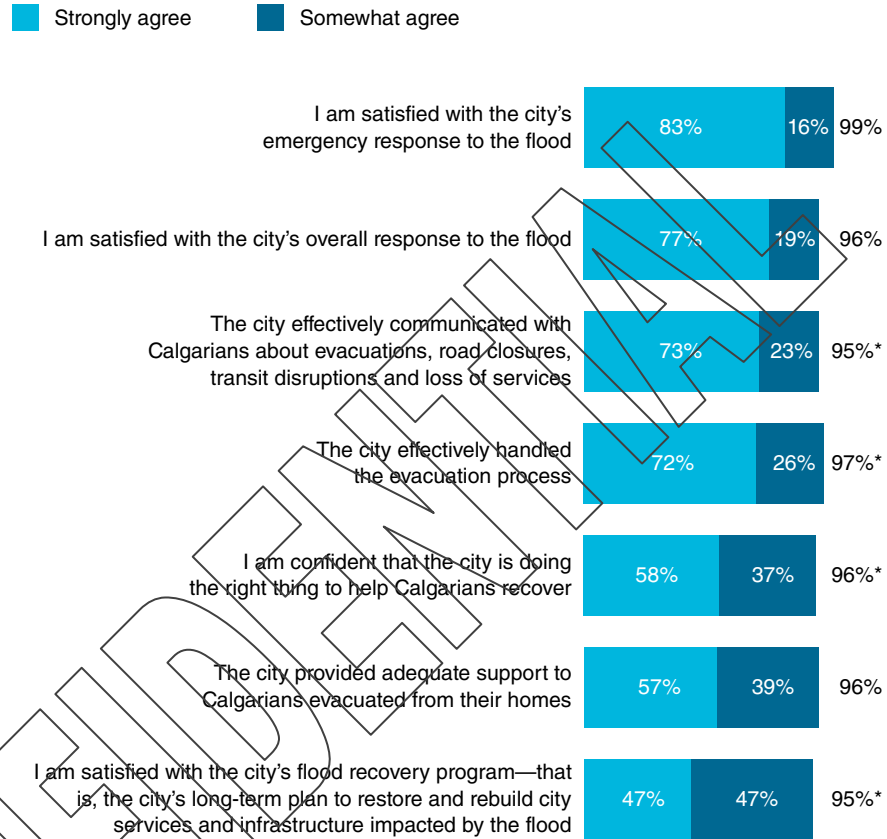
8 First responders interview #7.

9 Ipsos Reid, *2013 Citizens Satisfaction Survey*, 69.

10 The Building Owners and Managers Association (BOMA), for example, was invited in after the 2012 windstorm that caused damage in Calgary's business core.

Exhibit 7

Ipsos on Perceptions of the City's Flood Performance



Note: * = Rounding
 As you know, the flood of June 2013 impacted the City of Calgary as well as Calgarians in one way or another. Thinking about the City of Calgary municipal government including administration and council, please indicate if you agree or disagree with the following statements.
 Base: Valid respondents
 Source: Ipsos Reid.

sharing information with those stakeholders not physically present.¹¹
 This might be facilitated through a liaison group that businesses tie into directly. Another communications issue with the private sector was

11 Within the telecommunications sector, for example, TELUS was present at the EOC, but some of its main competitors, such as Rogers and Bell, were not.

that, unlike City of Calgary business units, which could plug-and-play at the EOC, certain systems (such as the city intranet) were not always accessible to, or fully interoperable with, those of external agencies.¹²

A better conduit for information-sharing with the private sector could help CEMA and the City of Calgary to be better informed about the resources that the private sector can share with authorities. Some members of the oil and gas sector were particularly vocal about this during the interviews. In this regard, a more routine reporting mechanism for inventory monitoring, possibly based on those used by the military, would be beneficial. This could show which resources, from response vehicles to field generators and heavy pumps, are available to the logistics chief at any time. Planning meetings and relationship building prior to a disaster are equally important in this regard. The above was echoed by a recommendation made to the Emergency Water Operations Centre (H2OC) in the 2005 flood after action report.¹³

The Challenge of Vertical Communications Flows ... “Upstream”

As is often the case in large-scale emergency situations, communications with provincial authorities and other municipalities presented more challenges than those internal to the city. Interviewees agreed that processes could be streamlined further to facilitate a more efficient response.

A good example here would be the communication conduit between the City of Calgary and the City of Vancouver. In an emergency in either municipality, a request for assistance from Calgary to Vancouver or vice versa would go through provincial governments.¹⁴ Although this in

12 This was also true for other municipalities such as Edmonton and Vancouver and points to the importance of interoperable systems and identifying one point of contact for resources that come in from outside.

13 2005 Report Recommendation #26. Internal CEMA documentation.

14 That is, from Calgary to the Province of Alberta, to the Province of British Columbia, to Vancouver.

itself seems a suboptimal process for expediting the flow of resources, interviewees were more critical of the miscommunication and political interference inside the conduit. For example, the request for the urban search and rescue team, Canada Task Force 1 (Can-TF1), based in Vancouver, and which worked alongside Calgary-based Can-TF2 for the first time, generated some confusion. This was because the Province of Alberta and the City of Calgary initially contradicted each other on whether they were actually asking for its deployment.¹⁵ Similar experiences were reported on different levels between CEMA and the Alberta Emergency Management Agency (AEMA) around the location of evacuee dormitories at the University of Calgary.¹⁶ A senior official from the not-for-profit sector echoed these difficulties in stating that municipal and provincial requests did not always line up.¹⁷

... and “Downstream”

During the response to the flood, CEMA and the City of Calgary rapidly recognized where the water would likely present the most issues and identified the number and location of community centres required based on this. However, the chaos of an early crisis response notwithstanding, several local representatives reported feeling ignored during the early hours, stating that their points of contact were not reached out to prior to the set-up of the community centre. One interviewee reported having the impression that CEMA was disrespectful toward communities by not contacting them in time and not keeping them in the loop of developments. Some community associations also felt that getting their ideas on how they could help up the chain of command, as well as conveying their needs and wants, was an issue.

