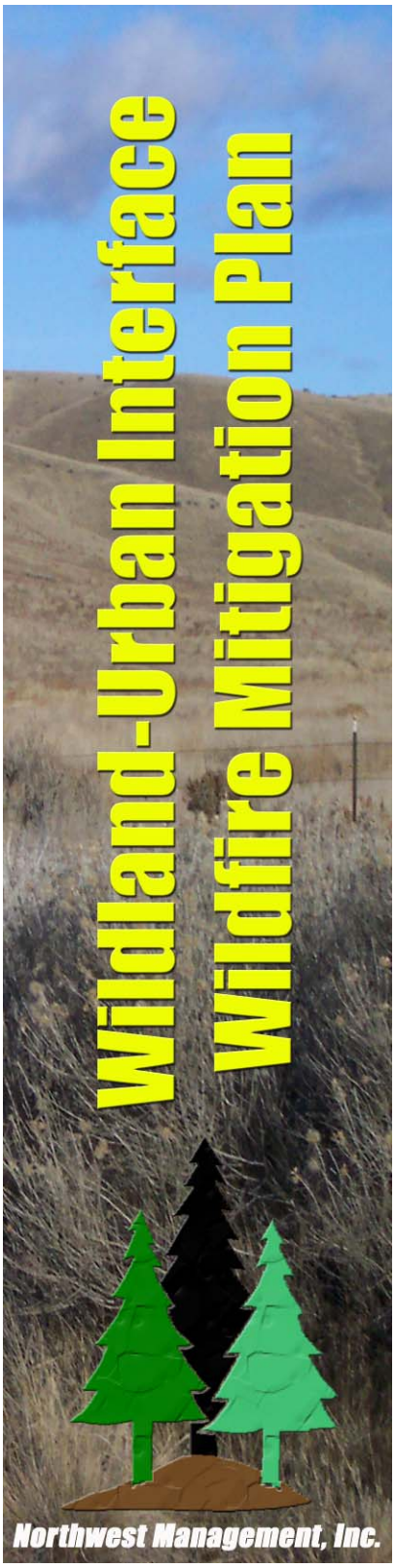


Canyon County, Idaho, All Hazards Mitigation Plan

Including the municipalities of Nampa, Caldwell, Middleton, Notus, Parma, Wilder, Greenleaf, & Melba

2006 Update

Volume II

Canyon County Wildland-Urban Interface Wildfire Mitigation Plan

FEMA Pre-Adoption Review

June 26, 2006

Vision: *Promote a countywide hazard mitigation ethic through leadership, professionalism, and excellence, leading the way to a safe, sustainable Canyon County.*

This plan was developed by the Canyon County Wildland-Urban Interface Wildfire Mitigation Plan Committee and All Hazard Mitigation Plan Committee in cooperation with Northwest Management, Inc., 233 E. Palouse River Dr. P.O. Box 9748, Moscow, Idaho 83843, Phone: (208) 883-4488, Fax: (208) 883-1098, www.Consulting-Foresters.com

Acknowledgments

This Wildland Urban Interface Wildfire Mitigation Plan represents the efforts and cooperation of a number of organizations and agencies, through the commitment of people working together to improve preparedness for wildfire events while reducing factors of risk.

Canyon County Commissioners and the employees of Canyon County

USDI Bureau of Land Management

Southwest Idaho Resource Conservation and Development Council, Inc.

USDI Bureau of Reclamation

Idaho Bureau of Homeland Security

Federal Emergency Management Agency

Idaho Transportation Department

Idaho Fish and Game

USDI Fish and Wildlife Service

USDA Forest Service

Idaho Department of Lands

City of Nampa

City of Caldwell

City of Middleton

City of Melba

City of Notus
City of Greenleaf
City of Wilder
City of Parma &
Local Businesses and
Citizens of Canyon County

Mercy Medical Center

Caldwell Fire Protection District

Nampa Fire Department

Nampa Police Department

Melba Fire Department
Middleton Fire, Rescue, & Emergency Services
Parma Fire Department
Upper Deer Flats Fire Department
Kuna Fire District
Marsing Rural Fire Department
Murphy-Reynolds-Wilson Fire District
Notus Fire Department
Star Joint Fire Protection District
Wilder Rural Fire Protection District
Caldwell Police Department

To obtain copies of this plan contact:

Canyon County Commissioners Office
Canyon County Courthouse
1115 Albany
Caldwell, ID 83605
Phone: (208) 454-7300

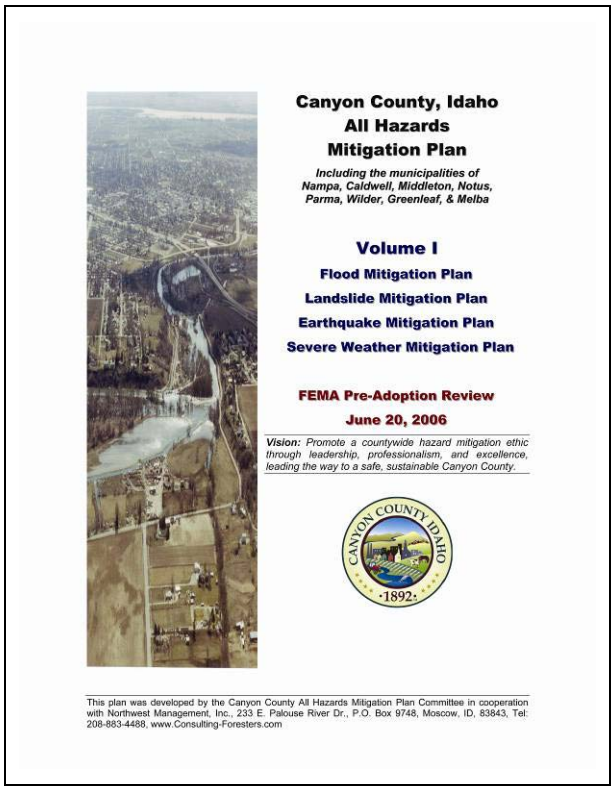
Table of Contents

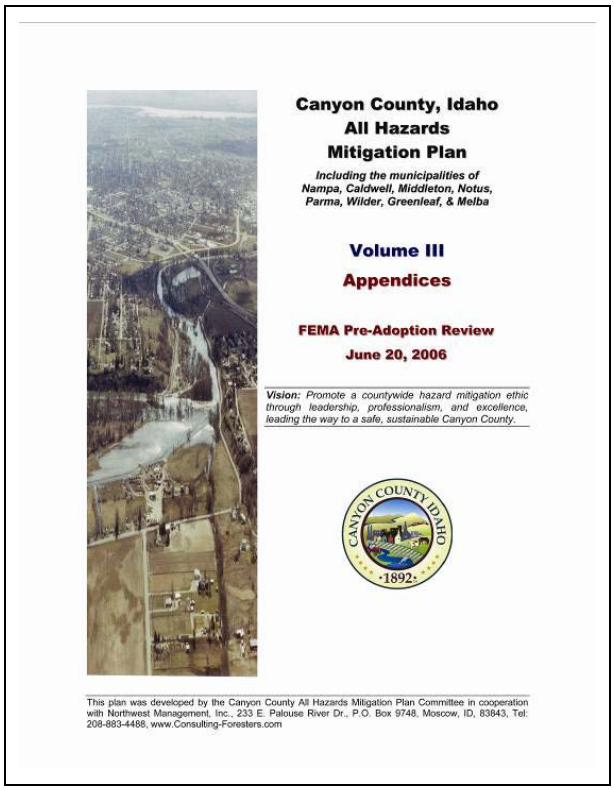
Foreword

The **Canyon County All Hazards Mitigation Plan** was developed during 2005-06 by the Canyon County Hazard Mitigation Planning Committee in cooperation with Northwest Management, Inc., of Moscow, Idaho. Three bound documents have been produced as part of this planning effort. They include:

- Volume I: All Hazards Mitigation Plan including chapters of:
  - Flood Mitigation Plan
  - Landslide Mitigation Plan
  - Earthquake Mitigation Plan
  - Severe Weather Mitigation Plan
- Volume II: Wildland-Urban Interface Wildfire Mitigation Plan
- Volume III: All Hazard Mitigation Plan Appendices

The Canyon County Wildland-Urban Interface Wildfire Mitigation Plan, in addition to being compatible with FEMA requirements is also compatible with the National Fire Plan, the Healthy Forests Restoration Act, and the Idaho Implementation Strategy for the National Fire Plan. Although it is being published as a separate document, it should be considered one chapter of the All Hazards Mitigation Plan and is hereby incorporated into this plan's contents.





Chapter I: Overview of this Plan and its Development

1 Introduction

This Wildland-Urban Interface Wildland Fire Mitigation Plan is the result of analyses, professional cooperation and collaboration, assessments of wildfire risks and other factors considered with the intent to reduce the potential for wildfires to threaten people, structures, infrastructure, and unique ecosystems in Canyon County, Idaho. The planning team responsible for implementing this project was led by the Canyon County Commissioners. Agencies and organizations that participated in the planning process included:

- Caldwell City Planning Department
- Caldwell City Public Works
- Caldwell Police Department
- Canyon County Assessor
- Canyon County Emergency Management
- Canyon County Board of County Commissioners
- Canyon County Highway District #4
- Canyon County Local Emergency Planning Committee
- Canyon County Planning Department
- Canyon County Sheriff's Department
- Canyon County Highway District
- City of Caldwell
- City of Melba
- City of Middleton
- City of Greenleaf
- City of Wilder
- City of Nampa
- City of Notus
- City of Parma
- Golden Gate Highway District
- Idaho Department of Lands
- Idaho Fire Chief's Association
- Idaho Transportation Department
- Kuna Fire District
- Melba Fire Department
- Mercy Medical Center
- Middleton Fire, Rescue, and Emergency Services
- Nampa City Planning Department
- Nampa City Public Works
- Nampa Dispatch Center
- Nampa Fire Department
- Nampa Highway District
- Nampa Police Department
- Northwest Management, Inc.
- Northwest Nazarene University
- Notus Fire Department
- Notus/Parma Highway District

- Notus Public Works
- Parma Fire Department
- Regional Communications - Canyon County Dispatch Center
- Southwest District Health
- Southwest Idaho Resource Conservation and Development Council
- Star Joint Fire Protection District
- Upper Deer Flats Fire Department
- USDA Forest Service
- USDI Bureau of Land Management
- USDI Fish and Wildlife Service
- West Valley Medical Center
- Wilder Rural Fire Protection District

The Southwest Idaho Resource Conservation and Development Council, Inc., on behalf of the Canyon County Commissioners, solicited competitive bids from companies to provide the service of leading the assessment and the writing of the **Canyon County Wildland-Urban Interface Wildland Fire Mitigation Plan**. The Southwest Idaho RC&D contracted with Northwest Management, Inc., to provide this service to Elmore, Ada and Canyon Counties. Northwest Management, Inc. is a professional natural resources consulting firm located in Moscow, Idaho. Established in 1984 NMI provides natural resource management services across the USA. The Project Manager from Northwest Management, Inc. was Dr. William E. Schlosser, a professional resource manager and regional planner.

1.1 Goals and Guiding Principles

1.1.1 Federal Emergency Management Agency Philosophy

Effective November 1, 2004, a Local Hazard Mitigation Plan approved by the Federal Emergency Management Agency (FEMA) is required for Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation Program (PDM) eligibility. The HMGP and PDM program provide funding, through state emergency management agencies, to support local mitigation planning and projects to reduce potential disaster damages.

The new local hazard mitigation plan requirements for HMGP and PDM eligibility is based on the Disaster Mitigation Act of 2000, which amended the Stafford Disaster Relief Act to promote and integrated, cost effective approach to mitigation. Local hazard mitigation plans must meet the minimum requirements of the Stafford Act-Section 322, as outlined in the criteria contained in 44 CFR Part 201. The plan criteria cover the planning process, risk assessment, mitigation strategy, plan maintenance, and adoption requirements.

FEMA will only review a local hazard mitigation plan submitted through the appropriate State Hazard Mitigation Officer (SHMO). Draft versions of local hazard mitigation plans will not be reviewed by FEMA. FEMA will review the final version of a plan prior to local adoption to determine if the plan meets the criteria, but FEMA will be unable to approve it prior to adoption. In Idaho the SHMO is:

Idaho Department of Homeland Security
4040 Guard Street, Bldg 600
Boise, ID 83705

A FEMA designed plan will be evaluated on its adherence to a variety of criteria.

- Adoption by the Local Governing Body

- Multi-jurisdictional Plan Adoption
- Multi-jurisdictional Planning Participation
- Documentation of Planning Process
- Identifying Hazards
- Profiling Hazard Events
- Assessing Vulnerability: Identifying Assets
- Assessing Vulnerability: Estimating Potential Losses
- Assessing Vulnerability: Analyzing Development Trends
- Multi-Jurisdictional Risk Assessment
- Local Hazard Mitigation Goals
- Identification and Analysis of Mitigation Measures
- Implementation of Mitigation Measures
- Multi-Jurisdictional Mitigation Strategy
- Monitoring, Evaluating, and Updating the Plan
- Implementation Through Existing Programs
- Continued Public Involvement

1.1.2 United States Government Accounting Office

1.1.2.1 Technology Assessment - April 2005 – "Protecting Structures and Improving Communications during Wildland Fires"

1.1.2.1.1 Why GAO Did This Study

Since 1984, wildland fires have burned an average of more than 850 homes each year in the United States and, because more people are moving into fire-prone areas bordering wildlands, the number of homes at risk is likely to grow. The primary responsibility for ensuring that preventative steps are taken to protect homes lies with homeowners and state and local governments, not the federal government. Although losses from wildland fires made up only 2 percent of all insured catastrophic losses from 1983 to 2002, fires can result in billions of dollars in damages.

Once a wildland fire starts, various parties can be mobilized to fight it, including federal, state, local, and tribal firefighting agencies and, in some cases, the military. The ability to communicate among all parties - known as interoperability - is essential but, as GAO reported previously, is hampered because different public safety agencies operate on different radio frequencies or use incompatible communications equipment.

GAO was asked to assess, among other issues, (1) measures that can help protect structures from wildland fires, (2) factors affecting use of protective measures, and (3) the role technology plays in improving firefighting agencies' ability to communicate during wildland fires.

1.1.2.1.2 What GAO Found

The two most effective measures for protecting structures from wildland fires are: (1) creating and maintaining a buffer, called defensible space, from 30 to 100 feet wide around a structure, where vegetation and other flammable objects are reduced or eliminated; and (2) using fire-resistant roofs and vents. In addition to roofs and vents, other technologies – such as fire-resistant windows and building materials, chemical agents, sprinklers, and geographic

information systems mapping – can help in protecting structures and communities, but they play a secondary role.

Although protective measures are available, many property owners have not adopted them because of the time or expense involved, competing concerns such as aesthetics or privacy, misperceptions about wildland fire risks, and lack of awareness of their shared responsibility for fire protection. Federal, state, and local governments, as well as other organizations, are attempting to increase property owners' use of protective measures through education, direct monetary assistance, and laws requiring such measures. In addition, some insurance companies have begun to direct property owners in high risk areas to take protective steps.

Existing technologies, such as audio switches, can help link incompatible communication systems, and new technologies, such as software-defined radios, are being developed following common standards or with enhanced capabilities to overcome incompatibility barriers. Technology alone, however, cannot solve communications problems for those responding to wildland fires. Rather, planning and coordination among federal, state, and local public safety agencies is needed to resolve issues such as which technologies to adopt, cost sharing, operating procedures, training , and maintenance. The Department of Homeland Security is leading federal efforts to improve communications interoperability across all levels of government. In addition to federal efforts, several states and local jurisdictions are pursuing initiatives to improve communications interoperability.

The GAO study specifically noted the actions taken by Ada County in the Boise Foothills in it "Examples of Laws Requiring Protective Measures Adopted by Jurisdiction in Five States GAO Visited" (GAO-05-380 Wildland Fire Technologies Table 1 pg 53. The report states:

> "The county has identified lands at high risk of wildland fire and, since 1997, has required homeowners in this area to maintain at least 50 feet of defensible space around new structures. New construction in the high-risk area must comply with additional requirements, including at least class B roofing materials; screened vents' enclosed eaves; nonflammable gutters; and fire-resistant exterior walls, windows and decks."

1.1.3 Additional State and Federal Guidelines Adopted

The Wildland-Urban Interface Wildfire Mitigation Plan component of this All Hazards Mitigation Plan will include compatibility with FEMA requirements while also adhering to the guidelines proposed in the National Fire Plan, the Idaho Statewide Implementation Plan, and the Healthy Forests Restoration Act (2004). This Wildland-Urban Interface Wildland Fire Mitigation Plan has been prepared in compliance with:

- The National Fire Plan; A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-Year Comprehensive Strategy Implementation Plan–May 2002.
- The Idaho Statewide Implementation Strategy for the National Fire Plan–July 2002.
- Healthy Forests Restoration Act (2004)
- The Federal Emergency Management Agency's Region 10 guidelines for a Local Hazard Mitigation Plan as defined in 44 CFR parts 201 and 206, and as related to a fire mitigation plan chapter of a Natural Hazards Mitigation Plan.

"When implemented, the 10-Year Comprehensive Strategy will contribute to reducing the risks of wildfire to communities and the environment by building collaboration at all levels of government."
- The NFP 10-Year Comprehensive Strategy August 2001

The objective of combining these four complimentary guidelines is to facilitate an integrated wildland fire risk assessment, identify pre-hazard mitigation activities, and prioritize activities and efforts to achieve the protection of people, structures, the environment, and significant infrastructure in Canyon County while facilitating new opportunities for pre-disaster mitigation funding and cooperation.

1.1.3.1 National Fire Plan

The goals of this Wildland-Urban Interface Fire Mitigation Plan include:

1. Improve Fire Prevention and Suppression
2. Reduce Hazardous Fuels
3. Restore Fire-Adapted Ecosystems
4. Promote Community Assistance

Its three guiding principles are:

1. Priority setting that emphasizes the protection of communities and other high-priority watersheds at-risk.
2. Collaboration among governments and broadly representative stakeholders
3. Accountability through performance measures and monitoring for results.

This Wildland-Urban Interface Fire Mitigation Plan fulfills the National Fire Plan's 10-Year Comprehensive Strategy and the Idaho Statewide Implementation Strategy for the National Fire Plan. The projects and activities recommended under this plan are in addition to other Federal, state, and private / corporate forest and rangeland management activities. The implementation plan does not alter, diminish, or expand the existing jurisdiction, statutory and regulatory responsibilities and authorities or budget processes of participating Federal, State, and tribal agencies.

By endorsing this implementation plan, all signed parties agree that reducing the threat of wildland fire to people, communities, and ecosystems will require:

- Firefighter and public safety continuing as the highest priority.
- A sustained, long-term and cost-effective investment of resources by all public and private parties, recognizing overall budget parameters affecting Federal, State, Tribal, and local governments.
- A unified effort to implement the collaborative framework called for in the Strategy in a manner that ensures timely decisions at each level.
- Accountability for measuring and monitoring performance and outcomes, and a commitment to factoring findings into future decision making activities.
- The achievement of national goals through action at the local level with particular attention on the unique needs of cross-boundary efforts and the importance of funding on-the-ground activities.

- Communities and individuals in the wildland-urban interface to initiate personal stewardship and volunteer actions that will reduce wildland fire risks.
- Management activities, both in the wildland-urban interface and in at-risk areas across the broader landscape.
- Active forestland and rangeland management, including thinning that produces commercial or pre-commercial products, biomass removal and utilization, prescribed fire and other fuels reduction tools to simultaneously meet long-term ecological, economic, and community objectives.

The National Fire Plan identifies a three-tiered organization structure including 1) the local level, 2) state/regional and tribal level, and 3) the national level. This plan adheres to the collaboration and outcomes consistent with a local level plan. Local level collaboration involves participants with direct responsibility for management decisions affecting public and/or private land and resources, fire protection responsibilities, or good working knowledge and interest in local resources. Participants in this planning process include Tribal representatives, local representatives from Federal and State agencies, local governments, landowners and other stakeholders, and community-based groups with a demonstrated commitment to achieving the strategy's four goals. Existing resource advisory committees, watershed councils, or other collaborative entities may serve to achieve coordination at this level. Local involvement, expected to be broadly representative, is a primary source of planning, project prioritization, and resource allocation and coordination at the local level. The role of the private citizen is not to be under estimated, as their input and contribution to all phases of risk assessments, mitigation activities, and project implementation is greatly facilitated by their involvement.

1.1.3.2 Idaho Statewide Implementation Strategy

The Strategy adopted by the State of Idaho is to provide a framework for an organized and coordinated approach to the implementation of the National Fire Plan, specifically the national "10-Year Comprehensive Strategy Implementation Plan".

Emphasis is on a collaborative approach at the following levels:

- County
- State

Within the State of Idaho, the Counties, with the assistance of State and Federal agencies and local expert advice, will develop a risk assessment and mitigation plan to identify local vulnerabilities to wildland fire. A Statewide group will provide oversight and prioritization as needed on a statewide scale.

This strategy is not intended to circumvent any work done to date and individual Counties should not delay implementing any National Fire Plan projects to develop this county plan. Rather, Counties are encouraged to identify priority needs quickly and begin whatever actions necessary to mitigate those vulnerabilities.

It is recognized that implementation activities such as; hazardous fuel treatment, equipment purchases, training, home owner education, community wildland fire mitigation planning, and other activities, will be occurring concurrently with this County wide planning effort.

1.1.3.2.1 County Wildland Fire Interagency Group

Each County within the State has been requested to write a Wildland Fire Mitigation Plan. These plans should contain at least the following five elements:

1) Documentation of the process used to develop the mitigation plan. How the plan was developed, who was involved and how the public was involved.
2) A risk assessment to identify vulnerabilities to wildfire in the wildland-urban interface (WUI).
3) A prioritized mitigation strategy that addresses each of the risks. Examples of these strategies could be: training for fire departments, public education, hazardous fuel treatments, equipment, communications, additional planning, new facilities, infrastructure improvements, code and/or ordinance revision, volunteer efforts, evacuation plans, etc.
4) A process for maintenance of the plan which will include monitoring and evaluation of mitigation activities
5) Documentation that the plan has been formally adopted by the involved agencies. Basically a signature page of all involved officials.

This five-element plan is an abbreviated version of the FEMA mitigation plan and will begin to meet the requirements for that plan. To develop these plans each county should bring together the following individuals, as appropriate for each county, to make up the County Wildland Fire Interagency Group. It is important that this group has representation from agencies with wildland fire suppression responsibilities:

- County Commissioners (Lead)
- Local Fire Chiefs
- Idaho Department of Lands representative
- USDA Forest Service representative
- USDI Bureau of Land Management representative
- US Fish and Wildlife representative
- Bureau of Indian Affairs
- Local Tribal leaders
- Idaho Bureau of Homeland Security
- LEPC Chairperson
- Resource Conservation and Development representative
- State Fish and Game representative
- Interested citizens and community leaders as appropriate
- Other officials as appropriate

Role of Resource Conservation and Development Councils (RC&D): If requested by the County Commissioners, the local RC&D's may be available to assist the County Commissioners in evaluating each County within their council area to determine if there is a wildland fire mitigation plan in place, or if a plan is currently in the development phase. If no plan is in place, the RC&D's, if requested, could be available to assist the Commissioners with the formation of the

County Wildland Fire Interagency Group and/or to facilitate the development of wildland fire mitigation plan.

If a plan has been previously completed, the Commissioners will determine if the recommended five elements have been addressed. The Counties will provide a copy of the completed mitigation plan to the Idaho Department of Lands National Fire Plan Coordinator, which will include a contact list of individuals that developed the plan.

1.1.3.3 National Association of State Foresters

1.1.3.3.1 Identifying and Prioritizing Communities at Risk

This plan is written with the intent to provide the information necessary for decision makers (elected officials) to make informed decisions in order to prioritize projects across the entire county. These decisions may be made from within the council of Commissioners, or through the recommendations of ad hoc groups tasked with making prioritized lists of projects. It is not necessary to rank projects numerically, although that is one approach, rather it may be possible to rank them categorically (high priority set, medium priority set, and so forth) and still accomplish the goals and objectives set forth in this planning document.

The following was prepared by the National Association of State Foresters (NASF), June 27, 2003, and is included here as a reference for the identification of prioritizing treatments between communities.

Purpose: To provide national, uniform guidance for implementing the provisions of the "Collaborative Fuels Treatment" MOU, and to satisfy the requirements of Task e, Goal 4 of the Implementation Plan for the 10-Year Comprehensive Strategy.

Intent: The intent is to establish broad, nationally compatible standards for identifying and prioritizing communities at risk, while allowing for maximum flexibility at the state and regional level. Three basic premises are:

- Include all lands and all ownerships.
- Use a collaborative process that is consistent with the complexity of land ownership patterns, resource management issues, and the number of interested stakeholders.
- Set priorities by evaluating projects, not by ranking communities.

The National Association of State Foresters (NASF) set forth the following guidelines in the Final Draft Concept Paper; Communities at Risk, December 2, 2002.

Task: Develop a definition for "communities at risk" and a process for prioritizing them, per the Implementation Plan for the 10-Year Comprehensive Strategy (Goal 4.e.). In addition, this definition will form the foundation for the NASF commitment to annually identify priority fuels reduction and ecosystem restoration projects in the proposed MOU with the federal agencies (section C.2 (b)).

1.1.3.3.2 Conceptual Approach

1. NASF fully supports the definition of the Wildland Urban Interface (WUI) previously published in the Federal Register. Further, proximity to federal lands should not be a consideration. The WUI is a set of conditions that exists on, or near, areas of wildland fuels nation-wide, regardless of land ownership.

2. Communities at risk (or, alternately, landscapes of similar risk) should be identified on a state-by-state basis with the involvement of all agencies with wildland fire protection responsibilities: state, local, tribal, and federal.
3. It is neither reasonable nor feasible to attempt to prioritize communities on a rank order basis. Rather, communities (or landscapes) should be sorted into three, broad categories or zones of risk: high, medium, and low. Each state, in collaboration with its local partners, will develop the specific criteria it will use to sort communities or landscapes into the three categories. NASF recommends using the publication "Wildland/Urban Interface Fire Hazard Assessment Methodology" developed by the National Wildland/Urban Interface Fire Protection Program (circa 1998) as a reference guide. (This program, which has since evolved into the Firewise Program, is under the oversight of the National Wildfire Coordinating Group (NWCG)). At minimum, states should consider the following factors when assessing the relative degree of exposure each community (landscape) faces.
    - **Risk:** Using historic fire occurrence records and other factors, assess the anticipated probability of a wildfire ignition.
    - **Hazard:** Assess the fuel conditions surrounding the community using a methodology such as fire condition class, or [other] process.
    - **Values Protected:** Evaluate the human values associated with the community or landscape, such as homes, businesses, and community infrastructure (e.g. water systems, utilities, transportation systems, critical care facilities, schools, manufacturing and industrial sites, and high value commercial timber lands).
    - **Protection Capabilities:** Assess the wildland fire protection capabilities of the agencies and local fire departments with jurisdiction.
4. Prioritize by project not by community. Annually prioritize projects within each state using the collaborative process defined in the national, interagency MOU "For the Development of a Collaborative Fuels Treatment Program". Assign the highest priorities to projects that will provide the greatest benefits either on the landscape or to communities. Attempt to properly sequence treatments on the landscape by working first around and within communities, and then moving further out into the surrounding landscape. This will require:
    - First, focus on the zone of highest overall risk but consider projects in all zones. Identify a set of projects that will effectively reduce the level of risk to communities within the zone.
    - Second, determining the community's willingness and readiness to actively participate in an identified project.
    - Third, determining the willingness and ability of the owner of the surrounding land to undertake, and maintain, a complementary project.
    - Last, set priorities by looking for projects that best meet the three criteria above. It is important to note that projects with the greatest potential to reduce risk to communities and the landscape may not be those in the highest risk zone, particularly if either the community or the surrounding landowner is not willing or able to actively participate.
5. It is important, and necessary, that we be able to demonstrate a level of accomplishment that justifies to Congress the value of continuing the current level of appropriations for

the National Fire Plan. Although appealing to appropriators and others, it is not likely that many communities (if any) will ever be removed from the list of communities at risk. Even after treatment, all communities will remain at some, albeit reduced, level of risk. However, by using a science-based system for measuring relative risk, we can likely show that, after treatment (or a series of treatments), communities are at "*reduced risk*".

Similarly, scattered, individual homes that complete projects to create defensible space could be "counted" as "households at reduced risk". This would be a way to report progress in reducing risk to scattered homes in areas of low priority for large-scale fuels treatment projects.

Using the concept described above, the NASF believes it is possible to accurately assess the relative risk that communities face from wildland fire. Recognizing that the condition of the vegetation (fuel) on the landscape is dynamic, assessments and re-assessments must be done on a state-by-state basis, using a process that allows for the integration of local knowledge, conditions, and circumstances, with science-based national guidelines. We must remember that it is not only important to lower the risk to communities, but once the risk has been reduced, to maintain those communities at a reduced risk.

Further, it is essential that both the assessment process and the prioritization of projects be done collaboratively, with all local agencies with fire protection jurisdiction – federal, state, local, and tribal – taking an active role.

1.1.3.4 Healthy Forests Restoration Act

On December 3, 2003, President Bush signed into law the Healthy Forests Restoration Act of 2003 to reduce the threat of destructive wildfires while upholding environmental standards and encouraging early public input during review and planning processes. The legislation is based on sound science and helps further the President's Healthy Forests Initiative pledge to care for America's forests and rangelands, reduce the risk of catastrophic fire to communities, help save the lives of firefighters and citizens, and protect threatened and endangered species.

Among other things the Healthy Forests Restoration Act (HFRA):

- Strengthens public participation in developing high priority projects;
- Reduces the complexity of environmental analysis allowing federal land agencies to use the best science available to actively manage land under their protection;
- Creates a pre-decisional objections process encouraging early public participation in project planning; and
- Issues clear guidance for court action challenging HFRA projects.

The Canyon County Wildland-Urban Interface Wildfire Mitigation Plan is developed to adhere to the principles of the HFRA while providing recommendations consistent with the policy document which should assist the federal land management agencies (US Forest Service and Bureau of Land Management) with implementing wildfire mitigation projects in Canyon County that incorporate public involvement and the input from a wide spectrum of fire and emergency services providers in the region.

1.1.4 Local Guidelines and Integration with Other Efforts

1.1.4.1 Canyon County Fire Mitigation Planning Effort and Philosophy

The goals of this planning process include the integration of the National Fire Plan, the Idaho Statewide Implementation Strategy, the Healthy Forests Restoration Act, and the requirements of FEMA for a countywide Wildfire Mitigation Plan; a component of the County's All Hazards Mitigation Plan. This effort will utilize the best and most appropriate science from all partners, the integration of local and regional knowledge about wildfire risks and fire behavior, while meeting the needs of local citizens, the regional economy, the significance of this region to the rest of Idaho and the Inland West.

1.1.4.1.1 Mission Statement

To make Canyon County residents, communities, state agencies, local governments, and businesses less vulnerable to the negative effects of wildland fires through the effective administration of wildfire hazard mitigation grant programs, hazard risk assessments, wise and efficient fuels treatments, and a coordinated approach to mitigation policy through federal, state, regional, and local planning efforts. Our combined prioritization will be the protection of people, structures, infrastructure, and unique ecosystems that contribute to our way of life and the sustainability of the local and regional economy.

1.1.4.1.2 Vision Statement

Promote a countywide wildfire hazard mitigation ethic through leadership, professionalism, and excellence, leading the way to a safe, sustainable Canyon County.

1.1.4.1.3 Goals

- To reduce the area of WUI land burned and losses experienced because of wildfires where these fires threaten communities in the wildland-urban interface
- Prioritize the protection of people, structures, infrastructure, and unique ecosystems that contribute to our way of life and the sustainability of the local and regional economy
- Educate communities about the unique challenges of wildfire in the wildland-urban interface (WUI)
- Establish mitigation priorities and develop mitigation strategies in Canyon County
- Strategically locate and plan fuel reduction projects
- Provide recommendations for alternative treatment methods, such as brush density, herbicide treatments, fuel reduction techniques, and disposal or removal of treated fuels
- Meet or exceed the requirements of the National Fire Plan and FEMA for a County level Fire Mitigation Plan

Chapter 2: Planning Process

2 Documenting the Planning Process

Documentation of the planning process, including public involvement, is required to meet FEMA's DMA 2000 (44CFR§201.4(c)(1) and §201.6(c)(1)). This section includes a description of the planning process used to develop this plan, including how it was prepared, who was involved in the process, and how all of the involved parties participated.

2.1.1 Description of the Planning Process

The Canyon County Wildland-Urban Interface Wildfire Mitigation Plan was developed through a collaborative process involving all of the organizations and agencies detailed in Section 1.0 of this document. The County's local coordinator contacted these organizations directly to invite their participation and schedule meetings of the planning committee. The planning process included 5 distinct phases which were in some cases sequential (step 1 then step 2) and in some cases intermixed (step 4 completed though out the process):

1. **Collection of Data** about the extent and periodicity of hazards in and around Canyon County. This included an area encompassing Ada, Canyon, Owyhee, Payette, Gem and Elmore counties to insure a robust dataset for making inferences about hazards in Canyon County specifically.
2. **Field Observations and Estimations** about wildfire risks including fuels assessments, juxtaposition of structures and infrastructure to wildland fuels, access, and potential treatments by trained wildfire specialists.
3. **Mapping** of data relevant to wildfire control and treatments, structures, resource values, infrastructure, fire prone landscapes, and related data.
4. **Facilitation of Public Involvement** from the formation of the planning committee, to a public mail survey, news releases, public meetings, public review of draft documents, and acceptance of the final plan by the signatory representatives.
5. **Analysis and Drafting of the Report** to integrate the results of the planning process, providing ample review and integration of committee and public input, followed by acceptance of the final document.

2.2 The Planning Team

Planning efforts were led by the Project Co-Directors, Dr. William E. Schlosser, of Northwest Management, Inc. and Mr. Toby R. Brown, B.S. Dr. Schlosser's education includes 4 degrees in natural resource management (A.S. geology; B.S. forest and range management; M.S. natural resource economic & finance; Ph.D. environmental science and regional planning). Mr. Brown holds a bachelor's degree in Forest Resource Management. Leading efforts from Canyon County, was Todd Herrera, Canyon County Disaster Services Coordinator, who organized meetings, facilitated information management, and coordinated many activities associated with the development of the plans.

They led a team of resource professionals that included city and rural fire protection, federal agencies, resource management professionals, hazard mitigation experts, and local city employees.

The planning team met with many residents of the county during the inspections of communities, infrastructure, and hazard abatement assessments. This methodology, when coupled with the other approaches in this process, worked adequately to integrate a wide spectrum of observations and interpretations about the project.

The planning philosophy employed in this project included the open and free sharing of information with interested parties. Information from federal and state agencies and county departments was integrated into the database of knowledge used in this project. Meetings with the committee were held throughout the planning process to facilitate a sharing of information between cooperators.

When the public meetings were held, many of the committee members were in attendance and shared their support and experiences with the planning process and their interpretations of the results.

2.2.1 Multi-Jurisdictional Participation

CFR requirement §201.6(a)(3) calls for multi-jurisdictional planning in the development of hazard mitigation plans which impact multiple jurisdictions. This Wildland Urban Interface Wildfire Mitigation Plan is applicable to the following Jurisdictions:

- Canyon County, Idaho
- City of Nampa
- City of Caldwell
- City of Middleton
- City of Notus
- City of Wilder
- City of Parma
- City of Melba
- City of Greenleaf

All of these jurisdictions were represented on the planning committee, in public meetings, and participated in the development of hazard profiles, risk assessments, and mitigation measures. The monthly planning committee meetings were the primary venue for authenticating the planning record. However, additional input was gathered from each jurisdiction in a combination of the following ways:

- Planning committee leadership visits to scheduled municipality public meetings (e.g., County Commission meetings, City Hall meetings) where planning updates were provided and information was exchanged.
- One-on-one visits between the planning committee leadership and the representatives of the municipality (e.g. meetings with County Commissioners or City Councils in chambers).
- Special meetings at each jurisdiction by the planning committee leadership requested by the municipality involving elected officials (Mayors, County Commissioners, Assessor, and Sheriff), appointed officials, municipality employees, local volunteers (e.g. fire district volunteers), business community representatives, and local citizenry.
- Written correspondence was provided monthly between the planning committee leadership and each municipality updating the cooperators in the planning process, making requests for information, and facilitating feedback.

Planning committee leadership (referenced above) included: Todd Herrera, Canyon County Disaster Services Coordinator and Dr. William E. Schlosser, Toby Brown, and Tera King all of

Northwest Management, Inc.; and Bill Moore Southwest Idaho Resource Conservation and Development Council, Inc. Coordinator.

Like other rural areas of Idaho and the USA, Canyon County's human resources have many demands put on them in terms of time and availability. Although many of the elected officials (County Commissioners and Nampa and Caldwell Mayors) serve in a full-time capacity. Many of the smaller towns and cities elected officials serve in a part time capacity. Many of them have other employment and serve the community through a convention of community service. Recognizing this, many of the jurisdictions decided to identify a representative from the jurisdiction to cooperate on the planning committee and then report back to the remainder of the organization on the process and serve as a conduit between the planning committee and the jurisdiction. This was the case with the Canyon County Commissioners where Todd Herrera attended each planning committee meeting as a regular attendee and reported back to the Commissioners.

At the city level, all of the City Mayor offices were represented in a variety of ways. Most commonly, the Mayor of a municipality appointed a representative from the municipality to provide this representation on the committee meetings. In cases where the mayor was unable to attend, the planning committee leadership provided communications and feedback with the municipality directly to insure the multi-jurisdictional planning necessitated by this process.

2.3 Public Involvement

Public involvement in this plan was made a priority from the inception of the project. There were a number of ways that public involvement was sought and facilitated. In some cases this led to members of the public providing information and seeking an active role in protecting their own homes and businesses, while in other cases it led to the public becoming more aware of the process without becoming directly involved in the planning process.

2.3.1 News Releases

Under the auspices of the Canyon County Wildland-Urban Interface Wildfire Mitigation Planning Committee, news releases were submitted to area newspapers and flyers were distributed around communities by committee members.

2.3.1.1 Newspaper Articles

Committee and public meeting announcements were published in the local newspaper ahead of each meeting.

2.3.1.2 Flyers

The following is an example of the flyer that was distributed to committee members and area agencies. These flyers were also distributed around communities by Northwest Management, Inc. and committee members.

Canyon County, Idaho Wildfire Mitigation Plan

Public Meetings!

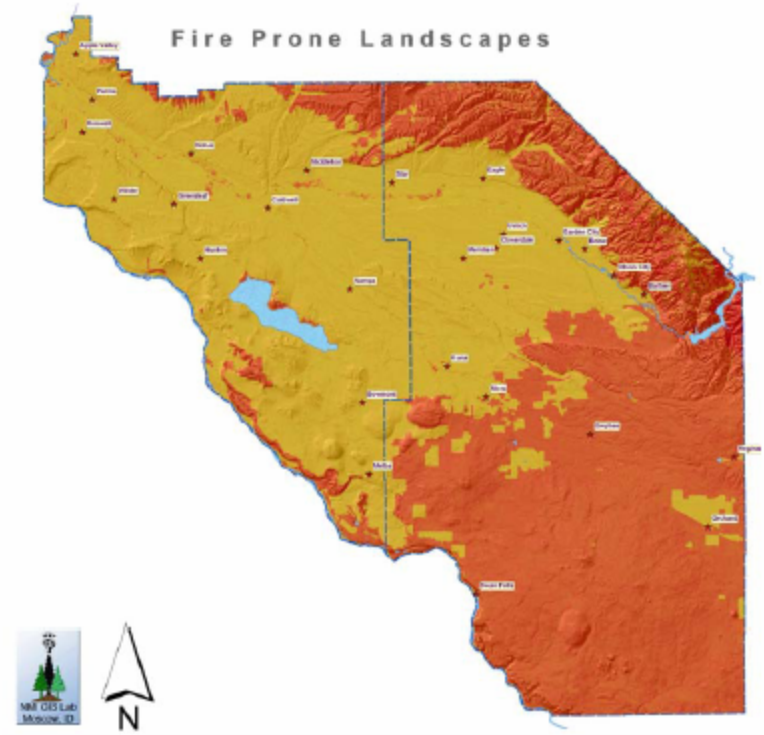
Southwest Idaho Resource Conservation and Development

Caldwell: March 29, 7:00 PM, Caldwell Police Department - Community Room, 110 S. 5th St.
Nampa: March 30, 7:00 PM, Hispanic Cultural Center, 315 Stampede Dr.
Melba: March 31, 12:30 PM, Melba Senior Center, 115 Baseline Rd.
Notus: March 31, 7:00 PM, Notus Community Center, next to Post Office on 1st St.

These public meetings will address the **Wildfire Mitigation Plan** for our communities. These meetings are open to the public and will include slideshow presentations from hazard mitigation specialists working on the Canyon County Wildfire Mitigation Plan. Public input is being sought in order to better frame the County's efforts of hazard mitigation treatments, fire district resource enhancements, and public land management.

