EXECUTIVE SUMMARY

SECTION 1: INVENTORY & ANALYSIS SUMMARY BRIEF

The Lincoln County Transportation Plan includes an inventory and analysis of the existing physical roadway system, traffic volumes, crash data and land use plan and their effects on the overall transportation system. Based on this information, weaknesses in the system have been identified and improvement recommendations made. As a general rule, the transportation system within the county is adequate to handle the volume of traffic currently experienced. Deficiencies of the existing transportation network are related to substandard widths, geometry, signing and delineation. These deficiencies can contribute to crashes and maintenance problems. Based on these weaknesses, the recommended improvements fall into three general categories:

- Improve delineation and signage
- Improve intersection alignments and accesses
- Widen and improve roadways to specific county standard, meeting both Wyoming County Road Fund Standards and AASHTO (American Association of State Highway & Transportation Officials) standards for
  - Rural Local Roads
  - Rural Minor Collector
  - Rural Major Collector

Inventory of County Road Network

An inventory of the Lincoln County road network was conducted during July/August of 2005. The road inventory is outlined by regions within Lincoln County, specifically the Star Valley, Cokeville and Kemmerer areas. The following characteristics were observed during this road network inventory:

- Road Number
- Road Name
- Beginning Milepost
- Ending Milepost
- Street Names
- Direction
- Road Classification
- Existing Right of Way width
- Roadway Width
- Roadway Surface Type
- Traffic Control (by leg)
According to this inventory, three types of roadway functional classifications currently exist along all roads in Lincoln County. The roadway functional classifications currently identified in Lincoln County are:

- Rural Local
- Rural Minor Collector
- Rural Major Collector

Table 1.1 below identifies the breakdown for the functional classification of roadways in Lincoln County.

**Table 1.1**

<table>
<thead>
<tr>
<th>Segment Type</th>
<th>Number of Segments</th>
<th>Segment Miles</th>
<th>Percentage of Segment Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural Local</td>
<td>163</td>
<td>147.21</td>
<td>48%</td>
</tr>
<tr>
<td>Rural Minor Collector</td>
<td>37</td>
<td>131.35</td>
<td>42%</td>
</tr>
<tr>
<td>Rural Major Collector</td>
<td>9</td>
<td>30.50</td>
<td>10%</td>
</tr>
</tbody>
</table>

Based on the information acquired from the inventory the following general concerns were identified:

- Significant portion of roadways are not paved
- Paved roads do not have adequate striping
- Some traffic control devices need updating

Four roadway surface types were used for surface identification. “Paved 1” indicates hot plant batched pavement. “Paved 2” is a paved surface of lesser quality, primarily a chip sealed gravel road. “Gravel” is a gravel surface that has not been treated. “Primitive” is a road that has not been graveled and is likely unimproved (no crown or ditch).

Table 1.2 identifies the breakdown of the road surface types that currently exist in Lincoln County.

**Table 1.2**

<table>
<thead>
<tr>
<th>Road Surface</th>
<th>Segment Type</th>
<th>Number of Segments</th>
<th>Segment Miles</th>
<th>Percentage of Segment Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paved 1</td>
<td>48</td>
<td>134.21</td>
<td>43%</td>
<td></td>
</tr>
<tr>
<td>Paved 2</td>
<td>73</td>
<td>64.32</td>
<td>21%</td>
<td></td>
</tr>
<tr>
<td>Gravel</td>
<td>81</td>
<td>105.63</td>
<td>34%</td>
<td></td>
</tr>
<tr>
<td>Primitive</td>
<td>6</td>
<td>4.9</td>
<td>2%</td>
<td></td>
</tr>
</tbody>
</table>

**Supplemental Sign Inventory**

In addition to the road inventory a Lincoln County regulatory and warning sign inventory was conducted for all roadways not included as a part of the Lincoln County Roads Speed Zoning Signing Plans, assembled in July of 2002
Transportation Aspects of Land Use Regulations

In May of 2005 Land Use Regulations were adopted for Lincoln County, WY. This Land Use document designated general and specific zoning areas and is used as criteria for establishing the type of development that will occur in these areas. Transportation impacts are a result of how land is used and the traffic demand it generates.

A significant amount of land is currently being developed in the Lower Valley from Rural uses to Mixed and Recreational uses. Specifically, the town of Alpine has experienced significant growth over the last five years. Additionally Star Valley Ranch, Wyoming has also seen significant growth. The primary development which has occurred in these areas is low to high density residential, which is a result of commuters that work in the Jackson area and live in the Lower Valley.

