

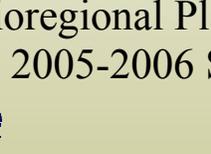
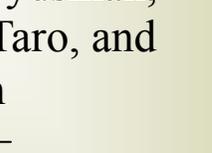
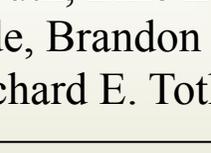
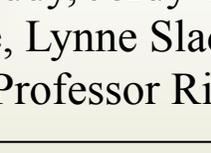
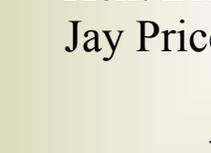
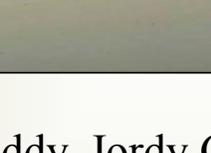
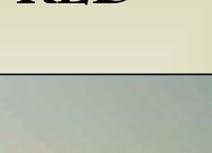
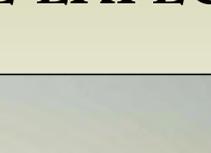
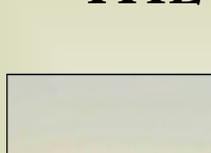
# CACHE VALLEY 2030 ~ THE FUTURE EXPLORED



Kent Braddy, Jordy Guth, Ellie Leydsman,  
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Bioregional Planning Program  
2005-2006 Studio Project

**UtahState**  
UNIVERSITY





# CACHE VALLEY 2030 ~ THE FUTURE EXPLORED

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# REMEMBERING LYNNE M. SLADE

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This report is dedicated to our friend and colleague  
Lynne Slade  
who passed away in Salt Lake City on the 18<sup>th</sup> of May, 2006.



Lynne joined the Bioregional Planning program this past fall and was in this year's major planning and design studio studying future growth in Cache Valley, Utah and Idaho. She was our Idaho contingent, as she lived in Clifton since 1981 with her family. She was a 4-H leader for more than 30 years, working with many youngsters in teaching them to ride and care for horses. She was a member of the 4-H Horse Council in Franklin County as well as District 4 for the state of Idaho. For 15 years she served Utah State University as an advisor for the college of Humanities, Arts, and Social Sciences. She was an active member of the National Association of Professional Academic Advisors and recently received the 2006 Robins Award for Professional Academic Advisor of the Year.

Her interest and motivation in the studio was contagious, and she was a constant source of ideas and new approaches to regional planning for Cache Valley. Lynne was very concerned about helping to direct future growth in the valley in order to maintain a rich quality of life for all of its people in Utah and Idaho. She was recently selected to serve on the Growth Committee for Franklin County Planning and Zoning. She and her husband Paul were the proud parents of 7 children and grandparents of 16 grandchildren. Lynne will be missed by all of us.

# ACKNOWLEDGEMENTS

There have been a number of individuals and agencies who have contributed to the study of Cache Valley this year. Faculty associates affiliated with the studio were Professors James MacMahon, Director of the Ecology Center; Nancy Mesner and Matthew Baker from the Department of Aquatic, Watershed, and Earth Resources; Tom Edwards from the USGS Biological Resources Division, Utah Cooperative Research Unit, R. Douglas Ramsey from the Department of Forest, Range, and Wildlife Sciences and Director of the Utah State University Remote Sensing/Geographic Information Systems Laboratory; Christopher McGinty, John Lowry, and Lisa Langs from the RS/GIS Laboratory; Mark Brunson and Rob Lillieholm from the Department of Environment and Society; Douglas Jackson-Smith from the Department of Sociology, Social Work, and Anthropology; and Carl F. Steinitz from the Graduate School of Design, Harvard University. These associates contributed by way of lectures, seminars, and participation on interim reviews as well as giving advice and counsel in their areas of specialty.

In addition, various stakeholders associated with the region also contributed to the study by making presentations on their agency's interests as well as assisting in defining some of the future issues facing the valley: Glen Busch, Planning Specialist with the Bear River Association of Governments (BRAG); Jeff Gilbert, Planner with the Cache Metropolitan Planning Organization (CMPO); Wendell Morse, Director of Development Services, Cache County Corporation; Eve Davies, Biologist/Environmental Analyst from PacifiCorp; and Joan Degiorgio, Environmental Associate with The Nature Conservancy.

The study team especially thanks the Marriner S. Eccles Foundation, the Bear River Association of Governments, and Cache County Development Services Department for their generous support of the studio and its related activities.



*Study team from left to right: Professor Richard E. Toth, Brandon Taro, Jordy Guth, Lynne Slade, Kent Braddy, Ellie Leydsman, Kevin Campbell (Fall Semester), and Jay Price*

# FOREWORD

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The planning study which follows has a relatively long history in Cache Valley. In the fall of 1977, individuals in the Utah State University Extension office requested assistance to address future land use development in Cache County. The study utilized an Information Manipulation System for Grid Cell Data Structures (INGRID) which was first developed in the Laboratory for Computer Graphics in the Graduate School of Design at Harvard University. The study examined both the biophysical and cultural systems of the region and projected basic land use proposals (residential, commercial, industrial, and open space) for the Cache County portion of the valley. In May of 1980, the Cache County Land Use Study was presented to members of the Cache County Planning and Zoning Office and the County Commission.

Due to increases in population growth and development in Northern Utah, a number of additional studies were carried out for Cache County from 1982 to 1992, including the Logan-Smithfield Corridor Study, South Cache/Mendon Study, and North Cache/Cutler Reservoir Study. This period also saw advances in data quality, scale, and acquisition, as well as advances in forecasting future growth alternatives utilizing computer simulations. In 1999-2000, a detailed land use project, the Cub River Watershed Futures Study, led to the development of additional visual simulation techniques to assess various land use impacts on the region. The proposed land uses were identified through a series of public surveys carried out for the watershed (Envision Utah 2001; Toth et al. 2000; Blahna et al. 2000). The Cub River work provided additional data and a survey foundation for a large regional study in the fall of 2000 titled *Alternative Futures for the Bear River Watershed, Part One*. This study included portions of Wyoming and Idaho. Part Two of the Bear River Watershed Study which followed focused on more detailed studies for six new proposed communities within the region. These proposals took into account major energy and water conservation measures in their planning and design as well as proposed agricultural land conservation and other open space concerns.

In 2004, a new project for the entire Bear River Watershed was initiated utilizing much improved GIS data both in content and scale. Parallel to this study, The Cache Valley Community Benchmark Summit was held, and several citizen groups were formed to address the continued growth and development issues within the valley. One of the events which evolved from the Summit was a successful visioning proposal for Cache Valley. The proposal invited members of a Sustainable Design Assessment Team (American Institute of Architects) to visit the region and hold a three-day public workshop for the identification of future planning and policy concerns. These workshops generated several “powerful and achievable objectives,” including 1) the formation of a regional planning commission (see Appendix D) similar to the Bear Lake Regional Commission, 2) a reworking of the tax structure to create a level playing field and a spirit of cooperation between communities, and 3) principles and guidelines that assure changes are mindful of the economy, the community, and the environment and serve as a baseline to show that each change improves air quality (American Institute of Architects 2005).

A Growth and Development Subcommittee of the Cache Valley Community Benchmark Summit also participated in the SDAT workshops. Several additional recommendations and growth principles were highlighted, including 1) future development should be looked at from a regional- or valley-wide perspective including portions of southeastern Idaho, 2) growth should be directed to proper locations by respecting critical lands composed of environmental, agricultural, and cultural features of the region, 3) more compact development should be encouraged (four to six residential units per acre), and 4) new tools for managing growth should be instituted including shared tax revenues, transfer of development rights, and urban growth boundaries.

# FOREWORD

The results of the workshops led to the evolution of the Cache Valley Vision 2020 Committee. Cache Valley 2020 is made up of various mayors, county commissions, ranchers, farmers, and business leaders in both Utah and Idaho.

In order to provide a planning foundation for these programs, a planning studio was initiated for Cache Valley, Utah and Idaho. The results of the studio are contained in this report. Several objectives of the studio are to provide an updated GIS database for the valley as well as the continued analysis of public surveys for the region (see Appendix E). There is no single plan proposed in the report, but instead a series of alternative futures have been identified and applied across the valley based upon an expected 25-year growth prediction. In addition to the alternative futures, a series of assessment models are proposed in order to analyze how and where those futures may compromise quality-of-life concerns related to public health, welfare and safety.

Cache Valley's unique history, culture, climate, and natural resources have provided a foundation for the future growth and development of the region. The Cache Vision 2020+ Subcommittee on Growth, Land Use, Public Lands, and Open Space developed a number of goals and objectives for addressing growth and land preservation issues in the valley (See Appendix G). The study team strongly endorses those recommendations by setting forth the enclosed alternative futures outlined in this study.



*“The unprepared mind cannot see the  
outstretched hand of opportunity.”*  
- Sir Alexander Fleming

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# INTRODUCTION

Cache Valley is a regional landscape encompassing Cache County, Utah and Franklin County, Idaho. Historically, the region was a mosaic of agricultural lands surrounding small towns settled by Mormon pioneers. Each town or commu-



nity was strategically placed based upon access to vital resources, such as water and fertile soils. However, with the advent of the automobile and improvements in technology, towns began to grow and expand outward. In the last several decades this expansion has become apparent.



Cache Valley is experiencing rapid suburban and second-home development. With this rapid urbanization, several problems have emerged, and many people have become concerned. Suburban sprawl is one of many issues facing the valley and is often characterized by low-density, non-contiguous, automobile dependent, residential and nonresidential development that consumes relatively large amounts of farmland and natural

areas (Bengston et al. 2004). Although suburban sprawl may provide a variety of private benefits to new residents and developers, it progressively elicits a range of social and environmental costs and concerns. In Cache Valley, these include loss of prime agricultural lands, encroachment and loss of critical wildlife habitat, water and air quality degradation, transportation congestion, development on hazardous lands which threatens the public health, safety, and welfare, and detriment to the historic and rural quality and identity of the region.

## STUDY AREA DESCRIPTION

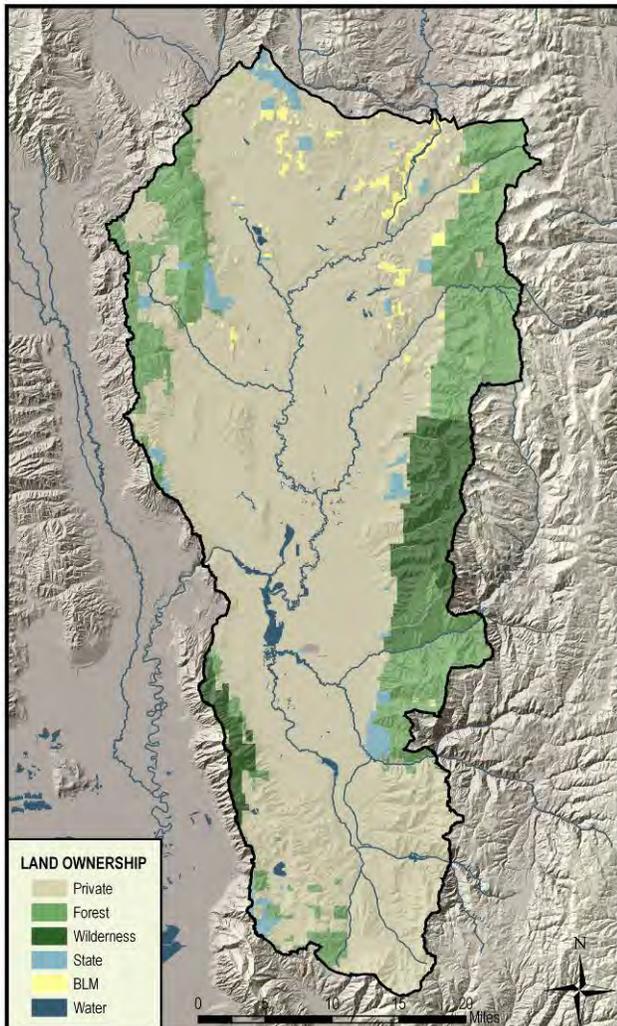
The Cache Valley study area is approximately 1387 square miles and includes the valley floor, the benches, and the flanks of the Wasatch Mountains. The valley floor is approximately 18 miles at its widest and about 55 miles long. The towns of Avon and Paradise, Utah set the southern extent of the study area, and Red Rock Pass in Idaho sets the northern extent. The Wellsville Mountains in Utah and the Malad and Bannock Ranges in Idaho set the western boundary. The Bear River Range establishes the eastern boundary.

Within the valley, there are 25 incorporated areas, 19 in Cache County, Utah and six in Franklin County, Idaho. The towns and cities in Utah include Amalga, Clarkston, Cornish, Hyde Park, Hyrum, Lewiston, Logan, Mendon, Millville, Newton, Nibley, North Logan, Paradise, Providence, Richmond, River Heights, Smithfield, Trenton, and Wellsville. The towns and cities in Idaho include Clifton, Dayton, Franklin, Oxford, Preston, and Weston. The towns, cities, and unincorporated county land currently support approximately 110,000 people with the city of Logan having approximately 46,000 people. Based on population projections, it is estimated that the population of Cache Valley will nearly double by the year 2030.

Of the 1,387 square miles in Cache Valley, approximately 1,009 square miles is private property. This accounts for 73 percent of the total

# INTRODUCTION

land ownership. The remainder of the land is federal and state public lands. Nineteen percent is managed by the Forest Service with two percent designated as wilderness areas, including Naomi Peak Wilderness and Wellsville Mountain Wilderness. Two percent is managed by the Bureau of Land Management and two percent is state lands.



## CACHE VALLEY FEATURES

The Cache Valley region is predominantly defined by an agrarian landscape and contains a wealth of historical, cultural, geological, ecological, recreational, and scenic features.

Cultural and historical landmarks include the Logan Temple, the Logan Tabernacle, the Wellsville Tabernacle, and Old Main at Utah State University. The Logan Temple, the Logan Taber-



nacle, and the Wellsville Tabernacle are of cultural and historical importance because they represent the heritage of the region. Old Main at Utah State University is a historical, educational, and economic landmark and represents Utah's land-grant institution and a primary source of revenue within the valley.



The Wellsville Mountains are an astonishing and almost surreal natural landmark. Their grandeur defines the western boundary of the valley with some of the steepest terrain in the United States. The Wellsville Mountains also have significant historical and ecological importance. Prior to 1984, the Wellsville Mountains were devastated by overgrazing; however, once they were declared as a wilderness area, populations of deer, moose, mountain lions, and bighorn sheep began to rise. The Wellsville Mountains also serve as a valuable and vital watershed for the communities within Cache Valley.

# INTRODUCTION



The Bear River Range is a natural landscape feature that has ecological and recreational significance. The Bear River Range provides habitat for an abundance of wildlife species, and it serves as a major watershed resource for the valley. The Bear River Range is also a popular area for both winter and summer activities including camping, hiking, fishing, rock climbing, skiing, and snowmobiling.



The Bear River and its tributaries are other natural features that have historical, economic, and ecological significance. The waters of the Bear River and its tributaries defined where communities settled. The town of Logan became the principle city because of its central location and abundant water supply for irrigation and mills. The Bear River continually serves as the primary source of irrigation water for the region. The Bear River and its tributaries also have ecological value, as they supply water to wetlands which

support an array of migratory bird species within the region.

The Bonneville shorelines are geologic features that represent the Pleistocene Lake Bonneville. The Bonneville shoreline lies at approximately 5,100 feet and marks the highest level attained by the lake approximately 15,500 years ago. Currently, parts of the eastern portion of the Bonneville Shoreline serve as a trail system for hikers and bikers. The continued development of the trail will increase access to open space and provide a connection to other trails and recreational areas within the valley.

## ECONOMY OF THE REGION

The economy of Cache Valley began to advance at the turn of the twentieth century. Agricultural research and development changed from subsistence agriculture to the production of specialized cash crops, livestock, and produce. The dairy industry expanded, row crops, particularly sugar beets, and orchards were established, and a sheep and wool industry grew. With the support of the new Utah Agricultural College, beets eventually replaced wheat as Cache Valley's main cash crop. By 1920, nearly 10,000 acres of farmland was growing sugar beets (Peterson 1997).

The 1920s also saw a quadrupling of automobiles and trucks. The miles of paved road increased, and the road from Logan through College Ward to Wellsville was completed in preparation for the change from Sardine Canyon to Wellsville Canyon of U.S. highways 89 and 91. The road in Logan Canyon was also made passable. The improved roads brought opportunity to the Cache Valley market (Peterson 1997).

However, the post-war years and the Great Depression of the 1930s had an impact on the agricultural industry. Cache Valley farm income declined from \$6.5 million in 1920 to less than \$4 million a year later. As a result, many farm areas were lost and sold as debt increased and the market declined. This era also saw the slowest population growth in Cache Valley. The agricultural

# INTRODUCTION

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depression caused numerous people to move, and the towns of Wellsville, Millville, Benson, Avon, and Smithfield lost their populations (Peterson 1997).

In 1932, with the election of Franklin D. Roosevelt, the economic life in Cache Valley began to improve. The New Deal economic program provided federal dollars for the construction of Hyrum Dam which supplied water to more than 8,000 acres of farmland. The Agricultural Adjustment Act, which was also passed within the first hundred days of the Roosevelt administration, allowed farmers to borrow money from the government to pay on their bank mortgages in order to save their farms. As a result, farm income began to rise and continued to increase through the post-World War II period with widespread agricultural mechanization (Peterson 1997).

Since the late 1960s, most agricultural enterprises in the valley have specialized in the production of livestock, both dairy cattle and beef cattle. The dairy industry has served as the foundation of the agricultural economy for over the last four decades (Peterson 1997). Currently, agricultural industries within the valley employ a substantial portion of the population. Swift Beef meat packing plant is the fourth largest employer in the valley. Gossner Food Inc., Dairy Farmers of America, and Millers Brothers Beef also employ several people. However, the non-agricultural economy of the valley is supported by Utah State University which has over 6,000 employees, and Icon Health and Fitness which employs over 2,000 people (Cache Valley Almanac).



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# INTRODUCTION



©Jordy Guth

# METHODOLOGY

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The methodology for regional planning consists of a combination of identifying issues, assembling data, analyzing and assessing the data based upon defined criteria, and finally using the information to develop plans. If employed properly, the process is iterative, allowing for a constant re-evaluation of priorities and assumptions. Planning must accommodate change as new issues are identified and understood. It must be reflective of the extreme complexity and dynamic nature of the systems it seeks to analyze.

A detailed comprehension of the process is essential in understanding the priorities and biases a study inevitably possesses. For the Cache Valley study, the flowchart on the opposite page illustrates the priorities established by the study team for this particular project.

The flowchart illustrates a logical progression in the development of a plan for the region. It employs a linear progression with feedback loops. The major stopping and starting points are identified in green ovals, the major decision making points in yellow polygons, and the assimilation of data in blue boxes. Orange boxes identify different types of outputs generated from analysis of the data by the design team.

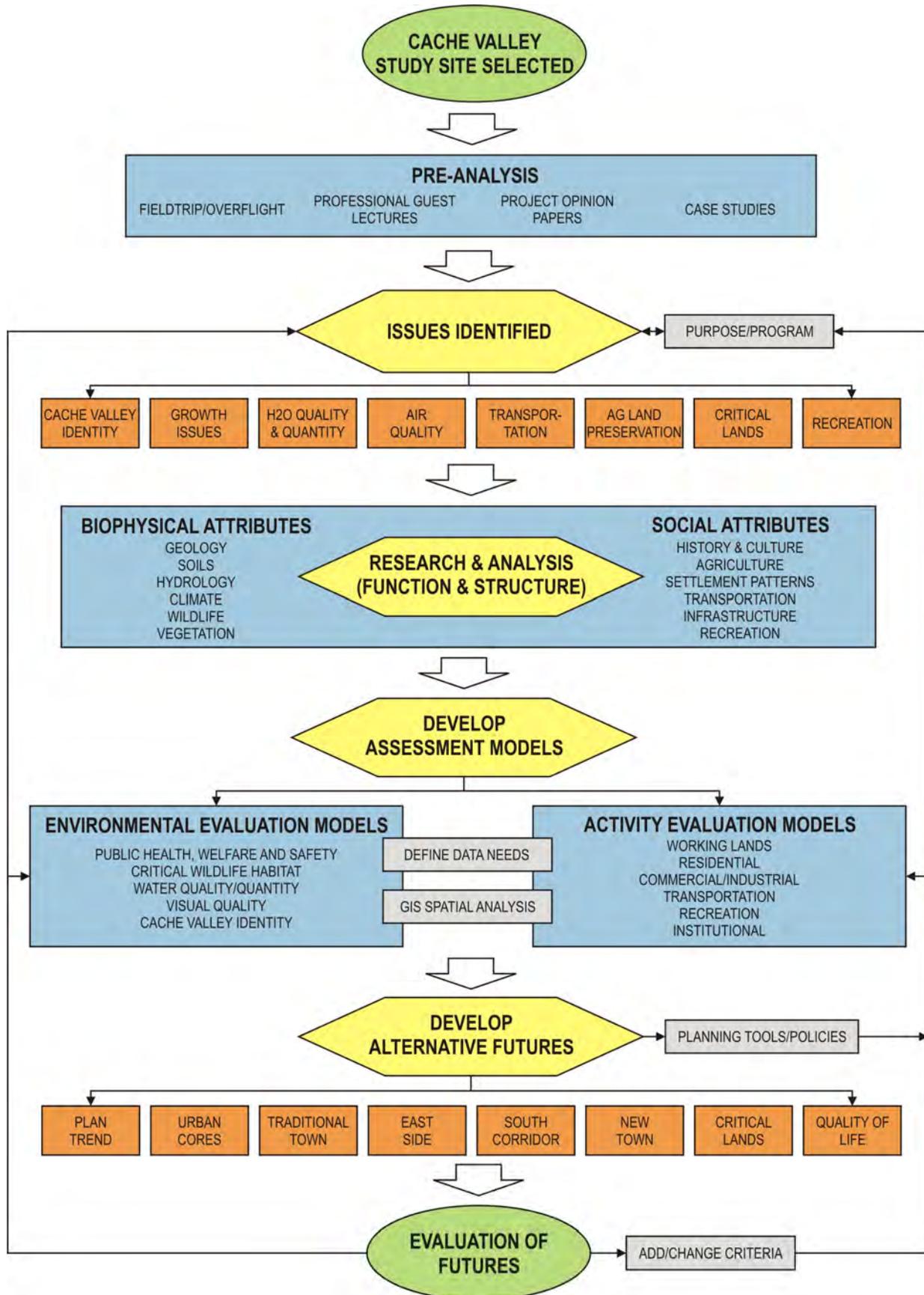
One important aspect of this methodology is that it creates a framework of information that can be used to evaluate any potential plan. It is based loosely on a process outlined by Richard E. Toth in his publication *An Approach to Principles of Land Planning and Design*. In this work, Toth creates a system of evaluating potential planning decisions through a comprehensive biophysical, social, and economical framework, translated and analyzed spatially through mapping.

For the Cache Valley study, alternative futures are evaluated in terms of the environmental and activity evaluation models. By overlaying each evaluation model on each future proposed, the impact on each system can be determined.

A plan does not necessarily need to have all of the information about an area to be successful. In

fact, planning of this nature can become bogged down easily due to the perception that decisions cannot be made without all of the data. It is impossible to have all of the information, or understand all of the complexities of the systems involved. A good plan seeks to identify, preserve, and enhance the most critical natural, economic, and social systems for the sustained health of communities. Understanding the interaction of critical systems with each other is perhaps more informative than an exhaustive study of the finer nuances of one particular structure. Ultimately, a good plan will be scientifically sound as well as creatively inspired, striving to discover harmony and possibly synergy between human activities and the essential natural processes that are necessary to sustain them.

# METHODOLOGY



# PRE-ANALYSIS

Prior to generating the assessment models and developing alternative futures, several pre-analysis activities were carried out to help the study team gain an understanding of the issues facing the valley. These activities included examination of Cache Valley via field trips and overflights, project opinion papers, review of case studies and surveys, and professional guest lectures and stakeholder meetings.

## SITE VISITS

Many members of the study team have lived in Cache Valley for a number of years, and therefore, understand many of the issues facing the valley. Even as residents of the valley, the study team was initially introduced to the Cache Valley project via site visits and overflights. The site visits and overflights were essential to understanding the valley in a physical context. The site visits consisted of driving through several towns in the valley as well as meandering in and out of undeveloped agricultural lands. Several stops were made along the route to observe and discuss positive and negative land uses. The purpose of the site visits and the accompanied discussions was to aid in the understanding and perception of regional issues and potential solutions.



After the initial site visit, the study team met at the Logan-Cache Airport to view the valley from an airplane. From the air, it was possible to see the landscape on a broader scale. Larger and more significant issues became apparent such as suburban sprawl, loss of agricultural land to subdivisions, and encroachment into the foothills.



## PROJECT OPINION PAPERS

The project opinion papers were the synthesis of the notes and photographs gathered during the site visits. They were useful in delineating various aspects of Cache Valley such as landmarks, paths, edges, districts, and nodes. These are five elements which Kevin Lynch (1960) recognized as an integral part of understanding a city or landscape. Landmarks are physical objects that act as reference points. The Logan LDS Temple and Tabernacle, the Wellsville Tabernacle, and Old Main are examples of landmarks in Cache Valley. Paths are channels by which people move along their travels. Examples of paths include roads, trails, and sidewalks. Edges are the boundaries between two distinct elements. An example of an edge within Cache Valley is the distinct boundary between urban areas and agricultural lands. Districts are sections of a landscape which have an identifying character about them. The Logan Center Street Historic District is an example of a district in Cache Valley. Nodes are points or strategic spots where there is extra focus. Prime examples of nodes include busy intersections or town centers.

This framework allowed the study team to summarize impressions and observed issues within the valley. As a result, these papers provided a foundation for the project.

## CASE STUDIES AND SURVEYS

Following the site visits and the project opinion papers, the study team reviewed several influen-

tial case studies and Cache Valley surveys. The case studies reviewed ranged from the late 1960s to the present and included:

- *The Plan and Program for the Brandywine* (1968)
- *Design with Nature* (1969)
- *Regional Design for Human Impact – Upper Mississippi River Comprehensive Basin Study* (1969)
- *The Santa Cruz Mountains Regional Pilot Study: An Early Warning System* (1970)
- *Honeyhill: A Systems Analysis for Planning the Multiple Use of Controlled Water Areas* (1971)
- *Biodiversity and Landscape Planning: Alternative Futures for the Region of Camp Pendleton, California* (1995)
- *Guidelines for Ecological Risk Assessment* (1998)
- *The Willamette River Basin Planning Atlas: Trajectories of Environmental and Ecological Change* (2002)
- *Alternative Future Growth Scenarios for Conserving Open Space along Utah's Wasatch Front: A Case Study for the Mountainland Association of Governments* (2002)
- *Wasatch Choices 2040: A 4 County Growth and Transportation Collaboration* (2005)

Each case study displayed different planning approaches and techniques, and therefore, served as a guideline which allowed the study team to analyze Cache Valley using different methods and tools (see Appendix C).

The surveys reviewed were the Cache County Quality Growth Survey (Rogers et al. 1999) (see Appendix E) and the City of Logan Growth Survey (Jones et al. 2003). Although these surveys are not regionally comprehensive, they indicated that 84 percent of Cache County residents felt that open public space was very important, 94 percent felt that safe streets were very important, 54 percent agreed that development should be encouraged within town and city limits, 69 percent felt that existing open agricultural space be-

tween communities should be preserved as open space, 59 percent agreed that agriculture is important to the local economy, and 54 percent felt that as long as Logan maintains the same feel, growth should be supported. In addition, the majority of Cache County residents surveyed felt that residential growth should occur in the Logan urbanized area and agricultural growth should occur on the west side of Cache Valley.

## LECTURES AND MEETINGS

Another vital component of the planning process included professional guest lectures and meetings with stakeholders. Joan Degiorgio from The Nature Conservancy and Eve Davies from PacificCorp spoke with the study team about the partnership with other agencies and private landowners to protect and maintain healthy ecosystems within the valley. Nancy Mesner and Matthew Baker from the Department of Aquatic, Watershed, and Earth Resource Sciences provided excellent information about the hydrologic cycle and water quality and quantity issues within the region. Glen Busch from the Bear River Association of Governments (BRAG) and Jeff Gilbert from the Cache Metropolitan Planning Organization (CMPO) provided insight and assistance in regard to the existing planning issues. Douglas Jackson-Smith from the Department of Sociology provided useful information about the Agricultural Advisory Board and the Land Evaluation and Site Assessment (LESA) system which helps state and local officials make sound decisions about agricultural land use and change. Mark Brunson from the Department of Environment and Society provided information about growth and development with respect to demographics, recreation, and tourism. Carl Steinitz from the Harvard School of Design introduced the team to various comprehensive planning methods with a display of successful plans.

# REGIONAL INVENTORY & ANALYSIS

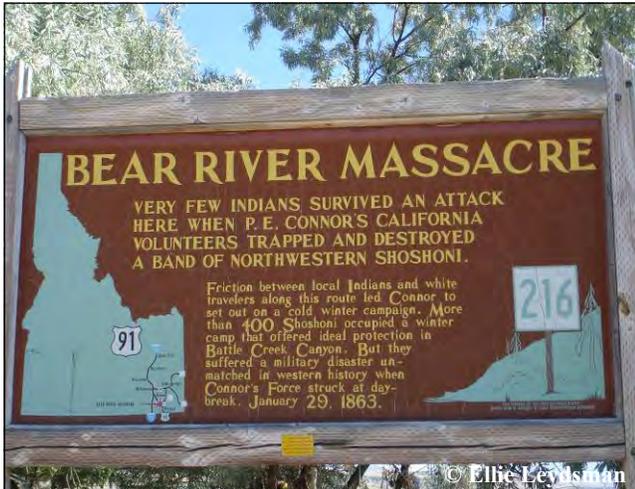
The regional inventory and analysis consisted of two major areas of study: the biophysical attributes and the cultural attributes of the region. The biophysical attributes are those which describe the natural setting of Cache Valley such as the geology, soils, climate, hydrology, vegetation, and wildlife. The cultural attributes are those which utilize and change the systems or processes in the biophysical setting such as agriculture, residential housing, commercial, industrial, and institutional development, transportation and infrastructure networks, and recreation and tourism.

The purpose of the research and analysis was to examine the interactions and linkages between the various systems in the valley.



## HISTORY OF CACHE VALLEY

Prior to European settlement, Native Americans utilized Cache Valley as their fishing and hunting grounds. According to historians and ethnologists, as many as five different bands lived in and around Cache Valley. The Shoshoni Indians were the primary group to occupy Cache Valley. They lived along the rivers of Cache Valley and they called themselves the Pangwaduka, or “fish-eaters,” as trout was their primary source of food. However, buffalo, elk, deer, antelope, and fowl also contributed to their diet. The Shoshoni often faced competition from the other native neighbors who also hunted buffalo, elk, deer, and antelope along the Bear River and its tributaries. Although periodic confrontations arose between the Shoshoni and other native groups, they persevered until fur trappers had an impact on their food sources (Peterson 1997). Eventually, as trappers and settlers competed for animals and territory, hunger, poverty, and war led the native populations to disappear.



Around 1818, Cache Valley was visited by French-Canadian trappers under Michael Bourdon, and by the mid-1820s, Cache Valley became the home of numerous fur trapper and traders representing the Hudson’s Bay Company, William H. Ashley’s Rock Mountain Fur Company, and John Jacob Astor’s American Fur Company. The demand for beaver pelts to make fancy felt top hats for men drew trappers deep into the Intermountain West (Somers et al. 2004). In 1824, a group under William H. Ashley and Captain

John Weber, including James Bridger and Ephraim Logan, entered Cache Valley as they took on the assignment of exploring the Bear River (Peterson 1997). Weber and his men spent the winter of 1824-1825 trapping beaver on the tributaries of Cache Valley and succeeded in trapping most of the beaver prior to the arrival of the Hudson’s Bay trappers led by Peter Skene Ogden in 1825 (Ricks 1956). By 1826, many well-known trappers came to Cache Valley, and the success of the fur trading industry was evident at the trappers’ rendezvous on the Blacksmith Fork River. It has been assumed that there was not a year between 1824 and 1855 when Cache Valley was not visited by trappers or explorers (Ricks 1956).

The trappers left an imprint on Cache Valley, as many of the names were carried over as Mormon settlers entered the valley. The Bear River, the Logan River, the Little Bear River, Blacksmith Fork River, and Cache Valley were all named by the trappers. For example, the Blacksmith Fork River was so named because trappers had cached a set of blacksmith’s tools near the river (Peterson 1997). Cache Valley, originally known to Native Americans as Willow Valley, was renamed by trappers during the winter of 1825-1826 in acknowledgement of the furs, goods, and tools cached within the region. According to Hiram Chittenden, historian of the fur trade, one account of the name Cache stemmed from a rumor that William Ashley recovered bear furs cached in the valley by Peter Skene Ogden (Peterson 1997).

While the last of the trappers explored the West, emigrants began to pass through Cache Valley. Many of the old trappers became guides for these parties and utilized their knowledge. Major Moses “Black” Harris, a noted trapper, advised Brigham Young that Cache Valley was much more desirable than the Salt Lake Valley, and allegedly, Jim Bridger agreed (Peterson 1997).

By August 1847, Brigham Young decided to pursue church control of Cache Valley. The church organization had accumulated thousands of head of cattle and a large grazing area was needed.

# HISTORY

Since Cache Valley was depicted as an area of abundant grass and numerous streams, Brigham Young proceeded to acquire the land. He organized a group of men to establish a cattle ranch, and by July 1855 ten men arrived in Cache Valley to prepare an area for the herds (Ricks 1956). However, the experienced herdsmen realized that the winters of Cache Valley were more severe than expected. The snow depths increased dramatically, and the cattle could not forage. As a result, the herders decided to round up the stock and drive them over Sardine Canyon back to the Salt Lake Valley. Consequently, Brigham Young abandoned his decision to turn Cache Valley into a permanent herding ground. However, he did not abandon the idea of the valley as a place for settlement (Peterson 1997).



Since the Mormons were a persecuted people, they were thoroughly determined not only to escape from Gentile territory but also to avoid having non-Mormons settle in nearby communities (Stewart 1941). So despite the harsh winters, Brigham Young turned to Cache Valley in 1856 as a new area for settlement. During this time, Peter Maughan called upon Brigham Young to report the drought and the destruction of crops by grasshoppers in Tooele. As a result, Brigham Young sent Peter Maughan to Cache Valley to pick out a location for settlement. By August 1856, a small party of eight or nine men with their families left for Cache Valley. Mrs. Mary Ann Weston Maughan, wife of Peter Maughan wrote: "...the road was good until we came to Wellsville Canyon which we found very rough

and narrow in some places and a very steep hill to descend but we got down all right...when we got to the mouth of the canyon we stopped to look at the Beautiful Valley before us my first words were O what a beautiful valley (Peterson 1997)."



Maughan's Fort, now known as Wellsville, was the first settlement in the valley. The founders of Wellsville built their homes in rows facing each other in a fort style (Peterson 1997). This style was characteristic of many other settlements within the valley. As Peter Maughan explored the valley, he felt that additional pioneers could survive in what he termed the isolated splendor of Cache Valley. Cache Valley began to grow not only because people were sent, but also because settlers wanted to come. During 1859, Logan and Providence were founded in April, Mendon in May, Richmond in July, and Smithfield in October. In 1860, Franklin, Idaho, the first permanent settlement in Idaho, was founded as settlers continued to spread north. However, settlers thought they were still in Utah when they founded Franklin (Stewart 1941).

Less than a decade after the first pioneers entered the valley, the settlers felt they were at home, and their future was tied to a beautiful valley. By late 1864, since a county government existed, James H. Martineau, the county surveyor, completed surveys of the area's town plots. Following the survey completion, Brigham Young advised settlers to move west of the Bear River. As a result, the communities of Clarkston, Newton, Preston

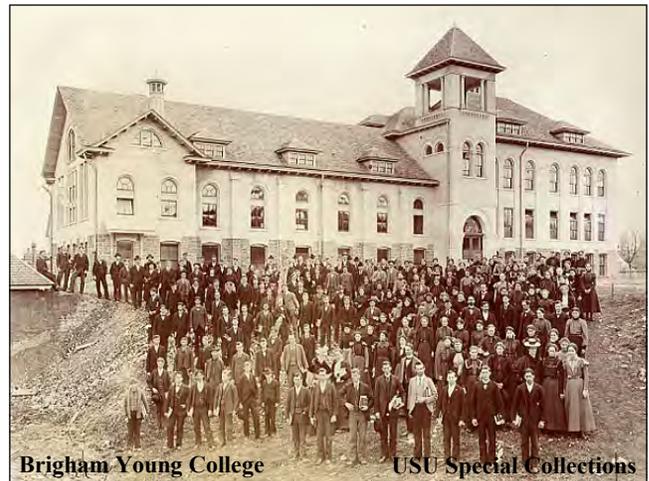
were founded. Many Idaho towns were established in the 1860s with Weston being founded in 1865 and Preston being founded in 1866. Later in the 1870s, the smaller grazing communities of Trenton, Cornish, Lewiston, and Amalga were settled.

As towns within Cache Valley began to increase in population, more surveys were needed. After a survey was completed, farming lands were divided into fields of twenty acres and usually apportioned by a lottery. Unmarried men often had to petition in order to participate, and they typically received less desirable land. The village plots were divided in a similar manner. The typical community plan included the creation of city blocks of ten acres divided into eight lots. The blocks were separated by a grid of wide streets running north-south and east-west. Each lot was approximately 1.25 acres and usually had a home, a garden, a small orchard or pasture, a barn, and a shed. As more agricultural land was cultivated, the community continued to appropriate surrounding areas in the same manner (Peterson 1997).

While the Mormon settlers succeeded in providing a well planned landscape of communities, they still had challenges. The greatest challenge they faced was controlling the water needed for irrigation. Shortly after the settlement of Hyrum in 1860, pioneers realized that their crops and gardens might die in July if they could not bring water to them. Therefore, the construction of an elaborate network of canals and irrigation ditches

began. By 1880, nearly 50,000 acres were irrigated by canals (Peterson 1997).

By 1890, Cache Valley had passed through its pioneer period and the people had transformed their villages into pleasant towns and cities. The city of Logan grew from 1,757 in 1870 to 4,620 in 1890 (Ricks 1956). The economy began to flourish through agriculture, sawmills, gristmills, molasses mills, and a series of cooperative mercantile stores, including Zion's Cooperative Mercantile Institution (ZCMI). The Mormons also began to build permanent structures for their religious education and worship. The Logan LDS Temple, the third Mormon Temple to be erected, was completed and dedicated in 1884, and the Logan LDS Tabernacle was completed and dedicated in 1891 (Peterson 1997).

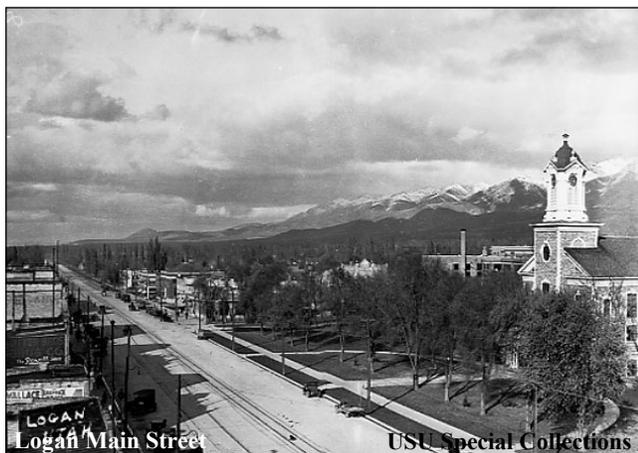


Another defining feature of Cache Valley was its role as an educational center. From the first settlements, Mormon pioneers established small



# GEOLOGY

ward schools, and in 1878, the Brigham Young College opened its doors as a church-owned high school. In 1888, the Agricultural College of Utah, now known as Utah State University, was founded as Representative Anthon H. Lund introduced a bill in the territorial legislature to establish an agricultural college and accompanying experiment station. In September of 1890, the college opened its doors with an enrollment of 139 students (Peterson 1997).



Cache Valley entered the 1900s with agriculture, religion, and education as the primary influential factors of growth and development. These features are still evident in Cache Valley today.

## GEOLOGY OF CACHE VALLEY

Cache Valley has a rich geologic history. The present physiography of Cache Valley is primarily the result of both active Basin and Range normal faulting and the occupation of Lake Bonneville during the Pleistocene.



## SEISMOLOGY

Cache Valley is bound by two primary normal fault zones—the East Cache fault zone and the West Cache fault zone. Since both sides of Cache Valley are bound by normal faults, it is considered a structural basin called a graben. The East Cache and West Cache fault zones are defined by vertical displacement in which the mountain block moves upward relative to the adjacent downward moving valley block. This type of faulting has created the Bear River Range in the east and the Wellsville Mountains and Malad Range in the west.



The East Cache fault zone lies along the base of the uplifted Bear River Range. It is an approximately 50 mile long normal fault zone that extends from James Peak in the south to Richmond, Utah in the north. The East Cache fault zone is divided into three major segments—the northern, the central, and the southern segments. The central segment near Logan, Utah is the most active section (Janecke and Evans 1999). The northern and southern sections are less active and show evidence of only middle to late Pleistocene activity (Black et al. 1999).

The West Cache fault zone is a series of east-dipping normal faults and extends approximately 50 miles along the west side of Cache Valley along the base of the uplifted Malad Range and the Wellsville Mountains (Yonkee and Eaton 1999). Three primary faults define this zone—the Clarkston fault, the Junction Hills fault, and the

Wellsville fault. All of these faults show evidence of late Quaternary activity. However, the Clarkston fault shows the highest degree of independence and is the most active fault segment, having generated one or two surface-rupturing events since Lake Bonneville (Black et al. 1999). In addition to the three primary faults, the Oxford-Dayton fault along the base of the Malad Range in southeast Idaho is an important geologic feature. Seismic data indicates that the Oxford-Dayton fault was a master fault within the active Basin and Range fault system. The morphology of the fault suggests Holocene or Late Pleistocene surface ruptures (Janecke and Evans 1999).

As a result of seismic activity in Cache Valley, fault scarps, triangular facets, and pediments have become important geologic features. Fault scarps are the escarpments formed from surface rupturing earthquakes. After fault scarps are generated, accelerated erosion occurs. This erosion forms triangular facets that often form between stream-eroded valleys. Therefore, triangular facets are the remnants of fault scarps and result from the uplift along a fault (Eldredge 1996). Pediments are also prominent features that form as a result of erosion. They are planar surfaces that are believed to form during times of tectonic stability (Oaks et al. 1999).

## LAKE BONNEVILLE

Cache Valley is a geomorphic subbasin of the Bonneville basin. The Bonneville basin was an area of internal drainage characterized by several successive lakes during much of the Miocene and into the Pleistocene. Lake Bonneville, the most recent deep lake, occupied Cache Valley. Deposits of Lake Bonneville define the Quaternary geology of Cache Valley (Black et al. 1999).

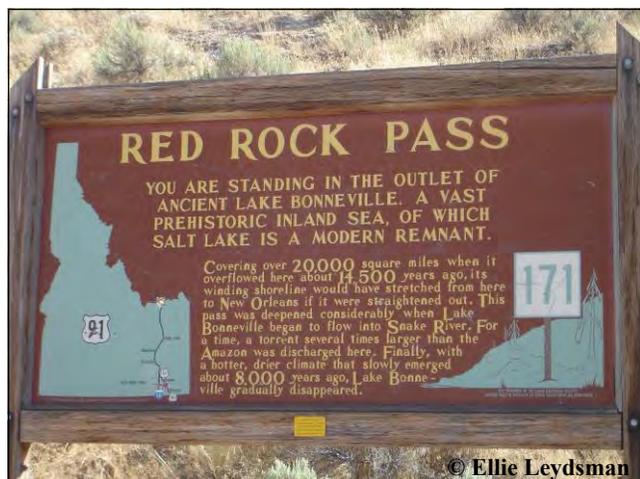
Existing from approximately 30,000 to 14,000 years ago, Lake Bonneville was most likely coincident with the last global ice age. The lake, being in a closed basin for most of its existence, was influenced and controlled by precipitation and evaporation. Increased precipitation in the

Basin and Range during the Pleistocene with lower temperatures and lower evaporation rates were the major contributing factors in the formation of Lake Bonneville (Stratford 1999). Lake Bonneville grew until it was about 300 miles long, 145 miles wide, and covered an area of approximately 20,000 square miles. It was a deep lake with an estimated maximum depth of 1,000 feet (Hamblin 2004).

In its estimated 20,000-year span, Lake Bonneville consisted of three major phases. As a result of these phases and the fluctuations of Lake Bonneville, four major shorelines were incised into the mountain fronts throughout the basin. The four major shorelines are, in chronological order, the transgressive Stansbury shoreline, the Bonneville shoreline, the regressive Provo shoreline, and the late transgressive Gilbert shoreline (Stratford 1999).



The Bonneville shoreline complex at 5,160 feet marks the highest level the lake reached around 16,500 to 15,000 years ago. During this time, Lake Bonneville became a threshold-controlled lake until 14,500 years ago when the Zenda threshold failed. Upon failure, the lake level dropped to a new threshold at Red Rock Pass, approximately 2 miles to the southeast. After the Bonneville flood, the lake stabilized at an elevation of 4,790 feet and formed the Provo shoreline (Black et al. 1999). This shoreline has the greatest geomorphic development because of its long duration, from approximately 14,000 to 12,500 years ago (Stratford 1999).



Red Rock Pass marks the northern extent of present day Cache Valley. It is a narrow valley south of Downey, Idaho, and it is surrounded by the Portneuf Range to the east and the Bannock Range to the west. During Lake Bonneville, alluvial fan gravels from the two ranges coalesced to create a saddle shaped dam (Link et al. 1999). Therefore, the area served as a natural physical barrier to the waters of Lake Bonneville. However, once the lake waters raised high enough to top the barrier, the current began to excavate a channel through the unconsolidated gravel, sand, and silt. As the channel increased in size, the amount of water discharged increased. Eventually, rivers from Lake Bonneville catastrophically flowed through Red Rock Pass. Once the water eroded to the bedrock, the flooding most likely ceased and Lake Bonneville started drying up in Cache Valley about 12,000 years ago (Morgan 1992). After Lake Bonneville dried up in Cache Valley, the Bear River became an important feature in shaping the landscape. As the lake dried up, the Bear River's base level lowered and the river began to erode downward through lake and delta sediment (Morgan 1992).

Lake Bonneville created a variety of coastal features within Cache Valley. Beach gravels, deltas, spits, and wave-cut terraces are some of the most obvious geomorphic landforms. For example, near the mouth of Logan Canyon, the Provo shoreline extends into the valley. This indicates that a delta was formed as sediment was emptied into Lake Bonneville.

## SOILS OF CACHE VALLEY

Cache Valley once formed the northeastern edge of the Pleistocene era Lake Bonneville. This singular fact is the most influential in terms of understanding the soil conditions that exist in the valley today.

Around 14,500 years, Lake Bonneville began draining out at the north end of the Cache Valley at Red Rock Pass. The former "Great Lake of the West" left behind a legacy of bars, benches, deltas, silt, and alluvial sediment. The weight of the water compacted a heavy layer of clay around 120 feet thick.

Woody plants, forbs, and grasses soon made their way into the area, and their successive generations would turn the soil into a rich, sandy loam. Thousands of years later, wild bison frequented the area for grazing. When aboriginal humans came to the area, they hunted the bison for meat and skins. They found they could increase pasture productivity for the bison by burning the woody plants to encourage grasses to grow. This thereby attracted more bison. Later, European settlers found the grassland areas highly suitable for grazing domesticated livestock. Once human settlement became more permanent, agriculture also began in the fertile soils (Shaw 1996).



Currently, there are three major orders of soil that make up Cache Valley: alfisols, inceptisols, and mollisols. These soils have shaped the settlement

of the valley and firmly established it as an agricultural region. Each kind of soil has a general



structure and possesses definite physical and biological characteristics. The soils consist of sand, silt, and clay derived from the bedrock, organic matter from plants and animals, and water (Billings 1978).

## ALFISOLS

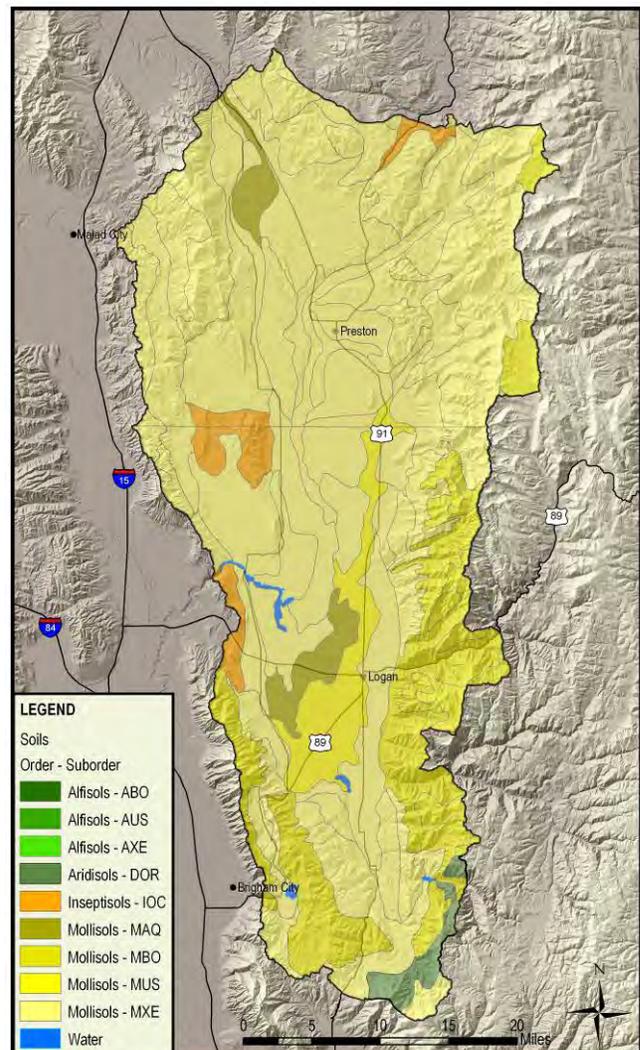
Alfisols are characterized by a light colored surface and clayey subsoil. The surface layer is generally very low in organic material and very thin. The subsurface is mostly made up of silicate clays. This type of soil occurs in some high mountain areas where the clay has moved from the surface to the subsurface. In this case, there is a thin layer of dark, organic matter that covers the light-colored surface of the soil. Alfisols are highly alkaline due to the nature of their creation and are predominantly vegetated by salt-tolerant shrubs and grasses (Toth et al. 2005).

## INCEPTISOLS

Inceptisols have a wide range of characteristics and can occur in a wide range of areas, from semi-arid to humid environments. One common trait is that they are only moderately developed. They are often found on fairly steep slopes, young geomorphic surfaces, and on resistant parent materials. Land use varies considerably with inceptisols. A sizable percentage of inceptisols are found in mountainous areas and are used for forestry and recreation.

## MOLLISOLS

Mollisols are by far the most predominant soil type found in Cache Valley. They are dark and fertile and usually associated with grasslands. The dark surface comes from the abundant organic matter provided by the roots of grasses. Mollisols are also characterized by a soft to slightly hard granular structure which makes for good agriculture when combined with its fertile organic matter. These soils typically occur in areas where annual precipitation is greater than 12 to 40 inches and at elevations greater than 4,500 feet. They are most typically found on mountains, high plateaus, foothills, and the benches of Lake Bonneville. This soil ranges from being moderately alkaline at lower elevations to moderately acidic at higher elevations (Toth et al. 2005).



# CLIMATE

## CLIMATE OF CACHE VALLEY

Cache Valley is situated in the northwest corner of Utah where the climate is dry, sunny, and cool, with dramatic diurnal temperature changes. The average precipitation on the valley floor is about 15 inches annually (Western Regional Climate Center). The mean humidity is 55 percent (University of Utah Department of Meteorology).

The valley is located between the Great Basin region and the Northern Rocky Mountain region (Parzybok 2005). It is classified as Humid Continental, Mild Summer according to the Koppen climate classification system. This climate type is defined by four seasons, generally mild summers and long, cold winters. The surrounding mountains exhibit characteristics of the Highland classification, characterized by severely cold winters and cool to cold summers (Toth et al. 2005).

## CONTROLLING FACTORS

Cache Valley is located at approximately 41 degrees north latitude. This position is almost mid-latitude between the equator and the North Pole, contributing to the four distinct seasons experienced in this area. The latitude also places the valley in the zone of prevailing westerly winds, which constantly interact with polar and tropical air masses. These produce frontal storm activity from the west (Pope and Brough 1996).

The locations of significant mountain ranges have a major effect on the climate patterns of Cache Valley. The Rocky Mountains to the east protect the area from the cold arctic weather of the northern Plains, and the Cascade Mountains to the west reduce the amount of moisture that reaches Utah. Any remaining moisture that reaches the local mountain ranges surrounding the valley is squeezed out and deposited due to orographic lifting (forced lifting) of the air over the mountains (Pope and Brough 1996).

There are many benefits as a byproduct of orographic lifting, or the “mountain shadow” effect. The valley receives significantly more precipita-

tion than much of the surrounding Great Basin, creating an environment that will support agriculture and human settlement. A large portion of the moisture is stored in the mountains in the form of snow, contributing to streams and rivers flowing year round. Due to the long distances that storms travel over dry plains from the west, the snow that is dropped is typically a light and fluffy “powder” and is coveted by skiers worldwide (Pope and Brough 1996).