This meeting will last for approximately 1.5 hours.

Please attend and participate!



Discuss ***YOUR*** priorities for how our communities can best mitigate these risks.

These meetings will last for approximately 1.5 hours and include refreshments, a slideshow, information on the planning process, and schedules for completion. ***We want your input.***

Topics of discussion include:

- Wildfirfes
- Fire Fighting Resources
- Fire Districts
- Infrastructure
- Fuels Treatments

For more information on Hazard Mitigation Plan projects in Canyon County, contact your County Commissioners, Bill Moore at the Southwest Idaho RC&D office at 208-888-1890 ext. 4, or William E. Schlosser at the Northwest Management, Inc., office in Moscow at 208-883-4488.

We'll see you there!

2.3.2 Public Mail Survey

In order to collect a broad base of perceptions about wildland fire and individual risk factors of homeowners in Canyon County, a mail survey was conducted. Using a state and county database of landowners in Canyon County, homeowners from the Wildland-Urban Interface surrounding each community were identified. In order to be included in the database, individuals were selected that own property and have a dwelling in Canyon County, as well as a mailing address in Canyon County. This database created a list of unique names, to which was affixed a random number that contributed to the probability of being selected for the public mail survey. A total of 230 landowners meeting the above criteria were selected.

The public mail survey developed for this project has been used in the past by Northwest Management, Inc., during the execution of other WUI Wildfire Mitigation Plans. The survey used The Total Design Method (Dillman 1978) as a model to schedule the timing and content of letters sent to the selected recipients. Copies of each cover letter, mail survey, and communication are included in Appendix III.

The first in the series of mailing was sent July 9, 2004, and included a cover letter, a survey, and an offer of receiving a custom GIS map of the area of their selection in Canyon County if they would complete and return the survey. The free map incentive was tied into assisting their community and helping their interests by participating in this process. Each letter also informed residents about the planning process. A return self-addressed enveloped was included in each packet. A postcard reminder was sent to the non-respondents on July 17, 2004, encouraging their response. A final mailing, with a revised cover letter pleading with them to participate, was sent to non-respondents on July 25, 2004.

Surveys were returned during the months of July, August, September, October, and November. A total of 71 residents responded to the survey (as of April 11, 2005). No surveys were returned as undeliverable, and four responded that they no longer live in the area. The effective response rate for this survey was 31%. Statistically, this response rate allows the interpretation of all of the response variables significantly at the 95% confidence level.

2.3.2.1 Survey Results

A summary of the survey's results will be presented here and then referred back to during the ensuing discussions on the need for various treatments, education, and other information.

All of the respondents have a home in Canyon County, and 86% consider this their primary residence. About 27% of the respondents were from the Parma area, 23% were from the Middleton area, 17% were from the Nampa area, 17% from Caldwell, 8% from Wilder, 4% from Notus, 2% from Melba, with the remainder from Canyon County landowners living in communities just outside Canyon County borders.

Almost all of the respondents (98%) correctly identified that they have emergency telephone 911 services in their area. Respondents were asked to identify if their home is protected by a rural or city fire district. Of the respondents, 88% correctly identified they live in an area protected by a rural or city fire district. Approximately 12% responded they do not have a fire district covering their home, when in fact they do.

Respondents were asked to indicate the type of roofing material covering the main structure of their home. Approximately 79% of respondents indicated their homes were covered with a composite material (asphalt shingles). About 5% indicated their home was covered with a metal (e.g., aluminum, tin) roofing material. Roughly 16% of the respondents indicated they have a

wooden roofing material such as shakes or shingles. The additional 1% of respondents had a variety of combustible and non-combustible materials indicated.

Residents were asked to evaluate the proximity of trees within certain distances of their homes. Often, the density of trees around a home is an indicator of increased fire risk. The results are presented in Table 2.1

Table 2.1 Survey responses indicating the proximity of trees to homes.

Number of Trees	Within 250 feet of your home	Within 75 feet of your home
None	0%	5%
Less than 10	62%	71%
Between 10 and 25	29%	22%
More than 25	9%	3%

Approximately 95% of those returning the survey indicated they have a lawn surrounding their home. Of these individual home sites, 98% indicated they keep this lawn green through the fire season.

The average driveway length of the respondents was approximately 301 feet long, from their main road to their parking area. Roughly 8% of the respondents had a driveway over ¼ miles long. Of these homes with lengthy driveways, roughly 35% have turnouts allowing two vehicles to pass each other in the case of an emergency. Approximately 77% of all homeowners indicated they have an alternative escape route, with the remaining 23% indicating only one-way-in and one-way-out.

Nearly all respondents (99%) indicated they have some type of tools to use against a wildfire that threatens their home. Table 2.2 summarizes these responses.

Table 2.2. Percent of homes with indicated firefighting tools in Canyon County.

95% – Hand tools (shovel, Pulaski, etc.)
8% – Portable water tank
5% – Stationery water tank
29% – Pond, lake, or stream water supply close
21% – Water pump and fire hose
10% – Equipment suitable for creating fire breaks (bulldozer, cat, skidder, etc.)

Roughly 14% of the respondents in Canyon County indicated they have someone in their household trained in wildland firefighting. Approximately 11% indicated someone in the household had been trained in structural firefighting. However, it is important to note that these questions did not specify a standard nor did it refer to how long ago the training was received.

A couple of questions in the survey related to on-going fire mitigation efforts households may be implementing. Respondents were asked if they conduct a periodic fuels reduction program near their home sites, such as grass or brush burning. Approximately 52% answered affirmative to this question, while 27% responded that livestock (cattle, horses, and sheep) graze the grasses and forbs around their home sites.

Respondents were asked to complete a fuel hazard rating worksheet to assess their home's fire risk rating. An additional column titled "results" has been added to the table, showing the percent of respondents circling each rating (Table 2.3).

Circle the ratings in each category that best describes your home.

Table 2.3. Fuel Hazard Rating Worksheet		Rating	Results
Fuel Hazard	Small, light fuels (grasses, forbs, weeds, shrubs)	1	78%
	Medium size fuels (brush, large shrubs, small trees)	2	22%
	Heavy, large fuels (woodlands, timber, heavy brush)	3	0%
Slope Hazard	Mild slopes (0-5%)	1	80%
	Moderate slope (6-20%)	2	18%
	Steep Slopes (21-40%)	3	2%
	Extreme slopes (41% and greater)	4	0%
Structure Hazard	Noncombustible roof and noncombustible siding materials	1	60%
	Noncombustible roof and combustible siding material	3	0%
	Combustible roof and noncombustible siding material	7	40%
	Combustible roof and combustible siding materials	10	0%
Additional Factors	Rough topography that contains several steep canyons or ridges	+2	Average -2.4 pts
	Areas having history of higher than average fire occurrence	+3	
	Areas exposed to severe fire weather and strong winds	+4	
	Areas with existing fuel modifications or usable fire breaks	-3	
	Areas with local facilities (water systems, rural fire districts, dozers)	-3	

Calculating your risk

Values below are the average response value to each question.

Fuel hazard __1.2___ x Slope Hazard ____1.2___ = ____1.44____		
Structural hazard	+	____4.7__
Additional factors	(+ or -)	___-2.4___
Total Hazard Points	=	____3.7__.

Table 2.4. Percent of respondents in each risk category as determined by the survey respondents.
00% – Extreme Risk = 26 + points
01% – High Risk = 16–25 points
25% – Moderate Risk = 6–15 points
74% – Low Risk = 6 or less points

Maximum household rating form score was 20 points, as assessed by the homeowners. These numbers were compared to observations made by field crews trained in wildland firefighting. These results indicate that for the most part, these indications are only slightly lower than the risk rating assigned by the "professionals". Anecdotal evidence would indicate that Canyon County landowners involved in this survey have a more realistic view of wildfire risk than the landowners in other Idaho counties where these questions have been asked.

Finally, respondents were asked "if offered in your area, would members of your household attend a free, or low cost, one-day training seminar designed to teach homeowners in the wildland–urban interface how to improve the defensible space surrounding your home and adjacent outbuildings?" A significant number of the respondents, 35%, indicated a desire to participate in this type of training.

Homeowners were also asked, "How do you feel Wildland-Urban Interface Fire Mitigation projects should be funded in the areas surrounding homes, communities, and infrastructure such as power lines and major roads?" Responses are summarized in Table 2.5.

Table 2.5. Public Opinion of Wildfire Mitigation Funding Preferences.

	Mark the box that best applies to your preference		
	100% Public Funding	**Cost-Share (Public & Private)**	**Privately Funded (Owner or Company)**
Home Defensibility Projects	31%	20%	48%
Community Defensibility Projects	51%	29%	20%
Infrastructure Projects Roads, Bridges, Power Lines, Etc.	65%	16%	20%

2.3.2.2 Committee Meetings

The following list of people who participated in the planning committee meetings, volunteered time, or responded to elements of the Canyon County Wildland-Urban Interface Wildfire Mitigation Plan's preparation:

- Andy Ogden .....Idaho Fish and Game
- Arnold Waldemer .....Wilder Rural Fire Protection District
- Bill Moore .....Southwest RC&D
- Brad Trosky.....Middleton Fire, Rescue, and Emergency Service
- Carmen Boeger.....Nampa Dispatch Center
- Doug Amick.....Wilder Rural Fire Protection District
- Doug Brown .....Idaho Fire Chief's Association
- Doug Rosin .....Kuna Fire District
- Elaine Johnson.....US Fish and Wildlife Service
- Fred Mould .....Canyon County LEPC
- Holly Lefevre .....Bureau of Land Management
- Jack Hellbusch .....Parma Fire Department
- James Cook .....Parma Fire Department
- Jeff Bohr.....NRCS
- John McGee.....Northwest Management, Inc.
- Ken Homik.....Northwest Management, Inc.

- Kevin Courtney.....Star Joint Fire Protection District
- Lary D. Silver.....Farm Service Agency
- Lorraine Elfering.....Canyon County
- Mark Wendelsdorf .....Caldwell Rural Fire Protection District
- Richard Davies.....Nampa Fire Department
- Richard Farner .....Melba Fire Department
- Roger Sharp.....Canyon County
- Russ Schrall.....Upper Deer Flat Fire Department
- Tera Duman .....Northwest Management, Inc.
- Toby R. Brown .....Northwest Management, Inc.
- Todd A. Fenzl.....US Fish and Wildlife Service
- Wayne Davis .....Melba Fire Department
- William E. Schlosser .....Northwest Management, Inc.

2.3.2.2.1 June 2, 2004: Canyon County Committee Meeting

Caldwell NRCS Office

Miscellaneous Business –

Send electronic copy of community assessments to e-mail list. Fire Departments have received resources and capabilities surveys, but we need to send a copy to Elaine at Deer Flat NWR because they have significant firefighting resources. Also send her a copy of attendance and e-mail list because she might have some contacts for training instructors for fire departments and some other info that the county would be interested in having.

Lorraine Elfering is going to make request to obtain cadastral data ASAP. Also contact Lorraine to get dates of Fire Chiefs Association meeting, which NMI needs to attend.

Need to establish a good list of contacts for all fire depts.

Discussion –

Resource and Capability Enhancements: (Parma Fire was only dept in attendance)

- Communications – no money to buy enough radios for all dept to be compatible with BLM. Parma, Wilder, and Melba have major problems with dead spots. Recent upgrading has crippled the communication abilities of dispatch to reach remote areas. They need sub-repeaters set up around the county to alleviate this problem. Right now they are relying heavily on personal cell phones.
- Water Resources – Parma Fire has access to water, but NMI needs to find out what the issues are in other areas.
- Building Codes – county is experiencing a lot of growth, but efforts to curb housing designs, etc. have been unsuccessful. Education of homeowners is the best way to reach homeowners. Fish and Wildlife had funding at one point to hire a Fire Education Tech., but the money was taken away. There are no other organized fire education programs that the committee is aware of.
- Roads – Access is a huge issue throughout the county (same as Ada). Fire Depts. do inspect new driveways and turnarounds to see if they are adequate for equipment; however, getting personnel trained in such codes is difficult and expensive.
- Recreation – Deer Flat NWR enforces no fires or smoking bans. They also have created a 10’ fire break around the refuge and installed gates at critical access

points. They are attempting to get funding to create a greenbelt around the refuge as well. Deer Flat has a Fire Mgmt plan that Elaine will send to NMI.

- Training/Retention – typical problems associated with not having enough volunteers for rural departments. Smaller depts. have major problems with getting instructors or being able to attend training classes in other areas. The BLM is not providing enough funding for small depts. to meet their requirements (particularly radios). Elaine said that she knew of an FMO that may be able to provide some training classes.

Potential Mitigation Projects:

- Set up a regional study regarding communications issue instead of piecemealing funding to each county or dept.
- Education – need to establish good programs. Defensible space is a key issue in this type of environment. What are insurance companies doing or what can they do?

Next Meeting: July 14 (Wed) @ 1:30 pm @ NRCS office

2.3.2.2.2 July 14, 2004 Committee Meeting

NCS Office, Caldwell

Meeting Kick-off

No fire departments in attendance.

Bill Moore would like a copy of the public survey for his files.

Synopsis of Wildland Fire Mitigation Planning by JMcG and KH

- What is it, what is the history behind these planning efforts
- Where have we been and where are we going- continued review of community assessments, development of resources and capabilities, stepping stone for funding sources.

Update on public participation, including mailing of surveys and press releases regarding the plans.

Resources and Capabilities: No surveys have been returned to date. JMcG needs to make initial contacts and develop contact list ASAP.

Review of Infrastructure, protection, and WUI maps. Need clarification of the definition of WUI map. All map legends need to be descriptive enough for the average lay person of the street can understand the information presented without explanation.

- Include Chevron and NW pipeline gas lines.
- Include repeater sites.
- Map LPG plant in Star.

Elaine Johnson of Fish and Wildlife discussed refuge fire management. Currently, the refuge does not have any formal mutual aid agreements with the surrounding departments. BLM has protection on a fee basis, however rural departments typically respond to refuge fires prior to BLM, and sometimes before refuge personnel are aware of the fire. Currently, there is no

means by which the refuge can compensate the rural departments for their efforts. Question- why can't the rural departments simply bill the refuge? The refuge does not have any qualified firefighters at this time. This may be a recommendation in the plan.

Elaine Johnson will provide information of refuge fuel treatments for the past years. She will also provide historic fires on the refuge, dating to 1941.

Review of time line for Fire Plan- Next committee meeting to be scheduled by McGee. The meeting will be prior to one of the three public meetings, which are scheduled for August 17, 18 and 19. Meetings will likely be held in Nampa, Parma, and at the Refuge. Exact times and locations are to be determined.

Re-send community assessments to all parties.

List of Fire Departments in Canyon County that need surveys. Initial contacts need to be made.

2.3.2.3 Public Meetings

Public meetings were held during the planning process, as an integral component to the planning process. It was the desire of the planning committee, and the Canyon County Commissioners to integrate the public's input to the development of the fire mitigation plan.

Formal public meetings were scheduled on March 29, 2005, at Caldwell, Idaho, on March 30, 2005, at Nampa, Idaho, and on March 31, 2005, at Melba and Notus, Idaho. The purpose of these meetings was to share information on the planning process with a broadly representative cross section of Canyon County landowners. All of the meetings had wall maps posted in the meeting rooms with many of the analysis results summarized specifically for the risk assessments, location of structures, fire protection, and related information. The formal portion of the presentations included a PowerPoint presentation made by Toby Brown from Northwest Management, Inc. During his presentations, comments from committee members, fire chiefs, and others were encouraged in an effort to engage the audience in a discussion.

It was made clear to all in attendance that their input was welcome and encouraged, as specific treatments had not yet been decided, nor had the risk assessment been completed. Attendees were told that they could provide oral comment during these meetings, they could provide written comment to the meetings, or they could request more information in person to discuss the plan. In addition, attendees were told they would have an opportunity to review the draft plan prior to its completion to further facilitate their comments and input.

The formal presentations lasted approximately 1.5 hours and included many questions and comments from the audience. Following the meetings, many discussions continued with the committee members and the general public discussing specific areas, potential treatments, the risk analysis, and other topics.

Attendance at the public meetings included 1 individual each at the Caldwell and Nampa meetings, 72 in Melba, and 4 at Notus. The following are comments, questions or suggestions from the meetings:

2.3.2.3.1 Caldwell Public Meeting

March 29, 2005 – Caldwell Police Department

Attendees: Elaine Johnson
Tera Duman
Toby Brown

Toby Brown gave an abbreviated version of the slide show for committee member, Elaine Johnson from the FWS focusing on issues that she would be more interested in or would have more information on. She had several questions regarding how and why the plans were being done and how the funding for projects worked.

The Fish and Wildlife Service maintains all islands in the Boise River from the Canyon-Ada County area all the way to Brownlee Dam. Fire ignitions on these islands and other wildlife areas are responded to on a case by case basis. Some areas are allowed to burn naturally, while others are aggressively fought due to irreplaceable wildlife resources, recreation facilities, or other structures, etc.

The FWS was awarded $5,000 to the Deer Flat area through the Fire Assistance Program. The FWS often forms partnerships with other entities for hazardous fuel reduction projects and wildlife habitat improvement. So far, they have implemented projects like pulling out Russian olive trees along the river and cheatgrass eradication along roadways. One of their proposed projects will include developing a green strip along the northwestern corner of Deer Flat Reservoir. Developing dry hydrant sites might be a future project they will look at doing.

2.3.2.3.2 Melba Public Meeting

March 31, 2005 – Melba Senior Citizens Center

Attendees: Toby Brown
Tera Duman
Bill Moore
Approximately 72 senior citizens

Toby began by introducing the NMI and Bill Moore from the RC&D. He presented the power point presentation to a fairly large group of senior citizens during their lunch period. Although there were no specific questions or comments during the presentation, a few from the audience made a point to talk to NMI staff after the meal and presentation were over. One comment that came up several times was their support of using grazing as a way to keep the fuel loading down. Other comments included not having enough volunteers and training for the fire department and being able to burn tumbleweeds, etc. without a lot of hassle from the fire department or other agencies.

2.3.2.3.3 Notus Public Meeting

March 31, 2005 – Notus Community Center

Attendees: Toby Brown
Tera Duman
Martin Galvin
Jim Martell
Mike? (Middleton and Notus FD)

The group arrived a little early and began an in depth discussion about fire related problems in the Notus area. Rather than interrupt the conversation, Toby asked specific questions regarding the Mitigation Plan and explained different aspects of the plan. After about a 1 ½ hour discussion, Toby presented an extremely abbreviated slideshow due to the fact that most of the presentation topics had already been discussed at length. Some of the issues discussed included:

- Weed reduction projects would go a long way to prevent fires. Weeds, particularly tumbleweeds, tend to gather in ditches, etc and cause major fire hazards.

- Middleton Fire – needs trucks and an equipment storage station
- Middleton – subdivisions abutting BLM ground need fuels reduction work
- Endangered plants affect the ability of rural departments to fight fire. They have been told by local wildlife officials that they will not be allowed to enter areas that are believed to contain certain plans. In order to deal with this issue ahead of time they need an action plan detailed in the fire plan and other protocol.
- There is very little water available in the north end of the County. Development of some kind of water resource would be helpful.
- Canyon County is also having issues with poor access routes to homes (i.e. too narrow roads, no turnouts or turn around areas, low overhangs, and sometimes steep grades).
- Local fire departments have had some issues with fires on empty lots or drainages that can and have carried fire through the urban areas.
- Kingsbury Area is a very high hazard area.
- There is less susceptibility to fire as the urban areas grow; however, the value lost due to even small fires has increased significantly.
- Areas that have been farmed historically aren't being farmed anymore due to the rising cost. This is creating a huge fire hazard as these fields are overgrown with weeds and tall grasses. The area north of Middleton and extending towards Ada County are most pronounced.
- Canyon County fire districts have good communications with other agencies and with Ada County.
- Currently, County is trying to get something through the system on standardizing rural addressing (i.e. #'s aren't big enough to see from the road, enhanced 911).
- Dispatch and departments do not know all of the names of the new subdivisions, which is causing some communication and response problems.
- People are not paying taxes, particularly in new developments, which is severely hurting the fire departments

2.4 Documented Review Process

Review of sections of this document was conducted by the planning committee during the planning process as maps, summaries, and written assessments were completed. These individuals included fire mitigation specialists, firefighters, planners, elected officials, and others involved in the coordination process. Preliminary findings were discussed at the public meetings, where comments were collected and facilitated.

The results of these formal and informal reviews were integrated into a DRAFT Wildland-Urban Interface Wildfire Mitigation Plan. This plan was given to members of the planning committee (including the Canyon County Commissioners and the Southwest Idaho RC&D) on October 20, 2005.

This draft plan was distributed to the planning committee for editing, review, and discussions. The committee review period was extended beyond the anticipated 1 month committee review process because of some unanticipated personnel changes (the death of the one of the lead planners for the project).

The revised draft of the plan was then announced for public review during May and June of 2006. While this plan was undergoing public review (available on the Canyon County Internet web site) the Idaho Bureau of Homeland Security Mitigation Officer conducted a pre-FEMA-submission review. Edits from these reviews was incorporated into the final All Hazard Mitigation Plan (Volumes I-III) for FEMA review.

This set of documents will serve as the Canyon County All Hazards Mitigation Plan for all County, State, and Federal Purposes. This plan will be submitted by the County Commissioners to the Idaho Bureau of Homeland Security for FEMA final review and approval. The Wildland-Urban Interface Wildfire Mitigation Plan component of this plan will be submitted to the Idaho Statewide Implementation Committee for the National Fire Plan in an effort to facilitate the County's ability to garner financial assistance in wildfire mitigation planning and implementation.

Amendments to the plans can be made through a modification of the completed documents with acceptance by the County Commissioners, annually at the renewal of the plan.

2.5 Continued Public Involvement

Canyon County is dedicated to involving the public directly in review and updates of the Hazard Mitigation Plan. The Canyon County Commissioners, through the All Hazard Mitigation Committee are responsible for the annual review and update of the plan as recommended in the "Recommendations" section of this document.

The public will have the opportunity to provide feedback about the Plan annually on the anniversary of the adoption of this plan, at the meeting of the County Commissioners. Copies of the Plan will be catalogued and kept at all of the appropriate agencies in the county. The existence and location of these copies will be publicized. Instructions on how to obtain copies of the Plan will be made available on the County's Internet web site. The Plan also includes the address and phone number of the county Planning Division, responsible for keeping track of public comments on the Plan.

In addition, copies of the plan and any proposed changes will be posted on the county website. This site will also contain an email address and phone number to which people can direct their comments and concerns.

A public meeting will also be held as part of each annual evaluation or when deemed necessary by the All Hazard Mitigation Committee. The meetings will provide the public a forum for which they can express its concerns, opinions, or ideas about the Plan. The County Public Information Officer will be responsible for using county resources to publicize the annual public meetings and maintain public involvement through the public access channel, webpage, and newspapers.

Chapter 3: County Characteristics & Risk Assessment

3 Background and Area Description

3.1 Demographics

Canyon County reported an increase in total population from 90,076 in 1990 to 131,441 in 2000 and a 2004 estimated population of 158,038 with approximately 45,065 households. Canyon County has eight incorporated communities, Parma (pop. 1,771), Wilder (pop. 1,462), Caldwell (25,967), Nampa (51,867), Middleton (2,978), Notus (458), Greenleaf (862), and Melba (pop. 439). The population in Canyon County has been growing very rapidly, especially the communities of Nampa, Melba, and Middleton, all of which experienced over a 50% increase in population between 1990 and 2000. Nearly 56% of the total county population resides in Nampa. Unincorporated communities include Huston, Apple Valley, Roswell, Sunnyslope, Riverside, Bowmont, Westma, and Walters Ferry. The total land area of the county is roughly 630.51 square miles (403,526.4 acres).

Table 3.1 summarizes some relevant demographic statistics for Canyon County.

Table 3.1. Selected demographic statistics for Canyon County, Idaho, from the Census 2000.

Subject	Number	Percent
Total population	**131,441**	**100.0**
SEX AND AGE		
Male	65,148	49.6
Female	66,293	50.4
Under 5 years	11,922	9.1
5 to 9 years	11,798	9.0
10 to 14 years	10,336	7.9
15 to 19 years	10,617	8.1
20 to 24 years	10,149	7.7
25 to 34 years	18,905	14.4
35 to 44 years	18,282	13.9
45 to 54 years	15,188	11.6
55 to 59 years	5,651	4.3
60 to 64 years	4,212	3.2
65 to 74 years	7,097	5.4
75 to 84 years	5,295	4.0
85 years and over	1,989	1.5
Median age (years)	30.5	(X)
18 years and over	90,742	69.0
Male	44,346	33.7
Female	46,396	35.3
21 years and over	84,698	64.4
62 years and over	16,933	12.9

Table 3.1. Selected demographic statistics for Canyon County, Idaho, from the Census 2000.

Subject	Number	Percent
65 years and over	14,381	10.9
Male	6,030	4.6
Female	8,351	6.4
RELATIONSHIP		
Population	**131,441**	**100.0**
In households	128,492	97.8
Householder	45,065	34.3
Spouse	28,203	21.5
Child	44,026	33.5
Own child under 18 years	37,393	28.4
Other relatives	5,949	4.5
Under 18 years	2,324	1.8
Nonrelatives	5,249	4.0
Unmarried partner	2,027	1.5
In group quarters	2,949	2.2
Institutionalized population	1,289	1.0
Noninstitutionalized population	1,660	1.3
HOUSEHOLDS BY TYPE		
Households	**45,065**	**100.0**
Family households (families)	34,239	76.0
With own children under 18 years	18,373	40.8
Married-couple family	27,961	62.0
With own children under 18 years	14,221	31.6
Female householder, no husband present	4,369	9.7
With own children under 18 years	2,914	6.5
Nonfamily households	10,826	24.0
Householder living alone	8,848	19.6
Householder 65 years and over	3,849	8.5
Households with individuals under 18 years	19,630	43.6
Households with individuals 65 years and over	13,532	30.0
Average household size	2.85	(X)
Average family size	3.28	(X)
HOUSING TENURE		
Occupied housing units	**45,018**	**100.0**
Owner-occupied housing units	33,010	73.3
Renter-occupied housing units	12,008	26.7
Average household size of owner-occupied unit	2.83	(X)
Average household size of renter-occupied unit	2.91	(X)

3.2 Socioeconomics

Canyon County had a total of 45,065 housing units (45,018 occupied) and a population density of 222.9 persons per square mile reported in the 2000 Census. Ethnicity in Canyon County is distributed: white 83.1%, black or African American 0.3%, American Indian or Alaskan Native 0.9%, Asian 0.8%, Hispanic or Latino 18.6%, two or more races 2.6%, and some other race 12.2%.

Specific economic data for individual communities is collected by the US Census; in Canyon County this includes Parma, Wilder, Huston, Caldwell, Nampa, Middleton, Notus, and Melba. Parma households earn a median income of $32,278 annually, Wilder averages $32,946, Huston averages $40,313, Caldwell averages $32,641, Nampa averages $37,148, Middleton averages $38,568, Notus averages $27,955, and Melba reported a median income of $33,971, all of which compares to the Canyon County median income during the same period of $35,884.

Table 3.2 shows the dispersal of households in various income categories in Canyon County.

Table 3.2. Income in 1999	**Canyon County**	
	Number	**Percent**
Households	**45,065**	**100.0**
Less than $10,000	3,863	8.6
$10,000 to $14,999	3,104	6.9
$15,000 to $24,999	7,489	16.6
$25,000 to $34,999	7,441	16.5
$35,000 to $49,999	9,347	20.7
$50,000 to $74,999	8,426	18.7
$75,000 to $99,999	3,135	7.0
$100,000 to $149,999	1,599	3.5
$150,000 to $199,999	311	0.7
$200,000 or more	350	0.8
Median household income (dollars)	35,884	(X)

(Census 2000)

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, directs federal agencies to identify and address any disproportionately high adverse human health or environmental effects of its projects on minority or low-income populations. In Canyon County, a significant number, 8.7%, of families are at or below the poverty level (Table 3.3).

Table 3.3. Poverty Status in 1999 (below poverty level)	**Canyon County**	
	Number	**Percent**
Families	**2,976**	**(X)**
Percent below poverty level	(X)	8.7
With related children under 18 years	2,493	(X)
Percent below poverty level	(X)	12.9
With related children under 5 years	1,548	(X)
Percent below poverty level	(X)	17.1

Families with female householder, no husband present	**1,100**	**(X)**
Percent below poverty level	(X)	25.2
With related children under 18 years	1,062	(X)
Percent below poverty level	(X)	33.7
With related children under 5 years	596	(X)
Percent below poverty level	(X)	44.6
Individuals	**15,438**	**(X)**
Percent below poverty level	(X)	12.0
18 years and over	9,299	(X)
Percent below poverty level	(X)	10.5
65 years and over	1,470	(X)
Percent below poverty level	(X)	10.7
Related children under 18 years	5,767	(X)
Percent below poverty level	(X)	14.5
Related children 5 to 17 years	3,636	(X)
Percent below poverty level	(X)	13.0
Unrelated individuals 15 years and over	4,354	(X)
Percent below poverty level	(X)	26.8

(Census 2000)

The unemployment rate was 3.9% in Canyon County in 1999, compared to 4.4% nationally during the same period. Approximately 4.7% of the Canyon County employed population worked in natural resources, with much of the indirect employment relying on the employment created through these natural resource occupations; Table 3.4 (Census 2000).

Table 3.4. Employment & Industry	**Canyon County**	
	Number	**Percent**
Employed civilian population 16 years and over	**59,634**	**100.0**
OCCUPATION		
Management, professional, and related occupations	15,565	26.1
Service occupations	9,087	15.2
Sales and office occupations	14,096	23.6
Farming, fishing, and forestry occupations	1,692	2.8
Construction, extraction, and maintenance occupations	7,824	13.1
Production, transportation, and material moving occupations	11,370	19.1
INDUSTRY		
Agriculture, forestry, fishing and hunting, and mining	2,793	4.7
Construction	5,859	9.8
Manufacturing	11,432	19.2
Wholesale trade	2,333	3.9
Retail trade	6,909	11.6
Transportation and warehousing, and utilities	3,182	5.3

Information	1,222	2.0
Finance, insurance, real estate, and rental and leasing	2,633	4.4
Professional, scientific, management, administrative, and waste management services	3,816	6.4
Educational, health and social services	10,824	18.2
Arts, entertainment, recreation, accommodation and food services	3,396	5.7
Other services (except public administration)	2,579	4.3
Public administration	2,656	4.5

Approximately 78% of Canyon County's employed persons are private wage and salary workers, while around 13% are government workers (Table 3.5).

Table 3.5. Class of Worker	**Canyon County**	
	Number	**Percent**
Private wage and salary workers	46,754	78.4
Government workers	8,018	13.4
Self-employed workers in own not incorporated business	4,603	7.7
Unpaid family workers	259	0.4

(Census 2000)

3.2.1 European Settlement of Canyon County

Information summarized from the Canyon County Comprehensive Plan.

During the Boise Basin and Owyhee gold rushes of 1862 and 1863, Canyon County provided highways to and from the mines. Its earliest permanent communities founded along the Snake and Boise Rivers in the 1860's were farming centers developed to feed the mining population. Arrival of the Oregon Short Line Railroad in 1883 stimulated the growth of the cities of Nampa, Caldwell, Parma, and Melba and soon became the territory's most densely populated area. The urban areas of Canyon County have continued to grow with expansion of agriculture, business, and industry. The county was created from a portion of Ada County by act of the legislature on March 7, 1891.

3.3 Description of Canyon County

Canyon County was named after the Snake River canyon, which forms the county's western and southern border. Owyhee County lies to the south, Ada County to the east, Payette and Gem Counties to the north, and the state of Oregon to the west. Caldwell is the county seat. There are 53 local taxing jurisdictions including four separate highway districts.

Canyon is a large county covering approximately 578.3 square miles. Of this, 6.0% is federally owned, 0.9% is state land, 0.2% belongs to the local government, and the remaining 92.9% is in private ownership. The Canyon Soil and Water Conservation District has identified 278,517 acres of important farm land in Canyon County. This acreage accounts for approximately 72% of Canyon County.

The topography is generally level with some rolling and bench terrain. The elevation ranges from 2,200 feet near where the Boise River flows into the Snake River to 3,083 feet at Pickles Butte. Most cultivated soils are at an elevation of 2,200 to 2,700 feet. The indigenous vegetation in most of the county is mainly big sagebrush, bluebunch wheatgrass, Sandberg

bluegrass, giant wild rye, and cheatgrass. This favorable situation supports a diversified agricultural economy with 74 different commercial agriculture crops.

3.3.1 Highways

The main highways weaving through the county are U.S. 95, 30, 20, and 26; State Route 44, 45, 55, and 19; and Interstate 84. Interstate Hwy I-84 traverses the northeastern corner of the county entering near Nampa, passing through Caldwell, and exiting near Sand Hollow. I-84 provides adequate on-off ramps for easy access to both cities. I-84 provides the main transportation route for the trucking industry in the northwestern section of the United States. I-84 also provides good connections eastward to Salt Lake City and points beyond.

U.S. Routes 20 and 26 provide access to the communities of Notus and Parma west of the main urban center. U.S. 95 and State Routes 55 and 19 connect Greenleaf, Wilder, Huston, and Roswell to the main arterial roadways as well as other communities. State Highway 45 travels south from Nampa to the communities of Bowmont, Melba, and Walters Ferry. Many access points along the Snake River are also reached via this route. These are all two lane highways that not only provide a transportation network, but also provide quick access in emergency response situations.

3.3.2 Rivers

The two major rivers in the county are the Boise River and the Snake River. Both waterways are significant components of the local economy as well as large financial entities providing many recreational and economic resources. Other important bodies of water in Canyon County are Lake Lowell, Jensen Lake, and the multitude of canals that provide irrigational resources to the otherwise arid landscape.

3.3.3 Climate

Canyon County lies almost entirely within the valleys of the Boise and Snake Rivers. This area is on the boundary between steppe and desert, and the climate is correspondingly semiarid to arid. Summers are warm and dry, annual precipitation is relatively low, and natural vegetation is sparse. Annual precipitation ranges from a little more than 5 inches to more than 15 inches. Generally rainfall is not adequate for crops from early in June to late in September. Winds tend to follow the orientation of the valleys. They blow mainly from the northwest during warmer months, and from the southeast during the rest of the year. Occasionally destructive winds occur with a passing cold front or squall line, or late in spring and in summer during thunderstorms, but tornadoes are extremely rare. The highest wind speed recorded at Boise was 61 miles per hour in July 1944. Hailstorms are relatively infrequent. Small, soft hailstones fall early in spring. Late in spring and in summer the hailstones are occasionally larger, but generally they are not more than half an inch to three-fourths inch in diameter. Statistics about hail damage are not available, but widespread damage to crops is rare.

3.3.4 Growing Season

The frost-free season, or the interval between the last freeze in spring and the first in fall, generally ranges from 140 to 165 days. However, the dates can vary considerably from year to year and from place to place. For example, at Caldwell a temperature of 32° F. was recorded as late as June 11 in 1917 and as early as August 31 in 1932. At Parma the latest freeze on record was June 4 in 1962 and the earliest was September 7 in 1927. At Lake Lowell Dam the latest was May 23 in 1944 and the earliest was September 13 in 1960. The shortest frost-free season at Caldwell was 98 days (June 7 to September 13) in 1914; at Lake Lowell Dam it was

114 days (May 23 to September 14) in 1960; and at Parma it was 115 days (May 24 to September 16) in 1944.

3.3.5 Hours of Sunshine

Sunshine is ample during much of the growing season. The daily average number of hours of sunshine, based on 27 years of record, is 9.1 in April, 10.2 in May, 11.7 in June, 14.3 in July, 12.0 in August, 10.3 in September, and 7.5 in October.

3.3.6 Recreation

Canyon County has many outstanding tourism and recreational facilities. The county offers a full panorama of recreational opportunities ranging from boating on the Snake River to golfing at the Purple Sage Golf Coarse in Caldwell.

The economic impacts of these activities to the local economy and the economy of Idaho have not been enumerated. However, they are substantial given the many months of the year that activities take place and the large numbers of visitors that travel to this location.

3.3.6.1 Old Fort Boise

The original Fort Boise was built in 1834 by the Hudson's Bay Fur Trading Company and was located northwest of present day Parma. With the decline in fur trading, this outpost became known for its hospitality to travelers on the Oregon Trail. The original buildings washed away in the 1853 flood; however, replicas have been built to commemorate the site.

3.3.6.2 Deer Flat National Wildlife Refuge

Nestled in the rolling sagebrush hills of southwest Idaho, the watery oasis at Deer Flat National Wildlife Refuge provides an important breeding area for birds and mammals, as well as other wildlife. The refuge is also a significant resting and wintering area for birds migrating along the Pacific Flyway, including spectacular concentrations of mallards and Canada geese. Because of its value to birds, Deer Flat National Wildlife Refuge has been declared a Globally Important Bird Area by the American Bird Conservancy.

Deer Flat National Wildlife Refuge has two sectors–Lake Lowell and the Snake River Islands. The Lake Lowell sector encompasses 10,588 acres, including the almost 9,000-acre Lake Lowell and surrounding lands. The Snake River Islands sector contains about 800 acres on 101 islands. These islands are distributed along 113 river miles from the Canyon-Ada County Line in Idaho, to Farewell Bend in Oregon.

The refuge protects a wide range of wildlife habitats from the open waters and wetland edges of Lake Lowell to the sagebrush uplands around the lake to the grasslands and riparian forests on the Snake River islands. Refuge staff uses a variety of wildlife management techniques to create and maintain wildlife habitat. With assistance from local growers, the refuge also cooperatively farms 240 acres to provide food for wildlife.

3.3.6.3 Celebration Archaeology Park

Celebration Park is located on the Snake River at the western boundary of the Snake River Birds of Prey National Conservation Area and serves as a beginning point for Halverson Bar and Lake Trail. Travelers worldwide have come to enjoy the high desert flora, scenic land features, and unique Indian art. Celebration Park was established as Idaho's only

archaeological park in 1989. Hiking, fishing, boating, picnicking, camping, horseback riding trails, bird watching, ongoing interpretive park programs, and student fieldtrips are just some of the many activities available.

There are thousands of petroglyphs on the Bonneville melon gravel that make up the landscape of Celebration Park. Each element is considered Indian Art with many dating as far back as 12,000 years. The park offers a fascinating exploration tour into the scene of the wintering area used by Paleolithic, Archaic, historic Native Americans, and other visitors. There is also a tour of the historic Guffy Bridge, which offers interesting Idaho historic facts as you walk along the Snake River. Initially built in 1897, the bridge was intended to carry ore from Silver City to Nampa where it would be smelted. Guffy Bridge is a true Idaho artifact and has been renovated to allow walking access to the south side of the river and primitive trails beyond.

3.3.6.4 Bureau of Land Management Public Lands

A few portions of the County, particularly in the northwest corner, are administered by the Bureau of Land Management. These areas are open to the public year round. Although there are no developed sites, residents of Canyon County use these lands to hunt, four-wheel, mountain bike, and drive off-road vehicles among many other things.

3.3.6.5 Golfing

The flat to gently rolling landscape and availability of irrigation makes much of the Treasure Valley a hotspot for golfers. Canyon County boasts five golf courses in the Nampa-Caldwell area and an additional course in Wilder.

3.3.6.6 Boating

Boating, both motorized and non-motorized, is a very popular activity in Canyon County. There are many launching access points along the Snake and Boise Rivers, which usually also offer restroom and picnicking facilities. Swarms of recreators flock to these areas during the warmer months for swimming and various other water sports.

3.3.6.7 Fishing and Hunting

Fishing and hunting is very important to Canyon County both from a recreational standpoint and as an economic resource. A wide variety of fish can be caught in Canyon County's rivers and lakes. Many farms have sites that are suitable for fish ponds. For those people who prefer a gun or bow to a fly rod, Canyon County offers a bounty of bird hunting experiences. Wild birds, like bobwhite, chukar, mourning dove, ducks, geese, gray partridge, ring-necked pheasant, and California quail. Many non-game birds also live in the area. Wild ducks, geese, and muskrat live on bottom lands near the Boise and Snake River and in drainage ways. Wild geese nest on river islands and in the Deer Flat National Wildlife Refuge. There are numerous developed sportsmen's access points and boat launching sites around the Wildlife Refuge and along both the Snake and Boise River.

3.3.7 Resource Dependency

Over the past century, employment through agricultural farming, livestock ranching, and mining has been significant in the region. Livestock ranching has been and continues to be an important component of the economy of Canyon County. Livestock grazing in Canyon and

surrounding counties has provided stable employment while serving to keep rangelands maintained at a lower wildfire risk than if they had not been present and managed.

Agriculture in the county is now characterized by a wide range of farming enterprises. The principal crops are alfalfa and clover for hay and seed, winter and spring wheat, barley, field corn, sweet corn, hybrid sweet corn seed, sugar beets, potatoes, hops, onions, and beans. Specialty crops include lettuce, spinach, onions, carrots, peas, and vegetables for seed. Cherry, plum, peach, and apple orchards are on the south-facing slopes near the Snake River.

