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Build–out Study

Eastern Washington County Rural Planning Organization

2010

June

Acknowledgement

The Rural Planning Organization staff acknowledge the hours of dedication rendered by Ms. Nancy Lucchetti in processing the Geographic Information System data used in this Build-out Study.

She succeeded in creating order out of chaos, with tenacity and good humor.

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Introduction

The Eastern Washington County Rural Planning Organization (RPO) was created in May 2008 by a Memorandum of Understanding between the Utah Department of Transportation (UDOT) and Five County Association of Governments (FCAOG).

The Program Goals of the Utah Department of Transportation for a Rural Planning Organization are as follows:

- Assist rural local governments understand the linkage between land use and transportation.
- Develop a partnership between the RPO and UDOT that preserves and protects the future State Highway System Right of Way (ROW) and that provides for a safe and efficient highway system in the future.
- Develop and promote communication and better understanding of rural local government priorities.
- Identify short term, medium term, and long-term projects for UDOT's Long Range Plan.
- UDOT expects that the planning process the Department helps initiate will grow into a continuing and coordinated process with regular plan updates using local funds as the primary source.
- UDOT expects the program will develop strong relationships, understanding, and open communication between the Department, the Region, and participating local governments of the RPO.

As part of the process of meeting these goals, UDOT and FCAOG have agreed in a Memorandum of Understanding to accomplish certain projects within a specific timeframe. One of the goals of Year Two of the Eastern Washington County RPO is to construct a build-out study.

Rural Planning Organization (RPO) Build-out Study

This build-out study is the calculation and location of the maximum number of housing units that could be built in the RPO communities according to the densities outlined by the communitys' land use plans. A build-out population can be determined by taking the sum of maximum allowable number of housing units from throughout a community and multiplying that number by the average household size for that community. The same process is applied to private unincorporated County land.

Indicating specifically where the different housing densities will be located, along with business and public use areas, can assist in the projection of future transportation patterns and loads.

This information can also improve current and future communication between RPO communities regarding land use and development, in order to: 1) increase transportation project cooperation; 2) evaluate compounding effects of adjacent projects; and 3) prevent or reduce possible future conflict.

Eastern Washington County RPO

The members of the RPO include the municipalities of the City of Hurricane, City of LaVerkin, City of Toquerville, Town of Leeds, and the County of Washington, Utah. Most communities lie along three main State Routes – SR-9, SR-17, and SR-59. SR-228 serves as Main Street for Leeds, which is paralleled by Interstate 15. The Route leading to Quail Creek Reservoir in Hurricane is SR-318.

State Route 7, the 'Southern Parkway', will enter the RPO area with construction of Phases 4 & 5. Phase 6 will continue the expressway from its intersection with SR-9, westward to Interstate 15.

In recognition of the importance of the communities located along the same State Routes as the RPO member communities, the RPO Bylaws also include the following communities as ex-officio members of the organization: Town of Apple Valley, Town of Hildale, Town of Rockville, Town of Springdale, and Town of Virgin. However, these communities are not included in the RPO Build-out Study.

General Study Process

RPO staff collected the data, coordinated with Washington County Geographic Information Servces (GIS), and drafted the initial Build-out document. The Washington County GIS staff worked with all data to create report maps and table data. The draft Study will be presented to the RPO Transportation Advisory Committee (RTAC) for review and recommendation. The RTAC Study will then be presented to the RPO Transportation Executive Council (RTEC) for approval before submission to UDOT.

The RPO Build-out Study involved the collection of all existing general plans and/or land use plans and maps from municipalities. Each area involved a different collection of resources, i.e. multiple formats of GIS data, print maps, land use designations and plans, and zoning designations and plans. General Plans with land use GIS data and maps were the preferred resources. Each entity defined and indicated their land use with different definitions of low,

medium and high densities. Some had very detailed delineation of land use, while others used very general and sparse designations. Specific methods applied to each municipality and the County will be addressed in more detail in individual chapters.

With the resources available, a land use map and data table(s) were created for each RPO entity. This was a substantial challenge due to the variety and/or quality of the information available. These individual maps utilize the land use designations and densities as defined by each individual entity.

In addition, a single Comparison Map combining all five RPO entities was created after adjusting the land use designations of each entity to a single set of parameters. The definitions of density levels and map legend indicators were determined by RPO staff.

With common land use designations and definitions, the land use of the entities can more easily be compared. This capacity to visually compare land use and densities will facilitate a clearer projection of future transportation patterns and capacities within the RPO totality.

City of Hurricane

Overview

The City of Hurricane is the largest municipality within the Eastern Washington County Rural Planning Organization. It lies on the east side of Interstate-15 (I-15), north of the Utah-Arizona border. Hurricane encompasses 52 square miles (33,288.14 acres)[1] and is bisected west to east by State Route 9 (SR-9). Its northern border is largely delineated by the Virgin River, a major drainage. Hurricane also includes two major reservoirs which supply water through a regional water agreement to a number of surrounding communities.

Land use is primarily residential and agricultural, with developing industrial resources. Growth actually declined between 1940 and 1970, then accelerated rapidly during 1970 - 2010. The population was 8,250 as of the 2000 US Census, and projected to reach 16,381 by early 2010[2].

Hurricane also includes State Route 59 (SR-59) and 318 (SR-318). Both SR-9 and SR-59 are significant roads that lead to important tourism sites, such as Zion National Park, Bryce Canyon National Park, Lake Powell Recreational Area, Grand Staircase Escalante National Monument, and Grand Canyon National Park.

Both Routes serve as important local transportation corridors as well. Serving the needs of the local population as well as access for tourism is a unique transportation challenge to this and other RPO communities.

The City of Hurricane has large areas of undeveloped, but developable land. It is expected to experience significant growth over the next 20 years. There is speculation that the Hurricane Valley area will eventually outgrow the St George metropolitan area.

Land Use Planning

The City of Hurricane has a dedicated Geographic Information Systems (GIS) department. The City's General Plan is currently in a state of revision. Due to the detail and extent of the numerous land use designations in the current Hurricane plan, some similar land uses were combined for creation of the Build-out Study map, particularly various public facilities, and

[1] Washington County GIS Office, N. Lucchetti, May 2010
[2] 2008 Baseline City Population Projections, 2000-2060. Governor's Office of Planning and Budget, Subcounty Population Projections (Total Population).

recreational/open space areas. Residential densities were combined into 7 designations. Very Low Density Residential/Agriculture density was grouped as 1 unit per 1-5 acres. The GIS data did not clearly delineate between the different acreage sizes, so the maximum density of 1 unit per 1 acre was applied. Also, there was a land use designation of Medium Density Residential (MDR) that had a density of 10 units per acre, along with a High Density Residential (HDR) designation with a density of 6 units per acre. The density of 10 units per acre was changed to HDR and combined with HDR/Multi Family 10-12 units per acre.

With the main purpose of the Build-out Study being to create an indicator of density and movement of people, differences in zoning within the same density were not always differentiated. Areas of mixed use (MXD) were specifically designated because these areas may create different traffic volumes than strictly residential areas.

