

Candy Mountain Road Area
Environmental Restoration
Committee (CMRAERC)

April 2009

Citizens Review of the June 2008
Porter Lake/Lake Echo Wildfire.
With Recommendation.



Candy Mountain Road Area Environmental Restoration Committee

CMRAERC

Proposal for remediation of critical issues April 2009

Table of Contents

Executive Summary	3
Synopsis	4
The Candy Mountain Road Area Environmental Restoration Committee	5
Scope:	5
Mandate:	5
History	5
Timeline:	6
Aftermath:	6
Identified Problems:	7
Other Considerations.....	8
Committee Findings and Recommendations	9
1) Ground Water Quality	9
CMRAERC Specific Recommendation	9
General Recommendation	9
2) Erosion and Runoff	9
CMRAERC Specific Recommendation	10
General Recommendation	10
3) Rehabilitation of Wild Land Urban Interface Burn	11
CMRAERC Specific Recommendations	11
4) Recovering from Interface Fires ~ Post-Emergency Recovery	12
Members	14
References	15
Resources	16
Wildfire 2008 Impact Survey – Wells	17
Photo Gallery	18
Appendix (A)	20
Psychosocial Responses to Fire	20
Communities and the Psychology of Fire	21

Attachment:

DVD containing Wildfire Impact Survey, Feed Line Special Edition, Communications Nova Scotia Thank You, DND Pictures of Wildfire Area, List of URLs relating to the Wildfire.

Executive Summary

- A nightmare situation that resulted in the largest fire evacuation in Nova Scotia's history.



Friday June 13th 2008 saw the first forest fire in Nova Scotia's history to affect the Urban Wild Land Interface. The fire burned 4,757 acres (1,925 hectares) covering 13 miles in length and up to 2 kilometers in width. Many homes were put at risk and more than 5,000 residents evacuated from their homes. The 3 major roads No 7, 107 and 207 linking thousands of homes to the urban center were closed for 3 days. Unfortunately for the residents of Candy Mountain Road area in Mineville 2 homes were destroyed and 20+ others damaged.

After the fire, MLA the Honorable Bill Dooks and Municipal Councillor David Hendsbee met with residents of Candy Mountain Road and Shoreline Drive and jointly conducted a survey to determine common factors affecting them. After correlating the results it was recommended that a committee of local residents be formed to formulate a proposal to deal with the issues raised. The hope is that the plans can form the basis of a Municipal, Provincial and Federal Government plan that could be used in the event of future disasters. This report is the summary of actions required to be undertaken with the support of the various levels of Government.

Synopsis

The residents and community of Candy Mountain Road and Shoreline Drive suffered a devastating event in June 2008. The following recommendations are presented in this report.

- 1) Ensure the health of the residents through seasonal well water testing for a period of 4 years.
- 2) Protect the properties and roadways in the community through erosion and runoff remediation from the fire destroyed lands.
- 3) Acquire +/- 43 acres of Federal Government land seized as Proceeds of Crime to permit restoration and remediation.
- 4) Fell and remove burnt trees to improve ground water quality.
- 5) Plant Ground cover in drainage area to address erosion and runoff.
- 6) Plant mixed species of nursery stock trees to create visual barrier.
- 7) The Provincial and Municipal Governments should work with the CMRAERC to develop a template for Post-Emergency Recovery Committees for future events.

Candy Mountain Road Area Environmental Restoration Committee
CMRAERC

Proposal for remediation of critical issues April 2009

The Candy Mountain Road Area Environmental Restoration Committee

A sub committee of the Mineville Community Association made up of residents of Candy Mountain Rd. and Shoreline Dr.

Scope:

To determine the issues of concern facing the residents of Candy Mountain Road and Shoreline Drive as a result of the wild land fire that encroached on the community on June 13 – 16, 2008.

Mandate:

To recommend actions that will reduce the long term impact on the community.

The mandate of the sub committee is to explore solutions to the identified problems, formulate an action plan and forward a proposal for consideration by government to restore the Candy Mountain Road Area.

To provide guidance that can form the basis for the formulation of a program to help lessen the impact on communities similarly affected by future Urban Wild Land Interface Fires.

History

The wildfire started June 13 in the heavily wooded communities of Lake Echo and Porters Lake about 28 kilometers east of downtown Halifax, as a result of an ill conceived campfire. Before it was over, the Lake Echo/Porters Lake fire destroyed two homes, damaged 20+ others and forced the evacuation of 5,000 residents.