Approximately one-half of farm income is derived from livestock and livestock products. Dairying and feedlots for sheep and cattle are the major enterprises. The trend is toward more specialization in crops and more intensive management of the land.

The communities of Canyon County have been evaluated by the University of Idaho College of Natural Resources Policy Analysis Group (PAG) for the degree of natural resource dependency each community experiences.

Idaho communities with more than 10% employment in resource-based sectors (wood products, travel & tourism, agriculture, and mining) were evaluated by Harris *et al.* (2003). Their findings indicate the following (Harris *et al.* 2000):

- Nampa.....Travel & Tourism Only
- Caldwell.....Mining Only
- Middleton.....Agriculture Only
- Greenleaf .....Travel & Tourism Only
- Parma.....Agriculture Only
- Wilder .....Agriculture Only
- Notus.....Travel & Tourism and Agriculture
- Melba .....Agriculture Only

Harris *et al.* (2003) further evaluated Idaho communities based on their level of direct employment in several industrial sectors. Their findings for communities in Canyon County are summarized in Table 3.6.

Table 3.6. Levels of direct employment by industrial sector

Community	Economic Diversity Index	Agriculture	Timber	Travel and Tourism	State / Local Gov.	Federal Gov.	Mining and Minerals
Nampa	High	Low	Low	Med. High	Low	Low	Med. Low
Caldwell	High	Low	Low	Med. Low	Med. High	Low	Med. High
Greenleaf	Low	Low	Low	High	High	Low	Low
Middleton	Med. High	High	Low	Med. Low	Med. Low	Low	Low
Parma	High	High	Low	Low	Med. Low	Low	Low
Notus	Med. High	High	Low	Med. High	High	Low	Low
Melba	Med. Low	Med. High	Low	Med. High	High	Low	Low

A “low” level of direct employment represents 5% or less of total employment in a given sector; “med. low,” 6 to 10%; “med. high” 11 to 19%; and “high” 20% or more of total employment in a given sector.

Source: Harris *et al.* 2000

3.4 Emergency Services & Planning and Zoning

The County has adopted a full rural addressing system. Road signs were ordered and installed throughout the County. The County and the U S Postal Service implemented the physical addresses.

Currently, the County does have Enhanced 911. The Canyon County Sheriff's Department is the Central Dispatch for the County. Dispatch will contact appropriate emergency response agencies and notify Canyon County Dispatch of transmissions and responses.

The Canyon County Planning & Zoning Commission recognizes the need for improved Road Standards. The Commission is actively researching design standards and plans to recommend that the County adopt standards for new construction that comply with the International Fire Code.

3.5 Growth and Development

Canyon County is in the process of updating its Comprehensive Growth and Development Plan. The Canyon County Comprehensive Plan is a guide that establishes goals and objectives to help the County grow and develop. The Canyon County Comprehensive Plan includes a forecast of conditions that are anticipated to occur within the next five to ten year period.

The Canyon County Comprehensive Plan is directed toward all land within the County including Federal, State, Public and Private lands. This Wildland-Urban Interface Wildfire Mitigation Plan is developed to dove-tail with the goals and objectives of the Comprehensive Plan. For more details on the Comprehensive plan, contact the Canyon County Director of the Growth and Development Office.

3.6 Cultural Resources

Cultural resource impacts were qualitatively assessed through a presence/absence determination of significant cultural resources and mitigation measures to be employed during potential fire mitigation activities such as prescribed burning.

The United States has a unique legal relationship with Indian tribal governments defined in history, the U.S. Constitution, treaties, statutes, Executive Orders, and court decisions. Since the formation of the union, the United States has recognized Indian tribes as domestic dependant nations under its protection. The Federal Government has enacted numerous regulations that establish and define a trust relationship with Indian tribes.

The relationship between Federal agencies and sovereign tribes is defined by several laws and regulations addressing the requirement of Federal agencies to notify or consult with Native American groups or otherwise consider their interests when planning and implementing Federal undertakings, among these are:

- **EO 13175, November 6, 2000**, Consultation and Coordination with Indian Tribal Governments.
- **Presidential Memorandum, April, 1994**. Government-Government Relations with Tribal Governments (Supplements EO 13175). Agencies must consult with federally recognized tribes in the development of Federal Policies that have tribal implications.
- **EO 13007, Sacred sites, May 24, 1996**. Requires that in managing Federal lands, agencies must accommodate access and ceremonial use of sacred sites and must avoid adversely affecting the physical integrity of these sites.

- **EO 12875, Enhancing Intergovernmental Partnerships, October 26, 1993**. Mainly concerned with unfunded mandates caused by agency regulations. Also states the intention of establishing "regular and meaningful consultation and collaboration with state, local and tribal governments on matters that significantly or uniquely affect their communities."
- **Native American Graves Protection and Repatriation Act (NAGPRA) of 1989**. Specifies that an agency must take reasonable steps to determine whether a planned activity may result in the excavation of human remains, funerary objects, sacred objects and items of cultural patrimony from Federal lands. NAGPRA also has specified requirements for notifying and consulting tribes.
- **Archaeological Resources Protection Act (ARPA), 1979**. Requires that Federal permits be obtained before cultural resource investigations begin on Federal land. It also requires that investigators consult with the appropriate Native American tribe prior to initiating archaeological studies on sites of Native American origin.
- **American Indian Religious Freedom Act (AIRFA), 1978**. Sets the policy of the US to protect and preserve for Native Americans their inherent rights of freedom to believe, express, and exercise the traditional religions of the American Indian . . . including, but not limited to access to sacred sites, use and possession of sacred objects, and the freedom to worship through ceremonies and traditional rites.
- **National Environmental Policy Act (NEPA), 1969**. Lead agency shall invite participation of affected Federal, State, and local agencies and any affected Indian Tribe(s).
- **National Historic Preservation Act (NHPA), 1966**. Requires agencies to consult with Native American tribes if a proposed Federal action may affect properties to which they attach religious and cultural significance. (Bulletin 38 of the act, identification of TCPs, this can only be done by tribes.)
- Treaties (supreme law of the land) in which tribes were reserved certain rights for hunting, fishing and gathering and other stipulations of the treaty.
- Unsettled aboriginal title to the land, un-extinguished rights of tribes.

3.6.1 National Register of Historic Places

The National Park Service maintains the National Register of Historical Places as a repository of information on significant cultural locale. These may be buildings, roads or trails, places where historical events took place, or other noteworthy sites. The NPS has recorded sites in its database. These sites are summarized in Table 3.7.

Table 3.7. National Register of Historic Places in Canyon County, Idaho.

Item Number	Resource Name	Address	City	Listed	Architect or Building Designer
1	College of Idaho Academy Building	1015 Albany St	Caldwell	1986	
2	F. F. Beale House	1802 Cleveland Blvd.	Caldwell	1993	
3	Blatchley Hall	College of Idaho	Caldwell	1978	
4	Caldwell Carnegie Library	1101 Cleveland Blvd.	Caldwell	1979	
5	Caldwell Historic District	Downtown Caldwell	Caldwell	1982	Tourtellotte & Hummel

Table 3.7. National Register of Historic Places in Canyon County, Idaho.					
Item Number	**Resource Name**	**Address**	**City**	**Listed**	**Architect or Building Designer**
6	Caldwell Odd Fellow Home for the Aged	N 14th Ave	Caldwell	1982	Silbaugh, C. E., and Tourtellotte & Hummel
7	Caldwell Oregon Short Line Railroad Depot	701 S 7th	Caldwell	1995	Union Pacific
8	Caldwell Residential Historic District	Steunenberg's Acres	Caldwell	2002	Caldwell
9	Deer Flat Embankment	Lake Lowell	Nampa	1972	
10	E. H. Dewey Stores	1013-15 1st St	Nampa	1982	Tourtelotte & Hummel
11	Diversion Dam and Deer Flat Embankments	SE of Boise River	Boise	1976	US Reclamation Service
12	Henry W. Dorman and Ida Frost House	114 Logan St	Caldwell	2000	Harding, Lem
13	Farmers and Merchants Bank	101 11th Ave	Nampa	1976	Tourtellotte & Hummel
14	Fort Boise and Riverside Ferry Sites	NW of Parma on Snake River	Parma	1974	
15	Guffey Butte-Black Butte Archeological District	Swan Falls Dam and Power Plant		1978	
16	Horse Barn	NE of Nampa	Nampa	1978	Idaho State School and Hospital
17	Ellen Houlder Farm	Arena Valley Rd	Wilder	1994	
18	Idaho State Sanitarium Administration Building	11th Ave	Nampa	1982	Tourtellotte & Hummel
19	Thomas K. Little House	703 E Belmont St	Caldwell	1980	Miller, Robert E.
20	Map Rock Petroglyphs Historic District		Givens Springs	1982	
21	Middleton Substation	SR 44	Middleton	1973	
22	Samuel J. and Ora B. Miller House	1204 Cleveland Blvd	Caldwell	1982	Miller, Ora B.
23	Nampa American Legion Chateau	1508 2nd St	Nampa	1982	Tourtellotte & Hummel
24	Nampa City Hall	203 12th Ave	Nampa	1985	Reinhardt, Newton & Murphy, Wayland & Fennel
25	Nampa Department Store	1st St and 13th Ave	Nampa	1982	Rush, G. H., Tourtellotte, John E. & Company
26	Nampa Depot	12th Ave and Front St	Nampa	1972	Et al., Clarke, F. W.
27	Nampa First Methodist Episcopal Church	12th Ave and 4th St	Nampa	1982	Tourtellotte & Hummel
28	Nampa Historic District	1200 and 1300 blocks S 1st St	Nampa	1983	Tourtellotte & Hummel
29	Nampa Presbyterian Church	2nd St and 15th Ave	Nampa	1982	Tourtellotte & Hummel
30	Nampa and Meridian Irrigation District Office	1503 1st St	Nampa	1982	Tourtellotte & Hummel

Table 3.7. National Register of Historic Places in Canyon County, Idaho.					
Item Number	Resource Name	Address	City	Listed	Architect or Building Designer
31	North Caldwell Historic District	Albany and Belmont Sts	Caldwell	1979	
32	George Obendorf Gothic Arch Truss Barn	24047 Batt Corner Rd	Wilder	1999	Sears, Roebuck & Co.
33	Peckham Barn	US 95	Wilder	1982	
34	John C. Rice House	1520 Cleveland Blvd	Caldwell	1980	
35	Roswell Grade School	ID 18 and Stephan Lane	Roswell	1982	Tourtellotte & Hummel
36	Sacred Hearts of Jesus and Mary Church	608 7th St	Parma	1982	Tourtellotte & Hummel
37	St. Mary's Catholic Church	616 Dearborn	Caldwell	1982	McNeel, H. J., Tourtellotte & Hummel
38	St. Paul's Rectory and Sisters' House	810 15th Ave	Nampa	1982	Tourtellotte & Hummel
39	Sterry Hall	College of Idaho	Caldwell	1978	Nesbit & Paradice
40	A. K. Steunenberg House	409 N Kimball	Caldwell	1982	Tourtelotte, John E. & Company
41	A. H. Stewart House	3rd St and Bates Ave	Parma		
42	Carrie Adell Strahorn Memorial Library	College of Idaho	Caldwell	1982	McNeel, J. H. and Wayland & Fennell
43	US Post Office-Caldwell Main	823 Arthur St	Caldwell	1989	Wetmore, James A.
44	US Post Office-Nampa Main	123 11th Ave	Nampa	1989	Wetmore, James A.
45	Orton H. Wiley House	524 E Dewey	Nampa	1986	

(NRHP 2003)Fire mitigation activities in and around these sites have the potential to affect historic places. In all cases, the fire mitigation work will be intended to reduce the potential of damaging the site due to wildfire. Areas where ground disturbance will occur will need to be inventoried depending on the location. Such actions may include, but not be limited to, constructed firelines (hand line, mechanical line, etc.), new roads to creeks to fill water tankers, mechanical treatments, etc. Only those burn acres that may impact cultural resources that are sensitive to burning (i.e., buildings, peeled bark trees, etc.) would be examined. Burns over lithic sites are not expected to have an impact on those sites, as long as the fire is of low intensity and short duration. Some areas with heavy vegetation may need to be examined after the burn to locate and record any cultural resources although this is expected to be minimal. Traditional Cultural Properties (TCPs) will also need to be identified. Potential impact to TCPs will depend on what values make the property important and will be assessed on an individual basis.

3.7 Transportation

Primary access to and from Canyon County is provided by Interstate 84, a four-lane highway which passes through the county from the Payette-Canyon boarder at Sand Hollow to the Canyon- Ada County border east of Nampa. State Route 20/26 provide access from Parma to Caldwell and through to Boise, eventually merging with Interstate 84 east of Boise. State Highways 20, 26 and 95 provide access to Canyon County from Payette County the north to Parma, then south to the Owyhee-Canyon border at Homedale. County Route 45 provides access to the southern portion of the county, passing into Canyon County at Walters Ferry. All major roadways in the county are relatively level and well-maintained with good width and

access and exit points. Many of these routes also serve as ignition corridors where the roads pass through dry grass and brush fuels. Each year, dozens of fires starts are associated with travel routes, primarily along Interstate 84.

Smaller roads maintained by the County provide access to the adjoining areas within the county, including recreational areas and rural agricultural hubs. Many roads in the county were originally built to facilitate farming and ranching activities. As such, these roads can support harvesting equipment, trucks, and firefighting equipment referenced in this document. However, many of the new roads have been built for home site access, especially for new sub-divisions. In most cases, these roads are adequate to facilitate firefighting equipment as they adhere to County Building Codes. County building codes for new developments should be adhered to closely to insure this tendency continues.

The Idaho Land Use Planning Act located in Title 67, requires Idaho Counties to address transportation in the individual Comprehensive Plans. It requires an analysis, prepared in coordination with the local jurisdiction(s) having authority over the public highways and streets, showing the general locations and traffic ways, and of streets and the recommended treatment thereof. This component may also make recommendations on building line setbacks, control or access, street naming and numbering, and a proposes system of public and other transit lines and related facilities including rights-of-ways, terminals, future corridors, viaducts and grade separations.

3.8 Vegetation & Climate

Vegetation in Canyon County is mostly agricultural and rangeland ecosystems. An evaluation of satellite imagery of the region provides some insight to the composition of the vegetation of the area. The full extent of the county was evaluated for cover type as determined from Landsat 7 ETM+ imagery in tabular format, Table 3.8.

Table 3.8. Cover Types in Canyon County

	Acres	Percent of County's Total Area
Perennial Grass Slope	21	0%
Mountain Big Sagebrush	50	0%
Rabbitbrush	147	0%
Foothills Grassland	151	0%
Disturbed, High	244	0%
Disturbed, Low	459	0%
Perennial Grassland	503	0%
Basin & Wyoming Big Sagebrush	948	0%
Shallow Marsh	1,470	0%
Deep Marsh	1,534	0%
Shrub Dominated Riparian	3,193	1%
Low Intensity Urban	3,594	1%
Broadleaf Dominated Riparian	4,207	1%
Salt-desert Shrub	5,304	1%
Water	10,507	3%
Shrub/Steppe Annual Grass-Forb	27,867	7%
High Intensity Urban	30,604	8%
Agricultural Land	295,124	76%

Native vegetation communities within the county follow the strong moisture and temperature gradient related to the river drainages. Irrigation has allowed 76% of the total area in the county to be converted to agriculture.

From the County's Comprehensive Plan, the following goals are enumerated:

Natural Resources Goal №1

> One of the most important ongoing planning challenges is to adequately conserve and balance the natural resources of Canyon County with population growth and the protection of the life style which makes the county attractive as a place to live.

Natural Resources Objectives:

1. Encourage Southwest District Health and the Idaho Department of Water Resources to monitor the water supply of the county in order to protect and conserve this valuable natural resource for maximum use into the future for agricultural irrigation purposes, industrial and commercial use, and to have an ample supply of culinary water for the residential population.
2. Encourage new industries that will explore and take advantage of any mineral resources of the county that may be available while not damaging neighboring property values.
3. Encourage new and expanded agri-industries to maximize the agricultural natural resources of the county.
4. Encourage harmony of land uses and patterns by using soil surveys and other interpretations of natural resource conditions by the planning commission, engineers, developers and others who can benefit from use of this information.
5. Support the protection of the water irrigation rights and recognize the historical efforts of the smaller companies of Canyon County with prior water rights.
6. Support the goals of the Deer Flat National Wildlife Refuge within the Refuge boundaries which are:
    a. To preserve, restore and enhance in their natural ecosystems, when practical, all species of animals and plants that are endangered or threatened.
    b. To perpetuate the migratory bird resource.
    c. To preserve a natural diversity and abundance of fauna and flora on refuge lands.
    d. To provide an understanding and appreciation of fish and wildlife ecology and man's role in his environment, and to provide refuge visitors with high quality, safe, wholesome, and enjoyable recreational experience oriented toward wildlife to the extent these activities are compatible with the purposes for which the refuge was established.
7. Support the management goals of the Fort Boise Wildlife Management Area which are similar to those above.
8. Support actions to properly manage extraction of gravel so that processes are safe and the results of extraction do not leave conditions that severely impact surrounding areas.

Implementation:

The Wildland-Urban Interface Wildfire Mitigation Plan has been developed to integrate the above stated goals and objectives, to adhere to this management philosophy, and implement,

through targeted fuels management, policy development, and educational objectives, the goals enumerated above.

3.8.1 Monthly Climate Summaries In or Near Canyon County

3.8.1.1 Caldwell, Idaho (101380)

Period of Record Monthly Climate Summary

Period of Record: 10/8/1904 to 12/31/2003

Table 3.9. Climate records for Caldwell, Idaho (Canyon County)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	37.1	45.4	56.3	65.9	74.4	82.6	92.4	90.3	79.7	66.6	50.1	39.2	65.0
Average Min. Temperature (F)	20.5	25.7	30.7	36.6	43.7	50.4	55.9	53.0	44.2	35.7	28.0	22.5	37.2
Average Total Precipitation (in.)	1.36	1.06	1.09	0.97	1.00	0.79	0.27	0.28	0.52	0.77	1.21	1.27	10.60
Average Total Snowfall (in.)	6.8	2.9	0.8	0.2	0.0	0.0	0.0	0.0	0.0	0.1	1.5	4.3	16.5
Average Snow Depth (in.)	1	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record. Max. Temp.: 99.6% Min. Temp.: 99.5% Precipitation: 99.4% Snowfall: 97.8% Snow Depth: 94.5%

3.8.1.2 Parma Experiment Station, Idaho (106844)

Period of Record Monthly Climate Summary

Period of Record: 11/7/1922 to 12/31/2003

Table 3.10. Climate records for Parma, Idaho (Canyon County)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	36.6	44.8	56.2	65.6	74.2	82.1	92.1	90.5	80.3	67.0	49.8	38.9	64.8
Average Min. Temperature (F)	19.1	24.3	29.4	35.7	43.3	49.5	54.5	52.1	43.2	34.3	26.7	21.6	36.1
Average Total Precipitation (in.)	1.33	0.93	0.96	0.88	1.01	0.83	0.22	0.36	0.53	0.75	1.13	1.20	10.14
Average Total Snowfall (in.)	6.3	2.2	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.1	1.4	4.0	14.6
Average Snow Depth (in.)	1	1	0	0	0	0	0	0	0	0	0	1	0

Percent of possible observations for period of record. Max. Temp.: 98.5% Min. Temp.: 98.5% Precipitation: 98.7% Snowfall: 97.9% Snow Depth: 95.3%

3.8.1.3 Deer Flat Dam, Idaho (102444)

Period of Record Monthly Climate Summary

Period of Record: 3/14/1916 to 12/31/2003

Table 3.11. Climate records for Deer Flat Dam, Idaho (Canyon County)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	37.8	45.5	55.5	64.0	72.5	80.1	88.4	87.2	78.4	65.7	49.8	39.3	63.7
Average Min. Temperature (F)	21.8	26.7	32.0	37.9	45.6	52.0	57.6	55.6	47.6	37.7	29.8	23.6	39.0
Average Total Precipitation (in.)	1.18	0.87	1.04	0.96	1.03	0.78	0.24	0.34	0.48	0.67	1.02	1.17	9.77
Average Total Snowfall (in.)	4.5	1.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	3.0	9.8
Average Snow Depth (in.)	1	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record. Max. Temp.: 66.5% Min. Temp.: 66.6% Precipitation: 67% Snowfall: 62.5% Snow Depth: 61.7%

3.8.1.4 Nampa Sugar Factory, Idaho (106305)

Period of Record Monthly Climate Summary

Period of Record: 10/1/1976 to 12/31/2003

Table 3.12. Climate records for Nampa Sugar Factory, Idaho (Canyon County)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	37.5	45.0	56.0	64.6	72.5	82.7	90.9	89.9	79.7	67.0	49.8	39.3	64.6
Average Min. Temperature (F)	21.0	25.2	31.1	36.4	43.3	50.8	56.0	54.1	45.2	35.6	27.6	21.3	37.3
Average Total Precipitation (in.)	1.36	1.08	1.33	1.19	1.26	0.59	0.31	0.26	0.56	0.67	1.18	1.32	11.12
Average Total Snowfall (in.)	3.7	1.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	3.3	9.2
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record. Max. Temp.: 95.1% Min. Temp.: 95.1% Precipitation: 95.1% Snowfall: 84.3% Snow Depth: 81.8%

3.9 Wildfire Hazard Profiles

3.9.1 Wildfire Ignition & Extent Profile

Fire was once an integral function of the majority of ecosystems in Idaho. The seasonal cycling of fire across the landscape was as regular as the July, August and September lightning storms plying across the canyons and mountains. Depending on the plant community composition, structural configuration, and buildup of plant biomass, fire resulted from ignitions with varying intensities and extent across the landscape. Shorter return intervals between fire events often

resulted in less dramatic changes in plant composition (Johnson 1998). The fires burned with a varied return interval, however, much of the county burned through a stand replacing fire that occurred on a moderate return interval of 20-80 years.

Native plant communities in this region developed under the influence of fire, and adaptations to fire are evident at the species, community, and ecosystem levels. Fire history data (from fire scars and charcoal deposits) suggest fire has played an important role in shaping the vegetation in the Columbia Basin for thousands of years (Steele *et al.* 1986, Agee 1993).

Detailed records of fire ignition and extent have been compiled by the USDI Bureau of Land Management. Using this data on past fire extents and fire ignition data, the occurrence of wildland fires in the region of Canyon County has been evaluated. The following (Table 3.13) is a summary of fire ignitions within Canyon County for the period 1957-2002.

Table 3.13. Past Fires Reported in Canyon County as reported by the BLM.

Year	Name	Latitude	Longitude	Acres
1957	STOCK TRAIL	0.0000	0.0000	0
1957	S. LITTLE FREEZEOUT	0.0000	0.0000	138
1957	HARTLEY GULCH	0.0000	0.0000	95
1957	LAKE LOWELL	0.0000	0.0000	530
1957	RIFLE PIT	0.0000	0.0000	566
1957	HARE	0.0000	0.0000	3086
1957	WHITE SAGE	0.0000	0.0000	203
1957	WALTERS FERRY	0.0000	0.0000	47
1961	STOCK DRIVEWAY	0.0000	0.0000	122
1962	LITTLE FREEZEOUT	0.0000	0.0000	79
1963	WY 16 & PIPELINE	0.0000	0.0000	559
1966	ITCHYBON	0.0000	0.0000	110
1971	PICKLES BUTTE	0.0000	0.0000	146
1979	CHAPARREL	0.0000	0.0000	269
1979	PICKLES BUTTE	0.0000	0.0000	901
1980		0.0000	0.0000	2603
1981		0.0000	0.0000	436
1984		0.0000	0.0000	275
1984	GROUCH DRAW	0.0000	0.0000	334
1986		0.0000	0.0000	236
1988		0.0000	0.0000	805
1989	DEER FLAT	0.0000	0.0000	311
1992		0.0000	0.0000	171
1992		0.0000	0.0000	91
1992		0.0000	0.0000	1042
1994		0.0000	0.0000	63
1995		0.0000	0.0000	74
1995		0.0000	0.0000	370
1996		0.0000	0.0000	178
1996		0.0000	0.0000	142
1996		0.0000	0.0000	4
1997		0.0000	0.0000	340

Table 3.13. Past Fires Reported in Canyon County as reported by the BLM.

Year	Name	Latitude	Longitude	Acres
1999		0.0000	0.0000	21
1999		0.0000	0.0000	121
1999		0.0000	0.0000	15
2000	OLD DUMP	43.8286	116.9189	51
2000	WEBERRANCH	43.7956	116.6404	43
2000	HARTLEY	43.7859	116.6321	22
2000	PICKLE SW	43.4895	116.7148	14
2000	PICKLEBUTT	43.4771	116.6921	51
2001	TOWERS	43.8291	116.9210	10
2001	RADIO	43.8147	116.5446	129
2001	SPROAT	43.3516	116.5999	275
2002	HARDLY LUNCH	43.7915	116.5890	108
2002	DILL PICKLE	43.4901	116.7182	7
2002	ROCKY	43.4866	116.7054	77

Approximately 46 wildfires have burned in the region of Canyon County (Table 3.13 & 3.14). Figure 3.1 summarizes wildfire ignitions and acres burned each year from 1957 through 2002. The highest number of total ignitions occurred in the 1990's, with 13 wildfires. However, based on the 11 ignitions which occurred between 2000 and 2002, the current decade is poised to hit approximately 37 ignitions (based on the observed rate of ignitions per year since 2000). The most acres burned in any one decade were in the 1950's however this is based to a large degree on extrapolated data from 1950-1956 (Figure 3.1).

Due to the extreme increase in development along the wildland-urban interface, many acres of highly flammable wildland fuels have been converted to green, well-groomed lawns and home sites. Nevertheless, as the amount of high fire risk acres decreases, the value lost when homes are threatened or destroyed by wildfires has skyrocketed. Many high value homes abut unmanaged, native rangeland fuels in Canyon County causing a very significant increase in the value lost even as the number of high risk acres decreases.

Unfortunately, detailed records on fire cause have not been maintained for wildfires in Canyon County. In other counties of Idaho, wildfire occurrence is recorded by a variety of sources, including the Idaho Department of Lands. It is strongly recommended that the BLM and Canyon County cooperate on collecting additional data for ignition cause as well as current extent mapping as time goes on. Past fires occurring in Canyon County have been mapped and are shown in Appendix I.

Figure 3.1. Canyon County Wildfire Extent Profile.

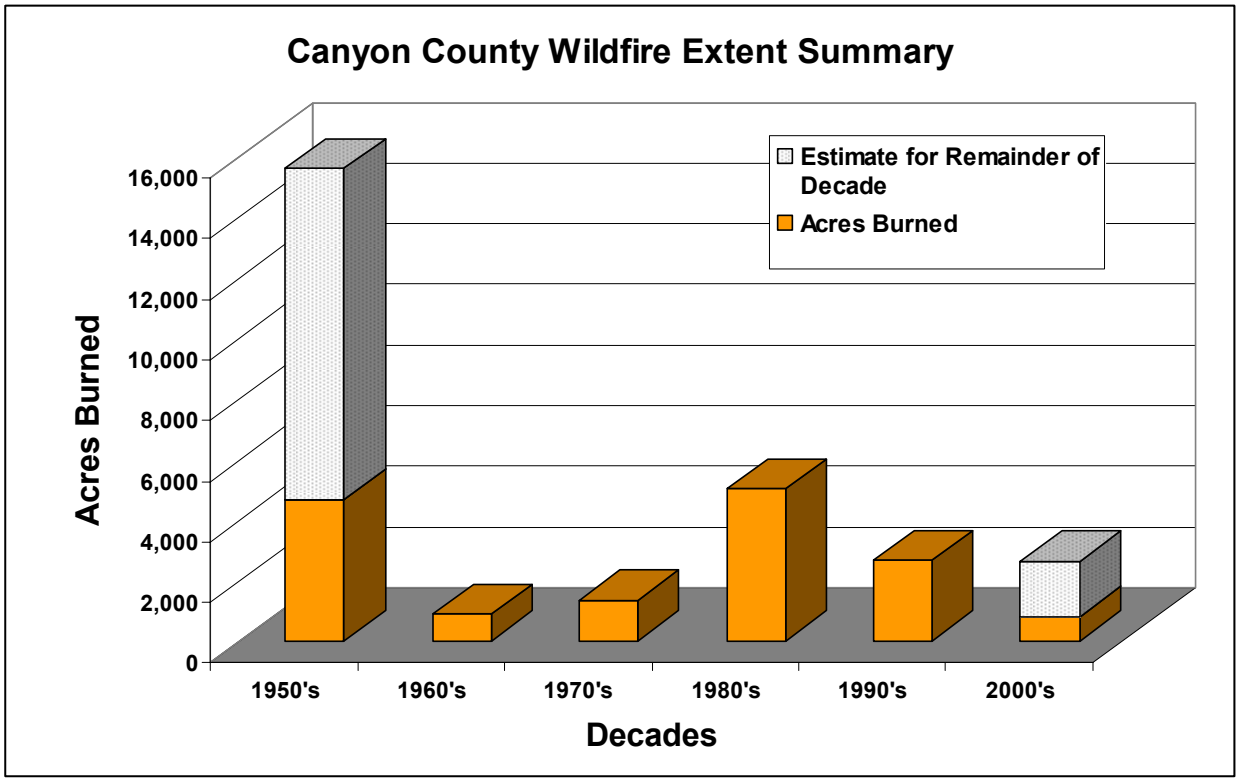


Table 3.14. Wildfire Ignition Profile for Canyon County 1957-2002.

Decade	Acres Burned	Estimated for Remainder of Decade	Number of Ignitions*
1950	4,665	10,886	8
1960	870		4
1970	1,315		3
1980	5,001		7
1990	2,632		13
2000	788	1,838	11

* based on 1957-2002 data

3.9.2 Regional and National Wildfire Extent Profile

Across the west, wildfires have been increasing in extent and cost of control. The National Interagency Fire Center (2003) reports nearly 88,500 wildfires in 2002 burned a total of nearly 7 million acres and cost $1.6 billion (Table 3.15). By most informed accounts, the 2003 totals will be significantly higher in terms of acres burned and cost.

Table 3.15. National Fire Season 2002 Summary	
Number of Fires (2002 final)	88,458
10-year Average (1992-2001)	103,112
Acres Burned (2002 final)	*** 6,937,584**
10-year Average (1992-2001)	4,215,089
Structures Burned (835 primary residences, 46 Commercial buildings, 1500 outbuildings)	2,381
Estimated Cost of Fire Suppression (Federal agencies only)	$ 1.6 billion

This figure differs from the 7,184,712 acres burned estimate provided by the National Interagency Coordination Center (NICC). The NICC estimate is based on information contained in geographic area and incident situation reports prepared at the time fires occurred. The 6,937,584 estimate is based on agency end-of-year reports.

The National Interagency Fire Center, located in Boise, Idaho, maintains records of fire costs, extent, and related data for the entire nation. Table 3.16 and 3.17 summarize some of the relevant wildfire data for the nation, and some trends that are likely to continue into the future unless targeted fire mitigation efforts are implemented and maintained in areas like Canyon County.

Table 3.16. Total Fires and Acres 1960 - 2002 Nationally.

Year	Fires	Acres	Year	Fires	Acres
2002	88,458	* 6,937,584	1980	234,892	5,260,825
2001	84,079	3,555,138	1979	163,196	2,986,826
2000	122,827	8,422,237	1978	218,842	3,910,913
1999	93,702	5,661,976	1977	173,998	3,152,644
1998	81,043	2,329,709	1976	241,699	5,109,926
1997	89,517	3,672,616	1975	134,872	1,791,327
1996	115,025	6,701,390	1974	145,868	2,879,095
1995	130,019	2,315,730	1973	117,957	1,915,273
1994	114,049	4,724,014	1972	124,554	2,641,166
1993	97,031	2,310,420	1971	108,398	4,278,472
1992	103,830	2,457,665	1970	121,736	3,278,565
1991	116,953	2,237,714	1969	113,351	6,689,081
1990	122,763	5,452,874	1968	125,371	4,231,996
1989	121,714	3,261,732	1967	125,025	4,658,586
1988	154,573	7,398,889	1966	122,500	4,574,389
1987	143,877	4,152,575	1965	113,684	2,652,112
1986	139,980	3,308,133	1964	116,358	4,197,309
1985	133,840	4,434,748	1963	164,183	7,120,768
1984	118,636	2,266,134	1962	115,345	4,078,894
1983	161,649	5,080,553	1961	98,517	3,036,219
1982	174,755	2,382,036	1960	103,387	4,478,188
1981	249,370	4,814,206	(National Interagency Fire Center 2003)		

Table 3.17. Suppression Costs for Federal Agencies Nationally.

Year	BLM	BIA	FWS	NPS	USFS	Totals
1994	$98,417,000	$49,202,000	$3,281,000	$16,362,000	$678,000,000	**$845,262,000**
1995	$56,600,000	$36,219,000	$1,675,000	$21,256,000	$224,300,000	**$340,050,000**
1996	$96,854,000	$40,779,000	$2,600	$19,832,000	$521,700,000	**$679,167,600**
1997	$62,470,000	$30,916,000	$2,000	$6,844,000	$155,768,000	**$256,000,000**
1998	$63,177,000	$27,366,000	$3,800,000	$19,183,000	$215,000,000	**$328,526,000**
1999	$85,724,000	$42,183,000	$4,500,000	$30,061,000	$361,000,000	**$523,468,000**
2000	$180,567,000	$93,042,000	$9,417,000	$53,341,000	$1,026,000,000	**$1,362,367,000**
2001	$192,115,00	$63,200,000	$7,160,000	$48,092,000	$607,233,000	**$917,800,000**
2002	$204,666,000	$109,035,000	$15,245,000	$66,094,000	$1,266,274,000	**$1,661,314,000**

(National Interagency Fire Center 2003)

Although many very large fires, growing to over 250,000 acres have burned in the region, actual fires in this county have usually been controlled at much smaller extents. This is not to imply that wildfires are not a concern in this county, but to point to the aggressive and professional manner to which the wildland and local fire districts cooperate in controlling blazes.

3.10 Analysis Tools and Techniques to Assess Fire Risk

Canyon County and the adjacent counties of Ada, Boise, and Elmore were analyzed using a variety of techniques, managed on a GIS system (ArcGIS 8.2). Physical features of the region were represented by data layers including roads, streams, soils, elevation, and remotely sensed images from the Landsat 7 ETM+ satellite. Field visits were conducted by specialists from Northwest Management, Inc., and others. Discussions with area residents and fire control specialists augmented field visits and provided insights to forest health issues and treatment options.

3.10.1 Fire Prone Landscapes

Schlosser *et al.* 2002 developed a methodology to assess the location of fire prone landscapes on forested and non-forested ecosystems in the western US. Working under an agreement with the Clearwater Resource Conservation and Development Council, Inc., (RC&D), Northwest Management, Inc. completed a similar assessment for five counties in north central Idaho including Clearwater County, Idaho County, Canyon County, Lewis County, and Nez Perce County. In a separate project, also funded by the Bureau of Land Management working in cooperation with Adams, Gem, Payette, Washington, and Valley Counties, through the West Central Highlands RC&D Area, Northwest Management, Inc., completed Fire Prone Landscapes assessments on those listed areas. Additional assessments of Fire Prone Landscapes were completed simultaneously for Ada, Boise, Canyon, and Elmore Counties, working in cooperation with the Southwestern Idaho RC&D located in Meridian.

The goal of developing the Fire Prone Landscapes analysis is to make inferences about the relative risk factors across large geographical regions (multiple counties) for wildfire spread. This analysis uses the extent and occurrence of past fires as an indicator of characteristics for a specific area and their propensity to burn in the future. Concisely, if a certain combination of vegetation cover type, canopy closure, aspect, slope, stream and road density have burned with a high occurrence and frequently in the past, then it is reasonable to extrapolate that they will have the same tendency in the future, unless mitigation activities are conducted to reduce this potential. The analysis for determining those landscapes prone to wildfire utilized a variety of sources.

Digital Elevation: Digital elevation models (DEM) for the project used USGS 10 meter DEM data provided at quarter-quadrangle extents. These were merged together to create a continuous elevation model of the analysis area.

The merged DEM file was used to create two derivative data layers; aspect and slope. Both were created using the spatial analyst extension in ArcGIS 8.2. Aspect data values retained one decimal point accuracy representing the cardinal direction of direct solar radiation, represented in degrees. Slope was recorded in percent and also retained one decimal point accuracy.

Remotely Sensed Images: Landsat 7 Enhanced Thematic Mapper (ETM+) images were used to assess plant cover information and percent of canopy cover. The Landsat ETM+ instrument is an eight-band multi-spectral scanning radiometer capable of providing high-resolution image information of the Earth's surface. It detects spectrally-filtered radiation at visible, near-infrared, short-wave, and thermal infrared frequency bands from the sun-lit Earth. Nominal ground sample distances or "pixel" sizes are 15 meters in the panchromatic band; 30 meters in the 6 visible, near and short-wave infrared bands; and 60 meters in the thermal infrared band.

The satellite orbits the Earth at an altitude of approximately 705 kilometers with a sun-synchronous 98-degree inclination and a descending equatorial crossing time of 10 a.m. daily.

Image spectrometry has great application for monitoring vegetation and biophysical characteristics. Vegetation reflectance often contains information on the vegetation chlorophyll absorption bands in the visible region and the near infrared region. Plant water absorption is easily identified in the middle infrared bands. In addition, exposed soil, rock, and non-vegetative surfaces are easily separated from vegetation through standard hyper-spectral analysis procedures.

Two Landsat 7 ETM images were obtained to conduct hyper-spectral analysis for this project. The first was obtained in 1998 and the second in 2002. Hyper-spectral analysis procedures followed the conventions used by the Idaho Vegetation and Land Cover Classification System, modified from Redmond (1997) and Homer (1998).

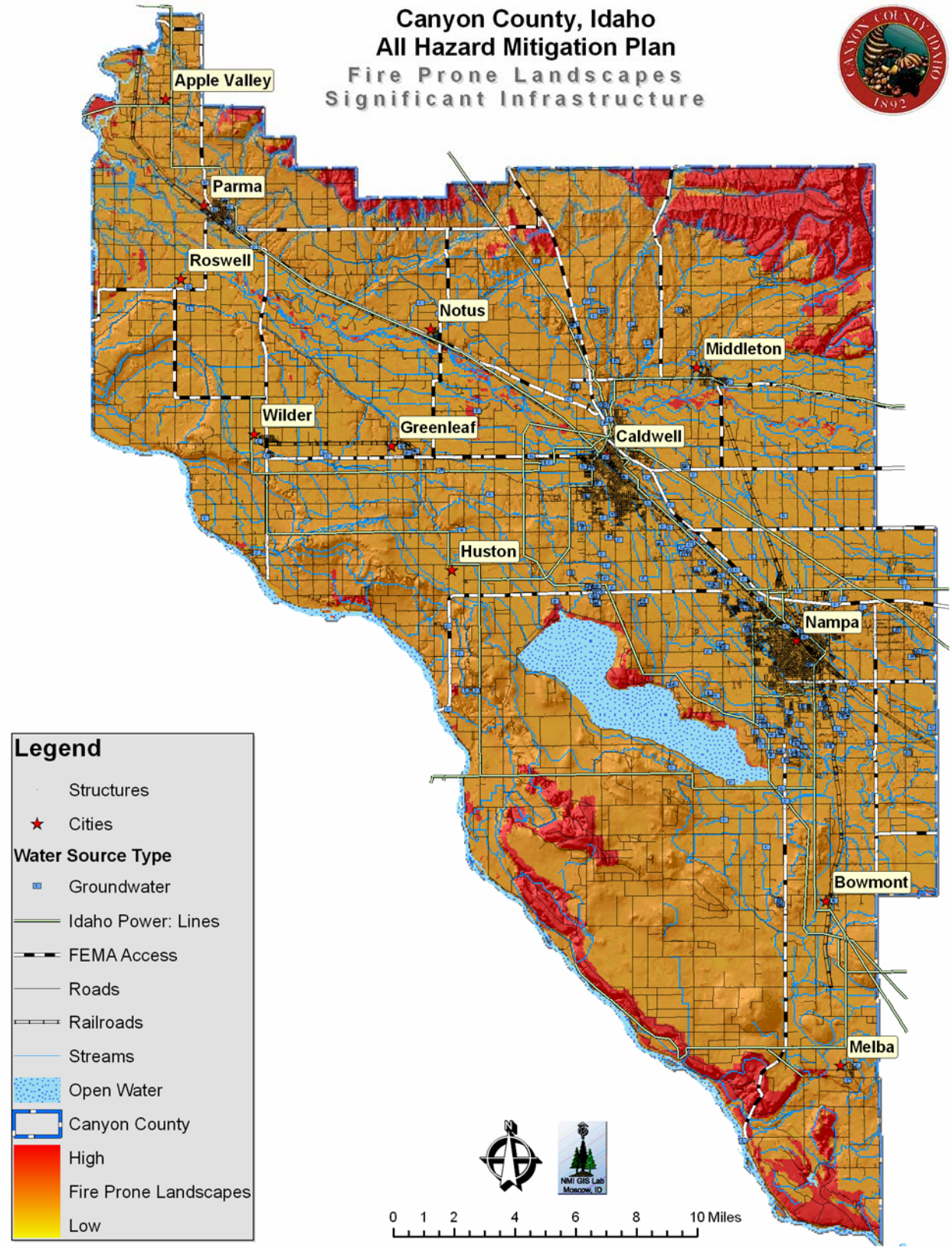
Riparian Zones: Riparian zones were derived from stream layers created during the Interior Columbia Basin Ecosystem Management Project (Quigley *et al.* 2001).