The altitude of the valley floor ranges from about 4,200 feet above sea level at the valley bottom to 4,800 feet at the benches. The mountains rise sharply on all sides, with some local peaks reaching above 9,000 feet.

## LOCAL FACTORS

The interaction between the Wellsville and Bear River mountain ranges with the large westerly storms cause most of the precipitation in the valley and surrounding watersheds, due to the orographic phenomenon. The Great Salt Lake, to the south and west of Cache Valley, also produces some precipitation through “lake effect” snowstorms.



Bear River Range

© Nancy Guth

While prevailing winds are from the west, the sheltered nature of Cache Valley with its surrounding mountains mitigates the severe effects of these winds. Usually winds in the valley are not significant or persistent and average 4.5 miles per hour based on readings from the Logan-Cache Airport. In localized areas near the can-

yons, severe wind conditions can occur. These “mountain gap winds” can reach hurricane strength and have been recorded at over 100 miles per hour. These winds usually occur in winter months and are caused by a pressure gradient that occurs when a low-pressure system sits over Nevada and a high-pressure system over Wyoming which forces air over and around the Wasatch Mountain Range (Parzybok 2005).

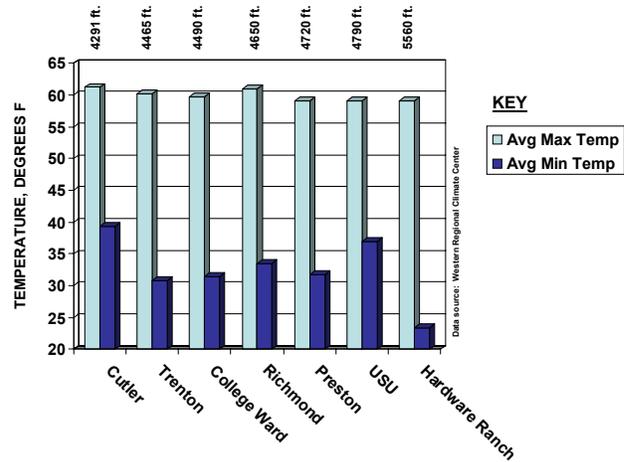
Temperature inversions are common in the Cache Valley from late fall to early spring. Inversions occur when warmer, lighter air rises and sits on top of cooler, heavier air. The steep mountain ranges on all sides contain the air masses, making it difficult for them to dissipate. This creates a stable and stagnant weather condition in lower elevations. Inversions can cause very cold temperatures, fog, and significant pollution on the valley floor (Pope and Brough 1996).



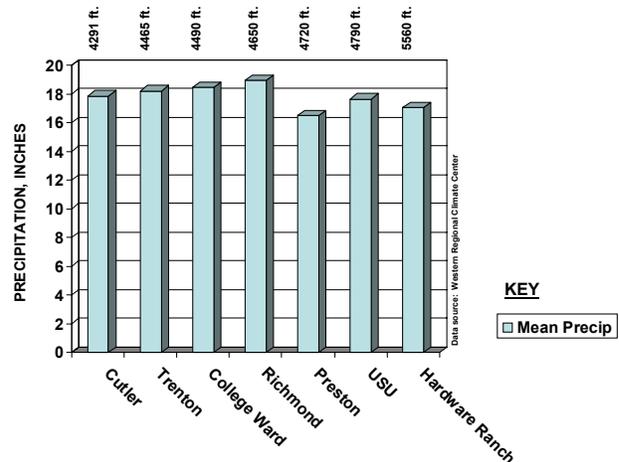
Another local phenomenon of significance is the difference in precipitation from the north end of the valley to the south. Usually precipitation can be related to elevation. The north end of the valley is at a slightly higher elevation; therefore, a logical assumption may be that this area would receive more precipitation than the south end. However, this is not the case. In fact, the north end of the valley receives approximately two inches less precipitation per year than the south. This translates to about a 12 to 15 percent difference. This may be due to more “lake effect” pre-

cipitation to the south, or perhaps could be explained by the difference in topography.

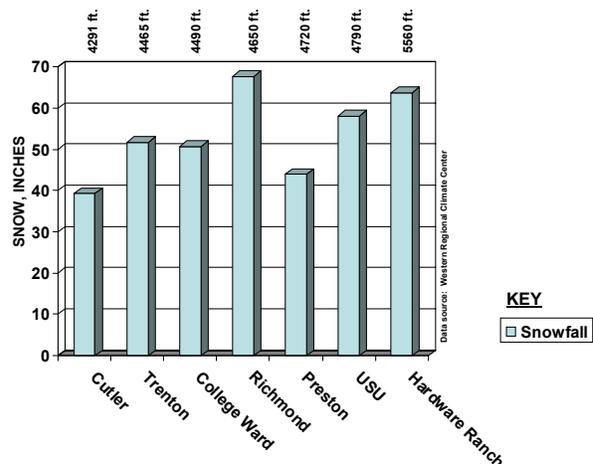
**Cache Valley Temperature Chart**



**Cache Valley Precipitation Chart**



**Cache Valley Snow Chart**



# CLIMATE

## CLIMATE AND HUMAN SETTLEMENT

Historically, human settlements were directly affected by the climate of a region. The climate helped define how and where buildings should be built. With the advent of advanced technology, placement and design of buildings are less restricted. Today, buildings no longer rely on the amenities of the site to provide comfort because most of it is provided artificially. The increasing dependence on fossil and other fuels has become expensive, inefficient, and has significantly added to pollution problems. An analysis of the climate of an area and its early patterns of settlement can provide clues for the appropriate location of lasting future human developments.

There were many benefits to the historic settlements within Cache Valley. They occurred in the zone slightly above the valley floor, but generally below the bench elevations. According to G. Z. Brown, in *Sun, Wind, and Light*, the best location is “low on a south-facing slope to increase solar

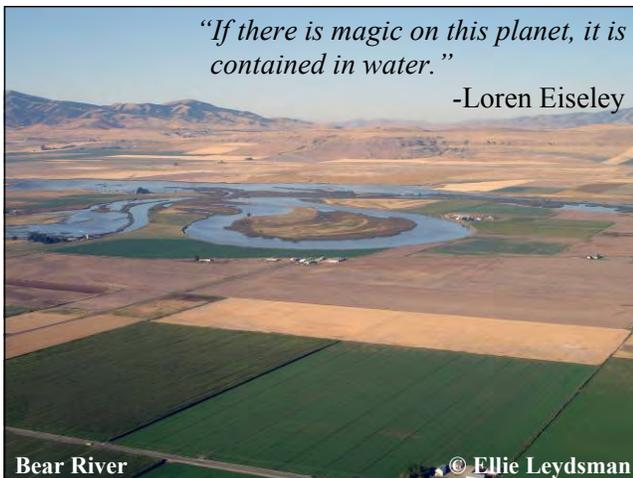
radiation; low enough to give wind protection, but high enough to avoid cold air collection at the bottom of the valley.” As an added advantage, the towns stayed above the lowlands that were prone to flooding. These were also the prime agricultural areas.

In a cold climate, it is beneficial to maximize the warming effects of solar radiation while reducing the impact of winter winds. Buildings can be located and grouped to form wind protected sunny exterior spaces. Maximizing south facing exposures and using buildings and vegetation as wind-breaks are also appropriate strategies. During hot summer months, evaporative cooling by moving air over water is effective in arid climates (Brown 1985).



## HYDROLOGY OF CACHE VALLEY

The Bear River is the major hydrologic feature in Cache Valley. The river originates in the high Uinta Mountains of Utah and it meanders in and out of Wyoming and into Idaho prior to entering Cache Valley. It is estimated that as the river enters Cache Valley, it doubles in size (Mesner 2005). Within Cache Valley, the primary tributaries of the Bear River include the Logan River, the Little Bear River, and Blacksmith Fork River. The Logan River is the largest tributary, as it supplies approximately half of the total input. The water transported in this river network eventually converges at Cutler Marsh. The average annual flow in the Bear River increases from about 31 cubic meters per second as it enters Cutler Reservoir to 43 meters per second at Cutler Dam (BRWIS). After the Bear River flows through the dam, it eventually empties into the Great Salt Lake. At this point, the river has followed a course of nearly 500 miles; however, it ends only 90 miles from its origin.



In Cache Valley, the major uses of water include agriculture, irrigation, power generation, and municipal and industrial uses. Many of the rivers, lakes, reservoirs, and wetlands within the valley also serve as recreational havens. The Logan and Blacksmith Fork Rivers are cold water fisheries that bestow excellent habitat for a variety of fish, including the Bonneville cutthroat, brown, and rainbow trout. Hyrum, Porcupine, Newton, Twin Lakes, Glendale, Johnson, Condie, and LaMont reservoirs have boating recreation (Idaho Fish

and Game). Cutler Marsh and surrounding wetlands provide excellent canoeing and bird-watching activities (Utah Division of Water Resources 2002).



## WATER RESOURCES IN CACHE VALLEY

Surface and subsurface water are important features in Cache Valley. The primary source of surface water is from precipitation and spring runoff that does not infiltrate into the soil. Surface water flows into rivers, streams, lakes, wetlands, and reservoirs. However, a portion of the precipitation and runoff permeates through soil and various pores in rocks and eventually becomes groundwater (Billings 1978).

In Cache Valley, the depth to groundwater ranges from at or near the ground surface in the central portion of the valley to more than 300 feet along the valley margins. Since the valley is primarily unconsolidated sediment consisting of multiple continuous layers of silt, sand, and gravel, the primary groundwater aquifer consists of a complex system in which unconfined and confined aquifers exist (Sanderson and Lowe 2002). Unconfined aquifers are aquifers in which there is no upper confining layer of impermeable soil or rock material. The water table is exposed to the atmosphere through a series of interconnected openings in the overlying permeable soil and rock layers. Confined aquifers, also known as artesian aquifers, are bound by two layers of impervious matter such as clay or shale. Much of the confined portion in the principal aquifer is

# HYDROLOGY

overlain by a shallow unconfined aquifer in Cache Valley (Sanderson and Lowe 2002).

Many Cache Valley residents depend on groundwater resources for human consumption. It is estimated that approximately 50 percent of Cache Valley's drinking water comes from groundwater wells. (Kariya et al. 1994). A large portion of the water withdrawn from groundwater wells is extracted from the unconfined aquifers. Therefore, there is a concern that as the population in Cache Valley increases, there will be a greater demand for groundwater, and as a result, the source may become depleted. This may not only create problems for humans, but it may also instigate problems for wetland vegetation and wildlife.

Riparian vegetation is particularly sensitive to fluctuations in the water table. As water levels decrease, riverine and wetland vegetation are vulnerable to desiccation. This is evident as Cache Valley was originally called Willow Valley by the Shoshoni Indians. The natural riparian vegetation that exists along water courses also prevents erosion and provides oxygen for an array of aquatic species. Without the riparian vegetation, stream banks are likely to slough off, which is likely to increase the sediment load and eventually alter the ecosystem.

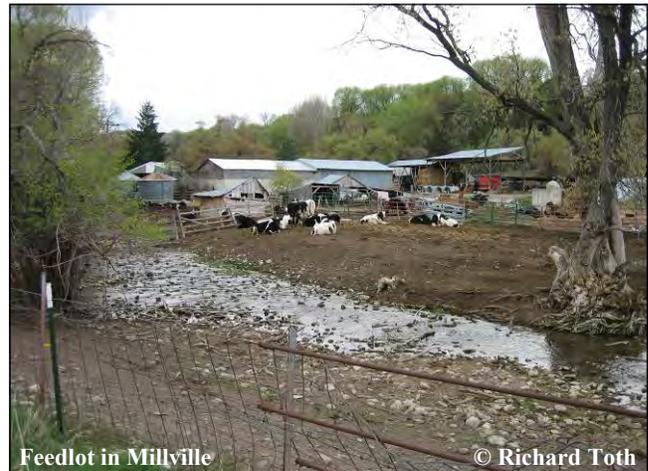


Streambank Erosion

© Nancy Mesner

In addition to water quality problems caused from over-consumption of water, a series of problems are presented from animal feeding operations, overgrazing, agriculture, wastewater treatment, urban development, roads, and surface mining. Both point and non-point source pollu-

tion contribute to sedimentation, increased nutrients load, fecal coliform bacteria, low dissolved oxygen, and high water temperatures (BRWIS). Many of these problems can be solved by implementing best management practices, such as fencing and offstream watering (Mesner 2005).



Feedlot in Millville

© Richard Toth

## FUTURE WATER SUPPLY

The past 25 years have been characterized by an increase in urbanization and the sale of prime agricultural lands for residential and commercial development. As the population continues to grow in Cache Valley, the demand for municipal water will increase. Population projections indicate that many municipalities within the valley may not have an ample water supply in the future. However, the Bear River is one of the few remaining areas with a significant amount of developable water. It is expected that the waters of the Bear River will be developed to accommodate growing populations within Cache Valley. However, water development is increasingly difficult and expensive as new environmental regulations regarding wildlife, vegetation, and land protection are being implemented. Therefore, the key for future planning in regard to water is to recognize that water is not an independent issue. Stakeholders, researchers, and decision makers may need to come together to discuss the future needs of the valley.

## VEGETATION OF CACHE VALLEY

Prior to European settlement, Cache Valley was a grassland covered with lush bluebunch wheatgrass, sandburg bluegrass, crested wheatgrass, basin wild rye, needlegrass, blue gramma, dandelion, prickly pear, and Indian ricegrass. The west side of the valley was called the big range because of its abundant grass and excellent grazing. Sagebrush was rare (Hull and Hull 1974).

Settlers in the mid to late 1800s converted many of the grasslands to row crops, irrigated pasture, hayfields, and dry crops. Sugar beets were grown in Cache Valley from the period of 1905 until 1972 when the Lewiston Sugar Factory closed down (Shaw 1998). Del Monte operated canneries in Smithfield, Utah and Franklin, Idaho, from the mid 1920s until the mid 1980s processing peas, carrots, beans, and cabbage grown by local farmers. Tomatoes were an important cash crop during the period of 1930 to 1950. Potatoes were better grown in Franklin County and are the last remaining row crop produced commercially in the valley. Alfalfa, hay, hard red winter wheat, soft white wheat, barley, and corn are the principle crops grown today.

Although agricultural crops define a large portion of the valley floor, the natural vegetation of Cache Valley consists of semiarid shrub- and grass-covered plains, wetlands, woodland and shrubland covered hills, and forested mountains (EPA Ecoregions). Four major vegetation zones occur in Cache Valley, and they include wetlands, sagebrush steppe, mountain brush and juniper woodlands, and montane forests. Vegetation is determined by soils, precipitation, temperature, and elevation and it is an integral part of an ecosystem. Therefore, understanding the relationships between the different types of flora and fauna is an important component of the planning process to address future development.

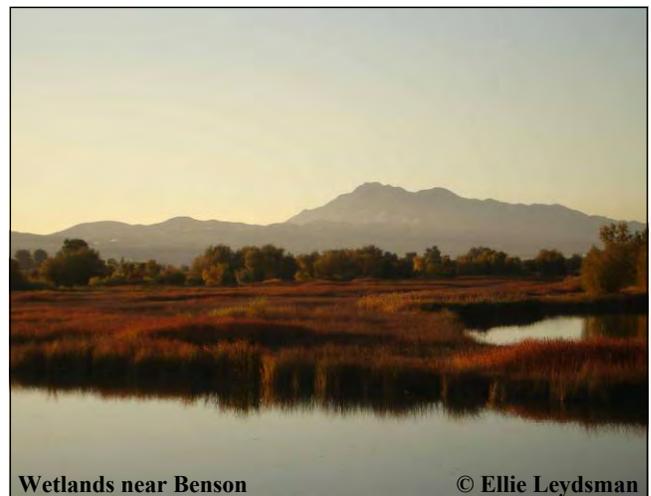
## WETLANDS

Wetlands define a large portion of the valley floor. They are areas where soil saturation is the



Cattails © Ellie Leydsman

dominant feature, and they often border creeks, streams, ponds, lakes, and other riparian zones. Vegetation found in and near wetlands include tules, Baltic rushes, cattails, reed grasses, sedges, bulrushes, cinquefoil, and willowherb. Willows, water birch, cottonwood, honeysuckle, tamarisk, hackberry, ash, and chokecherry are a few of the trees and woody shrub species common to the biome.



Wetlands near Benson © Ellie Leydsman

# VEGETATION

## SAGEBRUSH STEPPE

Sagebrush steppe is defined by the combination of sagebrush and herbaceous species. It is often the transition zone between grasslands and desert shrubland (Johnson 1989). In Cache Valley, the foothills and benches support several species of sagebrush and an array of herbaceous species such as bluebunch wheat grass, crested wheat-grass, needlegrass, western wheat grass, Indian ricegrass, and Idaho fescue. Juniper woodlands often intermix with sagebrush steppe vegetation at higher elevations.



Sagebrush Steppe near Dayton

© Lynne Slade

## MOUNTAIN BRUSH AND JUNIPER VEGETATION

The mountain brush and juniper woodland zone typically occurs between 5,000 and 8,000 feet and is best developed along the flanks of the Wasatch Mountains. This zone usually forms the transition zone between coniferous forests and sagebrush steppe. This zone is characterized by shrub-dominated vegetation with grasses and forbs in the interspaces. Taller woody vegetation includes mountain mahogany, Gambel oak, big tooth maple, and Western juniper. Shorter statured shrubs include serviceberry, bitterbrush, snowberries, and deerbrushes. Major grasses include needlegrasses, bluegrasses, and wheatgrasses (Johnson 1989).



Logan Canyon

© Ellie Leydsman

## MONTANE FORESTS

Montane forests typically occur between 7,500 and 9,000 feet and are characterized by conifers and deciduous trees. North-facing slopes are primarily Douglas fir, Engleman spruce, and aspen which can tolerate lower temperatures. Aspen typically occur in small groves interspersed in stands of spruce along with huckleberry, buffaloberry, and a variety of grasses and sedges (Knight 1994). South-facing slopes may have mountain big sagebrush, snowberry, Idaho fescue, mountain brome grass, and Indian needlegrass.

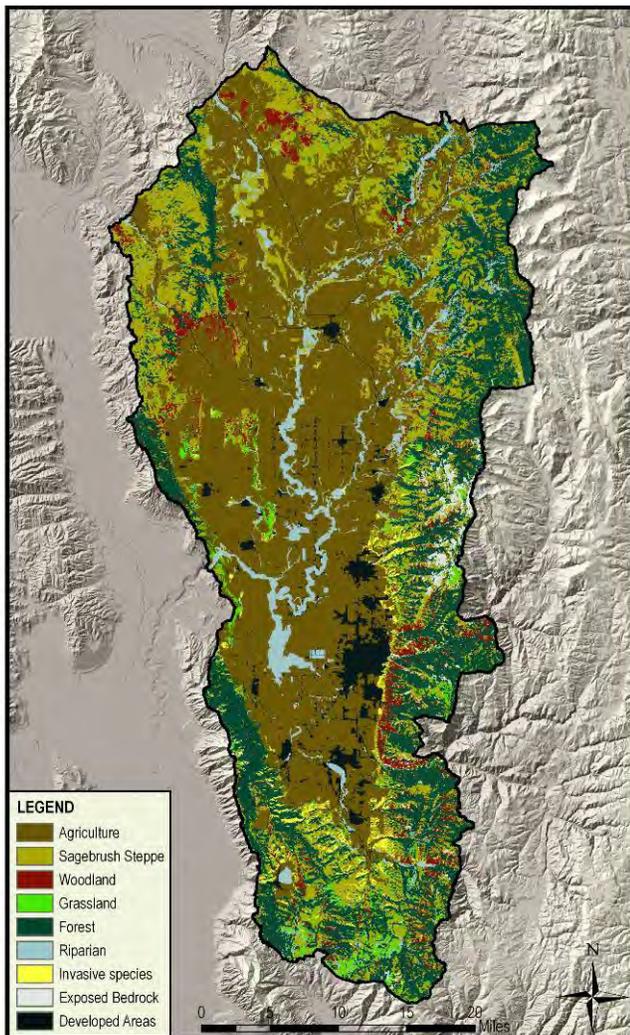


Aspen

© Christopher McGinty

## INVASIVE WEEDS

Within the intermountain west, the threat of invasive plants is increasing. “A plant out of place,” according to the Weed Science Society of America, is classified as an “invasive.” Most invasive plants did not typically evolve in North America but were imported from other countries. Species such as leafy spurge, spotted knapweed, downy brome or cheatgrass, Dyer’s wode, and yellow star thistle have displaced larger tracts of sagebrush and bunchgrass. As a result, the natural fire cycle and soil stability is affected which thereby influences water runoff, erosion, and wildlife habitat (Beck 1994).



## WILDLIFE OF CACHE VALLEY

Wildlife provides not only an economic benefit to the valley, but aesthetic and recreational resources. Wildlife viewing areas such as Hardware Ranch Elk Refuge, Oxford Slough National Wildlife Refuge, Riverside Nature Trail, and Cutler Marsh provide recreational opportunities. The Wellsville Wilderness and Mount Naomi Wilderness are designated wilderness areas which provide critical wildlife habitat. The Wasatch-Cache National Forest is part of a critical wildlife corridor for species migration in the western United States which provides a link between the Greater Yellowstone Ecosystem and the lower Rocky Mountains (BRWIS).

As a result of Cache Valley’s unique and diverse landscape, there is an array of wildlife species in terrestrial, riparian, wetland, and aquatic environments.

### TERRESTRIAL

Sagebrush steppe, defined by sagebrush and an array of grasses and forbs, serves as habitat for a wide variety of species. The native animals utilizing this ecosystem type are a mixture of grassland and desert species, including coyote, raccoon, porcupine, sagegrouse, ringneck pheasant, black-tailed jackrabbit, prairie falcon, great horned owl, Ferruginous hawk, red-tailed hawk, northern sagebrush lizard, Great Basin rattlesnake, and a multitude of mice, rats, and chipmunks (West 1983). Sagebrush steppe also serves as important winter range for mule deer and elk (Johnson 1989).

Mountain brush and juniper woodlands are important vegetation zones for deer and elk, particularly in winters with low to moderate snow packs. These areas also serve as seasonal habitat for many song birds. Many game birds, such as Valley quail, Merriam’s turkey, bandtailed pigeon, and blue and ruffed grouse, also utilize mountain brush vegetation as their primary habitat.

# WILDLIFE



The montane zone, typically defined by a tree-dominated landscape with a fairly continuous canopy, serves as habitat for moose, elk, pine marten, black bear, cougar, bobcat, ground squirrel, rubber boa, badger, long-eared bat, and possibly the Canada lynx.

## RIPARIAN

Riparian areas represent the ecological transition with well-defined plant communities at the interface between upland terrestrial ecosystems and

bodies of water (Baker et al. 2003). Beaver, muskrat, American goldfinch, belted kingfishers, mink, Townsend's Big-eared bat, osprey, and American Bald Eagle utilize these areas. Moose are also known to frequent riparian areas.

## WETLANDS

Wetlands, also known as marshes, swamps, bogs, fens, or peatlands, support a wide range of wildlife species. In particular, birds use wetlands for breeding, nesting, feeding, rearing young, resting, and socializing (Stewart 1996). In Cache Valley, Oxford Slough Wildlife Management Area near Red Rock Pass encompasses 1,878 acres of marshes, meadows, and uplands. Sandhill cranes, Franklin Gulls, Great Blue Herons, pelicans, trumpeter swans, several species of ducks, swallows, northern harriers, beaver, and other birds of prey can be seen at various times of the year. Cutler Marsh provides habitat for American avocets, stilts, cinnamon teal, mallards, Canadian geese, and ring-neck pheasants.



Pelican at Oneida Narrows

© Lynne Slade

## AQUATIC

Aquatic areas include lakes, reservoirs, streams, rivers, and ponds. These areas can be classified as lotic (running water) habitats, such as rivers, streams, or springs, or lentic (standing water) habitats, such as lakes, reservoirs, or ponds. Common to lakes and reservoirs throughout the area are Bonneville whitefish, blue-gill, largemouth and smallmouth bass, hybrid rainbow trout, and yellow perch. Brook trout and cutthroat trout can be found in the Cub River in southeastern Idaho. The Logan and Blacksmith Fork Rivers and their tributaries are cold water fisheries that provide excellent habitat for a variety of fish, including the Bonneville cutthroat, brown, and rainbow trout. The east fork of the Little Bear River is stocked with several varieties of trout species, including brown trout.

Many reservoirs within Cache Valley provide habitat for fish. Cutler Reservoir's shallow, warm water environment supports populations of walleyes, black crappies, channel catfish, common carp, and black bullheads. Green sunfish, bluegill sunfish, largemouth and smallmouth bass, rainbow trout, and brown trout have also been found in Cutler Reservoir (Bear River Watershed Information System (BRWIS)).

## ENDANGERED, THREATENED, AND SPECIES OF CONCERN

In 1973, Congress passed the Endangered Species Act for numerous reasons, including 1) various species of fish, wildlife, and plants in the United States had been rendered extinct as a consequence of economic growth and development, 2) other species of fish, wildlife, and plants were so depleted in numbers that they were in danger of becoming endangered or extinct, and 3) species of fish, wildlife, and plants were determined to have aesthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people (ESA 1973).

Currently, there are three categories under the Endangered Species Act, including endangered

species, threatened species, and species of concern. Endangered species are taxon listed by the U.S. Fish and Wildlife Service in which there is danger of extinction throughout all or a significant portion of its range. Threatened species are taxon in which there is a likelihood of endangerment within the foreseeable future throughout all or a significant portion of its range. Species of concern are taxon in which there is sufficient biological vulnerability to justify it becoming a candidate for listing on the threatened or endangered species list.

Within Cache Valley there are no endangered species. However, there are several threatened species and species of concern. The Maguire primrose, Canada lynx, bald eagle, Ute-ladies tresses, and bull trout are threatened species. Species of concern include Yellow-billed Cuckoo, burrowing owl, California floater (mussel), Columbia clubtail (dragonfly), Ferruginous hawk, long-eared myotis (bat), redband trout, river lamprey, sagebrush lizard, western brook lamprey, and gray cryptantha (Utah Division of Wildlife Resources and Idaho Fish and Game 2006).

# MODELING PROCESS

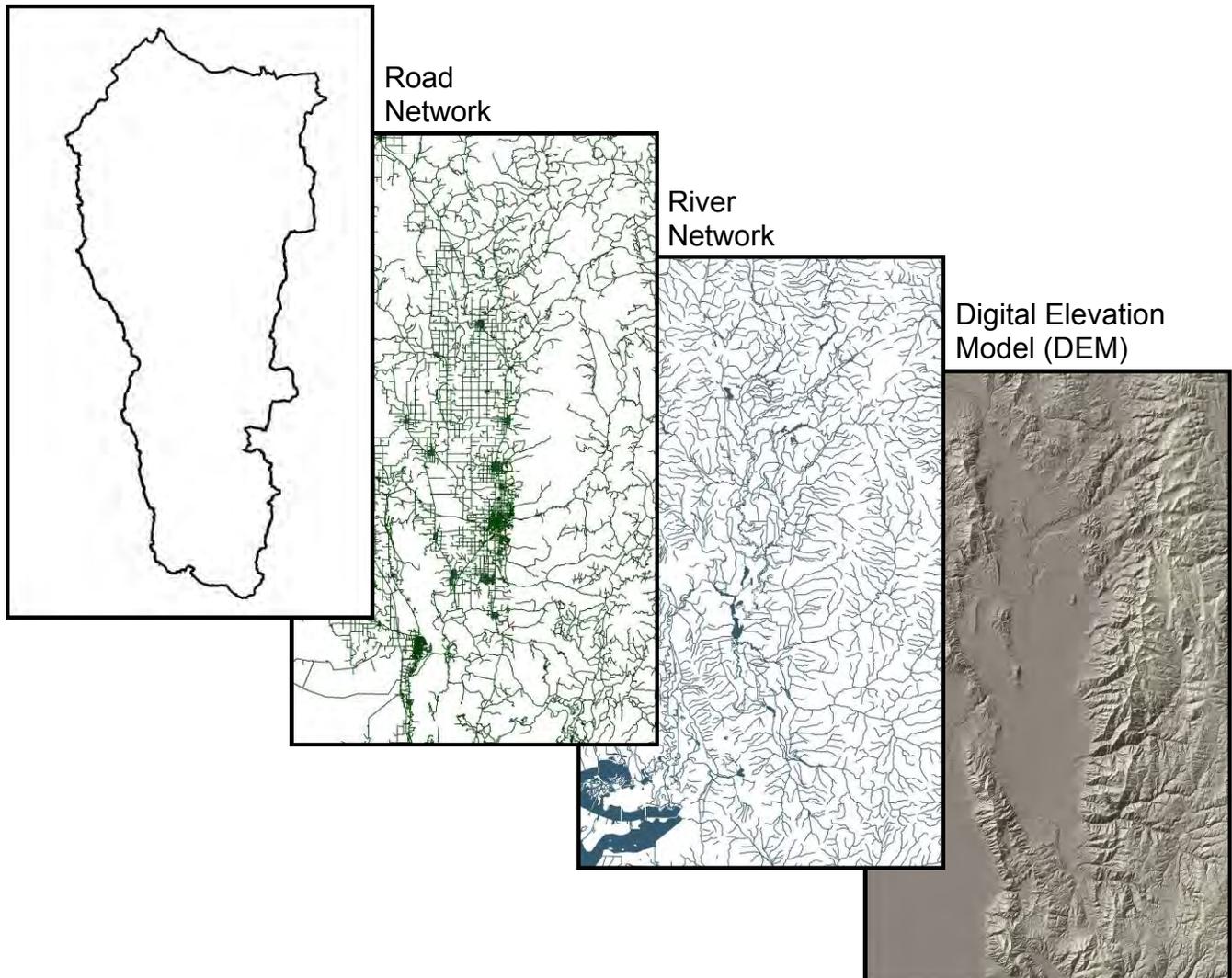
The assessment models and alternative future models were generated utilizing Geographic Information Systems (GIS). GIS is a computer software program that enables geospatial data to be mapped and analyzed. Geographic Information Systems often provide a foundation that enables planners to identify significant attributes of the landscape such as the physiography, geology, hydrology, wildlife habitat, existing land use, infrastructure, and historical and cultural landmarks.

A valuable feature of GIS is its overlay capabilities. The concept of map overlay originated in the 1960s when Ian McHarg, a landscape architect, suggested that information about social con-

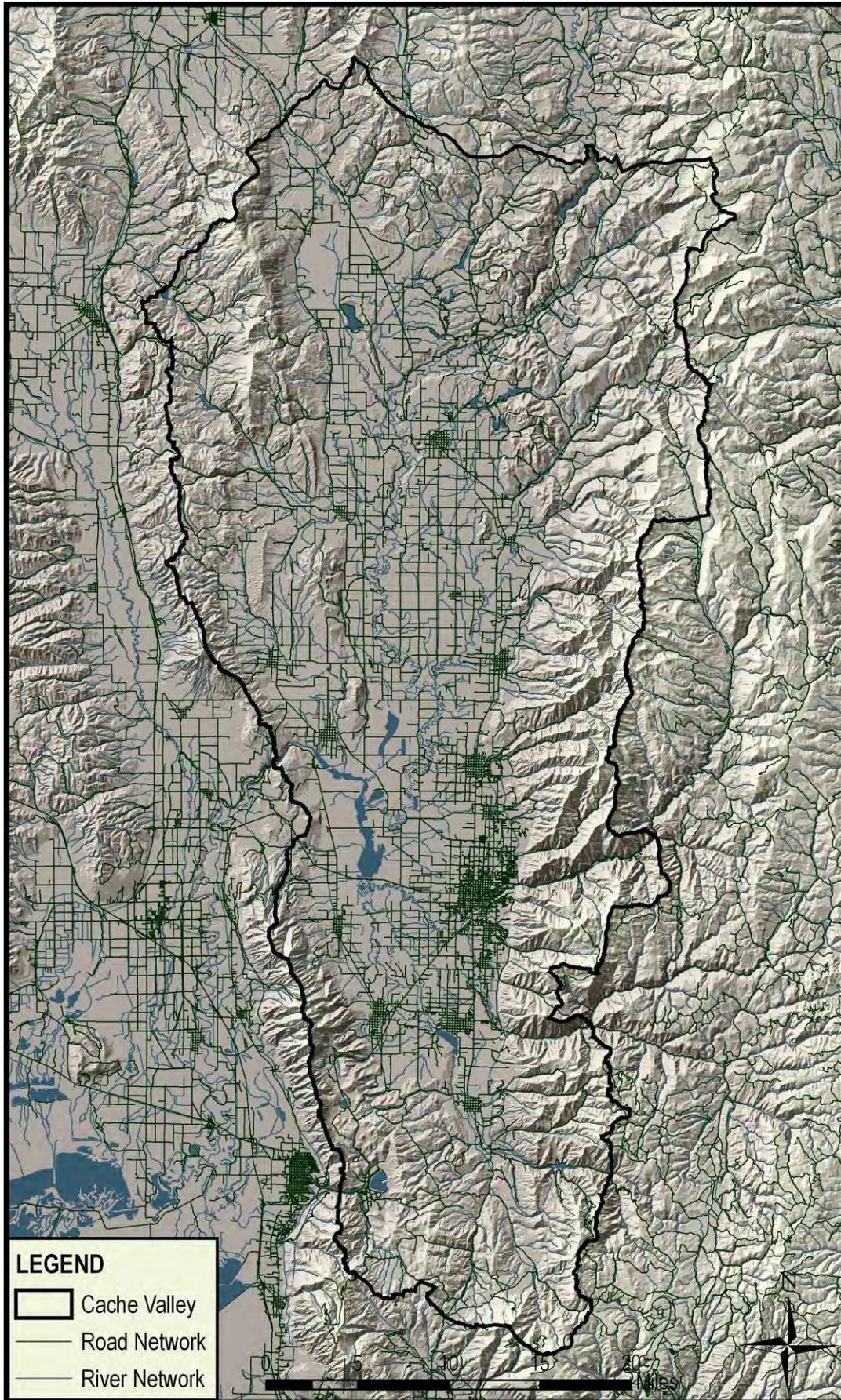
structs and environmental processes could be mapped and overlaid to determine opportunities and constraints for potential land uses. This multi-layer method that initially utilized transparent overlays and markers has evolved through GIS technology. GIS has facilitated this process by allowing users to view layers individually or collectively.

The overlay method is displayed below using some general components of the base map. The base map is comprised of a digital elevation model (a digital representation of the Earth's surface), the river network, the road network, and the Cache Valley boundary.

Cache Valley Boundary



# MODELING PROCESS



# ASSESSMENT MODELS

The assessment models are visual representations of various attributes within Cache Valley. The models were generated utilizing GIS data from various federal, state, and private agencies. The assessment models serve two functions. They not only provide a foundation for developing alternative futures, but they are also useful in evaluating the potential impacts of each alternative future.

There are two types of assessment models: environmental evaluation models and activity allocation models. The environmental evaluation models depict the biophysical attributes that are considered to be important for the overall health and function of ecosystems within Cache Valley. These models are integral in determining areas in need of preservation, and therefore, can serve as

an evaluation for future open space. The environmental evaluation models for this study include Public Health, Safety, and Welfare, Surface Water, Groundwater, Critical Wildlife Habitat, Visibility Assessment, and Cache Valley Identity.

The activity allocation models depict current and potential future land uses in Cache Valley. These models are useful in determining where future land uses could occur based on favorable conditions and proximity to or distance from existing land uses. These models do not necessarily account for any environmental aspect. The activity allocation models for this study include Working Lands, Residential, Commercial/Industrial, and Transportation.



*“A model is a rehearsal for reality, a way of making a trial that minimizes the penalties for error.”*

-Horace F. Judson

©Ellic Leydsman

# PUBLIC HEALTH, SAFETY, AND WELFARE

## PUBLIC HEALTH, SAFETY, AND WELFARE

The public health, safety, and welfare environmental assessment model was developed to illustrate hazardous lands within Cache Valley. Cache Valley has a variety of natural landscape features, and therefore, has an equally diverse suite of hazardous lands. Hazardous lands within Cache Valley include floodplains, wetlands, steep slopes, fault zones, areas susceptible to soil liquefaction, and the wildland-urban interface. As growth and development expands in Cache Valley, more physical structures are being built upon these lands without much consideration of the consequences. As a result, there is often an unknown significant physical and economic threat to people who have chosen to reside in these areas. Therefore, the preservation of hazardous lands in Cache Valley will assist in protecting the health, safety, welfare, and property of the public.

### FLOODPLAINS

Floodplains are low-lying areas adjacent to rivers that are periodically inundated by floodwater. Floodplains and adjacent waters combine to form a complex, physical, and biological system that supports an array of water resources, living resources, and societal resources. Floodplains provide natural flood and erosion control, natural water filtering processes, a wide variety of habitats for flora and fauna, and are ideal locations for agriculture and recreation (Federal Inter-agency Floodplain Management Task Force 1994).

Flooding is a natural process that can distribute large amounts of water and suspended river sediment over vast areas. In many areas, this sediment helps replenish valuable topsoil components to agricultural lands. Historically, natural flooding of large areas did not create dangerous situations; however, population growth and indiscriminate urbanization on floodplains has often created detrimental impacts to humans and valuable habitat for wildlife (Honachefsky 2000).



Flooding in Young Ward

© Ellie Leydsman

The most common types of floods are the rainstorm-river flood and the snowmelt flood. Snowmelt is most frequently a contributing factor to a rainstorm-river flood, but on occasion, it can be the major source of a flood. A sudden warm spell may accelerate snowmelt and the water accumulates as runoff. As a result, overland flow occurs because the rate of runoff exceeds the infiltration capacity of the river channel. Rivers or streams flowing through a nearly flat valley are often situated on alluvial deposits; therefore, the land adjacent to the river is higher in elevation than the land farther away. As a result, river flows greater than the carrying capacity of the channel spread into the adjacent lateral basin, the floodplain, which serves as a flood storage reservoir (Bolt et al. 1977).



Flooding in Logan

© Ellie Leydsman

Floods cause damage to physical structures built on floodplains by inundation, erosion, and by the deposition of sediment and detritus (Bolt et al.

# PUBLIC HEALTH, SAFETY, AND WELFARE

1977). In Cache Valley, in terms of potential damage to developed residential, commercial, or industrial areas, the Logan and Blacksmith Fork Rivers, two major tributaries of the Bear River, pose the most significant threat (see Appendix D). The Logan and Blacksmith Fork Rivers drain large areas and have steep well defined stream channels. Flood level flows are often produced when high temperatures occur early in the spring and are often compounded with early spring rains (Bear River Association of Governments (BRAG) 2004).

Historically, the majority of flooding in Cache Valley has occurred on agricultural land (BRAG 2004). However, as agricultural land is being sold to development, the risk to humans and property increases substantially.

## WETLANDS

Wetlands are lands transitional between terrestrial and aquatic systems where the water table is

usually at or near the surface or the land is covered by shallow water. Wetlands occur over a wide range of hydrologic conditions, and they perform a wide range of valuable functions for humans. They have local and international significance as regulators of the hydrologic cycle, and they improve water quality. Human health is closely related to the health of wetlands as wetlands intercept and filter nutrients, sediments, and contaminants before they reach aquatic systems. As a result, they indirectly provide safe drinking water and sanitation. In addition, wetlands also provide important migration and breeding habitat for aquatic and bird species (Holland and Prach 1994). Therefore, as a vital element of human health, wetlands should be protected from development.

Currently, wetlands are protected by federal legislation. The Federal Government protects wetlands directly and indirectly through regulation, by acquisition, or through incentives and disincentives. The Federal Government regulates,



# PUBLIC HEALTH, SAFETY, AND WELFARE

through the Clean Water Act, some of the activities that occur in wetlands. The act regulates dredge and fill activities that would adversely affect wetlands such as channel construction, water control projects, and fills to create dry land for development sites near the water (Votteler and Muir 1996). However, in recent years, many states have implemented more stringent laws to preserve and protect wetlands.

## STEEP SLOPES

Steep slopes are often the primary source of landslides and are particularly vulnerable to landslides if disturbed by activities associated with development (Honachefsky 2000). Landslides may produce an array of adverse effects in towns and cities by damaging buildings, infrastructure, communication systems, and large structures including dams and bridges (Bolt et al. 1977).

Landslides are the most widespread geologic hazard and they include falls, slides, topples, lateral spreads, and flows. Landslides occur on a variety of geological materials and develop through a variety of mechanisms. Landslides most often occur when the downslope component of the forces acting on the Earth or rock mass exceed the strength or shearing resistance of the material. Steep slopes, generally classified as slopes greater than 20 to 25 percent, are a primary mechanism of landslides, but changes in water content or groundwater level, excess loading, weathering, and erosion interference with water courses are other sources of landslides (Bolt et al. 1977).

A large portion of Cache Valley is mountain, hill, and steep-valley terrain conducive to landslides (see Appendix D). The most frequent problems are associated with debris flows on alluvial fans in many of the canyon drainages. Debris flows present a significant threat for development located in the mouths of many steep canyons located in Cache Valley (BRAG 2004). The use of geologic information in land-use planning can minimize the negative impact of landslides. Therefore, building on slopes greater than 20 per-

cent, particularly near canyons susceptible to debris flows, should be reduced to protect the public health, safety, and welfare.

## EARTHQUAKE HAZARDS

Earthquakes represent one of the Earth's most devastating natural hazards. The potential impact of earthquakes continues to grow in importance as urban centers spread over seismic zones. Most large earthquakes generate multiple hazards and their impact is most pronounced when they strike urban environments.

An earthquake is capable of producing a number of direct and induced effects. Direct effects include fault displacement or rupture, tectonic uplift and/or subsidence, and ground shaking. Various types of ground failure, such as liquefaction and landslides, represent induced seismic hazards (Berlin 1980). Zones of surface fault rupture and liquefaction pose a significant threat to persons living in proximity to them.

## FAULT ZONES

Cache Valley is bounded by two normal fault zones. The East Cache fault zone is the dominant structure in the southern portion of the valley, south of Hyrum, Utah and the West Cache fault zone is the dominant structure in the north (Janecke and Evans 1999). Normal faults are capable of producing significant surface rupture and displacement (Christenson et al. 2003). Therefore, structures that currently straddle fault zones in Cache Valley are vulnerable to considerable structural damage or collapse. This type of hazard can be minimized by constructing buildings off fault traces (Bolt 1999) and establishing fault hazard easements that require varying setbacks from active faults (Berlin 1980). Appropriate uses for zones of surface faulting are undeveloped open space, recreational areas, or parking lots.

## LIQUEFACTION

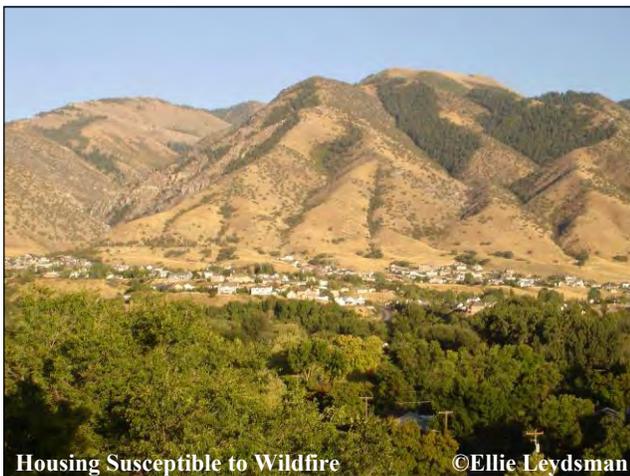
Most ground failure associated with earthquakes

# PUBLIC HEALTH, SAFETY, AND WELFARE

is attributed to liquefaction (Bolt 1999). Liquefaction is a severe seismic hazard that can damage structures on both shallow and deep foundations and may disrupt buried infrastructure with potentially catastrophic consequences (O'Rourke et al. 1997). Liquefaction occurs when water-saturated sandy soils are subjected to earthquake ground shaking. The soil and unconsolidated sediments take on characteristics of a dense liquid rather than a solid as a result of an increase in pore pressure (Bryant 1991). Therefore, the strength of the soil decreases, and the ability of soils to support foundations of building structures is reduced. Liquefaction can cause buildings to tilt or sink into the ground. Fine-grained sands that are water saturated are widespread in low-lying areas and are often used for agriculture (Bolt 1999). In Cache Valley, liquefaction is of greatest concern in the center of the valley where unconsolidated sediments are several hundred feet thick. Appropriate uses for areas of potential liquefaction are open space, agriculture, and other non-occupancy uses.

## WILDLAND-URBAN INTERFACE

The wildland-urban interface is where housing and development meets or intermingles with undeveloped wildland vegetation. The affinity for a rural setting has increased development along the wildland-urban interface. Housing development



in or near wildland vegetation is widespread and comprises approximately one-tenth of the area and one-third of the housing units in the con-

tinuous United States (Radeloff et al. 2005).

The wildland-urban interface has received considerable attention because of recent increases in the number of structures destroyed by wildfire. The interface poses several problems because protection of structures from wildfire is challenging and it is also an area where human-caused fire ignitions are most common (Radeloff et al. 2005).

Any region where climate is influenced by periodic drought is susceptible to natural fires (Bryant 1991). Fire is a natural and essential process that recycles nutrients and maintains the fitness of an ecosystem. However, there have been major attempts to suppress and control wildfires. As a result of the accumulation of dense underbrush and organic matter, severe wildfires often destroy physical structures along the interface.

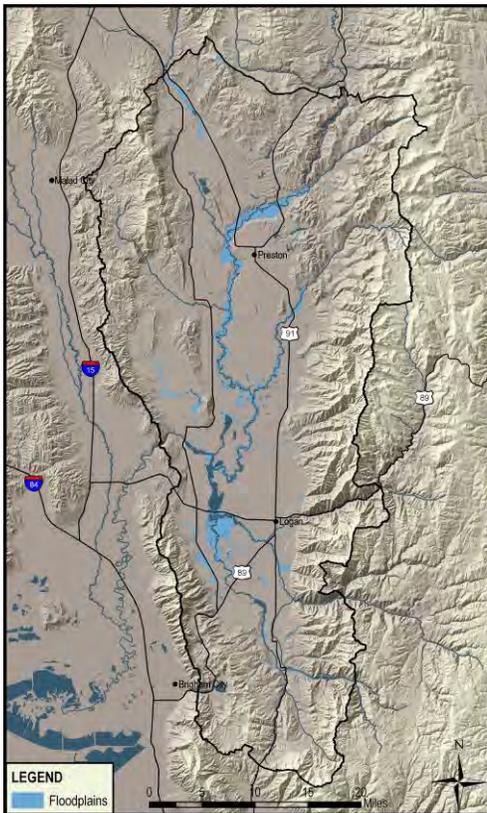
As the population of Cache Valley increases, development pressure will certainly increase in fire prone areas. Increased encroachment on the wildland margins will undoubtedly occur without planning.

## MODEL CRITERIA:

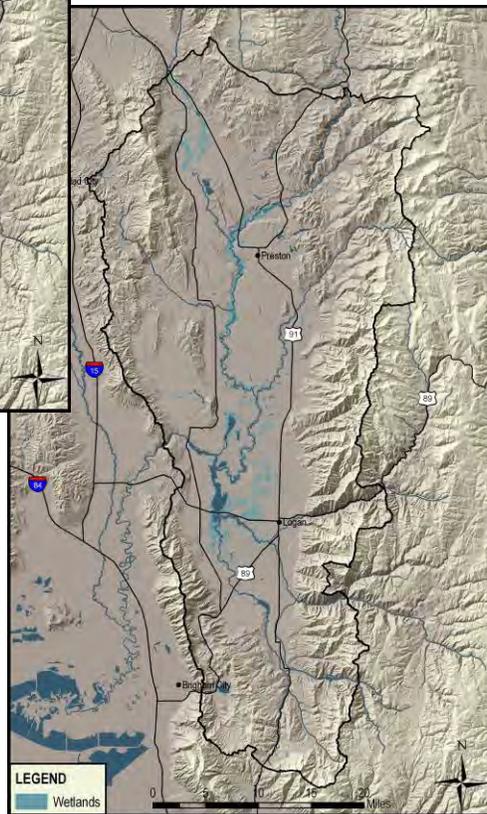
- Floodplains
- Wetlands
- Slopes > 20%
- Fault zones
- Soils susceptible to liquefaction
- Wildland vegetation prone to natural fire

# PUBLIC HEALTH, SAFETY, AND WELFARE

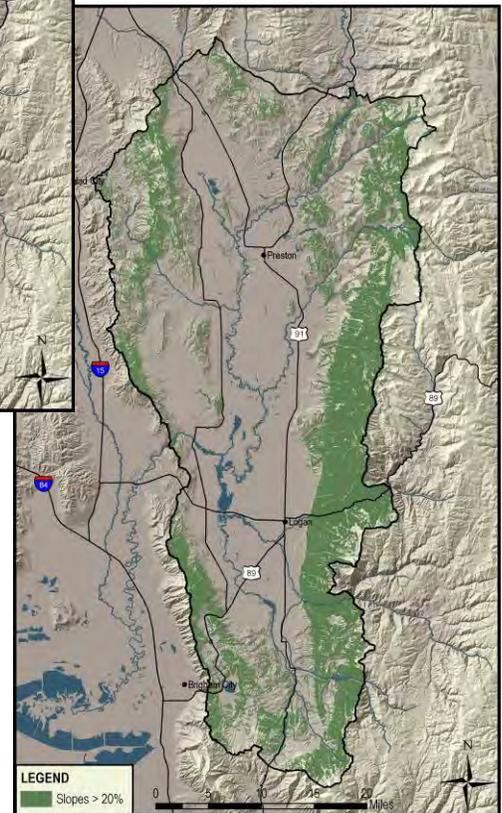
Floodplains



Wetlands

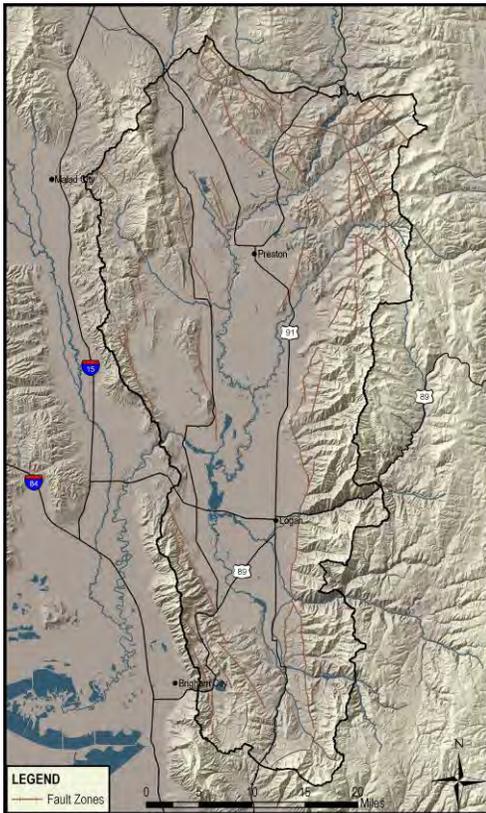


Slopes > 20%

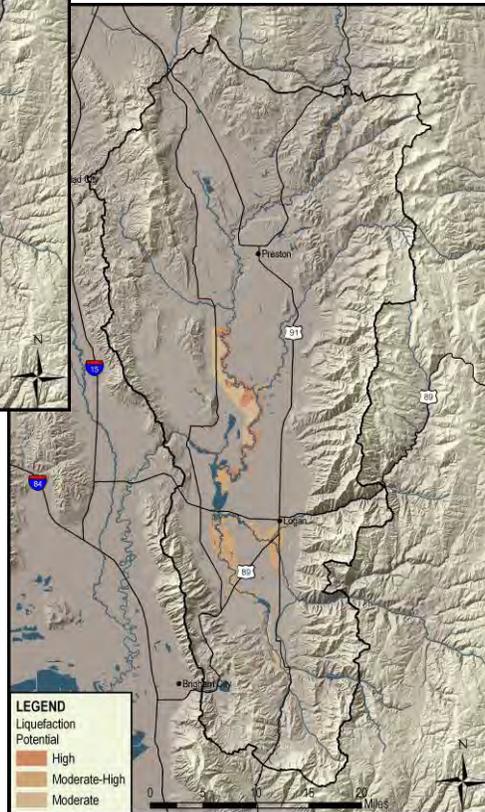


# PUBLIC HEALTH, SAFETY, AND WELFARE

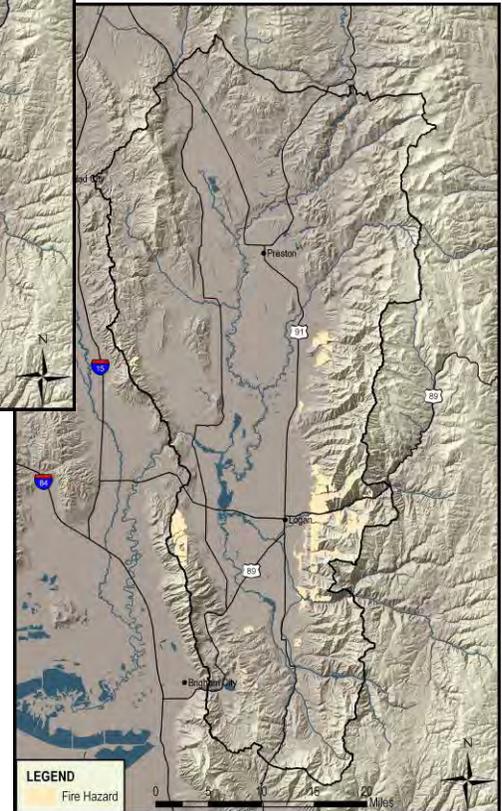
## Fault Zones



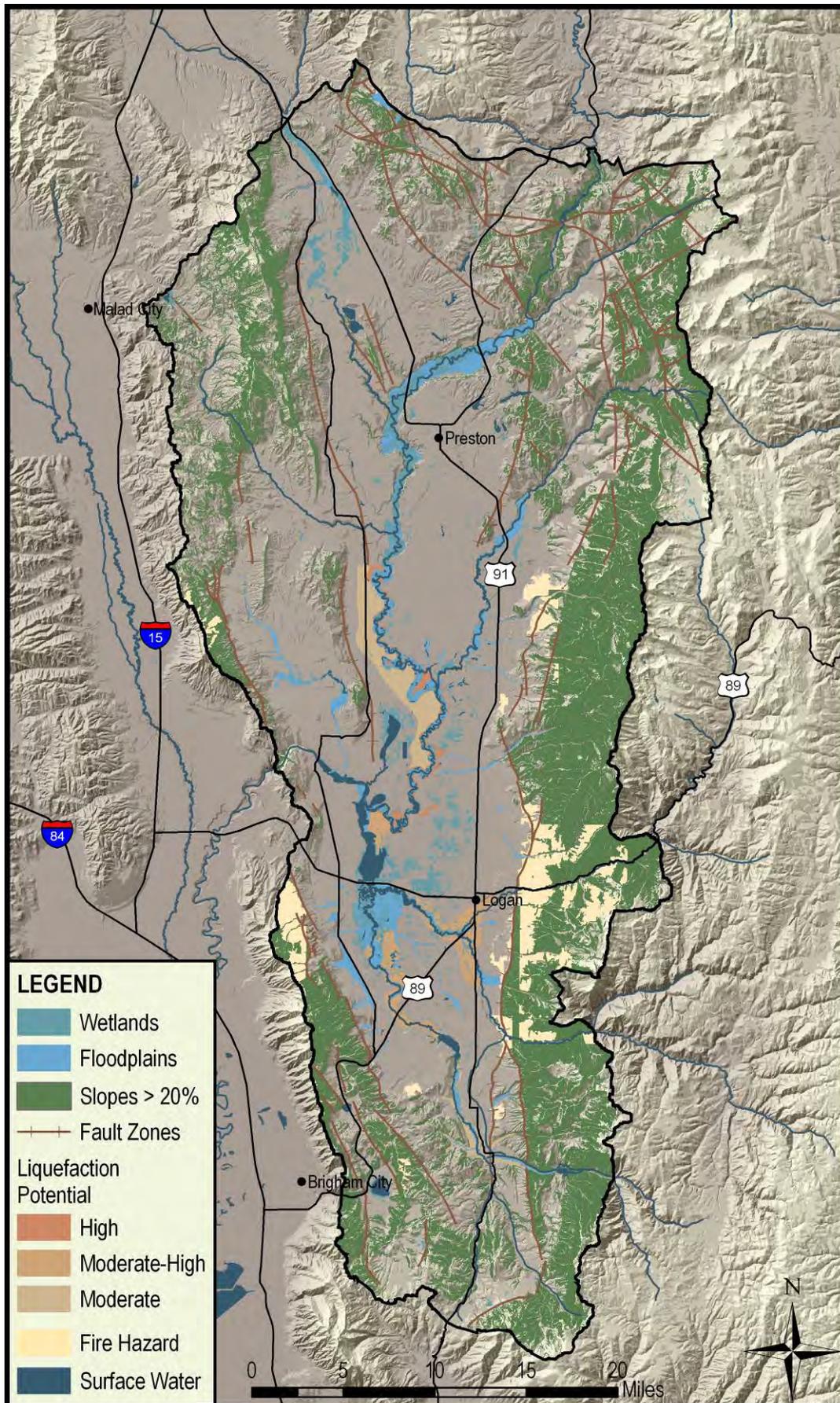
## Liquefaction Potential



## Fire Hazard (Wildland Urban Interface)



# PUBLIC HEALTH, SAFETY, AND WELFARE



# SURFACE WATER

## SURFACE WATER

The surface water assessment model was developed to depict the surface water resources in Cache Valley. These include rivers, streams, lakes, reservoirs, and wetlands. Water resources are important to the region for irrigation and agricultural, wildlife habitat, recreation, and municipal consumption.