Based on current growth in Alpine and Star Valley Ranch, it is assumed that more land in the entire Lower Valley is going to convert from a Rural use to either a Recreational or Mixed use. Towns such as Thayne and Etna will also likely see growth similar to what is occurring in Alpine. The growth rates assumed for the 2030 future roadway conditions reflect these anticipated land use changes and were taken into consideration.

The Upper Valley, specifically areas surrounding the city of Afton are also experiencing similar land use changes. This growth is not as significant as what is anticipated to occur in the Lower Valley however, these trends have also been taken into consideration in determining the 2030 future roadway condition growth rates.

All growth rates determined for the 2030 future roadway conditions are noted in Task 2 of this report.

In order to better understand the types of land use changes likely to occur a model should be created based on existing Traffic Analysis Zones (TAZ’s), socio-economic data, employment rates, and household rates. This type of analysis is not part of this transportation plan. To identify what type of land use changes will affect the most growth and demand on the transportation network, it is recommended that a model be generated to determine those demands.

Safety Analysis

The Wyoming Department of Transportation (WYDOT) provided crash data for all Lincoln County Roadways from January 2000 to March of 2005. In addition WYDOT provided a copy of the Average State Wide Crash Rates by Functional Classification. An inventory of the crash location, crash cause, crash type, and road conditions was formatted from the WYDOT raw data and is shown in Appendix C. The WYDOT average state wide crash rates by functional classification are also located in Appendix C. WYDOT crash data was used to determine roadway surface conditions, collision type and crash causes that contributed to these crashes. Roads with a high crash incidence and crash rates were identified and similar conditions among crashes at these locations were also identified.

According to the information provided by WYDOT, Lincoln County roads recorded 183 crashes with 53 injury crashes and one fatal crash for the period. The remaining 129 crashes were property damage only crashes (no injuries or fatalities). Of the 183 crashes 87 people were injured.
Similar crash conditions were identified for certain crashes that occurred more than once at a specific location on the county road network. These roadway sections and intersections might warrant a site specific crash study if crashes continue to occur in these locations. Improved signing, width and geometry can be used to reduce crashes. Site specific studies should be conducted to establish specific mitigation measures.

The Institute of Transportation Engineers (ITE) Traffic Engineering Handbook contains a section regarding traffic-data analysis. Table 7-13, Traffic Safety-Related Accident Countermeasure Ideas, lists possible crash patterns, probable causes for and possible countermeasures for crashes. Table 7-14, Accident Pattern Countermeasures, discusses crash cause, potential studies, and possible safety enhancements based on a specific crash type.

**EXISTING TRAFFIC ANALYSIS**

**Traffic Data Collection**

A total of fifty five intersections and/or roadway segments were identified for analysis. Of the fifty five intersections and segments, forty one were identified for field traffic counts. Thirty eight were intersection counts and the remaining three were roadway segment counts. Those intersections that were not counted as part of this study involved state highways intersecting county roads and were counted by WYDOT through their regular traffic counting processes. This information was obtained from WYDOT and used in the analysis.

**Intersection Counts**

The thirty eight intersection counts were performed on weekdays, Monday through Thursday and excluded weeks with holidays. The intersection counts occurred from early June and were completed by the beginning of August. The PM peak hour was counted at each intersection, with the exception of the intersection of Swift Creek Lane (CR 137) and Allred Lane (CR 135) which was conducted during the AM and PM peak hour.

A photo was taken for each intersection counted and the following outlined criteria were identified and established:

- Intersection diagram, including
  - street names
  - north arrow
  - lane configuration
  - lane movements
  - roadway widths
  - turn bay lengths
  - offset to physical obstructions
  - speed limits
- Setback problems with structures
- Ped/Bike use at intersections during peak hour
- Vertical sight obstructions
- Horizontal sight obstructions
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- Congestion
- Unsafe roadway conditions
- Traffic and safety problems

Heavy vehicles were recorded independently during each count to determine the percentage of heavy vehicles using each identified intersection. A copy of the raw traffic collected data, formatted traffic count data (excel format), an intersection diagram, and a photo of each intersection is included in Appendix B.

Fourteen additional intersections were identified by WYDOT and Lincoln County for analysis. All necessary count data at these intersections were provided by WYDOT and intersection diagrams for each of the fourteen identified intersections were developed. These are also included in Appendix A.