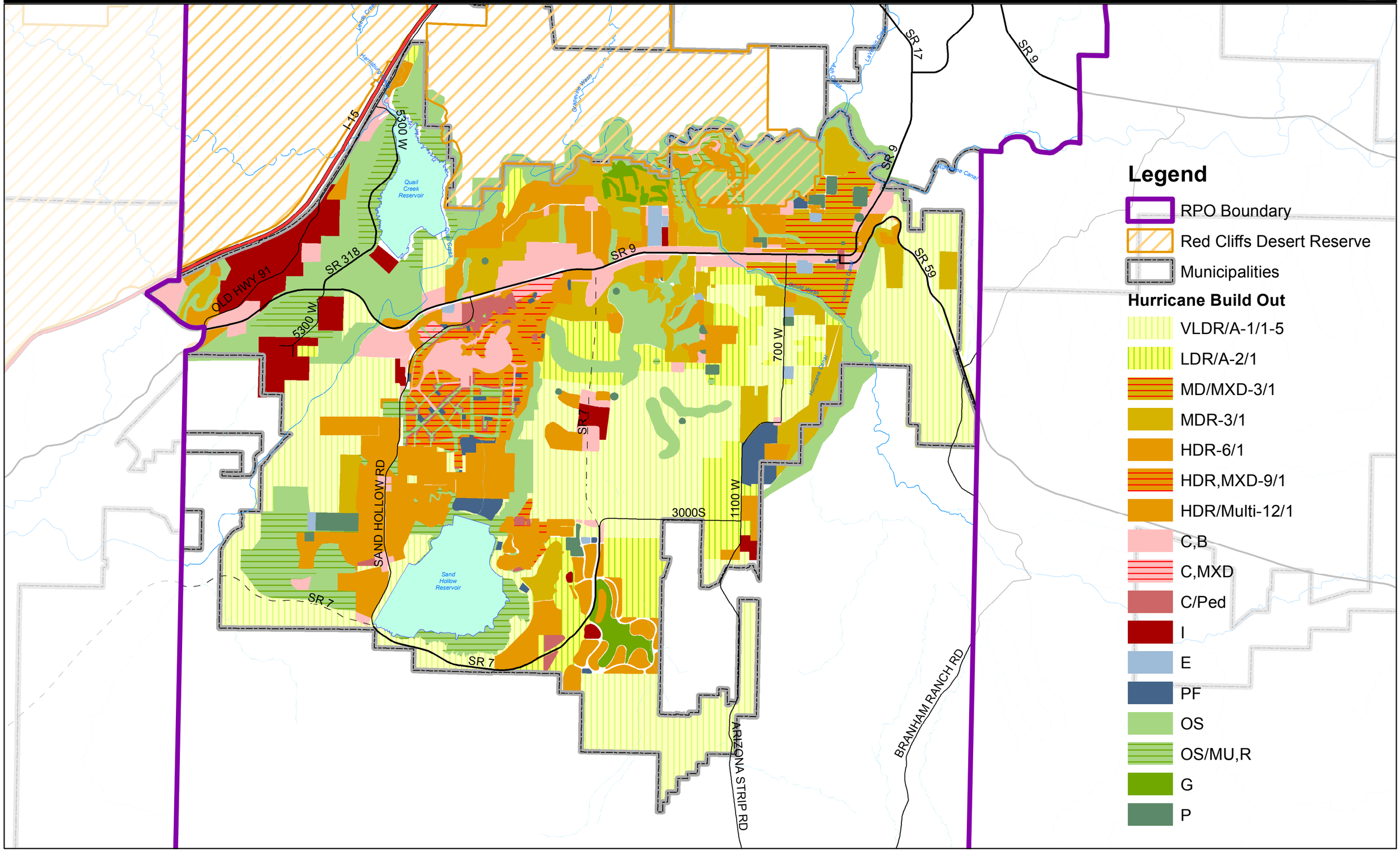
Land Use Designation Legend

Hurricane City Land Use Designations

Land Use Designation	Type or Code	Density	Legend
Very Low Density Residential/Agricultural	VLDR/A	1 unit/1-5 acres	
Low Density Residential/Agricultural	LDR/A	2 units/1 acre	
Medium Density Residential/Mixed Use	MDR/MXD	3 units/1 acre	
Med Density Residential	MDR	3 units/1 acre	
High Density Residential	HDR	6 units/1 acre	
High Density Residential/ Mixed Use	HDR/MXD	9 units/1 acre	
High Density Residential/ Multi Family	HDR/Multi	10-12 units/1 acre	
Commercial, Business	C, B		
Commercial, Mixed	C/MXD		
Commercial/Pedestrian Oriented	C/Ped		
Industrial	I		
Education/Research, Schools	E		
Public Facilities (power, storage, civic sites, churches)	PF		
Open Space	OS		
Open Space/Multiple Use, Recreation	OS/MU, R		
Golf	G		
Parks	P		

Eastern Washington County Rural Planning Organization

CITY OF HURRICANE



Maximum Build-Out Table

Hurricane City Build-out Table

Land Use Designation	General Plan Code	Units/acre in General Plan	Total Residential Acres	Total Units	Average House-hold Size*	Potential Municipal Population
Very Low Density Residential/Agricultural	VLDR/A	1 unit/ 1-5 acres	9,261.67	9,261.67	2.97	27,507.16
Low Density Residential/Agricultural	LDR/A	2 units/ 1 acre	2,185.00	4,370.00	2.97	12,978.90
Med Density Residential/Mixed Use	MDR/MXD	3 units/ 1 acre	699.70	2,099.10	2.97	6,234.33
Med Density Residential	MDR	3 units/ 1 acre	2,634.47	7,903.41	2.97	23,473.13
High Density Residential	HDR	6 units/ 1 acre	3,415.58	20,493.48	2.97	60,865.64
High Density Residential/Mixed Use	HDR/MXD	9 units/ 1 acre	741.31	6,671.79	2.97	19,815.22
High Density Residential/Multi Family	HDR/Multi	10-12 units/ 1 acre	1,555.08	18,660.96	2.97	55,423.05
TOTAL			20,492.81	68,367.65		**206,297**

* US Census 2000

City of LaVerkin

Overview

The Virgin River Gorge divides the City of Hurricane from the City of LaVerkin. State Route 9 in Hurricane turns north and crosses the Gorge, then continues north until its intersection with State Route 17 at 500 North, LaVerkin. At this intersection, State Route 17 continues north toward Toquerville. State Route 9 takes a right turn to the east and up onto the Hurricane Cliffs. This creates two levels for the City of LaVerkin: the developed portion in the valley, and the undeveloped 'topside' up on the Hurricane Cliffs.

LaVerkin is known as the Beautiful Valley, because of its rich farmlands that filled the LaVerkin bench between the LaVerkin Creek on the west and the Hurricane Fault to the east. Residential development is slowly replacing the farmlands, but LaVerkin remains largely agricultural.

LaVerkin City encompasses 12.75 square miles (8,158.40 acres)[3]. Historical growth in LaVerkin was slow between 1910 and 1970, then accelerated, especially between 1970 - 2000. The population was 3,392 as of the 2000 US Census, and projected to sit around 5,162 in early 2010[4].

LaVerkin serves as the 'Gateway' community to the Zion Canyon Corridor. Access to Zion National Park from the west begins at Interstate-15, either traveling south down SR-17 or east on SR-9. Both SR-9 and SR-17 meet in LaVerkin where SR-9 heads east to Zion. This convergence makes LaVerkin a transportation hub of high importance. It also means that LaVerkin is sensitive to the growth and movement of persons from three different directions – Zion Canyon Corridor, Toquerville, and Hurricane. This triple confluence and its possible ramifications suggests a need for constant and plentiful communication between LaVerkin and its neighbors, something the Eastern Washington County Rural Planning Organization is able to support.

[3] Washington County GIS Office, N. Lucchetti, May 2010

[4] 2008 Baseline City Population Projections, 2000-2060. Governor's Office of Planning and Budget, Subcounty Population Projections (Total Population).

Land Use Planning

LaVerkin City provided an updated (2009) General Plan that includes a zoning map and minimal land use definitions and goals. The zoning map applies only to the developed valley portion of the City. LaVerkin also provided the plans for an undeveloped Topside Planned Community Development (Mosaic 2006) which illustrates the type and density of land use LaVerkin City would consider acceptable for 'topside' development. GIS information was available for the lower portion of LaVerkin, but the print map of the proposed planned development was plotted to create GIS data for the approximately 315 developable acres of the LaVerkin 'topside'.

Between the main portion of the City and the 'topside' development, LaVerkin was mapped using 11 residential density designations. Land use and density were determined by a combination of zoning designations and land use definitions. The 5.4 units per acre density reflects an adjustment from gross to net acreage. All other densities in LaVerkin and the other RPO entities are given as gross acreages.