Wind Direction: Wind direction and speed data detailed by monthly averages was used in this project to better ascertain certain fire behavior characteristics common to large fire events. These data are spatially gridded Average Monthly Wind Directions in Idaho. The coverage was created from data summarized from the Interior Columbia Basin Ecosystem Management Project (Quigley *et al.* 2001).

Past Fires: Past fire extents represent those locations on the landscape that have previously burned during a wildfire. Past fire extent maps were obtained from a variety of sources for the central Idaho area including the USFS Panhandle National Forest and the Idaho Department of Lands.

Fire Prone Landscapes: Using the methodology developed by Schlosser *et al.* (2002), and refined for this project, the factors detailed above were used to assess the potential for the landscape to burn during the fire season in the case of fire ignition. Specifically, the entire region was evaluated at a resolution of 10 meters (meaning each pixel on the screen represented a 10 meter square on the ground) to determine the propensity for a particular area (pixel) to burn in the case of a wildfire. The analysis involved creating a linear regression analysis within the GIS program structure to assign a value to each significant variable, pixel-by-pixel. The analysis ranked factors from 0 (little to no risk) to 100 (extremely high risk) based on past fire occurrence.

Figure 3.2 Fire Prone Landscapes

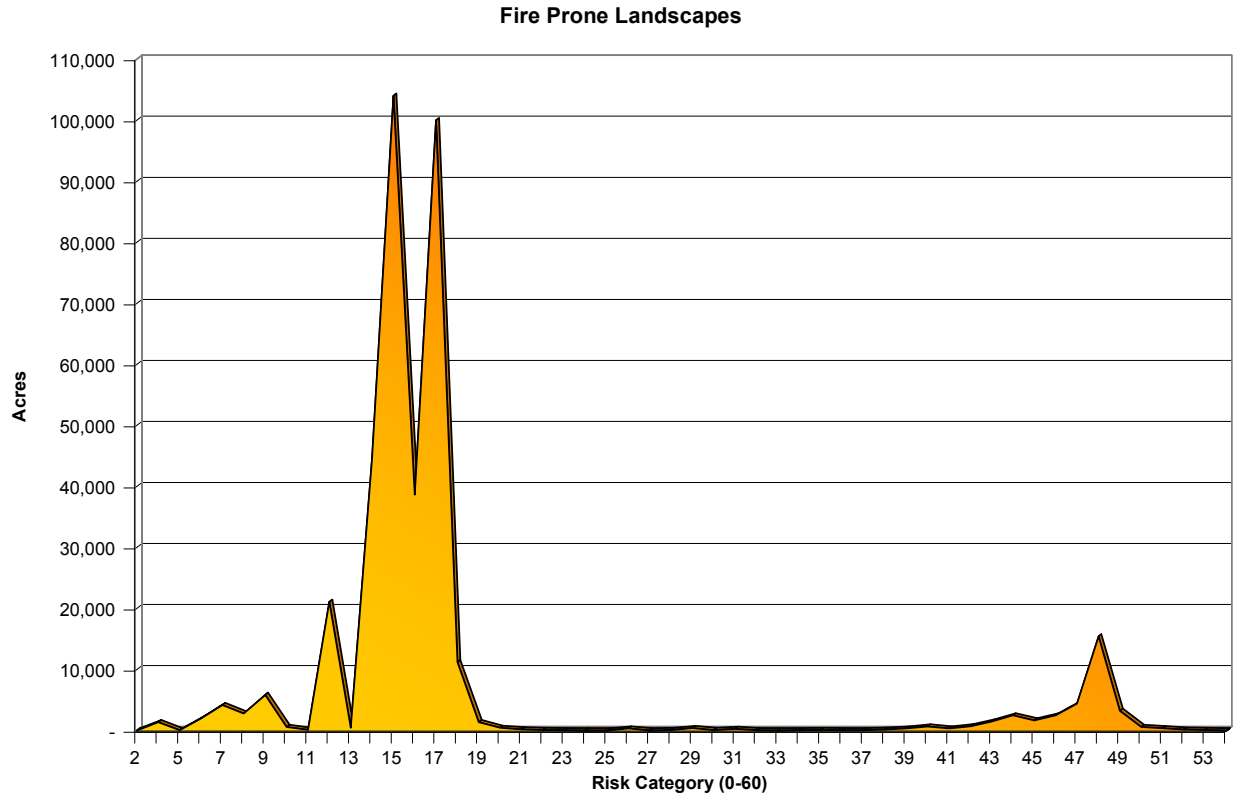


The maps depicting these risk categories display yellow as the lowest risk and red as the highest with values between a constant gradient from yellow to orange to red (Table 3.18). While large maps (16 square feet) have been provided as part of this analysis, smaller size maps are presented in Appendix I.

Table 3.18 Fire Prone Landscape rankings and associated acres in each category for Canyon County.

Color Code	Value	Total	Percent of Total Area
	0	-	0%
	10	17,177	4%
	20	331,684	86%
	30	1,150	0%
	40	1,637	0%
	50	33,690	9%
	60	587	0%
	70	-	0%
	80	-	0%
	90	-	0%
	100	-	0%

Figure 3.3 Distribution of area by Fire Prone Landscape Class.



The risk category values developed in this analysis should be considered **ordinal data**, that is, while the values presented have a meaningful ranking, they neither have a true zero point nor

scale between numbers. Rating in the “40” range is not necessarily twice as “risky” as rating in the “20” range. These category values also do not correspond to a rate of fire spread, a fuel loading indicator, or measurable potential fire intensity. Each of those scales is greatly influenced by weather, seasonal and daily variations in moisture (relative humidity), solar radiation, and other factors. The risk rating presented here serves to identify where certain constant variables are present, aiding in identifying where fires typically spread into the largest fires across the landscape.

3.10.2 Fire Regime Condition Class

The US Forest Service has provided their assessment of Fire Regime Condition Class for Canyon County to this WUI Wildfire Mitigation Plan analysis. These measures of vegetative conditions are the standard method of analysis for most federal agencies.

A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human intervention, but including the influence of aboriginal burning (Agee 1993, Brown 1995). Coarse scale definitions for natural (historical) fire regimes have been developed by Hardy *et al.* (2001) and Schmidt *et al.* (2002) and interpreted for fire and fuels management by Hann and Bunnell (2001). The five natural (historical) fire regimes are classified based on average number of years between fires (fire frequency) combined with the severity (amount of replacement) of the fire on the dominant overstory vegetation. These five regimes include:

I – 0-35 year frequency and low (surface fires most common) to mixed severity (less than 75% of the dominant overstory vegetation replaced);

II – 0-35 year frequency and high (stand replacement) severity (greater than 75% of the dominant overstory vegetation replaced);

III – 35-100+ year frequency and mixed severity (less than 75% of the dominant overstory vegetation replaced);

IV – 35-100+ year frequency and high (stand replacement) severity (greater than 75% of the dominant overstory vegetation replaced);

V – 200+ year frequency and high (stand replacement) severity.

As scale of application becomes finer these five classes may be defined with more detail, or any one class may be split into finer classes, but the hierarchy to the coarse scale definitions should be retained.

A fire regime condition class (FRCC) is a classification of the amount of departure from the natural regime (Hann and Bunnell 2001). Coarse-scale FRCC classes have been defined and mapped by Hardy *et al.* (2001) and Schmidt *et al.* (2001) (FRCC). They include three condition classes for each fire regime. The classification is based on a relative measure describing the degree of departure from the historical natural fire regime. This departure results in changes to one (or more) of the following ecological components: vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and other associated disturbances (e.g. insect and diseased mortality, grazing, and drought). There are no wildland vegetation and fuel conditions or wildland fire situations that do not fit within one of the three classes.

The three classes are based on low (FRCC 1), moderate (FRCC 2), and high (FRCC 3) departure from the central tendency of the natural (historical) regime (Hann and Bunnell 2001, Hardy *et al.* 2001, Schmidt *et al.* 2002). The central tendency is a composite estimate of vegetation characteristics (species composition, structural stages, stand age, canopy closure,

and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and other associated natural disturbances. Low departure is considered to be within the natural (historical) range of variability, while moderate and high departures are outside.

Characteristic vegetation and fuel conditions are considered to be those that occurred within the natural (historical) fire regime. Uncharacteristic conditions are considered to be those that did not occur within the natural (historical) fire regime, such as invasive species (e.g. weeds, insects, and diseases), "high graded" forest composition and structure (e.g. large trees removed in a frequent surface fire regime), or repeated annual grazing that maintains grassy fuels across relatively large areas at levels that will not carry a surface fire. Determination of the amount of departure is based on comparison of a composite measure of fire regime attributes (vegetation characteristics; fuel composition; fire frequency, severity and pattern) to the central tendency of the natural (historical) fire regime. The amount of departure is then classified to determine the fire regime condition class. A simplified description of the fire regime condition classes and associated potential risks are presented in Table 3.19. Maps depicting Fire Regime and Condition Class are presented in Appendix I.

Table 3.19. Fire Regime Condition Class Definitions.

Fire Regime Condition Class	Description	Potential Risks
Condition Class 1	Within the natural (historical) range of variability of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.	Fire behavior, effects, and other associated disturbances are similar to those that occurred prior to fire exclusion (suppression) and other types of management that do not mimic the natural fire regime and associated vegetation and fuel characteristics. Composition and structure of vegetation and fuels are similar to the natural (historical) regime. Risk of loss of key ecosystem components (e.g. native species, large trees, and soil) is low.
Condition Class 2	Moderate departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.	Fire behavior, effects, and other associated disturbances are moderately departed (more or less severe). Composition and structure of vegetation and fuel are moderately altered. Uncharacteristic conditions range from low to moderate. Risk of loss of key ecosystem components is moderate.
Condition Class 3	High departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.	Fire behavior, effects, and other associated disturbances are highly departed (more or less severe). Composition and structure of vegetation and fuel are highly altered. Uncharacteristic conditions range from moderate to high. Risk of loss of key ecosystem components is high.

An analysis of Fire Regime Condition Class in Canyon County shows that approximately 3% of the County is in Condition Class 1 (low departure), just about 9% is in Condition Class 2 (moderate departure), and less than 1% in Condition Class 3 (Table 3.20).

Table 3.20. FRCC by area in Canyon County.

Code	Condition Class	Acres	Percent of Area
1	low departure	11,456	3%
2	moderate departure	34,188	9%
3	high departure	180	0%
4	agriculture	308,451	80%
5	rock/barren	1,228	0%
7	urban	19,421	5%
8	water	11,000	3%

See Appendix I for maps of Fire Regime and Conditions Class.

3.10.3 Predicted Fire Severity

Current fire severity (CFS) is an estimate of the relative fire severity if a fire were to burn a site under its current state of vegetation. The US Forest Service (Flathead National Forest) did not attempt to model absolute values of fire severity, as there are too many variables that influence fire effects at any given time (for example, temperature, humidity, fuel moisture, slope, wind speed, wind direction).

The characterization of likely fire severity was based upon historic fire regimes, potential natural vegetation, cover type, size class, and canopy cover with respect to slope and aspect. Each cover type was assigned a qualitative rating of fire tolerance based upon likely species composition and the relative resistance of each species to fire. The US Forest Service researchers defined 3 broad classes of fire tolerance: high tolerance (<20 percent post-fire mortality); moderate tolerance (20 to 80 percent mortality); and low tolerance (>80 percent mortality). We would expect that fires would be less severe within cover types comprised by species that have a high tolerance to fire. Conversely, fires would likely burn more severely within cover types comprised by species having a low tolerance to fire. Data assignments were based upon collective experience in the field, as well as stand structure characteristics reported in the fire-history literature. For example, if they estimated that a fire would remove less than 20 percent of the overstory, the current fire severity would be assigned to the non-lethal class (that is, NL). However, if they expected fire to remove more than 80 percent of the overstory, the current fire severity was assigned to a stand replacement class (that is, SR or SR3).

3.10.3.1 Purpose

Fire is a dominant disturbance process in southern Idaho. The likely effect of fire upon vegetation (i.e., current fire severity) is critical information for understanding the subsequent fire effects upon wildlife habitats, water quality, and the timing of runoff. There have been many reports of how fire suppression and timber harvest has affected vegetation patterns, fuels, and fire behavior. The US Forest Service researchers from the Flathead National Forest, derived the current fire severity theme explicitly to compare with the historical fire regime theme to evaluate how fire severity has changed since Euro-American settlement (that is, to derive fire-regime condition class).

3.10.3.2 General Limitations

These data were designed to characterize broad scale patterns of estimated fire severity for use in regional and subregional assessments. Any decisions based on these data should be supported with field verification, especially at scales finer than 1:100,000. Although the resolution of the CFS theme is 90 meter cell size, the expected accuracy does not warrant their use for analyses of areas smaller than about 10,000 acres (for example, assessments that typically require 1:24,000 data).

Current fire severity rule-set was developed for an "average burn day" for the specific vegetation types in our area. Any user of these data should familiarize themselves with the rule sets to better understand our estimate of current fire severity.

Table 3.21. Predicted Fire Severity by area in Canyon County.

	Predicted Fire Severity	Acres	Percent of Area
1	non-lethal	352	0%
3	mixed severity, long	5,052	1%
6	non-forest stand replacing, short	25,187	7%
8	non-forest stand replacing, moderate	5,626	1%
9	non-forest stand replacing, long	9,608	2%
10	agriculture	308,451	80%
11	rock/barren	1,228	0%
13	urban	19,421	5%
14	water	11,000	3%

See Appendix I for a map of Predicted Fire Severity.

3.10.4 On-Site Evaluations

Fire control and evaluation specialists as well as hazard mitigation consultants evaluated the communities of Canyon County to determine, first-hand, the extent of risk and characteristics of hazardous fuels in the Wildland-Urban Interface. The on-site evaluations have been summarized in written narratives and are accompanied by photographs taken during the site visits. These evaluations include a generalized fuel models as established by Anderson (1982). These fuel models are described in the following section of this document.

3.10.5 Fuel Model Descriptions

Anderson (1982) developed a categorical guide for determining fuel models to facilitate the linkage between fuels and fire behavior. These 13 fuel models, grouped into 4 basic groups: grass, chaparral and shrub, timber, and slash, provide the basis for communicating fuel conditions and evaluating fire risk. There are a number of ways to estimate fuel models in forest and rangeland conditions. The field personnel from Northwest Management, Inc., that evaluated communities and other areas of Canyon County have all been involved in wildland firefighting and the incident command system. They made ocular estimates of fuel models they observed. In an intensive evaluation, actual sampling would have been employed to determine fuel models and fuel loading.

Fuel Model 0- This type consists of non-flammable sites, such as exposed mineral soil and rock outcrops. Other lands are also identified in this type.

3.10.5.1 Grass Group

3.10.5.1.1 Fire Behavior Fuel Model 1

Fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one-third of the area.

Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations that met the above area constraint. Annual and perennial grasses are included in this fuel model.

This fuel model correlates to 1978 NFDRS fuel models A, L, and S.

Fuel model values for estimating fire behavior

Total fuel load, < 3-inch dead and alive, tons/acre 0.74
Dead fuel load, ¼-inch, tons/acre 0.74
Live fuel load, foliage, tons/acre 0
Fuel bed depth, feet 1.0

3.10.5.1.2 Fire Behavior Fuel Model 2

Fire is spread primarily through the fine herbaceous fuels, either curing or dead. These are surface fires where the herbaceous material, in addition to litter and dead-down stem wood from the open shrub or timber overstory, contribute to the fire intensity. Open shrub lands and pine stands or scrub oak stands that cover one-third to two-thirds of the area may generally fit this model; such stands may include clumps of fuels that generate higher intensities an that may produce firebrands. Some pinyon-juniper may be in this model.

This fuel model correlates to 1978 NFDRS fuel models C and T.

Fuel model values for estimating fire behavior

Total fuel load, < 3-inch dead and alive, tons/acre 4.0
Dead fuel load, ¼-inch, tons/acre 2.0
Live fuel load, foliage, tons/acre 0.5
Fuel bed depth, feet 1.0

3.10.5.1.3 Fire Behavior Fuel Model 3

Fires in this fuel are the most intense of the grass group and display high rates of spread under the influence of wind. Wind may drive fire into the upper heights of the grass and across standing water. Stands are tall, averaging about 3 feet (1 m), but considerable variation may occur. Approximately one-third or more of the stand is considered dead or cured and maintains the fire. Wild or cultivated grains that have not been harvested can be considered similar to tall prairie and marshland grasses.

This fuel correlates to 1978 NFDRS fuel model N.

Fuel model values for estimating fire behavior

Total fuel load, < 3-inch dead and live, tons/acre 3.0
Dead fuel load, ¼-inch, tons/acre 3.0
Live fuel load, foliage tons/acre 0

Fuel bed depth, feet 2.5

3.10.5.2 Shrub Group

3.10.5.2.1 Fire Behavior Fuel Model 4

Fire intensity and fast-spreading fires involve the foliage and live and dead fine woody material in the crowns of a nearly continuous secondary overstory. Stands of mature shrubs, 6 or more feet tall, such as California mixed chaparral, the high pocosin along the east coast, the pinebarrens of New Jersey, or the closed jack pine stands of the north-central States are typical candidates. Besides flammable foliage, dead woody material in the stands significantly contributes to the fire intensity. Height of stand qualifying for this model depends on local conditions. A deep litter layer may also hamper suppression efforts.

This fuel model represents 1978 NFDRS fuel models B and O; fire behavior estimates are more severe than obtained by Models B or O.

Fuel model values for estimating fire behavior

Total fuel load, <3-inch dead and live, tons/acre 13.0
Dead fuel load, ¼-inch, tons/acre 5.0
Live fuel load, foliage, tons/acre 5.0
Fuel bed depth, feet 6.0

3.10.5.2.2 Fire Behavior Fuel Model 5

Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs and the grasses or forbs in the understory. The fires are generally not very intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material. Usually shrubs are short and almost totally cover the area. Young, green stands with no dead wood would qualify: laurel, vine maple, alder, or even chaparral, manzanita, or chamise.

No 1978 NFDRS fuel model is represented, but model 5 can be considered as second choice for NFDRS model D or as third choice for NFDRS model T. Young green stands may be up to 6 feet (2m) high but have poor burning properties because of live vegetation.

Fuel model values for estimating fire behavior

Total fuel load, <3-inch dead and live, tons/acre 3.5
Dead fuel load, ¼-inch, tons/acre 1.0
Live fuel load, foliage, tons/acre 2.0
Fuel bed depth, feet 2.0

3.10.5.2.3 Fire Behavior Fuel Model 6

Fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at mid-flame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, oak brush, low pocosin, Alaskan spruce taiga, and shrub tundra. Even hardwood slash that has cured can be considered. Pinyon-juniper shrublands may be

represented but may over-predict rate of spread except at high winds, like 20 mi/h (32 km/h) at the 20-foot level.

The 1978 NFDRS fuel models F and Q are represented by this fuel model. It can be considered a second choice for models T and D and a third choice for model S.

Fuel model values for estimating fire behavior

Total fuel load, <3-inch dead and live, tons/acres..... 6.0
Dead fuel load, 1/4 –inch, tons/acre 1.5
Live fuel load, foliage, tons/acre 0
Fuel bed depth, feet..... 2.5

3.10.5.2.4 Fire Behavior Fuel Model 7

Fires burn through the surface and shrub strata with equal ease and can occur at higher dead fuel moisture contents because of the flammability of live foliage and other live material. Stands of shrubs are generally between 2 and 6 feet (0.6 and 1.8 m high). Palmetto-gallberry understory-pine overstory sites are typical and low pocosins may be represented. Black spruce-shrub combinations in Alaska may also be represented.

This fuel model correlates with 1978 NFDRS model D and can be a second choice for model Q.

Fuel model values for estimating fire behavior

Total fuel load, <3-inch dead and live, tons/acre 4.9
Dead fuel load, ¼-inch, tons/acre 1.1
Live fuel load, foliage, tons/acre 0.4
Fuel bed depth, feet..... 2.5

3.10.5.3 Timber Group

3.10.5.3.1 Fire Behavior Fuel Model 8

Slow-burning ground fires with low flame lengths are generally the case, although the fire may encounter an occasional “jackpot” or heavy fuel concentration that can flare up. Only under severe weather conditions involving high temperatures, low humilities, and high winds do the fuels pose fire hazards. Closed canopy stands of short-needle conifers or hardwoods that have leafed out support fire in the compact litter layer. This layer is mainly needles, leaves, and occasionally twigs because little undergrowth is present in the stand. Representative conifer types are white pine, and lodgepole pine, spruce, fire and larch

This model can be used for 1978 NFDRS fuel models H and R.

Fuel model values for estimating fire behavior

Total fuel load, <3-inch, dead and live, tons/acre 5.0
Dead fuel load, ¼-inch, tons/acre 1.5
Live fuel load, foliage, tons/acre 0
Fuel bed depth, feet..... 0.2

3.10.5.3.2 Fire Behavior Fuel Model 9

Fires run through the surface litter faster than model 8 and have longer flame height. Both long-needle conifer stands and hardwood stands, especially the oak-hickory types, are typical. Fall

fires in hardwoods are predictable, but high winds will actually cause higher rates of spread than predicted because of spotting caused by rolling and blowing leaves. Closed stands of long-needled pine like ponderosa, Jeffrey, and red pines, or southern pine plantations are grouped in this model. Concentrations of dead-down woody material will contribute to possible torching out of trees, spotting, and crowning.

NFDRS fuel models E, P, and U are represented by this model. It is also a second choice for models C and S.

Fuel model values for estimating fire behavior

Total fuel load, <3-inch dead and live, tons/acre 3.5
Dead fuel load, ¼-inch, tons/acre 2.9
Live fuel load, foliage, tons/acre 0
Fuel bed depth, feet 0.2

3.10.5.3.3 Fire Behavior Fuel Model 10

The fires burn in the surface and ground fuels with greater fire intensity than the other timber models. Dead-down fuels include greater quantities of 3-inch (7.6 cm) or larger limb wood, resulting from overmaturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, wind-thrown stands, overmature situations with dead fall, and aged light thinning or partial-cut slash.

The 1978 NFDRS fuel model G is represented.

Fuel model values for estimating fire behavior

Total fuel load, < 3-inch dead and live, tons/acre 12.0
Dead fuel load, ¼-inch, tons/acre 3.0
Live fuel load, foliage, tons/acre 2.0
Fuel bed depth, feet 1.0

The fire intensities and spread rates of these timber litter fuel models are indicated by the following values when the dead fuel moisture content is 8 percent, live fuel moisture is 100 percent, and the effective wind speed at mid-flame height is 5 mi/h (8 km/h):

Table 3.22. Comparative Fire Intensities and Rates of Spread in Timber Fuel Models.

Fuel Model	Rate of Spread Chains/hour	Flame length Feet
8	1.6	1.0
9	7.5	2.6
10	7.9	4.8

Fires such as above in model 10 are at the upper limit of control by direct attack. More wind or drier conditions could lead to an escaped fire.

3.10.5.4 Logging Slash Group

3.10.5.4.1 Fire Behavior Fuel Model 11

Fires are fairly active in the slash and herbaceous material intermixed with the slash. The spacing of the rather light fuel load, shading from overstory, or the aging of the fine fuels can contribute to limiting the fire potential. Light partial cuts or thinning operations in mixed conifer stands, hardwood stands, and southern pine harvests are considered. Clearcut operations generally produce more slash than represented here. The less-than-3-inch (7.6-cm) material load is less than 12 tons per acre (5.4 t/ha). The greater-than-3-inch (7.6-cm) is represented by not more than 10 pieces, 4 inches (10.2 cm) in diameter, along a 50-foot (15 m) transect.

The 1978 NFDRS fuel model K is represented by this model.

Fuel model values for estimating fire behavior

Total fuel load, < 3-inch, dead and live, tons/acre 11.5
Dead fuel load, ¼-inch, tons/acre 1.5
Live fuel load, foliage, tons/acre 0
Fuel bed depth, feet 1.0

3.10.5.4.2 Fire Behavior Fuel Model 12

Rapidly spreading fires with high intensities capable of generating firebrands can occur. When fire starts, it is generally sustained until a fuel break or change in fuels is encountered. The visual impression is dominated by slash and much of it is less than 3 inches (7.6 cm) in diameter. The fuels total less than 35 tons per acres (15.6 t/ha) and seem well distributed. Heavily thinned conifer stands, clearcuts, and medium or heavy partial cuts are represented. The material larger than 3 inches (7.6 cm) is represented by encountering 11 pieces, 6 inches (15.3 cm) in diameter, along a 50-foot (15-m) transect.

This model depicts 1978 NFDRS model J and may overrate slash areas when the needles have dropped and the limb wood has settled. However, in areas where limb wood breakup and general weathering have started, the fire potential can increase.

Fuel model values fore estimating fire behavior

Total fuel load, < 3-inch, dead and live, tons/acre 34.6
Dead fuel load, ¼-inch, tons/acre 4.0
Live fuel load, foliage, tons/acre 0
Fuel bed depth, feet 2.3

3.10.5.4.3 Fire Behavior Fuel Model 13

Fire is generally carried across the area by a continuous layer of slash. Large quantities of material larger than 3 inches (7.6 cm) are present. Fires spread quickly through the fine fuels and intensity builds up more slowly as the large fuels start burning. Active flaming is sustained for long periods and a wide variety of firebrands can be generated. These contribute to spotting problems as the weather conditions become more severe. Clearcuts and heavy partial-cuts in mature and overmature stands are depicted where the slash load is dominated by the greater-tayhn-3-inch (7.6-cm) diameter material. The total load may exceed 200 tons per acre (89.2 t/ha) but fuel less than 3 inches (7.6 cm_ is generally only 10 percent of the total load. Situations where the slash still has “red’ needles attached but the total load is lighter, more like model 12, can be represented because of the earlier high intensity and quicker area involvement.

The 1978 NFDRS fuel model I is represented. Areas most commonly fitting his model are old-growth stands west of the Cascade and Sierra Nevada Mountains. More efficient utilization standards are decreasing the amount of large material left in the field.

Fuel model values for estimating fire behavior

Total fuel load, < 3-inch dead and live, tons/acre 58.1
Dead fuel load, ¼-inch, tons/acre 7.0
Live fuel load, foliage, tons/acre 0
Fuel bed depth, feet 3.0

For other slash situations:

Hardwood slash .....Model 6
Heavy "red" slash.....Model 4
Overgrown slash .....Model 10
Southern pine clearcut slash.....Model 12

The comparative rates of spread and flame lengths for the slash models at 8 percent dead fuel moisture content and a 5 mi/h (8 km/h) mid-flame wind are presented in Table 3.23.

Table 3.23. Comparative Fire Intensities and Rates of Spread in Slash Fuel Models.

Fuel Model	Rate of Spread Chains/hour	Flame length Feet
11	6.0	3.5
12	13.0	8.0
13	13.5	10.5

3.11 Wildland-Urban Interface

3.11.1 People and Structures

A key component in meeting the underlying need is the protection and treatment of fire hazard in the wildland-urban interface. The wildland-urban interface refers to areas where wildland vegetation meets urban developments, or where forest fuels meet urban fuels (such as houses). These areas encompass not only the interface (areas immediately adjacent to urban development), but also the continuous slopes and fuels that present a risk to urban developments. Reducing the fire hazard in the wildland urban interface requires the efforts of federal, state, local agencies, and private individuals (Norton 2002). "The role of [most] federal agencies in the wildland urban interface includes wildland firefighting, hazard fuels reduction, cooperative prevention and education and technical experience. Structural fire protection [during a wildfire] in the wildland urban interface is [largely] the responsibility of Tribal, state, and local governments" (USFS 2001). Property owners share a responsibility to protect their residences and businesses and minimize fire danger by creating defensible areas around them and taking other measures to minimize the fire risks to their structures (USFS 2001). With treatment, a wildland-urban interface can provide firefighters a defensible area from which to suppress wildland fires or defend communities. In addition, a wildland urban interface that is properly thinned will be less likely to sustain a crown fire that enters or originates within it (Norton 2002).

By reducing hazardous fuel loads, ladder fuels, and tree densities, and creating new and reinforcing defensible space, landowners would protect the wildland-urban interface, the biological resources of the management area, and adjacent property owners by:

- minimizing the potential of high-severity ground or crown fires entering or leaving the area;
- reducing the potential for firebrands (embers carried by the wind in front of the wildfire) impacting the WUI. Research indicates that flying sparks and embers (firebrands) from a crown fire can ignite additional wildfires as far as 1¼ miles away during periods of extreme fire weather and fire behavior (McCoy *et al.* 2001 as cited in Norton 2002);
- improving defensible space in the immediate areas for suppression efforts in the event of wildland fire.

Four wildland/urban conditions have been identified for use in the wildland urban interface (Norton 2002). These include the Interface Condition, Intermix Condition, Occluded Condition, and Rural Condition. Descriptions of each are as follows:

- **Interface Condition** – a situation where structures abut wildland fuels. There is a clear line of demarcation between the structures and the wildland fuels along roads or back fences. The development density for an interface condition is usually 3+ structures per acre;
- **Intermix Condition** – a situation where structures are scattered throughout a wildland area. There is no clear line of demarcation; the wildland fuels are continuous outside of and within the developed area. The development density in the intermix ranges from structures very close together to one structure per 40 acres;
- **Occluded Condition** – a situation, normally within a city, where structures abut an island of wildland fuels (park or open space). There is a clear line of demarcation between the structures and the wildland fuels along roads and fences. The development density for an occluded condition is usually similar to that found in the interface condition and the occluded area is usually less than 1,000 acres in size; and
- **Rural Condition** – a situation where the scattered small clusters of structures (ranches, farms, resorts, or summer cabins) are exposed to wildland fuels. There may be miles between these clusters.

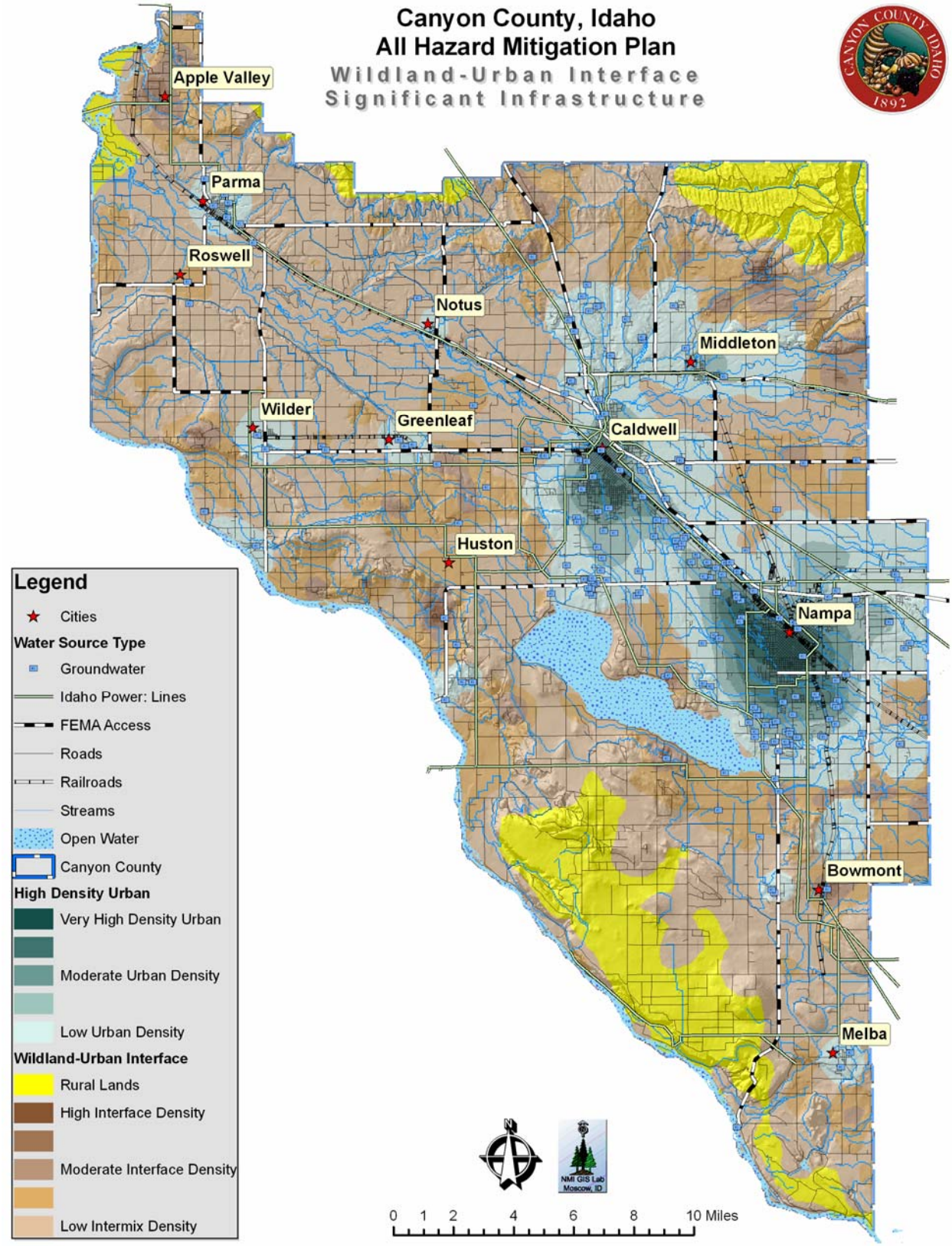
The location of structures in Canyon County have been mapped and are presented on a variety of maps in this analysis document; specifically in Appendix I. The location of all structures was determined by examining two sets of remotely sensed images. The more detailed information was garnered from digital ortho-photos at a resolution of 1 meter (from 1998). For those areas not covered by the 1 meter DOQQ images, SPOT satellite imagery at a resolution of 10 meters was used (from 2002). These records were augmented with data collected on hand-held GPS receivers to record the location of structures, especially in areas where new housing developments were seen.

All structures are represented by a “dot” on the map. No differentiation is made between a garage and a home, or a business and a storage building. The density of structures and their specific locations in this management area are critical in defining where the potential exists for casualty loss in the event of a wildfire in the region.

By evaluating this structure density, we can define WUI areas on maps by using mathematical formulae and population density indexes to define the WUI based on where structures are located. The resulting population density indexes create concentric circles showing high density areas of Interface and Intermix WUI, as well as Rural WUI (as defined by Secretary Norton of the Department of Interior). This portion of the analysis allows us to “see” where the highest concentrations of structures are located in reference to high risk landscapes, limiting infrastructure, and other points of concern.

It is critical to understand that in the protection of people, structures, infrastructure, and unique ecosystems, this portion of the analysis only serves to identify structures and by some extension the people that inhabit them. It does not define the location of infrastructure and unique ecosystems. Other analysis tools will be used for those items.

Figure 3.4. Canyon County Wildland-Urban Interface Map.



3.11.2 Infrastructure

There are numerous energy transmission infrastructures that pass through Canyon County that are critical to the safety and prosperity of county residents and residents throughout the western United States. High tension power lines and gas/petroleum power lines within the county have been mapped and are presented in Appendix I.

Multiple main grid transmission lines and associated substations operated by Idaho Power and numerous primary, secondary, and feeder power lines criss-cross the county. Those at greatest risk to direct impact from fire are those that are supported by wooden poles that can easily catch fire. In many cases, the wooden telephone or power poles can be extinguished before the integrity of the pole is significantly compromised. However, damage to transformers and other power components may result. During large wildland incidents when hundreds or thousands of poles may catch fire, significant numbers of poles may fail, leading to downed lines and significant safety risks. Repair times would be proportional to the scale of the event. Likewise power outages are proportional as well.

Protection of these lines from loss during a wildfire is paramount in as much as the electrical power they provide serves not only the communities of Canyon County but of surrounding counties. The protection of these lines allows for community sustainability, support of the economic viability of Canyon County, and the protection of people who rely on that power. Fuels mitigation under power lines has received considerable attention in forested ecosystems as timber is thinned and heavy accumulations of brush are managed. This practice should be mandated into the future. However, the importance of management of rangeland ecosystems under high tension power lines should not be overlooked. Brush intermixed with grasses and other species, during extreme fire weather events, coupled with steep slopes can produce considerable heat and particulate matter. When this occurs under power lines, the result can be arching between lines and even failure of the electrical media itself. Fuel mitigation treatments in high risk areas, especially where multiple lines are co-located, will be recommended for treatments.

Chevron and Northwest Natural Gas both maintain pipelines that pass through the county. A major pumping station and storage facility is also located east of Nampa near the Ada-Canyon County border. This pipeline infrastructure supplies natural gas and petroleum throughout the northwest. The lines link the oil and gas fields in Wyoming to refineries and markets in Salt Lake City, Spokane, Portland and numerous other high-demand markets throughout the region.

Multiple travel routes have been identified as primary and secondary escape routes through the course of the planning process (See Appendix I). These include Interstate 84, Highway 20-26, Highway 95, and a number of state and county routes that have been identified as critical emergency evacuation routes. Primary and secondary roads are generally not at risk of damage by wildland fire. However, fires frequently disrupt travel and commerce due to impaired visibility and suppression activities. Large fires can cause prolonged road closures with a notable impact to inter-county and interstate travel.

Smoke from any type of fire, wildland or agricultural, can pose significant risks public safety. Obscured vision can lead to collisions that can result in accidents with significant economic cost and a possible loss of life.

The ability to quickly locate a physical address is critical in providing services in any type of emergency response. Minutes can make the difference in home survival during fire events or life and death during medical emergencies. Accurate road signage and rural addressing is

fundamental to assure the safety and security of Canyon County residents. Currently, there are numerous areas throughout the county that are lacking road signs, rural addresses or both. Signing and addressing throughout the county needs to be brought up to NFPA code in order to assure visibility and quick location.

3.11.3 Ecosystems

Much of the native rangeland of Canyon County has been converted to irrigated agricultural crops. However, there are still many areas of native vegetation that serve as a haven for a variety of plant and animal species. Of special note is the presence of the Deer Flat National Wildlife Refuge in the southern portion of Canyon County. The watery oasis at Deer Flat National Wildlife Refuge provides an important breeding area for birds and mammals, as well as other wildlife. The refuge is also a significant resting and wintering area for birds migrating along the Pacific Flyway. Deer Flat National Wildlife Refuge has two sectors–Lake Lowell and the Snake River Islands. The Lake Lowell sector encompasses 10,588 acres, including the almost 9,000-acre Lake Lowell and surrounding lands. The Snake River Islands sector contains about 800 acres on 101 islands. These islands are distributed along 113 river miles from the Canyon-Ada County line in Idaho, to Farewell Bend in Oregon.

3.12 Soils

There are various soil types in the Canyon County area. Eight major soil divisions are found:

1. Thirteen percent of the land area, mostly in the northern and northeastern parts, is well drained silt loams to sandy loams on uplands
2. Fifteen percent of the land area, mostly in bottom lands near the Boise River, is somewhat poorly drained and moderately drained fine sandy loams to silt loams on lowlands.
3. Fourteen percent of the land area, mostly on high river terraces south of the Boise River near Caldwell and north of Nampa, has well drained silt loams.
4. Twenty-one percent of the land area, mostly in three areas separated by the Boise and Snake Rivers, has well drained silt loams on lake terraces and alluvial fans. Practically all of this association is now used for irrigated crops.
5. Eighteen percent of the land area, mostly on terraces near Sunnyslope, Central Cove, and Apple Valley, is well drained and somewhat excessively drained fine sandy loams and loamy fine sands on fans and terraces.
6. Nine percent of the land area, mostly on high plateaus and terraces south of Lake Lowell in an area extending from Dry Lake and Lakeview to Bowmont and Melba, has deep and shallow, well drained silt loam.
7. Six percent of the land area, mostly on high ridges and terraces north and south of Lake Lowell, is well drained silt loam and loam over hardpan or gravel on high terraces.
8. Four percent of the land area, mostly on high terraces and uplands east and southeast of Nampa, has deep and moderately deep, well drained silt loams on high basalt bedrock terraces.

Our soil resource is an extremely important component for maintaining a healthy ecosystem and economy. Fire can play an intricate role in this process, if it occurs under normal conditions of light fuels associated with low intensity underburns. However, the buildup of fuels and consequent high severity fires can cause soils to become water repellent (hydrophobic), and

thus greatly increases the potential for overland flow during intense rains. Soil in degraded conditions does not function normally, and will not be able to sustain water quality, water yield, or plant communities that have normal structure, composition, and function. Fire is also strongly correlated with the carbon-nutrient cycles and the hydrologic cycle. Fire frequency, extent, and severity are controlled to a large degree by the availability of carbon, as well as the moisture regime (Quigley & Arbelbide 1997).