Traffic counts were conducted on three roadway segments: Ham’s Fork Road (CR 305), Fontenelle North (CR 316) and Shute Creek (CR 340).

A one-week segment count was conducted on Ham’s Fork Road, (CR 305) approximately 2 miles before the roadway changes from SR 233 to Ham’s Fork Road.

Fontenelle North, (CR 316), was counted 1.5 miles north of the intersection with SR (State Road) 372. Because this roadway is surfaced with gravel, a supplemental count was conducted to ensure accurate results. Because a gravel surface is more flexible the potential for a car to not register as it passes over the tube counter is more likely. Comparison of the supplemental count, which was conducted by hand over the course of one hour with the hose counter, verified that all traffic crossing this location was being recorded. A one-day segment count was performed at Fontenelle North.

Shute Creek, (CR 340), was set up approximately 2 miles east of the intersection with SR 240. A one-week segment count was conducted at this location. All field count information is located in Appendix B.

**Capacity Results**

Most Of the 38 intersections identified for traffic counting operated at Level of Service (LOS) B or better. The most significant delay was observed for roadways that intersect with US 89. One intersection was predicted to operate at LOS A, 12 intersections were anticipated to operate at LOS B, and one intersection was identified to function at LOS C for the existing 2005 traffic volumes. The intersection of US 89 & SR-238 located in the City of Afton was noted as having the largest delay. The eastbound traveling traffic can expect a delay of approximately 15.5 seconds at LOS C.

In Figures 1-6 through 1-18, each intersection analyzed for capacity is identified and the corresponding LOS is indicated in the figure.

According to the results of the analysis, no capacity related improvements have been identified for the 2005 existing roadway traffic conditions. Similarly, analysis of each of the segments counted did not identify any capacity related improvements.
RECOMMENDATIONS

Safety

The following roadway segments were identified in the safety analysis sections as having a high crash incidence as well as crash rates over WYDOT averages.

- CR 117
- CR 122
- CR 123
- CR 126
- CR 135
- CR 137
- CR 140
- CR 141
- CR 207
- CR 304
- CR 315
- CR 340

Improved signing, width and geometry can be used to reduce crashes. Site specific studies should be conducted to establish specific mitigation measures. This safety investigation should take place at the crash location clusters identified in the Figures 1.1 - 1.5 in the report, in conjunction with the above identified county road locations. Roadway segments as well as intersections should be investigated. The ITE Traffic Engineering Handbook Table 7-13 and 7-14, should be used to identify potential countermeasures.

Delineation

Delineation of roadways in Lincoln County are generally inadequate. Some of the intersections identified above call for delineation improvements. However the majority of intersections and roadway segments throughout the county are without delineation.

All county roadways with horizontal curve radii greater than 50 feet and less than 1000 feet should have delineation installed. All installed delineation should meet the requirements set forth in the Manual of Uniform Traffic Control Devices (MUTCD) (2003 Edition - Table 3D-1).

Route Signage

Install route signage at all T-intersections. Based on the photo log located in Appendix A route signage is not apparent at the majority of T-intersections along the stopping/yielding leg. Placement of route signage at these intersections is primarily for road users who are not familiar with the area. In addition, they will enhance the emergency response ability by familiarizing and standardizing names and locations of roadways.

Use the Lincoln County Roads Speed Zone Signing Plan as a guide in determining where route signage is inadequate.
Speed Limit Signage

Post speed limit signs in the vicinity of all intersections within the county where it is missing. Posted speed limits are present in the majority of identified intersections within the county.

Use the Lincoln County Roads Speed Zone Signing Plan as a guide in determining where speed signage is inadequate.

Roadway Surface Conditions

The AASHTO-Guidelines for Geometric Design of Very Low-Volume Roads (ADT ≤ 400) addresses unpaved roads. These AASHTO guidelines state that “provision of an unpaved surface is an economic decision that is appropriate for many very low-volume roads for which the cost of constructing and maintaining a paved surface would be prohibitive”.

These guidelines also discuss the NCHRP Report 362 which discusses the safety of unpaved roads as opposed to paved roads. The NCHRP Report 362 indicates that crash rates were typically higher for unpaved roads compared to paved roads when the ADT reaches 250 vehicles per day (vpd). Additionally, the paving of a road with traffic volumes between 300 to 350 vpd can expect to see one less severe crash every 10 to 15 years.