A take-away message here concerns the need to build community resilience at a grassroots level and to communicate its importance at the appropriate level. Considering community centre volunteers were not

15 City of Vancouver interview #1.

16 Province of Alberta interview #1.

17 Not-for-profit and NGO interview #3.

trained emergency management professionals, but rather tired citizens under stress, authorities need to be mindful of the optics surrounding their activities and adjust their communication strategies to inform non-experts as well. In practical terms, this can mean having—and using—the right points of contact and being sensitive to how your actions might be perceived.¹⁸

CEMA and City of Calgary officials acknowledged that public outreach, including through city councillors, can be improved upon and needs to be a point of focus going forward. The city's Emergency Social Services is currently working with stakeholders to develop a vulnerable population strategy that can assist authorities in pre-identifying citizens most likely to require assistance, such as the homeless.¹⁹

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18 One interviewee mentioned that some community centre volunteers felt abandoned when “the CEMA shirts would go home” at the end of the day. See also Federation of Calgary Communities, *Calgary Flood 2013*, 9.

19 First responders interview #2 and City of Calgary interview #5.

CHAPTER 4

Social Media

Chapter Summary

- Using social media as part of a comprehensive approach enabled CEMA and the City of Calgary to lead the conversation from the start, communicate reassurance, and explain decision-making to the public.
- The city effectively adapted to changing circumstances brought on by technological issues. It is recommended that the city implement ongoing vulnerability reviews of its online presence and the established social media channels that can be used during an emergency.
- Intense use of social media alters the crisis communication landscape and calls for adapting messaging for specific platforms and target audiences. In addition, social media has the potential to shift the optics of need during an emergency.

“Using social media during the flood was [not] CEMA’s first trip to the rodeo, nor will it be its last.”

Applying Previous Lessons Learned

The application of social media in emergency situations has been a trending topic within the emergency management community. Not only does social media create new platforms and new possibilities, it also raises new expectations on the part of the public. CEMA and the City of Calgary’s employment of a variety of communication platforms during the 2013 flood is acknowledged to be the first Canadian case of widespread social media usage during the response and recovery phase of a crisis.¹

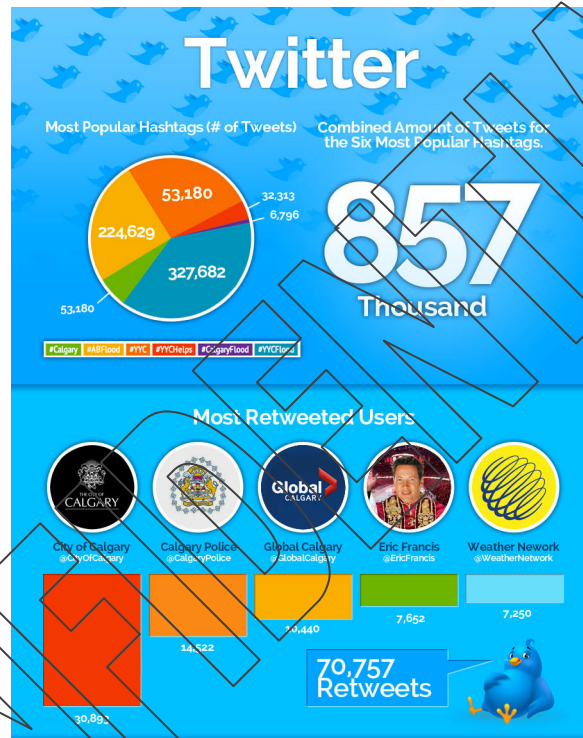
The City of Calgary had developed and tested a crisis communications tool kit with CEMA prior to the emergency. In fact, before the flood it already had more followers on Twitter than any other Canadian city and @CityofCalgary was among the top five most popular accounts in the Calgary area.² Practical experience gained from smaller incidents also helped. A water main break in December 2012 provided authorities, particularly the Calgary Police Service, with a testing ground for using social media for two-way communications with the public. This further enabled CEMA social media feeds to establish themselves as trusted voices on crisis response. As a result of its directly responding to questions through Twitter, the city’s quick action was lauded by the public.

When the flood hit in June 2013, CEMA successfully applied its acquired knowledge to a much wider emergency. Critical in reaching the community was the city’s efficient use of the primary hashtag #yycflood, which showed up an average of 32 times *every minute* over a 10-day

- 1 See Kaminska, #YYC Floods.
- 2 The City of Calgary, *City of Calgary Reaches*.

period. (See Exhibit 8.)³ This not only made flood-related information much easier to search, it also meant that, regardless of which corporate account was being used, the information would be easily retrievable.⁴

Exhibit 8 Social Media During the Flood



Source: Inbound Interactive. Full infographic available at www.socialmediainfluence.com.