Soils have been evaluated for their propensity to become hydrophobic during and after a fire as evidenced by the presence of clay and clay derivatives (e.g., clay loam, cobbly clay) in the upper soil layers. In addition, their permeability and tendency to allow runoff to infiltrate the soil rapidly was evaluated. In general, with notable exceptions, the majority of the area within Canyon County has highly variable clay content. On average soils are well drained with moderate permeability.

Low to moderate intensity fires would be not be expected to damage soil characteristics in the region, especially if the hotter fires in this range were limited to small extents associated with jackpots of cured fuels. Hot fires providing heat to the B horizon substrate depth have the potential to create hydrophobic characteristics in that layer. This can result in increased overland flow during heavy rains, following wildfire events, potentially leading to mass wasting. Rocky and gravelly characteristics in the A horizon layer would be expected to be displaced, while the silty and loamy fines in these soils may experience an erosion and displacement potential. These soils will experience the greatest potential impacts resulting from hot fires that burn for prolonged periods (especially on steep slopes).

The National Resource Conservation Service (NRCS) has mapped a large portion of Canyon County in detail. A complete soil survey for Canyon County was distributed in July 1972. Please refer the Canyon County NRCS Soil Survey Report to view each soil unit in the County and the associated characteristics relating to the effects of wildland fire.

3.12.1 Fire Mitigation Practices to Maintain Soil Processes

Firelines constructed by hand or with the use of machinery will have varying impacts, depending upon construction techniques. If only the surface litter is removed in the fireline construction, minor increases to soil erosion may occur. If trenches are dug which channelize runoff down steep slopes, heavy rilling or gullying could occur depending upon rock content of surface layers exposed. Jackpot burning and, to a greater extent, pile burning would result in greater soil heating and localized impacts. Loss of soil carbon, nitrogen, sulphur, phosphorus, potassium, and soil organisms would be high in the soil surface layer. Soil physical structure could be altered thereby creating hydrophobic soils, especially where clay content is moderate or high.

Indirect effects of prescribed burning to slope stability are highly variable in the soil types found in Canyon County. Vegetation structure, including root strength after over burning, is maintained from three to fifteen years following low to moderate intensity burns and therefore soil saturation potential is not greatly altered. Re-vegetation of burned areas within this time frame will be a critical component to maintaining soil resources and pre-empting noxious weeds and invasive species from occupying the site. Locale experiencing high intensity burns will need to be evaluated immediately for mechanical erosion control followed by re-vegetation efforts. Holding soils in place will be a difficult challenge in many locations, especially on moderate to steep slopes.

Where heavy grazing has occurred in the past, there is also a possibility that soil productivity has been reduced. This is especially true in riparian areas where animal concentrations have historically been the greatest. These areas generally have easily compacted soils, and are

where cattle tend to linger if not managed well. Mining also has significant effects on soil quality through soil compaction and mass displacement.

Severe fires in the past have consumed surface organics and volatilized nitrogen into the air. On some sites, however, these severe burns are a natural process, and therefore the inherent soil productivity may not be reduced. On other sites, however, where low intensity underburns typically occurred, high intensity wildland fires have consumed amounts of soil organics in excess of the historic patterns. Furthermore, excessive soil heating in these intense fires likely resulted in creation of water repellent soils, and therefore increased overland flow and soil erosion. In these cases, it can be assumed that wildland fires have reduced long-term soil productivity. Soil compaction damage typically is persistent in the area; several decades of rest from further compactive forces are needed until adequate soil recovery occurs. Loss of organics due to displacement and severe fire also requires decades to recuperate. This slow recovery from soil damage makes cumulative effects to soil productivity and soil hydrologic function a major concern.

To avoid potential impacts, wherever possible firelines should be located outside of highly erosive areas, steep slopes, intermittent streams, and riparian and other sensitive areas. Following prescribed fire or fire suppression activities, firelines should be rehabilitated.

3.13 Hydrology

The Idaho Water Resource Board is charged with the development of the Idaho Comprehensive State Water Plan. Included in the State Water Plan are the statewide water policy plan, and component basin and water body plans which cover specific geographic areas of the state (IDEQ 2003).

The state may assign or designate beneficial uses for particular Idaho water bodies to support. These beneficial uses are identified in sections 3.35 and 100.01 - .05 of the Idaho water quality standards (WQS). These uses include:

- **Aquatic Life Support:** cold water biota, seasonal cold water biota, warm water biota, and salmonid spawning;
- **Contact Recreation:** primary (swimming) and secondary (boating);
- **Water Supply:** domestic, agricultural, and industrial; and
- **Wildlife Habitat and Aesthetics**.

While there may be competing beneficial uses in streams, federal law requires DEQ to protect the most sensitive of these beneficial uses (IDEQ 2003).

The geology and soils of this region lead to rapid to moderate moisture infiltration. Slopes are moderate. Natural mass stability hazards associated with slides are low. Natural sediment yields are low for these watersheds. However, disrupted vegetation patterns from farming (soil compaction) and wildland fire (especially hot fires that increase soil hydrophobic characteristics), can lead to increased surface runoff and debris flow to stream channels.

A correlation to mass wasting due to the removal of vegetation caused by high intensity wildland fire has been documented. Burned vegetation can result in changes in soil moisture and loss of rooting strength that can result in slope instability, especially on slopes greater than 30%. The greatest watershed impacts from increased sediment will be in the lower gradient, depositional stream reaches.

3.13.1 Fire Mitigation Practices to Maintain Hydrologic Processes

The effects of wildland fire and prescribed burning on water quality are variable. The removal of the vegetative canopy will tend to reduce transpiration and increase water yield, especially during the growing season and immediately afterwards (MacDonald *et al.* 1991). Prescribed burning is used to maintain a healthy, dynamic ecosystem while meeting land management objectives. Prescribed burning objectives include reduction of natural fuels, assuring current and future habitat conditions for native plants and animals, improvement of forest health, and enhancement, protection, and maintenance of riparian areas. Prescribed burn impacts to soil and large woody debris are expected to be minimal, given project targets. In rangeland ecosystems, prescribed fire will have variable impacts dependant on burn intensity and proximity to streams. Stream buffering (low intensity to no burn around streams) has been shown to preserve most if not all normal sediment filtering functions.

A large rangeland fire could have negative effects on watershed conditions, thus affecting both fish and habitat in streams. Treatment with low to moderate intensity fire would result in a mosaic pattern of burned and unburned areas of ground level vegetation species and ground level natural fuels. Some patches of shade-tolerant, fire intolerant species may also be consumed. Prescribed burning is not designed to consume all vegetation within project areas. Each treatment will leave a mosaic of burned and unburned areas. Once the target fuels and the risk of fire carrying from one tributary to another have been reduced, hand ignition may be considered on a site-specific basis.

The effects on sediment yield vary according to the intensity of fire; degree of soil disturbance; steepness of the slope and drainage network; the size of the area burned; and the extent to which the vegetation controls the movement and storage of sediment. Fire also increases surface erosion and sediment delivery rates by removing the litter layer and organic debris that traps sediment both on slopes and in the stream channel (MacDonald *et al.* 1991). The magnitude of these effects will depend on the geomorphic sensitivity of the landscape, which is largely a function of slope steepness and parent material (Swanson 1978).

The effects of wildland fire or prescribed fire are generally considered in terms of potential short-term, negative effects and long-term benefits of fuels reduction. Potential short-term effects to streams and fish include increased risk of landslides, mass movement and debris torrents, increases in surface sediment erosion, possible reduction in streamside vegetation resulting in changes within management areas, and possible increases in water yield depending on the amount and severity of the vegetation burned. Long-term effects include increases in nutrient delivery, possible increases in woody debris in streams, and possible increases in stream temperature if shading is significantly reduced. The design criteria described above minimizes the risk that landslides, mass movement, significant increases in surface sediment yield, and significant changes in water yield will occur.

Spring burning often results in minimal riparian vegetation burned because streamside areas have higher humidity and live plant moisture. Fall burning will more likely result in understory vegetation removal, with a possibility of some tree and large shrub mortality, especially outside of riparian zones where live plant moisture is less.

Riparian buffer strips will be maintained, thereby preserving canopy cover for shading, sediment filtering, and stream bank and floodplain stability (PACFISH guidelines). Areas not burned will provide significant protection from adverse water quality impacts associated with wildland fire and prescribed burning. Therefore, effects to fish and habitat in these streams from increased water yield are unlikely.

3.14 Air Quality

The primary means by which the protection and enhancement of air quality is accomplished is through implementation of National Ambient Air Quality Standards (NAAQS). These standards address six pollutants known to harm human health including ozone, carbon monoxide, particulate matter, sulfur dioxide, lead, and nitrogen oxides (USDA Forest Service 2000).

Smoke emissions from fires potentially affect an area and the airsheds that surround it. Climatic conditions affecting air quality in Southern Idaho are governed by a combination of factors. Large-scale influences include latitude, altitude, prevailing hemispheric wind patterns, and mountain barriers. At a smaller scale, topography and vegetation cover also affect air movement patterns. In Canyon County, winds are predominantly from the northwest during the summer months and southeast during the winter months.

Air quality in the area and surrounding airshed is generally good during the spring and summer months. However, the Treasure Valley has had a history of air quality problems. The local terrain and meteorology can trap air pollution for long periods of time during stagnation events, particularly in the fall and winter. During these events, air quality levels raise to unhealthful levels throughout the region. Also, locally adverse conditions can result from occasional wildland fires in the summer and fall, and prescribed fire and agricultural burning in the spring and fall. All major river drainages are subject to temperature inversions which trap smoke and affect dispersion, causing local air quality problems.

Smoke management in Canyon County is managed by the Idaho/Montana Airshed Group. All of Canyon County is in Airshed Unit 22. The Boise Impact Zone is relatively large, covering a large portion of Canyon County and the Treasure Valley in general (Levinson 2002). An airshed is a geographical area which is characterized by similar topography and weather patterns (or in which atmospheric characteristics are similar, e.g., mixing height and transport winds). The USDA Forest Service, Bureau of Land Management, and the Idaho Department of Lands are all members of the Montana/Idaho State Airshed Group, which is responsible for coordinating burning activities to minimize or prevent impacts from smoke emissions. Prescribed burning must be coordinated through the Missoula Monitoring Unit, which coordinates burn information, provides smoke forecasting, and establishes air quality restrictions for the Montana/Idaho Airshed Group. The Monitoring Unit issues daily decisions which may restrict burning when atmospheric conditions are not conducive to good smoke dispersion. Burning restrictions are issued for airsheds, impact zones, and specific projects. The monitoring unit is active March through November. Each Airshed Group member is also responsible for smoke management all year.

The Clean Air Act, passed in 1963 and amended in 1977, is the primary legal authority governing air resource management. The act established a process for designation of Class I and Class II areas for air quality management. Class I areas receive the highest level of protection and numerical thresholds for pollutants are most restrictive for this Class. The Sawtooth Class I Area is northeast of Canyon County and the Hell's Canyon Class I area is north along the Idaho-Oregon state border.

All of the communities within Canyon County could be affected by smoke or regional haze from burning activities in the region. Idaho Department of Environmental Quality maintains Air Pollution Monitoring Sites at Nampa and Middleton. The Air Pollution Monitoring program monitors all of the six criteria pollutants. Measurements are taken to assess areas where there may be a problem, and to monitor areas that already have problems. The goal of this program is to control areas where problems exist and to try to keep other areas from becoming problem air pollution areas (Louks 2001).

The Clean Air Act provides the principal framework for national, state, and local efforts to protect air quality. Under the Clean Air Act, OAQPS (Organization for Air Quality Protection Standards) is responsible for setting standards, also known as national ambient air quality standards (NAAQS), for pollutants which are considered harmful to people and the environment. OAQPS is also responsible for ensuring these air quality standards are met, or attained (in cooperation with state, Tribal, and local governments) through national standards and strategies to control pollutant emissions from automobiles, factories, and other sources (Louks 2001).

3.14.1 Fire Mitigation Practices to Maintain Air Quality

Smoke consists of dispersed airborne solids and liquid particles, called particulates, which can remain suspended in the atmosphere for a few days to several months. Particulates can reduce visibility and contribute to respiratory problems. Very small particulates can travel great distances and add to regional haze problems. Regional haze can sometimes result from multiple burn days and/or multiple owners burning within an airshed over too short a period of time to allow for dispersion.

For prescribed fires, there are three principle strategies to manage smoke and reduce air quality effects. They include:

1. **Avoidance -** This strategy relies on monitoring meteorological conditions when scheduling prescribed fires to prevent smoke from drifting into sensitive receptors, or suspending burning until favorable weather (wind) conditions exist. Sensitive receptors can be human-related (e.g. campgrounds, schools, churches, and retirement homes) or wildlife-related (threatened and endangered species and their critical habitats);
2. **Dilution –** This strategy ensures proper smoke dispersion in smoke sensitive areas by controlling the rate of smoke emissions or scheduling prescribed fires when weather systems are unstable, not under conditions when a stable high-pressure area is forming with an associated subsidence inversion. An inversion would trap smoke near the ground; and
3. **Emission Reduction –** This strategy utilizes techniques to minimize the smoke output per unit area treated. Smoke emission is affected by the number of acres burned at one time, pre-burn fuel loadings, fuel consumption, and the emission factor. Reducing the number of acres burned at one time would reduce the amount of emissions generated by that burn. Reducing the fuel beforehand reduces the amount of fuel available. Prescribed burning when fuel moistures are high can reduce fuel consumption. Emission factors can be reduced by pile burning or by using certain firing techniques such as mass ignition.

If weather conditions changed unexpectedly during a prescribed burn, and there was a potential for violating air quality standards or for adverse smoke impacts on sensitive receptors (schools, churches, hospitals, retirement homes, campgrounds, wilderness areas, and species of threatened or endangered wildlife), the management organization may implement a contingency plan, including the option for immediate suppression. Considering 1) the proposed action would result in prescribed fire on a relatively small number of acres, 2) burning as part of this mitigation plan's implementation in the County will most likely occur over a 5-year or 10-year period at a minimum, and 3) the County will adhere to Montana/Idaho Airshed Group advisories and management strategies to minimize smoke emissions, prescribed fire activities would not violate national or state emission standards and would cause very minor and temporary air quality impacts. The greatest threat to air quality would be smoke impacts on sensitive receptors; however, the relative scarcity of sensitive receptors within the County minimizes this potential air quality impact.

In studies conducted through the Interior Columbia Basin Management Project, smoke emissions were simulated across the Basin to assess relative differences among historical, current, and future management scenarios. In assessing the whole Upper Columbia Basin, there was a 43 percent reduction in smoke emissions between the historical and current periods (Quigley and Arbelbide 1997). The projected smoke emissions varied substantially with the vastly different management scenarios. The consumptive demand and passive management scenarios were projected to substantially increase smoke emissions above current levels. The active management scenarios were projected to result in a decrease of current levels.

Although prescribed fire smoke would occur more frequently than wildland fire smoke, since prescribed fires are scheduled during the year, the effects of wildland fire smoke on visibility are more acute. Prescribed fires produce less smoke than wildland fires for comparatively shorter periods, because they are conducted under weather conditions that provide for better smoke dispersion. In a study conducted by Holsapple and Snell (1996), wildland fire and prescribed fire scenarios for the Columbia Basin were modeled. In conclusion, the prescribed fire scenarios did not exceed the EPA particulate matter (PM 10) standard in a 24-hour period. Similar projections were observed for a PM 2.5 threshold. Conversely, all wildland fire scenarios exceeded air quality standards. Similar responses were reported by Huff *et al.* (1995) and Ottmar *et al.* (1996) when they compared the effects of wildland fire to prescribed fire on air quality. The impacts of wildland fire and management ignited prescribed fire on air quality vary because of the differences in distribution of acres burned, the amount of fuel consumed per acre (due to fuel moisture differences), and the weather conditions in which typical spring and fall prescribed burns occur. This analysis reveals wildland fire impacts on air quality may be significantly greater in magnitude than emissions from prescribed burns. This may be attributable, in part, to the fact that several states within the project area have smoke management plans requiring favorable weather conditions for smoke dispersion prior to igniting wildland fires (Quigley and Arbelbide 1997).

3.14.1.1 Treasure the Valley's Air

Treasure the Valley's Air is a coalition of local partners working together to implement community-based projects to improve and protect air quality in the Treasure Valley. Partnerships are voluntary and dynamic, and can include any mix of businesses, government agencies, organizations and individuals. Under the *Treasure the Valley's Air* concept, partners join together to share expertise and leverage resources to design, carry out and promote air quality improvement projects.

Chapter 4: Summaries of Risk and Preparedness

4 Overview

4.1 Wildland Fire Characteristics

An informed discussion of fire mitigation is not complete until basic concepts that govern fire behavior are understood. In the broadest sense, wildland fire behavior describes how fires burn; the manner in which fuels ignite, how flames develop and how fire spreads across the landscape. The three major physical components that determine fire behavior are the fuels supporting the fire, the topography in which the fire is burning, and the weather and atmospheric conditions during a fire event. At the landscape level, both topography and weather are beyond our control. We are powerless to control winds, temperature, relative humidity, atmospheric instability, slope, aspect, elevation, and landforms. It is beyond our control to alter these conditions, and thus impossible to alter fire behavior through their manipulation. When we attempt to alter how fires burn, we are left with manipulating the third component of the fire environment, the fuels which support the fire. By altering fuel loading and fuel continuity across the landscape, we have the best opportunity to determine how fires burn.

A brief description of each of the fire environment elements follows in order to illustrate their effect on fire behavior.

4.1.1 Weather

Weather conditions are ultimately responsible for determining fire behavior. Moisture, temperature, and relative humidity determine the rates at which fuels dry and vegetation cures, and whether fuel conditions become dry enough to sustain an ignition. Once conditions are capable of sustaining a fire, atmospheric stability and wind speed and direction can have a significant affect on fire behavior. Winds fan fires with oxygen, increasing the rate at which fire spreads across the landscape. Weather is the most unpredictable component governing fire behavior, constantly changing in time and across the landscape.

4.1.2 Topography

Fires burning in similar fuel conditions burn dramatically different under different topographic conditions. Topography alters heat transfer and localized weather conditions, which in turn influence vegetative growth and resulting fuels. Changes in slope and aspect can have significant influences on how fires burn. Generally speaking, north slopes tend to be cooler, wetter, more productive sites. This can lead to heavy fuel accumulations, with high fuel moistures, later curing of fuels, and lower rates of spread. The combination of light fuels and dry sites lead to fires that typically display the highest rates of spread. In contrast, south and west slopes tend to receive more direct sun, and thus have the highest temperatures, lowest soil and fuel moistures, and lightest fuels. These slopes also tend to be on the windward side of mountains. Thus these slopes tend to be “available to burn” a greater portion of the year.

Slope also plays a significant roll in fire spread, by allowing preheating of fuels upslope of the burning fire. As slope increases, rate of spread and flame lengths tend to increase. Therefore, we can expect the fastest rates of spread on steep, warm south and west slopes with fuels that are exposed to the wind.

4.1.3 Fuels

Fuel is any material that can ignite and burn. Fuels describe any organic material, dead or alive, found in the fire environment. Grasses, brush, branches, logs, logging slash, forest floor litter, conifer needles, and home sites (the structures) are all examples. The physical properties and characteristics of fuels govern how fires burn. Fuel loading, size and shape, moisture content and continuity and arrangement all have an affect on fire behavior. Generally speaking, the smaller and finer the fuels, the faster the potential rate of fire spread. Small fuels such as grass, needle litter and other fuels less than a quarter inch in diameter are most responsible for fire spread. In fact, “fine” fuels, with high surface to volume ratios, are considered the primary carriers of surface fire. This is apparent to anyone who has ever witnessed the speed at which grass fires burn. As fuel size increases, the rate of spread tends to decrease, as surface to volume ratio decreases. Fires in large fuels generally burn at a slower rate, but release much more energy, and burn with much greater intensity. This increased energy release, or intensity, makes these fires more difficult to control. Thus, it is much easier to control a fire burning in grass than to control a fire burning in timber.

The study of fire behavior recognizes the dramatic and often-unexpected affect small changes in any single component has on how fires burn. It is impossible to speak in specific terms when predicting how a fire will burn under any given set of conditions. However, through countless observations and repeated research, the some of the principles that govern fire behavior have been identified and are recognized.

4.2 Canyon County Conditions

Canyon County encompasses 603.51 square miles of land in the heart of Idaho. The mild climate, abundance of sunshine and lack of precipitation result in an environment that is potentially very fire prone. Although much of the native rangelands have been converted for agricultural purposes, there are many areas of native vegetation or non-irrigated fields that cure early in the summer and remain available to burn until the winter. If ignited these areas burn very rapidly, potentially threatening homes, safety and other valued resources.

The vast majority of Canyon County is held in private ownership, with very small portions of land held in federal ownership.

4.2.1 Vegetative Associations

Wildland fuels vary throughout Canyon County. Fuel composition and distribution is dependent on aspect, elevation, management practices and time since last burned. Perennial bunch grasses and cheatgrass dominate areas that have been disturbed by recent fires, while heavy sage, bitterbrush and rabbitbrush are present on north and east aspects that have not burned in the last decades. Areas dominated primarily by grass with scattered sage can be described as Fuel Models 1 or 2 (FM1 and FM2). Fires in these fuel types tend to spread very rapidly, especially when pushed by wind. Sage-dominated fuel complexes can be described as FM5 (for a complete discussion of fuel models, turn to 3.10.5). Fires in all fuel types found throughout the county can spread rapidly, especially when driven by the wind or when burning in areas with steep slopes. Thousands of acres can burn after only a single hour in grass and brush fuels. In heavy brush fires can travel at over eight miles and hour with flame lengths in excess of 50 feet. Fires of this intensity are nearly impossible to control with suppression resources, requiring a change in weather in order to allow crews and support equipment to gain the upper hand.

Agricultural areas in grain crops can be described as either FM 1, 2 or 3, depending on stage in agricultural production. During the period while grain crops are cured prior to harvest, the

mature crops are similar to tall grass (FM 3, greater than 2.5 feet in height). Fires in this fuel type tend to spread very rapidly with large flame lengths. Post harvest fuels are more typical of FM1, as residual harvest stubble is typically less than 1 foot in height. Flame lengths are rates of spread are reduced in the post-harvest condition. However, fires in these fuels can still spread quite rapidly and generate moderate flame lengths. Fuels between 1 foot and 2.5 feet can be described as FM2. However, the large flame lengths and high intensities these fires generate can be very threatening to homes and safety. Fires prior to harvest can also result in significant economic loss.

4.2.1.1 Ignition Profile

The dry climate, xeric vegetation, and prevalence of hot and windy conditions in Canyon County create environmental and vegetative conditions that will sustain fire spread in non-irrigated areas for many months of the year. This increases the probability that ignition sources from both natural (lightning) causes and human causes will find a receptive fuel bed. Natural ignitions are most likely to occur during summer lightning storms over the high ridges and undeveloped areas throughout the County.

Human ignitions can stem from numerous activities, including debris burning, fireworks, cigarettes, and campfires, particularly around high use areas where recreation is concentrated. Included in human ignition sources are fires sparked by vehicles, welding construction practices, hot catalytic converters, and arson. There is a strong correlation between human habitation and fire occurrence. The high population density in the area dramatically augments the human ignition potential.

Further contributing to ignition sources are the numerous high tension and residential power lines that criss-cross the county. Downed lines, malfunctioning transformers or even electrocuted birds can spark fires anywhere in the county. All these potential ignition sources and the dry nature of vegetation in Canyon County increase the potential for fire occurrence.

4.2.2 Countywide Potential Mitigation Activities

There are four basic opportunities for reducing the loss of homes and lives to fires. There are many single actions that can be taken, but in general they can be lumped into one of the following categories:

- Prevention
- Education/ Mitigation
- Readiness
- Building Codes

4.2.2.1 Prevention

The safest, easiest, and most economical way to mitigate unwanted fires is to stop them before they start. Generally, prevention actions attempt to prevent human-caused fires. Campaigns designed to reduce the number and sources of ignitions can be quite effective. Prevention campaigns can take many forms. Traditional “Smokey Bear” type campaigns that spread the message passively through signage can be quite effective. Signs that remind folks of the dangers of careless use of fireworks, burning when windy, and leaving unattended campfires can be quite effective. It’s impossible to say just how effective such efforts actually are, however the low costs associated with posting of a few signs is inconsequential compared to the potential cost of fighting a fire.

Slightly more active prevention techniques may involve mass media, such as radio or the local newspaper. Fire districts in other counties have contributed the reduction in human-caused ignitions by running a weekly "run blotter," similar to a police blotter, each week in the paper. The blotter briefly describes the runs of the week and is followed by a weekly "tip of the week" to reduce the threat from wildland and structure fires. The federal government has been a champion of prevention, and could provide ideas for such tips. When fire conditions become high, brief public service messages could warn of the hazards of misuse of fire or any other incendiary devise. Such a campaign would require coordination and cooperation with local media outlets. However, the effort is likely to be worth the efforts, costs and risks associated with fighting unwanted fires.

Fire Reporting: Fires cannot be suppressed until they are detected and reported. As the number and popularity of cellular phones has increased, expansion of the #FIRE program throughout Idaho may provide an effective means for turning the passing motorist into a detection resource.

Burn Permits: The issues associated with debris burning during certain times of the year are difficult to negotiate and enforce. However, there are significant risks associated with the use of fire adjacent to expanses of flammable vegetation under certain scenarios. Fire departments typically observe the State of Idaho Closed fire season between May 10 to October 20. During this time, an individual seeking to conduct an open burn of any type shall obtain a permit to prescribe the conditions under which the burn can be conducted and the resources that need to be on hand to suppress the fire, from a State of Idaho fire warden. Although this is a state-wide regulation, compliance and enforcement has been variable between fire districts. Tackling this issue is difficult. Typically, the duty falls to the chief of whichever fire protection district the burning is planned for. However, this leads to an increased burden on the fire chiefs, who are already juggling other department obligations with obligations to work and to home. There is also considerable confusion on the part of the public as to when a permit is necessary and the procedure for which to obtain the permit. The best-intentioned citizen may unknowingly break this law for a lack of understanding. Clearly, there is a need to coordinate this process and educate the public.

4.2.2.2 Education

Once a fire has started and is moving toward home or other valued resources, the probability of that structure surviving is largely dependent on the structural and landscaping characteristics of the home. Also of vital importance is the accessibility of the home to emergency apparatus. If the home cannot be protected safely, firefighting resources will not jeopardize lives to protect a structure. Thus, the fate of the home will largely be determined by homeowner actions prior to the event.

The uncultivated portions of Canyon County are comprised of remnant rangelands. These fuels tend to be very flammable and can support very fast moving and intense fires. In many cases, homes can easily be protected by following a few simple guidelines that reduce the ignitability of the home. There are multiple programs such as FIREWISE that detail precautions that should be taken in order to reduce the threat to homes, such as clearing cured grass and weeds away from structures and establishing a green zone around the home.

However, knowledge is no good unless acted upon. Education needs to be followed up by action. Any education programs should include an implementation plan. Ideally, funds would be made available to financially assist the landowner making the necessary changes to the home. The survey of the public conducted during the preparation of this WUI Fire Mitigation Plan indicated that approximately 35% of the respondents are interested in participating in this type of an activity.

4.2.2.3 Readiness

Once a fire has started, how much and how large it burns is often dependent on the availability of suppression resources. In most cases, rural fire departments are the first to respond and have the best opportunity to halt the spread of a wildland fire. For many districts, the ability to reach these suppression objectives is largely dependent on the availability of functional resources and trained individuals. Increasing the capacity of departments through funding and equipment acquisition can improve response times and subsequently reduce the potential for resource loss.

In order to assure a quick and efficient response to an event, emergency responders need to know specifically where emergency services are needed. Continued improvement and updating of the rural addressing system is necessary to maximize the effectiveness of a response.

4.2.2.4 Building Codes

The most effective, albeit contentious, solution to some fire problems is the adoption of building codes in order to assure emergency vehicle access and home construction that does not "invite" a fast and intense house fire. Codes that establish minimum road construction standards and access standards for emergency vehicles are an effective means of assuring public and firefighter safety, as well as increasing the potential for home survivability. County building inspectors should look to the fire departments in order to assure adequate minimum standards. Fire districts may want to consider apparatus that may be available during mutual aid events in order that the adopted standards meet the access requirements of the majority of suppression resources. In Canyon County, such standards may be drafted in consultation with the Fire Chiefs in order to assure accessibility is possible for all responding resources.

Coupled with this need is the potential to implement a set of requirements or recommendations to specify construction materials allowed for use in high risk areas of the county. The Canyon County Commissioners may want to consider a policy for dealing with this situation into the future as more and more homes are located in the wildland-urban interface.

4.3 Canyon County's Wildland-Urban Interface

Individual community assessments have been completed for all of the populated places in the county. The following summaries include these descriptions and observations. Local place names identified during this plan's development include:

Table 4.1. Canyon County Communities

Community Name	Planning Description	Vegetative Community	National Register Community At Risk?[1]
Nampa	City	Rangeland	Yes
Caldwell	City	Rangeland	Yes
Parma	Community	Rangeland	Yes
Notus	Community	Rangeland	Yes
Roswell	Community	Rangeland	Yes
Wilder	Community	Rangeland	Yes
Greenleaf	Community	Rangeland	Yes
Huston	Community	Rangeland	No
Melba	Community	Rangeland	Yes
Middleton	Community	Rangeland	Yes

Table 4.1. Canyon County Communities

Community Name	Planning Description	Vegetative Community	National Register Community At Risk?[1]
Bowmont	Community	Rangeland	Yes
Westma	Community	Rangeland	No
Riverside	Community	Rangeland	Yes
Walters Ferry	Community	Rangeland	No

[1]Those communities with a "Yes" in the National Register Community at Risk column are included in the Federal Register, Vol. 66, Number 160, Friday, August 17, 2001, as "Urban Wildland Interface Communities within the vicinity of Federal Lands that are at high risk from wildfires". All of these communities have been evaluated as part of this plan's assessment.

Site evaluations on these communities are included in subsequent sections. The results of FEMA Hazard Severity Forms for each community are presented in Appendix II.

4.3.1 Mitigation Activities Applicable to all Communities

4.3.1.1 Home site Evaluations and Creation of Defensible Space

Individual home site evaluations can increase homeowners' awareness and improve the survivability of structures in the event of a wildfire. Maintaining a lean, clean, green zone within at least 100 feet of structures to reduce the potential loss of life and property is highly recommended. Assessing individual homes in the outlying areas can address the issue of escape routes and home defensibility characteristics. Educating the homeowners in techniques for protecting their homes is critical in these environments.

4.3.1.2 Travel Corridor Fire Breaks

Ignition points are likely to continue to be concentrated along the roads and railway lines that run through the county. These travel routes have historically served as the primary source of human-caused ignitions. In areas with high concentrations of resource values along these corridors, fire lines may be considered in order to provide a fire break in the event of a roadside ignition. Access route mitigation can provide an adequate control line under normal fire conditions. Alternatively, permanent fuel breaks can be established in order to reduce the potential for ignitions originating from the main travel roads to spread into the surrounding lands.

4.3.1.3 Power Line Corridor Fire Breaks

The treatment opportunities specified for travel corridor fire breaks apply equally for power line corridors. The obvious difference between the two is that the focus area is not an area parallel to and adjacent to the road, but instead focuses on the area immediately below the infrastructure element. Protection under the high tension power lines is strongly recommended. This may be an opportunity for intensive livestock grazing practices as a tool for reducing fine fuels around significant infrastructure.

4.4 Individual Community Assessments

The objective of the community assessments is to determine the extent to which wildland fire threatens the safety of people, homes, infrastructure, and other important resources throughout Canyon County. Assessing fire risk can be a challenging, as there are numerous individual

factors that individually or cumulatively define the overall risk to a community or area. Fuel characteristics, ignition sources, topography, proximity of fire protection resources, emergency vehicle access and egress, home construction, presence or absence of defensible space, and water availability are just some of the factors that determine risk.

The community assessments summarize the factors that have been identified as contributing to risk in a given area. Assessments are based on field observation as well as on discussion with local fire department representatives. By necessity, generalizations need to be made in efforts to assess risk. Each and every home site is unique, as are the characteristics of the home that contribute to its vulnerability to wildland fire. Thus the assessments attempt to capture the "average" condition, while noting attributes that significantly increase wildland fire risk in specific areas.

The assessments are followed by specific recommendations to address high hazard areas. The recommendations outlined in the Community Assessments generally focus on home site or community defensible space. Recommendations targeted at addressing county level policy or increasing fire resource capabilities will be addressed in Chapter 5- Mitigation Recommendations.

Elimination of all risk is not possible, nor is it desirable. Attempts at eliminating all risk would compromise the quality of life that Canyon County residents enjoy. Open space, native vegetation, recreation, and biological diversity would be adversely impacted if complete elimination of fire risk were to be the ultimate objective. The mitigation recommendations attempt to reduce risk to people, firefighters, homes and economically important assets at an acceptable level while not compromising the qualities that help define Canyon County.

4.4.1 Apple Valley

The community of Apple Valley is located along State Highway 20/26/95 in the northwestern part of the county. The primary land use in this area is agricultural with corn, onions, and apples being the most common.

Apple Valley is considered to be at a low wildland fire risk. Those structures located within the community center are well protected from wildland fire by large areas of lawn, pasture, or agricultural crops. Risk to homes situated on moderate slopes adjacent to or mingling with wildland fuels is moderate.

After harvest many of the crop fields set fallow, resulting in minimal risk of spread of wildland fire. The orchards do have a slight risk of wildfire with grasses found in the understory; however, most landowners mow and have irrigation systems thus alleviating any risk. The topography is generally flat to rolling foothills with some wildland fuels found along the canals. A few areas, primarily the steeper foothills are covered with cured grasses and sagebrush. There is some risk of fire spread in these areas.

Homes are found throughout the area and along many of the roads. Some driveways do pose some risk to the occupants due to their one-way in, one-way out nature. A few homes are constructed of non-fire resistant building materials. This appears to be most commonly found with decking materials. Screening and homeowner education will alleviate this problem. The area represents fuel models 1 & 2, which tend to support fast-moving, low intensity surface fires. Several potential water sources are found throughout the area with the D-line and Sebree canals to the east.

Apple Valley has several adequate escape routes that are at minimal risk. State Highway 95 and several county roads provide landowners with good escape routes. Some wildland fuels are present along roads; however, they remain at very low risk of wildfire due to being bordered by

non-fire prone landscapes. Several secondary roads access the community and the foothills providing low risk alternate escape routes for local residents.

Most of the electric power appears to be delivered through above ground transmission lines. During high wind events, downed power lines can be a source of ignition. While burying existing power lines may be cost prohibitive, long-term development codes may want to address this issue to encourage future sub-divisions to bury power lines.

Road names and house numbers are generally present throughout the area, yet many of the bridges crossing the numerous canals and small streams lack adequate signing and weight ratings.

The risk of wildfire threatening the community of Apple Valley is minimal due to the lack of topography and wildland fuels. However, homes in the outlying foothills area are at some risk. Many of these homes are located on private drives or dead end roads directly abutting wildland fuels. Providing alternative escape routes or safety zones is recommended in these types of areas. This is mostly an awareness issue for the residents of Apple Valley and the surrounding area. Field burning can increase the potential risk of fire threatening homes; however, the number of plowed fields and nearby water resources reduces the possibility of loss of life or property.

4.4.2 Bowmont

Bowmont is located approximately 7 miles south of Nampa on Bowmont Road near the Canyon and Ada County line. The Union Pacific Railroad travels directly through what is considered to be the community center. This area is primarily used for agricultural fields and pastureland, although there are a few clusters of homes.

Urban development is beginning to spread further south from Nampa making it difficult to distinguish between the communities. The few remaining pieces of undeveloped or uncultivated land are covered with low growing sagebrush and various arid climate grasses including non-native species such as cheat grass. This area represents fuel models 1 & 2, which tend to support fast-moving surface fires. The Mora Canal and several smaller streams provide seasonal water resources for irrigation.

The primary access into the community is by Bowmont Road off State Highway 45. This is a paved two lane road that, due to agricultural development, is located in a low fire risk area. Several other secondary roads lead into the area providing adequate escape routes for residents.

The risk of wildfire threatening Bowmont is minimal due to the lack of topography and fuels. The use of the Union Pacific Railroad near town and the presence of high tension power lines in the area could potentially serve as ignition sources in fine fuels along roads. Annual field burning could potentially threaten homeowners; however, services, water resources, and plowed fields decrease this risk.

4.4.3 Caldwell

The community of Caldwell is located near the junction of Interstate 84 and U.S. Route 20 approximately 6 miles northwest of Nampa. This area has been completely urbanized; thus, there is no clear line of demarcation between Caldwell and the cities of Nampa, Middleton, or Bowmont. There are a few agricultural lots remaining on the outskirts of the community (particularly towards Middleton); however, urban development is continuing in all directions. This area is very flat with numerous seasonal canals and small streams providing water resources.

There is very little risk of wildfire threatening the urban community of Caldwell, so fire mitigation activities are unnecessary in this area.

4.4.4 Deer Flat National Wildlife Refuge

The Deer Flat National Wildlife Refuge is a small strip of protected land surrounding Lake Lowell, which is a fairly large body of water approximately 3 miles southwest of Nampa. There are several interpretive signs and rest areas surrounding the lake in addition to a designated Recreation Area on the north shore. Black cottonwood and other hardwoods and brush grow thick around the marshy edges of the lake. The northern shore has become part of the Nampa urban complex while the southern shore is dominated by small clusters of homes and various agricultural crops and pastureland. This area is well traveled, but the lack of wildland fuels put it at low risk of wildfire. Fire mitigation in the Deer Flat National Wildlife Refuge beyond regulating the use of campfires and off road vehicles is unnecessary.

4.4.5 Green Leaf

The community of Green Leaf is located along State Highway 19 approximately 10 miles west of Caldwell. The land use for the area is primarily agricultural with corn and onions being the most commonly observed crop. After harvest many of the fields set fallow, resulting in minimal risk of wild spread wildland fire. The topography is mostly flat with some rolling foothills in the area. Many of the foothill areas are covered with cured grasses and intermittent patches of sagebrush.

Homes are found throughout the area and along many of the roads. Some of the driveways do pose a minimal risk to the occupants as they tend to provide one-way in, one-way out access. The Green Leaf area represents fuel models 1 & 2, which tend to support fast-moving, low intensity surface fires. Several good water sources are available throughout the area, particularly the Gate Canal, which passes just south of Green Leaf.

The primary access into Green Leaf is from State Highway 19 from Caldwell. While some wildland fuels are present along this road, it is at very low risk of wildfire due to being almost entirely bordered by agricultural fields combined with the mowing of the right of way. Several other secondary roads access the community and the foothills providing low risk alternate escape routes for local residents.

Most of the power appears to be delivered through above ground transmission lines. During high wild events downed power lines can be a source of ignition. While burying existing power lines may be cost prohibitive, long-term development codes may want to address this issue to encourage underground delivery of power.

Road names and house numbers are generally present throughout the area, yet many of the bridges crossing the numerous canals and small streams lack adequate signing and weight ratings.

Those structures located within the community center are well protected from wildland fire by large areas of lawn, pasture, or C 3 agricultural crops. The primary wildland fire risk is to the homes found in the areas surrounding Green Leaf. These at risk homes are commonly situated on moderate slopes adjacent to or mingling with wildland fuels. There are several seasonal streams and canals that may provide water resources during the fire season.

The risk of wildfire threatening the community of Green Leaf is minimal due to the lack of topography, the agricultural land use, and the wildland fuels. However, homes in the outlying foothills area are at some risk. Many of these homes are located on private drives or dead end roads directly abutting wildland fuels. Providing alternative escape routes or safety zones is

recommended in these types of areas. This is mostly an awareness issue for the residents of Green Leaf and the surrounding areas. Annual field burning can increases the potential risk of fire threatening homes; however the number of plowed fields and nearby water resources reduce the possibility of loss of life or property.

4.4.6 Huston

The community of Huston is located 10 miles southwest of Caldwell, Idaho near the Low Line canal. The primary land use in this area is agriculture. Many of the fields are plowed and left fallow following harvest, resulting in minimal risk of wildland fire spread. The topography is generally flat to rolling foothills with some wildland fuels found along the canals. A few areas, primarily the steeper foothills, are covered with cured grasses and sagebrush. There is some risk of spread of fire in these areas.

The town of Huston is primarily located outside the center of the community. Most homes are found throughout the surrounding area and along county roads. Some of the driveways pose a risk to the occupants due to the one-way in, one-way out nature of these roads. Some homes are constructed of non-fire resistant building materials. This appears to be most common when associated with the decking materials. Screening and homeowner education will alleviate this problem. The area represents fuel models 1 & 2, which tend to support fast-moving surface fires. Several potential water sources are found throughout the area with canals to the north and the south.