The report gives “… no specific guidelines that indicate the maximum traffic volume level for which unpaved surfaces are appropriate”.

Unpaved roads within Lincoln County should be monitored for both ADT volumes and as well as crashes. As ADT volumes exceed 250 vehicles per day, or if the number of crashes along a given unpaved roads increases, Lincoln County should consider paving the identified road segments. Economic considerations also need to be included when evaluating the demand of a paved road opposed to a gravel road.

Based on existing average daily traffic counts and safety analysis, the following roads should be considered for pavement improvements:

- Fontenelle North (CR 316) – MP 0.5. to MP 3.27
- Fontenelle Dam (CR 313) – MP 0.0 to MP 3.97
- Elkol Road (CR 304) – MP 0.0 to MP 3.2
- Shute Creek (CR 340) – MP 0.0 to MP 9.45

The Fontenelle Roads are just over the 250 VPD threshold, but current energy development is increasing the use of this road. This road is used as a cutoff, bypassing State Highway 372 to US 189. Crow Creek (CR 141) from MP 3.50 to MP 5.98 and LaBarge Creek (CR 315) from MP 11.2 to MP 13.0 were also identified as a concern based on the safety analysis, however both roads experience well under the 250 ADT Threshold. Pavement improvements are not justified at this time. The Elkol Road and Shute Creek Road are seeing increased industrial traffic.
Roadway/Shoulder Widening

The roadway inventory identifies travel widths on each county roadway. The projected ADT volumes determined from the capacity analysis section of this report was used in conjunction with the Wyoming County Road Fund Manual Chapter IX Design Standards, Table 10 and the 1990 AASHTO Table V-8. These tables list the criteria for Minimum Width of Traveled Way and Shoulders.

SECTION 2: FORECASTS & RECOMMENDATIONS, SUMMARY BRIEF

A capacity analysis was conducted for the anticipated future traffic demand on the Lincoln County road network. All intersections and road segments identified in Task 1 were included for the 2030 capacity forecast and analysis.

The 2030 projected traffic volumes are based on growth rates established for various regions within Lincoln County, these included:

- Lower Valley
- Upper Valley
- Cokeville Area
- Eastern Lincoln County

Various sources were used in determining the proposed growth rates for each identified area. Growth rate information was obtained from the US 89 Corridor Study-Star Valley (WYDOT), US Census Data, and the Lincoln County: Profile and Data Book; Bureau of Economic and Business Research (University of Utah).

For each identified area, growth rates of the cities were used as a means in determining the final value. Some decline in growth was noted within all areas in Lincoln County during various time frames from 1950 to 2000. However no declining values were used in determining a final growth rate.

A list of the growth rates used for analyzing the 2030 roadway network and intersections is listed below:

<table>
<thead>
<tr>
<th>Lincoln County Growth Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower Valley</td>
</tr>
<tr>
<td>Upper Valley</td>
</tr>
<tr>
<td>Cokeville Area</td>
</tr>
<tr>
<td>Eastern Lincoln County</td>
</tr>
</tbody>
</table>
Capacity Results

Using these growth rates, each of the study intersections were analyzed for the future LOS conditions:

- 29 intersections are predicted to operate at LOS A
- 11 intersections are predicted to operate at LOS B
- 7 intersections are predicted to operate at LOS C
- 1 intersection is predicted to operate at LOS D
- 2 intersections are predicted to operate at LOS E
- 2 intersections are predicted to operate at LOS F

Mitigation Measures

Four intersections were identified to have LOS below D. The intersections of US 89/CR 116-SR 239 and US 89/CR 108-CR 106 are expected to operate at LOS E and the intersection of US 89/CR 126-CR 192 and US 89/US 26 are expected to operate at LOS F for the 2030 planning year. Of these, Lincoln County has jurisdiction for three intersections.

US 89/CR116-SR 239 Intersections

The current intersection lane configuration of US 89/CR 116-SR 239 has a separate left turn bay and a thru-right for northbound traffic, thru-left and a free right for the southbound traffic, thru-left and free right for eastbound traffic, and one lane (thru-left-right) for the westbound traveling traffic. The 2030 projected LOS E is for the eastbound and westbound traveling traffic.

Changing the lane configuration so a dedicated left turn bay and thru-right lane are placed for each leg of the intersection will improve the intersection to an acceptable LOS D. The westbound traveling traffic is anticipated to operate at LOS D and the eastbound traveling traffic is anticipated to operate at LOS C by the 2030 planning year if this lane configuration change is implemented.