- 3 The City of Calgary, *City of Calgary Reaches*.
- 4 See Agnes, *Calgary Floods*. This is particularly helpful in case a corporate account is unavailable or thrown into Twitter jail (as happened to the Calgary Police).

During the flood, CEMA had about two dozen communications specialists at the EOC who worked from the city's defined objective on social media during a Municipal Emergency Plan activation: to lead the conversation by establishing the city's corporate social media accounts as *the* authoritative and trusted source of information.⁵

Committed Leadership

Social media specialists were assisted by a leadership core that acknowledged its potential for inspiring a sense of reassurance and empowerment among the public as well as providing a rationale and context for some of the operational decisions that were being made across the city. This was important, considering that roughly 7 per cent of the Calgary population had been displaced by the rising water and were therefore likely to rely exclusively on cell phone technology for communicating.

The adoption of social media by leaders also reflected an attitude that was averse to bureaucratic red tape when pushing out critical information. Although an activation of the MEP automatically cuts down the approval process, empowering communications specialists to take a proactive stance also requires a mindset throughout the chain of command that focuses on results instead of process.⁶ Interviewees from across the public and private sectors agreed that Calgary had had exceptional leadership from the Mayor's Office and CEMA senior leadership on this front, as well as on the original push for the development of a city-wide corporate social media capacity.

This contrasts with prior emergencies such as the Slave Lake/Lesser Slave Lake fires, where a less coordinated communications effort hampered the response and may have affected the local population's confidence in authorities. It also reflects how social media has become an important crisis response tool that can make a significant contribution

5 The city's successful attempt to be the crisis authority on social media is reflected in the doubling of its followers on Twitter, which reached 84,000 during the flood.

6 First responders interview #1.

to maintaining public support. In addition to social media, CEMA also maintained communications through traditional channels such as radio and television ticker tape. Interviewees noted this as an important aspect of any crisis communication strategy, since vulnerable parts of the population are unlikely to have adopted social media platforms at the same rate as the average citizen.

Technological Aspects

Although the development of a crisis will always present emergency managers with unforeseen problems, it is the ability to respond and communicate quickly that can resolve many situations. When the Calgary Police Service had its Twitter account suspended due to the massive volume of tweets it was sending, there was no significant impact on overall communications, as officials switched to sending messages from personal accounts while still using the same hashtags.⁷

But as beneficial as social media usage was overall during the emergency, CEMA admitted that the comprehensive integration and the harnessing of social media's full potential is still a work in progress. One aspect that is still relatively underdeveloped is the use of social media feeds to pull information instead of pushing it out for public consumption. Another challenge concerns the growing level of public expectation when it comes to the ability of authorities to exhaustively monitor and respond to social media feeds. As mentioned above, CEMA and the City of Calgary were blessed with a strong crisis communication team, but looking ahead, expectations will increase for information to be offered in appropriate formats for the end user. For example, if affected citizens and responders are likely to rely on cell phones to stay informed, one needs to ensure that critical information can be distributed through that platform in a practical way.

7 For a description of how the Calgary Police Service got its Twitter account back up and running in an hour, see Sieben, *The #yycflood and the Unsung Hero*.

The City of Calgary had two useful, freely available apps that provided an interface for mobile telephone users: 311 Calgary and the City of Calgary news app. (See Exhibit 9.) Considering the rapid developments in social media use for crisis response, ensuring that first responders have access to mobile technology such as smartphones is recommended.

Exhibit 9
Screenshot of City of Calgary 311 Application



Source: The City of Calgary.

Public Perception During a Crisis

In addition to formatting information for the right platforms and audiences, the psychological state of one's target audience needs to be taken into account. A shell-shocked, stressed-out citizen will not behave or absorb information as easily as under everyday circumstances. The experience of both CEMA and not-for-profit organizations during the

flood confirmed the relevance of the lessons for social media use during an emergency: know your audience, establish an early presence, and communicate often, consistently, and concisely.

Finally, an interesting aspect that surfaced during our interviews was the impact on public perception of social media use. During the Calgary flood, social media use had repercussions not just on the emergency response, but also on the optics surrounding it. Several interviewees argued that the way in which affected citizens took to social media to plead the needs of their local community affected resource allocation and, in some instances, created have and have-not neighbourhoods, depending on their outreach and the public perception of their level of need.

As such, authorities need to remain vigilant of the potential for misinformation to be spread quickly through social media.

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CHAPTER 5

Volunteerism

Chapter Summary

- Calgary's success at using volunteers was facilitated through a culture of empowering self-reliance that was supported across government, agencies, and companies. CEMA's commitment to running recovery alongside emergency response in a transparent and decisive fashion galvanized public support.
- CEMA and the City of Calgary should define a volunteer management plan that can facilitate matching people to skills needs, developing a skill inventory, and articulating suitable roles for volunteers prior to an emergency.
- Volunteerism is a valuable, but fragile resource, and authorities need to carefully weigh its potential as a force multiplier against safety questions, liability concerns, and authority issues.

“The volunteering effort reacquainted Calgary with its small town roots.”

Volunteering Capital of Canada

Managing spontaneous volunteerism fuelled by social media presented the City of Calgary with a combination of challenges and opportunities. Given the frequency and level of importance assigned to volunteers by interviewees at every level of emergency response and across the public and private sectors, some of the outstanding challenges surrounding their use were explored.

To many Calgarians, the 2013 flood will be forever tied to the spirit of volunteerism that turned everyday citizens into responders and swept through the city as fast as the rising waters. Many will remember the thousands of people who showed up at McMahon Stadium to help out neighbours, friends, and strangers—although the city had originally hoped to fill only 600 spots.¹ Considering the level of attention that local, national, and even international media paid to the volunteering effort, the lessons learned will be examined by emergency management practitioners well beyond Calgary.