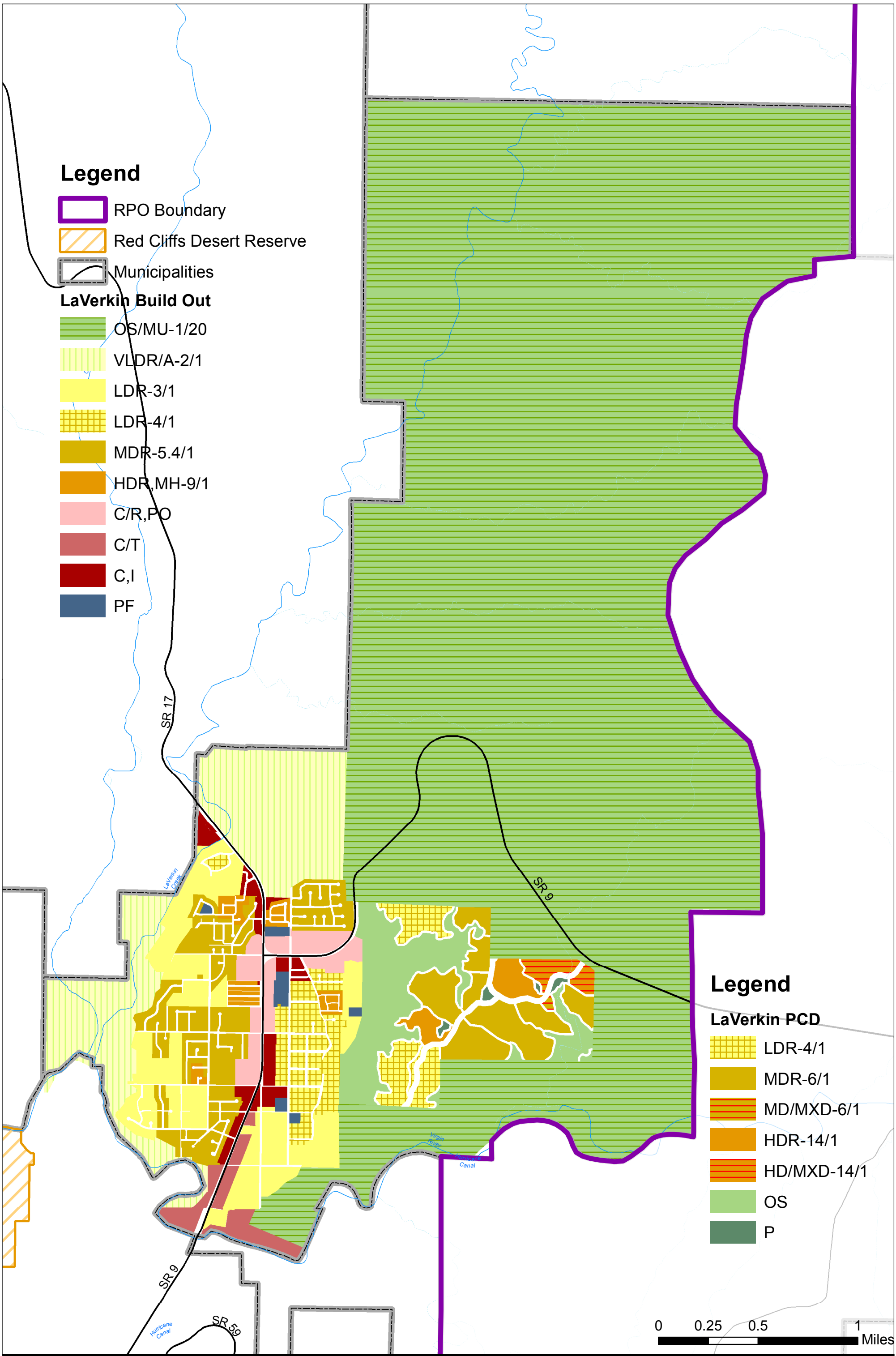
Land Use Designation Legends

LaVerkin City Land Use Designations

Land Use Designation	Type or Code	Density	Legend
Open Space/Multiple Use	OS/MU	1 unit/20 acres	
Very Low Density Residential/Agricultural	VLDR/A	2 units/1 acre	
Low Density Residential	LDR	3 units/1 acre	
Low Density Residential	LDR	4 units/1 acre	
Med Density Residential	MDR	5.4 units/1 acre	
High Density Residential, Multi Family, Mobile Homes	HDR, Multi, MH	15 units/1 acre	
Commercial/Retail, Professional Office	C/R, PO		
Commercial/Tourism	C/T		
Commercial/Light Industrial	C, I		
Public Facilities	CITY		

LaVerkin City Planned Community Development Land Use Designations

Land Use Designation	Type or Code	Density	Legend
Low Density Residential	LDR	4 units/1 acre	
Med Density Residential	MDR	6 units/1 acre	
Med Density, Mixed Use	MD/MXD	6 units/1 acre	
High Density Residential	HDR	14 units/1 acre	
High Density Mixed Use	HD/MXD	14 units/1 acre	
Open Space	OS		
Park	P		



EWC Rural Planning Organization

CITY OF LA VERKIN

Maximum Build-out Tables

LaVerkin City Build-out Table

Land Use Designation	General Plan Code	Units/acre in General Plan	Total Residential Acres	Total Units	Average Houshold Size*	Potential Municipal Population
Open space/ Multiple Use	OS/MU	1 unit/ 20 acres	6197.24	309.86	2.97	920.28
Very Low Density Residential/ Agricultural	VLDR/A	2 units/ 1 acre	530.37	1060.74	2.97	3150.40
Low Density Residential	LDR	3 units/ 1 acre	308.59	925.77	2.97	2749.54
Low Density Residential	LDR	4 units/ 1 acre	118.68	474.72	2.97	1409.92
Med Density Residential	MDR	5.4 units/ 1 acre	224.29	1211.17	2.97	3597.17
High Density Residential, Mobile Homes	HDR, MH	9 units/ 1 acre	36.58	329.22	2.97	977.78
TOTAL Table I			**7,415.75**	**4,311.48**		**12,805**

LaVerkin City Topside PCD Build-out Table

* US Census 2000

Land Use Designation	General Plan Code	Units/acre in General Plan	Total Residential Acres	Total Units	Average Houshold Size*	Potential Municipal Population
Low Density Residential	LDR	4 units/ 1 acre	71.11	284.44	2.97	844.79
Med Density Residential	MDR	6 units/ 1 acre	149.77	898.62	2.97	2,668.90
Med Density / Mixed Use	MD/MXD	6 units/ 1 acre	1.59	9.54	2.97	28.33
High Density Residential	HDR	14 units/ 1 acre	33.01	462.14	2.97	1,372.56
High Density / Mixed Use	HD/MXD	14 units/ 1 acre	24.67	345.38	2.97	1,025.78
TOTAL Table II			**280.15**	**2,000.12**	2.97	**5,940**
TOTAL Tables I & II			**7,695.90**	**6,311.60**		**18,745**

Town of Leeds

Overview

The Town of Leeds is situated in the northwest corner of the RPO. It is bisected by I-15 with State Route 228 serving as Main Street. Leeds currently consists of 6.25 square miles (4,003.10 acres)[5].

The 2000 Census counted the population as 547, and projected 2010 population at 980[6].

An important aspect of Leeds is the historic Silver Reef Mining District. In the early 1870's silver was discovered in the area. This discovery is the first and only time that silver has been found in sandstone in North America. For approximately 10 years the town of Silver Reef was a robust community with as many as 1,500 people. During the boom (approx. 1878 to 1882) it was the largest community in southern Utah

Land Use Planning

Although the Town of Leeds has developed zoning for areas outside of the Town boundary, this report only addresses acreage within current boundaries.

Leeds Town planning documents currently do not use land use designations, so zoning codes had to be converted to land use designations. There are a significant number of zoning codes and these converted into 13 residential density divisions. (For utility purposes, some densities were combined on the land use map.) One designation, Mixed Use (MXD) does not currently have a density assigned to it. Much of the MXD area has been newly annexed. When this area is assigned a density, then the build-out numbers for Leeds will increase.

Leeds has the potential and the plans for substantial development. Creation of a Land Use Plan in addition to a zoning map would greatly facilitate planning processes.

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[5] Washington County GIS Office, N. Lucchetti, May 2010

[6] 2008 Baseline City Population Projections, 2000-2060. Governor's Office of Planning and Budget, Subcounty Population Projections (Total Population).

Land Use Designation Legend

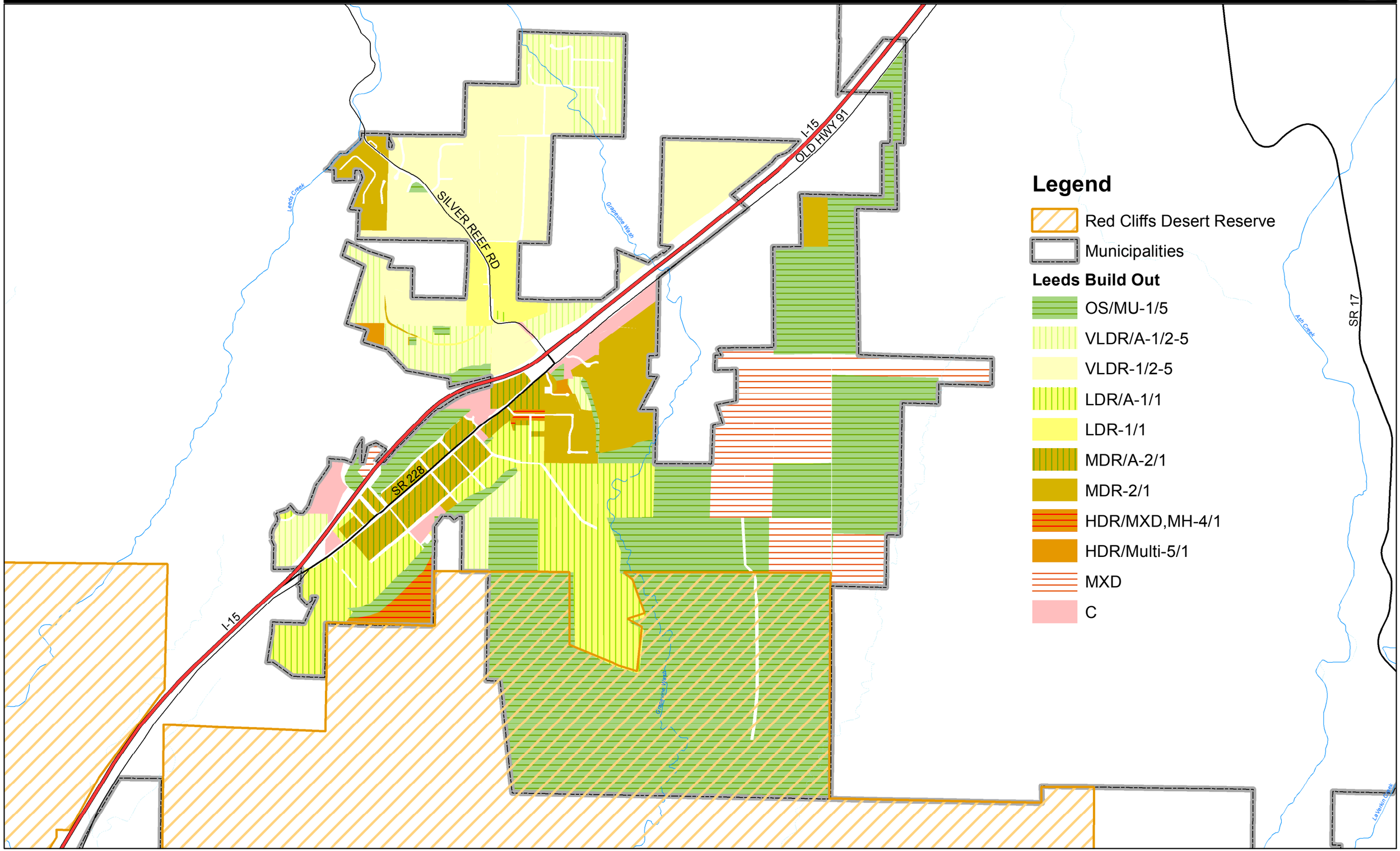
Leeds Town Land Use Designations

Land Use Designation	Type or Code	Density	Legend
Open Space/Multiple Use	OS/MU -1/5	1 unit/5 acres	
Very Low Density Residential/Agricultural	VLDR/A -1/2-5	1 unit/2-5 acres	
Very Low Density Residential	VLDR -1/2-5	1 unit/2-5 acres	
Low Density Residential/Agricultural	LDR/A -1/1	1 unit/1 acre	
Low Density Residential	LDR -1/1	1 unit/1 acre	
Medium Density Residential/Agricultural	MDR/A - 2/1	2 unit/1 acre	
Medium Density Residential	MDR - 2/1	2 units/1 acre	
High Density Residential/MXD, MH	HDR/MXD, MH - 4/1	4 units/1 acre	
High Density Residential/ Multi Family	HDR/Multi -5/1	5 units/1 acre	
Mixed Usde	MXD		
Commercial	C		