US 89/CR 106-CR 108 Intersections

The current intersection lane configuration of US 89/CR 106-CR 108 has a separate left turn bay and a thru-right for the north and southbound traveling traffic, the east and westbound traveling traffic have one thru-left-right lane.

Three different mitigation measures were analyzed for improving this intersection to an acceptable LOS including the addition of dedicated left turn bays, All Way Stop Control (AWSC) and signalization. All of the analyzed improvements failed to improve the LOS to an acceptable level except for signalization. The installation of a signal by the year 2030 at the intersection of US 89/CR 106-CR 108 would generate an acceptable LOS A. This intersection should be considered for signalization and dedicated left turning bays for each leg by the 2030 planning year. In considering signalization, the intersection will need to meet current WYDOT Signal Warrants. Level of Service improvement alone may not warrant signalization. A discussion on WYDOT Signal Warrants is included in Appendix E.

US 89/CR 126-CR 192 Intersections
The current intersection lane configuration of US 89/CR 126-CR 192 has thru-left and free right lanes for the northbound traveling traffic, a dedicated left turn bay and thru-right for the southbound traveling traffic, and a left-thru-right lane for both east and westbound traveling traffic.

Again, three different mitigation measures were analyzed for improving this intersection to an acceptable LOS including the addition of dedicated left turn bays, All Way Stop Control (AWSC) and signalization. All of the analyzed improvements failed to improve the LOS to an acceptable level except for signalization. The signalization of the US 89/CR 126-CR 192 intersection would improve from LOS F to LOS A by the 2030 planning year. This intersection should be considered for signalization, with dedicated left turning bays for each leg, by the 2030 planning year. Realignment options should also be considered to better align each leg of the intersection. In considering signalization, the intersection will need to meet current WYDOT Signal Warrants. Level of Service improvement alone may not warrant signalization. A discussion on WYDOT Signal Warrants is included in Appendix E.

2030 Segment Analysis

The roadway segments identified for field hose counts were analyzed for the 2030 planning year condition, these include:

- Hams Fork Road (CR 305)
- Fontenelle North (CR 316)
- Shute Creek (CR 340)

No capacity improvements have been identified for the 2030 planning year roadway conditions along the identified roadway segments.

2030 Average Daily Traffic (ADT)

All roadway segments in the vicinity of each of the study intersections were evaluated to determine ADT. Each ADT value was based on the existing volumes and growth rates were applied according to the regional location of the segment within Lincoln County. No roadway segment capacity improvements were identified for the 2030 planning year ADT analysis.

Roadway Surface Conditions

As ADT volume in Lincoln County increases so does the demand for improving roadway surfaces. The AASHTO-Guideline for Geometric Design of Very Low-Volume Roads (ADT ≤ 400) was used as a guideline in determining roadway surface conditions for the 2030 planning year. All roadways that exceed 250 vehicles per day and are currently gravel road surfaces should be improved to a Paved 2 surface (as defined in the inventory section in Task 1) prior to the 2030 planning year. The proposed roadway surface improvements are listed below:
Proposed Roadway Surface Improvements

<table>
<thead>
<tr>
<th>Road Name</th>
<th>Road #</th>
<th>Leg</th>
<th>MP Begin</th>
<th>MP End</th>
<th>Segment Length (mi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridle Trail</td>
<td>n/a</td>
<td>East</td>
<td>n/a</td>
<td>n/a</td>
<td>To be determined</td>
</tr>
<tr>
<td>Whitetail Lane</td>
<td>n/a</td>
<td>West</td>
<td>n/a</td>
<td>n/a</td>
<td>To be determined</td>
</tr>
<tr>
<td>Swimming Pool</td>
<td>CR 108</td>
<td>East</td>
<td>0.00</td>
<td>1.30</td>
<td>1.30</td>
</tr>
<tr>
<td>Prater Canyon</td>
<td>CR 116</td>
<td>West</td>
<td>0.00</td>
<td>2.00</td>
<td>2.00</td>
</tr>
<tr>
<td>Lincoln-Sweetwater</td>
<td>SR 372</td>
<td>South</td>
<td>0.00</td>
<td>0.85</td>
<td>0.85</td>
</tr>
<tr>
<td>Fontenelle North</td>
<td>CR 316</td>
<td>North</td>
<td>0.50</td>
<td>3.27</td>
<td>2.77</td>
</tr>
</tbody>
</table>