Culture of Self-Reliance

The spirit of volunteerism is no newcomer to Calgary: that spirit was solidified by the 1988 Winter Olympics and is reconfirmed annually by the Calgary Stampede. Although appearing as a self-organized force of nature, volunteers were managed by a variety of actors during the flood and empowered by a culture of self-reliance that was reinforced by companies, agencies, and not-for-profits alike.

1 First responders interview #4.

Municipal employees, for example, made an early appearance as volunteers during the flood by assisting in the evacuation efforts. Since knocking on thousands of doors exceeded the available resources of emergency services, they were invaluable in informing their fellow citizens to prepare to evacuate. Oil and gas sector companies too, enabled, actively encouraged, and even equipped employees to volunteer. Interviewees were unanimous in affirming that helping people help themselves at a local level was one of the biggest lessons learned around the use of volunteers. This stands in contrast with previous emergencies across Canada where authorities, in an attempt to maintain total control of the situation, failed to stimulate the public's ability to self-organize and their potential to act as a force multiplier.

Although the massive volunteer work effort in Calgary is cause for optimism, it can also be a cause for concern. Some interviewees mentioned that an increase in authorities collaborating with grassroots volunteering efforts goes against a longstanding mindset among some emergency management officials, who believe that using volunteers is an infringement upon their professional territory. Such perceptions aside, there needs to be a framework for managing volunteers, as well as associated liability issues, and for addressing the potential fragility of this system.

Framework for Oversight

Although media coverage of volunteerism during the flood was positive and the volunteer effort assisted citizens in recovering from the crisis both physically and emotionally, authorities can still make progress in managing the volume of volunteers in the future. Structuring the volunteer effort needs to include community associations, religious groups, and professional organizations that can raise volunteers at the grassroots level. This can take the form of a volunteer framework for oversight that can also identify skill sets in advance and the development of a skills database that can be drawn from during an emergency. The fact that Calgary can rely on a highly skilled workforce reinforces the notion that benefits could be reaped from such an approach.

A better defined volunteer framework would also match the right people with the appropriate task. Calgary's search and rescue (SAR) volunteers, for example, brought a range of skills and training to the table (including ICS) and were acknowledged for their value as a reconnaissance force that identified flooded areas. In addition, the innovative approach of grassroots collaborations of local volunteers, such as YYCHelps, which developed software platforms for direct use, was also praised during our interviews. These small, innovative, and skilled teams can provide unconventional solutions during crises.² In the case of YYCHelps, it can also provide additional capacity for crowd-sourcing pertinent information and sharing messages from authorities as a trusted citizen voice.³

CEMA and the City of Calgary should pursue the opportunity to work with and through these types of organizations in further developing a volunteer framework that focuses on determining which skill sets are needed and which group can provide them. This will help in situations like the massive volunteer intake at McMahon Stadium. Although there was general sympathy from people who were turned away there, the situation could have been given a different spin by local media and have had a less positive impact on public opinion.⁴

Considering the speed of present-day social media platforms, the instant connectivity between large numbers of citizens ensures that they will simply no longer wait for government to get organized. The empowering effects of social media, discussed in Chapter 4, have made these types of quick mobilizations possible. Where CEMA and the City of Calgary can make a difference is in further articulating a framework that facilitates the optimal use of volunteers, while at the same time minimizing tendencies to overly control their innovative and self-organizing aspects.⁵

2 Also see Kabilan, *Innovating in the Face of Disasters*.

3 Citizen groups also helped push messaging on known cases of price extortion during the flood, thereby using public shaming tactics that are generally unavailable to authorities.

4 The Calgary Zoo was another example of where volunteers had to be turned away at times, because it was in the process of demolishing buildings out of safety concerns.

5 The importance of innovation during an emergency is reflected by organizations such as FEMA using field innovation teams (FIT).

Liability

Several interviewees expressed concern about growing liability issues around the use of volunteers and the increasingly blurred line between volunteerism and professionalism. Although there was widespread agreement that the response phase should remain the exclusive turf of the emergency management professional, there was less clarity on what volunteers should or should not do and the level of overall authority that the city needs to maintain. This level of confusion resonated clearly in the interviews.

With regard to insurance coverage, volunteers who assisted through the city or YYCHelps were asked to complete registration forms that granted them coverage under the city's volunteer accident insurance program. However, some interviewees, particularly those in the legal and law enforcement areas, voiced concerns about the appropriate use of volunteers and the liability that the city took on during the crisis. A major lesson taken from the flood, and acknowledged by CEMA, is that the interface with the volunteer community and the related legal issues need clarifying before the next crisis hits.

Volunteer Fatigue?

On a minor, but important, note, although there seemed to be an inexhaustible source of energy during the flood recovery, several not-for-profit organizations spoke of volunteer fatigue by the end of 2013. Some organizations also mentioned that support for not-for-profits and interest in fundraisers for more traditional causes was down toward the end of the year, possibly because people felt they had done their share, physically, financially, or both.⁶ At the same time, YYCHelps still had over 15,000 volunteers in its database as of early 2014. The commitment to help is still present, but it could benefit from strategic direction from the city going forward.