The fire closed all 3 major roads serving the Eastern Shore affecting thousands more residents for 3 days. It burned out of control for 2 days due to high winds blowing at 90 km/h and aided by tree debris left on the forest floor by Hurricane Juan in 2003.

To fight the wildfire, the Nova Scotia Department of Natural Resources (DNR) used 120 of its firefighters and a full range of apparatus, including fixed-wing/helicopter water bombers. The Halifax Regional Fire Emergency Services were also deployed using 200 Firefighters over the weekend. Water bombers from Newfoundland and Labrador and Quebec arrived on Saturday to assist the 10 DNR water bombers in the fire fighting efforts. The aircraft worked to control the fire in inaccessible areas, while the crews were concentrating on protecting homes.

Candy Mountain Road Area Environmental Restoration Committee

CMRAERC

Proposal for remediation of critical issues April 2009



Considering the scale of this wildfire it is remarkable that no lives were lost, and only two homes destroyed. Such a result is a testament to the quality of the HRFES' firefighters, Department of Natural Resources firefighters and those who aided them that hot, dry weekend in June.

Timeline:

Friday June 13	3:10 pm	Fire Started in Lake Echo. Soon after large billows of smoke could be seen in the area. Calls start coming in to 911.
	4:00 pm	Evacuation begins in Mineville. Fire burning out of Control
	5:00 pm	Comfort Centers established at Cole Harbour Place and Seaforth Community Center
	6:00 pm	1 st of two homes on Candy Mountain Rd burning
Saturday June 14	all day	Evacuation expanded. Fire burning out of control. Evacuees meet at Cole Harbour Place for updates by fire and Government officials.
Sunday June 15	6:00 pm	Evacuation order lifted and residents are able to return home except for Candy Mountain Road, Shoreline Drive and Leslie Road in Lawrencetown.

Aftermath:

Residents of Candy Mountain Rd and Shoreline Dr are reliving history every day since the fire. There are new challenges in dealing with issues, memories, and stresses that have forever changed the social fabric of the community.

Candy Mountain Road Area Environmental Restoration Committee
CMRAERC

Proposal for remediation of critical issues April 2009

The week following the fire saw the first of several community meetings that allowed residents to express their concerns, seek answers to questions and ask for assistance with many things. There was no Government Department, Agency or organization that was able to provide authoritative information on many of the concerns the residents expressed. MLA Bill Dooks and Councillor David Hendsbee provided information to individuals as to who to contact about particular issues like insurance claim problems when they knew or could make a suggestion. At the August 26th update meeting the MLA and Councillor undertook to conduct a house by house survey of the 100 residents on Candy Mountain Road and Shoreline Drive to document all concerns.

The survey was conducted in mid September and the results were provided at the community meeting held on October 29th. The residents were informed that the MLA and Councillor had spent a lot of time trying to find government help for the residents in dealing with the issues resulting from the fire. They indicated there was no government program or agency that is responsible to deal with wildfire issues in general and made the suggestion that the community should create a committee to document the issues and present specific recommendation to the government to address the major concerns. A number of the residents at the meeting volunteered to form a committee under the sponsorship of the Mineville Community Association.