As a result of the numerous important uses and functions of surface water, there have been concerns over water quality and issues. Within the past 20 years, nutrient and bacterial problems have arisen in many water quality investigations in Cache Valley (Utah Department of Environmental Quality (DEQ)).

Several segments of the Bear River and its tributaries have been listed as impaired due to both point and nonpoint sources of pollution. Point sources within the valley primarily consist of municipal and industrial effluent. Nonpoint sources include erosion from irrigated and dry cropland, runoff from dairies and feedlots, inappropriate disposal of animal waste, and construction activities (DEQ). Pollution often results in increases in phosphorus, nitrogen, coliform bacteria, temperature, and sediment, and decreases in dissolved oxygen. Consequently, bodies of water may be classified as impaired, therefore, indicating that they do not meet applicable water quality standards or beneficial use.



Streams, rivers, lakes, and reservoirs in Cache Valley have several beneficial use classifications, including protected for drinking water (protected

for secondary contact recreation such as boating or wading (Class 2B), protected for cold water game fish (class 3A), protected for warm water game fish (Class 3B), protected for non-game fish (Class 3C), protected for waterfowl and shorebirds (Class 3D), and/or protected for agricultural use including irrigation and stock watering (Class 4).

According to the Department of Environmental Quality, Hyrum, Newton, and Porcupine Reservoirs are impaired for their beneficial use as cold water game fish habitat (Class 3A). However, their beneficial uses for recreation and agricultural use have been maintained. In addition, Spring Creek from the confluence with the Little Bear River to the headwaters is impaired in respect to secondary contact recreation (2B) and use as cold water game fish habitat (3A) due to fecal coliform, ammonia, dissolved oxygen, temperature, and total phosphorus issues. Other impaired waters include segments of the Cub River, Oneida Narrows, Weston Creek, Battle Creek, and Swan Lake Creek due to pathogens from agricultural impacts, sedimentation, and siltation (Environmental Protection Agency).

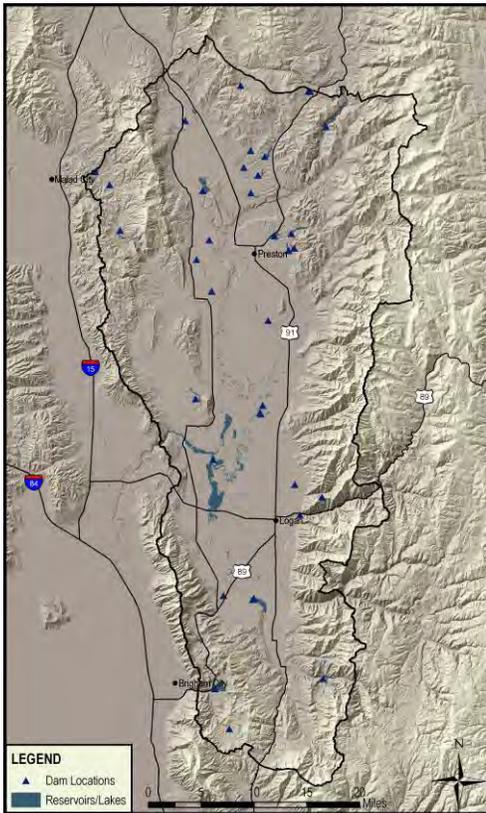
Currently, agencies and organizations such as the Environmental Protection Agency, Utah Division of Water Quality, and Idaho Rivers United are monitoring impaired waters as well as implementing remediation practices such as agricultural waste management, nutrient management, pasture management, irrigation water management, and streambank protection (DEQ). These will become increasingly important as the growing population will require clean water. Furthermore, the protection of wetlands will also become essential because they filter excess nutrients and contaminants, stabilize sediment, and are critical areas for groundwater recharge and discharge (Novitzki et al. 1996).

### MODEL CRITERIA:

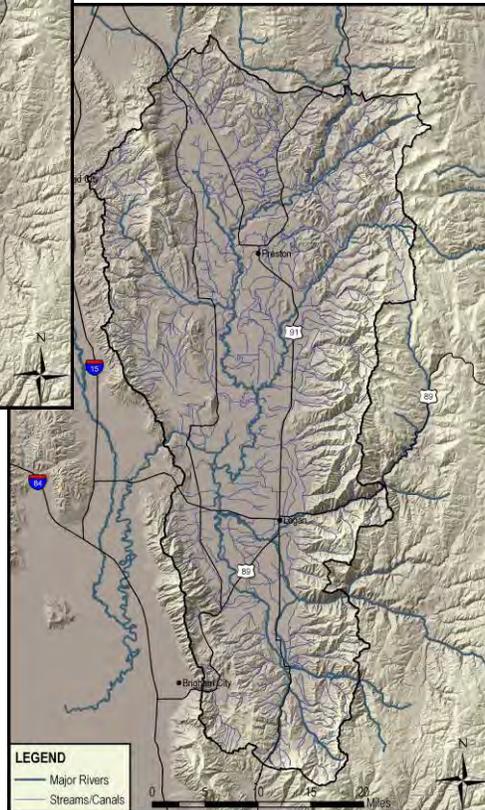
- Reservoirs and lakes
- Rivers, streams, and canals
- Wetlands

# SURFACE WATER

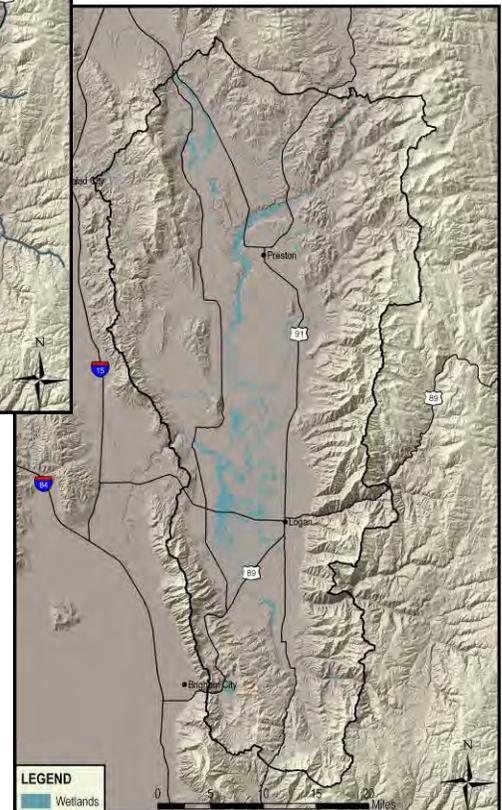
## Reservoirs and Lakes



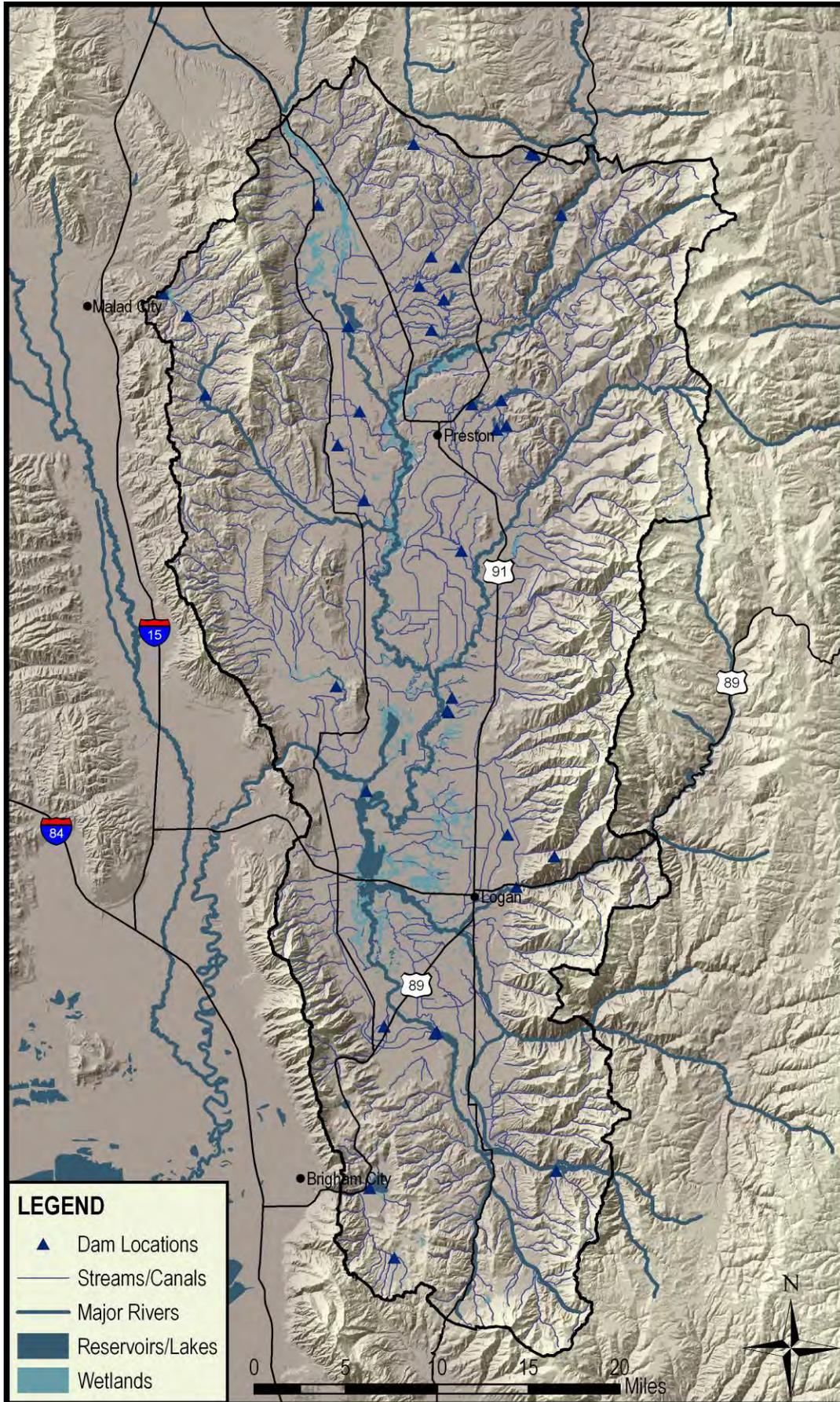
## Rivers, Streams, and Canals



## Wetlands



# SURFACE WATER



## GROUNDWATER

The groundwater environmental assessment model was developed to illustrate the primary aquifer recharge areas in the valley.

Groundwater is an important resource, and it is estimated that approximately 90 percent of fresh water in the United States is in the form of groundwater (Smith 1989). Groundwater is often the primary source of water in many rural communities for human consumption and agriculture.

Groundwater levels in Cache Valley's principal aquifer were relatively constant between 1945 and 1982; however, between 1970 and 2000, it was estimated that the water level declined in some areas by 13 feet (Sanderson and Lowe 2002). This is an indication of seasonal and decadal drought, as well as an increase in withdrawal from groundwater wells. If this trend continues, eventually there will be a reduction in flow from wells and springs, a reduction of flow into rivers, dewatering of wetlands, as well as an economic hardship (Peralta 1995). As a result, the long-term availability of groundwater should be considered when planning for growth and development.

In Cache Valley, the principle source of aquifer recharge occurs along the mountain-valley margin (approximately from Richmond to Hyrum) where unconsolidated materials have the greatest permeability. Other sources of recharge occur in wetlands and areas where the water table is at or near the ground surface. Although wetlands are primarily an area of groundwater discharge, they can also serve as groundwater recharge areas depending on sediment and soil characteristics, topographic position, and season (Carter 1996). Wetlands serve an important function in groundwater recharge as they intercept and filter pollutants, nutrients, and sediment before they reach water supply. Therefore, they serve to enhance water quality.

Even though it has been concluded that the quality of groundwater in the principle aquifer is good (Sanderson and Lowe 2002), there are

many threats to the potential quality of groundwater in Cache Valley as the population increases. Currently, livestock feedlots and irrigation runoff are the primary sources of surface and subsurface water pollution, but seepage from septic tanks, storm runoff from urban areas, landfills, and salt from winter roads will increasingly become a concern (Smith 1989).

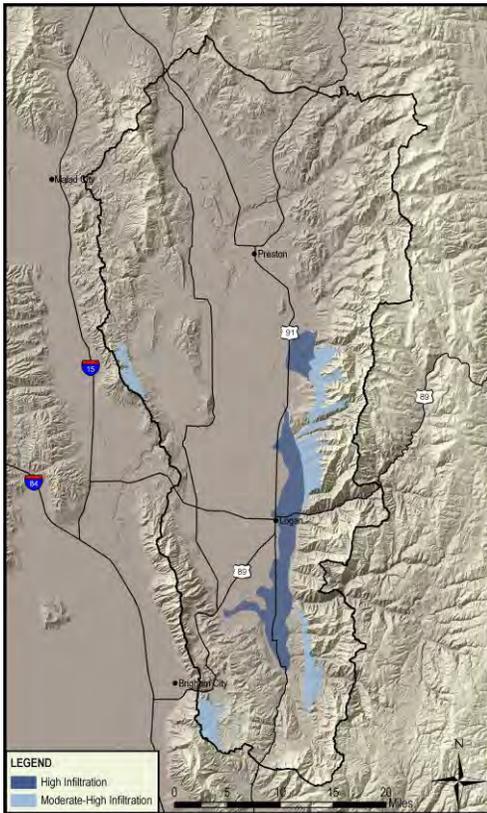
Therefore, wetlands and areas where the water table is in close proximity to the surface are deemed important for groundwater quality.

## MODEL CRITERIA:

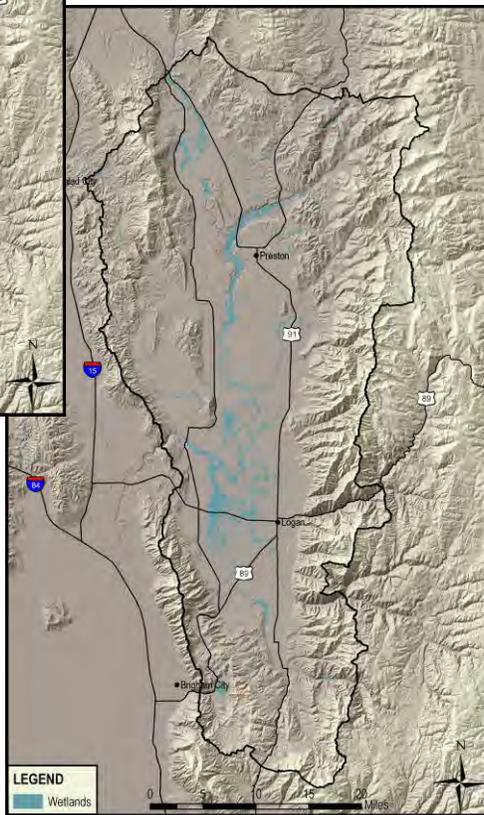
- High to moderate-high soil infiltration (USDA NRCS STATSGO soil data)
- Wetlands
- Shallow groundwater (water table less than one foot deep) (USDA NRCS SSURGO soil data)

# GROUNDWATER

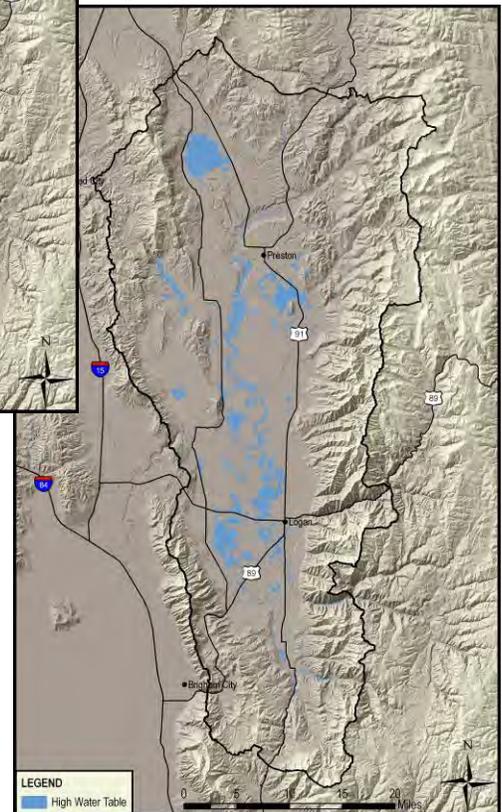
## High and Moderate-High Soil Infiltration



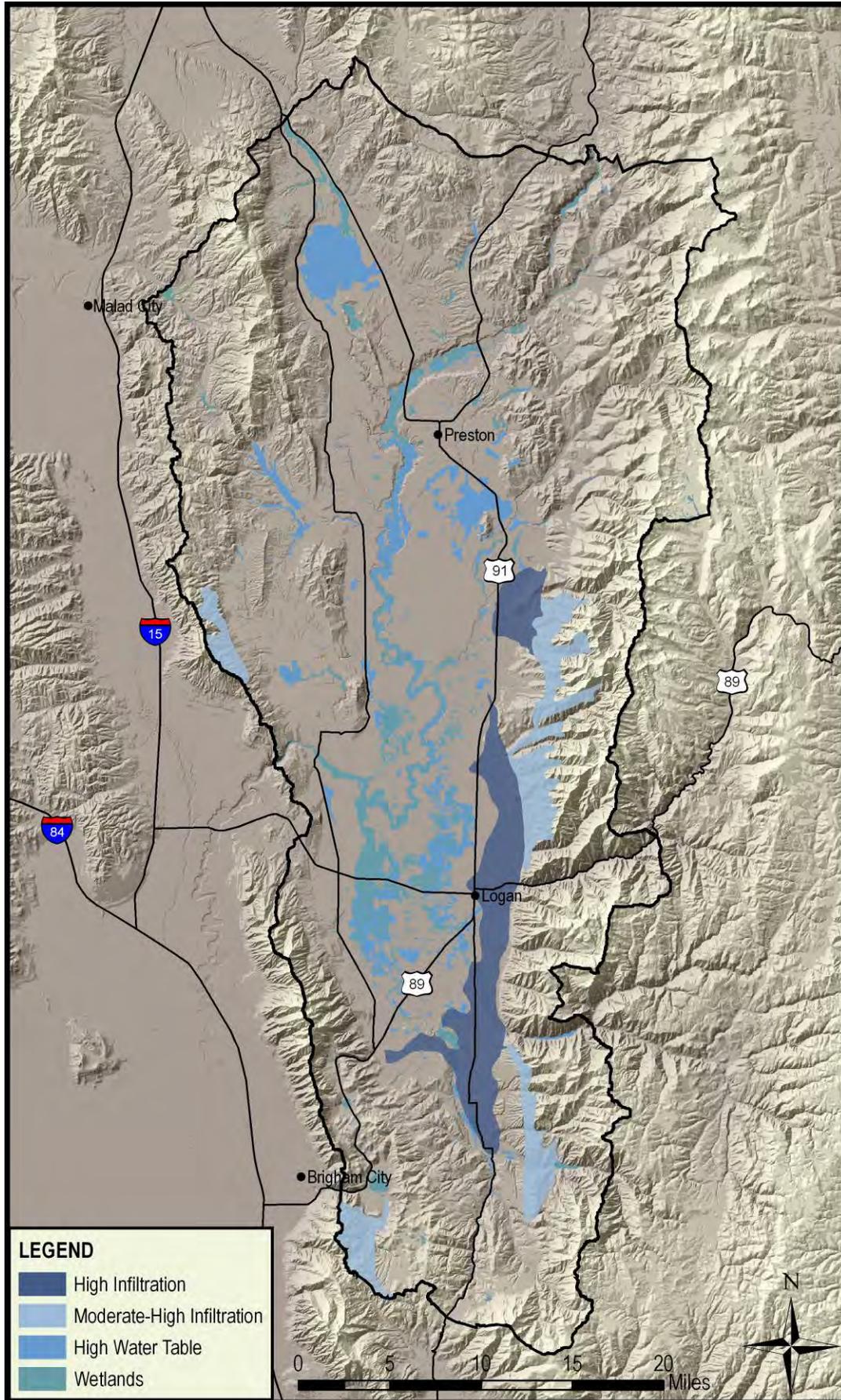
## Wetlands



## High Water Table



# GROUNDWATER



# WILDLIFE HABITAT

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## WILDLIFE HABITAT

The wildlife assessment model was created to spatially represent which habitats are critical for both terrestrial and aquatic wildlife species, and therefore, would be important to protect. Critical habitat, as defined by the Endangered Species Act, is the geographic area occupied by a species and considered essential for the survival and preservation of a species.

Even though there is an array of wildlife species in Cache Valley, it is difficult to acquire the necessary data for all major species. As a result, two indicator species were chosen to represent a wide range of wildlife habitat. In addition, wetlands and riparian areas were also deemed critical for wildlife. Rocky Mountain elk and mule deer were the two umbrella species selected, as their habitat is wide ranging and covers many biotic communities. It is also possible that threatened species may occupy portions of the same habitat.

Critical deer and elk habitat was obtained from Idaho Fish and Game and Utah Division of Wildlife Resources. However, there were slight discrepancies between the Utah and Idaho data. Therefore, the data was merged utilizing vegetation data from the Southwest Regional GAP Analysis Program (2004).

The composite critical wildlife habitat model depicts an apparent connectivity between the upland wildlife habitat and the lowland wildlife habitat with riparian corridors providing migration routes. Riparian corridors often provide a connection for many species from October through March when heavy snows limit foraging and grazing at higher elevations.

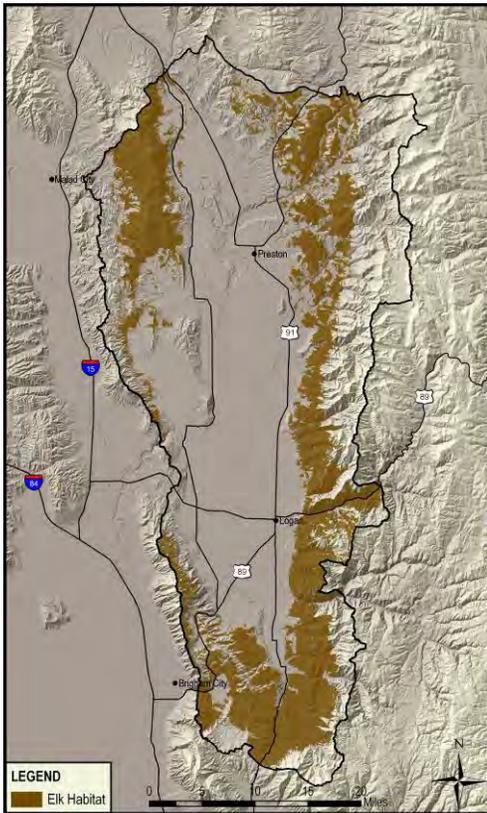
Growth and development often fragments critical wildlife habitat and important migration routes, and therefore exposes many species to predation, human interactions, and travel across highways. For these reasons, protection of critical wildlife habitat is not only important for species but also important for human safety.

## MODEL CRITERIA:

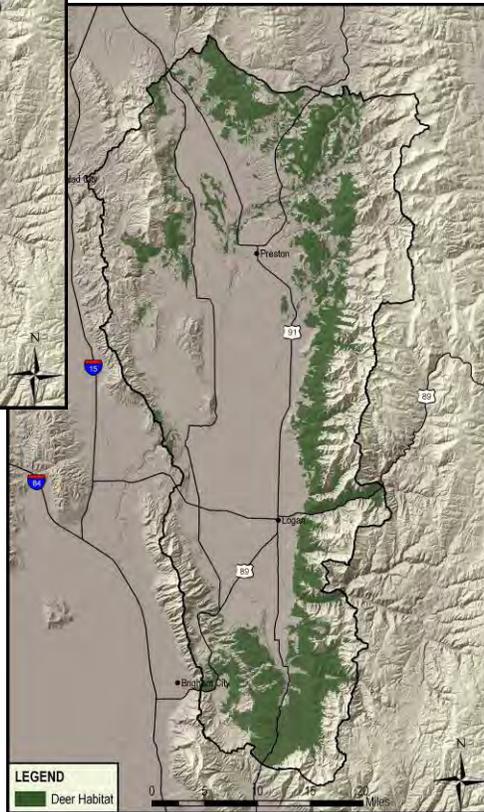
- Critical Rocky Mountain elk and mule deer habitat (Idaho Fish and Game, Utah Division of Wildlife Resources)
- Southwest Regional GAP vegetation data
- Wetlands
- Rivers

# WILDLIFE HABITAT

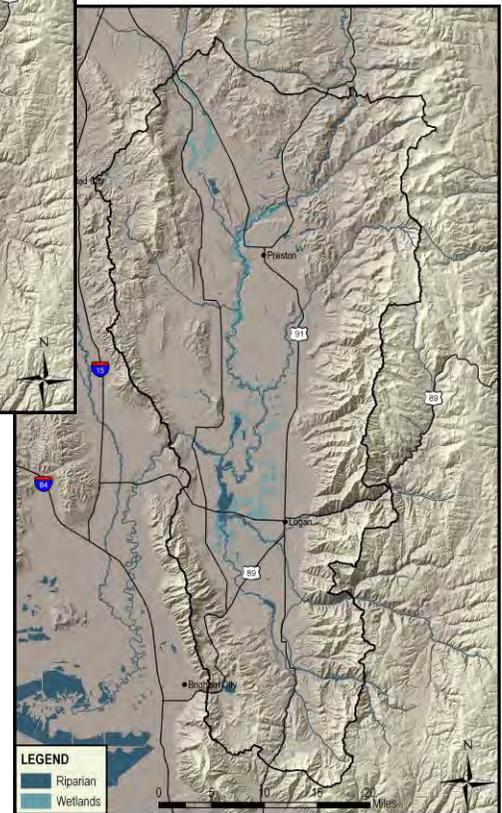
## Critical Rocky Mountain Elk Habitat



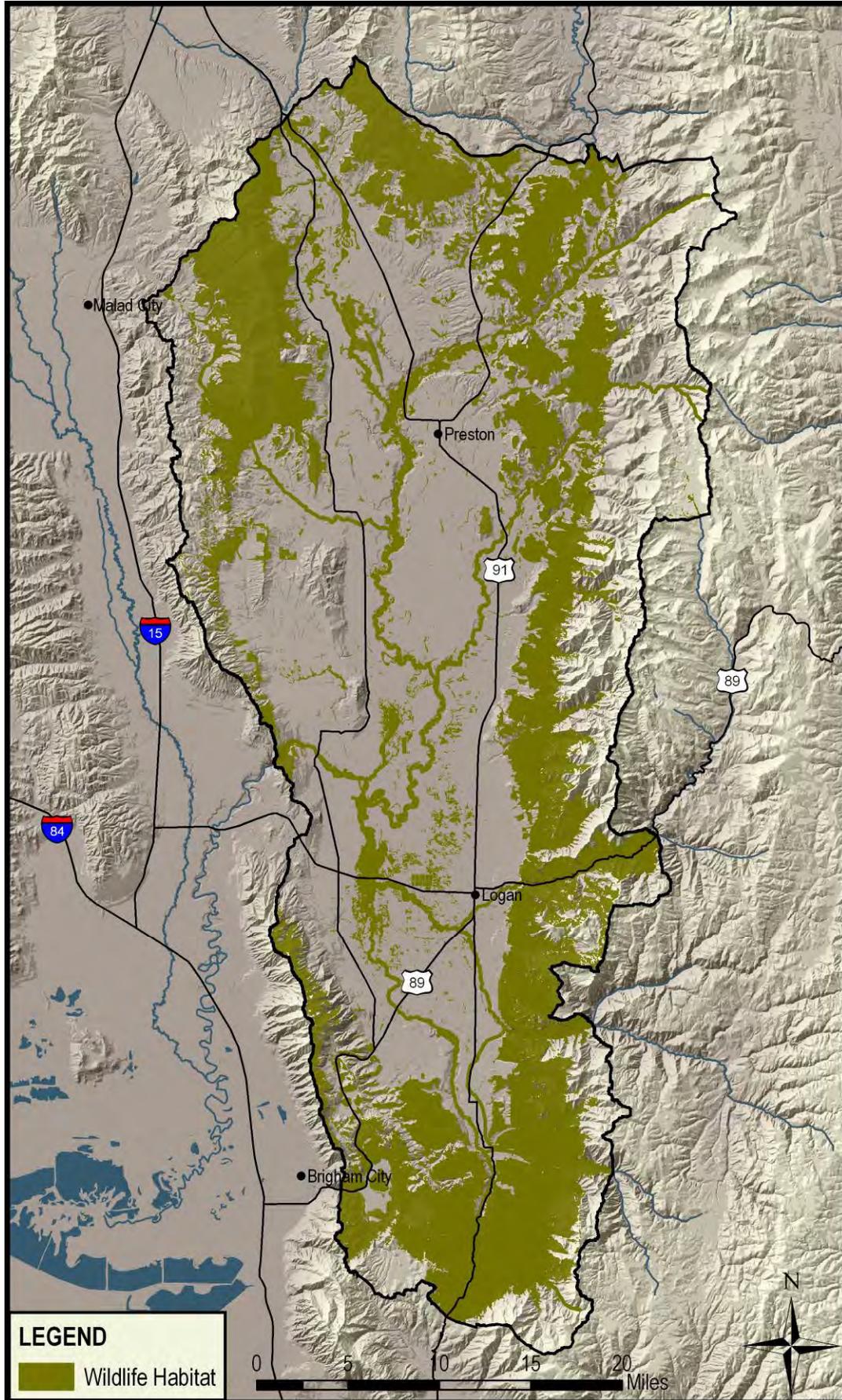
## Critical Mule Deer Habitat



## Wetland and Riparian Habitat



# WILDLIFE HABITAT



# VISIBILITY ASSESSMENT

## VISIBILITY ASSESSMENT

The purpose of this assessment model was to demonstrate which areas of the landscape are most visible from key points in the valley. However, it is important to remember that visibility in this sense is only measured in the context of changes in elevation and does not take into account occluding surface features such as man-made structures, trees, or other vegetation.

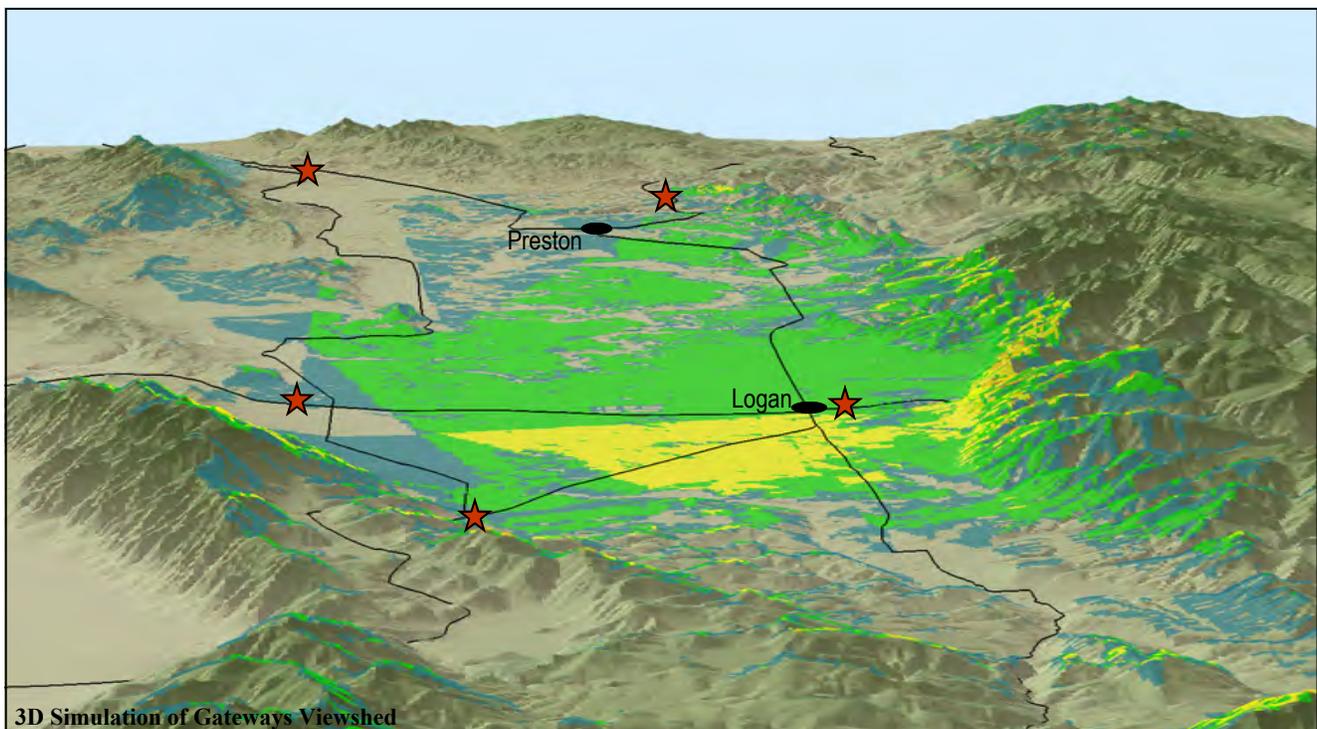
A visibility assessment is accomplished through the creation of viewsheds using Digital Elevation Models (DEM) and points of viewing locations. A DEM is a grid in which each cell contains a measure of elevation for the section of the landscape it covers. A viewshed is the result of computations of which cells can be seen by other cells given their relative elevations. A Digital Elevation Model of Cache Valley at 30 meter resolution (30m x 30m cells = 900m<sup>2</sup> or approximately a quarter of an acre) formed the basis of the various viewshed calculations.

Three different groups of viewing locations were chosen. These are *Gateways into Cache Valley*, *Towns in the West*, and *Towns in the East*. The *Gateways into Cache Valley* are places that rep-

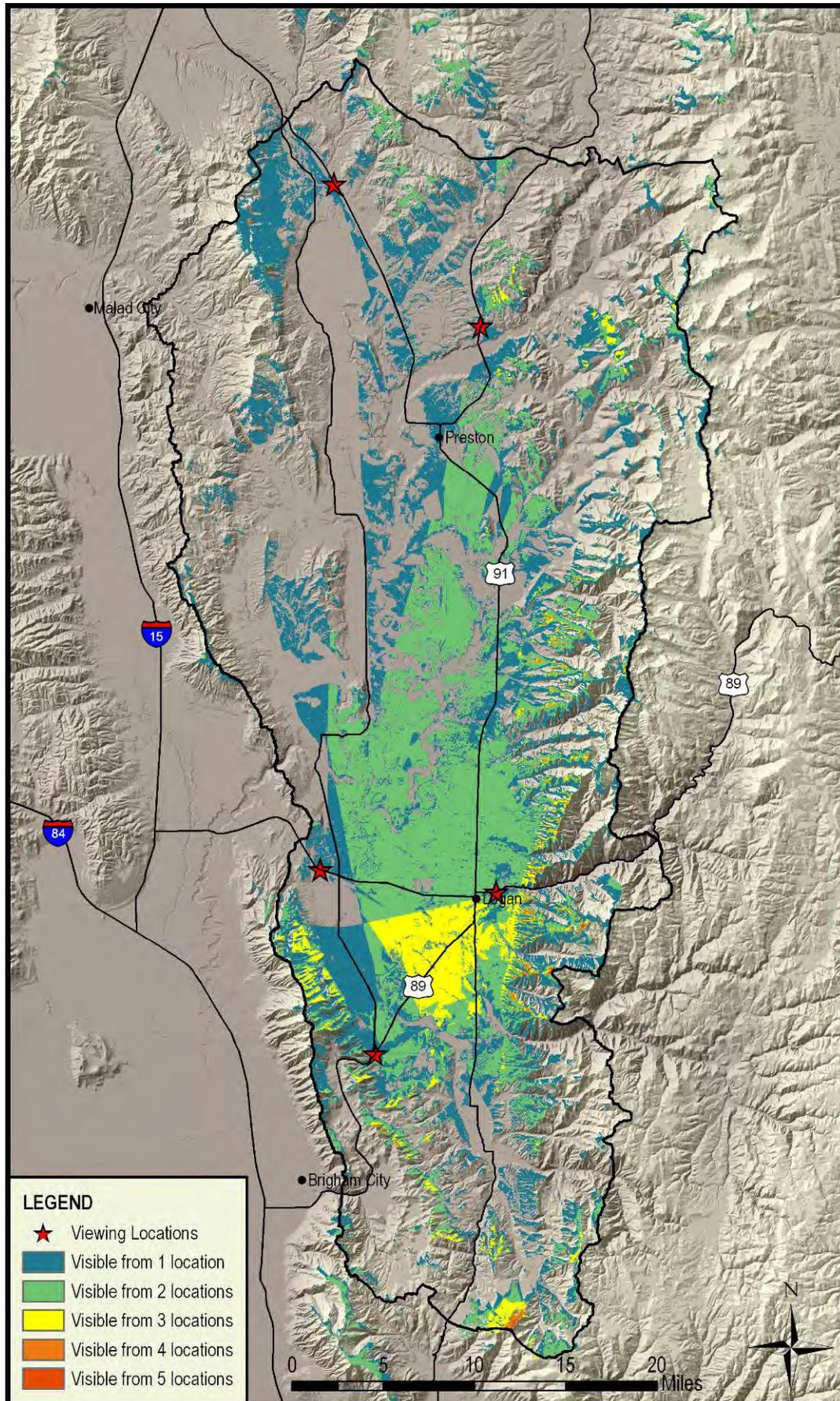
resent points of entrance into the valley and were placed at the south end on Highway 89/91 coming out of the mouth of Wellsville Canyon, the Valley View Highway (State Highway 30), the mouth of Logan Canyon by Utah State University, Highway 91 at Red Rock Pass, and the mouth of the Oneida Narrows. The *Towns in the East* are the communities on the east side of the valley and the *Towns in the West* are those in the west. These points were placed in the approximate center of the towns, or where major roads intersected. For example, in Logan the point was placed at the intersection of Main Street and Center Street.

Each of these viewsheds was calculated independently and are represented on the following maps. The changes in color represent the cumulative number of viewing locations that see certain areas of the landscape.

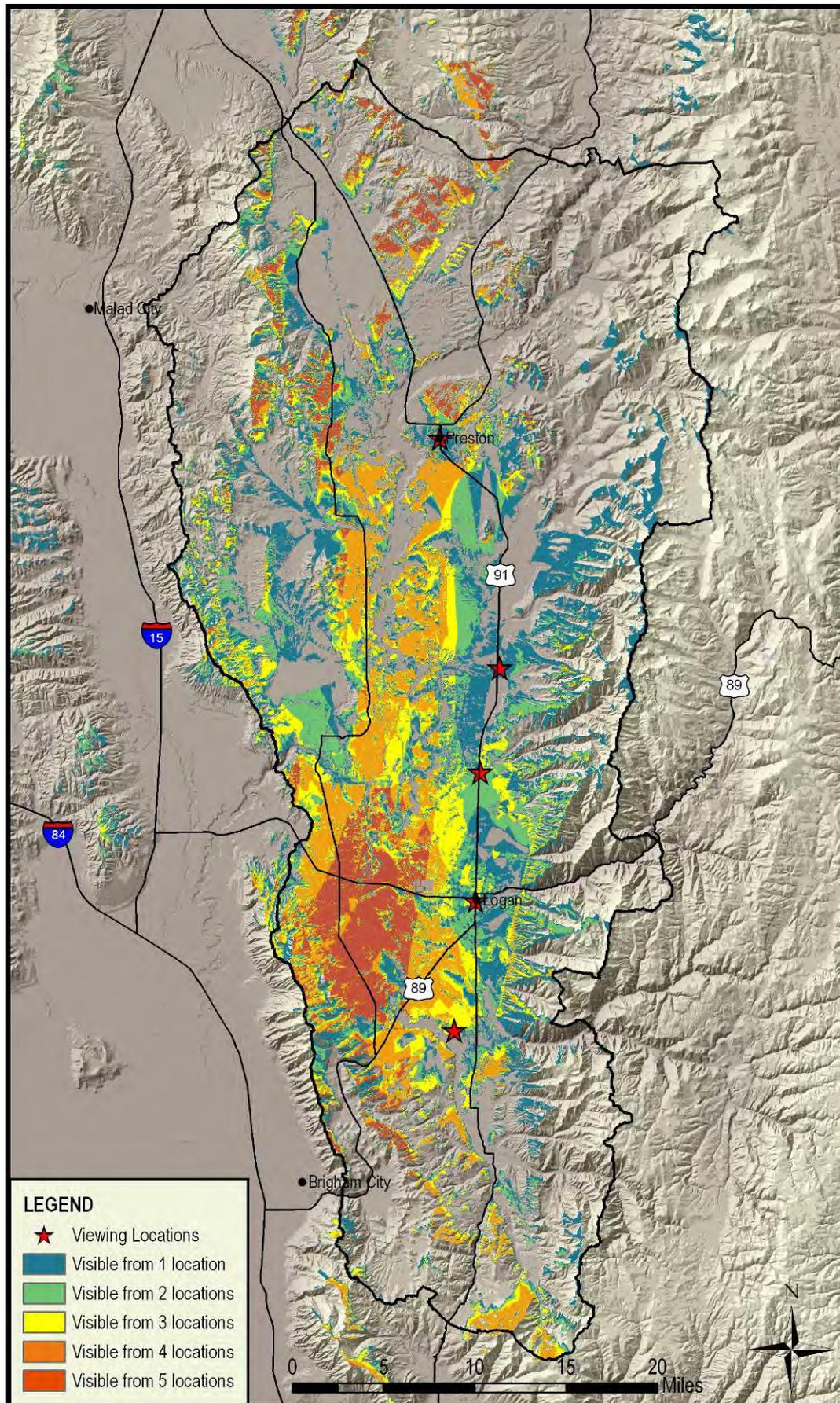
Finally, a composite map was created representing the most visible places in Cache Valley from the combination of viewing locations from all communities. This information would prove useful to planners for demonstrating potential visual impact of any proposed development or proposed preservation.



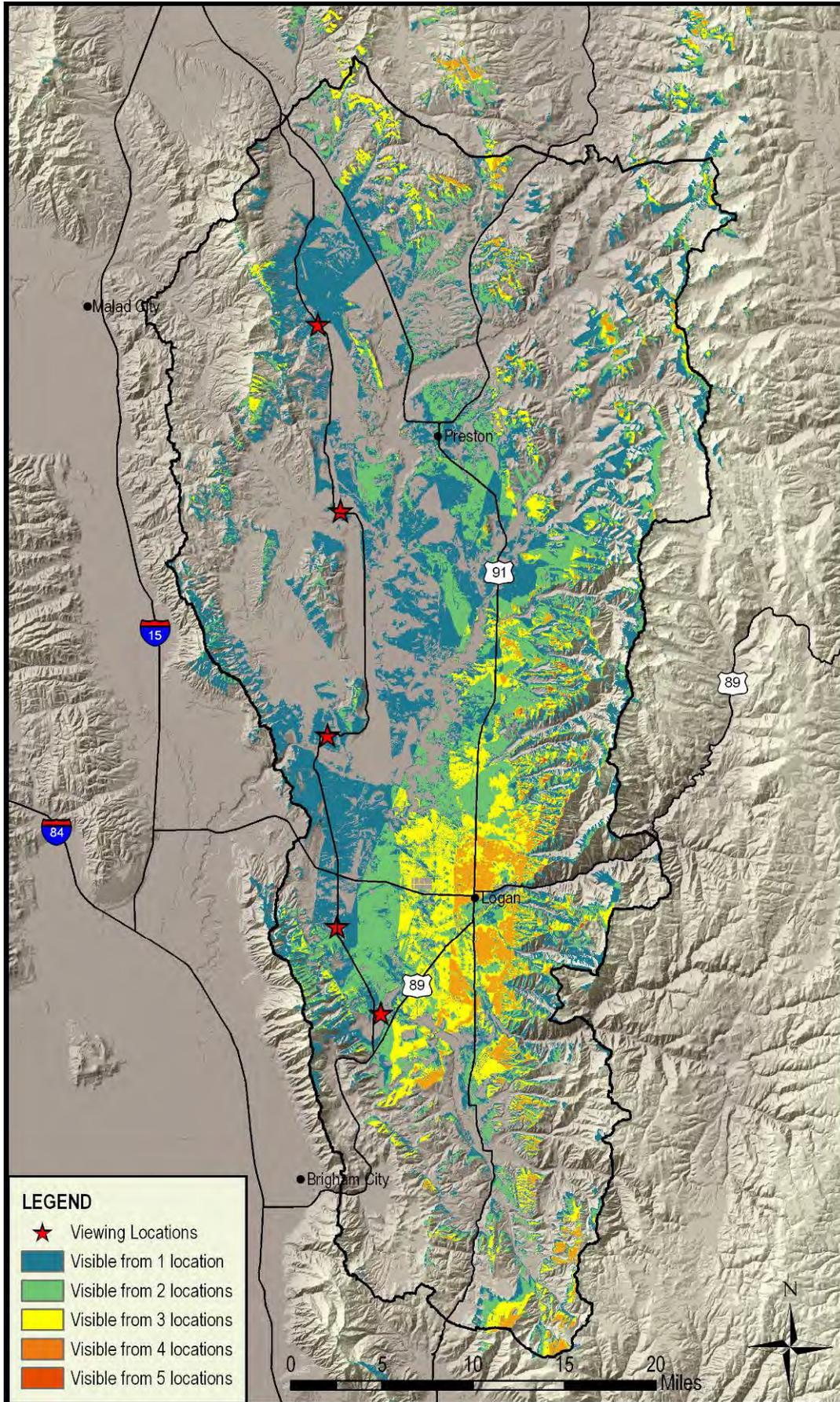
# VISIBILITY ASSESSMENT - Gateways



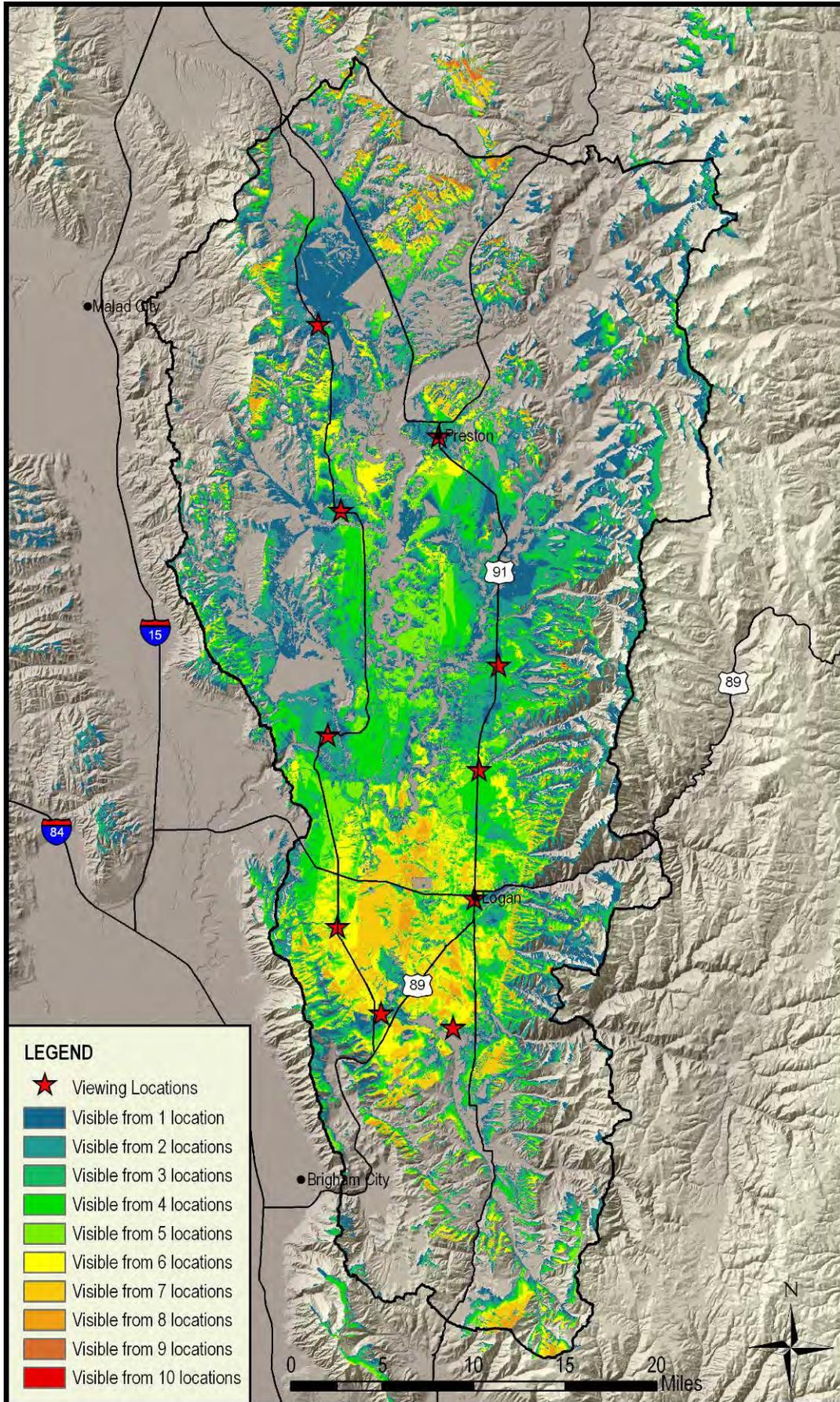
# VISIBILITY ASSESSMENT - East Towns



# VISIBILITY ASSESSMENT - West Towns



# VISIBILITY ASSESSMENT - Town Composite

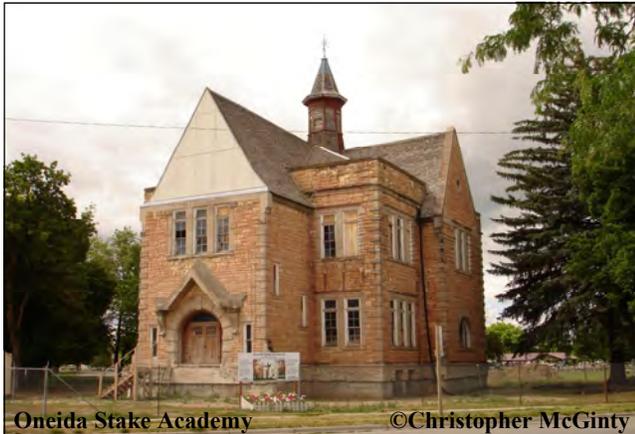


# CACHE VALLEY IDENTITY

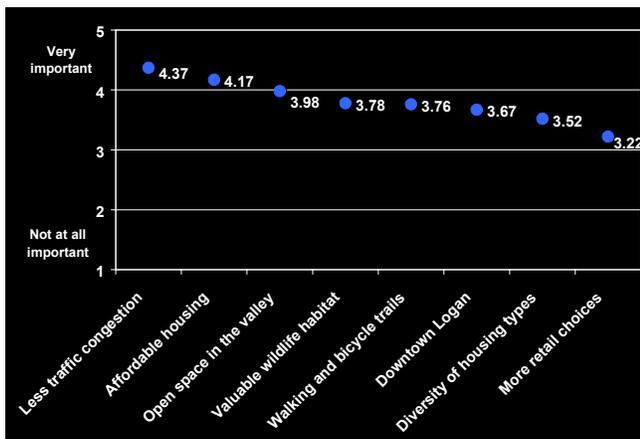
## CACHE VALLEY IDENTITY

The Cache Valley Identity models attempt to map some of the special characteristics of Cache Valley that help define the identity of the place. In several surveys, Cache Valley Residents have expressed preference for preserving the many qualities of the valley that make it unique and contribute to a higher quality of life.