6 Calgary Chamber of Voluntary Organizations (CCOV), *Calgary's Nonprofit Sector After the Flood*, 4.

CHAPTER 6

Preparedness and Resilience

Chapter Summary

- The City of Calgary can further augment its overall preparedness by formalizing and standardizing emergency response and business continuity plans and by promoting organizational resilience among the small business community.
- The remarkable resilience of the Calgary business community was facilitated by a strong collection of actors who worked toward a common goal across different phases of the emergency.
- Community resilience is built by empowering citizens and turning them into responders. The City of Calgary should build on this by advancing public education on local-level preparedness so that lessons learned are not forgotten.
- The mental health of an emergency management cadre is vital to maintaining preparedness and building resilience. Without the required financial commitments, one cannot expect a similarly effective crisis response next time.

“... it’s important to note that we cannot do it alone; disaster response and recovery has to be a whole community effort.”

Richard Serino,
FEMA Deputy
Administrator

Organizational Resilience

Preparedness is *the* aspect of the crisis management cycle that interviewees generally believed the City of Calgary could improve most on. A 2013 poll conducted by Ipsos revealed that 80 per cent of Calgary organizations had an emergency response plan (ERP) in place before the flood.¹ Although this is certainly an encouraging statistic, the devil is in the details. Only half of those plans include rudimentary communication protocols, such as phone trees, to stay in touch with employees, and less than a third mention specific steps to be taken during an evacuation or emergency.²

Although maintaining business continuity was identified as a priority by many organizations, strategies for doing so were often not included in their ERP. An interesting aspect surrounding ERPs that was confirmed during the interviews was the tendency to underestimate the difficulties surrounding getting back to business and getting employees back into their buildings. As one private sector official stated, getting people out was not a problem, it was getting them back in that caused headaches. This also highlights that having a response plan is naturally assigned a higher priority than one facilitating long-term recovery. But in the wake of a crisis of historic scope, having and exercising a longer term recovery plan is vital for business resilience.

Another statement often heard during the interviews was that the difference between businesses on overall preparedness was considerable. This is understandable to a degree. Large multinationals

1 RallyEngine, “Infographic.” Note that an annual survey conducted by the Calgary Chamber of Voluntary Organizations (CCVO) shows this percentage for non-profit organizations is only 50 per cent. See CCVO, *Calgary’s Nonprofit Sector*, 6.

2 Ipsos Reid, *2013 Calgary Flood*, 5.

can generally expend the necessary resources and training costs, whereas small and medium-sized enterprises may struggle to rationalize significant investments on which they may never see a return. Considering that they are more vulnerable to weather-related crises to begin with—as a closed store means no income—and are vital to the economic well-being of the downtown core, small and medium-sized enterprises would benefit from the city coordinating, and assigning more emphasis on, the need to develop ERPs and business continuity plans.³

These recommendations notwithstanding, it should be noted that early indications on business recovery in Calgary have been nothing short of astonishing. Reported numbers vary, but it is generally acknowledged that an estimated 40 per cent of small businesses do not reopen their doors after a major disaster.⁴ Hurricane Katrina, for example, had a devastating effect on the New Orleans business community that is still felt today. It is therefore all the more impressive that out of nearly 4,000 affected businesses in Calgary, very few permanently went under because of the flood.⁵ While the exact number of flood-related closures in Calgary is difficult to gauge, none of the estimates even comes close to 10 per cent.

Although the full impact of the flood on small and medium-sized enterprises may not manifest for some time, the remarkable resilience of the Calgary business community was facilitated by a variety of actors who had a solid understanding of their roles and responsibilities; provided a stable conduit to communicate business needs during and after the flood; and worked with an outcome-focused attitude across different phases of the emergency. Some, such as the Building Owners and Managers Association (BOMA), were invited partners in the CEMA EOC during the response. Some enabled CEMA to focus on citizens'

3 Note that the flood itself has had an impact on this already, since half of those organizations that did not have an ERP before the flood developed one within four months after the flood. See CCVO, *Calgary's Nonprofit Sector*, 11. (Note small sample size).

4 See, for example, KPMG, *Managing Business Continuity*, 2, and FEMA, *Protecting Your Businesses*.

5 The City of Calgary, *Calgary Recovers*.

needs while they looked after business interests (e.g., the Chamber of Commerce). Others focused on the city's long-term recovery through timely public outreach and media campaigns (e.g., Tourism Calgary).

Exhibit 10

Calgary, Our Doors Are Open Poster



Sources: Tourism Calgary.

Indicators on the recovery of the tourism industry have been very promising, thanks in no small part to the Calgary, Our Doors are Open campaign, which was launched the day the SOLE was lifted. (See exhibit 10.) Focusing on the same positive mindset that fuelled the volunteer effort, it leveraged the public figure of the mayor as its spokesperson and the sense of pride that many Calgarians felt following the flood. The

campaign, which reached 6 million people, restored confidence among travellers that the city was open for business, and it further minimized the negative effects of the flood.⁶ Organizations such as Tourism Calgary brought a tremendous amount of knowledge and professionalism that helped get the city back on its feet. As such, these actors can be recognized as a vital piece in the overall resilience puzzle.