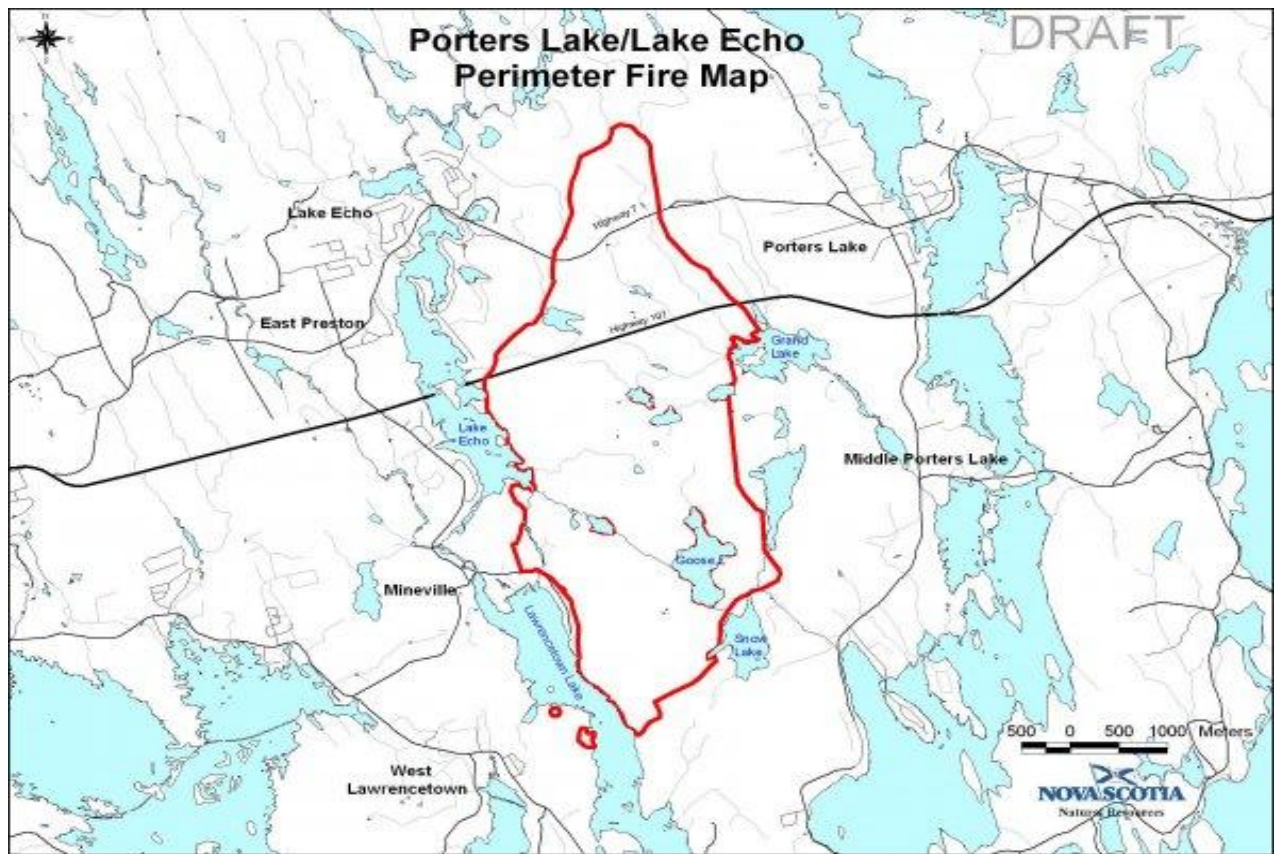
Eight sub-committee members met for the first time on Oct 30th and nominated a chairperson and scheduled weekly meeting. In the following 16 weeks, 12 meetings were held by the group where tasks were assigned and progress reviewed. Some of the tasks undertaken were to get a survey response from every residence on Candy Mountain Road and Shoreline Drive to have 100% representation, contact subject matter experts on well water quality, forestry information on Silviculture reforestation, hydrology regarding runoff and aquifer and forestry industry best practice on re-establishing wild land growth. (See Resources reference on page 12.) Face to face meetings were held with several representatives from different organizations which provided the committee with valuable information for formulating the recommendations in this document. The committee reviewed the many concerns in the community but focused on the 3 major issues identified by the surveys.

Identified problems

- * Well water contamination.
- * Increased run off causing erosion problems.
- * Social Impact on Residents.
- * Clearing of Crown land.
- * Restoration of community parkland.

Other Considerations

There are several other initiatives that have been identified by residents as having a great deal of merit. The residents feel they need to express their appreciation in a permanent and conspicuous way to all the organizations and individuals that put their lives at risk and gave so much support to the evacuees. They are looking to create a site at the entrance to the Candy Mountain Road and Shoreline Drive burn area where a commemorative plaque and story board would be displayed as a thank you to the many people who helped the community. It is believed that permanent commemorative plaques should also be located at each of the evacuation centers who provided shelter and support during the weekend. Planning has started on some form of anniversary recognition event to show the volunteers the changes in the community since the fire. There is also an opportunity to make something positive out of the devastation to the wild land by creating trails with informative placards and pictures that could show the changes to the environment over time as different areas are re-established naturally.



Committee Findings and Recommendations

1) Ground Water Quality

Mineville being a rural area the domestic water supplies to homes use individual dug or drilled wells. The wildfire destroyed the surrounding ecosystem immediately surrounding many of the wells as well as the majority of the feeder water shed area. Immediately following the fire one third of the households on Candy Mountain Road and Shoreline Drive had their well water tested and three quarters of the test results found one or more issues making the well water non potable.