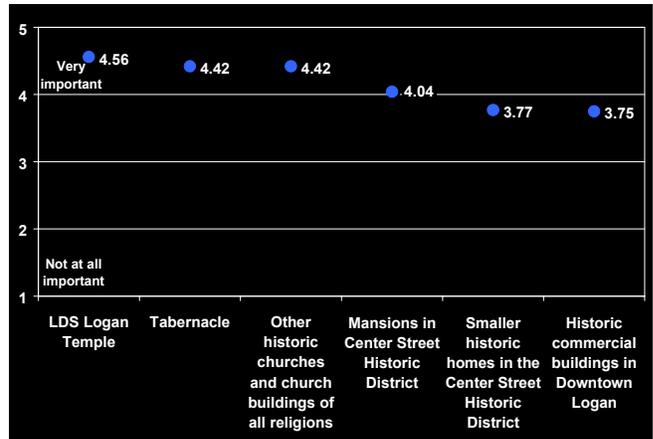
In 1999, Cache County conducted a “Quality Growth Survey.” Results from the survey indicated that 84% of Cache County residents value open public spaces, and 68% value maintaining the “community feeling,” 69% felt existing open agricultural spaces between communities should be preserved, and 66% valued preservation of working farms or ranches in the valley. Hillsides as well as rivers and streams were prioritized as the most valuable natural spaces for preservation.



From a survey by Dan Jones Associates in 2003, Logan residents were asked “Please rate the importance of each of the following to you:”



In the same survey, they were asked “How important to the future of this community is it to preserve the following historical resources?”

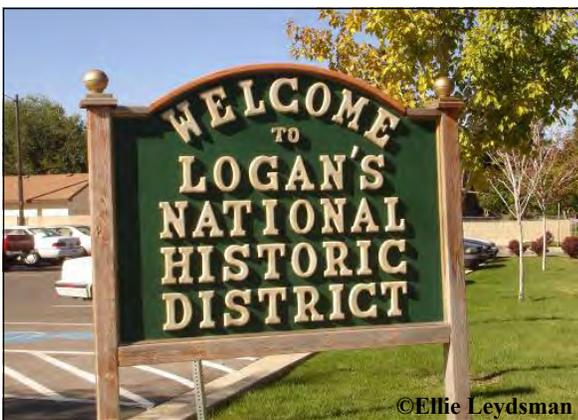
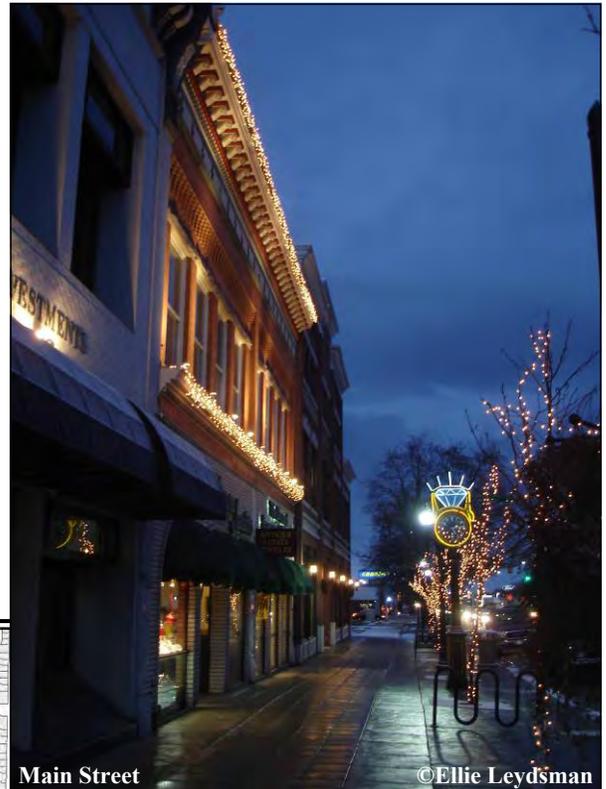


Almost 50% of those surveyed said they would be willing to spend public funds for the preservation of these historical resources.

Three models have been developed, each depicting different aspects of the region that people value and may wish to preserve. The categories are Cultural, Agrarian, and Natural. Each depicts significant landmarks, districts, and open space relevant to the category.



# CACHE VALLEY IDENTITY



# CACHE VALLEY IDENTITY

The Cultural Model illustrates significant historical landmarks. These include buildings, sites, and districts that have specific cultural or historical value. Many of these involve indigenous, religious, educational, and governmental significance.

## MODEL CRITERIA – CULTURAL:

- Cultural/Historical Landmarks
- Historical Districts

The Agrarian Model includes specific landmarks as well as high quality agricultural land. The open space of the valley in relationship to its history creates a significant impact on the rural character of the valley. It will not be enough to preserve landmarks to maintain the ambiance of the rural/agricultural nature of the valley floor. It will be imperative to consider preservation of large tracts of prime agricultural land to maintain this presence. The prime agricultural land defined in this model was derived from the United States Department of Agriculture (USDA) Natural Resources Conservation Service soils data for prime farmland.

## MODEL CRITERIA – AGRARIAN:

- Agricultural Landmarks
- Prime Agricultural Land

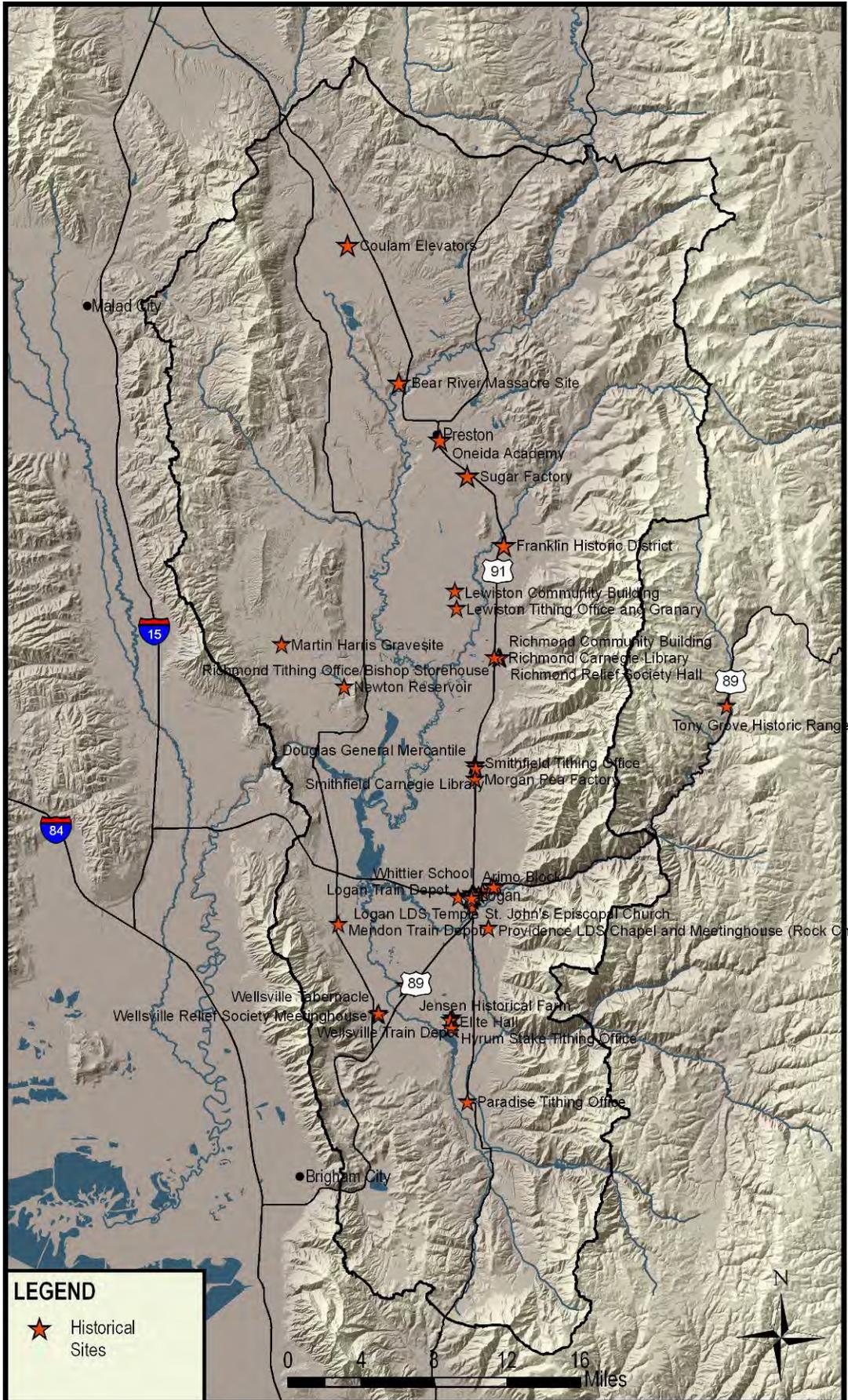
The Natural Model is comprised of landmarks in the natural environment, as well as significant open space. Some of the open space defined is already set aside through State and Federal lands. Other open space is designated as important to natural systems.

## MODEL CRITERIA – NATURAL:

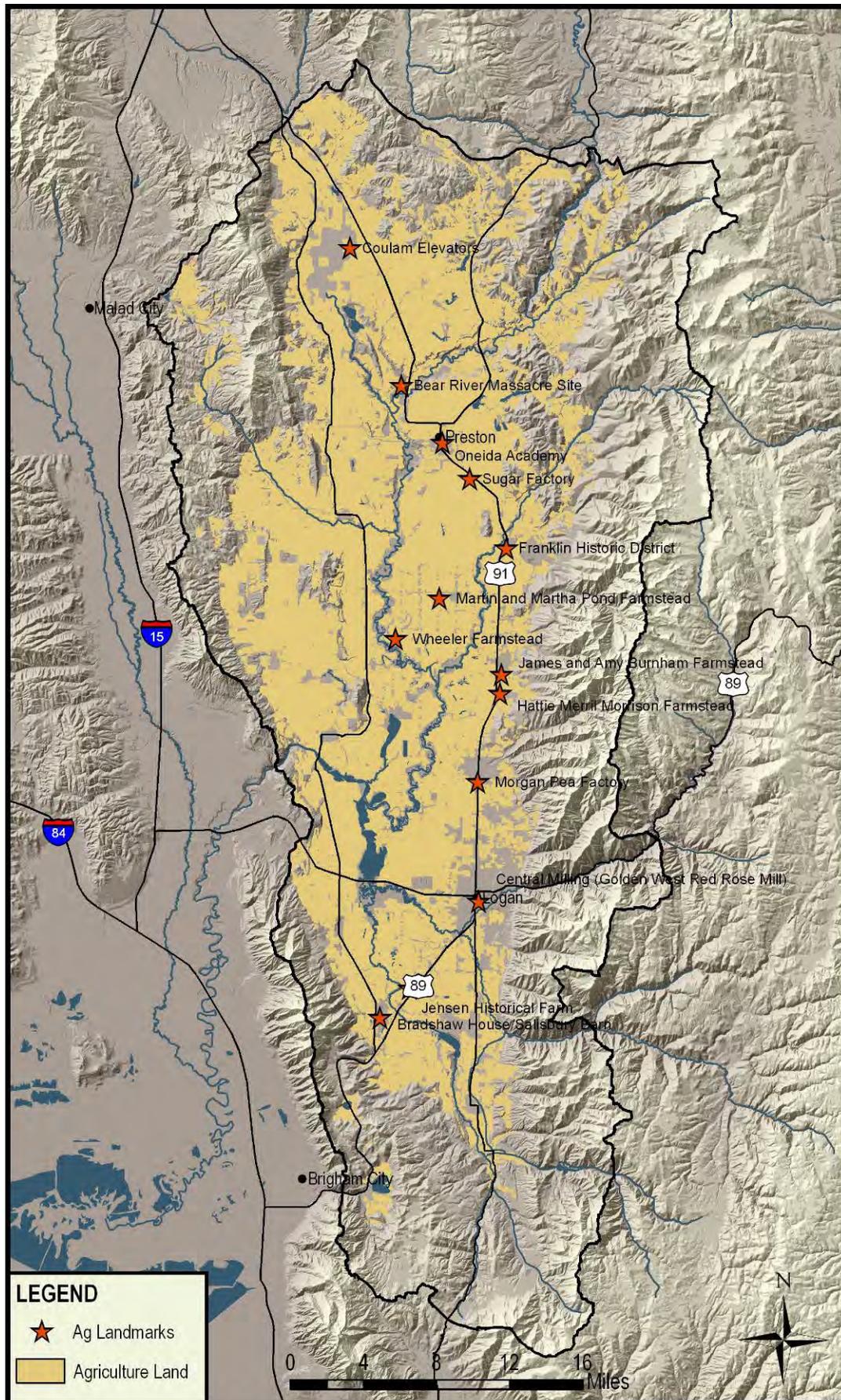
- Natural Landmarks
- State and Federal Lands
- Rivers, Streams, and Wetlands



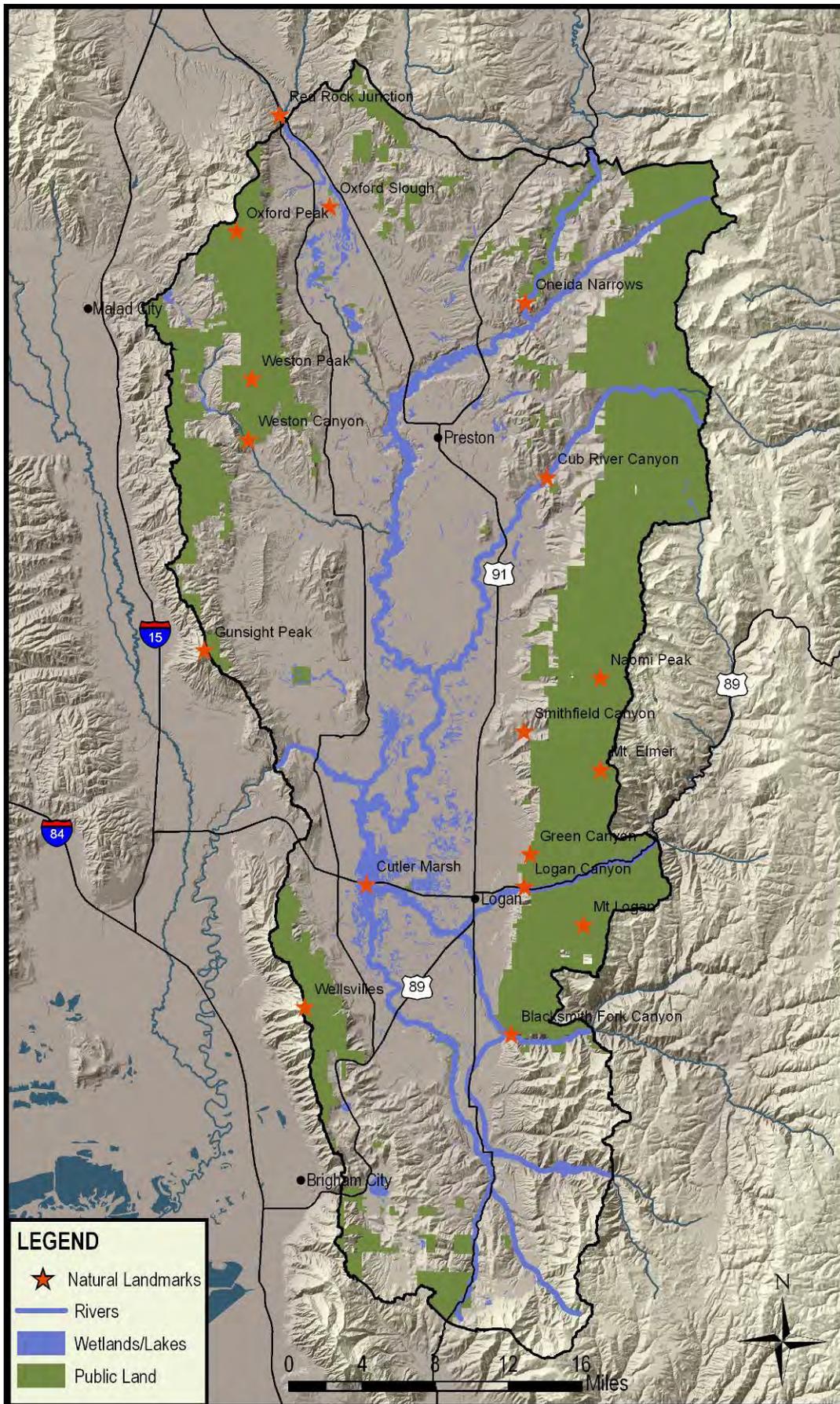
# CACHE VALLEY IDENTITY - Cultural



# CACHE VALLEY IDENTITY - Agrarian



# CACHE VALLEY IDENTITY - Natural



# WORKING LANDS

## WORKING LANDS

The working lands assessment model was designed to identify agricultural lands including prime farmland and dairy facilities, and sand and gravel surface mines within Cache Valley. Prime farmland as determined by the USDA Natural Resource Conservation Service is defined as land that is necessary in meeting the needs for food, fiber, feed, forage, and oilseed crops. Prime farmland is influenced by properties such as an adequate and dependable water supply, either from precipitation or irrigation, favorable temperature and growing season, soils free from rocks, and soils with neutral pH values. In Cache Valley, prime farmland is largely in the valley bottoms and is typically on slopes less than 10 percent.

The amount of prime farmland is decreasing as agricultural lands are being converted to residential subdivisions and commercial development. It is estimated that between 1997 and 2002, Cache County lost over 25,000 acres of agricultural land (9 percent decrease) and Franklin County lost over 6,000 acres of agricultural land (3 percent decrease). Therefore, government entities, planners, and citizens have the responsibility to evaluate future growth and development in such a manner as to preserve and protect prime agricultural lands for future generations. It is further recommended that these considerations be used in conjunction with other tools such as the Agricultural Heritage Initiative and the Land Evaluation and Site Assessment (LESA) system.

The working lands model also identifies dairies within Cache Valley. There are approximately 302 dairy facilities in Cache Valley. Dairy operations often contribute a variety of nuisances such as noise, odor, and water pollution. Therefore, the utility in identifying dairies within the valley is to avoid future conflicts between residential and agricultural land uses. It has been recommended that large dairies (greater than 1000 head) should have a one-half mile buffer, and small dairies (less than 1000 head) should have a one-quarter mile buffer surrounding them.

Currently, the State of Idaho Department of Agriculture annually inspects and regulates all dairy feedlots. Farm milk permits can be revoked for violations or unauthorized discharge of effluents (Minnesota Environmental Quality Review Board 2001).

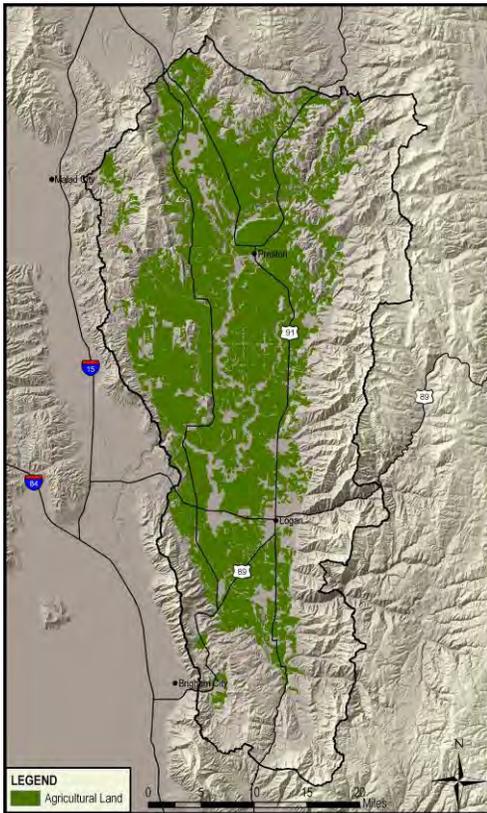
Another component of the working lands assessment model is surface mining. Surface mining in Cache Valley primarily includes sand and gravel extraction. As with dairies, gravel pits produce a variety of nuisances such as noise, dust, air pollution, water pollution, road wear, and aesthetic detriment. Therefore, the inclusion of gravel pits in the model is to aid developers and planners in locating residential development and public facilities away from them. It is estimated that large surface mines should have a one-quarter mile buffer around them.



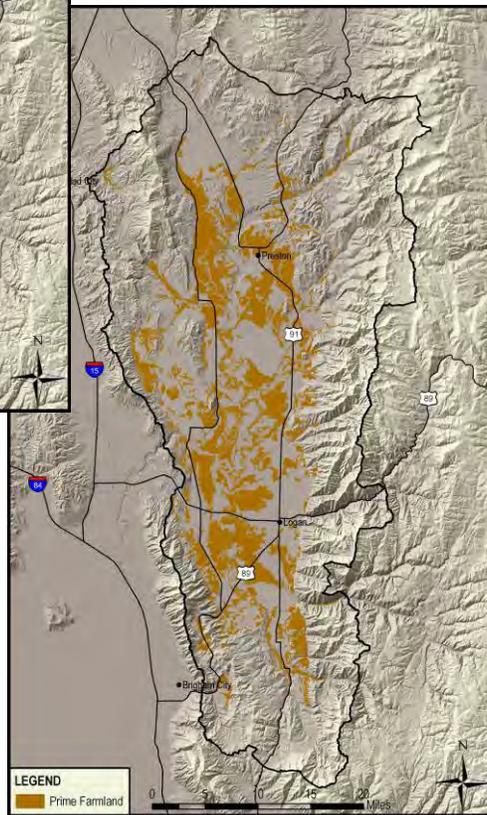
## MODEL CRITERIA:

- Agricultural lands (SWReGAP 2004)
- Prime farmland (USDA NRCS SSURGO soil data)
- Dairies
- Gravel pits (USDA NRCS SSURGO soil data)

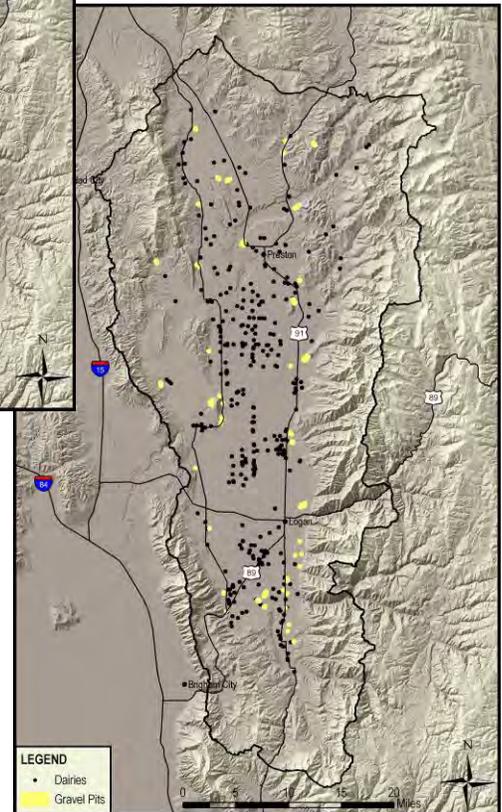
## Agricultural Lands



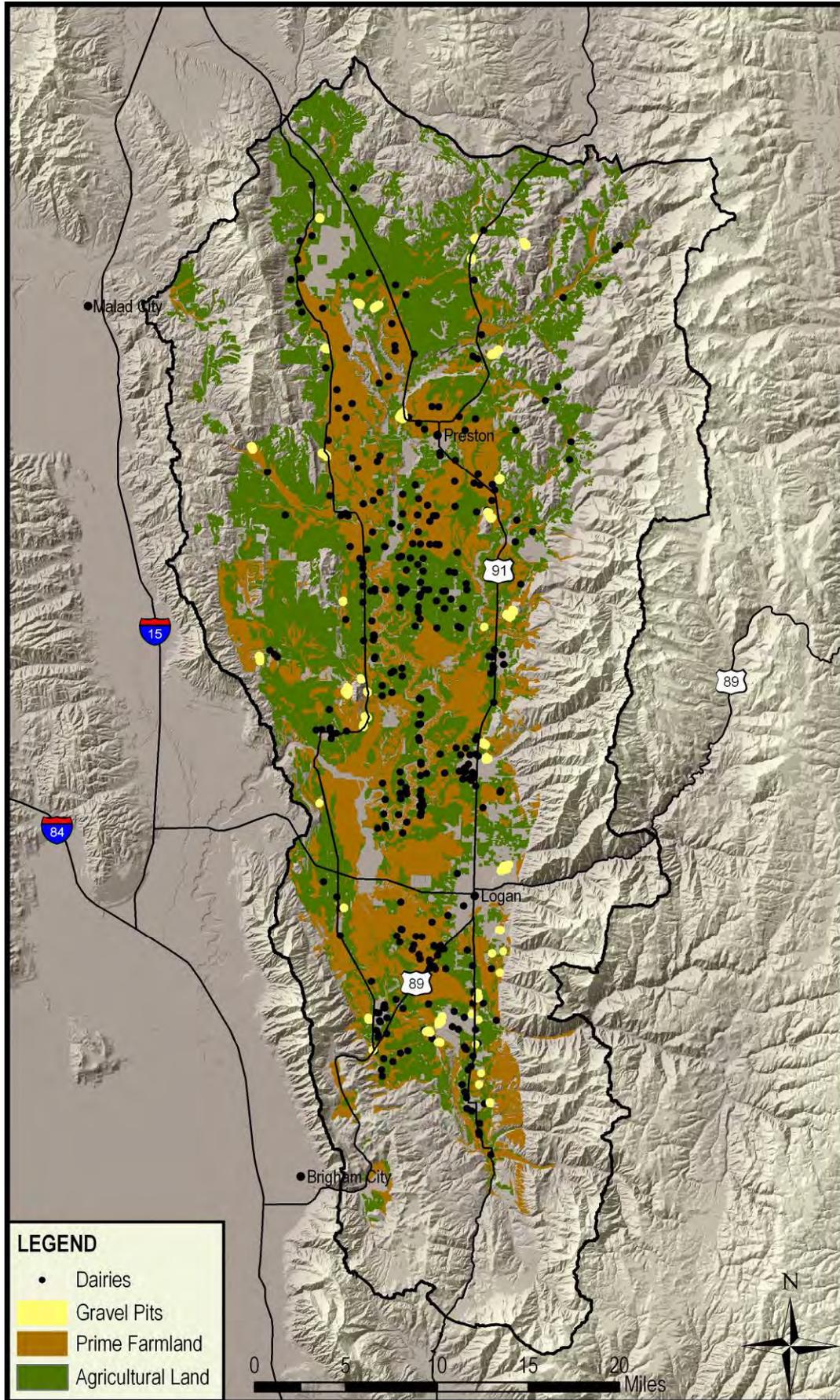
## Prime Farmland



## Dairies and Gravel Pits



# WORKING LANDS



## RESIDENTIAL

The residential assessment model was developed to illustrate the best lands available in Cache Valley for future residential development. As an activity allocation model, it is designed to show areas of potential suitability for the inevitable build-out that will occur in the valley based on current population projections. The model is meant to be one of the tools to guide decision making in future plans for growth. It should not be used without the use of other models and tools deemed to be important by the people of the valley in combination with plans by the city and county entities. For example, it would be natural to analyze locations appropriate for future development using this model in combination with any of the environmental models, such as critical lands.

The model combines information extracted from detailed soils data obtained from the United States Department of Agriculture (USDA) Natural Resources Conservation Service. This data is analyzed in combination with proximity to major roads and areas with existing infrastructure, for economic feasibility. The soils data combines soil types deemed “Not Limited” as well as “Somewhat Limited” by the USDA. This evaluation considers suitability of soils based on slope, depth to bedrock, large stones content, flooding, shrink-swell, and depth to saturated zone.

Three tiers of information are assembled in the model, starting with the least restrictive “Tier 1” layer depicting the suitable soils only. The “Tier 2” model combines where the suitable soils overlap with a one half mile proximity to major roads. The most restrictive “Tier 3” model overlaps the above criteria with areas that have existing infrastructure (water, sewer, power/phone) in place.

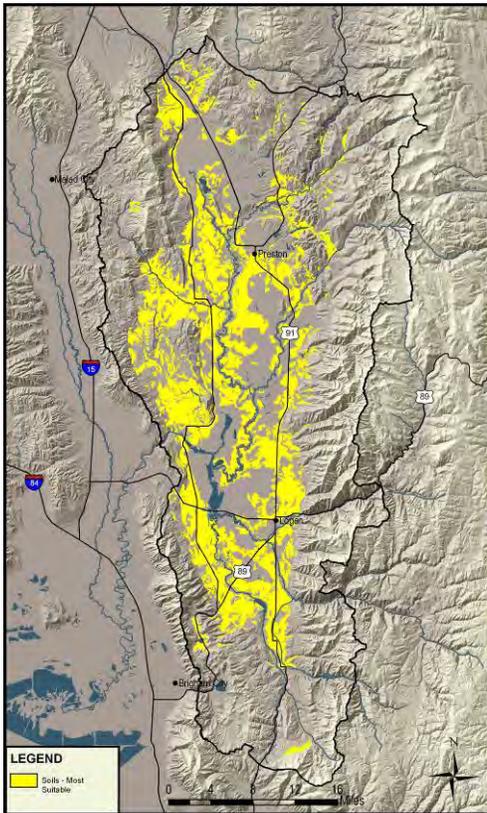
### MODEL CRITERIA:

- USDA NRCS soils classified as “not limited” and “somewhat limited” for residential buildings
- 1/2 mile buffer from major roads
- Areas of existing infrastructure

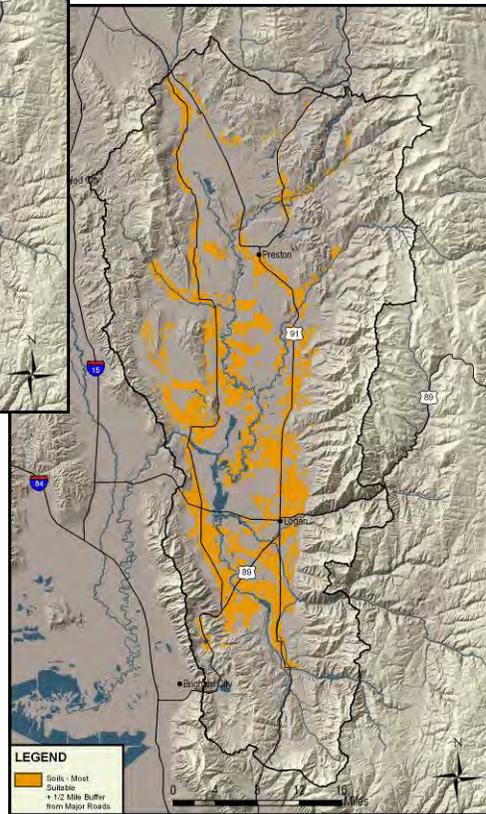


# RESIDENTIAL

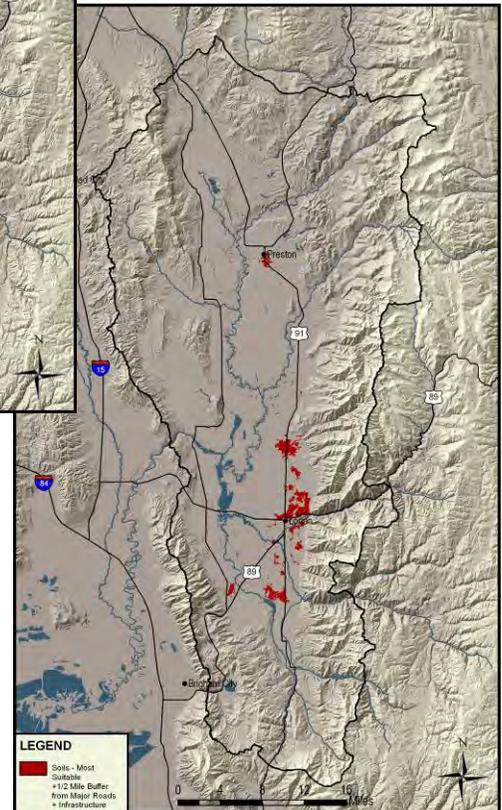
## Suitable Soils for Residential Development



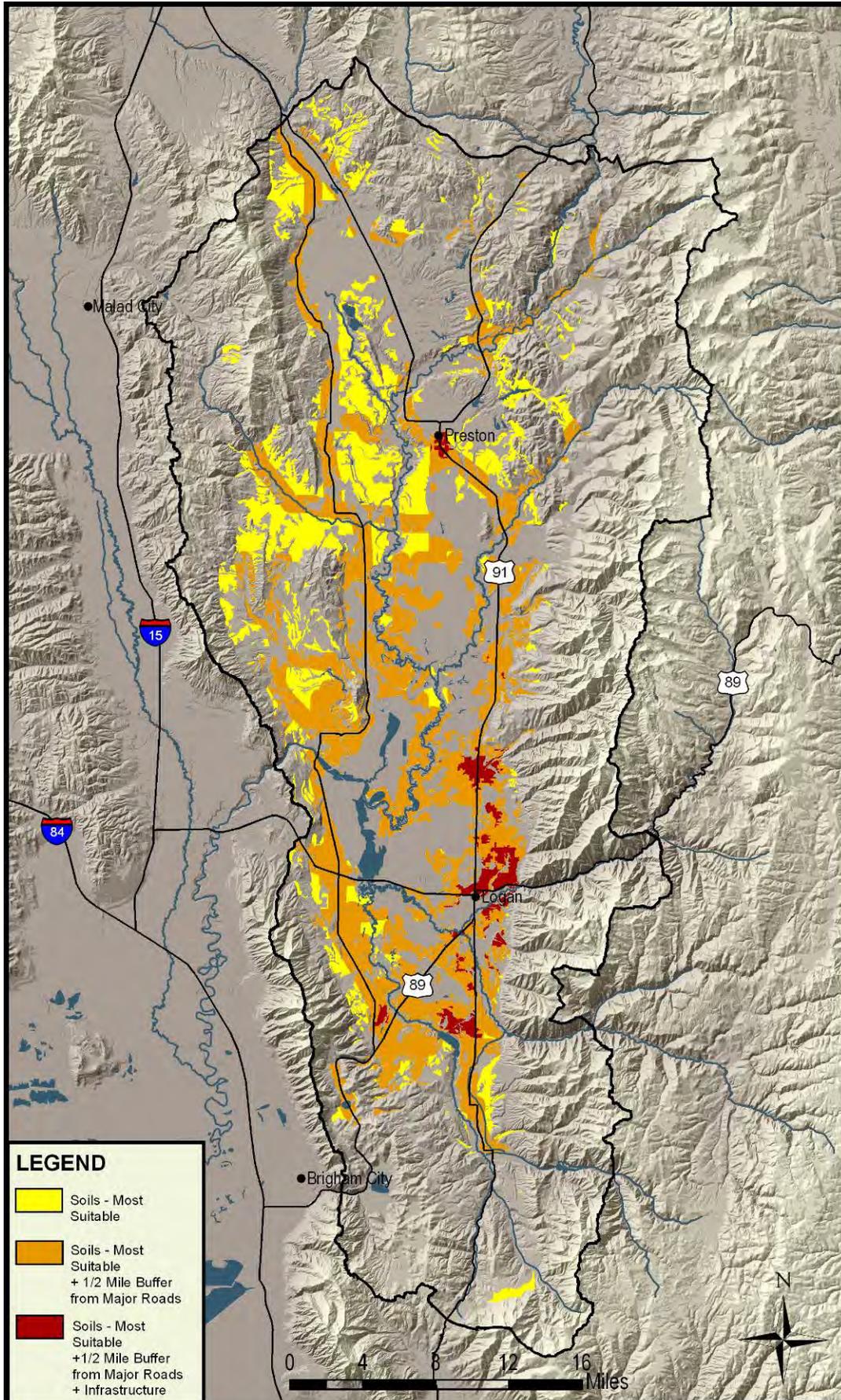
Suitable Soils within 1/2 Mile of Major Roads



Suitable Soils within 1/2 Mile of Major Roads and Existing Infrastructure



# RESIDENTIAL



# COMMERCIAL & INDUSTRIAL

The commercial and industrial activity model was designed to illustrate those areas in Cache Valley which would be adequate for commercial and/or industrial development. Although each type of development has its own specific set of requirements, there are many features common to both, such as suitable soils and proximity to existing infrastructure.

The USDA NRCS classifies suitable soils for small commercial and/or industrial buildings as soils which have properties that could support a load without movement. The properties that influence the load-supporting capacity include depth to the water table, flooding, slope, soil subsidence, shrink-swell potential, and compressibility. The soil ratings are also based on the properties that affect excavation and construction costs. These properties include depth to the water table, slope, depth to bedrock, and the amount and size of rock fragments.

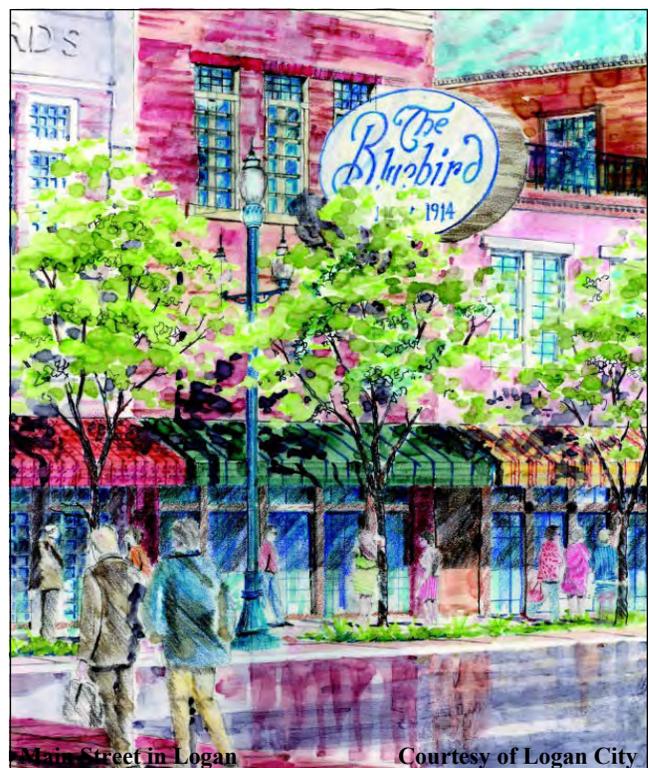


Proximity to major highways, interstates, or railroads is another essential consideration for both types of development. Therefore, both major highways and railroads were buffered out one-quarter of a mile. The last primary consideration for commercial and/or industrial development includes proximity to utilities, such as sewer, water, and electrical lines. Telecommunication and fiber optic lines may also be another consideration, as they are progressively gaining importance with dependency upon computers and rapid exchange of information.

In addition to the above requirements, there may be other prerequisites for a suitable commercial and/or industrial site, such as distance from residential development and an adequate labor market.

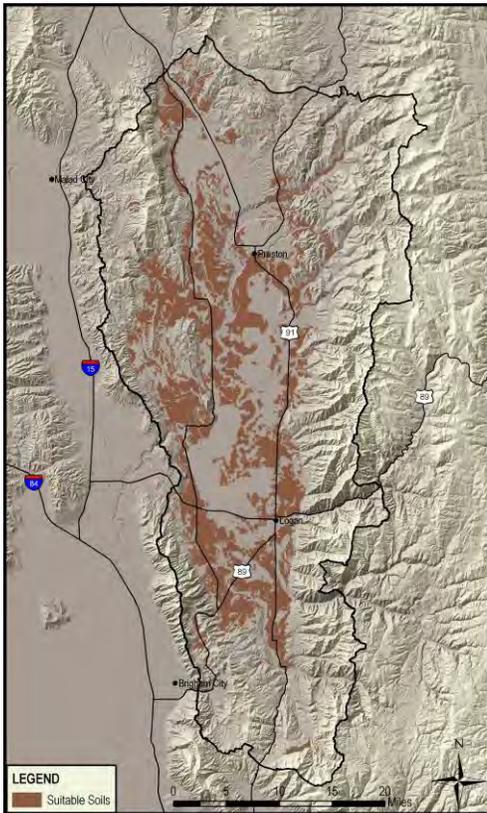
## MODEL CRITERIA:

- Suitable soils (USDA NRCS SSURGO soil data)
- Major highways and railroads
- 1/2 mile buffer on highways and railroads
- Sewered areas

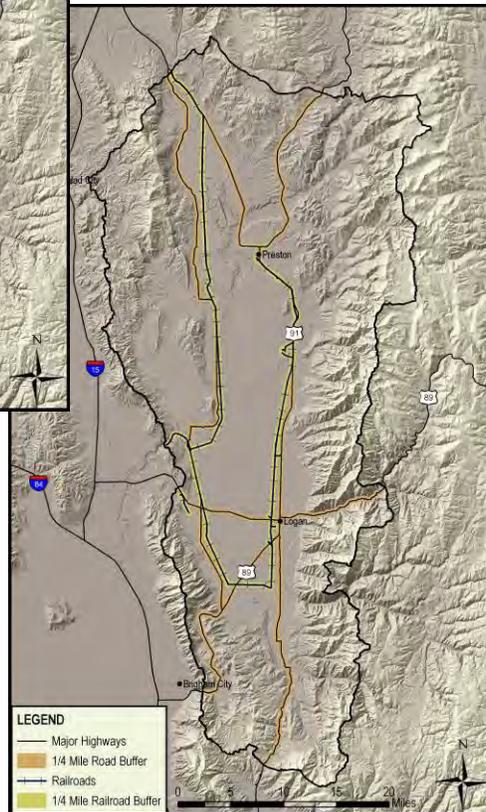


# COMMERCIAL & INDUSTRIAL

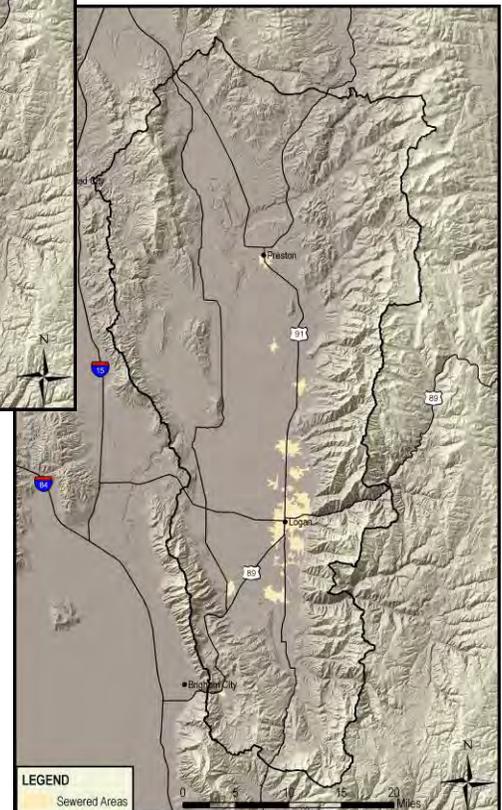
## Suitable Soils for Small Commercial/ Industrial Development



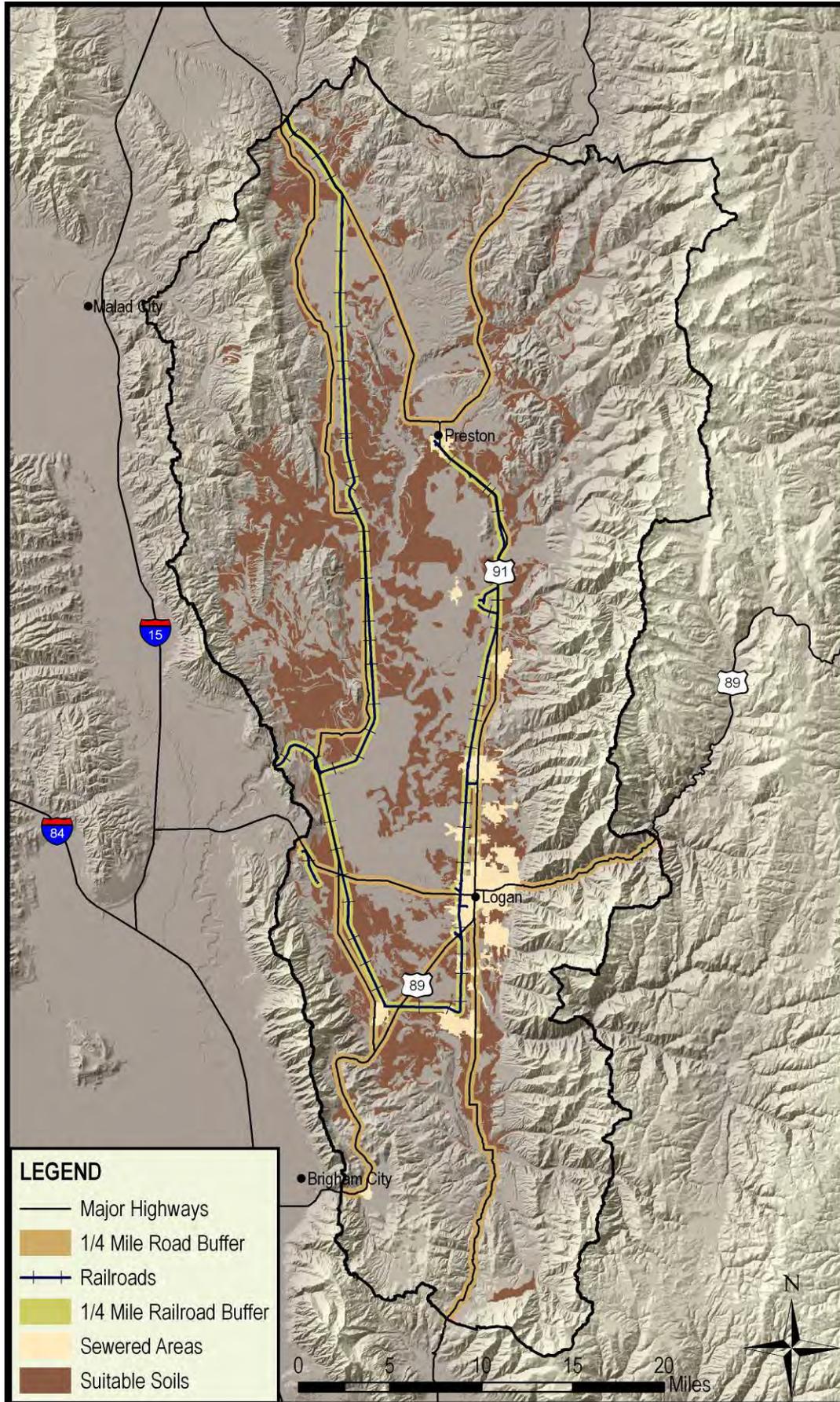
## Major Highways and Railroads with 1/4 Mile Buffer



## Existing Sewer Lines



# COMMERCIAL & INDUSTRIAL



## TRANSPORTATION

The transportation activity model was developed to depict current transportation routes as well as potential transit routes. Addressing the issue of transportation is an integral part of a successful future plan. Appropriate transportation planning will assist in preserving and protecting the economic vitality and quality of life in Cache Valley.

Over the past several winters, Cache Valley has experienced poor air quality (see Appendix D) and has nearly approached the PM<sub>2.5</sub> (particulate matter 2.5 microns in diameter) attainment level set by the United States Environmental Protection Agency. If the valley becomes a non-attainment area, federal funding for the construction of new roads may be withheld until air quality improves. The increased air pollution is largely the result of increased traffic within the valley in conjunction with the large number of livestock. Utah Department of Transportation (UDOT) indicated that the annual average traffic recorded on U.S. Highway 89/91 near Wellsville roughly doubled from 1993 to 2004 (UDOT 2005). If this trend continues, traffic congestion and air quality will likely worsen within valley. Therefore, the solution lies within making improvements in public transportation.



Currently, several entities within Cache County offer public transportation free of charge. The largest of these include the Logan Transit District (LTD) and the Cache Valley Transit District (CVTD). The Cache Valley Transit District in-

cludes routes to Hyrum in the south and to Richmond in the north.

While the current transportation systems work well for areas near the Logan urbanized area, several areas of the valley are not reached by the public transportation system. Therefore, one of many possibilities being analyzed is to extend the CVTD route to Preston (Beutler 2006). Other possibilities include links to smaller towns while still operating as a hub-and-spoke system. Smaller hubs or transit centers could be located in Hyrum and Richmond and a larger center could be established in Preston to facilitate access to buses.

Other future solutions include utilizing the existing rail line from Preston to Brigham City to run a commuter train or implementing a bus rapid transit (BRT) system that would link Preston to Logan and then to Brigham City. It is estimated that by the year 2012, commuter rail service will likely connect Brigham City to Salt Lake City (Benson 2006); therefore, linking a rail from Preston to Logan, Hyrum, Wellsville, Mendon, and Brigham City corresponds with future plans for Northern Utah. The bus rapid transit system would provide a similar option, but may prove to be more affordable and flexible.