Community Resilience

Organizational and community resilience are two aspects that can relieve the pressure on authorities during an emergency response. Community resilience is based on the idea that prepared citizens, who have been enabled to take control of their own situation and place themselves on the path to recovery, can free up municipal resources to focus first on the most vulnerable parts of the population. During the Calgary flood, the city enabled its citizens to self-assess their properties by providing them with the knowledge and authority to do so. In a practical sense this meant that most of the 39,000 homes evacuated could be promptly and safely re-entered without any inspections. The City's Development & Building Approvals team conducted a rapid damage assessment of 8,700 single-family homes. By limiting inspections to those requested by the homeowner, or to buildings where damage was previously noted, fewer than 1,800 single-family homes required follow-up by Development & Building Approvals.⁷

The positive mindset of empowered citizens brought neighbours, strangers, and communities together and fuelled the overall goal to get the city back on its feet. In the words of one interviewee, Calgary became a small town again. In this regard, the contrast between

6 Note that 85 per cent of travellers surveyed said the campaign reassured them that Calgary had recovered from the flood. See Tourism Calgary, *Destination Report, Q3 2013*, 6.

7 Planning, Development & Assessment, The City of Calgary.

Calgary and some other communities across the province of Alberta during the flood was particularly stark, highlighting the importance of resilience-building efforts.

Caring for Your Own

Working long hours is second nature to most emergency management professionals. Given the scale of the 2013 flood, those committed to getting the city back on its feet in record-breaking time definitely saw their share of long days and nights. But beyond deserved praise for peers and fellow citizens, our interviews found strong indications that, whether because of a reticence to acknowledge the warning signs of exhaustion or the overriding commitment to help those in need, many officials worked in the red for too long.⁸ Other recent large-scale emergencies have seen similar cases of fatigue negatively affecting high-stress environments.

Besides physical health, the importance of long-term mental health of emergency management professionals also needs to be emphasized. Although Calgary fared better than other parts of Alberta in terms of burnouts, long-term medical leaves, and job changes following the flood, it has been acknowledged that the emergency and its recovery took a significant emotional and physical toll on CEMA and city employees.⁹ The 2005 after action report recommended developing “an emergency management health and wellness strategy to assist emergency responders and other city staff in their ability to stay healthy during times of extreme stress.”¹⁰ As such, the importance of continued investment in people needs to be repeated here, since the Calgary (and wider Canadian) emergency management community is of limited size and federal funding for preparedness is seen as dwindling.¹¹

8 First responders interview #2 and City of Calgary interview #3.

9 Province of Alberta interview #1.

10 2005 Report Recommendation #4. Internal CEMA documentation.

11 Province of Alberta interview #1.

As memories of the flood fade, it bears remembering that, despite the enormous volunteer contribution, the effective response to the 2013 Calgary flood was facilitated by a core of professionals whose skills cannot be taken for granted and take considerable time and resources to develop. The outstanding quality of Calgary's first responders is reflected in an Ipsos poll revealing that citizens identify their fire department and police service as important primary strengths of their city.¹² It needs to be emphasized that an effective response cannot be expected without ongoing financial commitments for the human and technological aspects of emergency preparedness.

“ Organizations must develop sufficient depth of leadership so that they can rotate personnel regularly during extended events; otherwise, they will inevitably falter from fatigue Failure to provide for sufficient downtime for senior officials inevitably degrades their judgment, ability to comprehend information, and performance of even normal tasks.”

Leonard and others, *Why Was Boston Strong?*

A Final Note on Resilience

Given the current fiscal climate, emergency management, like many other areas of government, has seen its budgets come under pressure in recent years. This reality may mean that community resilience will increasingly become a buzzword or a box to tick on a checklist. Interviewees emphasized that building community resilience at a grassroots level and facilitating citizens to look after themselves is critically important. However, this cannot be an excuse for cutting corners in investing in emergency preparedness. Financial versus security considerations notwithstanding, it bears reminding that

¹² Ipsos Reid, *2013 Citizen Satisfaction Survey*, 38.

resilience cannot be done on the cheap. It takes time to build, cannot be an empty term if it is to be effective, and needs to form an integral part of a comprehensive emergency management model.

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CHAPTER 7

Best Practices and Recommendations

Chapter Summary

- The City of Calgary's strong Emergency Operations Centre (EOC) capacity and its commitment to continuous training and exercising enabled it to effectively manage the flood response. Tying the media into the EOC underlines the media's indispensable role in crisis management.
- Starting recovery immediately, matching its intensity to response efforts, working toward quick repatriation of evacuees and enabling self-recovery were all vital parts of getting Calgary back on its feet while building civic pride and maintaining community support.
- Flexible collaboration with grassroots organizations and leadership that championed outcomes, transparency, and the public's immediate needs over bureaucratic process helped to empower citizens and sped up crisis recovery.
- Aspects where CEEMA and the City of Calgary should focus attention going forward include augmenting private sector preparedness, developing a comprehensive volunteer framework, and prioritizing the mental health of its EOC officials and first responders.

“We can no longer afford to work at the speed of government.”

As indicated earlier, after action reviews can be strongly focused on identifying outstanding challenges without assigning importance to good practices that need to be remembered and transformed into lessons learned. Although this report has identified several areas where CEMA and the City of Calgary can improve, these recommendations should be viewed as complementing broader aspects of an overall response and recovery effort that worked well.

In financial terms, the 2013 flood was the costliest disaster in the city's history. And although there was one casualty within city limits as a direct result of the flood, there was no major loss of life.¹ Contrary to other large-scale disasters, Calgary did not see any looting or civil disturbances and cases of deliberately spreading misinformation were rare. In light of these realities and the positive mindset that spurred a level of civic pride rarely seen in other crises, it is no surprise that municipalities and emergency management organizations are looking to learn from the City of Calgary and CEMA.²

The aspects that prepared Calgary for an effective overall response to and recovery from the costliest Canadian disaster ever are legion, and they do not all involve trained professionals or advanced technology. Other aspects, such as having a large affluent community, a highly skilled workforce, and the presence of heavy industry that could provide a vast inventory of resources, played roles as well. Interviewees also spoke about intangibles that are harder to measure or duplicate, such as civic pride, volunteering spirit, and an overall strong work ethos.