0 0.5 1 Miles

Eastern Washington County Rural Planning Organization

TOWN OF LEEDS



Maximum Build-out Table

Leeds Town Build-out Table

Land Use Designation	General Plan Code	Units/acre in General Plan	Total Residential Acres	Total Units	Average Houshold Size*	Potential Municipal Population
Open Space / Multiple Use	OS/MU	1 unit/5 acres	1,678.21	786.35	2.64	2,075.96
Very Low Density Residential/ Agricultural	VLDR/A	1 unit/5 acres	143.55	28.71	2.64	75.79
Very Low Density Residential/ Agricultural	VLDR/A	1 unit/2 acres	154.37	77.18	2.64	203.76
Low Density Residential/ Agricultural	LDR/A	1 unit/1 acre	410.34	410.34	2.64	1,083.30
Very Low Density Residential	VLDR	1 unit/5 acres	154.24	30.85	2.64	81.44
Very Low Density Residential	VLDR	1 unit/2 acres	342.05	171.03	2.64	451.52
Low Density Residential	LDR	1 unit/1 acre	160.15	160.15	2.64	422.80
Medium Density Residential/ Agricultural	MDR/A	2 unit/1 acre	121.83	243.67	2.64	643.29
Medium Density Residential	MDR	2 units/1 acre	244.48	488.95	2.64	1,290.83
High Density Residential/MXD	HDR/MXD	4 units/1 acre	119.34	477.36	2.64	1,260.23
Mobile Home	MH	4 unit/1 acre	34.30	137.22	2.64	362.26
High Density Residential/ Multi Family	HDR/Multi	5 units/1 acre	9.87	49.35	2.64	130.28
Mixed Use	MXD	N/A	369.13	0	2.64	0
TOTAL			3,941.86	3,061.16		**8,081**

* US Census 2000

City of Toquerville

Overview

The City of Toquerville is located between I-15 on the north and the SR-17/SR-9 intersection on the south, and is bisected by SR-17. Much of this corridor is adjacent to Ash Creek and LaVerkin Creek. Most residential development is on the west side of SR-17, with numerous agricultural plots and open space. The west side of SR-17 is more commonly steep cliffs and narrowing canyons, but there is some development up both creeks, along with water sheds.

Toquerville encompasses 16.87 square miles (10,804 acres)[7]. The population actually decreased between 1920-1970, then tripled between 1980-2000. The population was 910 as of the 2000 US Census, and projected to sit around 1,514 in early 2010[8].

Land Use Planning

Toquerville has a General Plan dated 2005, which includes a land use map and land use designations. The designations include only two residential densities: Very Low Density Residential/Agricultural and Low Density Residential. This indicates that Toquerville has the opportunity to plan much of its land use with purpose and focus, rather than experiencing haphazard growth.

In the Toquerville Transportation Master Plan, professional consultants determined through interviews with planners and developers that it is possible that 3000-5000 homes could be built in a set of planned developments: 3100 homes west of SR-17 and 950 homes east of SR-17. Without land use designations for these developments, densities cannot be determined. However, the report does indicate estimated ADT (average daily trip) traffic through Toquerville of 44,750 if these developments were built.

The City of Toquerville recently annexed 1,834.31 acres, which was designated as Very Low Density Residential/Agricultural at 1 unit per acre.

The GIS data for the Toquerville land use map was provided by Ken Young from Utah Community Planners and Gateway Mapping, Inc.

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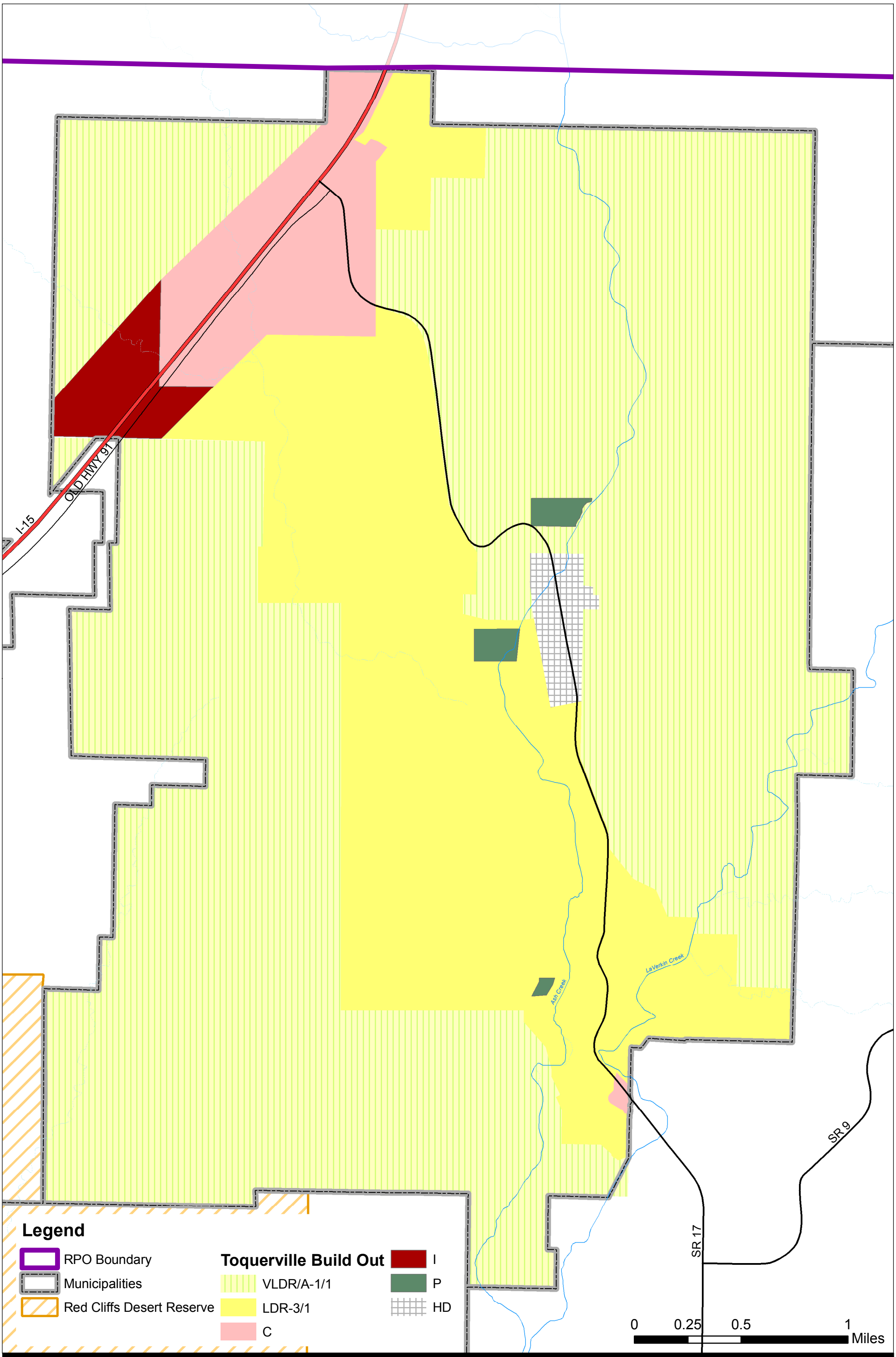
[7] Washington County GIS Office, N. Lucchetti, May 2010

[8] 2008 Baseline City Population Projections, 2000-2060. Governor's Office of Planning and Budget, Subcounty Population Projections (Total Population).

Land Use Designation Legend

Toquerville City Land Use Designations

Land Use Designation	Type or Code	Density	Legend
Very Low Density Residential/Agricultural	VLDR/A -1/1	1 unit/1 acre	
Low Density Residential	LDR -3/1	3 units/1 acre	
Commercial	C		
Light Industrial	I		
Parks, Trails	P		
Historic District	HD		



EWC Rural Planning Organization

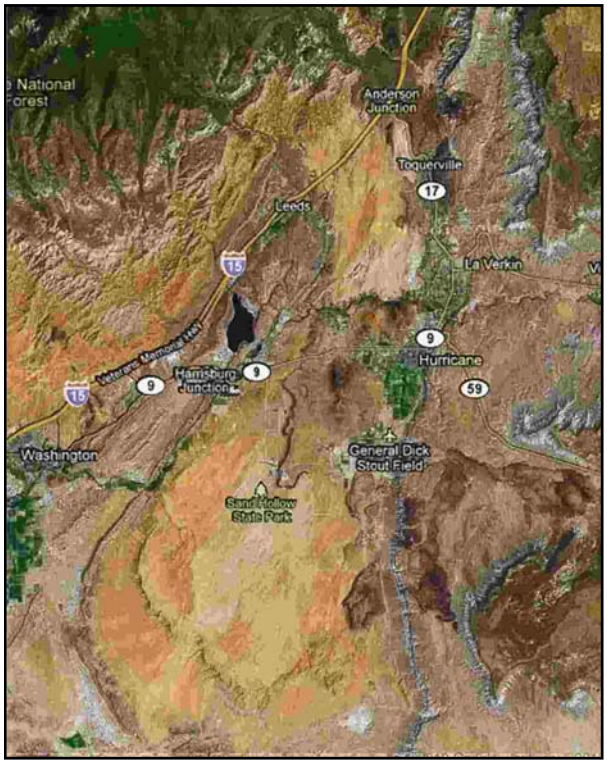
TOWN OF TOQUERVILLE

Maximum Build-out Table

Toquerville City Build-out Table

Land Use Designation	General Plan Code	Units/acre in General Plan	Total Residential Acres	Total Units	Average Houshold Size*	Potential Municipal Population
Very Low Density Residential/ Agricultural	VLDR/A	1 unit/1 acre	7,199.00	7,199.00	3.23	23,252.77
Low Density Residential	LDR	3 units/1 acre	2,726.68	8,180.04	3.23	26,421.53
TOTAL			9,925.68	15,379.04		**49,674**

* US Census 2000



Washington County

Overview

Washington County lies in the very southwest corner of the State of Utah. It is known for its unique beauty, recreation, geology, and ecology, being the convergence of three major eco-zones: the Basin and Range, Mojave, and Colorado Plateau.