### MODEL CRITERIA:

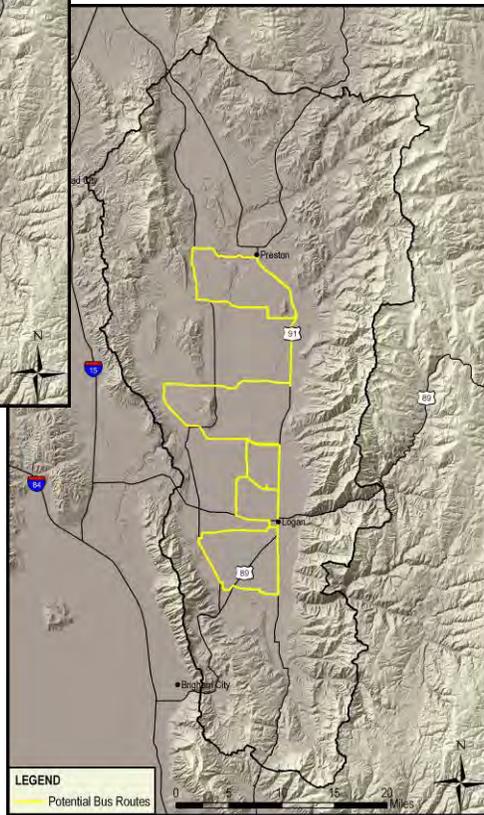
- Cities and towns
- Existing infrastructure (roads and rail lines)

# TRANSPORTATION

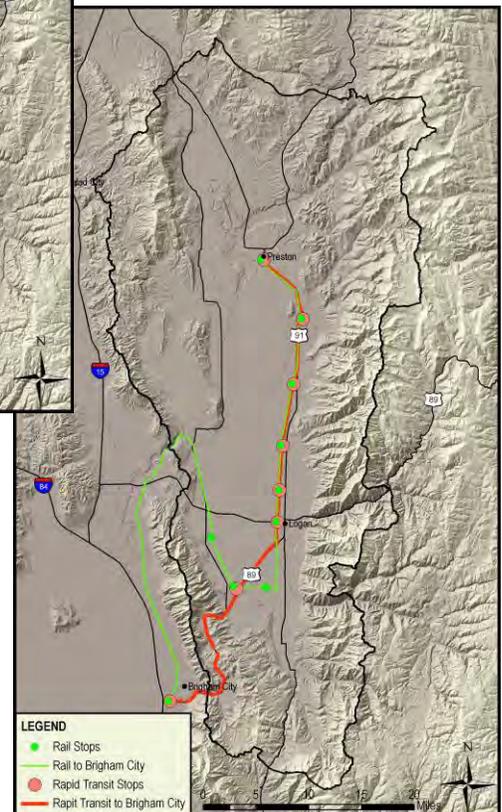
## Existing Transit Routes and Stops



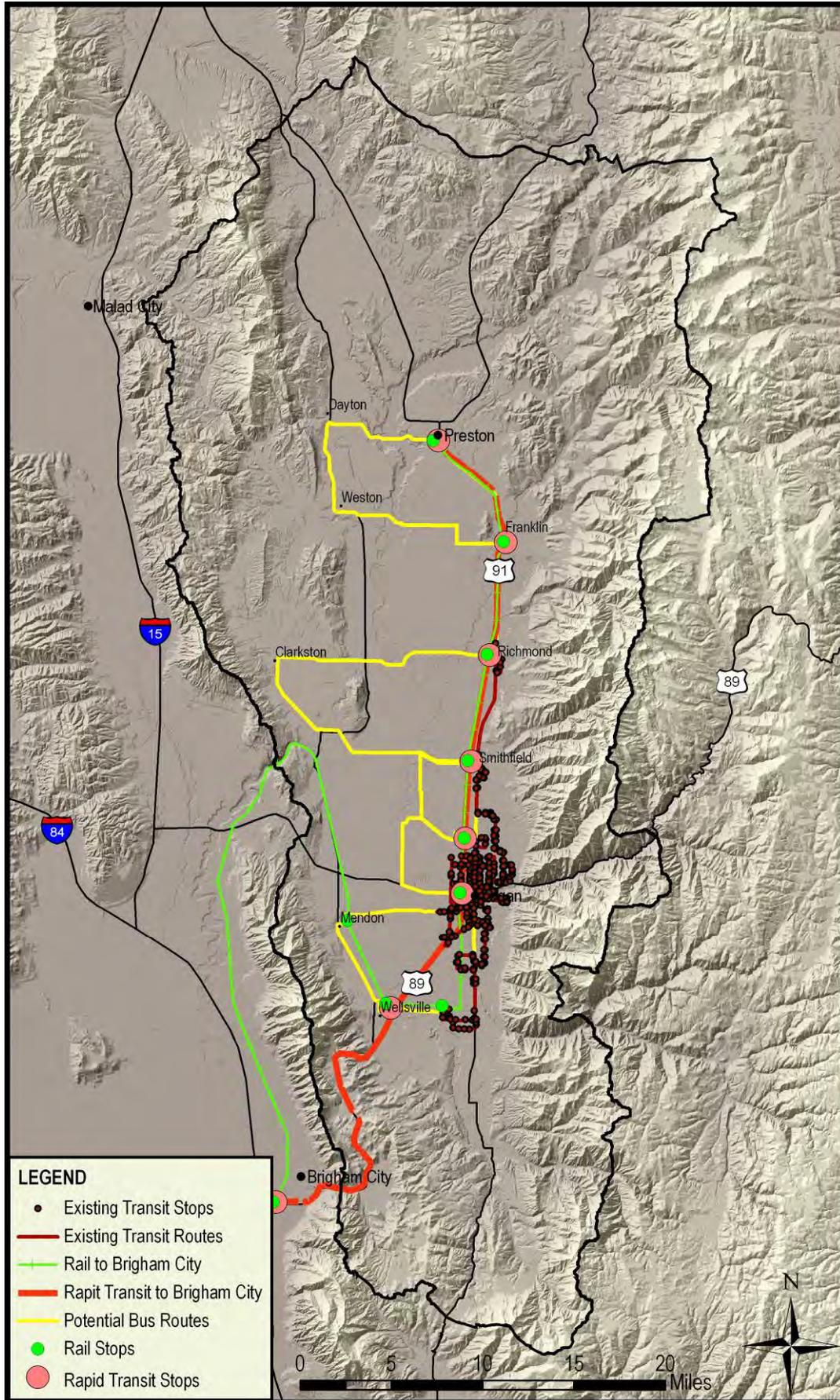
## Potential Bus Routes



## Potential Rail and Rapid Transit



# TRANSPORTATION



# ALTERNATIVE FUTURES

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Once a planner has generated a series of assessment models, the next step involves trying to construct a series of alternative futures. Planners can see what the data looks like under varied circumstances, such as how a change in urban density might affect the loss of agricultural land and open space, or where residential development should occur in respect to hazardous lands such as floodplains or fault zones.

In this study, there are eight alternative futures:

- Plan Trend
- Logan-Preston Urban Cores
- Urban Cores and New Town
- East Valley Development
- South Corridor Development
- Traditional Towns
- Critical Lands
  - Conservation Priority
  - Conservation Development
- Quality of Life

The final alternative future, Quality of Life, attempts to address a number of issues simultaneously and draws together multiple assessment models. With the exception of the Plan Trend future, the other futures represent variations in growth pattern, and reflect the changes in the landscape if implemented.

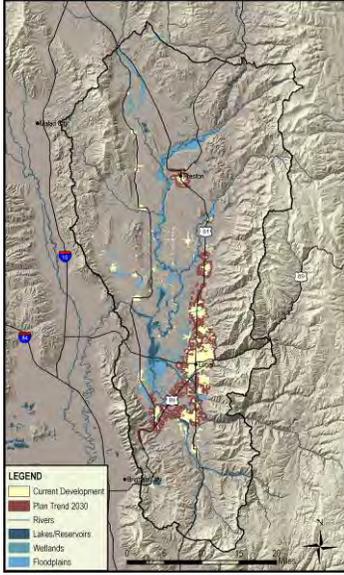
Some of the futures are focused on illustrating the impacts of less-effective development practices, while others are geared toward alternatives that seek to reduce those impacts. Nearly all of the futures have excluded areas of the landscape designated as wetlands or floodplains, and these are all signified on the base maps for the futures. The Plan Trend does not regard these areas, since current development practices tend to prefer mitigation over avoidance.

It is important to remember that alternative futures are intended to bring attention to the possibilities and are not meant to represent actual predictions. Just as the assessment models are only as good as the data, the alternative futures are

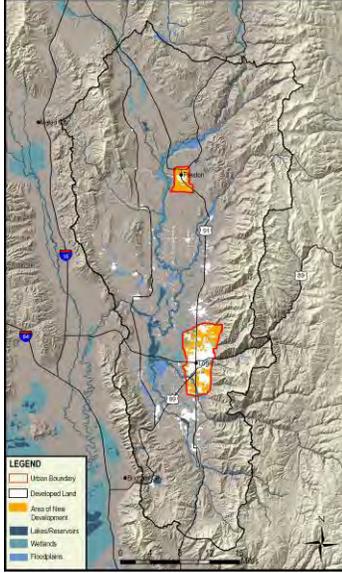
also only as good as the data or assessment models, coupled with the judgment of the planner who derived them.

In the case of Cache Valley, it falls upon the planners, commissioners, and citizens to decide for themselves the value of the alternative futures proposed here. Indeed, even if every future presented were rejected, the purpose of this project would be wholly fulfilled if it led to citizens and planners spawning their own ideas and alternative futures.

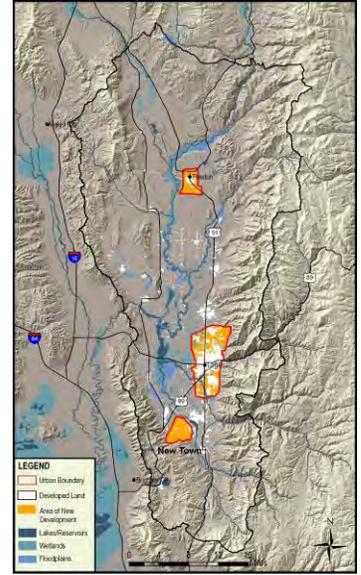
# ALTERNATIVE FUTURES



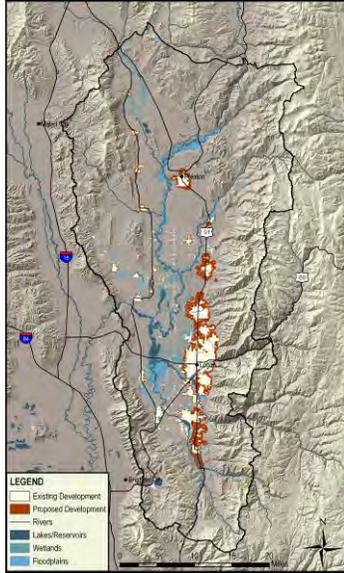
**PLAN TREND**



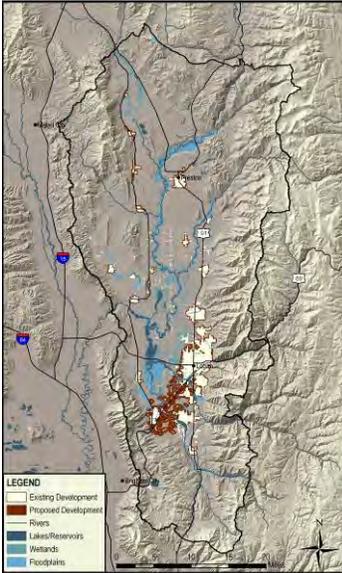
**URBAN CORES**



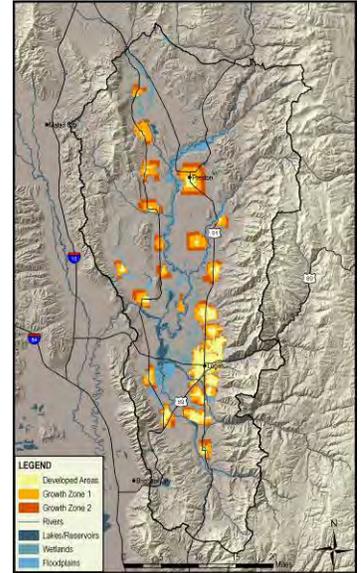
**URBAN CORES & NEW TOWN**



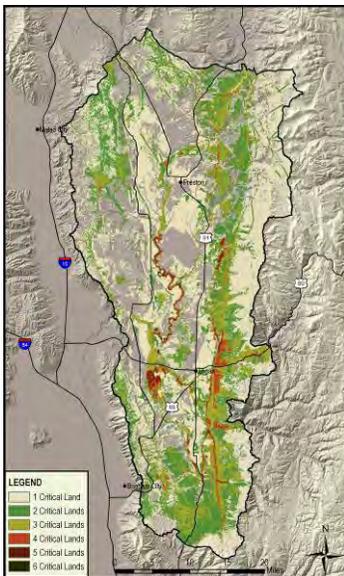
**EAST VALLEY DEVELOPMENT**



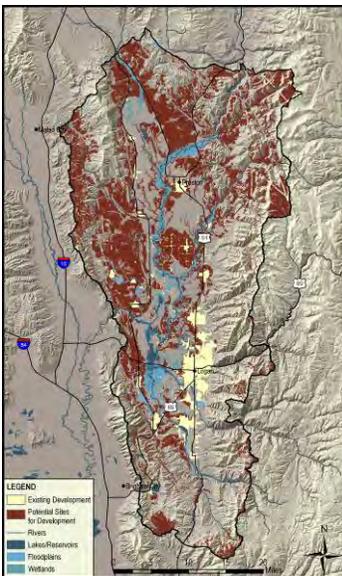
**SOUTH CORRIDOR DEVELOPMENT**



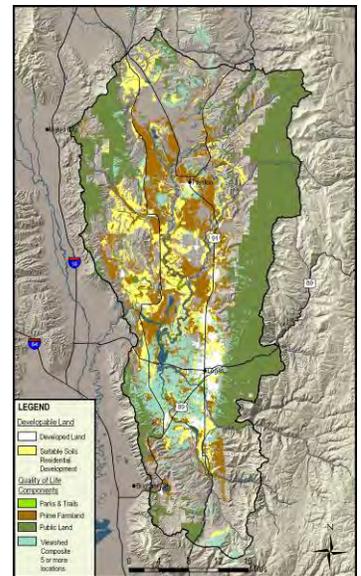
**TRADITIONAL TOWNS**



**CRITICAL LANDS CONSERVATION PRIORITY**



**CONSERVATION DEVELOPMENT**



**QUALITY OF LIFE**

# PLAN TREND

## PLAN TREND FUTURE

The Plan Trend future is an alternative growth model that attempts to demonstrate what the landscape would look like if we simply conduct "business as usual," or in other words, allow development to continue without a plan. Truly robust growth models are ones that can analyze multiple factors which are thought to affect future development, designating space on the landscape which best reflects those factors in a future time. One example of this type of model is cellular automata, where a computer runs multiple simulations of growth on a digital landscape. This model is processing-intensive and requires a great deal of effort to generate the parameters the model uses to simulate the landscape. Another example is using statistical logistic regression of past growth variables and applying the formula to predict future growth. There are other variations of growth models, but these two form the base of methods currently available.

Computer-intensive growth models were not practical for this study, but an alternative was found in adapting the "development footprint" principle as discussed by Busch et al. (2005). The development footprint is the total amount of developed land that supports a given population, including residential, commercial, and operational/industrial, and can be expressed in a ratio of persons per developed acre.

Using data obtained from the Southwest Regional Gap Analysis Project (SWReGAP 2004), we found the total developed acreage for all of Cache Valley as of the year 2000 to be approximately 27,298.7 acres. U.S. Census population data for that year was 102,720 persons. By dividing the supported population by the total developed acres, there are approximately 4 persons per developed acre.

A conservative future population projection for Cache valley, estimated to the year 2030, was figured to be 204,578 persons (see Appendix A). In order to maintain a plan trend density of 4 persons per developed acre, approximately 34,000

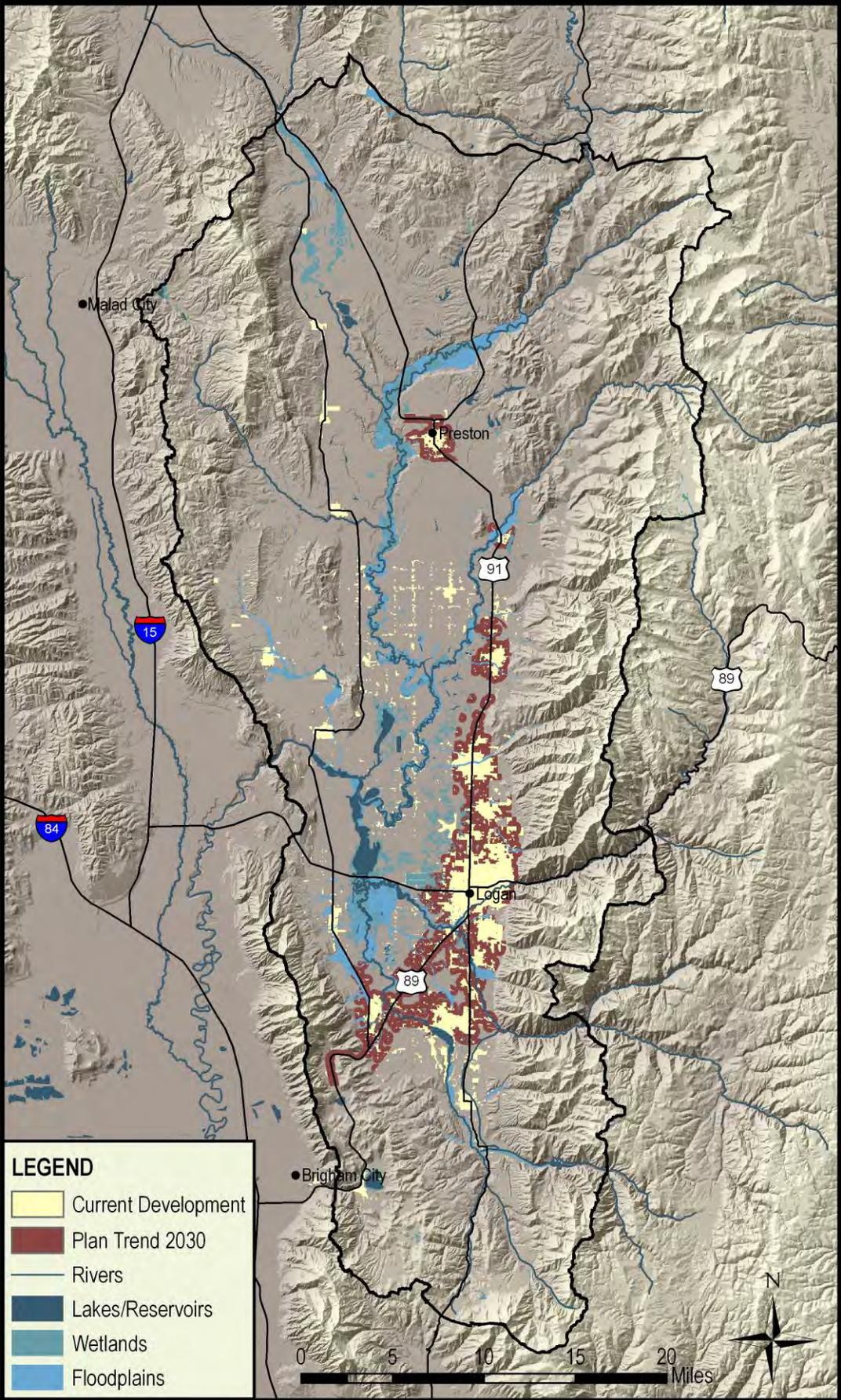
more acres of development would be required to sustain a population of that size.

Without available past growth predictors, the study team was constrained to make assumptions in the criteria used to spatially allocate the additional developed acreage. For the model, these included whether a piece of ground was currently within a municipality, whether it was near (within one mile) major roads, and whether it was close (within one-quarter of a mile) to existing development. Certain weights were also applied to the data in order to favor areas that were typically experiencing the most growth. For example, Logan City was weighted more heavily than Lewiston, as was Preston more than Oxford. Certain portions of the landscape were also excluded such as currently developed areas, the sewage treatment ponds west of Logan, and much of the area surrounding the Logan-Cache Airport.

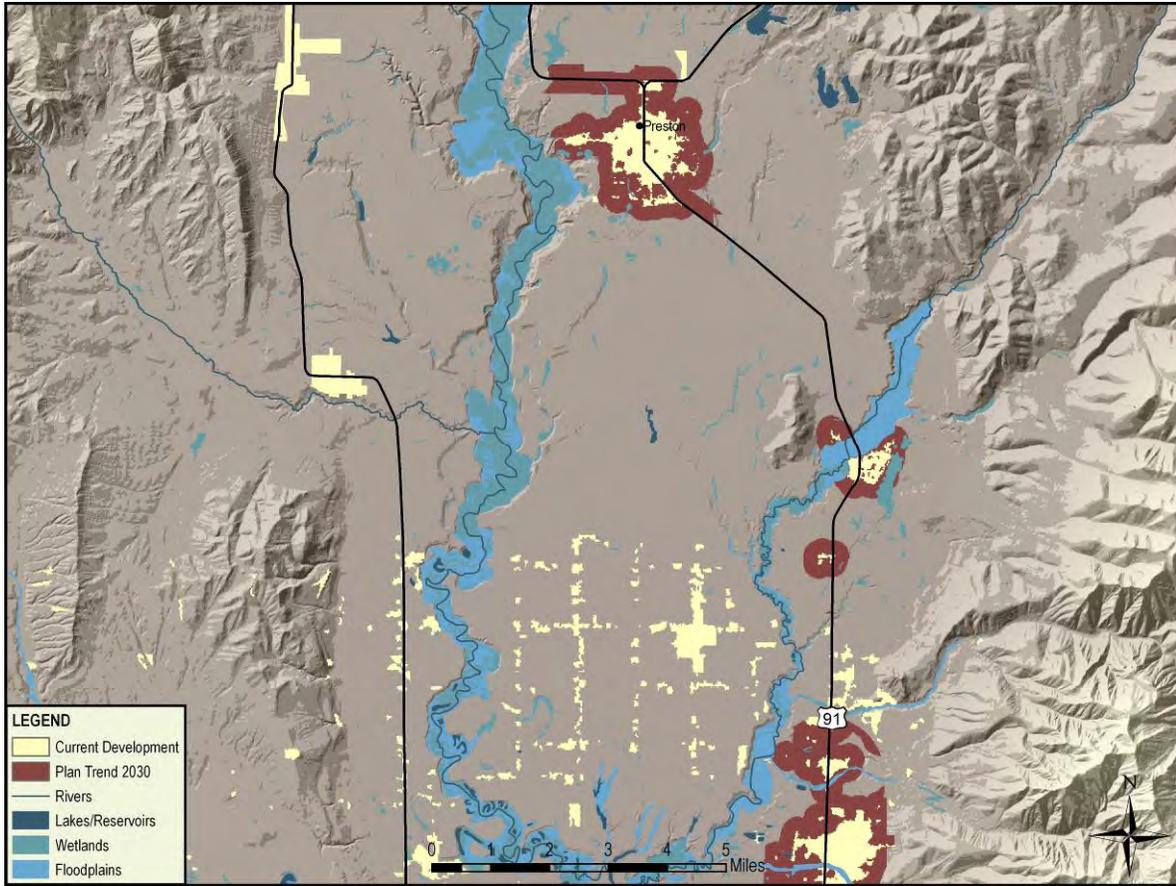
The resulting map shows the spatial allocation of development as it might appear in the year 2030 if we maintain the current development footprint of 4 persons per developed acre.



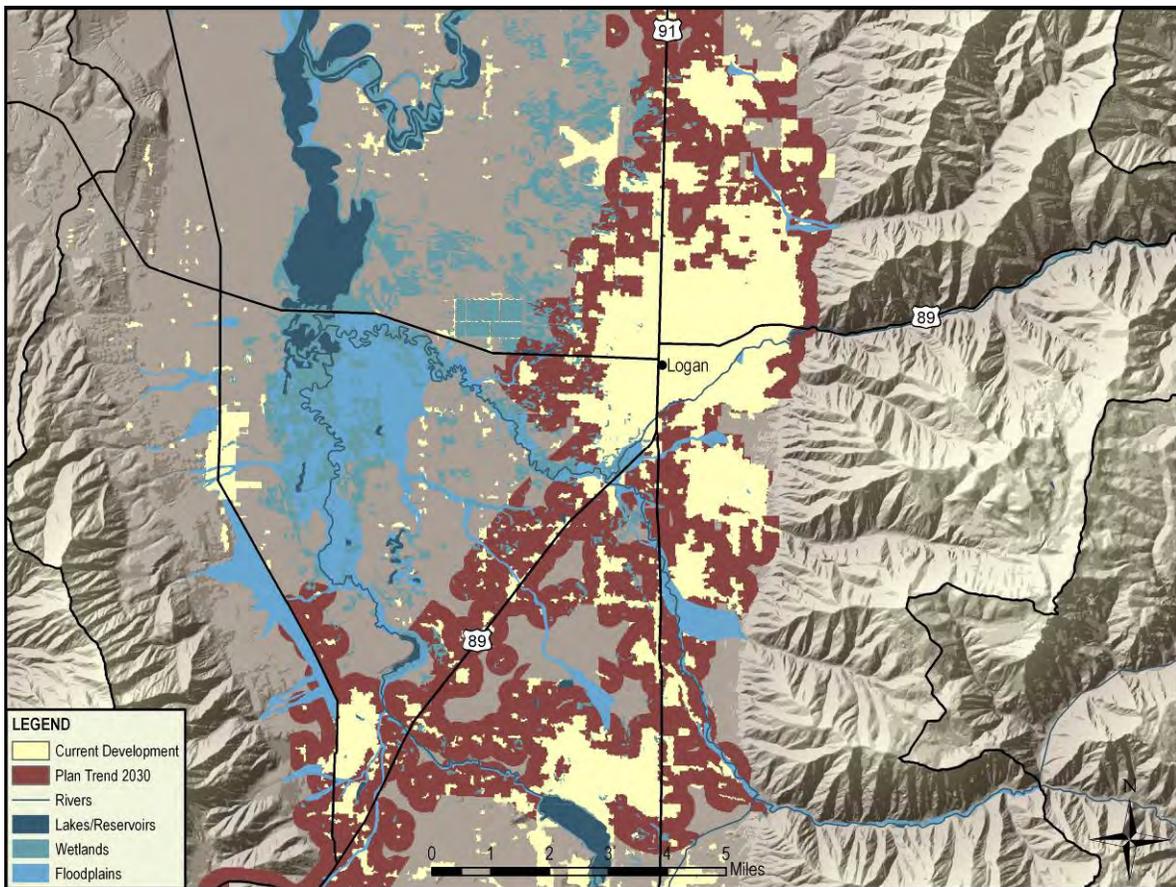
# PLAN TREND



# PLAN TREND



NORTH DETAIL



SOUTH DETAIL

## URBAN CORES - LOGAN AND PRESTON

The Urban Cores future seeks to contain growth by 2030 into two major cores, the Logan area and the Preston area. These are areas that are already developed extensively and provide many amenities to residents such as schools, hospitals, and places of employment.

By carefully containing the majority of the growth to these cores, this future also achieves the preservation of the most valuable open spaces in the region. The conservation of these areas contributes to a higher quality of health, safety, and welfare for residents, as well as maintains many of the lands valued for their “quality of life” traits.

If planned well, the creation of these cores has the potential to add vitality to these cities. The following strategies should be considered in making these cities a high quality, desirable place to live:

- Downtown revitalization, including re-routing of the highway, creation of gathering places, and encouragement of mixed-use zoning
- Provision for high quality, affordable housing
- Pedestrian/bike friendly neighborhoods
- Reduction of strip development
- Preservation of important historical sites and buildings



Courtesy of Logan City

The use of urban growth boundaries (see Appendix B) will be crucial in implementing these concepts. A shared regional tax base, adopted by all jurisdictions, will also be imperative for gaining buy-in.

## POPULATION PROJECTIONS

The current population of Cache Valley, including Cache County, Franklin County, and part of Bannock County, is approximately 110,000 residents. It is expected to grow by about 97,000 people by the year 2030, for a total of 207,000 people.

The current pattern of growth is dispersed throughout the valley, with the majority of it occurring in the vicinity of Logan and its surrounding communities. If unchecked, 35% of the growth is projected to occur in the smaller communities and county wide, outside of municipal boundaries. Uncontrolled growth of this nature has the potential to contribute to the elimination of important agricultural land, wildlife habitat, and degradation of the overall visual quality of the valley floor and benchlands.

The Urban Cores future proposes to distribute the population into three areas:

- The Logan vicinity – 69% of projected growth
- The Preston vicinity – 21 % of projected growth
- Small municipalities – 10% of projected growth

## THE LOGAN URBAN CORE

The Logan urban core seeks to contain growth in the areas from the northern edge of Hyde Park down to the south edge of Millville. The eastern boundary is the steep slopes of the Bear River range, defined by existing Federal land. The western boundary encompasses the airport and skirts the sewage ponds and dump. The goal is to maintain some existing open space between North Logan and Smithfield, as well as between

# URBAN CORES

Millville and Hyrum.

The new boundary encompasses 23,350 acres, including 10,600 acres of developable land. At the current Logan City density of 6.35 people per acre, this area will accommodate approximately 67,000 new people.

## THE PRESTON URBAN CORE

In developing the Preston urban core, several factors were taken into consideration: preservation of prime agricultural lands, existing infrastructure, and the current development pattern. Marking the city center at Oneida and Main Streets, the boundary was expanded to the north 1.25 miles, east 1.0 mile, south 2.0 miles, and west 1.0 mile. The Bear River serves as a natural boundary on the west. At 3200 South, the east-west boundaries were expanded to 1.5 miles each to incorporate lands adjacent to Highway 91 on the east and the Bear River on the west.

The new boundary encompasses 4,753 acres, including 3,358 of undeveloped land. At 6.35 people per acre, this new core will accommodate approximately 21,000 new people.

## OTHER MUNICIPALITIES

The Urban Cores future accommodates about 9,000 new people into outlying communities by 2030. These communities will continue to grow at a fairly slow rate. Even though these are low numbers, it will still be important for these smaller towns to contain the growth within their municipalities and implement good planning methods.

## ADVANTAGES

The primary advantage to the Urban Cores future is the channeling of growth into areas already well-suited for development and otherwise maintaining the rural character of the surrounding landscape. There may also be improvements in air quality since where residential development remains in close proximity to commercial/

industrial development, fewer motor vehicle miles are traveled. In addition, it can be more efficient and less expensive to expand existing public service facilities such as roads, sewer, and water, than it is to build new public service facilities in outlying areas.

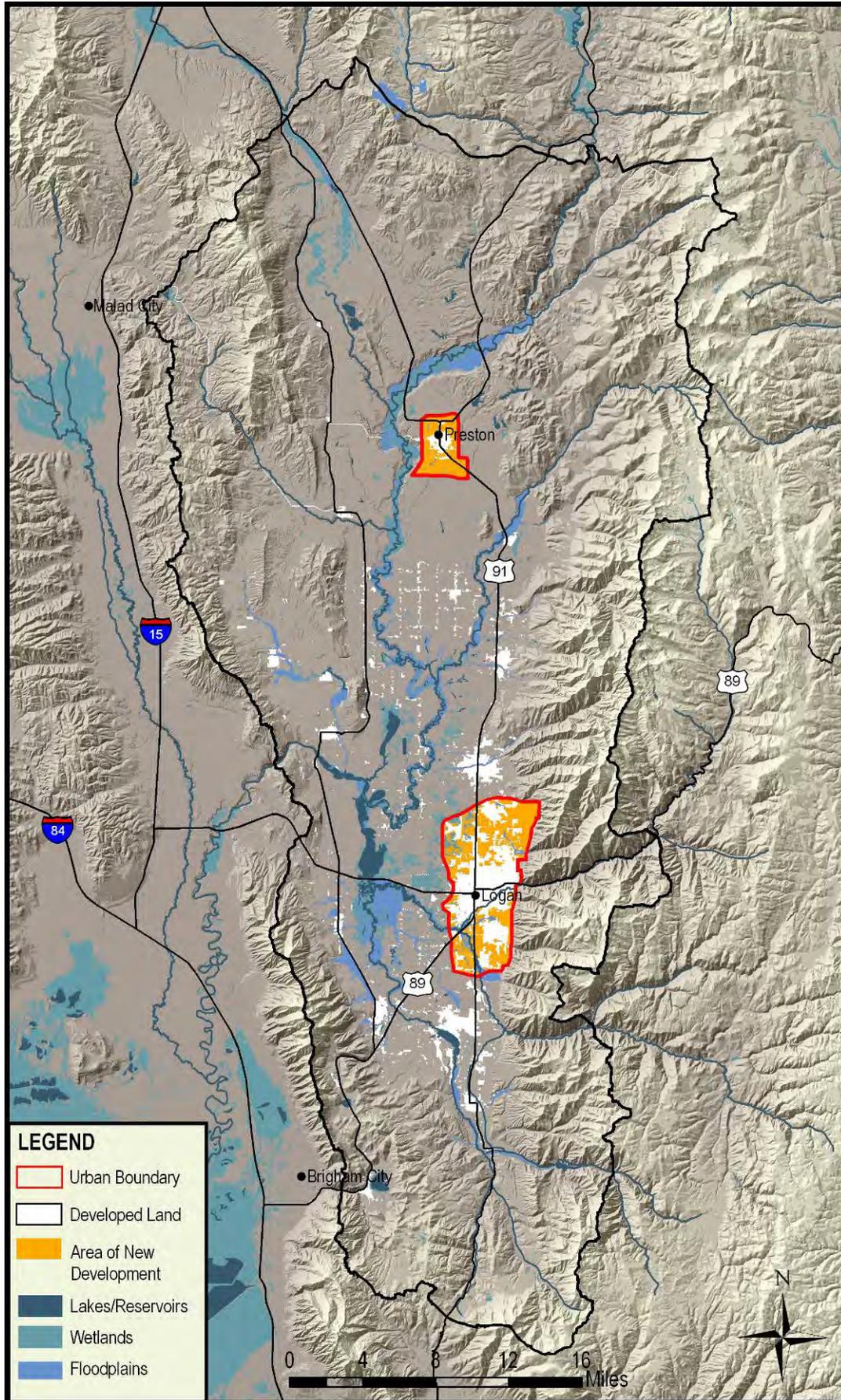
## DISADVANTAGES

Since the Urban Cores future seeks to transform communities that have historically been perceived as having a "small-town" character or feel, one disadvantage may be the loss of this character. With the increase in density, there will also be changes in the types of structures built, which may include more multi-family units, city condominiums, and town homes. These changes can feel constricting to Westerners accustomed to wide open spaces and low residential densities. Other disadvantages might include the loss of wildlife habitat which may exist in current areas of the Urban Cores.



© Courtesy of Logan City

# URBAN CORES



## URBAN CORES & NEW TOWN

The New Town future is an extension of the Urban Cores future. It embodies the same principals as the Urban Cores Future with an alternative to disperse some of the growth into a new community.

Building a new town has the definite appeal of “starting from scratch” to create a unique, high quality place to live. Overall master planning concepts are easier to implement and control if they are defined and enforced from the early stages of development. If done well, many desirable amenities can be provided to residents, including trails and open space, high quality choices in housing types, and alternative transportation opportunities. Healthy, sustainable development practices can be employed for building as well as maintaining the community.

One example of a successful new town is called Daybreak, a master planned community southwest of Salt Lake City, Utah. It is a large piece of

land owned by Kennecott Land, a mining company that once operated the Kennecott Copper Mine. The plan includes abundant pedestrian paths, community gardens, parks, as well as a lake. There is a wide variety of types of residential development offered, ranging from apartments and condos to large houses on large lots. The homes are built to accommodate a variety of tastes, yet they are arranged harmoniously. Daybreak also incorporates a school and will eventually include commercial and industrial development.

The site for the New Town in this study is located at the southern end of Cache Valley. This site was selected for multiple reasons. The site is favorable in regards to soils and slope and is well out of the floodplain. Based on our visibility assessment, it is in an area that will not cause a major impact to the visual quality of the area. The site is slightly elevated and provides beautiful views to the mountains and valley. The location



Daybreak Planned Community

Courtesy of Logan City

# URBAN CORES & NEW TOWN

in the southern part of the valley could draw residents who commute to the Salt Lake City area every day for their employment. This would help traffic congestion in the south valley along Highway 89/90. If these residents are commuting to the south, this location will also help improve the air quality of the valley. It would be most desirable to implement a transit system that could accommodate commuters to the south as well as the north.

## POPULATION PROJECTIONS

The current population of Cache Valley, including Cache County, Franklin County, and part of Bannock County, is approximately 110,000 residents. Based on a conservative estimate of 2.4%, it is expected to grow by about 94,000 people by the year 2030, for a total of nearly 205,000 people.

The New Town Future proposes to distribute the population into four areas:

- The New Town – 35% of projected growth
- The Logan Urbanized Area – 40% of projected growth
- The Preston Urbanized Area – 20% of projected growth
- Other municipalities – 5% of projected growth

The New Town would effectively reduce pressure for growth in the other Cores or allow for those boundaries to accommodate lower densities. Or, with the current boundaries defined, the

addition of the New Town will accommodate growth in the valley well beyond the year 2030.

## THE NEW TOWN

The New Town boundary encompasses 5,400 acres, most of which is undeveloped land. At the current Logan City density of 6.35 people per acre, this area will accommodate approximately 34,000 new people.

## ADVANTAGES

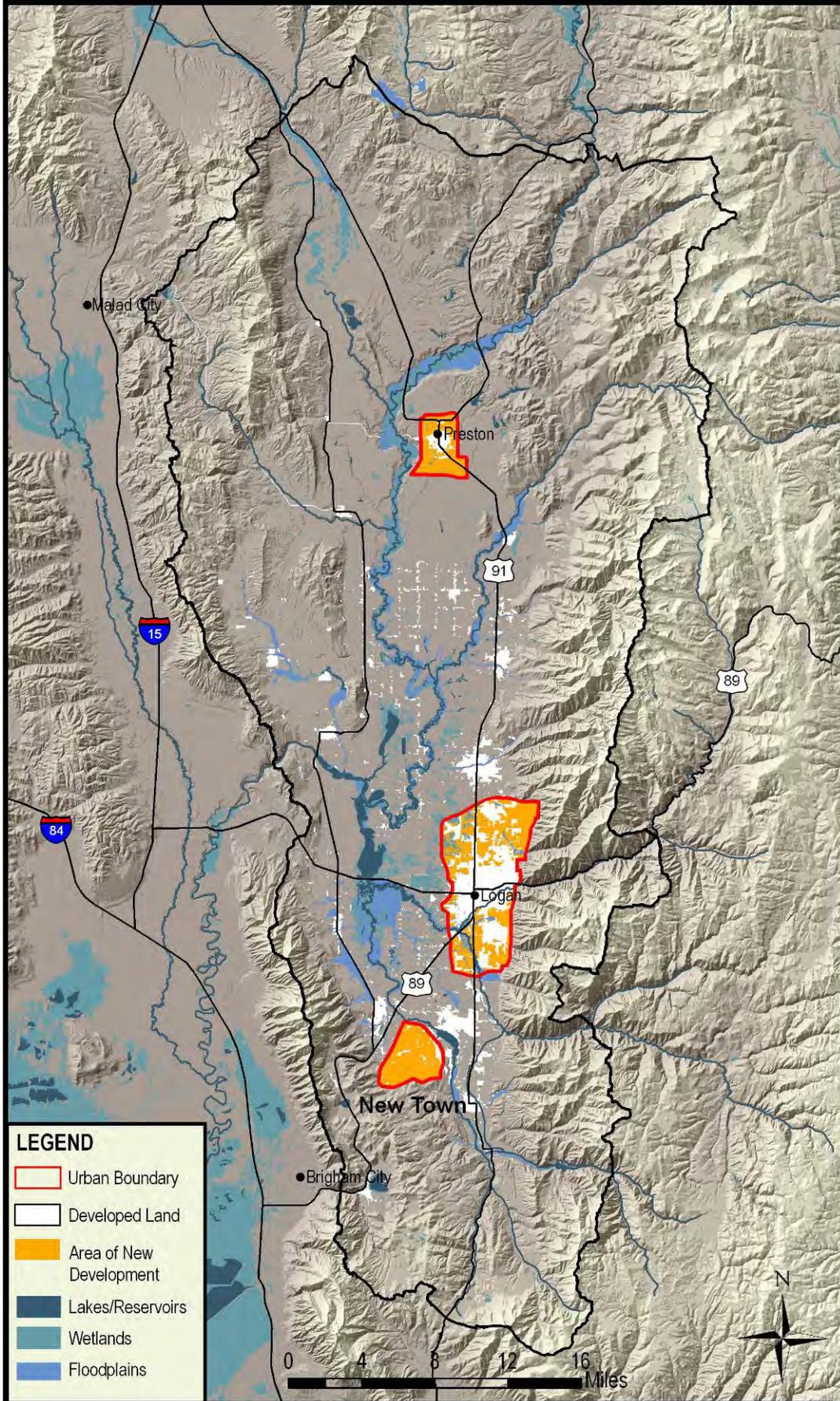
- Opportunity to create a high quality, master planned community based on principles of sustainability
- Consistency of design
- Appeal to commuters who travel south (e.g., Wasatch Front) for employment
- Possible air quality improvement
- Desirable and beautiful location
- Favorable soils that are out of floodplains
- Minimal impact on visual quality of the region

## DISADVANTAGES

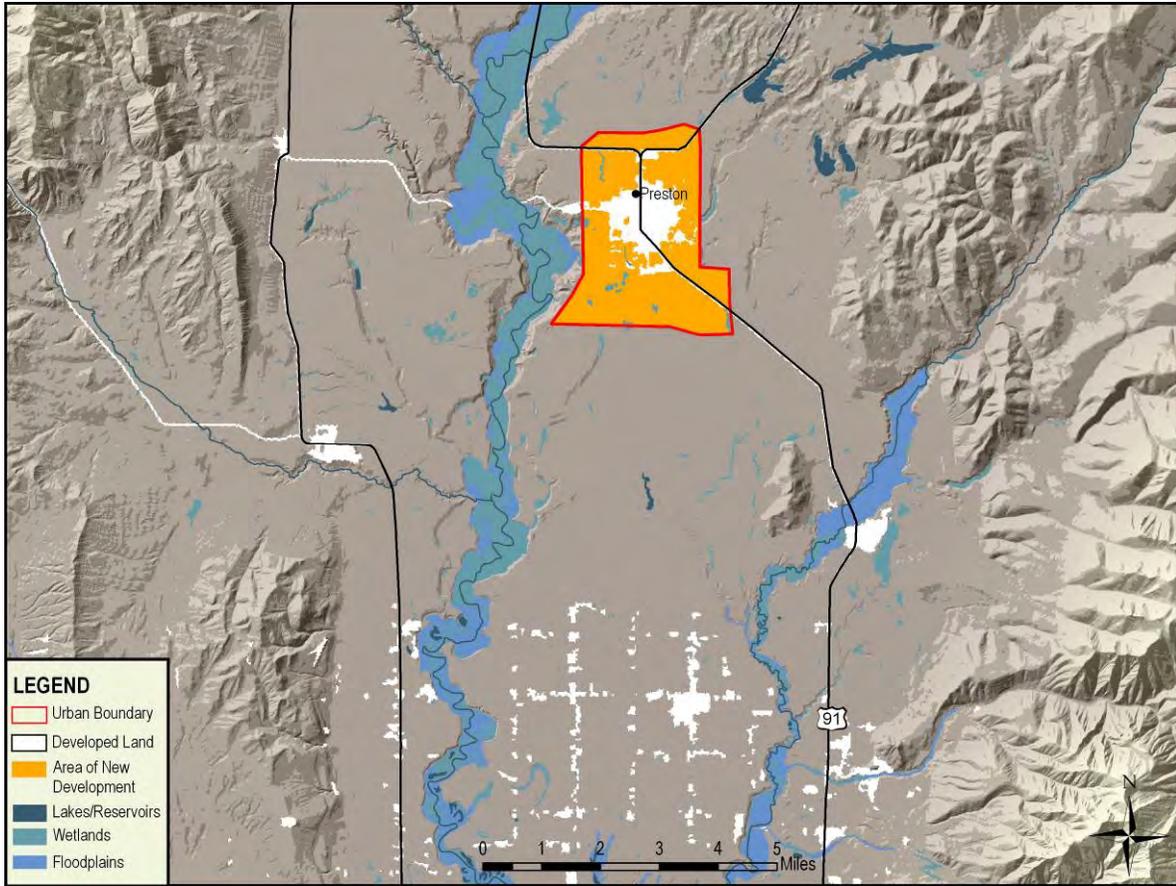
- Difficulty in developing financial support for a large scale, long term project
- Lengthy process in land acquisition and governmental buy-in
- Significant infrastructure costs
- Possible air quality degradation if a transportation system is not implemented or used
- Crowding of small towns in the south end of the valley



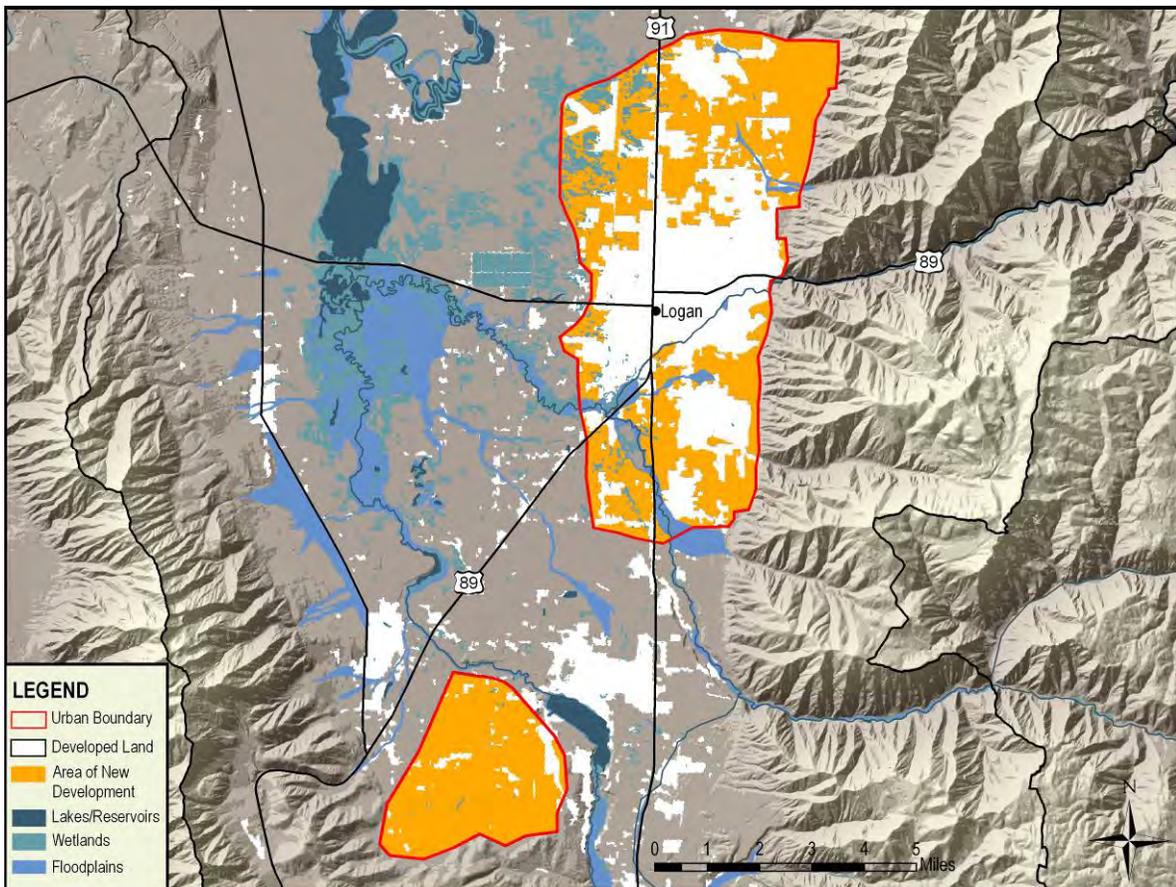
# URBAN CORES & NEW TOWN



# URBAN CORES & NEW TOWN



NORTH DETAIL



SOUTH DETAIL

# EAST VALLEY DEVELOPMENT

## EAST VALLEY DEVELOPMENT

The East Valley Development alternative future was designed to depict what Cache Valley would look like in the year 2030 if growth was focused around towns and cities on the eastern side of the valley from as far south as Avon, Utah to as far north as Preston, Idaho. This future attempts to preserve the rural quality and prime agricultural lands in the central portion and western side of Cache Valley by allowing minimal growth within those areas.

This alternative future is probable, as the current growth pattern is somewhat representative of this future model. However, it seeks to limit suburban sprawl and further encroachment onto the benches. It emphasizes the preservation of critical lands and the maintenance of riparian corridors between the larger urban areas for wildlife migration and access to public lands.

This alternative future would be conducive to the Cache Valley Transit District (CVTD) and Logan Transit District (LTD) public transportation system, particularly if routes were extended to Preston, Idaho. The present goal of LTD is to be within a three block walking distance from residents in the Logan urbanized area, and this goal may expand as ridership increases throughout the valley.

The East Valley Development alternative future model illustrates that approximately 28,860 acres of land within and surrounding eastern towns could be available for development. Based on the average of 4 persons per developed acre, development of this land could accommodate approximately 115,440 people. This area could support the projected population of Cache Valley in the year 2030 based on more conservative growth rates; however, if the growth rate over the next couple of decades is slightly more moderate, additional growth could be accommodated by allocating small portions of land with lower density housing surrounding the rural communities on the western side of the valley.

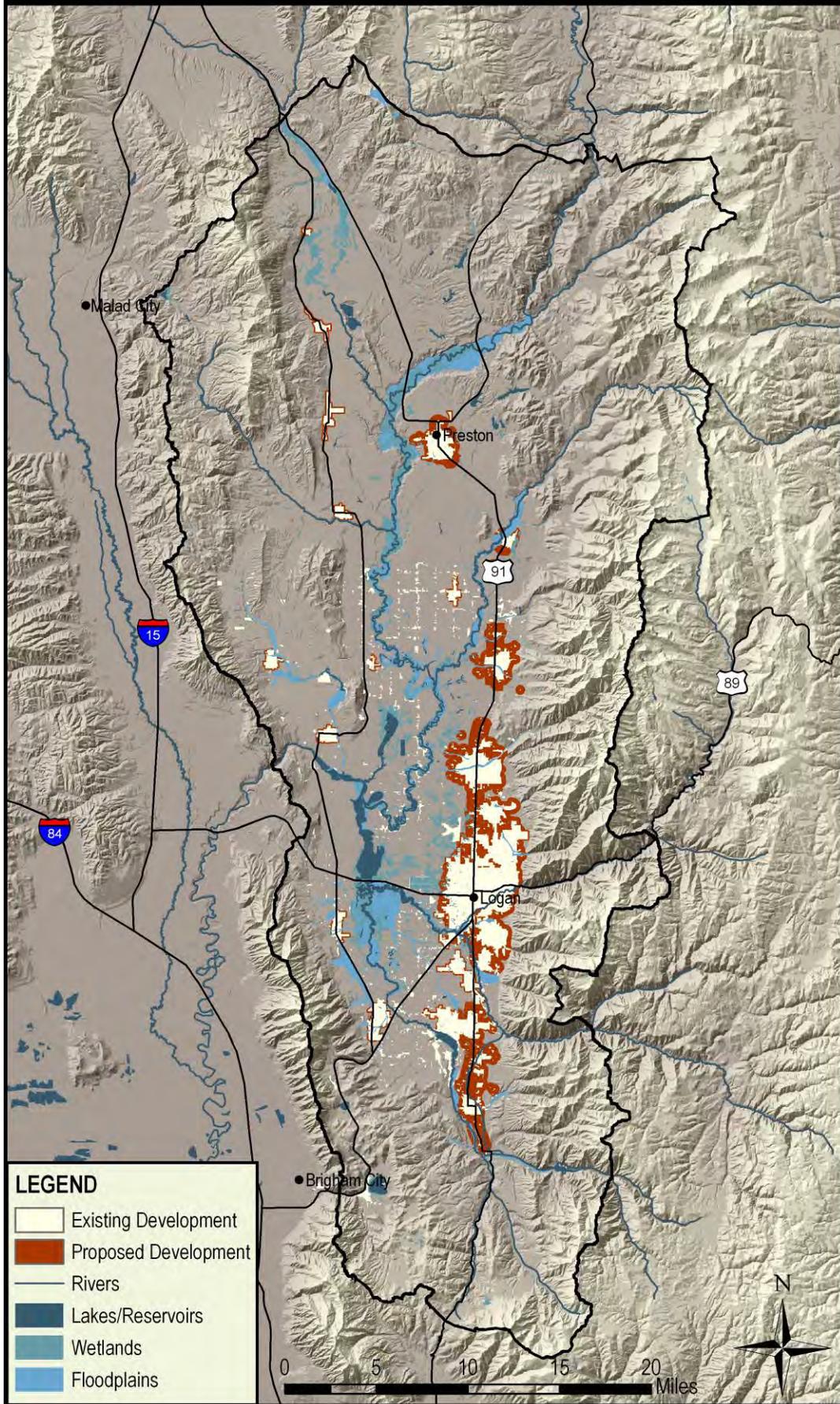
## ADVANTAGES

If growth were to progress into this pattern, advantages include the preservation of prime agricultural lands and critical lands, and maintenance of smaller rural communities within the central portion and western side of the valley. Future residential, commercial, institutional, and industrial development may be more economically efficient because they would be occurring in proximity to existing infrastructure. This alternative future also coordinates well with the short and long range transportation plans of the existing public transportation systems.