CMRAERC Specific Recommendation

Based on recommendations the committee received from the Nova Scotia Department of Environment and Mr. Dean Walker of Atlantic Water Investigations, the well water for the homes on Candy Mountain Road and Shoreline Drive directly impacted by the fire need to be tested seasonally (4 times a year) to determine the extent of contamination due to the effects of the fire. The water supply area will be producing excessive amounts of nitrites, nitrates, total organic carbons and sulfates until the filtration overburden can be restored. The residents request the Provincial Government work with the CMRAERC to organize the collect, appropriate testing and reporting of well water status quarterly for the next 4 years starting immediately. The cost of the testing should be born by the Government. Not all wells will have to be tested for the full term but sample wells will be selected as signal sources to indicate when more rigorous testing needs to be done.

General Recommendation

The government should develop a plan to assess well water quality in an interface area over an extended period following a wildfire such as occurred on June 13th, 2008. It can be expected that water quality can be adversely impacted for several years necessitating regular sampling. Information presented to the committee recommends well water test results on seasonal sampling for a minimum of 4 years.

2) Erosion and Runoff

The following excerpt is from the British Columbia 2003 Firestorm Provincial Review conducted by a review committee headed by the Honourable Gary Filmon for Premier Gordon Campbell. The full report is available on line at <http://www.2003firestorm.gov.bc.ca/>

{The burning off of vegetation and absorptive material leaves a coat of impervious material, in many cases loosely held together by damaged roots. As a consequence, under heavy rainfall or runoff conditions, the moisture will not be absorbed, but will run overland in a much more accelerated fashion. This can lead to flooding as the water overflows drainage channels and exceeds culvert capacity, eroding roadbeds or even causing mudslides.

Candy Mountain Road Area Environmental Restoration Committee
CMRAERC

Proposal for remediation of critical issues April 2009

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It will be many years before the absorptive capacity of the landscape is returned to normal. Many areas will remain at risk without rehabilitative measures. The most significant concern for residents who face the risk of water or mudslide damage is that they are likely uninsurable. Another area of grave concern is the potential damage to fish habitat and drinking water sources related to the destruction of streamside vegetation. }

Of the 4,757 acres burned in the Porters Lake/Lake Echo Wildfire all of the property bordering the houses on Candy Mountain Road and Shoreline Drive that were immediately affected and /or damaged consists of a +/- 43 acre lot of Federal Government owned land. Assessment Account Number 01549065 on the Property Valuation Services Corporation website, <http://www.nsassessmentonline.ca/Search/GenericSearch.aspx?mode=ACCOUNT> . This Federally owned land abuts the properties and was completely ravaged by the wildfire. Essentially all vegetation and root mat (duff) was destroyed on this property causing a loss of water retention and filtering capabilities. The property is the primary watershed area for wells of the affected homes on Candy Mountain Road and Shoreline Drive.

On July 22, 2008, 5½ weeks after the wildfire, there was a rainstorm that caused significant and wide spread erosion and runoff problems for residents in the CMRAERC review area. Evidence of the effects of the loss of vegetation and absorptive material can be found in the Candy Mountain Road residents' survey. There continues to be significant erosion and runoff problems. It has been observed by residents that runoff is affecting Lawrencetown Lake, a known Atlantic salmon habitat. Significant erosion is also evident on the West Porters Lake Road and the Old Mineville Road in areas ravaged by the Wildfire.

CMRAERC Specific Recommendation

There is an urgent need for the Federal and Provincial Government, in partnership with local government to assess and provide remediation in the areas of excessive runoff and erosion specific to Candy Mountain Road and Shoreline Drive before the commencement of the spring runoff period. The assessment has to address private and government owned land runoff and associated problems including condition and capacity of existing drainage systems. Reassessment should be conducted during the spring runoff to evaluate effectiveness of remediation efforts. The CMRAERC will undertake the co-ordination of resident concerns and requests and communicate them to the appointed government liaison.

General Recommendation

The provincial government, in partnership with local governments should examine watershed restoration as soon as possible, to identify the areas of severe watershed destruction and threats to roadway infrastructure and develop a plan for the protection and rehabilitation of these areas.