The primary access into the area is by State Highway 55. The risk to the escape routes is minimal due to the broken nature of the fuels found in the area. Huston residents have several adequate escape routes that are at minimal risk. Some wildland fuels are present along roads; however, they remain at very low risk of wildfire due to being bordered by non-fire prone landscapes. Several secondary roads access the community and the foothills providing low risk alternate escape routes for local residents.

Most of the electric power is delivered to homes and businesses through above ground transmission lines. During high wild events downed power lines can also be a source of ignition. While burying existing power lines maybe costs prohibitive, long-term development codes may want to address this issue to encourage future sub-divisions to bury power lines.

Road names and house numbers are generally present throughout the area, yet many of the bridges crossing the numerous canals and small streams lack adequate signing and weight ratings.

The risk of wildfire threatening the community of Huston is minimal due to the lack of topography and wildland fuels. Those structures located within the community center are well protected from wildland fire by large areas of lawn, pasture, or agricultural crops. However, homes in the outlying foothills area are at some risk. Many of these homes are located on private drives or dead end roads directly abutting wildland fuels. Providing alternative escape routes or safety zones is recommended in these types of areas. This is mostly an awareness issue for the residents of Huston and the surrounding area. Field burning can increases the potential risk of fire threatening homes; however the number of plowed fields and nearby water resources reduce the possibility of loss of life or property. Risk to homes situated on moderate slopes adjacent to or mingling with wildland fuels is moderate. There are several seasonal streams or canals that may provide water resources during the fire season. Fuel types in this area generally burn along the surface at lower intensities making them somewhat less dangerous for firefighters to suppress.

4.4.7 Melba

Melba is located approximately 5 miles south of the community of Bowmont. The area around the community is very flat and used primarily for agricultural purposes or pastureland; however, rolling hills and plateaus can be seen to the east and west and the Snake River canyon is approximately 5 miles to the south. The slopes of these plateaus are generally very rocky and vegetated by sagebrush and short grasses. Few residences have been built on these slopes, most preferring to remain on the more fertile flats. Waldvogel Canal and several other small streams provide seasonal water resources for irrigation. The Snake River and Jensen Lake supply additional water resources in the event of an emergency. This area represents fuel models 1 & 2, which tend to support fast-moving surface fires.

The primary access into Melba is from Melba Road off State Highway 45. This is a paved two lane road that, due to agricultural development, is located in a low fire risk area. Several secondary roads travel into the area providing additional escape routes for residents. Additionally, a Union Pacific Railway travels through the city center.

The risk of wildfire threatening the community of Melba is minimal due to the lack of topography and fuels. However, homes in outlying areas near plateaus or adjacent to wildland fuels are at significantly higher risk. Annual field burning in the area increases the potential risk of fire threatening homes, but plowed fields, and nearby water resources reduce the possibility of loss of life or property due to an escaped agricultural fire. The use of the railroad near town and the presence of above ground power lines in the area could also potentially serve as ignition sources.

4.4.8 Middleton

The community of Middleton is located along State Highway 44 approximately 3 miles northeast of Caldwell. Although agricultural development is the primary land use, this community is quickly becoming incorporated into the Nampa-Caldwell urban complex. The majority of this area is very flat; however, the northeastern corner of Canyon County (northeast of the community center) is characterized by gently rolling foothills. Much of the foothills area is covered with cured grasses and intermittent patches of sagebrush. Homes are scattered all along roads throughout this area, many of which are one-way in, one-way out. The Bureau of Land Management also maintains a fairly large parcel in this area. The Middleton area represents fuel models 1 & 2, which tend to support fast-moving surface fires. Willow Creek, Middleton Canal, and the Boise River provide water resources for irrigation or emergency services.

The primary access into Middleton is from State Highway 44 from either Caldwell or Star. This road is at very low risk of wildfire due to being almost entirely bordered by agricultural fields. Several other secondary roads access the community and the foothills providing additional low risk escape routes. An active Union Pacific Railway also travels directly through the community, which could potentially serve as an ignition source. Road names and house numbers are generally present throughout the area, yet many of the bridges crossing the numerous canals and small streams lack adequate signing and weight ratings.

The risk of wildfire threatening the community of Middleton is minimal due to the lack of topography and wildland fuels. Those structures located within the community center are well protected from wildland fire by large areas of lawn, pasture, or agricultural crops. However, homes in the outlying foothills area or adjacent to BLM lands are at significantly higher risk of experiencing a wildland fire. Many of these homes are located on private drives or dead end roads directly abutting wildland fuels. Annual field burning in the area increases the potential risk of fire threatening homes, but plowed fields, and nearby water resources reduce the possibility of loss of life or property due to an escaped agricultural fire. The use of the railroad

near town and the presence of above ground power lines in the area could also potentially serve as ignition sources.

4.4.9 Nampa

The community of Nampa is located along Interstate 84 approximately 6 miles southeast of Caldwell. This area has been completely urbanized; thus, there is no clear line of demarcation between Nampa and the cities of Caldwell, Middleton, or Bowmont. There are a few agricultural lots remaining on the outskirts of the community; however, urban development is continuing in all directions. This area is very flat with numerous seasonal canals and small streams providing water resources. There is very little risk of wildfire threatening the urban community of Nampa, so fire mitigation activities are unnecessary in this area.

4.4.10 Notus

The community of Notus is located along State Highway 26 approximately 10 miles northwest of Caldwell. The primary land use is agricultural. After harvest many of the fields set fallow, resulting in minimal risk of wildland fire spread. The topography is flat to rolling foothills. A few areas, primarily the steeper foothills are covered with cured grasses and sagebrush. There is some risk of wildland fire associated with the river as the hardwood trees in the area can provide a source of spotting along the river bottom. Areas along the river have a high accumulation of fine fuels, where in the event of a wind driven wildfire, rapid spread can be expected.

Homes are found throughout the area and along many of the roads. Some of the driveways do pose some risk to the occupants due to the one-way in, one-way out nature of these roads. Addressing this issue where wildland fuels are present should be considered. The Notus area represents fuel models 1 & 2, which tend to support fast-moving surface fires. Several potential water sources are found throughout the area with the Boise River to the south of the community and Sebree canal to the north.

The primary access into Notus is from State Highway 20/26 from either Caldwell or Parma. While some wildland fuels are present along this road it is at very low risk of wildfire due to being bordered by agricultural fields. Several secondary roads access the community and the foothills providing low risk alternate escape routes for local residents.

A Union Pacific Railway travels south of the community. This can be a potential source of ignition that needs to be monitored. Controlling the build up of wildland fuels in this area will reduce the overall risk to the community. Electric power is delivered to area residents and businesses through above ground transmission lines. During high wild events downed power lines can also be a source of ignition. While burying existing power lines may be cost prohibitive, long-term development codes may want to address this issue to encourage this activity.

Road names and house numbers are generally present throughout the area, yet many of the bridges crossing the numerous canals and small streams lack adequate signing and weight ratings.

The risk of wildfire threatening the community of Notus is minimal due to the lack of topography and wildland fuels. Those structures located within the community center are well protected from wildland fire by large areas of lawn, pasture, or agricultural crops. However, homes in the outlying foothills area are at some risk. Many of these homes are located on private drives or dead end roads directly abutting wildland fuels. Providing alternative escape routes or safety zones is recommended in these types of areas. This is mostly an awareness issue for the residents of Notus and the surrounding area. Annual field burning can increase the potential risk

of fire threatening homes; however, the number of plowed fields and nearby water resources reduces the possibility of loss of life or property.

4.4.11 Parma

The community of Parma is located along State Highway 26 approximately 25 miles northeast of Caldwell. The land use for the area is primarily agricultural with corn and onions being the most commonly observed crop. After harvest many of the fields set fallow, resulting in minimal risk of wild spread wildland fire. The topography is flat to rolling foothills. Much of the foothills area is covered with cured grasses and intermittent patches of sagebrush.

Homes are found throughout the area and along many of the roads. Some of the driveways do pose some risk to the occupants due to the one-way in, one-way out nature of these roads. The Parma area represents fuel models 1 & 2, which tend to support fast-moving surface fires. Several potential water sources are found throughout the area with the Boise River to the south of the community and Sebree canal to the north.

The primary access into Parma is from State Highway 20/26 from either Caldwell or Apple Valley. While some wildland fuels are present along this road, it is at very low risk of wildfire due to being almost entirely bordered by agricultural fields. Several other secondary roads access the community and the foothills providing low risk alternate escape routes for local residents.

A Union Pacific Railway travels south of the community. This could be a potential source of ignition that needs to be monitored. Controlling the build up of wildland fuels in this area will reduce the overall risk to the community. Power is delivered to area residents and businesses through above ground transmission lines. During high wind events, downed power lines can also be a source of ignition. While burying existing power lines maybe costs prohibitive, long-term development codes may want to address this issue to encourage this activity.

Road names and house numbers are generally present throughout the area, yet many of the bridges crossing the numerous canals and small streams lack adequate signing and weight ratings.

The risk of wildfire threatening the community of Parma is minimal due to the lack of topography and wildland fuels. Those structures located within the community center are well protected from wildland fire by large areas of lawn, pasture, or agricultural crops. However, homes in the outlying foothills area are at some risk. Many of these homes are located on private drives or dead end roads directly abutting wildland fuels. Providing alternative escape routes or safety zones is recommended in these types of areas. This is mostly an awareness issue for the residents of Parma and the surrounding area. Annual field burning can increases the potential risk of fire threatening homes; however the number of plowed fields and nearby water resources reduce the possibility of loss of life or property.

4.4.12 Roswell

The community of Roswell is located near State Highway 95 approximately 5 miles south of Parma. The land use for the area is primarily agricultural with corn and onions being the most common crops. After harvest many of the fields set fallow, resulting in very low risk of wildfire. The topography is mostly flat with some areas of rolling foothills to the south of the community. Some of the foothill areas are covered with grasses and patches of sagebrush.

Many of the homes in the area are associated with farming operations and can be found along county roads and are usually surrounded by agricultural fields. Some of the driveways do pose some risk to the occupants due to the one-way in, one-way out nature of these roads. Concerns with access are limited due to the abundance of agricultural development and the available

safety zones associated with the fields. The Roswell area represents fuel models 1 & 2, which tend to support fast-moving surface fires. Several potential water sources are found throughout the area with the Riverside Canal just south of the community.

The primary access into Roswell is from State Highway 95 from Parma. While some wildland fuels are present along this road it is at very low risk of wildfire due to being almost entirely bordered by agricultural fields and the mowing of the right-of-ways. Several other secondary roads access the community and the foothills providing low risk alternate escape routes for local residents.

Power is delivered to area residents and businesses through above ground transmission lines. During high wind events, downed power lines can be a source of ignition. While burying existing power lines maybe costs prohibitive, long-term development codes may want to address this issue to encourage this type of activity.

Road names and house numbers are generally present throughout the area, yet many of the bridges crossing the numerous canals and small streams lack adequate signing and weight ratings.

The risk of wildfire threatening the community of Roswell is minimal due to the lack of topography, the surrounding land use and the lack of available wildland fuels. Those structures located within the community center are well protected from wildland fire by large areas of lawn, pasture, or agricultural crops. Some homes in the outlying foothills area surrounded by wildland fuels are at some risk, particularly during wind driven events. Many of these homes are located on private drives or dead end roads directly abutting wildland fuels. Providing alternative escape routes and/or safety zones is recommended in these types of areas. This is mostly an awareness issue for the residents. Annual field burning can increase the potential risk of fire threatening homes; however, the number of plowed fields and nearby water resources reduces the possibility of loss of life or property.

4.4.13 Wilder

The community of Wilder is located at the junction of State Highway 19 and Highway 95 approximately 20 miles west of Caldwell. The land use is primarily agricultural with corn and onions commonly grown in this area. After harvest many of the fields set fallow, reducing the overall risk to the community from wildland fire. The topography is mostly flat with some areas of rolling foothills. Many of the foothill areas are covered with grasses and sagebrush.

Many homes are associated with small farming operations and can be found throughout the area along the county roads. Some of the driveways do pose some risk to the occupants due to the one-way in, one-way out nature of these roads. This risk is minimized due to the safety zones created by the agricultural fields in the area. With fuel being noncontiguous and the availability of safety zones this issue can be easily addressed. The Wilder area represents fuel models 1 & 2, which tend to support fast-moving, low intensity surface fires. Several potential water sources are found throughout the area with the Golden Gate Canal to the south.

The primary access into Wilder is from State Highway 19 from Caldwell and State Highway 95 from the north and south. While some wildland fuels are present along this road, it is at very low risk of wildfire due to being almost entirely bordered by agricultural fields and the mowing of the right-of-ways. Several other secondary roads access the community and the foothills providing low risk alternate escape routes for local residents.

Most of the power appears to be delivered through above ground transmission lines. During high wind events downed power lines can also be a source of ignition. While burying existing

power lines may be cost prohibitive, long-term development codes may want to address this issue to encourage burying the power lines.

Road names and house numbers are generally present throughout the area, yet many of the bridges crossing the numerous canals and small streams lack adequate signing and weight ratings.

The risk of wildfire threatening the community of Wilder is minimal due to the lack of topography, land use, and wildland fuels. Those structures located within the community center are well protected from wildland fire by large areas of lawn, pasture, or agricultural crops. However, homes in the outlying foothills area are at some risk. Many of these homes are located on private drives or dead end roads directly abutting wildland fuels. Providing alternative escape routes and/or safety zones is recommended in these types of areas. This is mostly an awareness issue for the residents of Wilder and the surrounding area. Annual field burning can increase the potential risk of fire threatening homes; however, the number of plowed fields and nearby water resources reduces the possibility of loss of life or property.

4.4.14 Community Mitigation Activities

In many cases, homes' survivability can be greatly enhanced by following a few simple guidelines that reduce the ignitability of the home. "Living with Fire, A Guide for the Homeowner" is an excellent tool for educating homeowners as to the steps to take in order to create an effective defensible space. Individual home site evaluations wherever rangeland fuels are in proximity to homes and improvements can increase homeowners' awareness and improve the survivability of structures in the event of a wildfire. Current management of the vegetation surrounding most homes provides some protection. However, maintaining a lean, clean, green zone around structures to reduce the potential for loss of life and property is recommended. Assessing individual homes in the outlying areas can address the issue of escape routes and home defensibility characteristics.

Ignition points are likely to be concentrated along the roads and travel corridors and other significant infrastructure. In areas with high concentrations of resource values along these corridors, plow or disk lines may be considered in order to provide a fire break in the event of a roadside ignition. Passage with a disk parallel to an access route can provide an adequate control line under normal fire conditions. Also, keeping ditches along roads mown and clear of surface fuels will reduce the possibility of accidental human ignition. It is important that people recognize and follow rules concerning campfires and trail restrictions in designated recreation areas as well.

Canyon County should continue to implement programs related to the signing of roads and house numbers in order to facilitate emergency response in these areas. Posting clear road signs warning of traffic restrictions, such as dead-ends and bridge restrictions are all imperative in a wildfire emergency.

4.5 Firefighting Resources and Capabilities

The Firefighting Resources and Capabilities information provided in this section (3.4) is a summary of information provided by the Rural Fire Chiefs or Representatives of the Wildland Firefighting Agencies listed. Each organization completed a survey with written responses. Their answers to a variety of questions are summarized here. ***In an effort to correctly portray their observations, little editing to their responses has occurred.*** These summaries indicate their perceptions and information summaries.

4.5.1 Wildland Fire Districts

4.5.1.1 Bureau of Land Management, Boise District

- Boise BLM Fire Office, 3948 Development Ave., Boise, 83705; 208-394-3400
- Hammett Guard Station, north of Exit 112 on Interstate 84, 208-366-7722
- Bruneau Guard Station, Hot Creek Road, Bruneau, 208-845-2011
- Wild West Guard Station, Exit 13 off I-84, 208-454-0613

The Department of Interior, BLM, provided funding for this Wildland-Urban Interface Wildfire Mitigation Plan. The Boise District BLM has been involved in Canyon County through assistance to rural fire districts and national fire prevention programs.

The Boise District BLM encompasses approximately 3.9 million acres of BLM-managed land in southwest Idaho. Through agreements with the Idaho Department of Land and the National Forest Service, the BLM also provides support on IDL and FS lands in some areas within the district boundary. The boundaries of the district extend north from the Nevada border following the Bruneau River fairly closely before heading east along the Saylor Creek Air Force Range boundary to the Elmore County line. Then, it heads north to the confluence of the Snake River. The border follows the Snake River east to the community of King Hill before turning north again following the King Hill Creek drainage to the Township 1S, Range 10E line, where it heads due north to the southwest corner of Section 6. The border, then, stair steps in a northeasterly direction just past the Elmore County line to the Township 2N, Range 12E line; then heads five miles due west to the Elmore County line. The eastern boundary follows the Elmore County line to where it meets the Blaine County line. The District boundary, then, follows the foothills west and north across the Boise Front; up Highway 55 and includes some scattered areas into the Crouch area; then jogs in a northwesterly direction to the Oregon border west of New Meadows.

Special features within the district include the 485,000-acre Snake River Birds of Prey National Conservation Area; the Owyhee Canyonlands; portions of the north and south fork Payette River corridors; the Owyhee Mountains, including the historic Silver City area; the Bruneau River canyon; and several popular recreation areas and wildland-urban interface areas.

The district's primary station is located in Boise, where 2 crews, with 2 engines per crew are based, along with both helicopter and fixed-wing aircraft resources. One of the two Boise crews is typically stationed during the day at Boise Fire Station #2 at the base of the foothills. Additional day-use stations are available in Kuna, Hidden Springs, and Eagle.

Furthermore, the district has out stations at Bruneau, Hammett, and Wild West (at Exit 13 on Interstate 84). Each facility is staffed by one crew, with two to three engines (depending on fire activity and yearly budget), on an 8-hour day, 5-day per week basis (on call 24/7) from mid June to mid September. Bruneau and Hammett will have different days off to provide 7 day coverage between the two guard stations. A dozer has historically been based at Hammett and will be based there when funding is available.

Wild West Guard Station is going to be demolished this spring with plans to build a new station. In the meantime, Wild West will be stationed at the Middleton Station #1 Fire Department in downtown Middleton.

BLM crews are neither trained nor equipped for structure suppression. Primary protection responsibilities are on public land throughout southwest Idaho and the BLM responds to fires originating on public lands and those on private land that threaten public land. Additionally, through mutual aid agreements with local fire departments, the BLM will provide assistance when requested on wildland fires.

The BLM does not provide formal EMT services. The crews are trained in first-aid, and some staff members have EMT and first-responder training, but this is not a service the BLM provides as part of their organization.

Personnel: The fire program staff totals 110-135 individuals, including 20 permanent employees, 40 career-seasonal employees who work up to nine months each year, and 75 seasonal employees on staff from roughly June to September. These are all paid staff members trained in wildland fire, but not in structure protection.

Mutual Aid Agreements: The BLM has an interagency working relationship with the US Forest Service (Boise National Forest and Payette National Forest) and the Idaho Department of Lands. The crews are dispatched on a closest-forces concept to public lands. Additionally, the BLM has mutual aid agreements with 37 community fire departments.

Top Resource Priorities:

- **Training:** Increasing the amount and level of training for and with partner community fire departments.
- **Communications:** Using the Rural Fire Assistance Program to allow departments to purchase radios to facilitate communication, coordination, and safety at the fire scene.

The district encompasses a broad spectrum of resources at risk, including recreation sites, power lines, wildlife habitat, wilderness study areas, wild horse management areas, historic districts, cultural and archaeological sites, and a range of vegetation types, from rare plant species to sagebrush and timber resources.

Table 4.2 summarizes available equipment.

Table 4.2 Boise District Equipment List for Wildland Fire Protection

Assigned Station	Make/ Model	Capacity (gallons)	Pump capacity (GPM)	Type
Boise	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Boise	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Boise	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Boise	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Boise	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Boise	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Boise	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Boise	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Hammett	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Hammett	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Hammett	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Bruneau	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Bruneau	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Bruneau	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Wild West (exit 13, I-84)	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Wild West (exit 13, I-84)	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Wild West (exit 13, I-84)	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Boise	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Boise	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Boise	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Boise	Ford	Light 300	120 GPM	Wildland

- The Boise District has 3 dozers, one of which is stationed in Hammett (may change in 2005); and two in Boise
- The Boise District also has 3, 3,500 gallon water tenders.
- There are 4 Fire Lookouts, one on Squaw Butte, north of Emmett; one on South Mountain, southeast of Jordan Valley; one on Danskin Peak, north of Mountain Home; and one on Bennett Mountain, northeast of Mountain Home.

Additionally, suppression resources include:

- **Helicopter:** The district has a new compact for 2005 helicopter on contract from June to October and an 11 member helitack crew. U.S. Forest Service helitack crews stationed at Lucky Peak and Garden Valley are available for assistance if needed and if they are not assigned elsewhere. Additionally, there are other helicopter resources equipped for fire missions that are available on a call-when-needed (CWN) basis.
- **Fixed-Wing:** The district has a contract AeroCommander 500S fixed-wing aircraft, staffed by a pilot and the air attack supervisor. The air attack supervisor coordinates aerial firefighting resources and serves as an observation and communications platform for firefighters on the ground.
- **Air Tankers:** There are typically two air tankers (fire retardant planes) on contract in Boise during the fire season. However, these aircraft are considered national resources and are assigned where they're needed at any particular time. These tankers have recently been grounded and may or may not be available for use in the future. Other, nearby, air tankers are located in McCall and various locations in Nevada and Oregon. There are also contract single-engine air tankers (SEATS) located in Oregon and Twin Falls, Idaho.

The primary operational challenges facing the district include:

- Continued development of wildland-urban interface areas across the district.
- Communications and coordination with current, new, and developing community fire departments and working with them to stay abreast of communication and technological developments so that we can continue and improve working together effectively at the fire scene.
- Internally, an operational challenge is to have sufficient and appropriate staff available throughout the year to foster partnerships with local departments and facilitate continued and improved coordination, training, communications, and other joint efforts with our partners across the district.
- Our effectiveness in addressing these challenges will largely hinge on funding available for the fire program and its various elements.

4.5.2 City and Rural Fire Districts

4.5.2.1 Caldwell Fire Protection District

Station #1 (208) 455-3032

The Caldwell Fire Department protects the City of Caldwell and the Caldwell Rural District. Our district boundaries border Middleton, Wilder, Parma, Nampa, Homedale, and Marsing Fire Dist. boundaries.

Staffing: We are a combination department with 8 career personnel on-duty, with off-duty personnel subject to call and 15 Paid on Call Members complete our roster of 50 personnel. All personnel are wildland fire trained.

Mutual Aid Agreements: We work with all of the departments in the area and have auto-aid agreements with most. In addition we have mutual aid agreements with all. We regularly perform joint training these agencies.

Protection Responsibilities: We are a full service department and respond to Fire/EMS/Tech Rescue/Haz Mat as well as other requests for services.

Current Equipment:

Truck #	Year	Make	GPM	Capacity	Structure-Wild land
101	1992	E-One	1500	1000	Structural
102	1999	BME	1500	1000	Structural
105	1982	Pierce	1500	750	Structural/Wildland
121	2002	BME	1250	3000	Structural/Wildland
131	1990	E-One	1500	400	Ladder Truck
141	1995				Rescue Truck
152	1990	Dodge	250	200	Brush Truck

Greatest Equipment Needs: We have none so we would first need training and equipment.

4.5.2.2 Melba Rural Fire Protection District

Richard Farner, Fire Chief
PO Box 183
Melba, Idaho 83641
Rf21kma@aol.com

District Summary: Melba Rural Fire Protection District is responsible for the structure and wildland fire protection for the southern part of Canyon County as well as the Southwest corner of Ada County.

Priority Areas: The last several years we are experiencing residential growth in the area around Melba

Communications: Communication capabilities in our district are fairly adequate. There are some areas that are difficult to communicate with our dispatch, which is located at the Canyon County Courthouse, Caldwell, Idaho.

Firefighting Vehicles: Due to our budget, one of our biggest concerns is replacing some of our aging vehicles such as our tender that runs not only on our fires but is used a lot for mutual aid with other departments.

Burn Permit Regulations: Burn ban periods need to be addressed.

Effective Mitigation Strategies: Future plans are looking into building a 2nd substation in the northern part of our district as well as updating our present tanker.

Education and Training: The Melba Fire Department each year participates in fire safety week with the schools. We also give smoke detectors and install to those that need them. We do training through the state and we have certified wildland trainers in our department.

Cooperative Agreements: Melba Rural Fire Protection has mutual aid agreements with Canyon, Ada and Owyhee Counties as well as with the BLM and IDL.

Current Resources:

1962 American LaFrance	Pumper Engine	1000 gal	750 gmp
2000 Freightliner	Pumper Engine	1000 gal	1250 gpm
1987 GMC	Tanker	3000 gal	350 gpm
1976 Dodge	Brush Truck	300 gal	150 gpm
1986 GMC	Brush Truck	300 gal	150 gpm
1989 GMC	Brush Truck	300 gal	200 gpm with foam
2004 GMC	Brush Truck	300 gal	200 gpm with foam
1993 GMC	Pickup		
1987 GMC	Command Vehicle		

Future Considerations: Updating our tanker to a pumper-tanker combo. Do to the volunteer nature of the department, we need to consider looking into putting full time staff on when budgets will allow.

Needs: More volunteers that can respond to daytime calls. Times have changed over the years and we due need more help in some kind of funding. The public expects more and more and it's extremely hard for volunteer fire departments to keep up with the pace.

4.5.2.3 Middleton Rural Fire Protection District Station #1

(208)585-6650

Middleton Rural Fire Protection District provides services from 2 modern fire stations in a geographical area covering 200 square miles in both Canyon and Gem counties. Services provided include EMS, Fire suppression and prevention activities for structural, wildland and urban interface, Technical rescue, HAZMAT operations.

Middleton Fire District is staffed by 47 part time paid personnel and 3 career personnel. Monday – Friday from 08:00 to 17:00 the 3 career personnel cover the station. Station coverage of 24/7 is accomplished by augmenting with part time paid personnel who cover nights and weekends. Minimum staffing includes 3 personnel on a structural engine and 2 personnel on the rescue apparatus at station 1. Nearly all personnel (42) are cross trained in structure and wildland fire.

Mutual aide agreements are in place for all agencies in Canyon and Ada Counties as well as the BLM. The District is also a member of the Intermountain Regional Mutual Aide Agreement. The District also leases space at Station 1 to the BLM for forward deployment of the Wild West Guard Station. This unit consists of 3 Type 4 engines and overhead personnel for the duration of fire season.

The District is made up of 10% urban area, 20% desert wildland surrounded by urban interface, and 70% agricultural. Historically the District will respond to an average of 700 calls per year of which 55% are EMS calls, 34% are wildland fires, 2% are structure fires and the remaining 9% are mutual aide and other call types.

Truck #	Year	Make	GPM	Capacity	Structure-Wild land
301	1958	ALF	750	750	Type II
302	2001	BME	1500	1000	Type I
303	1993	KME	1250	1000	Type I
361	2000	Dodge	125	300	Type 6
362	1999	Intl	150	750	Type 4
364	2004	Ford	150	300	Type 6
321	1978	Ford	500	3500	Tender
326	2000	KW	1250	3900	Tender
331	2001	Pierce	1500	300	75' Quint

The Districts top three priorities in order: 1. Improved communications system for the area in the foothills to enhance communications with dispatch and mutual aide agencies. 2. Training for the establishment of an all hazard Type 3 local overhead team. 3. A mapping system that will interface with CAD and is easy to update or have updated on a regular basis.

4.5.2.4 Nampa Fire Department

Administration Offices
Ph. 468-5770
1103 2nd St. So.
Nampa, Idaho 83651

Station # 1
Ph. 468-5771
923 1st St. So.
Nampa, Idaho 83651

Station # 2
Ph. 468-5772
1001 E. Greenhurst Rd.
Nampa, Idaho 83686

Station # 3
Ph. 468-5773
7935 Birch Lane
Nampa, Idaho 83687

Station # 4
Ph. 468-5774
2112 West Flamingo Ave
Nampa, Idaho 83651

Our District is primarily suburban with some agricultural land; it includes the entire City of Nampa and the surrounding Nampa Rural Fire District. The total area served is approximately 80 square miles with a total population of 83,000.

Nampa Fire Dept has 57 Full-time Firefighters there are 19 Firefighters on-duty each day. They work 24 hr shifts, Stations are staffed 7 days a week / 365 days a year. All firefighters are trained in wildland as well as structural firefighting.

We have written Mutual Aid Agreements with all the fire departments in our County (Canyon) as well as Ada County. We also have signed onto the Intermountain Regional Mutual Aid

Agreement (IRMA) which is being developed as a multi-state mutual aid agreement for all hazards including wildland fires.

Our department's responsibilities include structure fires, wildland fires, hazardous materials, technical rescue, emergency medical (ALS), fire prevention and code enforcement.

Equipment type by District

Truck #	*Year*	*Make*	*GPM*	*Capacity*	*Structure-Wild land*
E-401	1996	Pierce	1,500	1,000 Gals	Structure
E-402	1996	Pierce	1,500	1,000 Gals	Structure
E-403	2002	Pierce	1,500	1,000 Gals	Structure
E-404	1999	Pierce	1,500	1,000 Gals	Structure
T-421	2000	Intrnl	750	3,000 Gals	Structure/Wildland
S-461	2000	Ford	200	400 Gals	Wildland

Top resource priorities include increased training, more personal protective clothing & shelters, and additional equipment.

4.5.2.5 Notus Fire Department

Mike Skogsberg, Asst. Chief
Notus Fire Department
PO Box 201
Notus, ID 83656

April 7, 2005

District Summary:

Notus City Fire Department is responsible for structural and wildland fire protection with in the city boundaries as well as automatic aid agreements with surrounding departments.

Priority Areas:

Notus is starting to experience residential growth. It is anticipating some commercial growth with in the next ten years.

Areas of Concern:

At present time Caldwell Fire Department provides EMS coverage for Notus. They have a 14-minute response time; it is preferable to have no longer than a six minute EMS response. To accomplish the quicker response time, Notus Fire Department needs to provide EMS coverage.

Due to our small district, the tax base is small. This makes it difficult to have an adequate budget to meet all the growing needs of the district.

Apparatus/Equipment Needs:

Due to our small budget it is impossible to replace aging equipment and apparatus.

Communication:

At present time our communication needs have been met by another grant. In the future government regulations will require us to become P25 compliant or using 700mhz. This will mean more communication expenditures to remain compliant.

Training and Education:

Currently most of our personnel meets or exceeds Firefighter I, Driver/Operator, NWCG standards for wildland firefighters, and most recently Fire Officer.

Cooperative Agreements:

We have mutual aid agreements with the Treasure Valley, BLM and IDL.

Current Resource List:

1974 American LaFrance	Pumper Engine	500 gallon	1250 gpm
1956 American LaFrance	Pumper Engine	500 gallon	500 gpm
1964 Howe	Pumper Engine	500 gallon	1250 gpm
1969 6x6	Tanker	1600 gallon	250 gpm

4.5.2.6 Parma Rural Fire Department

James Cook, Chief
208-722-5716 station, 208-722-6175 home
parmafire@widaho.net
P.O. Box 429
Parma, Idaho 83660

District Summary

The Parma Rural Fire District is comprised of land in Northern Canyon County and Southern Payette County. We provide protection to the City of Parma and the town of Roswell as well as outlying areas. Our total area is approximately 180 acres, which includes the urban areas, farmland, and BLM property. We have one station, currently in Parma City at 2nd and Main. We are in the process of remodeling a building at 29200 Hwy. 95, just north of the city limits. We hope to occupy this new site by September 2004. We are a full volunteer department with 25 members. Our main duty is to protect life and property (structures) within our district, but we also provide mutual aid to departments within the Snake River Chief's Association and the Canyon County Chief's Association. Also within our district is an ambulance service providing medical transport services to our community.

Priority Areas

Residential Growth: As the valley grows, the expansion continues into the outlying areas. We are witnessing this within our community. We have two new subdivisions within city limits, one with 17 lots and another with 31 lots. The latter has two more phases to go through, making its total over 90 new houses. This does not include the new houses and business structures in the country. With this growth we will need more resources.

Communications: Communications with our dispatch center is not as good as it should be. We have several areas with virtually no coverage, by either radio or cell phone. Repeaters in strategic locations are needed for the safety of our emergency crews, both fire and ambulance, as well as police. We also need more portable radios for better scene control and firefighter safety.

Firefighting Vehicles: Vehicles are always a concern. With limited resources we are always struggling to maintain our fleet. We have applied for grants for vehicles but have been unsuccessful thus far. We will continue to do so until our fleet is current.

Burn Permit Regulations: Our county has a burn ordinance, but lacks the resources to properly enforce it. All open burning needs to be monitored for safety, and compliance with ordinances.

Effective Mitigation Strategies

Our district continually tries to keep pace with expansion in our fire protection areas, and has been able to purchase two fire vehicles is the past 7 years, one rescue truck and a 3000 gallon tender. The intent of the department is to continue to replace our aging fleet with newer and more reliable vehicles.

We have a process to inspect driveways of new residences in our district. This will ensure good access for our firefighting vehicles.

Future plans include radio repeaters in strategic locations, adding more portable radios, and continuing to upgrade our facilities. We will need to look at additional stations as our area grows.

Education of the public with regard to open burning would be beneficial to everyone. Knowing when and how to burn would reduce the amount of public assist type calls for our department.

Education and Training

Our department stresses the importance of good training, and provides in-house training at least twice a month. In addition to this training, we are members of the Snake River Valley Training Association as well as the Treasure Valley Training Association. These associations offer additional in-depth training to us year round. We encourage our members to take advantage of all the training they can.

Cooperative Agreements

The Parma Rural Fire District has mutual aid agreements with the Snake River Chiefs Association and the Canyon County Chiefs Association. These agreements link us to more than 30 area fire departments. We also work with the BLM on ground in Payette County that is in our district, but is public property managed by them. We have a good working relationship with all of the above mentioned agencies.

Current Resources

- 1968 Ford American-LaFrance Structural Engine with 500 gallon tank and 500 gpm pump
- 1968 American-LaFrance Engine with 500 gallon tank and 1000 gpm pump
- 1974 International Tender with 1700 gallon tank and 125 gpm pump
- 1986 Chevrolet Tender with 1700 gallon tank and 125 gpm pump
- 2001 International Tender with 2950 gallon tank and 500 gpm pump
- 1997 International Rescue Vehicle with 500 gallon tank and 250 gpm pump
- 1991 Ford F-250 Brush Truck with 200 gallon tank and 125 gpm pump
- 1991 Ford F-700 Brush Truck with 300 gallon tank and250 gpm pump
- 1999 Chevrolet Command Vehicle

**All of the above vehicles are the property of the fire district.*

Future Considerations

The Parma Rural Fire District will continually strive to update our equipment and facilities. We will occupy a new station in late summer 2004. This will give us adequate storage for all of our current equipment under one roof. When our district grows in its population base, another station will need to be added, possibly two. As with all fire districts, our primary concern is firefighter safety and protection of our citizens from fire damage or loss of life. Toward this end we will need to continually update our equipment and expand our training programs and facilities. We would like to see an area wide training facility built on our property, serving the

departments with which we have mutual aid agreements. Good communications is also essential, as stated before, and repeaters will be needed to accomplish this.

Needs

The most pressing need of our department is replacing our aging pumper trucks, one is a 1968 model and the other is a 1969. Neither of these trucks can meet the current requirement for first line engines. We also need more SCBA air packs and an air compressor for filling our breathing air bottles. As already stated, we will be occupying a new station this summer, but will need to monitor growth patterns for future station placement. As we grow, we will also need more personnel on our department, with the need for additional personal protection gear for these new firefighters. We also will need a utility type trailer to haul such things as extra cribbing for vehicle extrication and possibly trench rescue.

4.5.2.7 Marsing Rural Fire Department

308 Main St
Marsing, ID 83639
Dispatch: 208-896-4444
Roman Usabel – Chief Phone: 208-896-4571

Table 4.3. Fire Apparatus for Marsing Rural Fire Department.

Type	Year	Size	Tank Size (gal)	Pump Flow (gpm)
Pumper	2002	5 ton	1250	1250
Tanker	1996	5 ton	3250	500
Pumper	1963	3 ton	800	1000
Pumper	1974	3 ton	1000	1000
Tanker	1972	2 ton	1350	350
Brush truck	1982	1 ton	300	250
Brush truck	1979	2 ton	500	500

4.5.2.8 Murphy-Reynolds-Wilson Fire District

PO Box 82
Murphy, ID 83650
Owyhee County Sheriff: 208-495-1154
Kenneth Good – Chief Phone: 208-495-1267
Cell: 208-890-1170
Fax: 208-495-9822

Murphy Station

Tanker – 3,400 gallon, 300 GPM transfer pump, 3,000 gallon portable tank, 8'' dump valve, self-priming refill pump with suction and transfer hoses

Class A pumper – 1,250 GPM 2-stage pump, 500 gallon tank, 1,500 gallon portable tank, 1,100 foot of 5" supply line, 500' 1 ¾ " fire hose, foam inducer and nozzle, 3 - 1 ¾" firefighting nozzles, 2 - 2 ½" firefighting nozzles, miscellaneous 2 ½" to 1 ¾" "Y" valves, fire extinguishers, SCBA equipment, spare tanks, booster line with 200' 1" hard line on rewind reel

Reynolds Station

Tanker-Pumper – 1,200 gallon, 300 GPM pump, 300' 1 ½" fire hose, 200' 3" supply line, booster line on rewind reel, 200' 1" hard line and all other pertinent apparatus to be fully operational

Wilson Station

Pumper-Tanker – 1,300 gallons, 300 GPM pump, booster reel, rewind with 200' 1" hard line, 500' 1 ½" fire hose, 200' 3" transfer hose, and all nozzles and miscellaneous equipment to be fully operational

Forest Service Wildland Truck – 4x4, 200 gallons, rewind reel with 200' ¾" fire hose, 100 GPM engine driven pump, 100' 1 ½" fire hose with nozzle (fully equipped)

Givens Hot Springs (Sky Park)

BLM Heavy Pumper-Tanker Wildland Truck – 1,000 gallon tank with 100 GPM pump (fully equipped)

Pumper-Tanker – 1,200 gallon, 300 GPM pump (fully equipped)

Currently the Sky Park residents are housing the BLM truck and a 1,200 gallon pumper-tanker in their personal buildings. The Murphy-Reynolds-Wilson Fire Department would like to build a station in Givens Hot Springs large enough to accommodate a BLM satellite wildland crew and equipment.

The Murphy-Reynolds-Wilson Fire Department has three wildfire tankers with pumper trailers with hoses and nozzles and additional miscellaneous pumps, hoses, protective clothing, helmets, etc. We also have another Class A pumper under repair and hope to have it on line by late summer of 2005. The MRW Fire Department would also like to enlarge the 3 existing stations.

4.5.2.9 Star Joint Fire Protection District

Star Joint Fire Protection District
Kevin Courtney, Chief
Star-chief@cableone.net
208-286-7772
10831 W. State St.
Star, ID 83669

District Description:

Star Joint Fire Protection District is responsible for structural and wildland fire protection throughout the district. The District has a large amount of urban interface to the north and west of Star. The interface is made up of light flashy fuels that through most of the summer are dry and in a burnable state. Therefore a rapid initial attack is required to stop the fire from growing into a large fire incident. Star Fire utilizes its mutual aid agreements on these large scale incidents. The District is protected twenty four hours a day seven days a week by both paid and volunteer personnel.

Star Joint Fire Protection District utilizes their mutual aid agreements with BLM - Lower Snake River District and our neighboring departments. Also in return we frequently responded to resource request to assist the BLM - Lower Snake River District with protection of the Boise front.

Equipment:

501	Structural Pumper Tender	2000 gal.
503	Structural Pumper	1000 gal.
541	Type 6 brush squad Hummer	260 gal.
542	Type 4 Heavy brush squad	750 gal.
543	Type 6 brush squad	400 gal.
521	Tender	1200 gal.
551	Rescue squad	
561	Command Expedition 1997	
562	Command Suburban 1995	

Greatest Resource needs:

1. Procurement of a dual fire station in conjunction with the BLM and Star Fire on Highway 16 just south of Firebird Raceway. The station would give us increased response times plus allow BLM to house engine crews through out the summer so that they are staged in more critical areas. To accompany this station, a helipad would be placed near by so that helicopters used for firefighting efforts would be able to land and coordinate with ground crews to plan their attack.
2. Also the procurement of two water tenders of 3000 gallons would compliment the station and increase the response of water to the scene.
3. An increase in communication abilities so that all crews working on the incident would have the contact with those who are directing the firefighting efforts.

4.5.2.10 Kuna Fire District

Doug Rosin, Chief
rosind@cableone.net

Station 1

PO Box 607
150 West Boise Ave
Kuna ID 83634
208-922-1144
208-922-1135 fax

Station 2

10600 West Kuna Road
Kuna ID 83634

***District Description**:* Kuna Fire Protection District is responsible for structural and wildland fire protection throughout the district. The abundance of dry, light, flashy fuels requires rapid initial attack before fires develop into large wildland incidents. The department frequently utilizes mutual aid in suppression efforts.