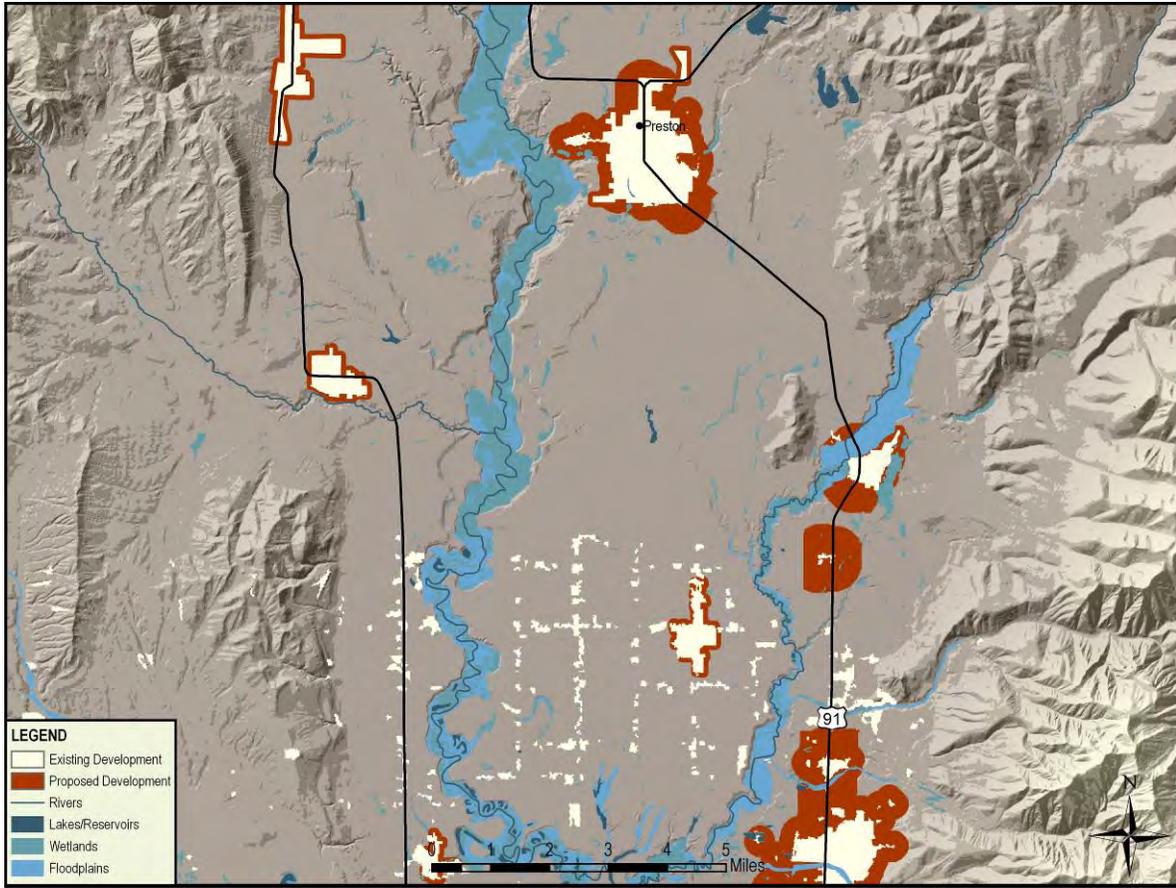
## DISADVANTAGES

Although the residential density of this alternative future does not differ from recent densities in Cache Valley, many communities along the eastern valley margin may lose some individuality because there would be more infill within towns and cities, as well as expansion along the valley margin. There may also be some loss of wildlife habitat in the less urbanized communities such as Paradise, Richmond, and Franklin. Another disadvantage may include air quality degradation unless the transportation system is expanded to Preston, Idaho. However, the transit companies are discussing a regional transportation system that may alleviate this problem (see Appendix D).

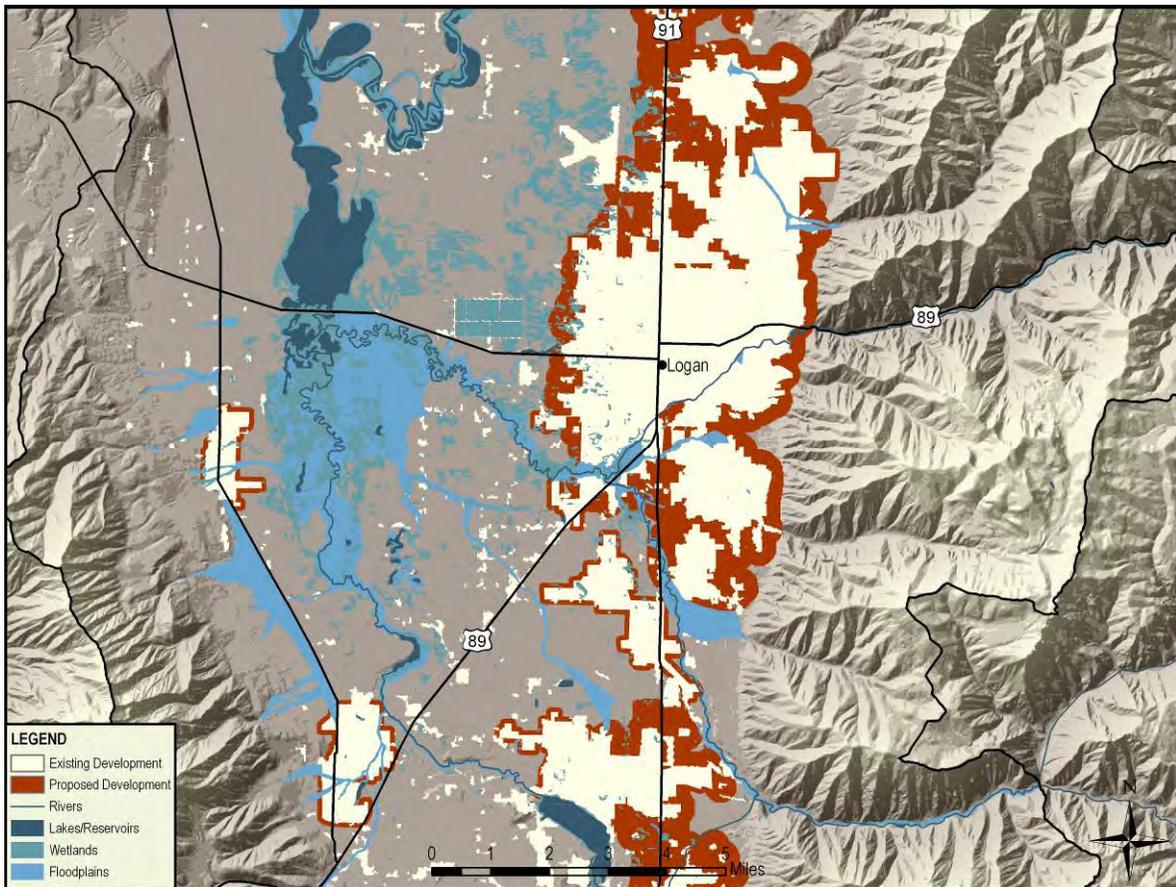
# EAST VALLEY DEVELOPMENT



# EAST VALLEY DEVELOPMENT



NORTH DETAIL



SOUTH DETAIL

# SOUTH CORRIDOR DEVELOPMENT

## SOUTH CORRIDOR DEVELOPMENT

The South Corridor future was designed to depict what Cache Valley could look like in the year 2030 if growth was concentrated along and in towns adjacent to Highway 89/91 from Logan to Wellsville. This alternative future emphasizes the unplanned development that could occur along the south corridor if lands were opened up to commercial and residential development. Since the majority of future development would occur in the southern end of the valley, minimal growth would take place in the towns and cities in the central and northern portions of Cache Valley in order to retain their pastoral sense.

The south corridor represents one of the beautiful gateways into Cache Valley, with stunning views of the Wellsville Mountains and picturesque agrarian landscapes. As demonstrated in the visibility assessment, the south corridor can be seen from multiple locations within the valley. As a result, there are many citizens within the valley who are striving to preserve and protect the rural qualities and scenic vistas.

This alternative future is not entirely improbable because segments of land along the highway have been annexed and zoned for commercial and residential development. Many towns in the south end of the valley are seeking commercial revenue to supplement their tax base. Therefore, there is a threat to the historic character and scenic quality of the area.

The South Corridor alternative future model illustrates that approximately 19,915 acres of land along the corridor would be converted into commercial and residential development. Based on the average of 4 persons per developed acre, this land could accommodate 79,660 people. The remainder of the growth could occur in lands surrounding existing developed areas within municipalities of central and northern Cache Valley. By utilizing growth patterns which emphasize development within one-eighth of a mile surrounding existing communities, as much as 14,250 acres could become available for development, which

would therefore support up to an additional 57,000 people.

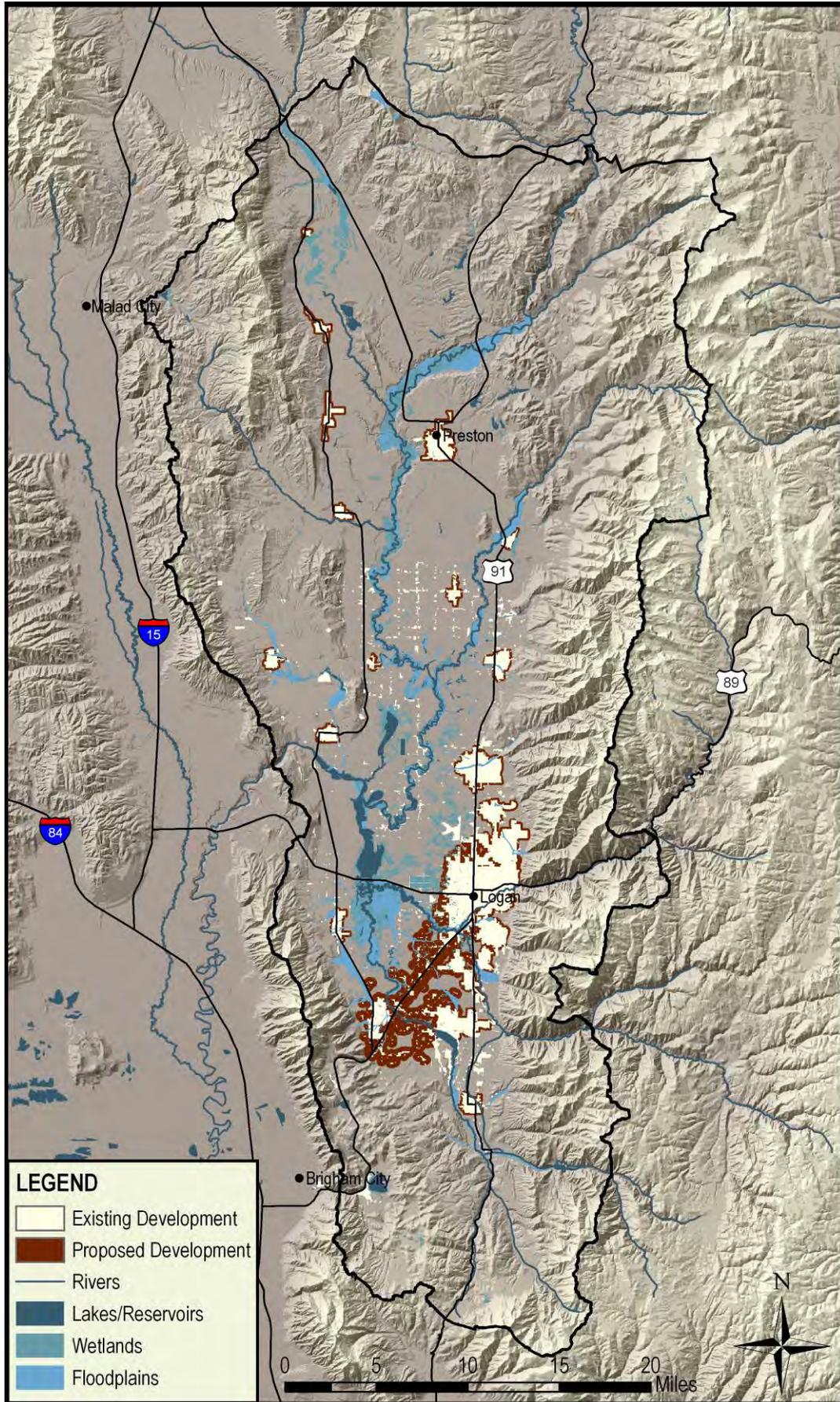
## ADVANTAGES

If growth were to proceed in this direction, advantages could include an increased tax base for the towns and cities in the southern end of Cache Valley. Towns and cities in the central and northern portion of the valley would retain their rural character and prime agricultural lands and open space.

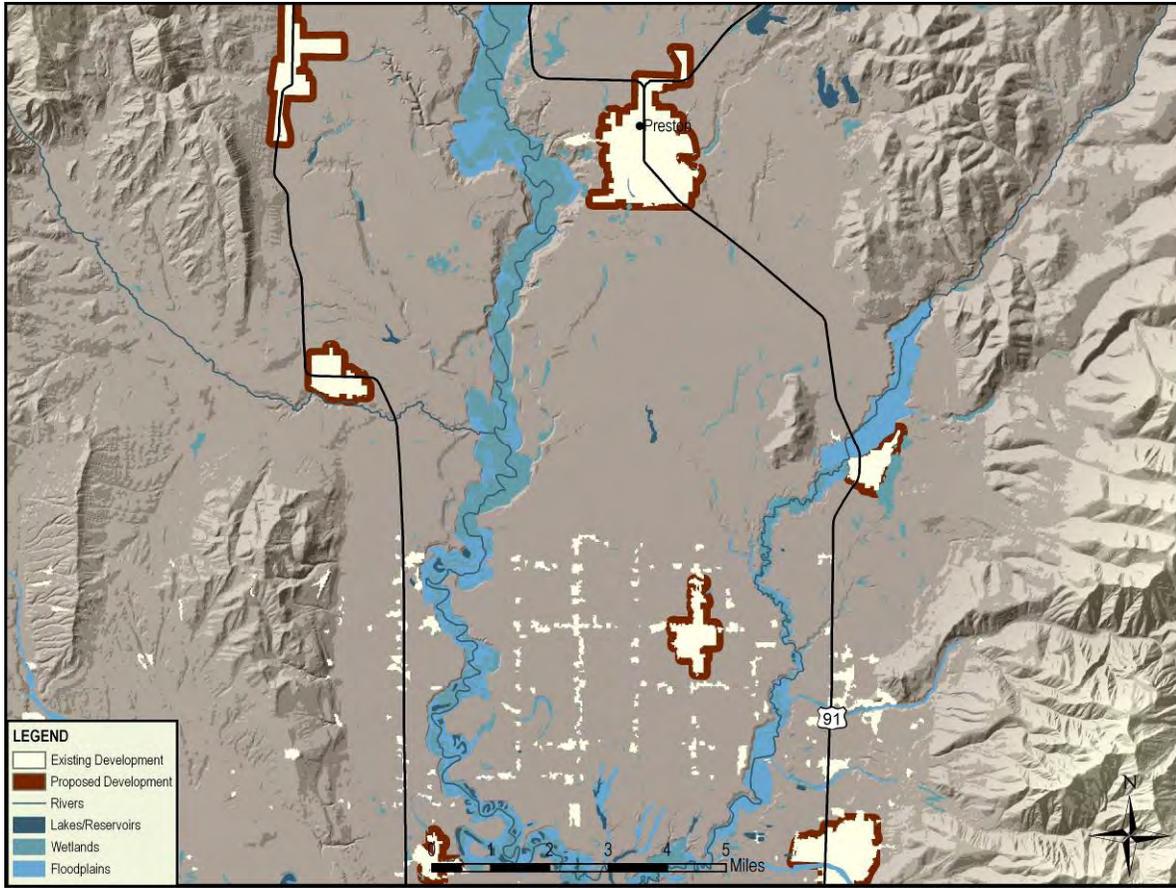
## DISADVANTAGES

Disadvantages could include loss of scenic vistas, open space, and agricultural land which would impair the rural character of southern Cache Valley. Suburban sprawl, particularly onto floodplains and wetlands, may also be encouraged with this pattern of development. Commercial and residential development would be expensive economically as additional infrastructure would be required. Therefore, the cost of development in a large portion of this area may outweigh the benefit. Transportation congestion may also become a problem as Highway 89/91 currently serves as the primary thoroughfare into and out of the valley. As a result, air quality may deteriorate and an additional highway may be needed to accommodate the growing population and bypass the traffic congestion. If this future growth pattern were to transpire, the overall quality of life of residents living in the southern half of the Cache Valley may decline.

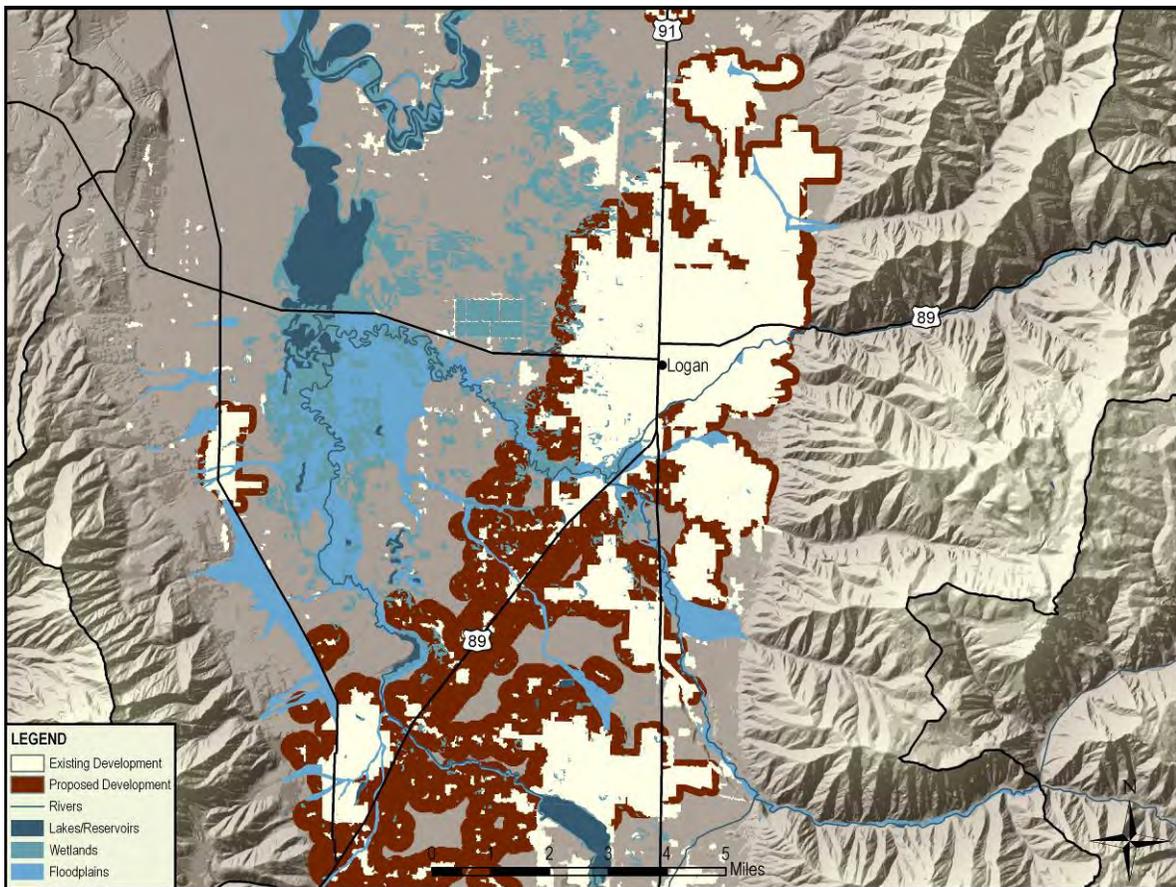
# SOUTH CORRIDOR DEVELOPMENT



# SOUTH CORRIDOR DEVELOPMENT



NORTH DETAIL



SOUTH DETAIL

# TRADITIONAL TOWNS

## TRADITIONAL TOWNS FUTURE

The Traditional Towns alternative future was developed to depict what Cache Valley would look like in 2030 and beyond if towns grew as they did after settlement. Historically, towns had a community plan, and it generally included the creation of city blocks of ten acres divided into eight lots. The blocks were separated by streets running north-south and east-west. Each lot was approximately 1.25 acres and typically had a home, a barn, a garden, and a small orchard or pasture. As each community grew, the towns grew outward by appropriating the outlying areas in a similar manner. However, as the population grew in Cache Valley and less land was under the control of the Mormon Church, parcels became slightly smaller, as many new residents only needed enough land for subsistence farming (Peterson 1997).



The contemporary housing pattern in Cache Valley does not reflect the historical nature of town settlement. Town communities, especially along the east bench, are blending together, and less open space is being preserved between the cities and towns. As a result of the suburban sprawl, communities are losing their identity and the rural character of Cache Valley is being threatened.

Currently, there are approximately 94,000 people living on an estimated 24,180 acres of developed land within incorporated areas. This alternative future model suggests that if towns were to grow in a traditional manner, even at one unit per acre, the first growth zones, approximating 29,670

acres, could support 89,000 people at an estimated density of 3 persons per acre. The second growth zones, approximating 22,520 acres, could support an additional 67,000 people. These numbers indicate that communities would still have the option to maintain larger lots, including lots larger than one acre, while preserving open space and prime agricultural land in outlying areas. However, since many of the communities along the east bench, particularly from North Logan to Providence, have already joined in some areas, one way to maintain some individuality is through residential infill and preservation of what open space is left between the communities.

One way to achieve and maintain this traditional town pattern of development would be through the implementation of urban service areas or public utility boundaries. Urban service areas and public utility boundaries limit growth by defining areas by public infrastructure systems. Urban service areas and public utility boundaries are often more flexible and less rigid than the common urban growth boundary because housing density increases do not always occur, and the area is drawn more consistently with the economics of planned public facilities.

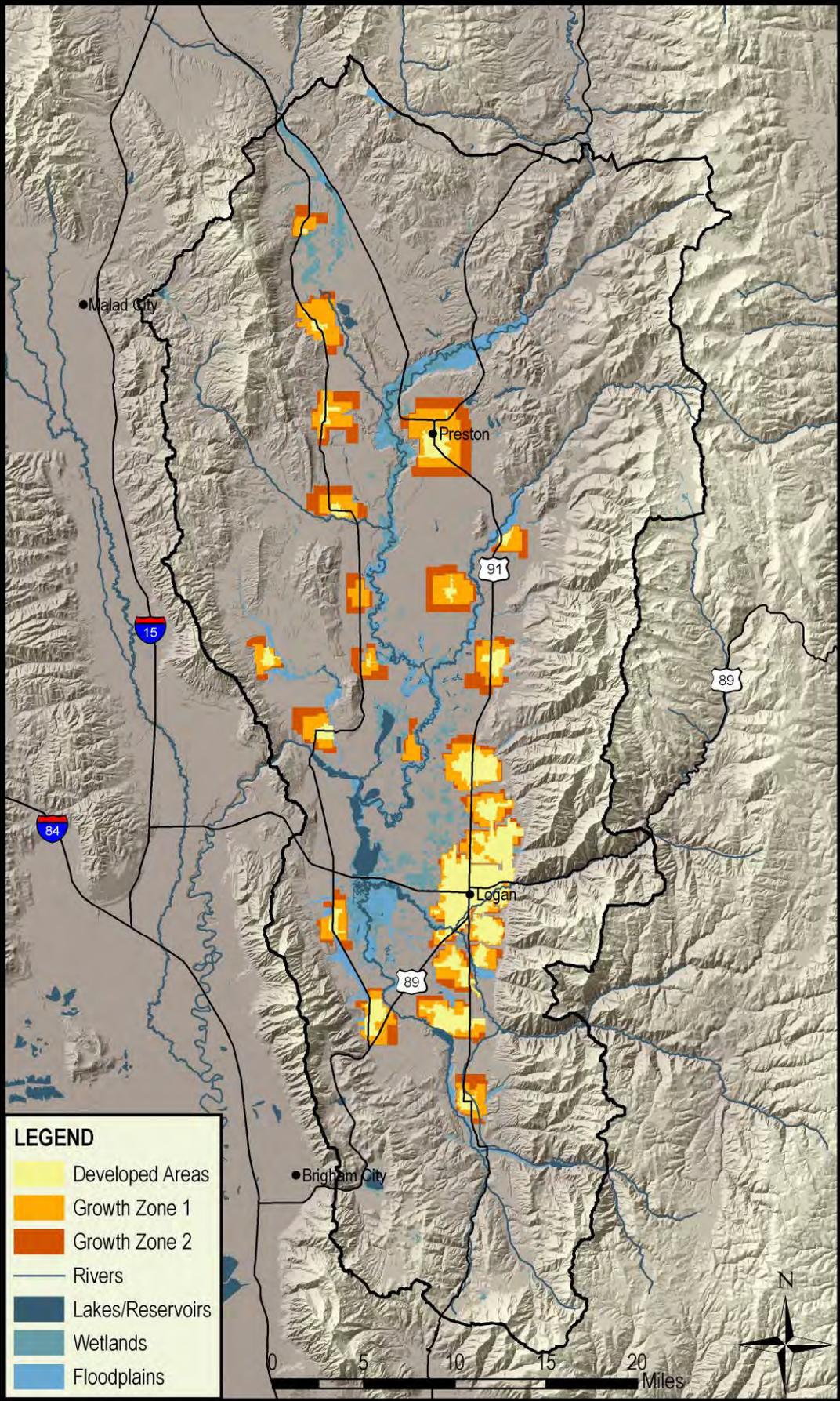
## ADVANTAGES

There are many advantages of maintaining the traditional town pattern through the use of urban service areas and public utility boundaries, including reduced local government costs due to more efficient infrastructure systems, less urban sprawl which promotes open space and preservation of agricultural lands, an increased opportunity for more compact development and affordable housing, and better public transportation (Kolakowski et al. 2000).

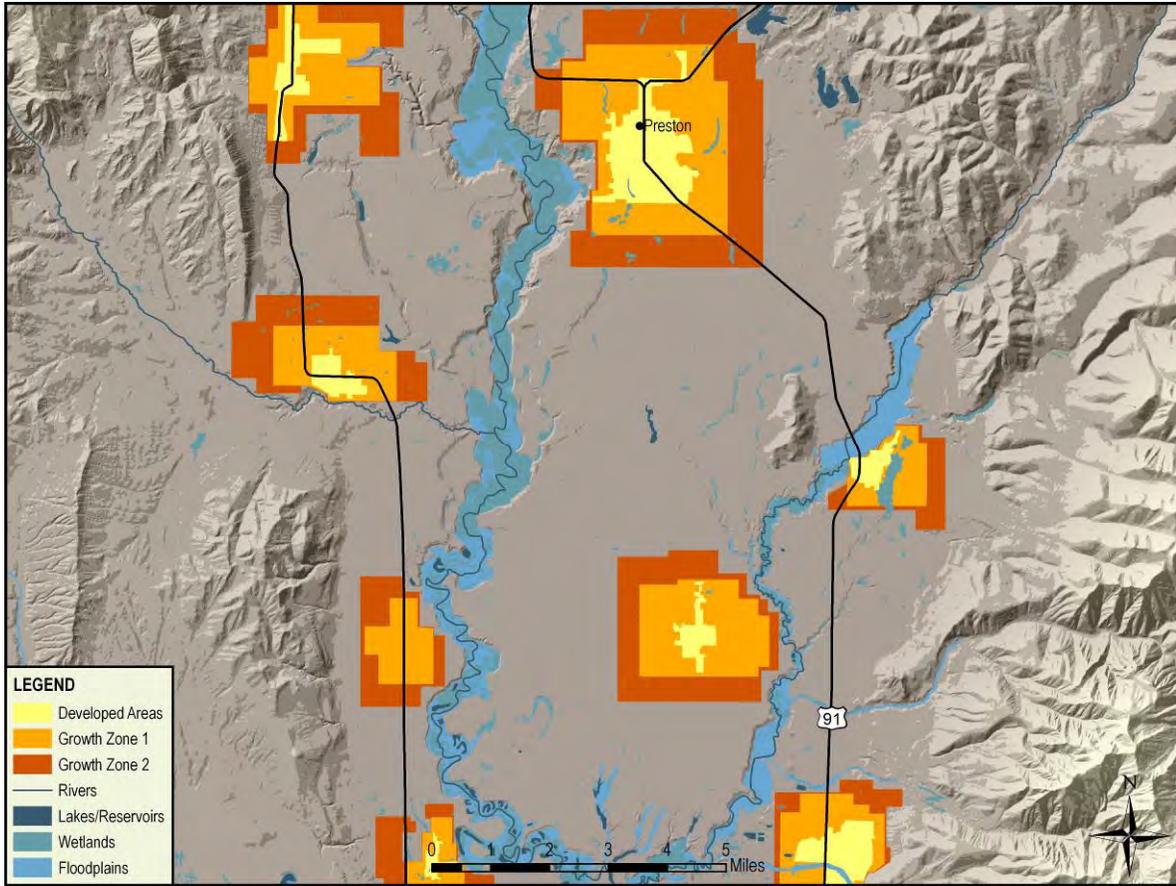
## DISADVANTAGES

Disadvantages are few, but may include increased air pollution unless a valley-wide transportation system is established and a possible increase in land prices within the urban service areas.

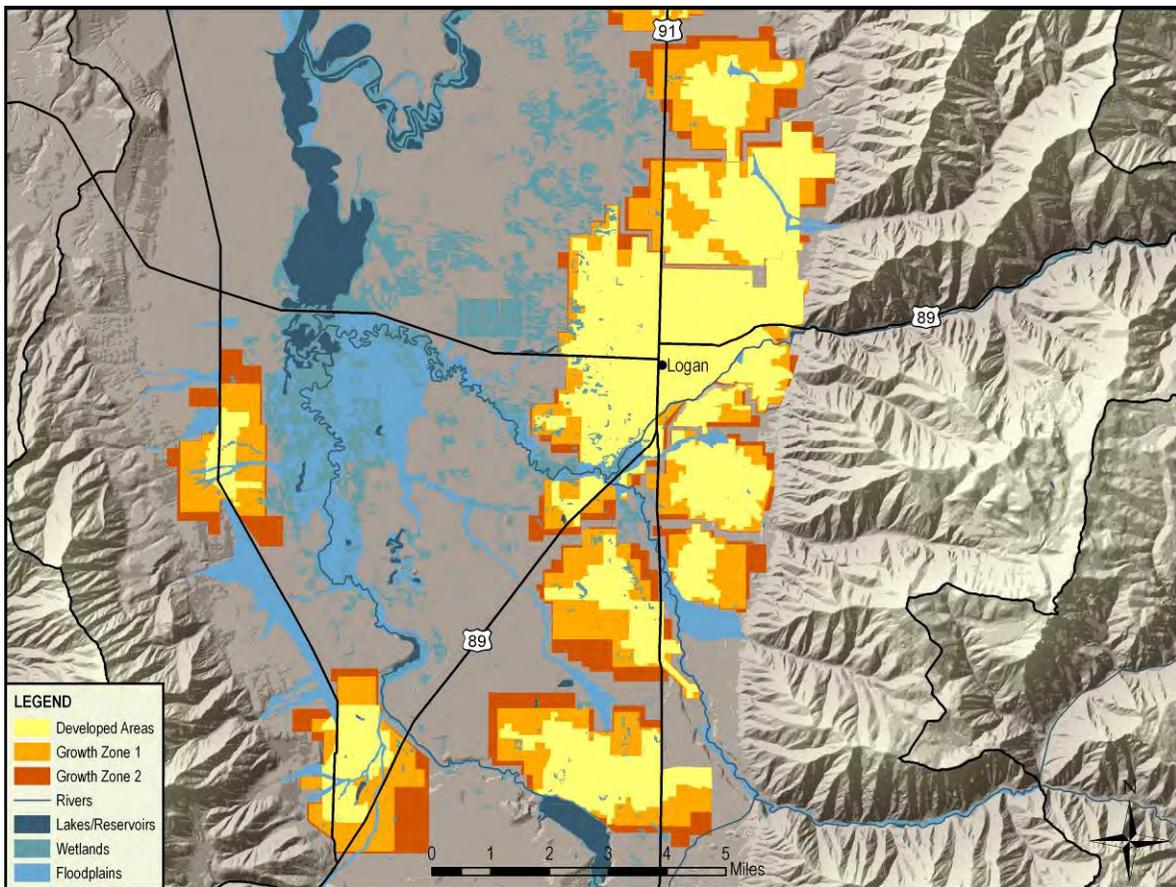
# TRADITIONAL TOWNS



# TRADITIONAL TOWNS



NORTH DETAIL



SOUTH DETAIL

## CRITICAL LANDS FUTURE

The Critical Lands alternative future was developed as a conservation-based future. This model was accomplished by overlaying a series of critical landscape features, all equally weighted, to identify where critical lands coincide. Ten features were entered into the model including wetlands, floodplains, prime agricultural lands, critical elk and deer habitat, steep slopes, aquifer recharge areas, soils susceptible to liquefaction, fault zones, and areas prone to wildland fire.

The first future model illustrates if and where critical lands overlap. It indicates that as many as six critical lands overlap in some areas. This model is useful in distinguishing between high priority conservation areas and low priority conservation areas. However, issues may arise because each critical land was given an equal weight. Some may argue that wetlands are more important than wildlife habitat or vice versa.

The second model illustrates where development could occur based on the exclusion of critical lands. Although this alternative future model may not be entirely feasible because some of the potential development sites are far from existing infrastructure and some areas may include public lands, it does indicate where development could occur in proximity to existing incorporated areas while preserving critical lands.

*“The aim of science we now see, is to find the relations which give order to this raw material, the shapes and structures into which the measurements fit. We are no longer preoccupied with the mere facts, but with the relations which the facts have with one another - with the whole which they form and fill, not with the parts. In place of the arithmetic of nature, we now look for her geometry; the architecture of nature.”*

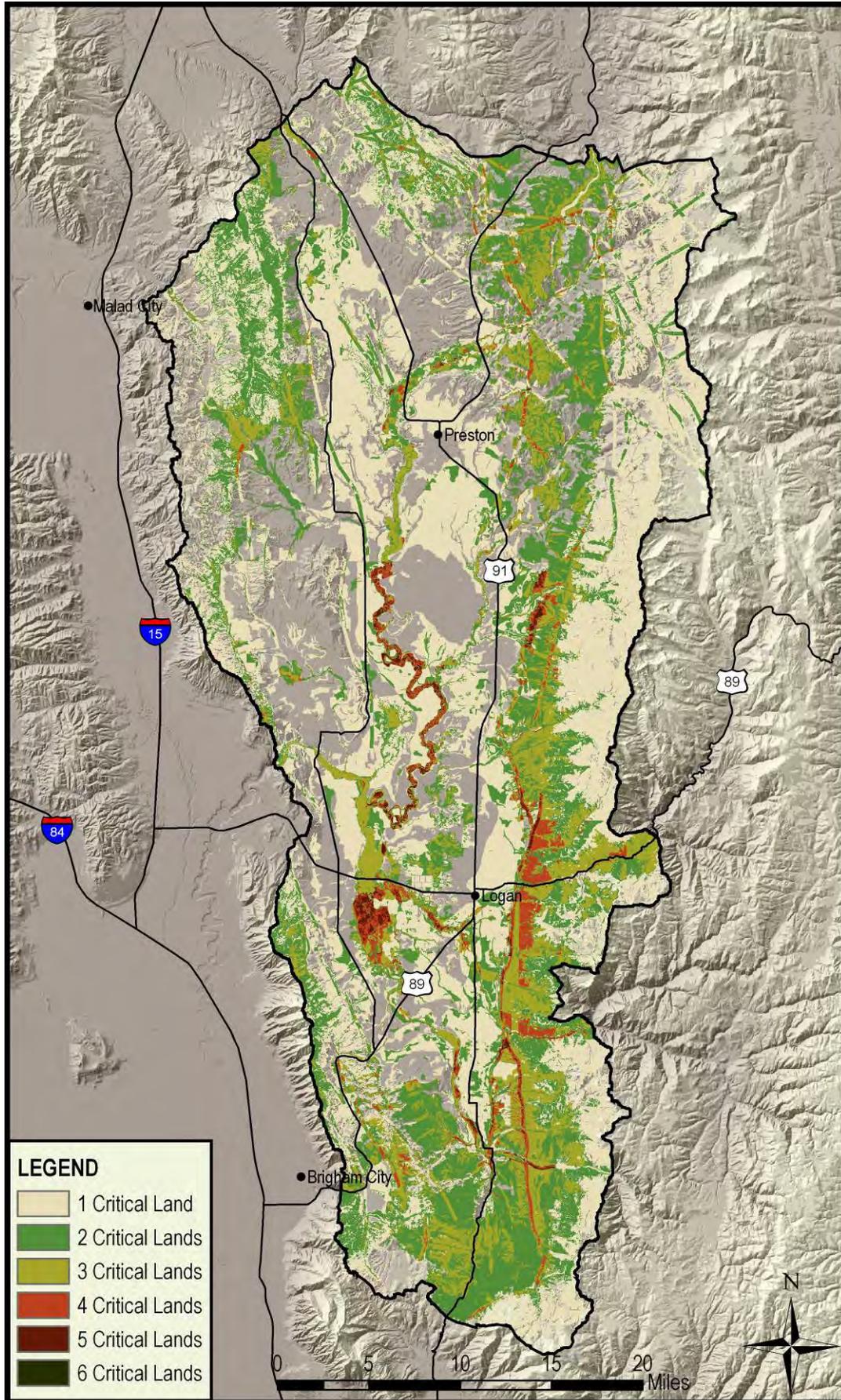
-Jacob Bronowski

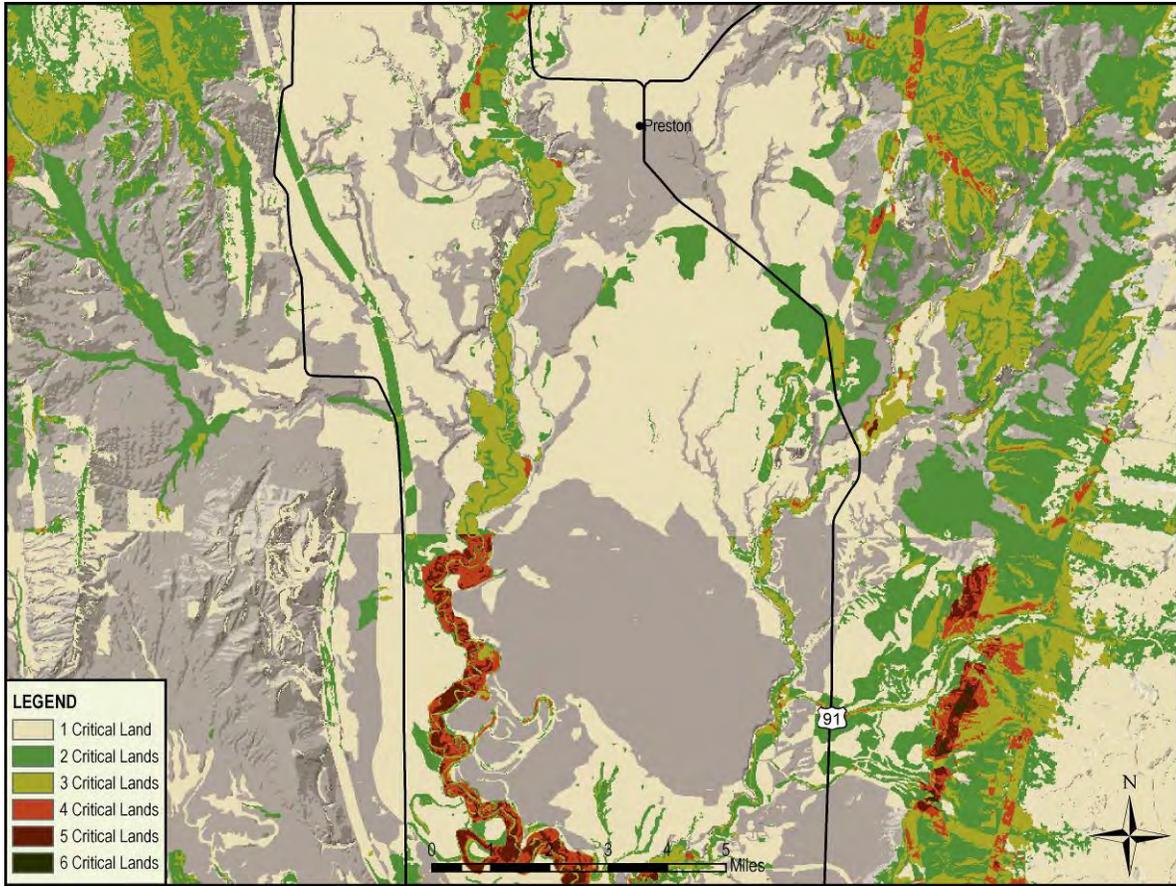


Sunset from Young Ward

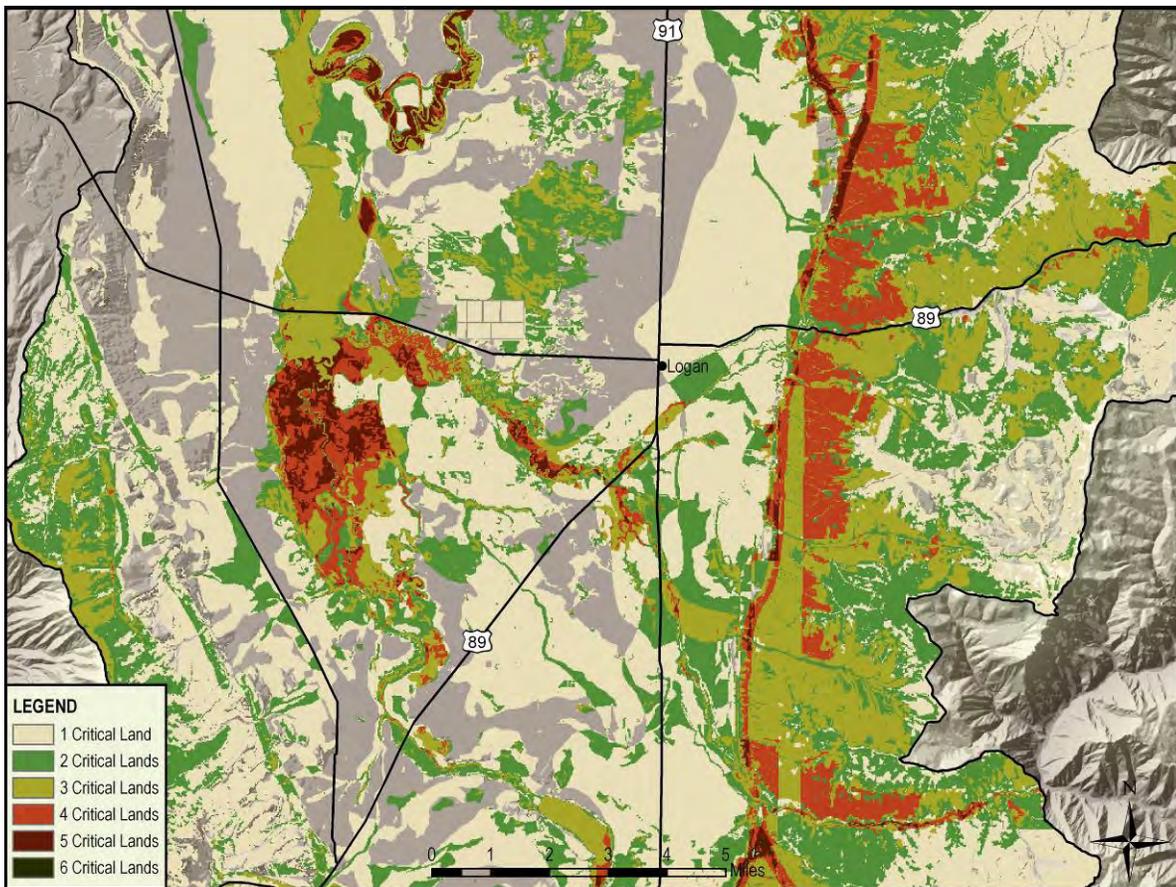
© Christopher McGinty

# CRITICAL LANDS



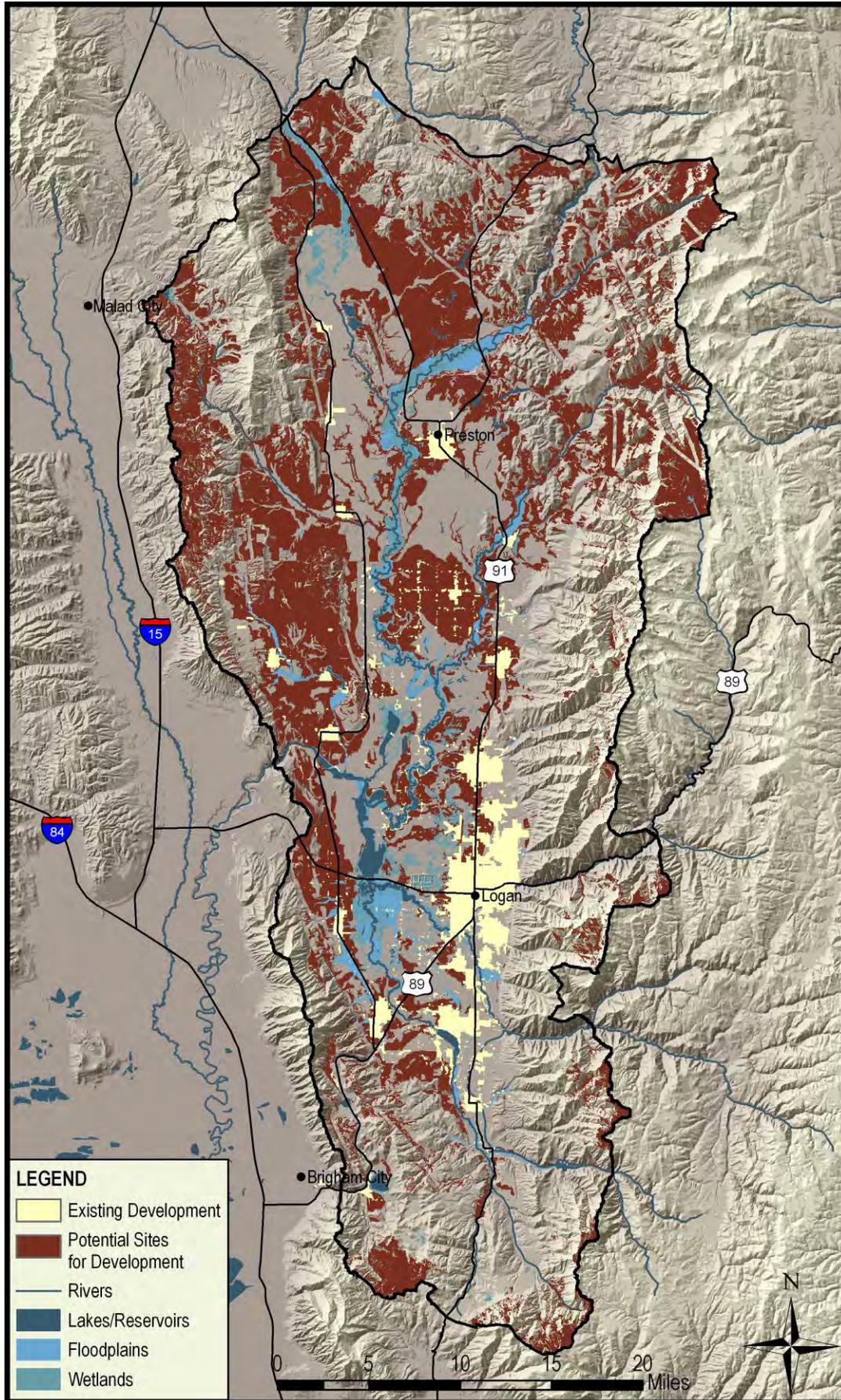


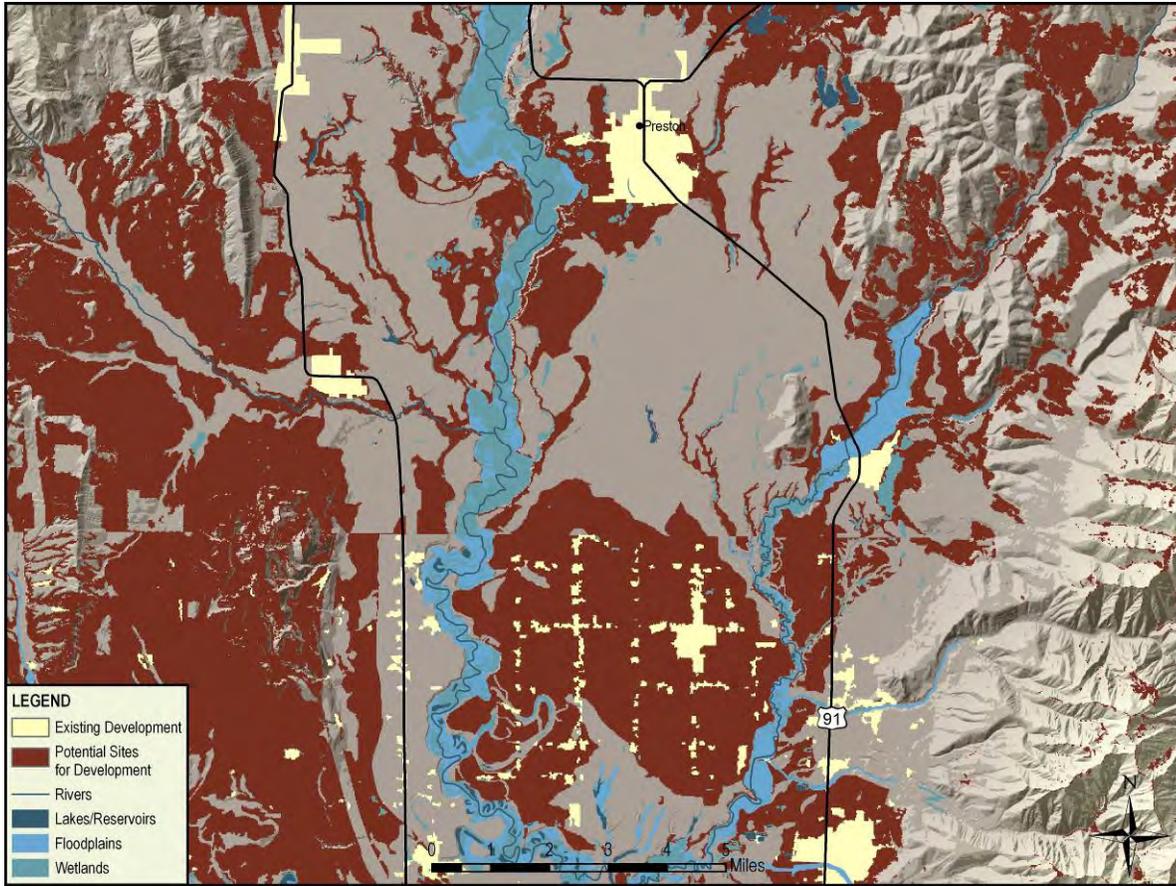
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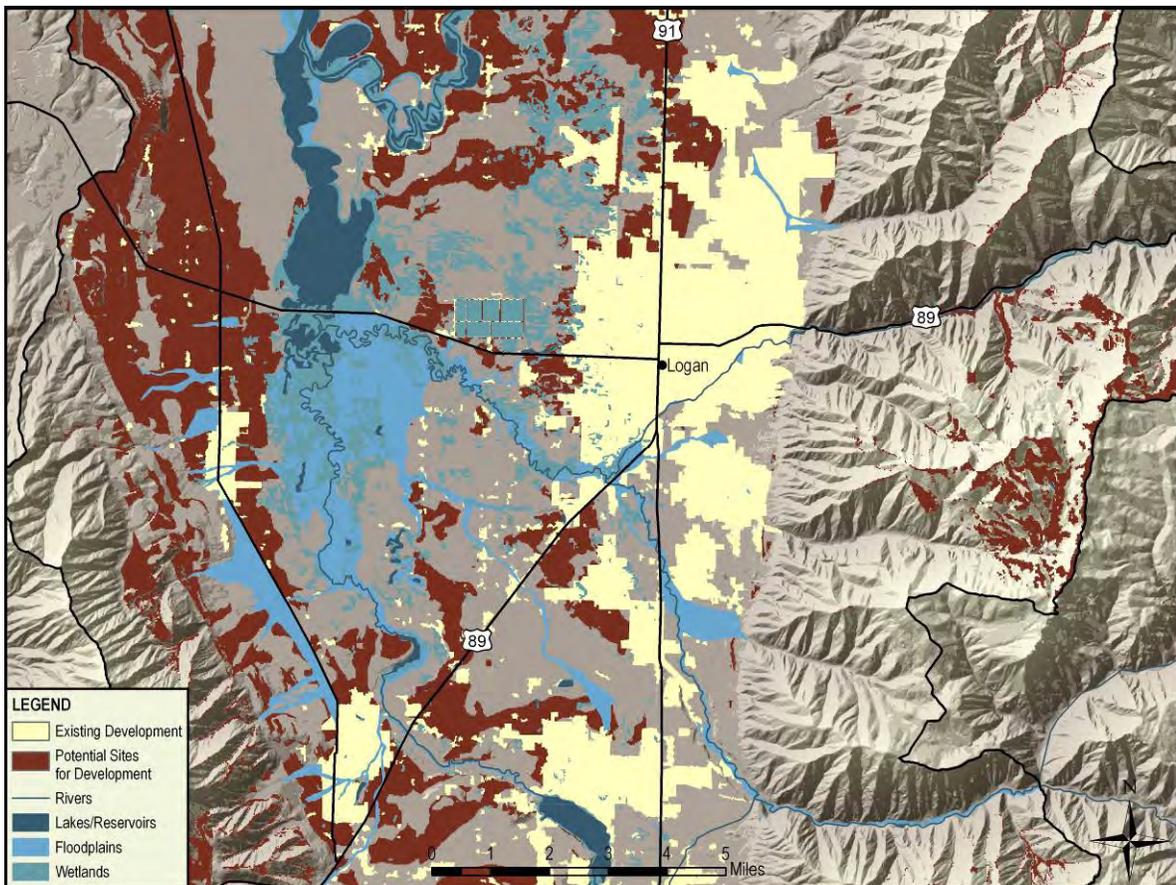
SOUTH DETAIL

# CRITICAL LANDS





NORTH DETAIL



SOUTH DETAIL

# QUALITY OF LIFE

## QUALITY OF LIFE

“Quality of Life” of a region may be defined as the physical and psychological aspects of the environment that contribute to the health, safety, and overall well-being of residents. It incorporates the physical welfare of people by including those elements required for basic survival. But quality of life is also compatible with the concept of “Sense of Place.” Sense of Place is the meaning attached to the unique features of the physical environment that contribute to the overall sensory experience of a region. The “patterns of these sensations make up the quality of places, and that quality affects our immediate well-being, our actions, our feelings, and our understandings (Lynch 1976).” The importance and meaning of these features varies, as each person’s perception is unique and his/her experience is different. Some of these characteristics are not always noticed and may be difficult to define. They combine to form an experience that is fully unique and not reproducible.