Roadway/Shoulder Widening

An evaluation for the need of roadway/shoulder widening was conducted based on the 2030 planning year projected ADT values, design speed and criteria based on the Wyoming County Road Funds Manual, Chapter IX; Design Standards. Roadway capacity needs do not justify additional travel lanes however intersection improvements to improve levels of service and widening of the traveled way on various roadways to meet current AASHTO criteria are justified. Summarized below are recommended improvements based on the future forecasts and traffic analysis:

Intersection Modifications:

<table>
<thead>
<tr>
<th>Intersection Modification</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>US89/CR116/SR239 Add Left Turn Bays</td>
<td></td>
</tr>
<tr>
<td>US89/CR106/CR192 Signalize &amp; Add Left Turn Bays*</td>
<td></td>
</tr>
<tr>
<td>US89/CR126/CR192 Signalize &amp; Add Left Turn Bays*</td>
<td></td>
</tr>
</tbody>
</table>

*Must meet current WYDOT signal warrants

Segment Improvements:

Widening based on ADT and Assumed Design Speed

<table>
<thead>
<tr>
<th>Roadway Segment</th>
<th>Current Road Width</th>
<th>Assumed Design Speed</th>
<th>Proposed Road Width</th>
<th>Graded Shoulder Width</th>
<th>ADT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strawberry Creek (CR 126)</td>
<td>20</td>
<td>45</td>
<td>22</td>
<td>6</td>
<td>2030</td>
</tr>
<tr>
<td>Lost Creek (CR 120)</td>
<td>20</td>
<td>45</td>
<td>22</td>
<td>6</td>
<td>1150</td>
</tr>
<tr>
<td>East Etna (CR 110)</td>
<td>19</td>
<td>45</td>
<td>22</td>
<td>6</td>
<td>720</td>
</tr>
<tr>
<td>Stewart Trail (CR 106)</td>
<td>18</td>
<td>45</td>
<td>22</td>
<td>6</td>
<td>880</td>
</tr>
<tr>
<td>State Line (CR 164)</td>
<td>22</td>
<td>45</td>
<td>22</td>
<td>6</td>
<td>1330</td>
</tr>
<tr>
<td>State Line (CR 114)</td>
<td>21</td>
<td>45</td>
<td>22</td>
<td>6</td>
<td>1890</td>
</tr>
<tr>
<td>Riverview Ranchettes (CR 173s)</td>
<td>20</td>
<td>45</td>
<td>22</td>
<td>6</td>
<td>640</td>
</tr>
</tbody>
</table>

Based on our study and comments from the public, it is apparent that additional corridors will benefit the overall transportation network. As development continues to occur in the lower valley, the need for additional north/south corridors will ease the traffic demand along adjacent and parallel roadways.
Lincoln County, Wyoming  
Transportation Plan

A private north/south roadway currently exists from Clark Lane (CR 115) to Etna-Forest (CR 112) and ties into the north/south East Etna (CR 110) roadway. This section of road should be purchased and used/maintained as a county road. Additionally, a north/south road should be constructed from Clark Lane south to Perkins Road (CR 119), and continue south to tie into the town of Thayne at Thayne Bedford Road (CR 122). This will remove traffic from the US 89 corridor and allow interconnectivity among the residential and commercial development which is anticipated to occur in this area.

A private north/south roadway currently exists from Thayne Bedford (CR 122) to Lost Creek (CR 120). This section of road should be purchased and used/maintained as a county road. A north/south road should be constructed to tie in this existing private road from Lost Creek (CR 120) to Perkins/Extension (CR 119). Another north/south road should be constructed from CR Thayne Bedford (CR 122) to Strawberry Creek (CR 126). This proposed roadway construction will improve interconnectivity and mobility.

Functional Classification Update Recommendations

The functional classification of roadways was investigated for recommendations and updates based on the 2030 planning year ADT values. The existing functional classification was compared to the 2030 ADT values. All functional classification recommendations are consistent with the WYDOT access manual functional classification standards and practices. The intent of this functional classification update is to provide consistency among road classifications in Lincoln County through the 2030 planning year. Functional classification updates are only recommended for roadways in the vicinity of the study intersections.