- 1 Media reported that the overall flood cost to Calgary was around \$530 million. Dormer, “Calgary Flood Costs.”
- 2 See, for example, Lee, “Vancouver Emergency Crews Learn Lessons From Calgary Floods.”

Apart from this, there are several high-level best practices and recommendations that merit consideration if the City of Calgary intends to maintain its overall level of preparedness for similar emergencies.

Best Practices

1. Having a strong EOC capacity is crucial for enhancing strategic coordination, developing a common operating picture, and facilitating line-of-sight communications among stakeholders.
2. The success of tying the media into the EOC underlines the media's indispensable role in crisis management. During the 2013 flood, this enabled CEMA and the City of Calgary to leverage its strong leadership, speak with one voice, and effectively reassure the public.
3. Starting recovery immediately and matching its intensity to response efforts forms part of the CEMA emergency management model. This outcome-focused approach was vital to getting Calgary back on its feet and maintaining community support.³
4. Working toward the quick repatriation of evacuees and enabling their self-recovery fosters a positive mindset, builds civic pride, and turns the evacuees into responders.
5. Crisis is the mother of innovation, and grassroots organizations, such as YYCHelps, were instrumental during the flood in building “on-the-fly” tools that empowered citizens to clean up their communities. Collaborating with these innovative teams in a flexible fashion can speed up crisis recovery.⁴

3 This stands in contrast to other large-scale disasters that saw much slower recoveries, such as Hurricane Sandy in New Jersey and New York. See Light, *Hurricane Sandy One Year Later*.

4 Partnerships with volunteer organizations to spark innovation have been a trending topic in the emergency management community. See Canton, “Are Your Policies”. Also, FEMA's successful use of field innovation teams during the response to Hurricane Sandy in 2012 further underlines the imperative of innovative thinking in an emergency. See The National Preparedness Leadership Initiative, *Hurricane Sandy*, 5.

6. The remarkable unity of effort during the 2013 flood was facilitated by all stakeholders working toward a common long-term objective and strong leadership that championed outcomes, transparency, and the public's immediate needs over bureaucratic process.⁵
7. CEMA's successful response to the 2013 flood was enabled by a commitment to continuous training and exercising. Although an emergency never unfolds by the book, preparedness puts a person two steps ahead once a real emergency scenario starts to unfold.⁶
8. Although quantifying the return on investment for emergency preparedness is difficult, research shows that for flood defence initiatives it can be as high as 8:1.⁷ In light of Calgary's geographic vulnerabilities and the financial damage incurred during the 2013 flood, continuing investments in preparedness would make for sound risk management.

Recommendations

1. To ensure an effective crisis response, EOC officials need to have strong, pre-existing relationships that go beyond a single point of contact. The EOC also needs to enhance communications on why certain agencies are brought in, what their mandate is, what the agencies bring to the table, and what they can and cannot do.
2. Information flows with the province need to be further calibrated in terms of municipal versus provincial crisis responsibilities. A better information-sharing conduit with the private sector on available resources is also recommended.⁸ In terms of the EOC communicating with the field, equipping front-line staff with smart phones would enable them to use information in a wider variety of formats.

5 In this regard, the responses in Calgary stand in contrast to those in New Orleans (Hurricane Katrina) and New York and New Jersey (Hurricane Sandy). See also Munn-Venn and Archibald, *Tough Times in the Big Easy*.

6 The crucial nature of preparedness and training was most recently acknowledged by Harvard University in its after action review of the 2013 Boston Marathon bombings. See Leonard and others, *Why Was Boston Strong?*

7 The United Kingdom Environment Agency, *Flood and Coastal Risk Management Outcome Measures*. Note that this source, like this report, uses a broad definition of the term *preparedness* that includes mitigation efforts.

8 2005 Report Recommendation #26. Internal CEMA documentation.

3. The City of Calgary should continue to advance private sector preparedness through business education and the formalizing of business continuity plans (BCPs) and emergency response plans (ERPs). Although most companies engage in some form of business continuity planning, substantial differences exist between them. As well, crucial information, such as points of contact, is often missing.
4. The City of Calgary should move ahead with developing a comprehensive volunteer framework that can build a skill inventory and ensure that it matches people's skill sets with the right jobs. This does not mean that the city should control the volunteering process; rather it should frame the process for optimal use. Authorities are currently looking at options for building a volunteer network.
5. The City of Calgary should further prioritize the mental health and well-being of EOC officials and first responders. During the flood, frayed nerves, "tired personalities," and extreme stress had a negative impact on the overall work environment. This recommendation was first made in the 2005 after action report.⁹

Conclusion

As has been mentioned, after action reviews have a tendency to overemphasize observed challenges at the cost of identifying take-away messages that should be turned into lessons learned. This is particularly important in the case of Calgary's response to and recovery from the 2013 flood, since there were more positives than negatives. Although we have identified both best practices and areas for improvement, CEMA and the City of Calgary can be proud of their handling of the emergency and deserve the public praise they received following the crisis.¹⁰ (See Exhibit 11.)

9 2005 Report Recommendation #4. Internal CEMA documentation.