## DEFINITION

In this study, quality of life will be generally defined and categorized “Ambiance,” “Sensory,” and “Clean Environment.”

“Ambiance” is the special or distinctive atmosphere of the region in relation to the human elements of culture, history, population demographics, schools, jobs, and recreational opportunities. These significant areas can be represented by objects in the built environment such as a building with historical significance. They can also be areas within the landscape such as trails and parks. Or they may take form as landmarks such as a church steeple. These objects/sites can be important visually, but sometimes they will be significant only through the historical meaning associated with them. An example is a historic battlefield site, which may not be noticed by a casual passerby, but holds deep value within a community.

The “Sensory” aspects to quality of life include the tactile experience of the landscape. These include the significant sights, sounds, smells, and comfort of humans in the environment. These are the qualities of the natural world which contribute to the distinctiveness and aesthetic appeal of a region. Generally, these elements are landmarks or significant open spaces of a region.

Quality of life in terms of “Safe Environment” involves concepts that relate directly to the health and safety of residents in a region. These elements are generally somewhat intuitive as they involve the basic needs of humans to survive. They can also involve more complex and integrative concepts such as the part humans play in the larger ecosystem and the importance of biodiversity for long term survival. These concepts tie directly into the “Critical Lands” Future and are addressed in that section of the report.

## MODEL

The Quality of Life Future is a theoretical approach to looking at patterns of future development. It combines and prioritizes the most significant aspects of the landscape as developed by the Environmental Assessment Models, particularly the Cache Valley Identity Model and the Visibility models. It could, in fact, be considered and used as another Environmental Assessment Model instead of a Future. As a future, the model overlays the significant elements defined for Quality of Life with the most suitable soils defined for residential development.

## MODEL CRITERIA:

- Open space – prime agriculture and public lands
- Composite viewshed (visibility assessment)
- Parks/trails
- Wetlands/floodplains
- Buffer on major streams and rivers
- Soils – most suitable for residential development
- Developed areas (SWReGAP 2004)

## ADVANTAGES

- Preservation of high quality open space
- Preservation of high quality visual character
- Preservation of high quality agricultural land
- Preservation/creation of recreational opportunities

## DISADVANTAGES

- Dispersal of new development, resulting in higher cost of infrastructure and transportation
- Potential air quality degradation with increased transportation needs
- Potential fragmentation of communities and urban centers

## CONCLUSION

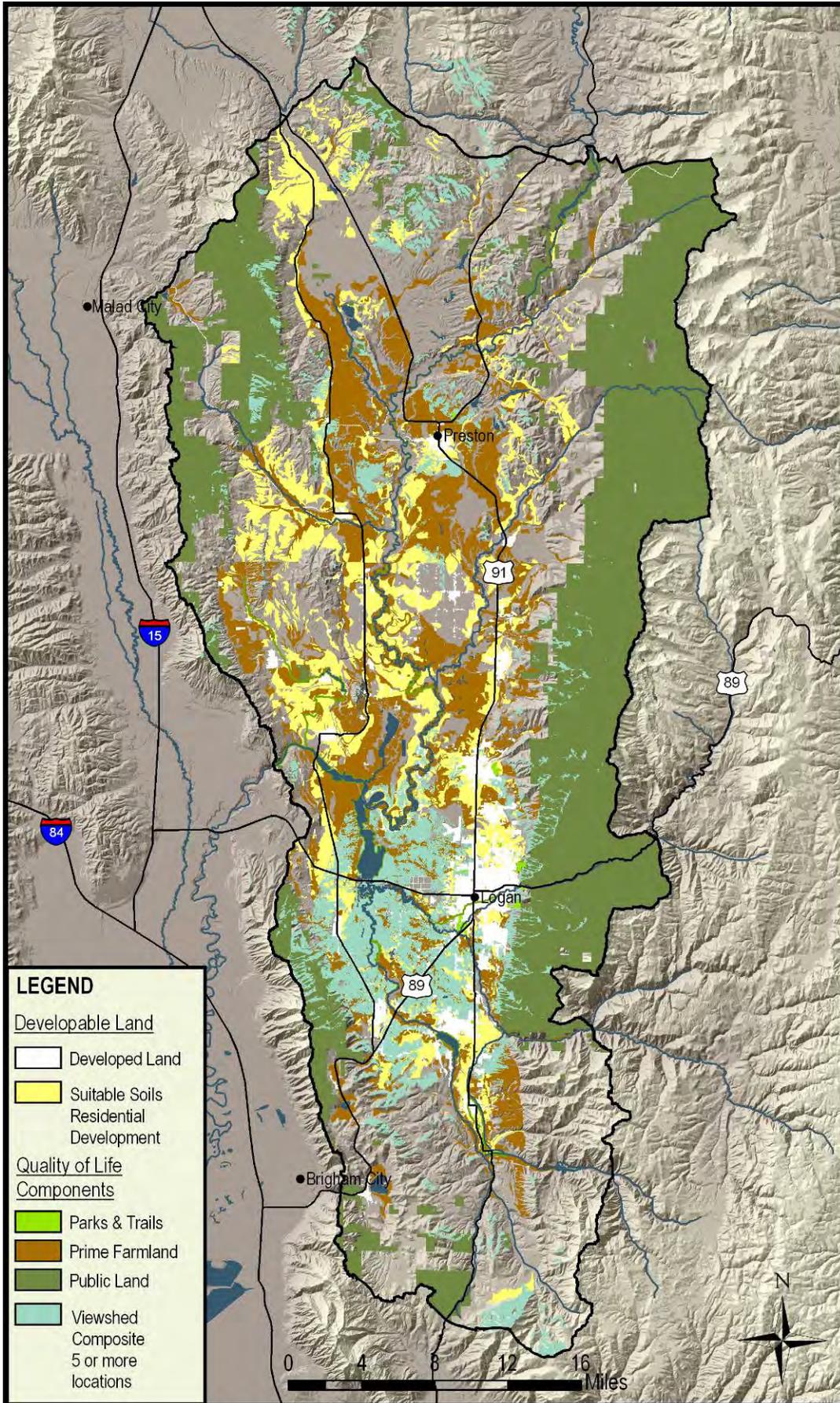
This model should not be considered a completed plan and is not meant to suggest ideal patterns of development. Its purpose is to illustrate conceptually where the largest pockets of space are available for future development if Quality of Life values are to be prioritized for planning. The model is best utilized in combination with other models and planning tools in order to find a cohesive, concise, and logical solution for expansion of communities in the valley.

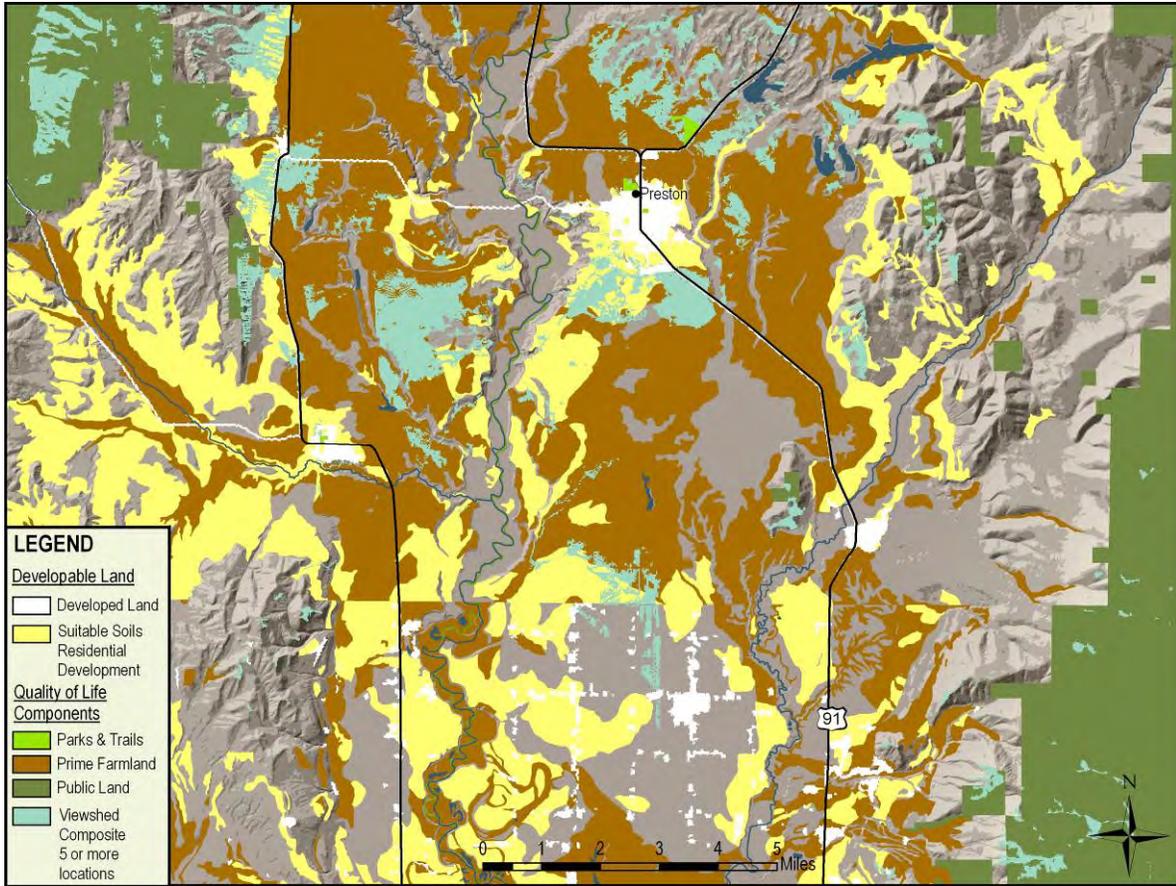


Historic Farmstead in Lewiston

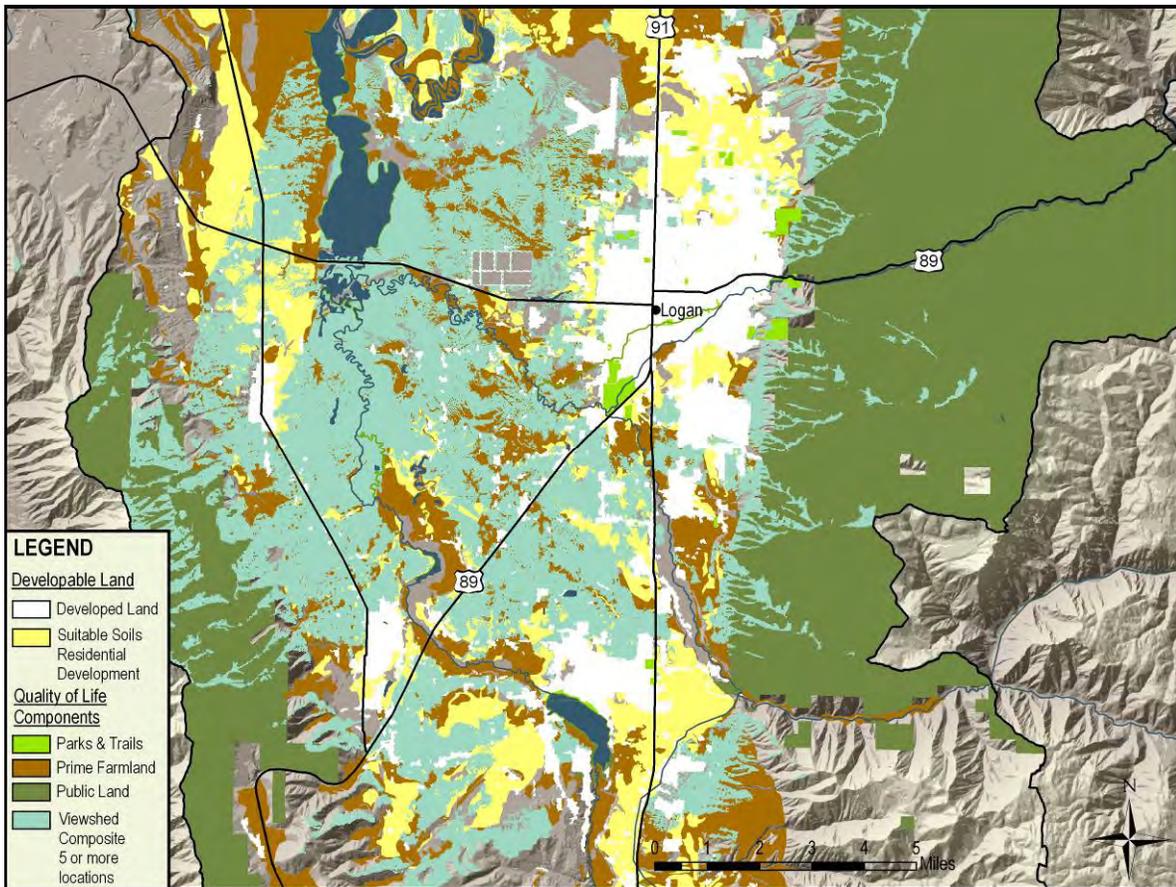
©Ellie Leydsman

# QUALITY OF LIFE





NORTH DETAIL



SOUTH DETAIL

# CONCLUSION

Growth and development in Cache Valley are inevitable. Conservative population projections estimate a doubling of the number of persons in the valley by the year 2030. The data presented in this preliminary report provide an opportunity for citizens, officials, and planners to explore whether current policies and trends will appropriately respond to the growth, or whether there need be further preparation for this inevitability. One need only to look 100 miles to the south for the precedent—by observing the changes of the past thirty years along the Wasatch Front, perhaps Cache Valley can see its own potential changes over the next thirty years.



With the observation that development frequently occurs on floodplains, it may be useful to invoke floods as a metaphor. Like growth, they are inevitable, and though it may be impossible to predict precisely *when* a flood will happen, *where* it will happen is a less complicated matter. Often, rather than avoiding building on floodplains, developers will advocate mitigation in the form of dikes, levees, drainage canals, etc., seeking to provide some level of protection in case of rising waters. Similarly, when communities are faced with the rising tide of development, if they are sufficiently prepared they may also mitigate the effects by channeling that development in less damaging directions. Instead of dikes and levees, communities can invoke the use of the tools listed in Appendix B of this report and can generate policies that ensures the landscape will change along more desirable lines. Although the

policies may seem to limit developers in the short term, the long-term effects may result in a landscape that has more intrinsic value and is more eagerly sought after by residents.



As an example, imagine that the citizens of Cache Valley agree that the primarily rural landscape views are what make the region unique and that the loss of those views would result in a loss of the identity of the valley. By examining the Visibility Assessment model presented here, communities will find that certain areas of the landscape are more highly visible than others, and priorities can be made to seek the purchase of development rights in those areas. This is particularly relevant given that state and federal funding for such purchases is limited, making prudence and efficiency a necessity. Once the flood of growth is thus excluded from certain areas, the value of the surrounding landscape may rise, creating higher demand for the property.



# CONCLUSION



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In the summer of 2005, a study was conducted to evaluate Cache Valley in terms of sustainability. The study was sponsored by the American Institute of Architects (AIA) and included a lengthy application process by local governments, business owners, stakeholders, and concerned citizens. A Sustainable Design Assessment Team (SDAT) was sent to Cache Valley to meet with local citizens and experts to determine the major issues the valley faces. The issues outlined were very similar to those identified for this report.



Blacksmith Fork Canyon

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They include:

- Improving air quality
- Developing transportation strategies
- Strengthening the local economy
- Sustaining the agricultural industry
- Preserving quality of life and sense of place
- Guiding growth pressures
- Improving water quality and quantity
- Restoring wetlands and wildlife habitat

The study conducted workshops and formed committees to define and address each issue. Many valuable recommendations came through the interdisciplinary open forum. The most critical objectives were the development of a Regional Plan, through a Regional Council unifying local governments, and the reworking of the tax structure to reduce competition for tax base through development and to create cooperation between communities.



Bear River Range at Dusk

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In accordance with the findings of the SDAT study, every assessment model and alternative future contained in this report addresses the landscape from a regional perspective. This is because, like floods, growth and development seldom regard administrative borders, and what happens upstream will certainly have an impact downstream. With the formation of the Cache Vision 2020+ Commission, communities in Cache Valley have made a bold and somewhat unique statement that the problems of the future



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# CONCLUSION

will be addressed as a region (see Appendix D). This is a powerful concept, and if successful, the region will become strong enough to determine its own destiny rather than being entirely subjected to external forces.

The following evaluation chart was developed by the team to provide a basic understanding and evaluation of the alternative futures studied in this report. The chart is not meant to pass definitive judgment on the impact of each alternative future, or to predict the outcome of specific actions. It simply points out where there will be some level of impact on the components of various environmental assessment and activity allocation models. The green indicates little or no impact, the yellow indicates some impact, and the red indicates significant impact.

If any of these alternative futures are to be pursued, it is the suggestion of the team that further study be implemented to understand the true nature of these impacts.



## ALTERNATIVE FUTURES

ALTERNATIVE FUTURES	ENVIRONMENTAL EVALUATION MODELS						ACTIVITY EVALUATION MODELS					
	PUBLIC HEALTH & SAFETY & WELFARE	WATER QUALITY/ QUANTITY	AIR QUALITY	WILDLIFE HABITAT	CACHE VALLEY IDENTITY	VISIBILITY ASSESSMENT	RESIDENTIAL GROWTH	COMMERCIAL/ INDUSTRIAL GROWTH	INSTITUTIONAL GROWTH	TRANSPORTATION	RECREATION	AGRICULTURE
FLAN TREND	Unfavorable	Unfavorable	Unfavorable	Unfavorable	Unfavorable	Unfavorable	Somewhat Favorable	Somewhat Favorable	Somewhat Favorable	Unfavorable	Somewhat Favorable	Somewhat Favorable
URBAN CORES LOGAN/PRESTON + NEW TOWN	Somewhat Favorable	Somewhat Favorable	Somewhat Favorable	Somewhat Favorable	Somewhat Favorable	Somewhat Favorable	Somewhat Favorable	Somewhat Favorable	Somewhat Favorable	Somewhat Favorable	Somewhat Favorable	Somewhat Favorable
URBAN CORES LOGAN/PRESTON	Somewhat Favorable	Somewhat Favorable	Favorable	Somewhat Favorable	Favorable	Somewhat Favorable	Favorable	Favorable	Favorable	Favorable	Favorable	Favorable
TRADITIONAL TOWNS	Favorable	Somewhat Favorable	Somewhat Favorable	Favorable	Favorable	Favorable	Somewhat Favorable	Somewhat Favorable	Somewhat Favorable	Somewhat Favorable	Favorable	Favorable
SOUTH CORRIDOR DEVELOPMENT	Somewhat Favorable	Somewhat Favorable	Unfavorable	Somewhat Favorable	Unfavorable	Unfavorable	Somewhat Favorable	Somewhat Favorable	Somewhat Favorable	Unfavorable	Somewhat Favorable	Unfavorable
EAST VALLEY DEVELOPMENT	Somewhat Favorable	Somewhat Favorable	Somewhat Favorable	Somewhat Favorable	Somewhat Favorable	Somewhat Favorable	Favorable	Favorable	Favorable	Somewhat Favorable	Favorable	Favorable
CRITICAL LANDS	Favorable	Favorable	Somewhat Favorable	Favorable	Somewhat Favorable	Favorable	Somewhat Favorable	Somewhat Favorable	Somewhat Favorable	Unfavorable	Favorable	Favorable
QUALITY OF LIFE	Somewhat Favorable	Favorable	Somewhat Favorable	Somewhat Favorable	Favorable	Favorable	Favorable	Favorable	Favorable	Unfavorable	Favorable	Favorable



# CONCLUSION



*The study team discusses ideas in the Bioregional Planning Studio.*



*The draft assessment models were pinned up on the studio walls.*



*The report outline was taped to the studio windows.*



*As each page of the report was completed, a red dot was placed on the corresponding page.*



*Kent Braddy presents to the Cache Vision 2020+ Subcommittee on Growth and Preservation.*



*Ellie Leydsman presents to the Cache Vision 2020+ Subcommittee on Growth and Preservation.*

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# APPENDIX A

## CENSUS DATA AND POPULATION PROJECTIONS

	1990	2000	2004	2030*	2030**	2030***
<b>CACHE COUNTY</b>						
<i>Amalga</i>	366	427	413	765	891	1397
<i>Clarkston</i>	645	688	661	1225	1426	2237
<i>Cornish</i>	205	259	252	466	543	853
<i>Hyde Park</i>	2190	2955	2955	5475	6373	9999
<i>Hyrum</i>	4829	6316	6463	11973	13938	21869
<i>Lewiston</i>	1532	1877	1781	3300	3840	6026
<i>Logan</i>	32762	42670	45517	84328	98162	154016
<i>Mendon</i>	684	898	974	1804	2101	3296
<i>Millville</i>	1202	1507	1487	2755	3207	5032
<i>Newton</i>	659	699	692	1282	1492	2341
<i>Nibley</i>	1167	2045	257	4922	5730	8991
<i>North Logan</i>	3768	6163	6692	12398	14432	22644
<i>Paradise</i>	561	759	728	1348	1570	2463
<i>Providence</i>	3344	4377	5351	9914	11540	18106
<i>Richmond</i>	1955	2051	1971	3651	4251	6669
<i>River Heights</i>	1274	1496	1422	2634	3067	4811
<i>Smithfield</i>	5566	7261	7801	14453	16824	26396
<i>Trenton</i>	464	449	437	810	942	1479
<i>Wellsville</i>	2206	2728	2745	5085	5920	9288
<i>Unincorporated</i>	4804	5766	7056	13072	15217	23875
<b>Cache County Total</b>	<b>70183</b>	<b>91391</b>	<b>98055</b>	<b>181660</b>	<b>211466</b>	<b>331788</b>
<b>FRANKLIN COUNTY</b>						
<i>Clifton</i>	228	213	235	435	507	795
<i>Dayton</i>	357	444	461	854	994	1560
<i>Franklin</i>	478	641	673	1246	1451	2277
<i>Oxford</i>	44	53	55	102	119	186
<i>Preston</i>	3710	4682	4962	9193	10701	16790
<i>Weston</i>	390	425	449	832	968	1519
<i>Unincorporated</i>	4025	4871	5536	10256	11938	18732
<b>Franklin County Total</b>	<b>9232</b>	<b>11329</b>	<b>12371</b>	<b>22918</b>	<b>26678</b>	<b>41859</b>
<b>TOTAL POPULATION</b>	<b>79415</b>	<b>102720</b>	<b>110426</b>	<b>204578</b>	<b>238144</b>	<b>373547</b>

\*Based on a growth rate of 2.4%

\*\*Based on a growth rate of 3.0%

\*\*\*Based on a growth rate of 4.8%

# APPENDIX B

## GROWTH TOOLS

If a Regional Council and reformed tax structure is successful, the following growth tools may be implemented as creative ways to implement change. Some of these may be voluntary measures and some may translate into changes in the local policies and laws.

## CONSERVATION EASEMENTS

In the United States, a Conservation Easement (CE) is a transfer of usage rights which creates a legally enforceable land preservation agreement between a landowner and a qualified protection organization for the purposes of conservation. CEs restrict real estate development, commercial and industrial uses, and certain other activities on a property to a mutually agreed upon level. CEs are voluntary and once set in place are binding on all future landowners. They are legal documents recorded with the county land office and become a chain of title for the property so reserved. The primary purposes of CEs are to protect agricultural lands, timber resources, wildlife habitat, scenic open space, clean water, and clean air (Wikipedia).

## TRANSFER OF DEVELOPMENT RIGHTS

Under a Transfer of Development Right (TDR) program, development rights are transferred from "sending areas" which are designated for protection, to "receiving areas," which are designated for growth. Conservation easements permanently protect land in the sending areas from which the development rights have been sold. TDR programs have been used successfully in other jurisdictions to protect thousands of acres of agricultural, historically, or ecologically sensitive land; to stimulate economic growth; and to manage urban development (University of Georgia River Basin Center).

## PURCHASE OF DEVELOPMENT RIGHTS

Purchase of Development Rights (PDR) began on the east coast in the 1970s when communities

decided to protect their open space and remaining farmland from urban sprawl. The practice has since spread across the country according to sources from The Trust for Public Land. A key point with PDRs is a reduction in the tax structure which enables landowners to continue the current land practices, i.e. agriculture, timber harvest, etc. Community members work with elected officials to establish municipal, county, state, federal, and privately-sponsored PDR programs that enable private landowners to partner with the public in the preservation of farms for agriculture as well as to preserve scenic beauty, wildlife habitat, watershed functions, and recreational opportunities. Through PDR programs, the public provides a cash payment to a landowner for the value of the development rights associated with a land parcel. The owner still owns the land but is compensated for relinquishing the right to develop it as real estate. For the public, PDR programs enable land conservation at a much-reduced expense, as the cost of PDR is less than outright purchase of land, and costs associated with subsequent management of the land remain the responsibility of the landowner (Stein et al. 2001).

## IMPACT FEES

Impact fees are charges assessed by local governments against new development projects that attempt to recover the cost incurred by government in providing the public facilities required to serve the new development. Impact fees are only used to fund facilities such as roads, schools, and parks, that are directly associated with the new development. They may be used to pay the proportionate share of the cost of public facilities that benefit the new development; however, impact fees cannot be used to correct existing deficiencies in public facilities (Municipal Research and Service Center of Washington).

## INCENTIVES

The typical pattern of urban development is sprawl: low-density, segregated use, automobile dependent development on the fringes of urban

areas. Local, state, and federal agencies are beginning to offer incentives such as enhanced funding for “smart growth” in local communities by encouraging brownfield revitalization (redevelopment), mixed-use development, and eco-industrial parks (Findlaw 1999).

## INCENTIVE ZONING

With Incentive Zoning, a developer provides community amenities in exchange for zoning accommodations. These incentives may include higher densities, increased floor area ratios, increased building height allowances, etc. Community amenities may include open space, trails, etc (Community and Rural Development Institute at Cornell).

## CLUSTER DEVELOPMENT

A Cluster Development can be defined as a concentration of buildings on a site to permit the maximum amount of land to be conserved for open space. The open space may consist of parks and trails or be set aside for its natural qualities (Community and Rural Development Institute at Cornell).

## URBAN GROWTH BOUNDARIES

Urban growth boundaries are successful tools for managing urban sprawl. They are legal boundaries which separate urban and rural lands. A unit of government establishes an area targeted for urban growth, and thus indicates that areas beyond that boundary will not be supported by public infrastructure services. There are variations of urban growth boundaries, such as urban service areas and public utility boundaries. Urban service areas and public utility boundaries are often more flexible and less rigid than the common urban growth boundary because housing density increases do not always occur, and the area is drawn more consistently with the economics of planned public facilities (Kolakowski et al. 2000).

## PLANNED UNIT DEVELOPMENT

A Planned Unit Development (PUD) is similar to a Cluster Development. This is a provision allowing large developments to occur with more flexibility than normally allowed by the zoning laws. It generally allows for the mix of residential types to accommodate a diversity of income levels. It may also allow for commercial development to be mixed in with residential. In return, the developer creates open space, additional facilities, or services (Community and Rural Development Institute at Cornell).

## ENVIRONMENTAL QUALITY REVIEW

An Environmental Quality Review process can be implemented to create an evaluation process for larger developments’ impact on the environment. An Environmental Impact Statement (EIS) is a written document which would be required to inform local government entities of adverse impacts (if they are found), and would include the study and notification of alternatives and measures to mitigate negative effects (Community and Rural Development Institute at Cornell).

## LAND TRUST

A Land Trust involves the private acquisition of land or conservation easements, usually by a nonprofit organization, through donations and purchases. The purpose is preservation and protection of the natural qualities of the land (Community and Rural Development Institute at Cornell).

## COMPREHENSIVE PLAN, GENERAL PLAN, OR MASTER PLAN

A Comprehensive Plan is a document developed by a local government or governments that gives basic guidelines for decisions regarding land use, infrastructure, transportation, open space, water supply and quality, public facilities, and critical lands (Community and Rural Development Institute at Cornell).

# APPENDIX C

## **Case Study: Plan and Program for the Brandywine** Kent Braddy

In 1968, several organizations headed by The Institute for Environmental Studies at the University of Pennsylvania devised a plan for the Upper East Branch of Brandywine Creek in Chester County, Pennsylvania. The plan was originally conceived as an experiment to demonstrate the use of less-than-fee interests in land conservation, as well as an opportunity to perform cost-benefit analyses on conducting that demonstration. The pressures of imminent urbanization coupled with the apparent willingness of many citizens to protect the area made the Upper East Branch of Brandywine Creek an ideal site for the plan's designers. The primary issues concerned water, land and population growth—water for supply and quality, land for preservation of natural amenities and open space, and population growth being kept at a normal level notwithstanding. Several local, county, state, and federal agencies contributed to the project in both funding and personnel support. Every conceivable aspect of the landscape was evaluated in the plan—topography, geology, and soils; climate and hydrology; human culture and history; land use, population growth; the role of law, government, and citizen education; and assessment of citizen attitude and perception.

Based on mapped data, the team determined that the plan should focus on purchasing conservation easements to limit development:

- On floodplains or within 300 feet of a stream or watercourse
- In wooded and steeply sloping (>15%) areas to a density of not more than one house per 4 acres
- To prevent excavating and dumping wastes
- To require timber growers to follow accepted forest management practices

The main implementation strategy focused on the original point of the plan—to experiment on the less-than-fee interest method of conservation, or

the conservation easement. Area landowners would sell their rights to develop their property to an agency such as the Water Resources Authority, who in turn could manage the easements in perpetuity. Extensive public awareness campaigns, newspaper articles, television and radio interviews, and mass mailings were all intended to encourage public support for the program. The project management team determined that at least 80% of the affected landowners would need to agree, after which the remaining 20% could be drawn in with eminent domain takings of the easements.

The designers of the Plan and Program for the Brandywine presented a well-researched plan to the citizens and governments of the study area. If followed, the plan would have allowed for normal growth to continue while promoting the best use of water and landscape for conserving open space and other natural amenities. The most significant issue interfering with the plan was the perception of citizens and landowners in the study area. The plan was regarded by many as hostile to local interests, and the work of controlling urban outsiders and large land-grabbing governmental agencies. This led to the plan's swift and absolute demise. Irrespective of the scientific basis of every other element of the plan, the human component was exponentially more influential in determining the plan's failure than all the other elements combined.

## **Case study: Biodiversity and Landscape Planning: Alternative Futures for the Region of Camp Pendleton, California**

Jordy Guth and Brandon Taro

Sponsored by the Environmental Protection Agency and the U.S. Forest Service, the purpose of the study was to examine the effects of urbanization on biodiversity in the region and provide better information to policymakers and stakeholders in making land use decisions. The study area encompassed an 80 km by 134 km region of rapid development between Los Angeles and San Diego, California. The region also included five

major river drainages and a large military base, Marine Corps' Base Camp Pendleton.

To accomplish its goals, the study proposed and evaluated six alternative future scenarios:

- Plans Build-out
- Spreads
- Spread with Conservation 2010
- Private Conservation
- Multi-centers
- New City

The study did not recommend one solution for the future of the site. The goal was to give policymakers and stakeholders the tools to make these decisions, through increased understanding of the risks and benefits of the range of alternatives presented. One important concept presented was the need for priorities and decisions to be made and implemented on a regional scale and not through local jurisdictions. Many significant issues affecting biodiversity can cross these superficial boundaries.

One of the limitations of the project was the decision to target a specific set of wildlife species in designing the models. This was done for practical reasons—there are so many species in the study area that to model them all would be nearly impossible. As a result, the study did not assess the effects on insects, fish, or specific vegetation types in its analyses.

# APPENDIX D



## **2020+ adopts bylaws**

**June 14, 2006**

Author: Charles Geraci

After months of preparation, a new advisory group intended to unite leaders from across Cache Valley — including Franklin County — convened for the first time Monday to begin setting future planning guidelines.

Members of the Cache Valley Regional Council adopted a set of bylaws and reviewed the recommendations of 10 subcommittees that were part of Cache Vision 2020+, a project designed to promote cooperation among officials as they tackle important issues facing the region.

“I think this is a great idea, and I appreciate those who have pioneered it,” said Hyde Park Mayor David Kooyman.

The council’s membership includes eight mayors, two legislators, three county officials, a city councilwoman and the president of Utah State University.

Of the 15 council seats, 12 will serve for a two-year term. The initial terms of six will run through 2007, and those of the other six will expire at the end of 2008. The Cache County Executive, Logan City mayor and USU president will serve for as long as they hold their respective positions.

The Cache County Planning and Development Office will serve as staff for the body.

“We, as planners in the county, are very excited about this concept,” said Countywide Planner Wendell Morse. “We really pledge our support to do what’s needed to make this a success.”

Gary Anderson, chairman of the Cache Vision 2020+ Steering Committee, will stay on board as a non-voting member. He advised the council to continue working with the subcommittees.

“We believe that there are about 150 people who have been involved with the subcommittees,” Anderson said. “I think it would be a big mistake not to use them in whatever direction you decide to take.”

Members received a report containing the recommendations of the subcommittees, and Anderson briefly reviewed their suggestions.

The council will meet the third Monday of each month, and unanimously selected County Councilman Craig Petersen as the chair and Preston Mayor Neal Larson as the vice chair.

Petersen requested that the council review the lengthy report in preparation for the July meeting.

“The good thing about this report is that it has lots and lots of good ideas,” he told the council. “The bad thing about this report is that it has lots and lots of good ideas. Let’s think about what’s most important for us to focus on.”

## **Franklin OKs historic 270-acre annex**

**May 28, 2006**

Author: Kelly Hafen

The Franklin City Council has approved the annexation of 270 acres – the largest land addition of the city since 1860 – allowing plans to move forward on the Maple Leaf Lake Estates development.

Before the annexation can be complete, a public hearing will be held for both the Franklin City Planning and Zoning and the Franklin City Council, County Attorney Todd Garbett said. Following the public hearings and the final approval of the annexation, paper work, such as tax documentation, must be completed, Garbett said.

“There are several steps that must be taken before the annexation can be official,” Garbett said.

Zoning details for the development will be set Thursday during a meeting with the Franklin City Planning and Zoning Commission. Developer Dean Hutchings said the land will be zoned primarily commercial and residential.

Preliminary plans are to break ground on the development during Franklin City Idaho Days, held June 23 and 24. Construction will begin then on the first phase of the development, which encompasses the middle portion of the site.

The first portion to be completed will be the lake, several city-sized lots, a retirement-type community and some commercial properties, scheduled to include an LW’s convenience store.

“This will include a pretty good cross section of the whole development,” Hutchings said. “It is a good hunk of development.”

This portion of the site is expected to have the roads, sewer and water lines and some homes complete by the end of the calendar year.

Hutchings said several people have expressed interest in investing in the property either commercially or residentially. The lots will not be sold before the zoning is complete, however reservation can be made, he said.

Hutchings said interest in the project has been “more than I had even hoped for when we started the development.”

## **Open space hot topic at seminar**

**May 27, 2006**

Author: Lindsay Kite

LEWISTON – Preserving agricultural land and open space in northern Cache Valley were top priorities for city and town representative at a Tuesday seminar on updating general plans.

“Be aware that you have a gem and you’ve got to take care of this thing or it’s going to get away from you,” Michael Hansen, manager of state and local planning for the state of Utah, told representatives from Cornish, Richmond, Lewiston, Trenton and Clarkston.

He cited the case of St. George, where home values have appreciated 40 percent in just the past year, warning that with infrastructure, roads and economic opportunities already present in northern Cache Valley, housing development could come very quickly.

A self-proclaimed “total planning nerd,” Hansen and two project managers from the Governor’s Office of Planning and Budget, Laura Bohn and Brian Carver, were invited to speak to the municipalities north of Smithfield to help get city plans in compliance with state laws.

Because of land scarcity and constantly increasing real estate rates, he said, updating the rights outlined in each municipality’s general plan is a must.

“We are not here to tell you what to do; our mission is building local capacity,” Hansen said.

Utah State Code outlines only three real requirements for a long-range general plan, he said, including some discussion of land uses, transportation and a zoning map – which some of the municipalities at the seminar do not currently have.

Emphasizing the importance of creative zoning to retain open space, as opposed to conventional large residential lots, Bohn said people in small towns often think they want to zone for 2- or 10-acre lots, but that isn’t always the case once they see what it will look like.

“Just be creative,” Hansen told the representatives. “Look at all the different opportunities and

# APPENDIX D

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throw them out to the public. You'll be surprised at all the positive energy that will become of it."

But Joe Hansen, a farmer and councilman from Cornish, pointed out that protecting agricultural land can be more complicated than simple zoning techniques.

"When homes are built near the farm ground, they want to fill in the ditches and they complain if the corrals get too 'aromatic,'" he said. "And then their garbage can tip over and we find trash out in the fields and in our machines."

But Hansen said proper zoning regulations can also address such issues.

"That is where agriculture protection zones come in," he said. "If someone complains about stinky cows or annoying chickens, just tell them sorry, but their house is built in an agriculture protection zone and it's out of your hands."

Another option to avoid undevelopment is by purchasing conservation easements, he said, which are cost-effective for the state and beneficial for the land owner.

"If you want to preserve open space, you have to buy it," Hansen said. "As far as agriculture goes, we buy conservation easements, which means the owner sells their development rights to the city – so there is no development potential – but they can be compensated for it."

But designing zones and setting up the general plan in a way that makes all these options possible is not an easy or inexpensive task, which is why the Office of Planning and Budget offers grants to aid municipalities in the process.

"We have the money and if you want it, you have to tell us, because it goes very quickly," Hansen said, adding that it takes about \$5,000 to create a general plan and have a consultant review it.

Another way cities and towns can receive funding is to become a Quality Growth Community, which is a program Hansen said helps align state infrastructure spending with the Quality Growth Act of 1999 – an act that encourages landowners and communities to work together in conserving important land.

To implement this focus in a general plan, he emphasized the need to keep the language vague, but to include rationale that is easily understood.

"In the plan, simply say you want to keep agribusiness because one dollar of that revenue goes to the cheese factory, which then hires that kid down the street, who goes to school and works here," Hansen said. "Say the backbone of this town is agriculture and you want to keep it that way."

## **Cache Valley Regional Council set**

**May 22, 2006**

Author: Charles Geraci

All 15 members of the Cache Valley Regional Council have been selected.

The advisory board, which will attempt to tackle some of Cache Valley's most pressing problems, will likely hold its first meeting in June. Its members, chosen from Cache and Franklin counties, include eight mayors, two legislators, three county officials, a city councilwoman and the president of Utah State University.

To create the council, participants of the project known as Cache Vision 2020+ met with each city council in the valley plus the Cache County Council and Franklin County Commission and requested that they pass a resolution in support of the new organization. All 24 cities and both county bodies have adopted the resolution.

"I'm really very pleased at the quality of people who are going to be on the Regional Council," said County Councilman Craig Petersen, who has been selected to represent the Cache County Council. "I think we have some outstanding members."

Petersen said that the Regional Council is revolutionary in a sense.

"For the first time, there'll be a real opportunity for elected officials in the valley to get

together, to discuss issues and to coordinate efforts,” he said.

A key component for the council is to cooperate with Franklin County in dealing with issues such as air quality and public transportation.

“Two of the issues that we should consider are the environment and public transportation into Idaho,” said Hyrum Mayor Dean Howard, who will also sit on the council.

Preston Mayor Neal Larson said from his standpoint, transportation is a priority, along with handling growth at both ends of the valley. He is hopeful that as the valley grows, Franklin County will also benefit from economic development.

County Executive Lynn Lemon would like to see the council discuss the distribution of sales tax based on population.

“If we could get the cities and the county to agree, we could actually implement that be interlo-cal agreement,” Lemon said.

There are many issues – from air quality to land use and open space – that the Cache Vision 2020+ subcommittees have discussed in the past four months. Nearly 150 residents from the two coun-ties have worked to identify critical issues and make recommendations that will be passed along to the Regional Council.

“Their ideas and recommendations will need to be looked at carefully,” Maughan said.

Petersen noted the council’s task will be to determine the recommendations it considers most important and to work toward their implementation.

The public is invited to attend all meetings, the first of which is tentatively planned for next month.

“The agendas and the minutes will be posted on the websites of both Franklin and Cache coun-ties, and the meetings are totally open,” Petersen said.

Many of the Regional Council members have said they are looking forward to the challenge.

“I want to be very proactive with all that’s going on in the valley to improve the quality of life for everybody,” said Logan Mayor Randy Watts.

Lemon added that the Regional Council is a long time coming.

“I’m glad to be part of it,” he said. “I think this will help us more than anything else we could as far as long-term planning for our valley.”

## **Regional Council Members:**

- Dean Howard, Mayor Hyrum
- Lee Atwood, Mayor of Paradise
- Ruth Maughan, Mayor of Wellsville
- Boyd Pugmire, Mayor of Clarkston
- Kelly Field, Mayor of Lewiston
- David Kooyman, Mayor of Hyde Park
- Randy Watts, Mayor of Logan
- Laraine Swenson, Logan Municipal Council
- Lynn Lemon, Cache County Executive
- Craig Petersen, Cache County Council
- DalVon Atkinson, Franklin County Commission
- Neal Larson, Mayor of Preston
- Scott Wyatt, Utah House of Representatives
- Larry Bradford, Idaho House of Representatives
- Stan Albrecht, President of Utah State University

# APPENDIX D

## **Fine with slow growing, Folks in Hyde Park comfortable with town's 'bedroom community' status**

**May 22, 2006**

Author: Kelly Hafen

HYDE PARK — Snuggled between North Logan and Smithfield lies a quaint town where streets are wide, sidewalks are almost non-existent, mailboxes are anchored in milk cans, the yield signs are faded and most homes house backyard mini-farms.

"It is kind of the bedroom community of Logan," 70-year resident Lois Reeder commented.

Hyde Park was founded in 1860 by Mormon pioneers and has grown from a rural agriculture community to a rural residential community. Mayor David Kooyman said that in Hyde Park, service and a strong sense of community are the main components of the town.

"It is neighbor taking care of neighbor. It is friends getting together. It is personal, in a sense," said Kooyman, who has lived in Hyde Park since 1975. "There are good, down-to-earth people that care about each other."

Many of the residents have lived in Hyde Park for most of their lives. Ronda Hyde is one of them. She said she married her husband, who was also from Hyde Park, because he was the only man available.

"Growing up here, we were all related," Hyde joked.

The couple moved away from Hyde Park for a few years, but eventually returned to the town they share a surname with.

"We were both Hyde Parkers," Hyde said, "and that was home."

Hyde Park began when Robert and Jamima Daines arrived in the area, and was later founded by William Hyde, the first bishop in the colony. The town was named both to honor Hyde and to memorialize the Daines' homeland of Hyde Park, England.

The town sits on three square miles of mostly residential land. More than 3,000 people call Hyde Park home. Although growing at a slower pace than the rest of the valley — only 35 building permits were given in the last year — the town now has nine LDS wards and its own LDS stake, Kooyman said.

"We used to have a one-room school house and one LDS chapel," Kooyman said. "And that was not too long ago."

Although the commercial and industrial zones have been limited to the area along Highway 91, Kooyman said home business is booming, with more than 200 licensed. He said nearly 25 percent of the residents in town work from home.

That industry follows dairy farming, once the staple of the community. Farmers often pastured their cows near the highway after leading their stock down Hyde Park Lane, commonly referred to at the time as the Green Velvet Highway.

"We drove cows down to the pasture west of the highway," 82-year resident Rendell Seamons said. "There would be a solid mass of cow from the highway to the middle of town."

Perhaps not as well known, Hyde Park also holds claim to Robert F. Kennedy Drive, on the northeast corner of the town.

"It is weird with so few democrats who live in Hyde Park," Reeder said of the street named after a former presidential candidate. "And you probably won't find anyone in town who knows why."

Reeder remembers the time when "everyone worked really hard" but leisure was also important. The men in the community would relax at the local service station and play checkers. Athletics were also used as a way to socialize and rest from everyday tasks, she said.

Hyde Park was once known for its fastpitch softball and baseball teams, Kooyman said.

Reeder remembers attending the baseball games every Saturday. She said everyone would stop what they were doing to attend the game and eat a Lions Club lunch.

"We played ball anytime we had time to do it," Seamons said.

Even though the baseball days have turned to soccer, most residents would agree that Hyde Park is still a good place to be.

"This was just home for us. We had no reason to move, and we just loved where we were and what we were doing," Seamons said. "The memories are all still right here."

## **Logan River jumps bank; small portion of Park Avenue closed**

**May 22, 2006**

Author: Tyler Riggs

Minor flooding on Logan's west side prompted emergency officials to shut down part a portion of Park Avenue Sunday afternoon, and the road is expected to remain closed today.

The flooding comes on the heels of a flood warning issued by the National Weather Service's Salt Lake City office, which remains in effect until Tuesday.

Water from the overflowing Logan River built up between Park Avenue and the Logan River Golf Course with only an 18-inch gravel berm keeping the water from overtaking the road. The Road was closed between about 1000 South and 1600 South, with Logan police officers patrolling the area to make sure motorists didn't drive through the cordoned-off area.

The only other major area of concern for flooding today, emergency officials said, was in Logan Canyon near the Birch Glen Summer Home development, where two houses have been affected by water seepage

"There are two of them (homes) that are sitting in a puddle of water," said Cache Sheriff's Lt. Matt Bilodeau.

Homes in the Crockett Avenue and Sumac Drive area of Logan's Island neighborhood had sandbags lining their backyards, as the river which flows behind them neared bank full Sunday afternoon. The National Weather Service forecasted that the river would reach a maximum stage of 5.12 feet by 6 a.m. today, which is about .12 feet above flood stage.

The rising water didn't phase Robert Sears, however, as he sat on the back porch of his Sumac home Sunday and watched the river while flipping hamburgers.

"I'm not worried," Sears said. "If God sends a bucket full of water all at once, who's it going to hit? It'll be one of us."

Sears conceded that as the water in the Logan River continues to rise, he thinks it'll be the people on the south end of Logan near the Blacksmith development and County Manor subdivision who feel the brunt of the water. Having lived nest to the river for 35 years, however, he didn't think he'd be facing any problem in his home, especially with a three-sandbag-tall wall between the river and his lawn.

With the Logan River expected to reach its high point sometime today, Bilodeau said that in retrospect, Cache Valley has largely escaped what could have been a major flooding year.

"We're just dang lucky," Bilodeau said. "We've had an almost near-perfect runoff."

Despite any luck the valley might have experienced, Bilodeau said, people recreating near the rivers still need to be careful.

"The water is more dangerous than you think it is," he said. "You've got water rushing by there that was snow minutes or hours ago. You get into it and it can incapacitate you very quickly and you can drown."

The latest flood and weather forecast information can be found online at [www.weather.gov](http://www.weather.gov).

# APPENDIX D

## Next stop Preston? Case made for extension of Transit District

May 14, 2006

Author: Kelly Hafen

Life would be complicated for Gordon Richins if he couldn't ride the bus to work every day. The Fairview, Idaho resident has been using the public transportation system for five years now, something that enables him to work in Logan like many other Franklin County residents.

Before the Cache Valley Transit District reached Richmond and because of his physical disability, Richins depended on his wife to drive him to and from work at Utah State University. Now Richins relies on the "more comfortable and safer" transportation of the bus system. However, his wife still must drive him from Fairview to Richmond in order for Richins to access the transit.

However, the future looks promising for the Fairview resident in terms of that drive to Richmond.

Richins may not have to drive to the Northern Utah city in the future if the CVTD decides its services are needed in Franklin County also, something a current study is examining. From Richins' point of view, the bus system would be utilized by many Idaho residents, many of whom frequent the Richmond stop, riding alongside Richins to work at the university.

"It could benefit all of Franklin County, not just me," Richins commented about the idea of a regional transit. "It would be a win-win deal."

As concerns for air quality and rising gas prices escalate, Cache Valley officials are recognizing the need for a regional transit that would service Franklin County.

"As we become a bigger community, air quality is going to be a big thing," Preston Mayor Neal Larson said. "I think public transportation is going to have to fit into it."

With an estimated 80 percent of commuters in Preston and nine out of 10 of those commuting to Logan specifically, Larson said a bus system from the north end to the south end would be used by commuters as well as teenagers, the elderly and consumers, he thinks.

"Mainly, the work force would be able to take advantage of cheaper transportation back and forth to work," Larson said. "I think there are a lot of opportunities for a transit system to be used."

As the Cache Vision 2020+ begins to materialize, Richard Westerberg, the Idaho steering committee member, said that air quality and transportation issues would be top discussion items for the organization. A mass transit system would ease commuter crowding and would have a positive effect on air quality, he said.

Transit Manager Todd Beutler said he is pleased with the direction Cache Vision is headed, especially in regard to the discussions of a regional bus system that would include Franklin County. Poor air quality is not just a Cache County problem, he said. Franklin County breathes the same bad air.

"The idea is to think as a valley and to act as a valley," Beutler said. "The mindset is supportive of doing that in all aspects. And transit is just one of those aspects."

The CVTD is currently conducting a feasibility study to determine the need of a regional transit system in the valley, Beutler said. The research will determine who potential riders are and the cost of creating such a system. The study will also consider the possibility of linking the CVTD with the Utah Transit Authority – something that Beutler sees as a definite possibility.

"At some point, we will have a connection both ways," Beutler said. "But first we have to have a better understanding of what is out there."

The study is being conducted both on the buses and off the buses, which includes current riders being asked what they like and what they would change about the transit system and a phone survey being conducted of Utah and Idaho residents.

"It comes down to creating a plan and getting public input," Beutler said. "That is really a key thing."

The northernmost CVTD stop is currently in Richmond and ridership there is heavy, said Transportation Planner Jeff Gilbert for the Cache Metropolitan Planning Organization. The ultimate decision for the more northern stops will be based on the ability of the transit to capture riders, Gilbert said. The study will be beneficial in determining the possible number of Idaho residents who would take advantage of a regional transit.

Nationwide public transportation is becoming advantageous, especially for "longer commuters who are more sensitive to rising gas prices," Gilbert said.

With the number of residents who do not commute to Logan from Preston, Gilbert feels those commuters would see the benefits of riding the transit.

Richins said he sees the immediate effects of rising gas prices as ridership from Richmond to Logan increases. There are more and more Idaho license plates appearing in the Richmond parking lot, he said.

Cities like Preston can prepare in advance to be served by a transit, Gilbert said. Land use decisions that allow for tighter density are one way to entice a bus system, he said. Gilbert said downtown Preston would already be a feasible area for a public transportation system because of the population base there.

"The density of housing has to be conducive to transit," Gilbert said. "If a bus has to go too far, the level of service is just not going to be there. If communities in outlying areas want transit to be a bigger player, a lot of it has to do with how they grow."

As for funding a regional transit, Gilbert said if the ridership is high, the costs of running the system will be workable.

Beutler said funding would be addressed once the study is complete and the issue is looked at more closely. But he feels the cost of running a regional system would be dealt with similar to that of the current funding of CVTD which comes from local sales tax.

Larson said if costs go up, "We are all going to be forced to look at public transportation."

Preston is more than willing to consider the possibility of helping to fund a regional transit system, Larson says.

"It is going to be necessary in the next few years for this valley to decide whether we are going to have transit be a significant part of the valley," Gilbert said. "We need to begin taking the steps to make transit more viable."

## **Three conservation easements OK'd County Council backs local farmers hoping to preserve their land**

**May 12, 2006**

Author: Charles Geraci

Three local farmers received the backing of the County Council on Tuesday as each is seeking a conservation easement for his agricultural property.

On Wednesday, the county sent three letters supporting the easements to the Quality Growth Commission, which approves grants out of the state's LeRay McAllister Critical Land Conservation Fund.

"To have the blessing of the County Council is a positive thing," said Earl Glenn, who farms in Mount Sterling. "It signifies that they recognize this is land worth preserving as farmland."

Glenn is also applying for funds from the Farm and Ranch Protection Program administered by the Natural Resources Conservation Service, a branch of the U.S. Department of Agriculture.

Two cousins, Randall Olsen and Noland R. Olsen of Young Ward, are seeking conservation easements for their farms as well.

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This year, the LeRay McAllister Fund has \$1.4 million available, while the NRCS has received \$836,029 from the federal government to distribute in Utah.

Several farmers throughout the state will be vying for funding.

"There are a number of applicants out there who are trying to get a conservation easement on their properties," said Joe Fuhriman, chairman of the agricultural advisory board. "They're competing with each other for the federal money and also for state and local matching funds."

Fuhriman said all three properties need to be protected. Glenn's farm even received the highest score in the history of the county's Land Evaluation and Site Assessment, a process used to determine soil productivity, proximity to protected lands and other factors.

"It is very productive farmland," Fuhriman said of Glenn's farm. "It has the ability to produce above-average yields."

Glenn said the farm has existed in his family for five generations, and he feels an obligation to preserve the land.

While Glenn could receive a substantial amount of money if a conservation easement were approved, he noted that is not his motivation.

"In the short term, I will get the money for the value of the easement, but in the long term, I'll forfeit the rights to sell it for development," he said. "It's a tradeoff for me because I'll get less money from this easement than I would if I sold the property to developers."

Glen Busch, a planner for the Bear River Association of Governments, said farmers are not trying to make a profit from the easements.