The area was originally settled by non-Native Americans in the 1850's as a place for growing cotton at an industrial level. The desert environment made this difficult with water being accessed by hand dug irrigation canals from the major water sources of the Virgin and Santa Clara rivers. Fields bordering these rivers were routinely destroyed by flash floods.

Although cotton failed as an industrial enterprise, agriculture continued in the area. As in many areas of urbanization, however, agriculture is decreasing as residential development increases.

In 2007 a major Washington County planning effort was undertaken by a coalition of diverse stakeholders and residents of the County. This planning project, called Vision Dixie[9], established basic principles and values that the County supports in land use planning and development.

Another significant planning project was the drafting and passage of the Washington County Growth and Conservation Act by the US Congress on March 25,2009.

Washington County recently experienced very high levels of growth, nearly doubling in population between 1980-1990 and again between 1990-2000. Between 2000-2008 the average annual rate of change was 5.4%[10], but is projected to slow to an average of 3.8% between 2000-2060.[11]

[9] Vision Dixie 2035: Land-Use and Transportation Vision, www.visiondixie.org
[10] Governors Office of Planning and Budget, 2010 Economic Report to the Governor, Table 22
[11] Governors Office of Planning and Budget, Subcounty Population Projections, 2008

Land Use Planning

For purposes of this Build-out Study, Washington County land refers to the unincorporated areas of Washington County within the RPO boundaries, excluding land owned by the Bureau of Land Management (BLM), the United States Forest Service (USFS), the Red Cliffs Desert Reserve (HCP), patented mining claims, and land owned by the Utah Department of Transportation (UDOT).

It does include private land, agricultural protection land, Washington County property, as well as land held by the Washington County Water Conservancy District (WCWCD) and State Institutional Trust Lands (SITLA). Within the RPO, this totals 13,053.80 acres[12].

In the case where County land is within a municipality, land use and development is determined by that municipality's land use plan, not current ownership.

SITLA land is State of Utah governed property. It is considered private land managed by a Trust. Washington County land use plans designate this land as Open Space Conservation (OSC) with no development allowed.

At such time as SITLA, or other lands, are privately purchased, they are then converted to the land use status of Open Space Transition and designated as OST. Washington County OST land can be developed at a low density of 2 residential units per 20 acres.

Once a property owner is able to provide appropriate water, sewer, power, road improvements, etc. for their property, Washington County can approve a permit for the building of a Planned Development, designated as a PD. Existing PD's within the RPO unincorporated areas are generally built as medium density with 1 residential unit per acre allowed. However, the County can allow for high density PD development at 5 units per acre.

Within the RPO, there are two areas designated as Agricultural Protection lands. This designation restricts the private land to agricultural usage for a 20 year time period. After that it is considered OST at a low density of 2 residential units/20 acres, and can be developed as per other County private land.

Another important variable when calculating build-out in unincorporated Washington County areas is annexation. All of the municipalities within the RPO have Master Declaration Policy Annexation Plans to extend their boundaries. An Annexation Map is included in this report for reference. Annexation of unincorporated properties would place those properties under the land use designations of the receiving municipality.

Due to the variables affecting purchase and development of unincorporated County land, the Washington County Build-out Tables include more than one development scenario. It is

[12] Washington County GIS Office, N. Lucchetti, May 2010

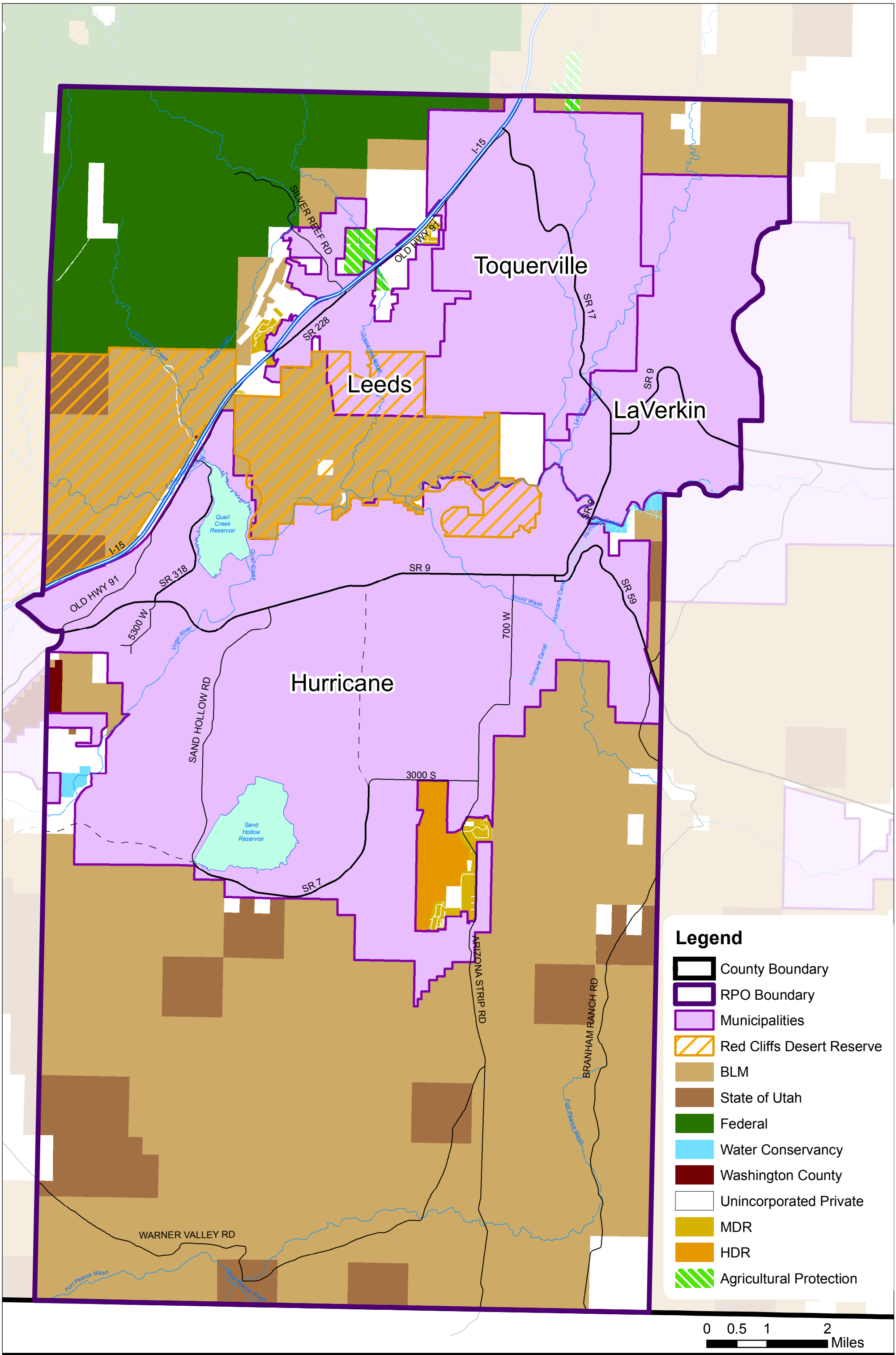
unlikely that all OSC and OST land will be developed as high density planned developments because in some areas it would be difficult to bring in roads, utilities, power, etc. at a reasonable cost.

In order to provide various perspectives for the future, three build-out scenarios are provided: 1) indicating current land usage and density; 2) where all OSC is converted to private land (OST), and one-third of all private unincorporated land is developed to low density, one-third to medium density, and one-third to highest density; then 3) where all OSC is converted to private (OST) and all private and OST is developed to the highest density (see following Maximum Build-out Tables).