3) Rehabilitation of Wild Land Urban Interface Burn

To address runoff, erosion and well water quality the interface burn area needs to be rehabilitated and in so doing the 3rd major issue for the residents of Candy Mountain Road area will also be addressed. The social impact of the wildfire for the majority of the evacuees ended when they returned to their homes. However, for the residents of Candy Mountain Road and Shoreline Drive the incident is still on going. Each day they have the burnt trees and blackened ground as a stark reminder of the stress and anxiety they have to deal with.

There is evidence among the residents of Candy Mountain Road area supporting the finding of the document “Psychosocial Responses to Fire” published on the Forest Encyclopedia Network at <http://www.forestencyclopedia.net/p/p4/p136/p793/p820/p824> excerpt attached - Appendix (A). Examples include disturbed sleep, increased domestic accidents, higher stress levels and increased occurrences of general maladies.

CRMAERC Specific Recommendations

- A) Fell and remove standing burnt trees to improve ground water quality. Refer to 1) Ground Water Quality on page 6. Based on estimates from Jim Verboom, President of Verboom Grinders Ltd. of Truro, Nova Scotia, the cost for the removal of the burnt trees will cost in the vicinity of \$600 to \$700 per acre as of December 2008. The Provincial and/or Federal Governments should cover the costs of the work and the CMRAERC can manage the project.
- B) Plant ground cover in the drainage area to address erosion and runoff issues. With the loss of the seed stock and ground duff in the burn area it will be necessary to plant trees to reestablish species and provide an environment for fauna repopulation. If left to natural regeneration there will be many years of invasive species expansion (raspberry, blackberry) that will deter the growth of quality species. Several methods of achieving the required results have to be undertaken. Planting nursery stock, spreading seeds and mulching cover, pruning and encouraging regenerative growth from hardwood stumps and controlling invasive species spread. The cost of nursery stock, seed, cover material and labor should be paid through Government programs.
- C) Create a growing visual barrier through the planting of fast growing mixed species of trees. Planting of nursery stock in a 10 to 15 meter band in the interface between the homes and the burn area will provide a visual break for the residents with a green barrier. The cost of the nursery stock and labor should be paid through Government programs.

It is relevant to note that following Hurricane Juan on September 28, 2003 there was a very large volume of fallen trees left on the ground that was confiscated by the Federal Justice Department: these fallen trees contributed to the intensity of the wild fire and interfered with the efforts to protect the houses. There had been no effort by the Federal Government to clean up the dead falls from Hurricane Juan.

The CMRAERC will take on the responsibility for managing the remediation and rehabilitation of the 43 acres of land owned by the Federal Government if they were to relinquish the title for the land to the Mineville Community Association for community use. The CMRAERC have started planning the creation of a commemorative site within the community to honor the fire fighters who fought to save the community and to thank all the volunteers and organizations who provided support to the more than 5000 evacuees. With the land being under management by the CMRAERC, development

of walking trails, parks and gardens will be encouraged within the community and help in the rehabilitation of the area surrounding the homes most affected by the fire. We request the transfer of ownership to the MCA be approved before June of 2009 to allow for the design and announcement of the commemorative site on the 1st anniversary of the fire on June 13th.

4) Recovering from Wild Land Interface Fires ~ Post-Emergency Recovery

All well-developed emergency plans contain a post emergency recovery component. This component should deal with the physical and social consequences of the emergency, in this case urban wild land interface fires.

With many non-profit agencies governed by different mandates, there can be a problem in the post-emergency recovery period of more than one organization providing assistance to the same individuals. This overlap and duplication could be overcome by the establishment of an umbrella committee with a designated lead agency responsible for collecting information on needs and donations and coordinating the support efforts.

During and immediately following an incident, contact with and communication to affected civilians needs co-ordination and centralization through a single agency. Use of public broadcast radio stations to identify affected areas and provide clear directions on where to get information (internet site, telephone number, briefing center etc.) is strongly recommended. The agency responsible for civilian contact should be the 'go to' location for all other agencies for getting information from homeowners or getting information to home owners.

Suggestions were made to establish a provincial template in every local emergency plan that will address the many actions needed to achieve comprehensive recovery from a disaster. The template should be used by all communities, municipalities and regional districts.

Ideally, in each community, the template would include a broadly structured Recovery Committee composed of representatives from local government, volunteer and funding agencies, Provincial Emergency Program personnel, local clergy and affected residents. Postmortem assessments have to include recovery committee residents' representative for civilian input and communications.