"The farmers that have done these easements in the county are not getting rich," Busch said. "It's not a windfall for them; they're putting the money back into their farms."

Fuhriman noted that the easements are a critical component to preserving agricultural land.

"I see prime, productive farmland being lost daily," he said. "I see urban sprawl. I see tracts of land being split up and sold off for development. We need to protect our farmland. It's our most valuable natural resource."

Council Chairman Cory Yeates said the council's decision to support the easement requests is only natural.

"I think we as a council realize the importance of agriculture in our county," Yeates said. "We want to do what we can to help agriculture continue to survive."

### **City has growing pains**

### **Providence torn on how to handle its building boom**

**May 11, 2006**

Author: Megan M. Roe

Like the visible line between subdivisions and the more traditional neighborhood areas in Providence — with the newer, planned developments sitting atop the east benches and the individual, larger plots down below — the division between those who support growth in the city and those opposing new developments is quite distinct.

That divide within the borders of one of Cache County's fastest-growing cities has prompted residents to take action in the form of petitions signed by more than 700 residents and a lawsuit against Providence — both in opposition of two rezoning changes passed in March which converted rural land southeast of the city from agricultural to single-family traditional, allowing for nearly 80 new residential lots that could be as small as a quarter-acre each.

However, city officials believe the controlled growth will benefit Providence in the long run.

Nola Call, a neighbor to the rezoned area of approximately 10 acres at 690 Grandview Drive

who filed the suit along with four other Providence residents, said she hopes city leaders will reconsider the rezone and keep the land as an agricultural zone, though she believes a residential subdivision is imminent in the area. Call, who was also one of more than 700 people who signed two petitions ordering the city to allow residents to vote on the rezones in the next election, said if these new subdivisions are built, traffic on nearby roads will likely increase.

"I'm hoping that even if they would develop it, they would not put so many homes up there," Call said. "Bigger lots would be a little better for this area up on the bench. That would at least eliminate some of the traffic."

Because they say complaints seem to have fallen on deaf ears at city meetings, residents like Call, who are worried about the traffic, taxes and water supply concerns that come with a growing population, and who are uneasy about losing the rural atmosphere Providence currently has, are looking for ways to abate the rapid growth the city is experiencing.

Residential construction in Providence has boomed in recent years. The total value of construction in the city was more than \$30 million in 2005 — up more than \$22 million since 2000, according to building statistics compiled by the Bureau of Economic and Business Research at the University of Utah. Providence was the only Cache Valley city to see double-digit percentage increases in construction value every year since 2000, as compared to the prior year. Additionally, the number of new dwelling units built annually in Providence has been second only to those built in Logan since 2000. In the five years before that time, Providence ranked no higher than fourth — and as low as seventh — among valley cities surveyed.

Mayor Randy Simmons said he believes the growing city can benefit from having smaller, closer lots, because money will be saved by keeping roads, waterlines, sewerlines and other city services to a minimum and in close proximity.

"What they are in favor of is sprawl," Simmons said of the residents who oppose the rezone. "If you have bigger lots you just spread people out. It increases the city's costs and costs of all citizens."

Simmons said having larger lots could also make it more difficult for middle-income people to live in the areas.

The suit, filed in Cache County 1st District Court by Call, Roy L. Hanson, Elinor Hanson and Larry Tanaka on April 18, alleges that the rezone ordinances were approved illegally. According to the suit, the rezones violated Utah Codes and the Utah Open Meeting Law because the city did not properly notify residents of the public hearings held concerning the ordinances and minutes were not taken for all portions of all public meetings. Also, not enough time was allowed during the public comment sessions held at City Council meetings to discuss the issue, according to the suit.

"The bottom line is that we want Providence city to simply follow the law," said the residents' lawyer, Brian G. Cannell, though he declined to comment any further on the suit. A Providence city attorney could not be reached as of Wednesday evening.

Hillcrest, a 55-house subdivision, is intended for the 20 acres of rezoned land at 870 S. 400 East. Developer Dan Hogan, who plans to divide the 10-acre 690 Grandview Drive area into a 26-house development called Cove, said almost all of the lots will be third-acre lots and three will be half-acre lots — all larger than the minimum required. He said the disputed quarter-acre lots are already abundant in the city.

"A bunch of these no-growthers think if you don't have a half acre you are ruining the town," said Hogan, whose plan to create a subdivision on one of the zones is in question. "They are like the old grandma who has nine kids and wants everybody to drive a station wagon and they want a sports car."

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## Franklin mulls massive development pitch

May 8, 2006

Author: Kelly Hafen

FRANKLIN — Land proposed for residential development along the Utah-Idaho border recently switched hands and proponents are asking to be annexed into Franklin City, claiming their interest in the site lies in the quality of the community.

"When we started looking at this project several months ago, a bunch of things jumped out about the area of Franklin," developer Dean Hutchings said during a public hearing Thursday. "We were inspired by the community as a whole. We decided to purchase the property after a lot of research. And we decided we wanted to annex it into the city."

Preliminary plans for the Maple Leaf Lake Estates project, whether annexed into the city or not, include 215 single family homes, 50 lakeside homes, 35 equestrian lots, 51 typical city lots, 35 homes in a retirement community, 69 homes with lots larger than 1/2 an acre, 50 multi-family units and 20 commercial lots, Hutchings said. Included with the homes would be a community lake, a community park and a lot for the fire station, he said. Hutchings added he would like to see a grocery store, a small hotel, restaurants and other retail located in the community.

Impact fees from homeowners would finance the new amenities, including the park and the lake, and would bring revenue to assist in funding a new sewer treatment plant and the recently installed water system, he said. Tax revenue from the commercial entities would also be beneficial to Franklin, Hutchings said.

"We will make sure the people who are (already living) here are not paying for this," he said.

During the hearing, Franklin City officials assured residents that water and sewage facilities in the city could sustain a large development.

"The revenue would provide a source of funds that would allow us to continue to improve the water rights that our city already has," Mayor Robert Wilkinson said. "We believe the water source will be there to meet our future needs."

Tentative plans are to develop the Maple Leaf Lake Estates in phases over an eight- to 10-year period, said Butch Hutchings, Dean Hutchings' brother. The Hutchings brothers hope to begin construction with the center phase of the development, which would include the retirement community, small and large lots and some commercial buildings.

Butch Hutchings said the overall atmosphere of the development would match the ambiance of Franklin City. The residential area would be built with "more of a rural atmosphere," he said. Sidewalks would be put on one side of the road, and the other side of the road would be used as a horse and four-wheeler lane, he said.

Councilman Bob Saxton said benefits to Franklin will dictate the decision regarding annexation.

"We are taking baby steps and trying to make it all make sense," Saxton said. "There are some benefits financially. ... There is no way we want to make a decision that will not benefit Franklin."

The developers encouraged residents to offer suggestions and input in regards to the improvement of the property.

"We are trying to create something that will extend the legacy of Franklin," Dean Hutchings said. "I am asking you to help us help you."

## City, owners clash over flood-plain risks

May 7, 2006

Author: Adam Benson

Over the past month, Logan's Municipal Council has engaged city officials in a discussion over just what can be done to make future and current homeowners aware of what risks building in a flood plain or on a high water table may bring.

"The city can only go so far (in) protecting people from themselves," City Attorney Kymber Housley said. "At some point, we've got to put accountability on property owners."

The question is, how much? And it's an answer that's slowly unfolding.

"More than anything, it's letting people know ahead of time," said Municipal Councilwoman Tami Pyfer. "I think we want to make sure that we've covered all our bases before we say 'yes,' to building in areas tagged on Federal Emergency Management Agency maps as flood plains.

Current city code requires certified engineering and hydrological studies before a home can be built in a sensitive area, and specific stipulations include a "description of the extent to which any watercourse will be altered or located as a result of development" and city approved "flood proofing criteria."

"There's always a tension between property owners' rights and the government's ability to regulate," Housley told council members April 18. "The city has never knowingly allowed somebody to build in a dangerous situation."

But as a rash of spring flooding last year and a September landslide that washed out the bottom third of a home on Canyon Road can attest, unknown and unexpected hazards do occur.

The hope for city lawmakers is that future homeowners living with Logan's limits will be equipped with a clear understanding of what risks living in sensitive areas carry.

"I don't know a person on Cliffside who bought a home and was warned they lived in a flood plain," said Councilwoman Laraine Swenson.

Now, city officials are expected to bond for help building a debris dam at the mouth of Dry Canyon that would greatly reduce the threat of flooding in the high-elevation Logan neighborhood. That project came to life on the strength of a \$4.5 million federal earmark, but such pricey ventures gave at least one councilmember pause.

"I think we would have looked a lot closer at that development had we known we'd be handed a \$6 million bill," said Council Chairman Steve Thompson.

Pyfer said her push to revamp existing city code came from constituents who expressed concern about the amount of development along the Logan's western limits.

"Without fail, every rezone we have made west of 1000 West, we have had adjacent property owners say 'There is water on the ground half the time, how can you approve this?'," said Pyfer, who lives with her family in the flood-prone County Manor subdivision in south Logan. "We shouldn't let any of those slip through the cracks."

Constructing a home in a flood-vulnerable portion of the city is not banned, but that is an option available to council members if they chose to pursue it, said Housley.

"We definitely have to change our code as it currently exists if you want to eliminate building in a flood plain," he said. "There's a misconception that if it's a flood plain you can't build there, and that's not the case."

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## **Cache Vision 2020+ nears creation Regional council finds support around valley**

**May 5, 2006**

Author: Charles Geraci

Nearly every municipality in Cache and Franklin counties has approved a resolution creating a Cache Valley Regional Council, designed to promote cooperation among officials on all levels of government as they deal with important issues facing the region.

The partnership, dubbed "Cache Vision 2020+," is a 15-member body comprised of elected officials from both counties, as well as the president of Utah State University. By the end of May, the members of the Regional Council should be decided upon, and the first meeting is expected in June.

"We just really appreciate the support of all the communities that passed the resolution to create the Regional Council," said County Councilman Craig Petersen, who sits on the Cache Vision 2020+ Steering Committee.

Gary Anderson, chair of the Steering Committee, added that he is "extremely pleased with the progress and the fact that the elected officials seem to have bought into the process."

The Cache Chamber of Commerce has also been instrumental in the process, providing staff support in contacting the cities involved.

"They sent out the letters, they made the phone calls, they did the minutes on the meetings and things like that," Petersen said.

The town of Oxford in Idaho is the only municipality in either county that has yet to sign off on the resolution.

Approximately 100 people, including about 10 mayors from the valley, met at the Historic County Courthouse on Tuesday night to hear subcommittee reports on a range of issues and further specifics on the composition of the regional council.

At the meeting, Petersen announced the body would be made up of the following members: three mayors from cities north of Logan and three from cities south of Logan; the mayor of Logan city and a member of the Logan Municipal Council; the Cache County executive and a member of the Cache County Council; a member of the Franklin County Commission and a mayor from Franklin County; a member of the Utah Legislature and one from the Idaho Legislature; and the president of Utah State.

The first order of business for the Regional Council will likely be to consider the recommendations of the 10 Cache Vision 2020+ subcommittees.

"The way that we conceived this is that the report of the committees will be a menu that we'll present to the Regional Council ..." Petersen said. "They'll have to pick the priorities."

Dr. Ed Redd, medical director for the Bear River Health Department, said one of the major goals of the Air Quality Task Force, which serves as one of the subcommittees, is to continue educating the community about the valley's growing air quality problem and possible solutions.

"I see Cache Vision 2020+ as a really long-range planning tool," Redd said. "Cache Vision 2020+ is not going to be that helpful in the next six months. It's going to be helpful down the road 10 years or five years as we continue to deal with growth and development."

Garth Barker, who sits on the Lands and Open Space Subcommittee, said he is "tickled" with the progress of most of the subcommittees.

"I hope that at this point, the people in the valley, especially the mayors of the small towns, understand that this is a necessity, not just another effort at control of some kind," Barker said.

Petersen said the Regional Council is revolutionary in the sense that it fosters much needed cooperation between Cache and Franklin counties.

"For the first time, we'll have a way of involving both Franklin County and Cache County together," Petersen said. "There's never been any mechanism for doing that before."

## **Lung Association: County air among dirtiest in country**

**May 4, 2006**

Staff reports

Pollution in the local air was cited as unhealthy again this week, when an American Lung Association study on nationwide air quality ranked Cache County among the country's most troublesome places for particulate matter pollution.

Cache County was lumped with counties throughout the state in its poor performance for particulate matter pollution 2.5 microns in size or less, results of which can be viewed at lungusa.org. The county's air was ranked eighth-worst in the country for the pollutant known as PM 2.5 over a 24-hour period, and was given an "F" grade by the New York-based organization. Davis, Salt Lake, Tooele and Weber counties also received "Fs," and Box Elder County was given a "D" grade, based on PM 2.5 recordings collected from 2002-2004.

In addition, Logan was rated near the top of the worst metropolitan areas in the nation for short-term particulate pollution (which is based on a 24-hour average of PM 2.5 levels), ranking sixth behind areas like Los Angeles, Fresno, Calif., Bakersfield, Calif., Pittsburgh and Salt Lake City.

No Utah metro areas or counties were listed among the 25 worst offenders for long-term PM 2.5 pollution or ozone pollution. During the 2005-06 winter, Cache County recorded zero "red air" days, which are declared when PM 2.5 pollution goes above an unhealthy level.

State of the Air: 2006 found that more than 150 million Americans still live in counties where they are exposed to high levels of air pollution. Some 53.1 million Americans suffer from chronic exposure to particle pollution, according to the study, and over 64.3 million Americans live in areas where they are exposed to unhealthy short-term levels of particle pollution.

## **Buses may link valley to Wasatch rail**

### **Northern Utah proponents hope to have plan in place within next six years**

**April 27, 2006**

Author: Adam Benson

Ask any Utah Transit Authority official about the possibility of heavy rail service coming to Northern Utah, and they'll agree it's a matter of when, not if.

The key question now, say local proponents of the idea, is whether a plan can be in place within the next six years.

"From our standpoint, we think it's feasible," said Brigham City Administrator Bruce Leonard.

So do transportation planners from Cache County, who on Wednesday morning threw their support behind a plan to link the region to Brigham City via a bus route once heavy rail enters the Box Elder County seat.

"We're definitely not thinking that UTA is ever going to be interested in bringing a train into Cache Valley, but we will have our (Logan Transit District/Cache Valley Transit District) buses take several loads a day over to that transit center," Logan Municipal Councilman Joe Needham said.

Needham was among several Cache Valley officials in attendance at a Wednesday presentation to UTA's Board of Trustees about the possibility of expanding commuter rail service into Box Elder County by 2012.

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Brigham City already boasts a train depot that could be converted into a transit hub, and it's primed to funnel travelers southward onto the Wasatch Front, said city planner Mark Tuescher.

"It isn't just Brigham City at the end of the line," he said. "There's a substantial population in Northern Utah. We're pushing UTA to do a more detailed analysis on this segment now."

One reason UTA has delayed stretching its heavy rail train, known as "FrontRunner," beyond Pleasant View until at least 2020 is the lack of a steady ridership base that would help offset costs.

But according to estimates provided Wednesday, the total regional population of Northern Utah and Southeastern Idaho will be more than 406,000 by 2020 and 339,000 by 2010.

Why not develop and establish commuter service well before then, said Brigham City Mayor Lou Ann Christensen.

"We want it now and we're making a strong statement that we want it now," she said. "It's crucial to our economic development. Because of our quality of life we have up here, I think there's going to be more people wanting to move this direction."

Sen. Peter Knudson, R-Brigham City, agreed.

"There's no doubt that as the area continues to grow, ridership will follow. I think that commuter rail is proving across the country to be a very viable system," he said. "You can sit down and think through this deal, and it has a lot of benefits."

UTA spokesman Kyle Bennett said the agency is in regular contact and conversation with Northern Utah officials as they work toward the same goal.

"We appreciate the partnership and dialogue we've had thus far," he said. "We're going to continue to work with Brigham City to provide them with the best service we can and look at all of the options to meet their needs."

He said UTA recently launched a feasibility study to explore the next steps in expanding commuter service within Box Elder County, a process that could take up to nine months.

Last October, the Cache County Mayors' Association sent a letter of support to the UTA endorsing the concept of mass transit in Northern Utah.

"This will be one of the fastest-growing areas for new population growth. Waiting for commuter rail to reach this area sometime in 2030 is not a viable option," the letter said. "Postponing commuter rail to Brigham City will only add to the growing problem of moving people on a restricted surface transportation system."

Besides that, said Jeff Gilbert, transportation planner for the Cache Metropolitan Planning Organization, introducing such a system helps fill an important human services need for Northern Utah residents.

"We've always known particularly in the special needs population that we have an unmet need as far as getting people to the Wasatch Front," he said. "But it's hard to justify the cost."

But nothing is possible without interest from Cache County's more than 100,000 people, said Christensen.

"They play a major role in bringing commuter rail here," he said. "It's crucial having Cache Valley support for this."

### **Valley on landslide alert**

**April 19, 2006**

Author: Adam Benson

Cache Valley officials will be on alert for potential landslide activity over at least the next two months, after a report by the state's Geological Survey identified the region as one of seven red flag areas around Utah.

"That probability has to do with the high amount of water we have in direct connection with the

flooding" threat, said Cache County Sheriff's Lt. Matt Bilodeau. "The ground is saturated. If you dig a hole, you're not finding any dry earth."

And the same heavy snowpack melt and runoff that causes flooding could also be responsible for triggering landslides, said Francis Ashland, a UGS geologist.

"We know at high elevations, you've got this very large snowpack sitting up there," he said. "As that snowpack melts, it causes localized flooding. The water that's infiltrating into the ground is recharging the water table. They're a related phenomenon."

The agency's forecast is built on precipitation rates, and Ashland said Cache Valley boasts about 2 inches of surplus water thus far, running at about 115 percent of normal.

Ashland said his agency didn't intend the alert to be made public — in an effort to avoid evoking mass panic — but spoke to The Herald Journal about the outlook when asked Tuesday. Bilodeau said the agency notified first responders here late last week about the elevated landslide threat.

Locally, any landslides that do occur would likely do damage to "lifelines" like utility poles or gas lines rather than directly threaten homes or lives.

"If you look at where those landslides are, they tend to be crossed by a canal or railroad track," said Ashland. "The large percentage of the community is immune to landslides. It really affects (directly) a small percentage of the population."

Typically, landslide season in Northern Utah falls between March and May, but can extend further into the calendar year depending on the amount of precipitation that's accrued.

"Pretty much, Cache County is sitting wetter than normal following the second-wettest year on record," said Ashland. "As a result of that, we likely have very high groundwater levels and (the possibility of) landslides in Cache Valley."

At this time last year, the valley had collected about 25 inches of water. Thus far, there's about 16 inches.

"The only difference was (that) last year was coming off several years of drought," Ashland said. "It takes less and less of a dramatic precipitation year to trigger landsliding."

Mark Nielsen, Logan's Public Works director, said it's difficult to pinpoint exactly where a slide could happen.

"I think there are opportunities all over the county. Wherever there is a slope, there's a potential," said Nielsen. "It's just a matter of where Mother Nature determines it will happen."

Homeowners living in Logan's Canyon Road neighborhood fell victim to her fury last autumn, when tons of debris coursed down Logan Bluff and buried the bottom portion of a home.

This week, Utah Department of Transportation workers are set to wrap up work on an \$800,000 project adjacent to the road that will shore up the base of the active landslide zone.

But no matter how much work gets done or money spent, nothing can totally avert the looming threat of a slide, officials said.

"We need people to be vigilant," said Bilodeau. "We'll do what we can, but in some circumstances there's very little we can do. Mother Nature rules supreme, and we need to understand that."

Ashland said that warning especially extends to people or property located across Cache Valley's foothills.

"The landslide hazard area doesn't exist in flat places except along riverbanks," he said. "Most of the hazard is on the west and east side of the foothills."

In Logan's case, those locations are sparsely developed and don't pose much of a risk should a slide occur there, said Nielsen.

"No, we're not prepared for a landslide, but the damage, based on history, is going to be isolated," he said. "Most of the landslides you get are probably going to be on steep natural slopes where there aren't any utilities."

Bilodeau said he understands the complacency that some residents may feel regarding the threat

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of landslides, since it's not something that happens every day.

"It's something that we haven't dealt with a lot historically, so it's kind of out of sight, out of mind," he said. "People who live in these potential risk areas need to be looking for signs of land movement. We hope for the best and plan for the worst."

## **Flood Watch '06**

**April 16, 2006**

Author: Tyler Riggs

Most Cache Valley residents remember last year's flooding, so those who were impacted by the high water should take note: Local emergency officials expect this year to be worse.

"Last year was kind of a dry run for what we're going to see this year," Cache Sheriff's Lt. Matt Bilodeau said.

There's some humor in Bilodeau's statement when he calls last year a "dry run," considering how a late-April rainstorm coupled with snowmelt to create a very wet nightmare in portions of Richmond, Logan, Nibley and elsewhere. But for 2006, the fact is this: There's more snow in the mountains than last year, and it's pretty close to being the most snow in the watersheds at this time of the year on record.

Traditionally, snow starts melting from watersheds like Tony Grove by April 1, and when that happens, the valley is typically OK flood-wise, said Brian McInerny, a hydrologist in the National Weather Service's Salt Lake City office, who earlier this month gave a presentation to several Cache officials on this year's flood potential.

But it's April 16, and during the next few days, storms are expected to pile on more snow in the mountains, creating a scary prospect for any valley resident who lives near a river, canal, estuary or pond. As of Saturday afternoon, the Blacksmith Fork was near bankfull and inching toward floodstage, according to National Weather Service monitors, making the southern Cache Valley waterway the first local flood threat of the spring.

"Theoretically, if it were to turn 70 to 75 degrees in Logan tomorrow and we were not to have another drop of rain anywhere from here to June, we could be OK," McInerny said. "Chances are that's not going to happen."

Accurately predicting springtime weather in Cache Valley is almost like throwing darts with a blindfold on, but the one thing McInerny and other weather forecasters know for sure is that it will warm up eventually. The best thing that could happen to Northern Utah right now, weather-wise, would be for it to start warming up now, instead of a month from now.

"It's better to come sooner and start melting it (snow) earlier, about an inch and a half per day," McInerny said.

At Tony Grove right now there's about 58 inches of water. A safe melting pace would be one to two inches a day — much more than that would be too fast — and at the safe rate it'd take 30 to 45 days to melt all the snow up there.

McInerny pointed out that even if the snow started melting today, it'd be June by the time all the snow was gone, and by the end of May temperatures are going to warm to the point where snow will be melting a lot faster than the "safe pace."

So McInerny sighs as he thinks about it.

"We really needed to start melting the snow on April 1," he said.

That's the way things look in the mountains. In the valley, emergency officials are doing everything they can to help residents prepare for the floods in advance. Last week, more than 200 tons of sand was used at the Country Manor subdivision in Logan to try and keep water from flowing into homes from the Blacksmith Fork River. Other sandbagging efforts are taking place in Nibley and Mill-

ville, and likely will in the coming weeks in Richmond, Smithfield and portions of North Logan and Hyde Park.

For Cache Sheriff's Sgt. Daron Henrie, the gist of the coming weeks is simple. Anyone who lives near a body of water is at risk of flooding, especially if the valley receives much rainfall.

"Everywhere between here and the Great Salt Lake is a concern," Henrie said. "This year there's going to be roaring torrents (of water)."

Henrie acknowledges that the government's resources are limited to respond to the potential of flooding, so he's hoping most residents who live near flood-prone areas are doing everything they can to prepare themselves in advance.

Logan Safety Director Will Lusk agrees with Henrie that residents need to prepare.

"There is nothing that government can do to make up for what we as citizens should do," Lusk said.

And if floods hit?

"We don't have more people available," Bilodeau said.

Anyone who wants to volunteer to help prepare neighborhoods for flooding, or to be available when flooding happens can dial 211 and put their name on a registry, Bilodeau said. If flooding gets as bad as some are predicting, officials likely will need all the help they can get.

In the presentation McNerny gave to Cache officials earlier this month, graphs of the predicted water levels showed that there's a high chance rivers like the Logan and the Blacksmith Fork will exceed their flood stages.

"Essentially, all the rivers in Utah are going to be flowing high, including the Blacksmith, the Logan, the Cub, the Little Bear and all the tributaries," McNerny said. "The key is if it stays cool and these storms keep coming through the rest of April and we move into May. The climate, that's the big picture. What's the climate going to do?"

Extensive weather and flood information, including up-to-the-minute status of the Logan and Blacksmith Fork rivers, is available at the National Weather Service's Web site, [www.weather.gov](http://www.weather.gov).

## **Residents welcome growth**

**February 11, 2006**

Author: Adam Benson

Welcome to Cache Valley.

It's one of the most rapidly growing places in the state, where people from Avon to Cornish live alongside picturesque farms and urban commercial centers.

Between April 2000 and July 2004, Cache County — population 97,467 in 2004 — experienced a 6.6 percent growth rate in its population, and a more than 30 percent spike between 1990 and 2000, according to the U.S. Census. Including Franklin County, the Idaho portion of Cache Valley, the population estimate jumps to over 100,000 for the community.

It'll keep growing, too, according to planners, and that's just fine with the majority of residents polled in The Herald Journal 2006 Community Survey.

Asked if the region's population growth over the past decade has been good for the community, 72 percent of respondents said it was — a sentiment shared nearly equally by those on either side of the valley: 67 percent on the south end and 68 percent on the north.

Interestingly, opinions are more sharply divided along regional lines when the question changes to "Are you comfortable with the population growth specifically in your town?" Of the 150 people polled, 73 percent said yes while 26 percent weighed in with a more NIMBY-like mindset — although more than 80 percent of those who live north of Logan said they liked the way their communities were growing while just 65 percent in the southern reaches of Cache Valley thought so.

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"Growth when managed correctly is acceptable," said Jay Nielsen, Logan city's director of community development.

And the majority of residents in Cache Valley's largest city agree. Three-fourths of those asked said they liked the way the city was growing — backing up the findings of an autumn 2003 Dan Jones and Associates Survey that Logan officials leaned on while updating their general plan.

Back then, 54 percent of the 406 residents surveyed said Logan should "maintain the same feel as it has now," and 90 percent of respondents said city planners should adopt zoning regulations that encourage open space.

With very few tracts of residential land left for development within the city's boundaries, Nielsen said, staying true to that desire requires creativity.

"We have to be able to compete on a quality basis," he said. "I think our efforts are going to be to increase the quality of development that occurs in Cache Valley since we can no longer compete with quantity."

It may be no surprise that the demographic most comfortable with the valley's growth are those who are between 20 and 30 years old — in that grouping, 80 percent said they are satisfied with growth trends within the region.

People between the ages of 45 and 60 voiced the most concern — 28 percent indicated the valley was growing too fast.

Nibley City Manager Larry Anhder said as people continue to want to call Cache Valley home, it will force residents already here to think a little differently.

Good growth "is all in the eye of the beholder," he said. "It's a good thing if my kids are living here and my grandkids are across town, but it's not a good thing if the alfalfa field across my house was torn up and a subdivision was put in."

Cache County Executive Lynn Lemon said he hears from people all the time who have strong feelings on both sides of the fence when talking about the future of the area.

"For a long time we blamed the growth on the outside," he said. "For our county, we've realized that we're going to grow, and we've planned on it continuing and in general, I think it's good."

And Herald Journal survey results show that most here feel that's happening: 88 percent of those north of Logan said they were comfortable with population growth in their specific towns, while 65 percent to the south said so.

"I think I'd concur with that," Richmond City Manager Marlowe Adkins said. "You're always going to have a percentage that's going to be unhappy, but by and far the population of Richmond is understanding that there is going to be growth, and they're comfortable with it."

People in Logan and southeast Idaho are also happy with growth in their own communities by a wide margin: 75 and 73 percent, respectively.

That's something Nielsen and Lemon say doesn't surprise them.

"I think the future of Logan hasn't ever been brighter than it is today, even though we're having to change the ways we manage growth. We're still the center of the valley," said Nielsen.

And, said Lemon, the balance between urban development and preserving the wide open spaces that dot much of Cache Valley's landscape will fall squarely on the shoulders of the people living here today.

"We've got to keep encouraging people to live around urban areas if we want to preserve open space and ag land. The challenge is that we don't have services" to accommodate people who live in outlying areas.

But it's hard for newcomers and old-timers alike to resist the temptation of setting down roots away from the hustle and bustle, Adkins said.

"Small communities are the last vestiges of what the Founding Fathers had in mind," he said.

## Locals unhappy with traffic

February 7, 2006

Author: Denise Albiston

It was no surprise to Cache Valley planners when they learned that locals rank traffic congestion as the most negative result of growth, but planners say there is little to do about it if people keep up their driving habits.

The 2006 Herald Journal Community Survey noted that the most negative result of local population growth has been traffic, cited by almost 70 percent of respondents who were given a choice of four options, with residential development on agricultural land a distant second at 21 percent of the vote.

But while people clearly don't like traffic, survey numbers also indicate many residents — around 48 percent — still drive an average of over 10 miles per day, with few riding public transportation on a regular basis (20 percent said they had ridden in the past three months).

"We have kind of always known it is fairly congested," said Jeff Gilbert, Cache Valley's metropolitan planning organizer. "The harder question is, How do you fix the problem?"

Andy Neff of the Utah Department of Transportation said Main Street carries about 40,000 vehicles a day from the "Y" intersection at Highway 165 on the south end of town to 400 North, and another 30,000 each day into Smithfield. After running some comparisons with other communities throughout the state with about the same population, Neff said Main Street is definitely one of the busiest.

"According to the roadway classification system, it's a principal urban artillery route crucial to movement of traffic flow," Neff said. Not to mention it is part of the national highway system traveling from Arizona through Utah and beyond the Idaho border. He said it is significant for state-to-state travel.

"Logan's Main Street is one of the busiest highways in the state," Gilbert said.

Corey Barton and his wife, Kayleen, live in Logan and both travel Main Street often. Barton said the traffic flow is decent, except during peak times when he simply avoids the highway. Although Barton said traveling through town has improved since the light synchronization occurred in 2003 and congestion has lifted a bit, there are other areas that could be improved.

"My biggest thing is to eliminate parking along Main, especially between 200 North and Center," Barton said.

He said he knows roads are limited in Cache Valley and there are not many places to build more streets, but people could do more to stay off the roads. He said he and his wife try to limit their traveling time, but it's difficult with children and being a campus student. Barton said most everybody knows traffic is bad in Logan and even though it's something that is just accepted, it doesn't mean they like it.

Eight and a half years ago, when former Logan Mayor Doug Thompson ran for office, traffic was a main concern. He said residents have noticed and have been aware traffic was on the rise; the problem has always been how to handle it.

"The truth of the matter is that if we spent \$10,000 or \$100 million it wouldn't really make things ... a whole lot better," Thompson said.

Valley planners are constantly trying to think of ways to help alleviate traffic congestion, like developing alternative traffic routes and encouraging carpools and bus use, but Gilbert said options are limited by space and funding. With the current rate of growth, Gilbert said, city planners are looking at a 6 percent trend of more cars per year, although efforts are under way to improve that projection.

In addition to the complaint over traffic congestion, the community survey said more than 48 percent of people drive at least 10 miles per day, and nearly 20 percent of those clock more than 25

## APPENDIX D

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miles during a commute or daily errands. Gilbert said that while traffic congestion comes from cars, commuting is a land-use issue.

People build out in the county to have acreage and nice space between neighbors. Gilbert said "building out" in the county creates a lot of people who must travel into Logan on a daily basis for shopping, work and other things.

"It creates a number of people dependent on transportation to make daily trips because land-use isn't balanced," Gilbert said. "People don't have a lot of choice."

The valley was built and planned long before cars became a major mode of transportation, Thompson said. There is little anybody can do about it now, other than to start reducing how much time is spent traveling.

Thompson said city planners and organizers made a big difference in congestion when they were able to organize with UDOT and synchronize traffic signals on Main Street. He said after the lights changed to coordinate green phases, it dropped travel time from one end of town to the other by half. He said before the synchronization effort, traveling from the north end of town to the south end took between 10 and 15 minutes; now he can do it in five to 10.

Neff said getting the lights to align so cars weren't stalled at intersections anymore was a priority for the state, and they have seen results. But while the amount of traffic standing still has greatly reduced in Logan, he said the number of cars hasn't.

Where many Cache Valley residents openly complain about traffic and air pollution, the survey response indicates that few are taking advantage of public transportation. Only 20 percent of the 150 respondents had been on a Logan Transit District bus in the past three months, although a large percentage of respondents — 86 percent — said the transit district was a worthwhile expense for taxpayers. Eleven percent disagreed when asked if public transportation was a worthwhile expense.

Todd Beutler, transit manager for the Logan and Cache Valley Transit District, said Logan's traffic problems are not going to go away. He said people need to make a choice to carpool, bike and walk more often and include the transit system. He said in order to preserve the quality of life found in Cache Valley, people are going to have to change some habits.

"We have a great system, and riders that don't have a car and students are served well," Gilbert said. "The question is, Are we going to move to a more public-transit society?"

Beutler said part of the problem is the sparsely populated areas dotting Cache Valley. He said it is unlikely the transit district could gain enough ridership with the limited population in those areas to be viable. He said with that known, urban residents will need to be more proactive and choose alternative transportation to help with congestion, which is a key element to the valley's pollution problems.

Beutler said the district is currently looking forward and trying to develop some more park-and-ride options out of Logan, possibly connecting the service from Franklin County to Brigham City. He said the idea is to become a viable mode of transportation, especially for those who live in the urban zones of the county, but they would like to try and include as many of the outer areas as possible.

"We have these two problems, and there is no question that if we reduce our travel it's going to help the pollution problem and transportation problem," Thompson said.

## CACHE COUNTY QUALITY GROWTH SURVEY

DATE: August 1999

AUTHORS: Dave Rogers, Stan Guy, Mark Tuescher

N=506

Margin of Error +/- 4.3%

The following survey is sponsored by the Cache County Commissioners, the Cache County Planning Office, and Utah State University Extension. To protect your confidentiality, do not put your name on the survey. We appreciate your help and cooperation in completing the survey. Circle the number that corresponds to your reply.

1. How important are each of the following characteristics to a community?

	VERY IMPORTANT	SOMEWHAT IMPORTANT	NOT IMPORTANT
a. standard residential subdivisions	36%	49%	15%
b. a variety of housing types and styles	57%	38%	5%
c. bicycle and running paths	53%	37%	10%
d. open public spaces	84%	14%	2%
e. tree lined streets	58%	35%	7%
f. sidewalks, curb, gutters	73%	23%	4%
g. public services	80%	19%	1%
h. private sector services	37%	54%	9%
i. diversity of people	45%	43%	12%
J. "community feeling"	68%	28%	4%
k. historical feel of a neighborhood	35%	53%	12%
l. safe streets	95%	4%	1%
m. affordable housing	79%	18%	3%
n. employment opportunities	84%	13%	3%
o. livable area wages	89%	10%	1%
p. local government investment	49%	42%	9%
q. other (list _____)	-	-	-

2. What level of density for single family dwelling units do you recommend for areas within CITIES AND TOWNS? (Circle one reply.)

a. 1 acre lot 43,560 sq ft (1 unit/acre)	6%
b. 1/2 acre lot 21,780 sq ft (2 units/acre)	19%
c. 1/3 acre lot 14,250 sq ft (3 units/acre)	37%
d. 1/4 acre lot 10,890 sq ft (4 units/acre)	25%
e. 1/5 acre lot 8,712 sq ft (5 units/acre)	5%
f. don't know	8%

3. What level of density for single family dwelling units do you recommend for areas within the UNINCORPORATED COUNTY? (Circle one reply.)

a. 1 unit per 40 acres	5%
b. 1 unit per 20 acres	6%
c. 1 unit per 10 acres	17%
d. 1 unit per 5 acres	26%
e. 1 unit per acre	25%

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f. don't know 21%

4. Would you favor higher density housing in your community if it were to occur in one of these forms:

	YES	NO	DON'T KNOW
	%	%	%
a. smaller lots for single family homes	42	50	8
b. duplexes	34	58	8
c. condominiums/Town Houses	42	50	8
d. apartments	27	63	10
e. mobile Home Park	11	80	9

5. Do you feel communities with higher housing densities (dwelling units per acre of land) are more likely than lower densities to have:

	YES	NO	DON'T KNOW
	%	%	%
a. traffic congestion	88	7	5
b. affordable housing	61	28	11
c. higher crime rates	75	15	10
d. lower property values	70	20	10
e. diverse neighborhoods	72	15	13
f. more efficient services	22	60	18
g. other _____	-	-	-

When answering question 6, refer to the following Cache Valley geographic areas: WEST CACHE VALLEY = Wellsville, Mendon, Benson, Cache Junction, Amalga, Newton, Trenton, Clarkston, Cornish; SOUTH CACHE VALLEY = Avon, Paradise, Hyrum; LOGAN URBANIZED AREA = Nibley, Millville, Providence, River Heights, Logan, North Logan, Hyde Park, Smithfield; NORTH CACHE VALLEY = Richmond, Cove, Lewiston

6. For each of the following types of growth, rank the geographic areas (one, highest priority, through four, lowest priority) where you feel each types of growth should occur in Cache Valley:

	RANK
a. RESIDENTIAL growth:	
West Cache Valley	4th
South Cache Valley	2nd
Logan Urbanized Area	1st
North Cache Valley	3rd
b. COMMERCIAL/RETAIL growth	
West Cache Valley	3rd
South Cache Valley	2nd
Logan Urbanized Area	1st
North Cache Valley	4th
c. AGRICULTURAL growth	
West Cache Valley	1st
South Cache Valley	2nd
Logan Urbanized Area	4th
North Cache Valley	3rd

d. INDUSTRIAL/MANUFACTURING growth	
West Cache Valley	3rd
South Cache Valley	2nd
Logan Urbanized Area	1st
North Cache Valley	4th

7. Please rank from 1 through 3, the most important principles that government should embrace for guiding growth. (1 being most important and 3 being least important. If you use the “other” category rank them 1 to 4)

Development should be based on:	RANK
a. where existing infrastructure is located	1st
b. local general plans	2nd
c. minimizing the cost of providing services to the developed areas	3rd
d. other (list _____)	4th

	YES	NO	DON'T KNOW
8. Should local government provide financial incentives to any of the following for building in designated growth areas?			
A. developers	27%	64%	8%
b. home buyers	53%	40%	7%
c. other (list _____)	-	-	-

9. Should development inside towns & cities be encouraged before building outside town and city limits?	54%	35%	11%
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10. Should existing open agricultural spaces between Communities in Cache Valley be preserved as open space?	69%	16%	15%
--	-----	-----	-----

11. How much of a sales tax increase, if any, would you be willing to pay for purchasing development rights to maintain open agricultural spaces?

NONE, NO SALES TAX INCREASE	49%
1/8 OF A CENT PER \$1.00	22%
1/4 OF A CENT PER \$1.00	15%
< OF A CENT PER \$1.00	12%
OTHER (LIST _____)	2%

12. How important is agriculture to the local economy?

VERY IMPORTANT	59%
SOMEWHAT IMPORTANT	36%
NOT IMPORTANT	2%
DON'T KNOW	3%

# APPENDIX E

13. How important is it to have working farms or ranches in Cache Valley? (Circle one reply.)

VERY IMPORTANT	66%
SOMEWHAT IMPORTANT	29%
NOT IMPORTANT	2%
DON'T KNOW	2%

14. What priority should each of the following have as potential open space sites?

	HIGH	MEDIUM	LOW	DON'T KNOW
a. regional parks	44%	43%	8%	5%
b. community parks	74%	22%	2%	2%
c. community entrances	23%	43%	21%	13%

15. What priority should each of the following natural spaces have as open space sites?

	HIGH	MEDIUM	LOW	DON'T KNOW
a. entrances to valley	49%	37%	7%	7%
b. visual corridors	39%	43%	8%	10%
c. hillsides	54%	34%	7%	5%
d. wetlands	49%	31%	14%	6%
e. rivers & streams	75%	75%	4%	6%

16. In general, how do you feel about the following types of development?

	FAVOR	OPPOSE	NO OPINION
a. residential	71%	16%	13%
b. agricultural	79%	6%	15%
c. commercial/retail services	62%	21%	17%
d. home based business	60%	19%	21%
e. mixed use neighborhoods	32%	46%	22%

17. Should roads linking communities be planned by: (Circle one reply.)

a. the county	8%
b. each community	6%
c. both the county & communities	83%
d. other (list _____)	1%
e. don't know	2%

18. Where should future commercial development be encouraged: (Circle on reply.)

a. continue commercial development along the highway corridor	25%
b. develop regional commercial centers throughout the valley	38%
c. in down towns/business districts in each community	30%
d. dispersed small scale commercial/retail throughout neighborhoods	6%
e. other ( _____ )	1%

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19. For the following questions indicate if you Strongly Agree, Agree, have No Opinion, Disagree, or Strongly Disagree with each statement.

	SA	A	NO	DA	SDA
a. limiting residential & commercial uses to certain areas of the county will preserve our quality of life	41%	35%	11%	10%	3%
b. preserving agricultural lands prevents necessary development in our county	16%	23%	14%	29%	18%
c. our water system is going to be adequate to meet our needs for at least the next 20 years	10%	21%	29%	30%	10%
d. developers should build homes that allow for various price ranges, including affordable housing	38%	42%	10%	6%	3%
e. transit (bus) service should be extended to serve the entire county	38%	32%	16%	9%	6%
f. Cache County should encourage or pay for water and sewer lines for residential development in unincorporated areas of the county	11%	22%	33%	18%	16%
g. the roads in Cache County meet our needs	4%	22%	10%	37%	28%
h. local governments should develop plans for affordable housing in their communities to accommodate younger families & senior citizens	24%	46%	16%	10%	4%
i. commercial and residential development needs to be limited by the amount of water available for human consumption	33%	45%	17%	4%	2%
j. air quality in our county is likely to be a problem in The future	33%	44%	14%	7%	3%

## DEMOGRAPHICS

1. Are you:

43% MALE    38% FEMALE    20% BOTH ANSWERED SURVEY

2. Which category best represents the age of the head of household?

18 - 24	8%
25 - 34	25%
35 - 44	26%
45 - 54	18%
55 - 64	11%
65 OR OLDER	12%

# APPENDIX E

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3. How many years have you lived in Cache County?

0 - 3	14%
4 - 6	9%
7 - 10	13%
11 - 15	10%
16 - 25	16%
OVER 25	38%

4. How many family members reside in your home?

1	6%
2	25%
3	16%
4	20%
5	14%
6	12%
7	3%
8 OR MORE	4%

## TABLE OF COMBINED RECOMMENDED PROGRAM CHARACTERISTICS FOR SMALL COMMUNITIES

	HAMLET	VILLAGE	NEIGHBORHOOD
AREA (acres)	10 – 100	100 – 500	175 – 300
DWELLING UNITS	4 – 100	100 – 600	400 – 2,100
DWELLING UNITS/ACRE	1 – 6	1 – 8	4 – 15
POPULATION	12 – 300	200 – 1,800	1,000 – 6,000
OPEN SPACE RATIO	0.5 – 0.75	0.45 – 0.70	0.10 – 0.25
PUBLIC OPEN SPACE RATIO	0.03 – 0.08	0.03 – 0.08	0.03 – 0.08
LOCAL RETAIL*	26 – 52	26 – 52	26 – 52
CIVIC SPACE**	300	300	300
GREEN/COMMON SPACE***	200	200	200
WATER	Private Wells	Community Well/ Regional Supply	Regional Supply
SEWAGE	Septic/Community Treatment	Community/Regional Treatment	Regional Treatment

\*Additional retail is required as it becomes more of a regional center. Values are reported in square feet per dwelling unit

\*\*Land area required for churches, municipal buildings, libraries, etc. Values are reported in square feet per dwelling unit.

\*\*\*This is included in the total public open space. Values are reported in square feet per dwelling unit.

Nelessen, A.C. (1993). *Process, Principles, and an Ordinance to Plan and Design Small Communities*. Chicago, IL: American Planning Association Planners Press.

# APPENDIX G

## CACHE VISION 2020+ GROWTH, LAND USE, PUBLIC LANDS, AND OPEN SPACE SUB- COMMITTEE 5/24/2006 FINAL DRAFT

### Overview

The population of Cache Valley is growing and is expected to double in the next 25 to 30 years. With this anticipated growth and development, Cache Valley will continue to change. Unless current density rates and growth patterns change, the amount of lands developed into new homes, businesses, and roads would also double from current amounts. Citizens and their public officials have the opportunity to make that change better for existing residents and for our future neighbors.

The Cache Vision 2020+ Growth, Land Use, Public Lands, and Open Space Sub-Committee encourages Cache Valley citizens, real estate developers, and public officials to consider and plan for the broader issues of growth management and land preservation in their decisions. They should learn from past experiences and from successful results in other communities. Cache Valley residents will not only want suitable places to live, work, produce, and procure, but also opportunities for learning, places for recreation and contemplation, clean air and water, the means to move about safely and efficiently, and the variety of services provided primarily by governmental agencies.

Cache Valley residents have the opportunity to plan and to make decisions in the context of Cache Valley's unique history, culture, climate, and natural resources. Many decisions can be improved by considering the area as a "region" and by anticipating the needs of future as well as current residents. The following goals, objectives, and actions are this sub-committee's recommendations for addressing growth management and land preservation issues. These recommendations are not necessarily in priority order and any incompatibilities reflect the diverse views of committee members.

### **Goal #1: Plan for Anticipated Growth**

Community growth may contribute to residents' well being in many ways, but it also has the potential to complicate or even negatively affect their quality of life, the pattern of development across Cache Valley, and individual and public property rights and responsibilities. Planning for quality growth necessitates better communication and coordination amongst Cache Valley communities. To address these concerns, a number of tools to help plan for growth should be developed and implemented, while balancing the rights of residents, land owners, future owners, and their neighbors, allowing for individual innovation and diversity in development while meeting public safety responsibilities.

### **Objective 1a: Promote Communication Among City and County Governments**

Action 1.a.1. Support the Cache Valley Regional Council to help foster better communication between Valley communities and the County governments.

Action 1.a.2. Provide appropriate planning staff to work with communities throughout Cache Valley (e.g., circuit-rider planner).

Action 1.a.3. Provide the best available information on health and economic implications of various development scenarios for citizens, developers, and government officials.

## **Objective 1b: Determine Cache Valley’s Carrying Capacity for Growth**

Action 1.b.1. Investigate carrying capacity for such issues as air quality, water quality and quantity, farmland, and infrastructure.

Action 1.b.2. Develop and implement tools that prevent growth from exceeding resource carrying capacities in constrained areas.

Action 1.b.3. Develop policies and make investments to ameliorate these resource constraints when feasible and prudent.

## **Objective 1c: Guide Development to Locate within Incorporated Areas**

Action 1.c.1. Identify and change taxation, regulatory and infrastructure policies that encourage sprawl.

- Develop and implement a transfer of development rights (TDR) program between willing unincorporated (sending areas) and incorporated (receiving areas) areas.
- Develop and make available a valley-wide purchase of development rights (PDR) program for targeted lands. This program should be approved by the citizens.
- Develop and implement an impact fee program, or other guarantee of financial responsibility, for unincorporated areas of Cache Valley to ensure that development pays its way in these areas.
- Encourage in-fill development of lands currently serviced by existing infrastructure.
- Encourage consistency between land use patterns and the regional transportation plan.
- Revise zoning and land use ordinances that reduce density, inhibit compatible neighborhood commercial activities, and increase transportation distances and costs.
- Identify and eliminate taxation and regulatory burdens on the private sale, exchange, and consolidation of lands to provide for more rational and higher valued uses of lands, including their preservation.
- Manage access to public roads so as to maintain or improve their transportation function.
- Promote innovative designs and streamlining of development approvals within incorporated areas.

## **Objective 1d: Apply Consistent Requirements to the Development of Public Properties and Projects**

Action 1.d.1. Recognize that the planning and building of public facilities can have any of the negative consequences of private development and apply consistent planning and land use principles to both.

Action 1.d.2. Consult with neighboring governing bodies when planning public facilities or improvements.

Action 1.d.3. Use the Cache Valley Regional Council and other coordinating bodies to more effectively influence development activities by the Federal, state, and local governmental agencies, such as school districts, to comply with Valley needs and plans.

## **Goal #2: Preserve Critical Lands**

Committee members are interested in identifying and preserving Cache Valley’s “sense of place.” Many residents value the aesthetic quality of Cache Valley and appreciate its agricultural heritage. Although interest in land preservation has been strong for many years, there are many issues remaining to be addressed including understanding the economics of agriculture and land preservation, defining what Cache Valley “open space” is and how to prioritize and enhance it, incorporating recreational facilities into land preservation projects, designating and conserving critical lands, and establishing roles for both public and private lands in land preservation efforts. To address these concerns, a number of tools for preserving critical lands should be developed and implemented, while balancing property rights and public safety responsibilities.

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## **Objective 2a: Define Cache Valley's Sense of Place**

Action 2.a.1. Engage citizens through a process of open and inclusive community involvement process in defining Cache Valley's Sense of Place and the qualities that should be preserved.

- Help citizens to identify what characteristics make their individual communities unique and desirable that establish their sense of place.
  - Identify the natural features of each community (e.g., wetlands, rivers and streams, geologic formations, other unique features).
  - Identify the cultural features of each community (e.g., landmarks, historic buildings, cultural festivals).
  - Identify the patterns of public circulation that establish the citizens' movement to public destinations such as parks, plazas, waterways, etc.
- Help citizens to think outside their individual community boundaries and appreciate how community decisions affect the entire Cache Valley.
  - Identify the movement of citizens from their communities to destinations within and outside of Cache Valley.
  - Identify the connections that would enhance Cache Valley as a regional entity (e.g., signage and marketing to reinforce the attributes of the region).
  - Consider the human scale of these connections, how they will be experienced by pedestrians and individuals in vehicles, various transit options, and the movement of agricultural equipment.
- Develop a series of future growth scenarios to illustrate various growth patterns and the costs/benefits of each.
  - Reference USU Bioregional Planning Department's graduate student work exploring Cache Valley's growth scenarios, view sheds, and natural resources.
  - Reference Envision Utah Smart Growth case studies of communities facing similar issues.

## **Objective 2b: Develop Ordinances to Protect Sensitive/Critical Lands**

Action 2.b.1. Implement critical lands policies that prevent growth from placing residents in harm's way and that protect the cultural and natural heritage of Cache Valley.

- Define the cultural and natural heritage components that should be protected. Likely components include landmarks (buildings, open lands, natural features), hunting grounds, fishing areas, critical wildlife habitats, historic buildings, prime and important farmlands, etc.
- Invest public funds in protecting these cultural and natural components to the extent warranted by their value to the public.
- Identify lands that pose a hazard to the health, safety, and welfare of Cache Valley residents. Likely components include floodplains, wetlands, fault zones, recharge zones, steep slopes, geologic hazards, unstable soils, etc.
- Develop better ways to notify prospective purchasers or developers of these hazards and their implications.

## **Objective 2c: Improve Farm/Working Lands' Profitability**

Action 2.c.1. Explore opportunities for improving farm profitability, including identifying niche markets, marketing local products, and increasing value-added agribusinesses.

Action 2.c.2. Review restrictions on the locating of agriculture-related commercial production and supply facilities where they can best serve the farming industry.

Action 2.c.3. Revise restrictions on the multiple-use of farming properties to allow compatible small commercial activities, resource extraction, and small-scale subdividing that enhance overall farm wealth and farm reinvestment potential.

**Objective 2d: Develop County-wide Open Lands and Recreation Master Plan**

Action 2.d.1. Identify a Valley-wide system of open lands and parks connected by trails.

- Identify and prioritize those lands within Cache Valley that should be preserved.
- Identify Cache Valley's existing recreational assets, future facility needs, and recreation activities.
- Incorporate this information as a component of the County-wide General Plan.

**Objective 2e: Promote the Formation of Citizens Groups to Interact with Public Land Managing Agencies**

Action 2.e.1. Form citizens-based groups of Cache Valley residents to promote better communication with State and Federal land managing agencies. Sponsor ad hoc groups to explore specific issues as they arise.

# APPENDIX H

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## GIS DATA REFERENCES

### COMPUTER SOFTWARE

Data analyses were performed using Environmental Systems Research Institute (ESRI) ArcGIS version 9.1 and Leica Geosystems Imagine version 9.0.

### MAP PROJECTION DATA

Projection: UTM Zone 12 North  
Spheroid: WGS 84  
Datum: North American Datum of 1983  
Primary Scale: 1:500,000  
Grid Data Resolution: 30 meters

### PRIMARY DATA SOURCES

Idaho Department of Water Resources  
<http://www.idwr.idaho.gov>

Inside Idaho  
<http://inside.uidaho.edu>

MapMart: Global Mapping Solutions  
<http://mapmart.com>

Natural Resource Conservation Service (NRCS) SSURGO/STATSGO Soils Data  
<http://soils.usda.gov>

Southwest Regional Gap Analysis Project (SWReGAP) Landcover Data  
<http://earth.gis.usu.edu/swgap>

United States Census Bureau  
<http://www.census.gov>

United States Fish and Wildlife Service  
<http://www.fws.gov/data/statdata>

Utah Automated Geographic Reference Center (AGRC)  
<http://agrc.its.state.ut.us>

Utah Division of Wildlife Resources: Index of Available GIS Data  
<http://dwrcdc.nr.utah.gov/ucdc/DownloadGIS/disclaim.htm>