Land Use Designation Legend

Washington County Land Use Designations

Land Use Designation	Type or Code	Density	Legend
Rural Planning Organization Municipality	RPO Municipality		
Rural Planning Organization Boundary	RPO Boundary		
Reservoirs, Lakes, Main tributaries	Water Features		
Red Cliffs Desert Reserve	HCP		
Bureau of Land Management	BLM		
State Institutional Trust Lands Administration – State of Utah	SITLA		
National Park, National Forest, Wilderness	FED		
Washington County Water Conservancy District	WCWCD		
Washington County	WC		
Agricultural Protection	AP		
Private Land, Open Space Transitional	OST	2 units/20 acres	
Planned Development	MDR	1 unit/1 acre	
Planned Development	HDR	5 units/1 acre	



Eastern Washington County RURAL PLANNING ORGANIZATION

Maximum Build-out Tables

Washington County Build-out Study Table I

CURRENT Land Use Designation	General Plan Code	Units/acre in General Plan	Total Residential Acres	Total Units	Average Houshold Size*	CURRENT County Unincorporated Population
Open Space Conservation, Agricultural Protection	OSC, AP	0	6,582.83	0.00	0.00	0.00
Open Space Transition Low Density Residential	OST, LDR	2 units/ 20 acres	5,481.83	548.18	2.93	1,606.17
Med Density Residential	MDR	1 unit/ 1 acre	506.14	506.14	2.93	1,482.99
High Density Residential	HDR	5 units/ 1 acre	483	2,415.00	2.93	7,075.95
TOTAL			13,053.80	3,469.32		**10,165**

Washington County Build-out Study Table II

Land Use Designation	General Plan Code	Units/acre in General Plan	1/3 Total Private Residential Acres	1/3 Total Private Units	Average Houshold Size*	Potential 33% County Unincorporated Population
Low Density Residential	LDR	2 units/ 20 acres	4,351.27	435.13	2.93	1,274.93
Med Density Residential	MDR	1 unit/ 1 acre	4,351.27	4,351.27	2.93	12,749.22
High Density Residential	HDR	5 units/ 1 acre	4,351.26	21,756.33	2.93	63,746.05
TOTAL			13,053.80	26,542.73		**77,770**

*US Census American Community Survey 2006-2008

Washington County Build-out Study Table III

Land Use Designation	General Plan Code	Units/acre in General Plan	Total Residential Acres	Total Units	Average Houshold Size*	Potential 100% County Unincorporated Population
High Density Residential	HDR	5 units/ 1 acre	13,053.80	65,269.00	2.93	191,238.17
TOTAL			13,053.80	65,269.00		**191,238**

*US Census American Community Survey 2006-2008

Comparisons

Each of the five entities within the Rural Planning Organization has defined their land use and densities differently. There is no established set of land use and density designations.

In order to use the RPO Build-out Study as a tool for planning within the entire RPO region, it is useful to create an additional map that utilizes the same land use and density designations for all five entities. This provides the ability to visually identify where people will live, places they may frequent, and what types and times of traffic flows this movement creates.

Land Use Designations

Using the density extremes assigned by the different municipalities and the types of land uses identified, a common legend was created for a standardized land use map. Some communities such as Hurricane have quite detailed land use designations, while others, such as Toquerville, have fairly simple templates.

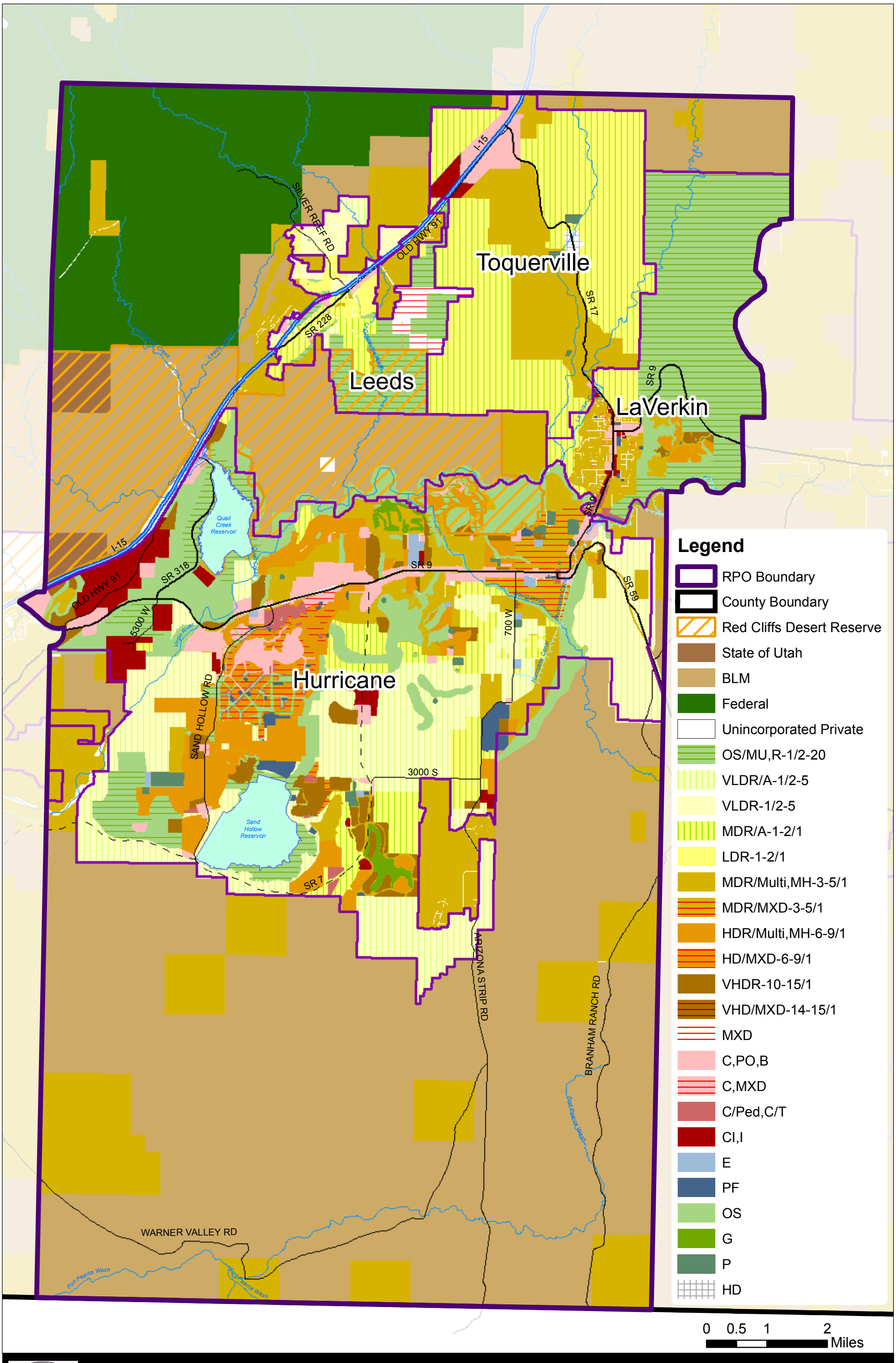
As the RPO communities grow, they can create and improve their own land use by observing the successes or challenges experienced by their neighbors. Contiguous communities can coordinate their efforts to make smooth transitions across municipal borders. Coordinated access management along these borders is particularly important.

Some of the RPO communities rely primarily on zoning in their planning. Land use planning is a very helpful tool to guide the growth and 'look' of a community. An understanding of density is important to create comfortable neighborhoods and to guide transportation planning. future land use planning should be given additional importance and attention by those municipalities which depend primarily on zoning.