10 On September 17, 2013, the Governor General of Canada presented a commendation for outstanding service to the citizens of Calgary for their response to the 2013 flood. See The City of Calgary, *Governor General of Canada*.

Exhibit 11

“We lost some stuff, but we gained a community”



Source: The City of Calgary.

Although large-scale crises will defy the best-laid plans, planning ahead remains vital. CEMA and the City of Calgary’s response and recovery to the 2013 flood reveal the difference that planning and sound investments in preparedness can make. Its first responders were well-trained; technology, equipment, and resources were readily available; personal relationships were strong; and leadership effectively promoted a unity of effort to a multitude of stakeholders. CEMA was the central coordinating

body amid the turmoil of the emergency, and it merits repeating that its new EOC facilitated a level of response that would have been impossible in 2005.

However, the fact that it took an earlier flood to be fully prepared for the latest crisis raises important questions on the trade-off between fiscal prudence and physical security. Can authorities sustain the political will and financial commitments that ensured Calgary was well-positioned for the scale of the 2013 flood? Will the possible absence of another emergency over the next few years mean a decreasing focus on maintaining preparedness?¹¹

Quantifying the value of preparedness and prevention will always be difficult, but Calgary's response to and recovery from the 2013 flood proves that forewarned is indeed forearmed and that emergency planning delivers a positive return on investment. Practical examples of this are CEMA using its HIRA method to inform its preparedness strategies and investing in flood inundation mapping that pre-identified those areas most likely to be affected by the rising water.¹² EOC officials agreed that having this type of information in the form of accurate flood maps was crucial in speeding up the response.

This is not a blanket recommendation for increasing the size of emergency management agencies and EOCs across Canada. Instead, other municipalities can adopt some of the principles underlined by the identified approaches and best practices regardless of their size, budgets, or context. But ultimately, even for cities that can draw on bigger budgets, the most pressing danger may be not the next emergency, but complacency.

11 One interviewee noted that, prior to the 2013 flood, some municipal decision-makers believed the EOC to be a "boondoggle." City of Calgary interview #7.

12 The river flood inundation maps from Water Resources would inform the evacuation plan and proved invaluable in predicting which neighbourhoods would be hit hardest and most quickly. City of Calgary interview #8.

Even if one were to discount climate change as a trend that is increasing the risks for weather-related emergencies, the reality remains that Calgary is an increasingly populous city with an ever-growing amount of infrastructure to protect. As such, there will need to be a strong commitment from across the city to ensure that Calgary retains its position as a leader in emergency management and resiliency as it moves forward.¹³

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13 In a 2014 research report on resilient cities by a London-based property company, the City of Calgary ranked third globally, after Toronto and Vancouver. See Grosvenor, *Resilient Cities*, 15.

APPENDIX A

Interviewees

List of Interviewees and Interview Dates

Interviewee Organization	Time of Interview (all times EST)
First responders 1	January 29, 2014, at 3:00 p.m.
First responders 2	January 29, 2014, at 8:00 a.m.
First responders 3	January 22, 2014, at 4:00 p.m.
First responders 4	January 21, 2014, at 11:30 a.m.
First responders 5	January 20, 2014, at 1:00 p.m.
First responders 6	February 7, 2014, at 3:00 p.m.
First responders 7	March 26, 2014, at 11:00 a.m.
First responders 8	February 25, 2014, at 3:00 p.m.
City of Calgary 1	January 15, 2014, at 12:00 p.m.
City of Calgary 2	January 8, 2014, at 12:30 p.m.
City of Calgary 3	January 20, 2014, at 11:30 a.m.
City of Calgary 4	March 26, 2014, at 2:00 p.m.
City of Calgary 5	February 3, 2014, at 6:00 p.m.
City of Calgary 6	March 28, 2014, at 1:00 p.m.
City of Calgary 7	April 3, 2014, at 11:00 a.m.
City of Calgary 8*	February 21, 2014, at 4:30 p.m.
City of Vancouver 1	January 10, 2014, at 12:00 p.m.
Province of Alberta 1	February 4, 2014, at 11:00 a.m.
Province of Alberta 2	February 10, 2014, at 1:00 p.m.
Province of Alberta 3*	January 31, 2014, at 3:00 p.m.
Private sector 1	January 17, 2014, at 12:00 p.m.
Private sector 2	January 14, 2014, at 12:00 p.m.

(continued ...)

List of Interviewees and Interview Dates (cont'd)

Interviewee Organization	Time of Interview (all times EST)
Private sector 3	February 7, 2014, at 12:00 p.m.
Private sector 4	February 7, 2014, at 4:00 p.m.
Private sector 5	January 13, 2014, at 2:45 p.m.
NGO and not-for-profit sector 1	February 5, 2014, at 3:00 p.m.
NGO and not-for-profit sector 2	January 28, 2014, at 2:00 p.m.
NGO and not-for-profit sector 3	January 16, 2014, at 3:00 p.m.
NGO and not-for-profit sector 4	January 28, 2014, at 6:30 p.m.
NGO and not-for-profit sector 5	January 22, 2014, at 1:00 p.m.
NGO and not-for-profit sector 6	February 7, 2014, at 11:00 a.m.
NGO and not-for-profit sector 7	January 31, 2014, at 9:00 a.m.
NGO and not-for-profit sector 8*	February 6, 2014, at 3:00 p.m.
NGO and not-for-profit sector 9*	January 24, 2014, at 9:00 a.m.

* Denotes interviews with multiple interviewees.

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APPENDIX B

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