Kuna is staffed 24/7/365 by one person throughout the year. Staffing increases during the summer the day shift to three to four people in order to assure rapid initial attack response during the fire season. The department also utilizes a force of 30 volunteers, who staff apparatus housed at Station 2.

Equipment:

601	Station 1	Structural Class A Pumper
602	Station 1	Structural Class A Pumper

611	Station 2	Structural Class A Pumper	
625	Station 1	2,000 gallon Tender	
626	Station 2	3,000 gallon pumper/tanker/tender	
641	Station 2	Chevrolet	125 gallon Type 6
642	Station 1	Ford	250 gallon Type 6
645	Station 1	Ford	250 gallon Type 6

Mutual Aid: Kuna RFPD is a member of the Intermountain Regional Mutual Aid Agreement. Kuna is frequently involved with mutual aid incidents with the BLM- Boise District during wildland fire events, as well as with other neighboring RFPD's.

Effective Mitigation Strategies*:* Rapid initial attack and keeping fires small is the most effective means of mitigating resource loss. Increases in both firefighting equipment and water availability are priorities for the district.

Greatest Resource Needs:

- *Procurement of a wildland engine*, preferably Type 3 or 4 with four-wheel drive would help in wildfire responses.
- *Identification and development of water sources* would reduce turn-around time for refilling. Reliable, deep wells need to be identified and developed to allow for drafting or filling in order to eliminate the need to rely on static water sources that are typically far from wildland events.
- *Increases in communication abilities,* particularly in command vehicles during mutual aid responses. Do to the number and differences of frequencies used during mutual aid responses, it is imperative that communication channels remain open between all cooperators. This requires monitoring of multiple channels simultaneously, which can only be accomplished with multiple mobile radios.
- *Increased inter-district training* in order to identify problems such as communication and radio frequencies before an incident.

4.6 Issues Facing Canyon County Fire Protection

There are dozens, if not hundreds of issues that contribute to fire occurrence, strain department resources, and otherwise complicate fire suppression throughout Canyon County. Very short lists of some issues are presented here.

4.6.1 Recruitment and Retention, Funding, Equipment Needs, Etc.

There are a number of pervasive issues that challenge volunteer districts county wide. Among these are issues associated with recruitment and retention of volunteers, lack of funding for needed equipment, keeping pace increases in training requirements, as well as numerous other factors strain fire district's resources. The members of all fire protection districts should be recognized for the dedication they have shown and the excellent level of protection they provide for residents throughout the county. Volunteers take time out of their lives every day in order to assure the safety of the community.

The demands on volunteer departments are considerable. Keeping pace with ever-increasing training requirements can lead to burn-out of volunteers who are scantly compensated for their time and efforts. Keeping pace with the growing needs of the communities the districts serve is a constant challenge as well. Although there are many potential funding sources available for rural districts to acquire equipment and other needs, grant writing and chasing of funding

sources takes considerable time and effort. Recommendations that can help to reduce these challenges will be presented in the Chapter 5: Mitigation Recommendations to follow.

4.6.2 Road Signage and Rural Addressing

The ability to quickly locate a physical address is critical in providing services in any type of emergency response. Minutes can make the difference in home survival during fire events or life and death during medical emergencies. Accurate road signage and rural addressing is fundamental to assure the safety and security for Canyon County residents. Currently, there are numerous areas throughout the county that are lacking road signs, rural addresses or both. Signing and addressing throughout the county needs to be brought up to NFPA code in order to assure visibility and quick location.

4.6.3 Inadequate Access to Homes and Subdivisions

Fire departments have frequently cited the lack of adequate access to homes and subdivisions as a significant issue in fire suppression countywide. This is particularly true in rapidly developing areas. Although departments are tasked with checking that access is sufficient for emergency vehicles, the rapid pace of development and the lack of trained fire department personnel result in many developments going unchecked. Developers should plan developments to ensure multiple access points in order to assure adequate access for fire suppression personnel. Furthermore, they should be encouraged to follow all codes through a system of disincentives such as penalties for non-compliance.

4.6.4 Augmentation of Emergency Water Supplies

Residential growth will likely accelerate in the coming years in all areas of Canyon County. Growth will continue to stress rural and wildland fire suppression abilities into the future. It is prudent to address development practices before they become significant issues. Of primary concern to fire departments will be water availability and access. Current county policies do not address these issues adequately, particularly in regard to water availability. County zoning and planning officials need to address this issue in order to assure that new development is built following specifications that will result in a safe and prosperous community.

In many rural areas of Canyon County, there are no readily accessible, year-round water resources available for use by local fire districts. Thus, it is necessary for firefighters to keep large amounts of water loaded on trucks at all times. In the event of a larger fire situation, additional water supplies must be transported to the site. The Canyon County fire districts feel that establishing permanent augmentations to emergency water supplies is necessary throughout the county. This includes establishment of pressurized water delivery systems in subdivisions as well as establishment of dry hydrants and drafting sites where immediate access to water is limited. Retrofitting dependable, year-round irrigation water sources with necessary fittings for use by emergency response equipment would also be highly beneficial. Once developed, these water sources need to be mapped and use agreements need to be made between landowners, rural departments, and the Bureau of Land Management.

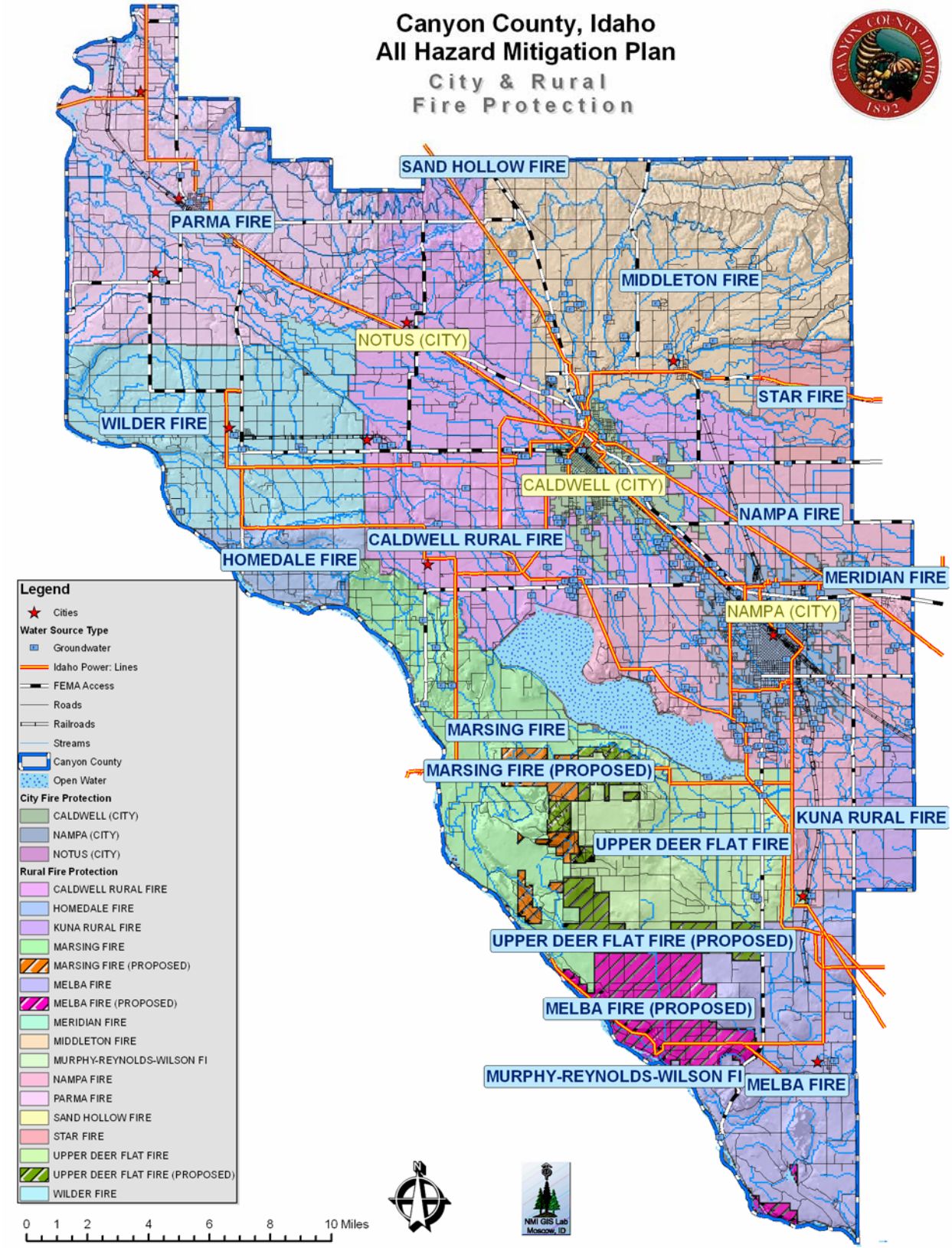
4.6.5 Outgrowth of Current Rural Districts

A comprehensive emergency resource plan should be drafted in order to assure development does not out-pace emergency response capabilities. Individual fire district population benchmarks should be established for addition of resources, expansion of staffing levels and building of new stations. Thousands of new homes are expected to be built throughout the county. This population increase will likely outpace current district capabilities in the near future.

4.6.6 Annexation of Unprotected Areas

There is currently a significant amount of land parcels south of Lake Lowell that are unprotected by any fire district. Homes in these areas are at high risk to loss by both structural and wildland fire because a neighboring fire department cannot legally respond to fires outside of their district (except when they have an MOU with another fire district). The wildfire mitigation planning committee has made recommendations to annex these lands into the neighboring fire districts in order to close the gaps in coverage and insure that all residents of Canyon County fire protection. The fire districts affected by the annexation recommendations are Upper Deer Flats Fire Department (6,853 acres proposed), Melba Fire Department (9,838 acres proposed), and Marsing Rural Fire Department (3,327 acres proposed). The cross hatched parcels in Figure 4.1 show the proposed annexation areas.

Figure 4.1. City and Rural Fire District Boundaries in Canyon County.



Chapter 5: Treatment Recommendations

5 Administration & Implementation Strategy

Critical to the implementation of this Wildland Urban Interface Wildfire Mitigation Plan will be the identification of, and implementation of, an integrated schedule of treatments targeted at achieving an elimination of the lives lost, and reduction in structures destroyed, infrastructure compromised, and unique ecosystems damaged that serve to sustain the way-of-life and economy of Canyon County and the region. Since there are many management agencies and thousands of private landowners in Canyon County, it is reasonable to expect that differing schedules of adoption will be made and varying degrees of compliance will be observed across all ownerships.

Canyon County encourages the philosophy of instilling disaster resistance in normal day-to-day operations. By implementing plan activities through existing programs and resources, the cost of mitigation is often a small portion of the overall cost of a project's design or program.

The federal land management agencies in Canyon County, specifically the Bureau of Land Management, are participants in this planning process and have contributed to its development. Where available, their schedule of land treatments have been considered in this planning process to better facilitate a correlation between their identified planning efforts and the efforts of Canyon County.

All risk assessments were made based on the conditions existing during 2004 - 2005, thus, the recommendations in this section have been made in light of those conditions. However, the components of risk and the preparedness of the county's resources are not static. It will be necessary to fine-tune this plan's recommendations annually to adjust for changes in the components of risk, population density changes, infrastructure modifications, and other factors.

As part of the Policy of Canyon County in relation to this planning document, this entire **Wildland Urban Interface Wildfire Mitigation Plan** should be reviewed annually at a special meeting of the Canyon County Commissioners, open to the public and involving all municipalities/jurisdictions, where action items, priorities, budgets, and modifications can be made or confirmed. A written review of the plan should be prepared (or arranged) by the Chairman of the County Commissioners, detailing plans for the year's activities, and made available to the general public ahead of the meeting (in accord with the Idaho Open Public Meeting Laws). Amendments to the plan should be detailed at this meeting, documented, and attached to the formal plan as an amendment to the Wildland Urban Interface Wildfire Mitigation Plan. Re-evaluation of this plan should be made on the 5th anniversary of its acceptance, and every 5-year period following.

5.1 Prioritization of Mitigation Activities

The prioritization process will include a special emphasis on cost-benefit analysis review. The process will reflect that a key component in funding decisions is a determination that the project will provide an equivalent or more in benefits over the life of the project when compared with the costs. Projects will be administered by local jurisdictions with overall coordination provided by the Canyon County Disaster Services Coordinator.

County Commissioners and the elected officials of all jurisdictions will evaluate opportunities and establish their own unique priorities to accomplish mitigation activities where existing funds and resources are available and there is community interest in implementing mitigation

measures. If no federal funding is used in these situations, the prioritization process may be less formal. Often the types of projects that the County can afford to do on their own are in relation to improved codes and standards, department planning and preparedness, and education. These types of projects may not meet the traditional project model, selection criteria, and benefit-cost model. The County will consider all pre-disaster mitigation proposals brought before the County Commissioners by department heads, city officials, fire districts and local civic groups.

When federal or state funding is available for hazard mitigation, there are usually requirements that establish a rigorous benefit-cost analysis as a guiding criterion in establishing project priorities. The county will understand the basic federal grant program criteria which will drive the identification, selection, and funding of the most competitive and worthy mitigation projects. FEMA's three grant programs (the post-disaster Hazard Mitigation Grant Program, the pre-disaster Flood Mitigation Assistance and Pre-Disaster Mitigation grant programs) that offer federal mitigation funding to state and local governments all include the benefit-cost and repetitive loss selection criteria.

The prioritization of projects will occur annually and be facilitated by the County Disaster Services Coordinator to include the County Commissioner's Office, City Mayors and Councils, Fire District Chiefs and Commissioners, agency representatives (BLM, Idaho Department of Lands, etc.). The prioritization of projects will be based on the selection of projects which create a balanced approach to pre-disaster mitigation which recognizes the hierarchy of treating in order (highest first):

- People and Structures
- Infrastructure
- Local and Regional Economy
- Traditional Way of Life
- Ecosystems

5.1.1 Prioritization Scheme

A numerical scoring system is used to prioritize projects. This prioritization serves as a guide for the county when developing mitigation activities. This project prioritization scheme has been designed to rank projects on a case by case basis. In many cases, a very good project in a lower priority category could outrank a mediocre project in a higher priority. The county mitigation program does not want to restrict funding to only those projects that meet the high priorities because what may be a high priority for a specific community may not be a high priority at the county level. Regardless, the project may be just what the community needs to mitigate disaster. The flexibility to fund a variety of diverse projects based on varying reasons and criteria is a necessity for a functional mitigation program at the County and community level.

To implement this case by case concept, a more detailed process for evaluating and prioritizing projects has been developed. Any type of project, whether county or site specific, will be prioritized in this more formal manner.

To prioritize projects, a general scoring system has been developed. This prioritization scheme has been used in statewide all hazard mitigations plans. These factors range from cost-benefit ratios, to details on the hazard being mitigated, to environmental impacts.

Since planning projects are somewhat different than non-planning projects when it comes to reviewing them, different criteria will be considered, depending on the type of project.

The factors for the non-planning projects include:

- Cost/Benefit
- Population Benefit
- Property Benefit
- Economic Benefit
- Project Feasibility (environmentally, politically, socially)
- Hazard Magnitude/Frequency
- Potential for repetitive loss reduction
- Potential to mitigate hazards to future development
- Potential project effectiveness and sustainability

The factors for the planning projects include:

- Cost/Benefit
- Vulnerability of the community or communities
- Potential for repetitive loss reduction
- Potential to mitigate hazards to future development

Since some factors are considered more critical than others, two ranking scales have been developed. A scale of 1-10, 10 being the best, has been used for cost, population benefit, property benefit, economic benefit, and vulnerability of the community. Project feasibility, hazard magnitude/frequency, potential for repetitive loss reduction, potential to mitigate hazards to future development, and potential project effectiveness and sustainability are all rated on a 1-5 scale, with 5 being the best. The highest possible score for a non-planning project is 65 and for a planning project is 30.

The guidelines for each category are as follows:

5.1.1.1 Benefit / Cost

The analysis process will include summaries as appropriate for each project, but will include benefit / cost analysis results, Projects with a negative benefit / cost analysis result will be ranked as a 0. Projects with a positive Benefit / Cost analysis will receive a score equal to the projects Benefit / Cost Analysis results divided by 10. Therefore a project with a BC ratio of 50:1 would receive 5 points, a project with a BC ratio of 100:1 (or higher) would receive the maximum points of 10.

5.1.1.2 Population Benefit

Population Benefit relates to the ability of the project to prevent the loss of life or injuries. A ranking of 10 has the potential to impact over 50% of the population. A ranking of 5 has the potential to impact 25% of the population, and a ranking of 1 will not impact the population. In some cases, a project may not directly provide population benefits, but may lead to actions that do, such as in the case of a study. Those projects will not receive as high of a rating as one that directly effects the population, but should not be considered to have no population benefit.

5.1.1.3 Property Benefit

Property Benefit relates to the prevention of physical losses to structures, infrastructure, and personal property. These losses can be attributed to potential dollar losses. Similar to cost, a ranking of 10 has the potential to save over $1,000,000 in losses, a ranking of 5 has the potential to save roughly $100,000 in losses, and a ranking of 1 only has the potential to save less than $100 in losses. In some cases, a project may not directly provide property benefits, but may lead to actions that do, such as in the case of a study. Those projects will not receive

as high of a rating as one that directly effects property, but should not be considered to have no property benefit.

5.1.1.4 Economic Benefit

Economic Benefit is related to the savings from mitigation to the economy. This benefit includes reduction of losses in revenues, jobs, and facility shut downs. Since this benefit can be difficult to evaluate, a ranking of 10 would prevent a total economic collapse, a ranking of 5 could prevent losses to about half the economy, and a ranking of 1 would not prevent any economic losses. In some cases, a project may not directly provide economic benefits, but may lead to actions that do, such as in the case of a study. Those projects will not receive as high of a rating as one that directly affects the economy, but should not be considered to have no economic benefit.

5.1.1.5 Vulnerability of the Community

For planning projects, the vulnerability of the community is considered. A community that has a high vulnerability with respect to other jurisdictions to the hazard or hazards being studied or planned for will receive a higher score. To promote planning participation by the smaller or less vulnerable communities in the state, the score will be based on the other communities being considered for planning grants. A community that is the most vulnerable will receive a score of 10, and one that is the least, a score of 1.

5.1.1.6 Project Feasibility (Environmentally, Politically & Socially)

Project Feasibility relates to the likelihood that such a project could be completed. Projects with low feasibility would include projects with significant environmental concerns or public opposition. A project with high feasibility has public and political support without environmental concerns. Those projects with very high feasibility would receive a ranking of 5 and those with very low would receive a ranking of 1.

5.1.1.7 Hazard Magnitude/Frequency

The Hazard Magnitude/Frequency rating is a combination of the recurrence period and magnitude of a hazard. The severity of the hazard being mitigated and the frequency of that event must both be considered. For example, a project mitigating a 10-year event that causes significant damage would receive a higher rating than one that mitigates a 500-year event that causes minimal damage. For a ranking of 5, the project mitigates a high frequency, high magnitude event. A 1 ranking is for a low frequency, low magnitude event. Note that only the damages being mitigated should be considered here, not the entire losses from that event.

5.1.1.8 Potential for repetitive loss reduction

Those projects that mitigate repetitive losses receive priority consideration here. Common sense dictates that losses that occur frequently will continue to do so until the hazard is mitigated. Projects that will reduce losses that have occurred more than three times receive a rating of 5. Those that do not address repetitive losses receive a rating of 1.

5.1.1.9 Potential to mitigate hazards to future development

Proposed actions that can have a direct impact on the vulnerability of future development are given additional consideration. If hazards can be mitigated on the onset of the development, the county will be less vulnerable in the future. Projects that will have a significant effect on all future development receive a rating of 5. Those that do not affect development should receive a rating of 1.

5.1.1.10 Potential project effectiveness and sustainability

Two important aspects of all projects are effectiveness and sustainability. For a project to be worthwhile, it needs to be effective and actually mitigate the hazard. A project that is questionable in its effectiveness will score lower in this category. Sustainability is the ability for the project to be maintained. Can the project sustain itself after grant funding is spent? Is maintenance required? If so, are or will the resources be in place to maintain the project? An action that is highly effective and sustainable will receive a ranking of 5. A project with effectiveness that is highly questionable and not easily sustained should receive a ranking of 1.

5.1.1.11 Final ranking

Upon ranking a project in each of these categories, a total score can be derived by adding together each of the scores. The project can then be ranked high, medium, or low based on the non-planning project thresholds of:

Project Ranking Priority Score

- High 40-65
- Medium 25-39
- Low 9-25

5.2 Possible Fire Mitigation Activities

As part of the implementation of fire mitigation activities in Canyon County, a variety of management tools may be used. Management tools include but are not limited to the following:

- Homeowner and landowner education
- Building code amendments and enforcement of existing codes for structures and infrastructure in the WUI
- Home site defensible zone through fuels modification
- Community defensible zone fuels alteration
- Access improvements
- Access creation
- Emergency response enhancements (training, equipment, locating new fire stations, new fire districts)
- Regional land management recommendations for private, state, and federal landowners

Maintaining private property rights will continue to be one of the guiding principles of this plan's implementation. Sound risk management is a foundation for all fire management activities. Net gains to the public benefit will be an important component in the decision making process.

5.3 WUI Safety & Policy

Wildfire mitigation efforts must be supported by county policies and regulations that maintain a solid foundation for safety and consistency. Because the Wildland Urban Interface Safety and Policy recommendations are policy are regulatory in nature, they will not necessarily be accompanied by cost estimates. It is likely that debate and formulation of alternatives will serve to make these recommendations suitable and appropriate for Canyon County.

5.3.1 Existing Practices That Should Continue

Canyon County currently is implementing many projects and activities that, in their absence, could lead to increased wildland fire loss. By enumerating some of them here, it is the desire of the authors to point out successful activities.

- The dedication of fire district volunteers and professionals has contributed tremendously to the safety and well-being of residents of Canyon County. All individuals involved in fire suppression in Canyon County should be commended and recognized for the sacrifices they make in order to provide the excellent level of community protection afforded to county residents.
- The aggressive Fire Prevention campaign by local fire departments, the Boise National Forest and the Boise District of the BLM has contributed to a reduction in the number of human caused fires over time in Canyon County. The prevention program should receive necessary support over the long term.
- The BLM Rural Fire Assistance has made significant contributions to the capabilities of the rural fire districts throughout Canyon County.
- Existing rural addressing efforts have aided emergency responses well.
- Development of the valley-wide mutual aid agreement to facilitate response procedure during mutual aid responses throughout Canyon County and the entire Treasure Valley.

5.3.2 Proposed Activities

Table 5.1. WUI Action Items in Safety and Policy.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
5.1.a: Adopt building codes and vegetation management requirements for homes and structures located in the urban-interface.	**Protection of people and structures** by enforcement of existing standards to insure new homes can be protected while minimizing risks to firefighters.	County Commissioners in cooperation with County and City Planning & Zoning, County and City Building Departments, Nampa Fire Department, Melba Fire Department, Caldwell Fire Protection District, Notus Fire Department, Parma Fire Department, Upper Deer Flat Fire Department, Star Joint Fire Protection District, Wilder Rural Fire Protection District, Kuna Fire District, Middleton Fire, Rescue, & Emergency Services, Marsing Rural Fire Department, Murphy-Reynolds-Wilson Fire District, and Cities of Nampa, Caldwell, Middleton, Notus, Parma, Wilder, Greenleaf, and Melba.	Year 1 (2006): Devise strategy between involved parties on how to efficiently and effectively enforce building codes.
5.1.b: Adopt and enforce applicable components of NFPA code 1144 that address the unique needs of Canyon County. Ensure policy addresses the specific needs of fire suppression resources, building materials and applies to subdivisions as well as new single home construction.	**Protection of people and structures** by applying a standard of road widths, access, water supply, and building regulations suitable to insure new homes can be protected while minimizing risks to firefighters.	County Commissioners in cooperation with County and City Planning & Zoning Departments, County and City Building Departments, and Cities of Nampa, Caldwell, Middleton, Notus, Parma, Wilder, Greenleaf, and Melba.	Year 1 (2006): Debate and adopt revised code. Ongoing: Ensure enforcement of codes by building department and integrate into County Comprehensive Plan.

Table 5.1. WUI Action Items in Safety and Policy.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
5.1.c: Amend existing building codes to apply equally to new single housing construction as it does to subdivisions in regard to access standards and water availability standards.	**Protection of people and structures** by applying a standard of road widths, access, and building regulations suitable to insure new homes can be protected while minimizing risks to firefighters. (defensible space, roads and access management, water systems, building codes, signage, and maintenance of private range lands).	County Commissioners in cooperation with County and City Planning & Zoning, County and City Building Departments, Nampa Fire Department, Melba Fire Department, Caldwell Fire Protection District, Notus Fire Department, Parma Fire Department, Upper Deer Flat Fire Department, Star Joint Fire Protection District, Wilder Rural Fire Protection District, Kuna Fire District, Middleton Fire, Rescue, & Emergency Services, Marsing Rural Fire Department, Murphy-Reynolds-Wilson Fire District, and Cities of Nampa, Caldwell, Middleton, Notus, Parma, Wilder, Greenleaf, and Melba.	Year 1 (2006): Debate and adopt revised code. Ongoing: Review adequacy of changes annually, make changes as needed.
5.1.d: Enact and enforce fireworks ban on public lands in rangeland areas.	**Protection of people, structures and unique ecosystems** by reducing the probability of fire occurrence through the use of fireworks.	County Commissioners, Sheriff's Office, and BLM.	Year 1 (2006): Pass ordinance and post necessary signs. Ongoing: Support enforcement of law.
5.1.e: Establish mutual aid agreements between Deer Flat NWR and surrounding fire departments.	**Protection of people, structures and unique ecosystems** by improving working relationships between rural departments and Deer Flat NWR.	Deer Flat NWR, Nampa Fire Department, Upper Deer Flats Fire Department, Caldwell Fire Protection District, and Marsing Fire Department.	Year 1 (2006): Enter into and formalize mutual aid agreement between all involved parties.

5.4 People and Structures

Many of the recommendations in this category involve education and increasing awareness of the residents of Canyon County. Although prevention campaigns and public education efforts have been quite successful in many areas, there is still much that residents can do to protect themselves and their property from wildland fire.

The recommendations stem from a variety of factors including items that became obvious during the analysis of the public surveys, discussions during public meetings, and observations about choices made by residents living in the wildland-urban interface. Over and over, a common theme was present that pointed to a situation of landowners not recognizing risk factors:

- Fire District personnel pointed to numerous examples of inadequate access to homes.
- Discussions with the general public indicated an awareness of wildland fire risk, but they could not specifically identify risk factors.
- Almost half of the respondents to the public mail survey indicated that they wanted to participate in educational opportunities focused on the WUI and what they can do to increase their home's chances of surviving a wildfire.

In addition to those items enumerated in Table 5.1, residents and policy makers of Canyon County should recognize certain factors that exist today, that in their absence would lead to an increase in the risk factors associated with wildland fires in the WUI of Canyon County. The items listed below should be encouraged, acknowledged, and recognized for their contributions to the reduction of wildland fire risks:

- **Livestock Grazing** in and around the communities of Canyon County has led to a reduction of many of the fine fuels. Domestic livestock not only eat these grasses, forbs, and shrubs, but also trample certain fuels to the ground where decomposition rates may increase. Responsible livestock grazing in this region should be encouraged into the future as a low cost, positive tool of wildfire mitigation in the wildland urban interface and in the wildlands.

5.4.1 Proposed Activities

Table 5.2. WUI Action Items for People and Structures.

Action Item	Goals and Objectives	Responsible Organization	Action Items, Planning Horizon and Estimated Costs
5.2.a: Develop a formal WUI Advisory Committee comprised of representatives from all fire and emergency service entities to coordinate and develop strategies to advance fire mitigation activities countywide.	**Protection of people and structures, infrastructure, public and firefighter safety and ecosystems** by coordinating efforts and improving communication avenues between all parties to make informed decisions about wildfire issues.	County Commissioners, Southwest Idaho RC&D, Emergency Management, BLM, USFS, FWS, Nampa Fire Department, Melba Fire Department, Caldwell Fire Protection District, Notus Fire Department, Parma Fire Department, Upper Deer Flat Fire Department, Star Joint Fire Protection District, Wilder Rural Fire Protection District, Kuna Fire District, Middleton Fire, Rescue, & Emergency Services, Marsing Rural Fire Department, Murphy-Reynolds-Wilson Fire District, and Cities of Nampa, Caldwell, Middleton, Notus, Parma, Wilder, Greenleaf, and Melba, and all other organizations responsible for safety of Canyon County Residents.	**Year 1 (2006):** Formalize a committee, its membership and service decided on by the County Commissioners, to collaborate on WUI issues within Canyon County. Members potentially to include land management organizations, private landowners, and fire protection personnel.

Table 5.2. WUI Action Items for People and Structures.

Action Item	Goals and Objectives	Responsible Organization	Action Items, Planning Horizon and Estimated Costs
5.2.b: Continued public education campaigns through targeted media campaigns, brochure and leaflet distribution, mailings, billboards, door-to-door visits, and any other means by which to communicate the need for fire safety throughout Canyon County.	**Protect people and structures** by increasing awareness of WUI risks, how to recognize risk factors, and how to modify those factors to reduce risk.	County Commissioners, Southwest Idaho RC&D, Emergency Management, BLM, UFS, FWS, Nampa Fire Department, Melba Fire Department, Caldwell Fire Protection District, Notus Fire Department, Parma Fire Department, Upper Deer Flat Fire Department, Star Joint Fire Protection District, Wilder Rural Fire Protection District, Kuna Fire District, Middleton Fire, Rescue, & Emergency Services, Marsing Rural Fire Department, Murphy-Reynolds-Wilson Fire District, and Cities of Nampa, Caldwell, Middleton, Notus, Parma, Wilder, Greenleaf, and Melba, and all other organizations responsible for safety of Canyon County Residents.	Year 1 (2006): Work together to form a countywide public education working group to strategize on methods and tactics to maximize outreach effectiveness. Ongoing: Identify and coordinate mitigation opportunities and work as a single cohesive unit to see projects through. Determine needs for educational material and advertising budgets.
5.2.c: Wildfire risk assessments of homes in identified communities.	**Protect people and structures** by increasing awareness of specific risk factors of individual home sites in the at-risk landscapes. Only after these are completed can home site treatments follow.	To be implemented by County Commissioners in cooperation with local homeowners, Nampa Fire Department, Melba Fire Department, Caldwell Fire Protection District, Notus Fire Department, Parma Fire Department, Upper Deer Flat Fire Department, Star Joint Fire Protection District, Wilder Rural Fire Protection District, Kuna Fire District, Middleton Fire, Rescue, & Emergency Services, Marsing Rural Fire Department, and Murphy-Reynolds-Wilson Fire District. Actual work may be completed by Wildfire Mitigation Consultants or trained volunteers.	Cost: Approximately $100 per home site for inspection, written report, and discussions with the homeowners. There are approximately 33,956 housing units in Canyon County, roughly 2,037 (6%) of these structures would benefit from a home site inspection and budget determination for a total cost estimate of $203,700. Year 1 & 2 (2006-07): Secure funding and contract to complete the inspections. Home site inspection reports and estimated budget for each home site's treatments will be a requirement to receive funding for treatments through grants.

Table 5.2. WUI Action Items for People and Structures.

Action Item	Goals and Objectives	Responsible Organization	Action Items, Planning Horizon and Estimated Costs
5.2.d: Home site WUI Treatments.	**Protect people, structures, and increase firefighter safety** by reducing the risk factors surrounding homes in the WUI of Canyon County.	County Commissioners in cooperation with local homeowners, Fire Mitigation Consulting company, and Nampa Fire Department, Melba Fire Department, Caldwell Fire Protection District, Notus Fire Department, Parma Fire Department, Upper Deer Flat Fire Department, Star Joint Fire Protection District, Wilder Rural Fire Protection District, Kuna Fire District, Middleton Fire, Rescue, & Emergency Services, Marsing Rural Fire Department, and Murphy-Reynolds-Wilson Fire District.	Actual funding level will be based on the outcomes of the home site assessments and cost estimates. Estimate that treatments will cost approximately $750 per home site for a defensible space of roughly 150'. Approximately 2,037 homes in this category for an estimated cost of $1,527,750. Home site treatments can begin after the securing of funding for the treatments and immediate implementation in 2006 and will continue from year 1 through 5 (2010).

Table 5.2. WUI Action Items for People and Structures.

Action Item	Goals and Objectives	Responsible Organization	Action Items, Planning Horizon and Estimated Costs
5.2.e: Community Defensible Zone WUI Treatments.	**Protect people, structures, and increase firefighter safety** by reducing the risk factors surrounding high risk communities in the WUI of Canyon County.	County Commissioners in cooperation with local homeowners, Fire Mitigation Consulting company, and Nampa Fire Department, Melba Fire Department, Caldwell Fire Protection District, Notus Fire Department, Parma Fire Department, Upper Deer Flat Fire Department, Star Joint Fire Protection District, Wilder Rural Fire Protection District, Kuna Fire District, Middleton Fire, Rescue, & Emergency Services, Marsing Rural Fire Department, and Murphy-Reynolds-Wilson Fire District.	Actual funding level will be based on the outcomes of the home site assessments and cost estimates. Years 2-5 (2007-10): Treat high risk wildland fuels from home site defensible space treatments to an area extending 400 feet to 750 feet beyond home defensible spaces, where high accumulations of high risk fuels exist. This will help link home treatment areas together. Treatments target high risk concentrations of fuels and not 100% of the area identified. To be completed only after or during the creation of home defensible spaces have been implemented. Approximate average cost on a per structure basis is $650-$800 depending on extent of home defensibility site treatments, for a cost estimate of $1,476,825.
5.2.f: Maintenance of Home site WUI Treatments.	**Protect people, structures, and increase firefighter safety** by reducing the risk factors surrounding homes in the WUI of Canyon County.	County Commissioners in cooperation with local homeowners and Nampa Fire Department, Melba Fire Department, Caldwell Fire Protection District, Notus Fire Department, Parma Fire Department, Upper Deer Flat Fire Department, Star Joint Fire Protection District, Wilder Rural Fire Protection District, Kuna Fire District, Middleton Fire, Rescue, & Emergency Services, Marsing Rural Fire Department, and Murphy-Reynolds-Wilson Fire District.	Home site defensibility treatments must be maintained periodically to sustain benefits of the initial treatments. Each site should be assessed 5 years following initial treatment Estimated re-inspection cost will be $50 per home site on all sites initially treated or recommended for future inspections ($101,850) Years 5 – 10 (2010 -2015): Follow-up inspection reports with treatments as recommended.

Table 5.2. WUI Action Items for People and Structures.

Action Item	Goals and Objectives	Responsible Organization	Action Items, Planning Horizon and Estimated Costs
5.2.g: Re-entry of Home site WUI Treatments.	**Protect people, structures, and increase firefighter safety** by reducing the risk factors surrounding homes in the WUI of Canyon County.	County Commissioners in cooperation with local homeowners and Nampa Fire Department, Melba Fire Department, Caldwell Fire Protection District, Notus Fire Department, Parma Fire Department, Upper Deer Flat Fire Department, Star Joint Fire Protection District, Wilder Rural Fire Protection District, Kuna Fire District, Middleton Fire, Rescue, & Emergency Services, Marsing Rural Fire Department, and Murphy-Reynolds-Wilson Fire District.	Re-entry treatments will be needed periodically to maintain the benefits of the initial WUI home treatments. Each re-entry schedule should be based on the initial inspection report recommendations, observations, and changes in local conditions. Generally occurs every 5-10 years.
5.2.h: Fuels reduction project on BLM ground surrounding subdivisions in the Middleton area.	**Protection of people and structures** by reducing fuel concentrations and creating a defensible space around homes.	BLM in cooperation with Middleton Fire, Rescue, and Emergency Service and local homeowners.	Year 1 (2006): Determine project areas and secure funding sources. Conduct educational campaign for homeowners near the project areas to inform them of fire risk and the importance of the project. Years 2 & 3 (2007-08): Implement planned fuels reduction projects.
5.2.i: Evacuation planning and education campaign to inform public of evacuation routes and evacuation procedures.	**Protection of people and structures** by providing residents and visitors with the information they need for an orderly and safe evacuation.	County Commissioners in cooperation with Canyon County Highway Districts, Sheriffs Office, Emergency Management, and Nampa Fire Department, Melba Fire Department, Caldwell Fire Protection District, Notus Fire Department, Parma Fire Department, Upper Deer Flat Fire Department, Star Joint Fire Protection District, Wilder Rural Fire Protection District, Kuna Fire District, Middleton Fire, Rescue, & Emergency Services, Marsing Rural Fire Department, and Murphy-Reynolds-Wilson Fire District.	Year 1 (2006): Establish primary and secondary roads that will be defined as evacuation routes. Post signs along routes identifying them to the public as designated and safe evacuation routes. Year 1 (2006): Conduct a public education campaign to inform residents of the existence of designated evacuation routes and the proper procedures to follow during an emergency evacuation.

Table 5.2. WUI Action Items for People and Structures.

Action Item	Goals and Objectives	Responsible Organization	Action Items, Planning Horizon and Estimated Costs
5.2.j: Hire or appoint Technical Assistance Coordinator/Special Project Leader to aid in grant writing, coordination of training and equipment needs, and administration of funds countywide.	**Protection of people and structures** by coordinating county needs and by facilitating writing of district and county grants for fire and other special projects.	County Commissioners and Emergency Management in cooperation with Nampa Fire Department, Melba Fire Department, Caldwell Fire Protection District, Notus Fire Department, Parma Fire Department, Upper Deer Flat Fire Department, Star Joint Fire Protection District, Wilder Rural Fire Protection District, Kuna Fire District, Middleton Fire, Rescue, & Emergency Services, Marsing Rural Fire Department, and Murphy-Reynolds-Wilson Fire District.	Year 1 (2006): Develop county budget to include funding for a Technical Assistance Coordinator/Special Project Leader. Release notice of job availability and seek qualified applicants.

5.5 Infrastructure

Significant infrastructure refers to the communications, transportation (road and rail networks), energy transport supply systems (gas and power lines), and water supply that service the county. Protection of these elements is critical in protecting the health, safety and economy of Canyon County.

Communication Infrastructure: Generally, there is little that needs to be done to safeguard communication infrastructure within Canyon County from wildland fire. However, there are some improvements that could be made in order to better serve emergency communications needs during mutual aid responses.

Transportation Infrastructure (road and rail networks): Wildland fire poses little direct threat to roadways. However, ignitions along highways and roadways contribute significantly to fire load across the county and should be address as part of the implementation of this plan. Various alternatives from herbicides to intensive livestock grazing coupled with mechanical treatments have been suggested. A variety of approaches will be appropriate depending on the landowner, fuels present, and other factors.

Many roads in the county have limiting characteristics, such as steep grades, narrow travel surfaces, sharp turning radii, low load limit bridges and cattle guards, and heavy accumulations of fuels adjacent to some roads. Roads that have these characteristics and access homes and businesses are the priority for improvements in the county. Furthermore, alternate access routes are absent in many areas. Access improvements should be made where possible. Specific recommendations for these roads are enumerated in Table 5.3.

There are a number of active railways belonging to Union Pacific Railroad that pass through Canyon County. The routes generally traverse relatively level rangelands with few curves, grades, or sidings; however, the potential for an ignition due to sparks, hot stack carbon, or blown brake shoes emitted by a train is significant. Care should be taken to keep the railroad corridor clear of wildland fuels by mowing, grazing, harvesting, or other means.

Energy Transport Supply Systems (gas and power lines): A number of power and gas lines pass through Canyon County. Many of these pass through undeveloped, rangeland areas that are subject to wildland fire events. The potential for wildland fire causing catastrophic damage due to pipeline explosions is very real. All possible steps should be taken to secure this infrastructure. In cases where non-flammable steel support structures are used for power transmission lines, there is little direct threat of power supply damage. However, where wooden power poles have been used, there is some risk of failure. Since retrofitting of these infrastructure components is not practical, no such recommendations will be made. It is the recommendation of this Wildfire Mitigation Plan that this situation be evaluated annually and monitored.

Water Supply: In Canyon County irrigation water is derived from surface flows that feed the larger irrigation network that sustains the county's agricultural economy. High intensity wildfires threaten the quality of these surface water sources by removing the organic material and vegetation that keeps sediments from entering streams. Protection of watersheds is important to maintaining high quality surface water for Canyon County.

The emergency water supply is limiting in many areas. Many areas of Canyon County are not serviced by any type of emergency water supply. Where this condition exists, municipalities should consider extending the hydrant system, or requiring the installation of dry hydrants to provide an emergency water supply.