Land Use Designation Legend

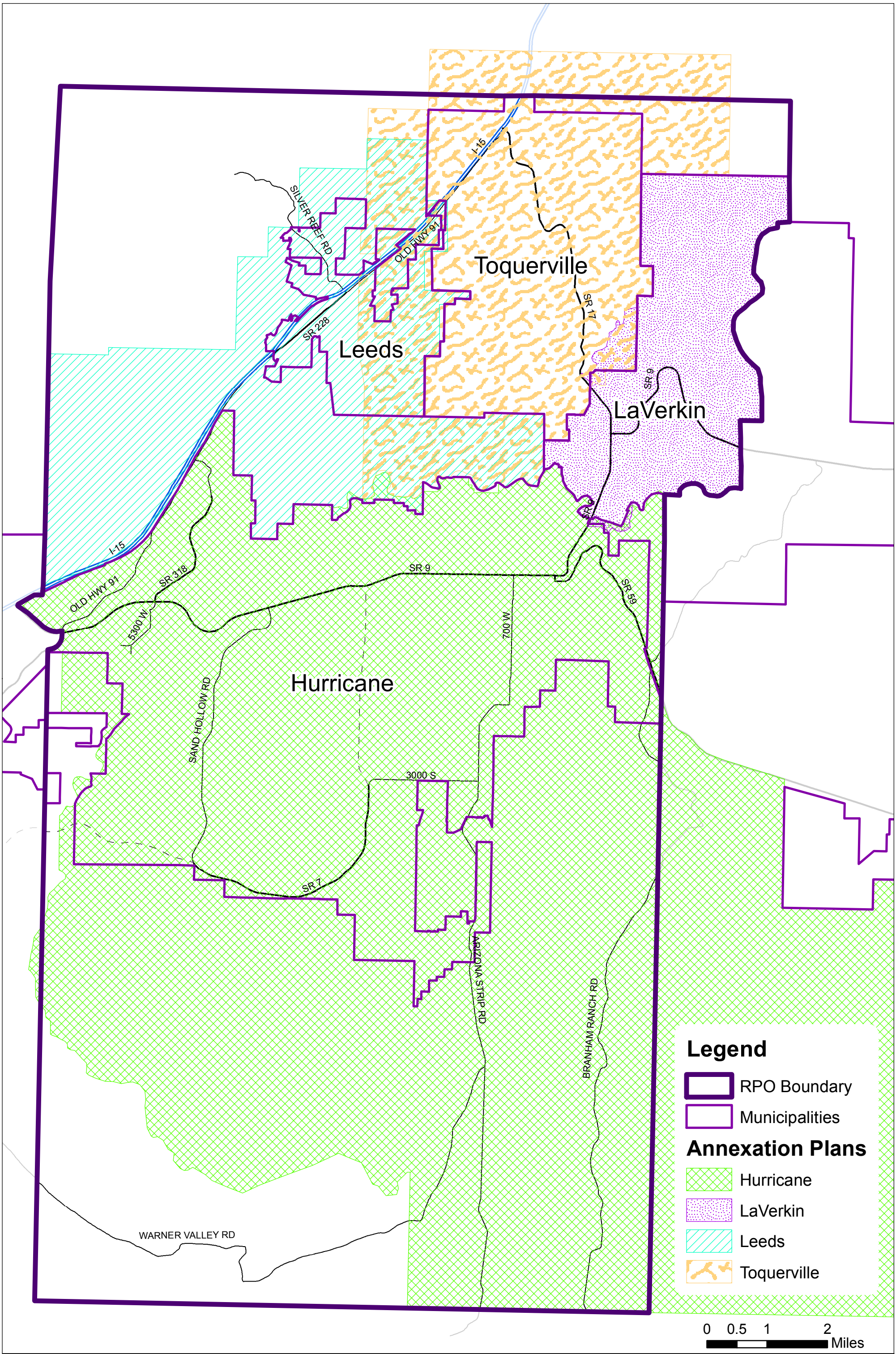
Legend for Comparison Map

Land Use Designation	Type or Code	Density	Legend
Open Space/Multiple Use, Recreation	OS/MU, R	1 unit/2-20 acres	
Very Low Density Residential/Agricultural	VLDR/A	1 unit/2-5 acres	
Very Low Density Residential	VLDR	1 unit/2-5 acres	
Low Density Residential/Agricultural	LDR/A	1-2 units/1 acre	
Low Density Residential	LDR	1-2 units/1 acre	
Med Density Residential/ Multi Family, Mobile Home	MDR/Multi, MH	3-5 units/1 acre	
Med Density Residential/ Mixed Use	MDR/MXD	3-5 units/1 acre	
High Density Residential/ Multi Family, Mobile Home	HDR/Multi, MH	6-9 units/1 acre	
High Density/Mixed Use	HD/MXD	6-9 units/1 acre	
Very High Density Residential/Multi Family	VHDR/Multi	10-15 units/1 acre	
Very High Density Residential/Mixed Use	VHD/MXD	14-15 units/1 acre	
Mixed Use	MXD		
Commercial, Professional Office, Business	C, PO, B		
Commercial/Mixed Use	C/MXD		
Commercial/Pedestrian Commercial/Tourism	C/Ped, C/T		
Commercial/Industrial, Industrial	C/I, I		
Schools, Education/Research	E		
Public Facilities	PF		
Open space	OS		
Golf	G		
Parks	P		
Historic District	HD		



EWCRPO

STANDARIZED FOR COMPARISON



EWCRPO

ANNEXATION PLANS

Table 22 U.S. Census Bureau City Population Estimates: April 1, 2000 to July 1, 2008

	April 1, 2000 Estimates											07-08 %	00-08
	Census	Base	2000	2001	2002	2003	2004	2005	2006	2007	2008	Change	AARC *
Washington County	**90,354**	**90,354**	**91,254**	**94,613**	**99,412**	**104,245**	**110,253**	**119,076**	**127,073**	**133,447**	**137,589**	**3.1%**	**5.4%**
Apple Valley Town	X	422	422	422	426	430	437	439	436	440	447	1.6%	0.7%
Enterprise City	1,285	1,285	1,285	1,282	1,292	1,402	1,407	1,422	1,499	1,549	1,636	5.6%	3.1%
Hildale City	1,895	1,895	1,897	1,894	1,910	1,924	1,984	1,975	1,952	1,977	1,970	-0.4%	0.5%
Hurricane City	8,250	8,289	8,354	8,727	9,113	9,454	9,797	11,028	12,181	12,868	13,321	3.5%	6.1%
Ivins City	4,450	4,572	4,695	5,162	5,649	6,150	6,410	6,747	7,247	7,539	7,870	3.0%	7.0%
La Verkin City	3,392	3,394	3,408	3,523	3,660	3,737	3,859	4,113	4,159	4,422	4,487	1.5%	3.6%
Leeds Town	547	543	646	653	564	671	675	591	721	754	764	1.3%	2.2%
New Harmony Town	190	190	190	189	191	192	195	195	194	195	194	-0.5%	0.3%
Rockville Town	247	247	248	252	257	261	260	258	258	262	264	0.8%	0.8%
St. George City	49,563	49,728	50,161	51,663	54,033	56,427	59,996	64,316	68,033	70,982	72,718	2.4%	4.9%
Santa Clara City	4,630	4,635	4,684	4,856	5,092	5,359	5,683	5,878	6,322	6,548	6,866	3.3%	5.0%
Springdale Town	457	455	458	470	490	508	520	537	554	564	579	2.7%	3.1%
Toquerville Town	910	908	911	916	947	995	1,048	1,119	1,222	1,318	1,373	4.2%	5.3%
Virgin Town	394	394	398	414	432	449	474	494	511	530	555	4.7%	4.4%
Washington City	8,186	8,185	8,319	8,815	9,661	10,496	11,558	13,593	15,310	16,614	17,716	6.6%	10.1%
County Balance	5,858	5,111	5,158	5,375	5,595	5,780	5,950	6,171	6,454	6,585	6,829	2.2%	3.7%

*Average Annual Rate of Change

Governors Office of Planning and Budget, 2010 Economic Report to the Governor

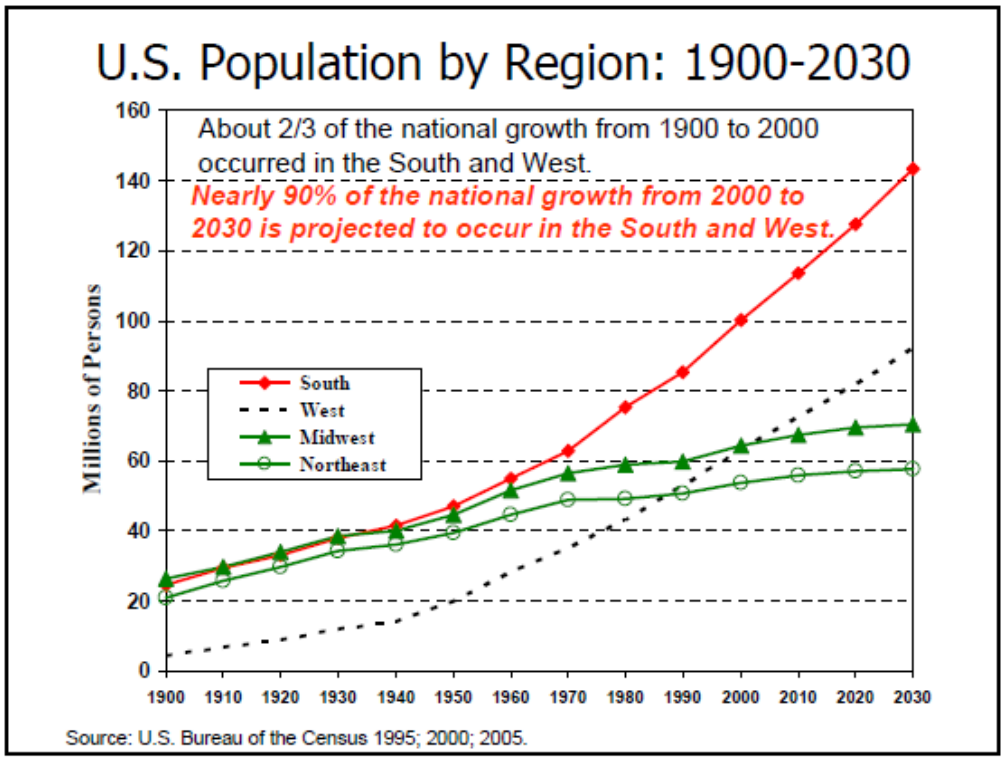
2008 Baseline City Population Projections
2000-2060

Geography	Census 2000	2006	2010	2020	2030	2040	2050	2060	AARC* 2000-2060
Washington County	90,354	134,899	168,078	279,864	415,510	559,670	709,674	860,378	3.8%
Apple Valley town	X	582	826	1,371	2,036	2,742	3,477	4,216	3.4%
Enterprise city	1,285	1,489	1,854	3,079	4,583	6,173	7,823	9,490	3.4%
Hildale city	1,895	1,950	2,430	4,058	6,008	8,092	10,261	12,440	3.2%
Hurricane city	8,250	12,084	16,381	27,287	40,512	54,568	69,193	83,887	3.9%
Ivins city	4,450	7,205	10,477	17,436	25,886	34,867	44,213	53,602	4.2%
La Verkin city	3,392	4,142	5,162	8,592	12,756	17,182	21,787	26,413	3.5%
Leeds town	547	720	980	1,623	2,410	3,246	4,116	4,990	3.8%
New Harmony town	190	193	241	392	595	801	1,016	1,232	3.2%
Rockville town	247	257	319	532	789	1,063	1,348	1,634	3.2%
Santa Clara city	4,630	6,280	9,325	15,532	23,061	31,062	39,387	47,751	4.0%
Springdale town	457	551	687	924	1,163	1,399	1,632	1,721	2.2%
St. George city	49,663	67,614	84,245	140,268	208,254	280,507	355,703	431,239	3.7%
Toquerville town	910	1,215	1,514	2,519	3,742	5,040	6,391	7,748	3.6%
Virgin town	394	508	634	1,063	1,566	2,109	2,675	3,243	3.6%
Washington city	8,186	15,217	22,858	38,285	57,050	77,011	97,793	118,818	4.6%
Balance of Washington County	5,858	14,892	10,145	16,904	25,099	33,807	42,854	51,954	3.7%