Candy Mountain Road Area Environmental Restoration Committee
CMRAERC

Proposal for remediation of critical issues April 2009

Bringing together all social support agencies, both public and private, under one organizing group would help ensure those with unique needs do not fall between the cracks.

CRMAERC Specific Recommendations

The CMRAERC recommends that the Nova Scotia Department of Health Promotion and Protection work with the committee to evaluate the Community Health Impact of an environmental disaster.

From: "Healthy People, Healthy Communities: Using the Population Approach in Nova Scotia" on line publication at <http://www.gov.ns.ca/hpp/publications/PopulationHealthApproach.pdf> .

"PATH (People Assessing Their Health) is an initiative based on the idea that people know a lot about what makes them healthy. It is also based on the idea that people at the community-level should be involved in planning and decision making about the policies and programs that affect them."

Based on the definition of the PATH project we believe the community should have input into policies and programs that need to be created or changed to ensure the health of the community over the years following an Urban - Wild Land Interface forest fire of this magnitude or other similar environmental disasters.

An Environmental Impact Assessment should be conducted to determine the immediate and long term impact on the community so policies and programs can be adjusted to reflect the long term needs and responsibilities. It is unclear at this time which Government Department this should fall under. There are several possibilities between Health Promotion and Protection, Environment and Natural Resources at the Provincial Government level. At the Municipal Government level there is Environmental Services and at the Federal Government level the Canadian Environmental Assessment Agency, Environment Canada, Health Canada and Public Health Agency of Canada are but a few groups that could take ownership for conducting an assessment. The CMRAERC recommends that the various levels of government fund an appropriate body to work with us to conduct an Environmental Impact Assessment and produce recommendations for the long term health of the residents.

Candy Mountain Road Area Environmental Restoration Committee

CMRAERC

Proposal for remediation of critical issues April 2009

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References:

- 1) Service Canada Website, Labour Market Information, Listing of Local Forestry Companies.
- 2) Nova Scotia Environment & Labour, Information Relating to Wells and Well Contaminates:
 - a) Sources of Drinking Water
 - b) Protecting Your Drinking Water
 - c) Well Contamination - General Chemistry & Metals
 - Humic Substances (end product of decaying organic matter)
 - Iron & Manganese
 - Arsenic
 - Nitrates & Turbidity
- 3) Nova Scotia Dept of Agriculture, Water Quality Evaluation Division
 - Bacteria Water Analysis
 - Mineral Water Analysis
- 4) The Fowler Report on Human Health Impacts of Forest Fires (2003), Journal of Ecological Anthropology - Appendix (A).
Vol. 7, pages 47-51
 - Direct Injuries
 - Health Consequences of Water Contamination
 - Psychosocial Consequences of Forest Fires
 - Socio-cultural Transformations
 - Grief and Distress
 - Stress Disorders
 - Responding to and Recovering from Damages
- 5) Association of Sustainable Forestry, Information on Silviculture treatments related to re-establishing tree growth.
- 6) British Columbia 2003 Firestorm Provincial Review, for Premier Gordon Campbell. Wilderness Committee Organization of British Columbia, 2003 Study of BC's Forest Fire Season.
 - Containing recommendations and mandates to better manage Urban Wild Land Interface Fire issues.Available online at <http://www.2003firestorm.gov.bc.ca/> .

Resources:

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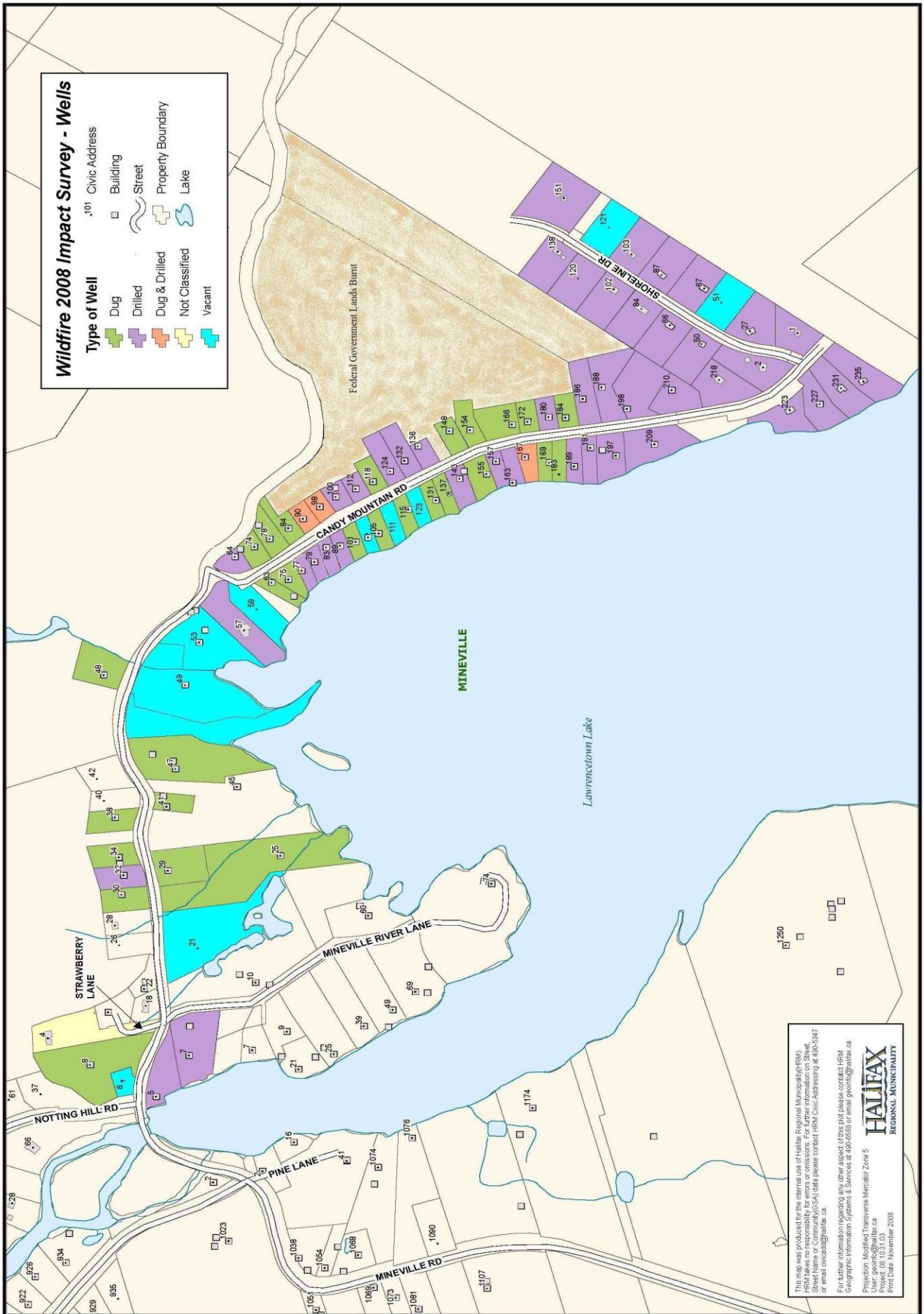
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Proposal for remediation of critical issues April 2009



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Proposal for remediation of critical issues April 2009



Appendix (A)

<http://www.forestencyclopedia.net/p/p4/p136/p793/p820/p824>

Pages reproduced here.

Psychosocial Responses to Fire

Authored By: C. Fowler

Exposure to forest fires impacts psychosocial wellbeing (Evans and Kantrowitz 2002). Adverse psychosocial consequences of forest fires range from temporary frustration, to the temporary or permanent reduction of health related quality of life (HRQL), to post traumatic stress disorder (PTSD). Beneficial consequences of forest fires include positive transformations in interpersonal relations, financial profit, and community cooperation.

Air pollution is a source of psychological distress. Ozone is associated with negative emotions and aggressive behaviors (Evans and Kantrowitz 2002). Air pollution and bad-smelling air are associated with increases in depression, anxiety, and with increases in hospital admissions for psychiatric problems (American Thoracic Society 2000). Studies show that the bad odors that often accompany air pollution episodes cause evaluative and cognitive deficiencies as well as behavioral disorders (Rotton 1983). Sensory stress from bad odors impair cognitive and intellectual functioning by interfering with an individual's ability to complete complex proof reading tasks, but does not decrease abilities to complete simple arithmetic tasks (Rotton 1983). One of the ways that sensory stress effects behavior is that when a person has little control, he/she becomes frustrated more easily (Rotton 1983).

Property loss, such as the destruction of a home or workplace or damage to personal goods, can be a source of grief. Feelings of helplessness may arise among people whose lives and property are threatened by wildland fires (Machlis 2002). In some cases fire may cause the disruption of communities, which is also a source of grief (Oliver-Smith 1996).