5.5.1 Proposed Activities

Table 5.3. WUI Action Items for Infrastructure Enhancements.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
5.3.a: Identify and post FEMA "Emergency Evacuation Route" signs along the identified primary and secondary access routes in the county.	**Protection of people and structures** by informing residents and visitors of escape routes that will be maintained in the case of an emergency.	County Commissioners in cooperation with the County Highway Districts, Nampa Fire Department, Melba Fire Department, Caldwell Fire Protection District, Notus Fire Department, Parma Fire Department, Upper Deer Flat Fire Department, Star Joint Fire Protection District, Wilder Rural Fire Protection District, Kuna Fire District, Middleton Fire, Rescue, & Emergency Services, Marsing Rural Fire Department, and Murphy-Reynolds-Wilson Fire District.	Year 1 (2006): Obtain funding and purchase signs. Post roads and make information available to residents of the importance of Emergency Routes.
5.3.b: Fuels mitigation of the FEMA "Emergency Evacuation Routes" in the county to insure these routes can be maintained in the case of an emergency.	**Protection of people and structures** by providing residents and visitors with ingress and egress that can be maintained during an emergency.	County Commissioners in cooperation with the County Highway Districts, Nampa Fire Department, Melba Fire Department, Caldwell Fire Protection District, Notus Fire Department, Parma Fire Department, Upper Deer Flat Fire Department, Star Joint Fire Protection District, Wilder Rural Fire Protection District, Kuna Fire District, Middleton Fire, Rescue, & Emergency Services, Marsing Rural Fire Department, and Murphy-Reynolds-Wilson Fire District.	Year 1 (2006): Conduct full assessment of road defensibility, cost, and ownership participation. Year 1 – 5 (2006-2010): Obtain funding and Implement recommended projects.
5.3.c: Improve road access to homes through construction of off-road access points and loop roads in subdivisions and other populated areas.	**Protection of people, structures, infrastructure, and economy** by improving access for residents and firefighting personnel in the event of a wildfire.	County Highway Districts, County and City Planning and Zoning Departments Nampa Fire Department, Melba Fire Department, Caldwell Fire Protection District, Notus Fire Department, Parma Fire Department, Upper Deer Flat Fire Department, Star Joint Fire Protection District, Wilder Rural Fire Protection District, Kuna Fire District, Middleton Fire, Rescue, & Emergency Services, Marsing Rural Fire Department, and Murphy-Reynolds-Wilson Fire District.	Year 1 (2006): Determine subdivisions and areas in greatest need of access improvements countywide and prioritize access improvement projects. Year 2 – 6 (2007-2011): Obtain funding and implement projects.

Table 5.3. WUI Action Items for Infrastructure Enhancements.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
5.3.d: Update and improve road signing and rural addressing compliant with NFPA standards for visibility throughout Canyon County.	**Protection of people and structures** by reducing emergency response time.	County Commissioners in cooperation with County and City Planning & Zoning and local homeowners.	Year 1 & 2 (2006-07): Update rural addressing and assure that 911 Dispatch, fire departments, sheriff, and all emergency services are aware of new addresses. New subdivisions should be signed with names as well as county grid addresses to assure consistency in addressing throughout the county
5.3.e: Roadside vegetation treatments to reduce flammability of fuels immediately adjacent to roads at high risk of ignitions.	**Protection of people and structures and unique ecosystems** by reducing probability of ignitions along travel corridors.	County Highway Districts, Idaho Transportation Department, BLM, and other affected landowners.	Year 1 (2006): Conduct full assessment of road defensibility, cost, and ownership participation. Year 1 – 5 (2006-2010): Obtain funding and Implement recommended projects. Treatments may include mowing, spring application herbicide treatments, or other treatments to reduce flammability. This item is applicable to the Interstate 84 corridor as well as all county and state roads not specifically identified by this plan.
5.3.f: Identification of resource staging areas throughout the county for coordination during major incidents.	**Protection of people and structures** by improving tactical planning efficiency.	County Emergency Management, BLM, USFS, FWS, Nampa Fire Department, Melba Fire Department, Caldwell Fire Protection District, Notus Fire Department, Parma Fire Department, Upper Deer Flat Fire Department, Star Joint Fire Protection District, Wilder Rural Fire Protection District, Kuna Fire District, Middleton Fire, Rescue, & Emergency Services, Marsing Rural Fire Department, Murphy-Reynolds-Wilson Fire District, and all other organizations responsible for safety of Canyon County Residents.	Year 1 (2006): Identify areas throughout the county and share information between all entities. Post staging area signing at appropriate locations.

Table 5.3. WUI Action Items for Infrastructure Enhancements.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
5.3.g: Access Improvements of bridges, cattle guards, and limiting road surfaces.	**Protection of people, structures, infrastructure, and economy** by improving access for residents and firefighting personnel in the event of a wildfire. Reduces the risk of a road failure that leads to the isolation of people or the limitation of emergency vehicle and personnel access during an emergency.	County Highway Districts in cooperation with BLM, Idaho Transportation Department, Idaho Department of Lands, and affected landowners.	Year 1 (2006): Update existing assessment of travel surfaces, bridges, and cattle guards in Canyon County as to location. Secure funding for implementation of this project (grants). Year 2 (2007): Conduct engineering assessment of limiting weight restrictions for all surfaces (e.g., bridge weight load maximums). Estimate cost of $150,000 which might be shared between County, BLM, State, and private based on landownership associated with road locations. Year 2 (2007): Post weight restriction signs on all crossings, copy information to fire districts and wildland fire protection agencies in affected areas. Estimate cost at roughly $25-$30,000 for signs and posting. Year 3 (2008): Identify limiting road surfaces in need of improvements to support wildland firefighting vehicles and other emergency equipment. Develop plan for improving limiting surfaces including budgets, timing, and resources to be protected for prioritization of projects (benefit/cost ratio analysis). Create budget based on full assessment.
5.3.h: Augment emergency water supply through establishment of dry hydrants and cisterns at designated locations	**Protection of people and structures** by improving water accessibility.	County Emergency Management, BLM, Idaho Department of Lands, FWS, local landowners, Nampa Fire Department, Melba Fire Department, Caldwell Fire Protection District, Notus Fire Department, Parma Fire Department, Upper Deer Flat Fire Department, Star Joint Fire Protection District, Wilder Rural Fire Protection District, Kuna Fire District, Middleton Fire, Rescue, & Emergency Services, Marsing Rural Fire Department, and Murphy-Reynolds-Wilson Fire District.	Year 1 (2006): Conduct survey to determine areas in need of water source development. Make recommendations and obtain needed funding. Year 2 – 5 (2007-2010): Acquire needed equipment and install recommended water supply developments.

5.6 Resource and Capability Enhancements

There are a number of resource and capability enhancements identified by the rural and wildland firefighting districts in Canyon County. All of the needs identified by the districts are in line with increasing the ability to respond to emergencies in the WUI and are fully supported by the planning committee.

Specific reoccurring themes of needed resources and capabilities include:

- More water tenders for Rural Fire Districts with drafting capabilities at unimproved sites
- Improved radio capabilities within each district and for mutual aid operations
- Retention and recruitment of volunteers
- Training and development of rural firefighters in structure and wildland fire

The implementation of each issue will rely on either the isolated efforts of the fire districts or a concerted effort by the county to achieve equitable enhancements across all of the districts. Given historic trends, individual departments competing against neighboring departments for grant monies and equipment will not necessarily achieve county wide equity. However, the Southwest Idaho RC&D may be an organization uniquely suited to work with all of the districts in Canyon County and adjacent counties to assist in the prioritization of needs across district and even county lines. Once prioritized, the RC&D is in a position to assist these districts with identifying, competing for, and obtaining grants and equipment to meet these needs.

5.6.1 Proposed Activities

Table 5.4. WUI Action Items in Firefighting Resources and Capabilities.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
5.4.a: Develop comprehensive fire district growth plans that address issues associated with growing populations and integrate into county Comprehensive Plan.	**Protection of people and structures** by incorporating new developments and structures into fire protection districts.	Nampa Fire Department, Melba Fire Department, Caldwell Fire Protection District, Notus Fire Department, Parma Fire Department, Upper Deer Flat Fire Department, Star Joint Fire Protection District, Wilder Rural Fire Protection District, Kuna Fire District, Middleton Fire, Rescue, & Emergency Services, Marsing Rural Fire Department, and Murphy-Reynolds-Wilson Fire District in cooperation with County Commissioners and Planning and Zoning.	Year 1 (2006): Establish community growth benchmarks for the expansion of district resources. Expand fire districts' planning horizon beyond five-years. Ongoing Activity: Evaluate need to expand district resources as set benchmarks are reached. Integrate plan into county Comprehensive Plan

Table 5.4. WUI Action Items in Firefighting Resources and Capabilities.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
5.4.b: Annexation of currently unprotected parcels into neighboring fire districts as discussed in Section 4.6.6.	**Protection of People and Structures** by providing fire protection in areas of the county that are currently without structural fire protection.	Local residents in cooperation with the County Commissioners, BLM, FWS, Melba Fire Department, Upper Deer Flat Fire Department, and Marsing Rural Fire Department.	Year 1 (2006): Determine interest among affected communities and landowners. Ongoing: Provide materials, resources and assistance for those community members interested in chartering new districts.
5.4.c: Acquisition of additional rolling stock and Personal Protective Equipment for Nampa Fire Department.	**Protection of people and structures** by direct firefighting capability enhancements.	Nampa Fire Department	Year 1 (2006): Determine specific needs and actively pursue funding sources.
5.4.d: Construction of new fire station in Melba Fire Protection District to keep up with demands of a growing population.	**Protection of people and structures** by direct firefighting capability enhancements.	Melba Fire Department, Southwest Idaho RC&D, and Canyon County Emergency Management.	Year 1 (2006): Develop expansion plan and determine station location. Year 2 (2007): Develop cost estimates and secure funding. Year 3 (2008): Complete construction and outfit station as necessary.
5.4.e: Acquisition of large capacity pumper-tanker for Melba Fire Department.	**Protection of people and structures** by direct firefighting capability enhancements.	Melba Fire Department	Year 1 (2006): Determine funding possibilities through BLM Rural Fire Assistance Program and other sources. Year 2 (2007): Acquire additional equipment.
5.4.f: Enhance radio availability in each district, link into existing dispatch, and improve range within the region, update to new digital, narrow band frequency adopted by feds and state.	**Protection of people and structures** by direct firefighting capability enhancements.	Nampa Fire Department, Melba Fire Department, Caldwell Fire Protection District, Notus Fire Department, Parma Fire Department, Upper Deer Flat Fire Department, Star Joint Fire Protection District, Wilder Rural Fire Protection District, Kuna Fire District, Middleton Fire, Rescue, & Emergency Services, Marsing Rural Fire Department, and Murphy-Reynolds-Wilson Fire District in cooperation with BLM, FWS, Southwest Idaho RC&D, Canyon County Emergency Management.	Year 1 (2006): Summarize existing two-way radio capabilities and limitations. Identify costs to upgrade existing equipment and locate funding opportunities. Year 2 (2007): Acquire and install upgrades as needed. Year 2-3 (2007-08): Identify opportunities for radio repeater towers located in the region for multi-county benefits.

Table 5.4. WUI Action Items in Firefighting Resources and Capabilities.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
5.4.g: Acquisition of mapping system for Middleton Fire Service that is compatible with CAD to keep pace with change in the district.	**Protection of people and structures** by facilitating address location.	Middleton Fire, Rescue, and Emergency Service and City of Middleton.	Year 1 (2006): Determine necessary hardware and software needs. Year 2 (2007): Acquire and install equipment and train personnel to use the new system.
5.4.h: Recruitment and retention of volunteer firefighters.	**Protection of people and structures** by direct firefighting capability enhancements.	Nampa Fire Department, Melba Fire Department, Caldwell Fire Protection District, Notus Fire Department, Parma Fire Department, Upper Deer Flat Fire Department, Star Joint Fire Protection District, Wilder Rural Fire Protection District, Kuna Fire District, Middleton Fire, Rescue, & Emergency Services, Marsing Rural Fire Department, and Murphy-Reynolds-Wilson Fire District in cooperation with BLM, FWS, Southwest Idaho RC&D, Canyon County Commissioners, Cities of Nampa, Caldwell, Middleton, Notus, Parma, Wilder, Greenleaf, and Melba, and Canyon County Emergency Management.	Ongoing: Target an increased recruitment (+10%) and retention (+20% longevity) of volunteers Year 1 (2006): Develop incentives program and implement it.
5.4.i: Increased training and capabilities of firefighters.	**Protection of people and structures** by direct firefighting capability enhancements.	Nampa Fire Department, Melba Fire Department, Caldwell Fire Protection District, Notus Fire Department, Parma Fire Department, Upper Deer Flat Fire Department, Star Joint Fire Protection District, Wilder Rural Fire Protection District, Kuna Fire District, Middleton Fire, Rescue, & Emergency Services, Marsing Rural Fire Department, and Murphy-Reynolds-Wilson Fire District in cooperation with BLM, FWS, Southwest Idaho RC&D, Canyon County Commissioners, and Canyon County Emergency Management..	Year 1 (2006): Develop a multi-county training schedule that extends 2 or 3 years in advance (continuously). Year 1 & 2 (2006-07): Identify funding and resources needed to carry out training opportunities and sources to acquire. Year 1 (2006): Begin implementing training opportunities for volunteers.

Table 5.4. WUI Action Items in Firefighting Resources and Capabilities.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
5.4.j: Create a mechanism to keep updated maps of new subdivisions including common names available to dispatch personnel and fire departments.	**Protection of people and structures** by direct firefighting capability enhancements.	Nampa Fire Department, Melba Fire Department, Caldwell Fire Protection District, Notus Fire Department, Parma Fire Department, Upper Deer Flat Fire Department, Star Joint Fire Protection District, Wilder Rural Fire Protection District, Kuna Fire District, Middleton Fire, Rescue, & Emergency Services, Marsing Rural Fire Department, and Murphy-Reynolds-Wilson Fire District in cooperation with BLM, FWS, Southwest Idaho RC&D, Canyon County Commissioners, County and City Planning & Zoning Departments, Cities of Nampa, Caldwell, Middleton, Notus, Parma, Wilder, Greenleaf, and Melba and Canyon County Emergency Management.	Ongoing: Include updated map creation and distribution to dispatch and fire departments on County GIS Lab's monthly agenda.
5.4.k: Training of Deer Flat NWR personnel to Single Resource: Engine Boss or higher qualification.	**Protection of people and structures** by direct firefighting capability enhancements.	Deer Flat NWR working with qualified local fire departments and BLM, IDL, and USFS for wildland training opportunities.	Ongoing: Work with cooperators to determine training needs and training schedule. Ongoing: Identify funding and resources needed to carry out training opportunities and sources to acquire. Year 1 (2006): Begin implementing training opportunities for volunteers.
5.4.l: Acquisition of Type 3 or 4, four-wheel drive engine for Kuna Fire District.	**Protection of people and structures** by direct firefighting capability enhancements.	Kuna Fire District	Year 1 (2006): Determine possibilities through BLM Rural Fire Assistance Program. Year 2 (2007): Secure funding source and purchase necessary equipment.
5.4.m: Acquisition of newer rolling stock and Personal Protective Equipment for Notus Fire Department.	**Protection of people and structures** by direct firefighting capability enhancements.	Notus Fire Department	Year 1 (2006): Determine possibilities through BLM Rural Fire Assistance Program. Year 2 (2007): Secure funding source and purchase necessary equipment.

Table 5.4. WUI Action Items in Firefighting Resources and Capabilities.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
5.4.n: Construct a new fire station and helipad located near the Firebird Raceway as a joint station between Star Joint Fire Protection District and the BLM.	**Protection of people and structures** by direct firefighting capability enhancements.	Star Joint Fire Protection District, BLM, Southwest Idaho RC&D, Canyon County Emergency Management, and Canyon County Emergency Management.	Year 1 (2006): Develop agreement between Star Joint Fire Protection District and BLM. Year 2 (2007): Develop cost estimates and secure funding. Year 3 (2008): Complete construction and outfit station as necessary.
5.4.o: Acquisition of two 3,000 gallon water tenders for Star Joint Fire Protection District.	**Protection of people and structures** by direct firefighting capability enhancements.	Star Joint Fire Protection District.	Year 1 (2006): Determine possibilities through BLM Rural Fire Assistance Program. Year 2 (2007): Secure funding source and purchase necessary equipment.
5.4. p: Construction of two new fire stations for Caldwell. One east of I-84 and one west of Farmway Road.	**Protection of people and structures** by direct firefighting capability enhancements.	Caldwell City and Rural Fire Protection District. and residents of Caldwell.	Year 1 (2006): Develop expansion plans and station locations. Develop cost estimate and secure funding. Year 2 & 3 (2007-08): Construct and outfit the stations.
5.4.q: Construction of living quarters at Notus Fire Station.	**Protection of people and structures** by direct firefighting capability enhancements.	Notus Fire Department	Year 1 (2006): Develop expansion plans and station locations. Develop cost estimate and secure funding. Year 2 & 3 (2007-08): Construct and outfit the station.

Table 5.4. WUI Action Items in Firefighting Resources and Capabilities.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
5.4.r: Establishment and training of Type II Overhead Team.	**Protection of people and structures** by direct firefighting capability enhancements.	Nampa Fire Department, Melba Fire Department, Caldwell Fire Protection District, Notus Fire Department, Parma Fire Department, Upper Deer Flat Fire Department, Star Joint Fire Protection District, Wilder Rural Fire Protection District, Kuna Fire District, Middleton Fire, Rescue, & Emergency Services, Marsing Rural Fire Department, and Murphy-Reynolds-Wilson Fire District in cooperation with BLM, FWS, Southwest Idaho RC&D, Canyon County Commissioners, and Canyon County Emergency Management.	Year 1 (2006): Identify needed training. Year 1 & 2 (2006-07): Provide needed training and experience. Ongoing: Implement a Type II overhead team for wildfire and other hazards.
5.4.p: Obtain two newer pumper trucks, a utility trailer to haul extrication equipment, an air compressor, and SCBA's for the Parma Fire Deparment.	**Protection of people and structures** by direct firefighting capability enhancements.	Parma Fire Department	Year 1 (2006): Determine funding possibilities through BLM Rural Fire Assistance Program and other sources. Year 2 (2007): Acquire additional equipment.

5.7 Regional Land Management Recommendations

Wildfires are a fact of life in Canyon County. Fires will continue to occur despite efforts of all city, county, state, and federal agencies within the county. However, active land management that modifies fuels, promotes healthy grassland and rangeland conditions, and promotes the use of these natural resources (consumptive and non-consumptive) will insure that these lands will continue to provide value to residents of Canyon County.

Of particular concern in Canyon County is the spread of non-native vegetative species that alter natural ecological systems and degrade resource values for wildlife, range and recreational use. The proliferation of cheatgrass and other exotic species threatens the biological integrity of the Foothills region and the Deer Flat National Wildlife Refuge. Efforts by local, state, and federal agencies responsible for management of these lands should be encouraged.

5.7.1 Proposed Activities

Table 5.5. Action Items for Regional Land Management Recommendations.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
5.5.a: Continue or initiate aggressive cheatgrass and other noxious weed abatement programs on rangeland ecosystems throughout Canyon County.	**Regional Land Management Recommendations** in order to ensure integrity of grassland and rangeland ecosystems through the control of exotic vegetation.	Cooperative effort between the BLM, Fish and Wildlife Service, Idaho Fish and Game, IDL, USFS, Cities of Nampa, Caldwell, Middleton, Notus, Parma, Wilder, Greenleaf, and Melba, and the communities of Roswell, Huston, Walters Ferry, and Bowmont.	Year 1 (2006): Continue with weed control and abatement programs where they already exist. Develop and implement comprehensive weed control program on targeted areas. Subsequent Years: Continue monitoring and control efforts through the long term.
5.5.b: Create a buffer along major roadways and along interface streets throughout the foothills to reduce the probability of roadside ignitions.	**Regional Land Management Recommendations** in order to ensure integrity of grassland and rangeland ecosystems by reducing potential for wildland fire events originating along roadways.	Idaho Fish and Game, BLM, Fish and Wildlife Service, IDL, private landowners, and other agencies responsible for land management throughout the county.	Year 1 (2006): Determine best means by which to control roadside vegetation and implement control program immediately.
5.5.c: Create greenbelt around Deer Flat NWR for reduce potential for roadside and other ignition sources from entering the refuge.	**Regional Land Management Recommendations** in order to ensure integrity wildlife habitat in the refuge.	FWS, private landowners, and other agencies responsible for land management in the Deer Flats NWR area.	Year 1 (2006): Develop management regime and secure funding for immediate implementation.
5.5.d Fire awareness and prevention signage in high use areas.	**Regional Land Management Recommendation** in order to make the public aware of fire related issues when recreating on public lands in the county.	BLM, Idaho Fish and Game, Fish and Wildlife Service , IDL, USFS, in cooperation with other entities including the County Commissioners, Nampa Fire Department, Melba Fire Department, Caldwell Fire Protection District, Notus Fire Department, Parma Fire Department, Upper Deer Flat Fire Department, Star Joint Fire Protection District, Wilder Rural Fire Protection District, Kuna Fire District, Middleton Fire, Rescue, & Emergency Services, Marsing Rural Fire Department, and Murphy-Reynolds-Wilson Fire District.	Year 1 (2006): Determine best signage location and verbiage. Year 2 (2007): Secure funding and install signs.

Chapter 6: Supporting Information

6

6.1 List of Tables

6.2 List of Figures

6.3 List of Preparers

The following personnel participated in the formulation, compilation, editing, and analysis of alternatives for this assessment.

Table 6.1. List of Preparers

Name	Affiliation	Role
William E. Schlosser, Ph.D.	Northwest Management, Inc.	**Lead Author,** Project Manager, GIS Analyst, Natural Resource Economist, Hazard Mitigation Specialist
Tera R. King, B.S.	Northwest Management, Inc.	Natural Resource Manager, Fire Control Technician
Toby R. Brown, B.S. (*posthumously*)	Northwest Management, Inc.	Natural Resource Manager, Project Co-Manager, Hazard Mitigation Specialist
Vincent P. Corrao, B.S.	Northwest Management, Inc.	Resource Management Specialist, Deputy Project Manager
John A. Erixson, M.S.	Northwest Management, Inc.	Range Management, Fire Specialist
Dennis S. Thomas	Northwest Management, Inc.	Fire & Fuels Specialist, Prescribed Burning Manager
Ken Homik, M.S.	Northwest Management, Inc.	Fire Use & Air Quality Specialist
Vaiden E. Bloch, M.S.	Northwest Management, Inc.	GIS Analyst
Greg Bassler, M.S.	Northwest Management, Inc.	Roads Engineer, Timber Sale Layout & Harvest Manager

6.4 Signature Pages

This **Canyon County Wildland Urban Interface Wildfire Mitigation Plan** has been developed in cooperation and collaboration with the representatives of the following organizations, agencies, and individuals.

6.4.1 Representatives of Canyon County Government

This Wildfire Mitigation Plan and all of its components identified herein were adopted formally through a resolution of the Board of County Commissioners as of _____ 2006, resolution number _____, recorded in the official record of the Canyon County Commissioners.

By: Robert Vasquez, Chairman Canyon County Commissioner	Date
By: David Ferdinand Canyon County Commissioner	Date
By: Matt Beebe Canyon County Commissioner	Date
By: Todd Herrera, Director Canyon County Emergency Management	Date
By: Chris Smith Canyon County Sheriff	Date
By: Gene Kuehn Canyon County Assessor	Date

6.4.2 Representatives of City Government in Canyon County

By: Tom Dale Mayor, City of Nampa	Date	Adopted by Resolution of the City Resolution Number: _____ Adoption Date: _____
By: Garret Nancolas Mayor, City of Caldwell	Date	Adopted by Resolution of the City Resolution Number: _____ Adoption Date: _____
By: Frank McKeever Mayor, City of Middleton	Date	Adopted by Resolution of the City Resolution Number: _____ Adoption Date: _____
By: Marje Ellmaker Mayor, City of Notus	Date	Adopted by Resolution of the City Resolution Number: _____ Adoption Date: _____
By: Margaret Watson Mayor, City of Parma	Date	Adopted by Resolution of the City Resolution Number: _____ Adoption Date: _____
By: John Bechtel Mayor, City of Wilder	Date	Adopted by Resolution of the City Resolution Number: _____ Adoption Date: _____
By: Brad Holton Mayor, City of Greenleaf	Date	Adopted by Resolution of the City Resolution Number: _____ Adoption Date: _____
By: Martin Luttrell Mayor, City of Melba	Date	Adopted by Resolution of the City Resolution Number: _____ Adoption Date: _____

6.4.3 Representatives of City and Rural Fire Districts in Canyon County

By: Mark Wendelsdorf, Chief Caldwell Fire Protection District	Date
By: James Woydziak, Chief Nampa Fire Department	Date
By: Brad Trosky, Chief Middleton Fire, Rescue, and Emergency Service	Date
By: Richard F. Farner, Chief Melba Fire Department	Date
By: James Cook, Chief Parma Fire Department	Date
By: Russ Shroll, Chief Upper Deer Flats Fire Department	Date
By: Doug Rosin, Chief Kuna Fire Department	Date
By: Brian Showalter, Chief Marsing Rural Fire Department	Date
By: Ken Good, Chief Murphy-Reynolds-Wilson Fire District	Date

By: Mike Skogsberg, Chief Notus Fire Department	Date
By: Kevin Courtney, Chief Star Joint Fire Protection District	Date
By: Arnold Waldenmer, Chief Wilder Rural Fire Protection District	Date

6.4.4 Representatives of Organizations and Federal, and State Agencies

This Wildland Urban Interface Wildfire Mitigation Plan was developed in cooperation and collaboration with the additionally listed agencies and organizations. The entities listed below are not eligible to "formally adopt" this plan, but will strive to implement its recommendations.

By: Idaho Department of Lands	Date
By: USDI Bureau of Reclamation	Date
By: USDI Bureau of Land Management	Date
By: USDA Forest Service	Date
By: Bill Moore, Coordinator Southwest Idaho Resource Conservation & Development Council	Date
By: Idaho Transportation Department	Date
By: Idaho Fish and Game	Date
By: William E. Schlosser, Ph.D. Project Manager-All Hazard Mitigation Plan Northwest Management, Inc.	Date

6.5 Glossary of Terms

Anadromous - Fish species that hatch in fresh water, migrate to the ocean, mature there, and return to fresh water to reproduce (Salmon & Steelhead).

Appropriate Management Response - Specific actions taken in response to a wildland fire to implement protection and fire use objectives.

Biological Assessment - Information document prepared by or under the direction of the Federal agency in compliance with U.S. Fish and Wildlife standards. The document analyzes potential effects of the proposed action on listed and proposed threatened and endangered species and proposed critical habitat that may be present in the action area.

Backfiring - When attack is indirect, intentionally setting fire to fuels inside the control line to contain a rapidly spreading fire. Backfiring provides a wide defense perimeter, and may be further employed to change the force of the convection column.

Blackline - Denotes a condition where the fireline has been established by removal of vegetation by burning.

Burning Out - When attack is direct, intentionally setting fire to fuels inside the control line to strengthen the line. Burning out is almost always done by the crew boss as a part of line construction; the control line is considered incomplete unless there is no fuel between the fire and the line.

Canyon Grassland - Ecological community in which the prevailing or characteristic plants are grasses and similar plants extending from the canyon rim to the rivers edge.

Confine - Confinement is the strategy employed in appropriate management responses where a fire perimeter is managed by a combination of direct and indirect actions and use of natural topographic features, fuel, and weather factors.

Contingency Plans: Provides for the timely recognition of approaching critical fire situations and for timely decisions establishing priorities to resolve those situations.

Control Line - An inclusive term for all constructed or natural fire barriers and treated fire edge used to control a fire.

Crew - An organized group of firefighters under the leadership of a crew boss or other designated official.

Crown Fire - A fire that advances from top to top of trees or shrubs more or less independently of the surface fire. Sometimes crown fires are classed as either running or dependent, to distinguish the degree of independence from the surface fire.

Disturbance - An event which affects the successional development of a plant community (examples: fire, insects, windthrow, and timber harvest).

Disturbed Grassland - Grassland dominated by noxious weeds and other exotic species. Greater than 30% exotic cover.

Diversity - The relative distribution and abundance of different plant and animal communities and species within an area.

Drainage Order - Systematic ordering of the net work of stream branches, (e.g., each non-branching channel segment is designated a first order stream, streams which only receive first order segments are termed second order streams).

Duff - The partially decomposed organic material of the forest floor beneath the litter of freshly fallen twigs, needles, and leaves.

Ecosystem - An interacting system of interdependent organisms and the physical set of conditions upon which they are dependent and by which they are influenced.

Ecosystem Stability - The ability of the ecosystem to maintain or return to its steady state after an external interference.

Ecotone - The area influenced by the transition between plant communities or between successional stages or vegetative conditions within a plant community.

Energy Release Component - The Energy Release Component is defined as the potential available energy per square foot of flaming fire at the head of the fire and is expressed in units of BTUs per square foot.

Equivalent Clearcut Area (ECA) - An indicator of watershed condition, which is calculated from the total amount of crown removal that has occurred from harvesting, road building, and other activities based on the current state of vegetative recovery.

Exotic Plant Species - Plant species that are introduced and not native to the area.

Fire Adapted Ecosystem - An arrangement of populations that have made long-term genetic changes in response to the presence of fire in the environment.

Fire Behavior - The manner in which a fire reacts to the influences of fuel, weather, and topography.

Fire Behavior Forecast - Fire behavior predictions prepared for each shift by a fire behavior analysis to meet planning needs of fire overhead organization. The forecast interprets fire calculations made, describes expected fire behavior by areas of the fire, with special emphasis on personnel safety, and identifies hazards due to fire for ground and aircraft activities.

Fire Behavior Prediction Model - A set of mathematical equations that can be used to predict certain aspects of fire behavior when provided with an assessment of fuel and environmental conditions.

Fire Danger - A general term used to express an assessment of fixed and variable factors such as fire risk, fuels, weather, and topography which influence whether fires will start, spread, and do damage; also the degree of control difficulty to be expected.

Fire Ecology - The scientific study of fire's effects on the environment, the interrelationships of plants, and the animals that live in such habitats.

Fire Exclusion - The disruption of a characteristic pattern of fire intensity and occurrence (primarily through fire suppression).

Fire Intensity Level - The rate of heat release (BTU/second) per unit of fire front. Four foot flame lengths or less are generally associated with low intensity burns and four to six foot flame lengths generally correspond to "moderate" intensity fire effects. High intensity flame lengths are usually greater than eight feet and pose multiple control problems.

Fire Prone Landscapes – The expression of an area's propensity to burn in a wildfire based on common denominators such as plant cover type, canopy closure, aspect, slope, road density, stream density, wind patterns, position on the hillside, and other factors.

Fireline - A loose term for any cleared strip used in control of a fire. That portion of a control line from which flammable materials have been removed by scraping or digging down to the mineral soil.

Fire Management - The integration of fire protection, prescribed fire and fire ecology into land use planning, administration, decision making, and other land management activities.

Fire Management Plan (FMP) - A strategic plan that defines a program to manage wildland and prescribed fires and documents the fire management program in the approved land use plan. This plan is supplemented by operational procedures such as preparedness, preplanned dispatch, burn plans, and prevention. The fire implementation schedule that documents the fire management program in the approved forest plan alternative.

Fire Management Unit (FMU) - Any land management area definable by objectives, topographic features, access, values-to-be-protected, political boundaries, fuel types, or major fire regimes, etc., that set it apart from management characteristics of an adjacent unit. FMU's are delineated in FMP's. These units may have dominant management objectives and preselected strategies assigned to accomplish these objectives.

Fire Occurrence - The number of wildland fires started in a given area over a given period of time. (Usually expressed as number per million acres.)

Fire Prevention - An active program in conjunction with other agencies to protect human life, prevent modification, of the ecosystem by human-caused wildfires, and prevent damage to cultural resources or physical facilities. Activities directed at reducing fire occurrence, including public education, law enforcement, personal contact, and reduction of fire risks and hazards.

Fire Regime - The fire pattern across the landscape, characterized by occurrence interval and relative intensity. Fire regimes result from a unique combination of climate and vegetation. Fire regimes exist on a continuum from short-interval, low-intensity (stand maintenance) fires to long-interval, high-intensity (stand replacement) fires.

Fire Retardant - Any substance that by chemical or physical action reduces flareability of combustibles.

Fire Return Interval - The number of years between two successive fires documented in a designated area.

Fire Risk - The potential that a wildfire will start and spread rapidly as determined by the presence and activities of causative agents.

Fire Severity - The effects of fire on resources displayed in terms of benefit or loss.

Foothills Grassland - Grass and forb co-dominated dry meadows and ridges. Principle habitat type series: bluebunch wheatgrass and Idaho fescue.

Fuel - The materials which are burned in a fire; duff, litter, grass, dead branch wood, snags, logs, etc.

Fuel Break - A natural or manmade change in fuel characteristics which affects fire behavior so that fires burning into them can be more readily controlled.

Fuel Loading - Amount of dead fuel present on a particular site at a given time; the percentage of it available for combustion changes with the season.

Fuel Model - Characterization of the different types of wildland fuels (trees, brush, grass, etc.) and their arrangement, used to predict fire behavior.

Fuel Type - An identifiable association of fuel elements of distinctive species; form, size, arrangement, or other characteristics, that will cause a predictable rate of fire spread or difficulty of control, under specified weather conditions.

Fuels Management - Manipulation or reduction of fuels to meet protection and management objectives, while preserving and enhancing environmental quality.

Gap Analysis Program (GAP) - Regional assessments of the conservation status of native vertebrate species and natural land cover types and to facilitate the application of this information to land management activities. This is accomplished through the following five objectives:

1. Map the land cover of the United States
2. Map predicted distributions of vertebrate species for the U.S.
3. Document the representation of vertebrate species and land cover types in areas managed for the long-term maintenance of biodiversity
4. Provide this information to the public and those entities charged with land use research, policy, planning, and management
5. Build institutional cooperation in the application of this information to state and regional management activities

Habitat - A place that provides seasonal or year-round food, water, shelter, and other environmental conditions for an organism, community, or population of plants or animals.

Heavy Fuels - Fuels of a large diameter, such as snags, logs, and large limb wood, which ignite and are consumed more slowly than flash fuels.

Hydrologic Unit Code - A coding system developed by the U. S. Geological Service to identify geographic boundaries of watersheds of various sizes.

Hydrophobic - Resistance to wetting exhibited by some soils, also called water repellency. The phenomena may occur naturally or may be fire-induced. It may be determined by water drop penetration time, equilibrium liquid-contact angles, solid-air surface tension indices, or the characterization of dynamic wetting angles during infiltration.

Human-Caused Fires - Refers to fires ignited accidentally (from campfires or smoking) and by arsonists; does not include fires ignited intentionally by fire management personnel to fulfill approved, documented management objectives (prescribed fires).

Intensity - The rate of heat energy released during combustion per unit length of fire edge.

Inversion - Atmospheric condition in which temperature increases with altitude.

Ladder Fuels - Fuels which provide vertical continuity between strata, thereby allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease. They help initiate and assure the continuation of crowning.

Landsat Imagery - Land remote sensing, the collection of data which can be processed into imagery of surface features of the Earth from an unclassified satellite or satellites.

Landscape - All the natural features such as grasslands, hills, forest, and water, which distinguish one part of the earth's surface from another part; usually that portion of land which the eye can comprehend in a single view, including all its natural characteristics.

Lethal - Relating to or causing death; extremely harmful.

Lethal Fires - A descriptor of fire response and effect in forested ecosystems of high-severity or severe fire that burns through the overstory and understory. These fires typically consume large woody surface fuels and may consume the entire duff layer, essentially destroying the stand.

Litter - The top layer of the forest floor composed of loose debris, including dead sticks, branches, twigs, and recently fallen leaves or needles, little altered in structure by decomposition.

Maximum Manageable Area - The boundary beyond which fire spread is completely unacceptable.

Metavolcanic - Volcanic rock that has undergone changes due to pressure and temperature.

Minimum Impact Suppression Strategy (MIST) - "Light on the Land." Use of minimum amount of forces necessary to effectively achieve the fire management protection objectives consistent with land and resource management objectives. It implies a greater sensitivity to the impacts of suppression tactics and their long-term effects when determining how to implement an appropriate suppression response.

Mitigation - Actions to avoid, minimize, reduce, eliminate, replace, or rectify the impact of a management practice.

Monitoring Team - Two or more individuals sent to a fire to observe, measure, and report its behavior, its effect on resources, and its adherence to or deviation from its prescription.

National Environmental Policy Act (NEPA) - This act declared a national policy to encourage productive and enjoyable harmony between humans and their environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and will stimulate the health and welfare of humankind; to enrich the understanding of important ecological systems and natural resources; and to establish a Council on Environmental Quality.

National Fire Management Analysis System (NFMAS) - The fire management analysis process, which provides input to forest planning and forest and regional fire program development and budgeting.

Native - Indigenous; living naturally within a given area.

Natural Ignition - A wildland fire ignited by a natural event such as lightning or volcanoes.

Noncommercial Thinning - Thinning by fire or mechanical methods of precommercial or commercial size timber, without recovering value, to meet MFP standards relating to the protection/enhancement of adjacent forest or other resource values.

Notice of Availability - A notice of Availability published in the Federal Register stating that an EIS has been prepared and is available for review and comment (for draft) and identifying where copies are available.

Notice of Intent - A notice of Intent published in the Federal Register stating that an EIS will be prepared and considered. This notice will describe the proposed action and possible alternatives, the proposed scoping process, and the name and address of whom to contact concerning questions about the proposed action and EIS.

Noxious Weeds - Rapidly spreading plants that have been designated "noxious" by law which can cause a variety of major ecological impacts to both agricultural and wild lands.

Planned Ignition - A wildland fire ignited by management actions to meet specific objectives.

Prescribed Fire - Any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist, and NEPA requirements must be met, prior to ignition.

Prescription - A set of measurable criteria that guides the selection of appropriate management strategies and actions. Prescription criteria may include safety, economic, public health, environmental, geographic, administrative, social, or legal considerations.

Programmatic Biological Assessment - Assesses the effects of the fire management programs on Federally listed species, not the individual projects that are implemented under these programs. A determination of effect on listed species is made for the programs, which is a valid assessment of the potential effects of the projects completed under these programs, if the projects are consistent with the design criteria and monitoring and reporting requirement contained in the project description and summaries.

Reburn - Subsequent burning of an area in which fire has previously burned but has left flareable light that ignites when burning conditions are more favorable.

Riparian Habitat Conservation Areas (RHCA) - Portions of watersheds where riparian-dependent resources receive primary emphasis, and management activities are subject to specific standards and guidelines. RHCAs include traditional riparian corridors, wetlands, intermittent headwater streams, and other areas where proper ecological functioning is crucial to maintenance of the stream's water, sediment, woody debris, and nutrient delivery systems.

Riparian Management Objectives (RMO) - Quantifiable measures of stream and streamside conditions that define good fish habitat and serve as indicators against which attainment or progress toward attainment of goals will be measured.

Road Density - The volume of roads in a given area (mile/square mile).

Scoping - Identifying at an early stage the significant environmental issues deserving of study and de-emphasizing insignificant issues, narrowing the scope of the environmental analysis accordingly.

Seral - Refers to the stages that plant communities go through during succession. Developmental stages have characteristic structure and plant species composition.

Serotinous - Storage of coniferous seeds in closed cones in the canopy of the tree. Serotinous cones of lodgepole pine do not open until subjected to temperatures of 113 to 122 degrees Fahrenheit causing the melting of the resin bond that seals the cone scales.

Stand Replacing Fire - A fire that kills most or all of a stand.

Sub-basin - A drainage area of approximately 800,000 to 1,000,000 acres, equivalent to a 4th - field Hydrologic Unit Code.

Surface Fire - Fire which moves through duff, litter, woody dead and down, and standing shrubs, as opposed to a crown fire.

Watershed - The region draining into a river, river system, or body of water.

Wetline - Denotes a condition where the fireline has been established by wetting down the vegetation.

Wildland Fire - Any nonstructure fire, other than prescribed fire, that occurs in the wildland.

Wildland Fire Implementation Plan (WFIP) - A progressively developed assessment and operational management plan that documents the analysis and selection of strategies and describes the appropriate management response for a wildland fire being managed for resource benefits. A full WFIP consists of three stages. Different levels of completion may occur for differing management strategies (i.e., fires managed for resource benefits will have two-three stages of the WFIP completed while some fires that receive a suppression response may only have a portion of Stage I completed).

Wildland Fire Situation Analysis (WFSA) - A decision making process that evaluates alternative management strategies against selected safety, environmental, social, economic, political, and resource management objectives.

Wildland Fire Use - The management of naturally ignited wildland fires to accomplish specific prestated resource management objectives in predefined geographic areas outlined in FMP's. Operational management is described in the WFIP. Wildland fire use is not to be confused with "fire use", which is a broader term encompassing more than just wildland fires.

Wildland Fire Use for Resource Benefit (WFURB) - A wildland fire ignited by a natural process (lightning), under specific conditions, relating to an acceptable range of fire behavior and managed to achieve specific resource objectives.

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