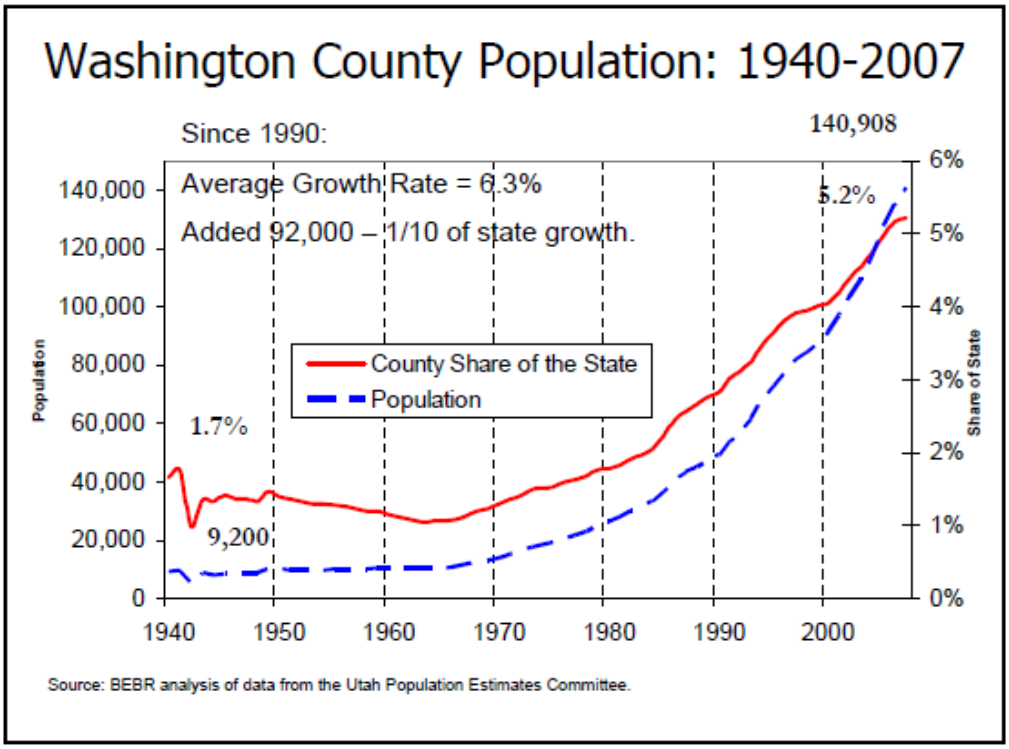
*Average Annual Rate of Change

Governors Office of Planning and Budget, Subcounty Population Projections (Total Population)

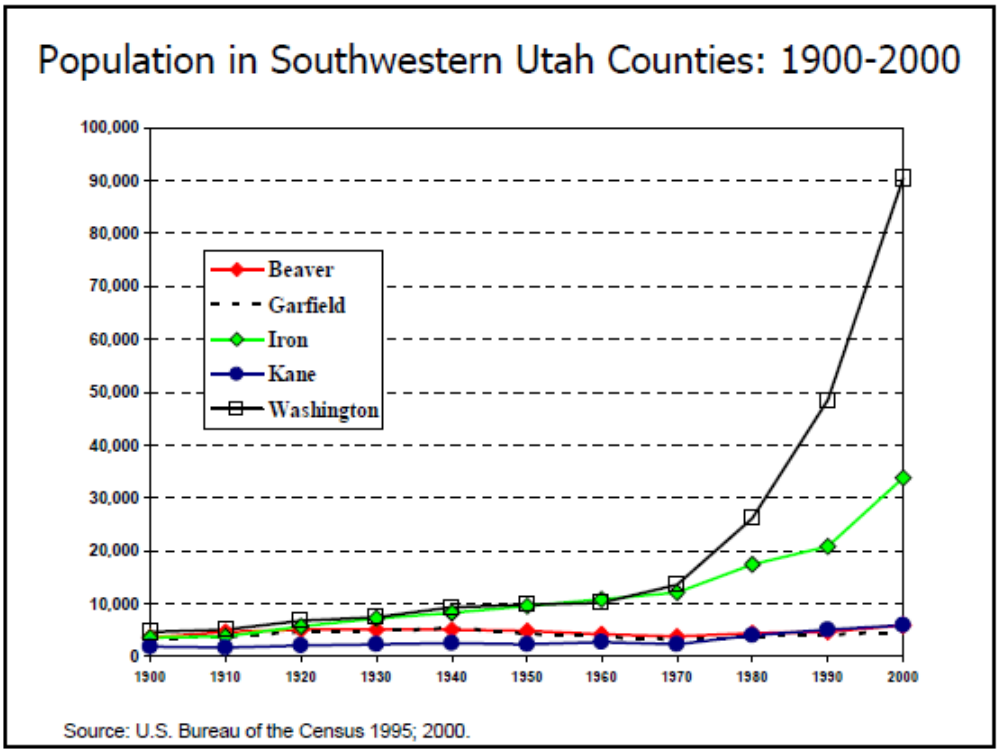
Population Projections – Graph I



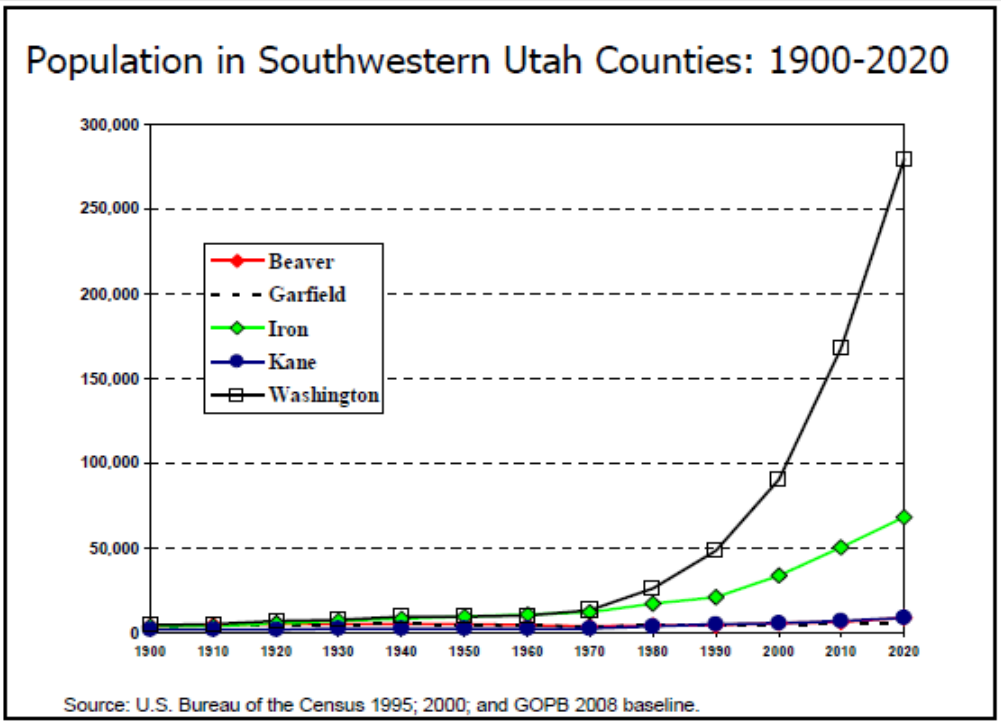
Population Growth Rate – Graph II



Population Figures – Graph III



Population Projections – Graph IV



Bureau of Economic and Business Research, University of Utah
"Southwestern Utah Population and Economy: A Five County View (6/08)", P. Perlich

Summary

This build-out study is the calculation and location of the maximum number of housing units that could be built in the RPO communities, and in the unincorporated areas of Washington County within the RPO. The total build-out population can then be determined by using average household sizes.

There is no projected timeframe for when a community has completed its full build-out. Land use densities and zoning can be altered, additional land can be annexed, average household size can change, and growth rates fluctuate.

However, a build-out study is a useful tool in guiding many aspects of community planning. The following is a simple summary of the population build-out of the five entities within the Eastern Washington County Rural Planning Organization. Although population is a major component of planning, where people live and where people travel are also important.

All the numbers used in this study are based on plans and data available as of the date of this report. No build-out is ever "correct" or unchanging – it is simply a guide, albeit very helpful. In an area of steady and continuous growth, such as within the RPO, it can be a very useful planning tool.

Eastern Washington County RPO Build-out Summary Table

Land Use Entity	Total Residential Acres	Total Units	Average Household Size	Potential Population
Hurricane	20,492.81	69,460.41	2.97*	206,297
LaVerkin	7,695.90	6,311.60	2.97*	18,745
Leeds	3,941.86	3,061.16	2.64*	8,081
Toquerville	9,925.68	15,379.04	3.23*	49,674
Washington County	13,053.80	65,269.00	2.93**	191,238
RPO TOTAL	54,785.98	159,176.55		**474,037**

* US Census 2000
**US Census American Community Survey 2006-2008