Forest fires potentially induce other profound forms of stress and serious psychological illnesses, such as post-traumatic stress disorder (PTSD) (Jones and others 2002; Patz, Engelberg, and Last 2000). PTSD can occur among people who live in areas that have been affected by fires. Following a fire in 1985, members of the Baldwin Hills (Los Angeles) community exhibited an array of post-traumatic stress symptoms including trouble sleeping, nightmares, jumpiness, disturbing memories, and depression (Maida 1989). Destruction of 'place' is a trauma that evokes PTSD symptoms (Oliver-Smith 1996). PTSD symptoms emerge following dislocation from home including frustration, fatigue, stress, and panic (Machlis 2002). Similarly, the evacuations that sometimes occur when forest fires threaten homes and businesses or when biomass smoke reaches unhealthy levels (Mutch 2002; Therriault 2001; Wade 1998) create psychological distress. Although it has not been demonstrated in scientific studies, we might hypothesize that some portion of the thousands of people who were evacuated from their homes in Florida in 1998 experienced some degree of psychological distress. Other fire-

related events that evoke PTSD symptoms in adults are threats to life, physical injury, and the injury or death of a loved one (Jones and others 2002).

Perceptions of forest fires may change following a fire. Direct experience with a forest fire causes people to perceive a higher risk of future fires or to become more fearful of fire (Machlis 2002). In some cases, prescribed fires may be less acceptable to people who previously had direct experience with fires (Machlis 2002). In other cases, prescribed fires may positively affect aesthetic values leading to greater satisfaction with one's living environment by reducing the potential for severe wildland fires to cause more dramatic disruptions of the landscape. Beyond perceptions, forest fires may affect the 'real' future vulnerability and resiliency of a community (Machlis 2002) due to changes in ecosystem traits, material infrastructure, cultural characteristics, and social relations.

Communities and the Psychology of Fire

Fires have been referred to as "engines of change" (Force, Machlis, and Zhang 2000) in communities. In fact, in human history some disasters have spawned social transformations monumental enough to be labeled "cultural evolution" (Oliver-Smith 1996: 312). Communication patterns among community members may change during and after a forest fire (Machlis 2002). Social relationships may change as a result of forest fires. Relationships may change between individual citizens, subgroups within a population, and between citizens and organizations (e.g., land and fire management teams). There may also be changes in relations between individuals, communities, and cultural or ethnic groups (Gordon and others 1995).

Fires, like other disasters, can instigate changes in cultural values. For instance, values regarding marriage may shift from a long-term commitment to an immediate means for gaining security (Oliver-Smith 1996). Significant religious changes follow major disasters. Transformations in symbols and rituals occur as a consequence of natural disasters (Oliver-Smith 1996). People may mourn for symbols of self and community that are damaged or destroyed by forest fires (Oliver-Smith 1996).

Fires, as natural disasters, affect self-identity and the lived experiences of individuals (Oliver-Smith 1996). Fires can alter community-identity. Fires affect future perceptions and decisions related to self and community; for example, perceptions of forest fire risks and decisions about landscape management.

Researchers have found that disasters change political dynamics in communities (Oliver-Smith 1996). We might extrapolate from those studies to suggest that catastrophic wildland fires – as a type of disaster – create conditions that encourage the reorganization of power relations, the formation of new alliances and agendas, and the emergence of activism (Oliver-Smith 1996). The politics of representation are a critical factor for communities experiencing forest fires. The power to portray forest fires and communities who experience fires influences perceptions held by insiders and outsiders of the community.

Candy Mountain Road Area Environmental Restoration Committee
CMRAERC

Proposal for remediation of critical issues April 2009

Oliver-Smith (1996: 302) describes disasters as “challenges to the structure and organization of a society.” Forest fires may change community infrastructure (Machlis 2002). Interruptions in social services and damage to infrastructure cause individual and group stress (Oliver-Smith 1996). There may be significant changes in social structure as a result of a fire. Individuals who experience a rise in social status may benefit from forest fires; for instance, community members who successfully control part of a wildland fire or firefighters who keep a fire from damaging local structures. Other members of the community may not benefit from social changes. In some communities fires, like natural hazards in general, confer a negative image upon, or stigmatize, a particular place, person, or subgroup of the population (Machlis 2002).

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Encyclopedia ID: p824