The proposed functional classification updates recommended to occur before the 2030 planning year are shown below:

**Proposed Functional Classification Updates**

<table>
<thead>
<tr>
<th>Roadway</th>
<th>CR #</th>
<th>Existing Functional Class</th>
<th>Proposed Functional Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stewart Trail</td>
<td>106</td>
<td>Rural Local</td>
<td>Rural Minor Collector</td>
</tr>
<tr>
<td>Swimming Pool</td>
<td>108</td>
<td>Rural Local</td>
<td>Rural Major Collector</td>
</tr>
<tr>
<td>Prater Canyon</td>
<td>116</td>
<td>Rural Local</td>
<td>Rural Major Collector</td>
</tr>
<tr>
<td>Cedar Creek</td>
<td>118</td>
<td>Rural Local</td>
<td>Rural Major Collector</td>
</tr>
<tr>
<td>Perkins</td>
<td>119</td>
<td>Rural Local</td>
<td>Rural Minor Collector</td>
</tr>
<tr>
<td>Strawberry Creek</td>
<td>126</td>
<td>Rural Minor Collector</td>
<td>Rural Major Collector</td>
</tr>
<tr>
<td>Allred Lane</td>
<td>135</td>
<td>Rural Local</td>
<td>Rural Minor Collector</td>
</tr>
<tr>
<td>Swift Creek Lane</td>
<td>137</td>
<td>Rural Local</td>
<td>Rural Minor Collector</td>
</tr>
</tbody>
</table>
SECTION 3: MASTER ROADWAY IMPROVEMENT PLAN SUMMARY BRIEF

The Master Roadway Improvement Plan for Lincoln County is developed from the conclusions of the existing conditions, and the forecasts and recommendations sections of the Lincoln County Transportation Plan. This Master Roadway Improvement Plan identifies those improvements that should be completed in the near term based on improving existing roadway conditions to address safety and functional needs. It then outlines improvements anticipated to address the growth that is occurring in Lincoln County. Finally, priorities are developed and costs are estimated to guide decision makers in implementing this plan.

GENERAL SYSTEM UPGRADES

Delineation

Appropriate delineation will improve the drive ability, function and safety of the county roads. Delineation on all of the roadways may not be cost effective, but higher order roads, those roadways experiencing higher traffic and areas where there are sudden changes in horizontal alignment will benefit from proper delineation.

Route Signage

Route signage should be installed at all T-intersections. Placement of route signage at these intersections is primarily for road users who are not familiar with the area. In addition, it enhances emergency response by familiarizing and standardizing names and locations of roadways.

Speed Limit Signage

While posted speed limits are present in the majority of identified intersections within the county. Those that are not posted should be considered for posting.

Roadway Surface Conditions

Unpaved roads within Lincoln County should be monitored for both ADT volumes as well as crashes. As ADT volumes exceed 250 vehicles per day, or if the number of crashes along a given unpaved roads increases, Lincoln County should consider paving the identified road segments. Economic considerations also need to be included when evaluating the demand of a paved road opposed to a gravel road.

As roadways are considered for pavement, the geometry of the roadway including horizontal alignments, profiles affecting sight distance and roadside shoulders and slopes should also be considered. With improvement of the surface, speeds and expectations increase. If geometric issues are not addressed along with pavement improvements, safety of the roadway itself could be compromised. Often, the geometric improvement costs can exceed the cost of improving the pavement.
RECOMMENDED IMPROVEMENTS BASED ON EXISTING CONDITIONS

Intersection Improvements

The Weaknesses and High Stress Points section of the Inventory and Analysis Chapter identifies specific intersections and recommends improvements that will improve function and safety. These recommendations are summarized in the improvement plan. These recommendations consist primarily of signing, striping and delineation improvements discussed above.

Roadway Surface Improvements

Based on existing average daily traffic counts and safety analysis, the following roads should be considered for pavement improvements:

- Fontenelle North (CR 316) – MP 0.5. to MP 3.27
- Fontenelle Dam (CR 313) – MP 0.0 to MP 3.97
- Elkol Road (CR 304) – MP 0.0 to MP 3.2
- Shute Creek (CR 340) – MP 0.0 to MP 9.45

The Fontenelle Roads are just over the 250 VPD threshold, but current energy development is increasing the use of this road. This road is used as a cutoff, bypassing State Highway 372 to US 189. Crow Creek (CR 141) from MP 3.50 to MP 5.98 and LaBarge Creek (CR 315) from MP 11.2 to MP 13.0 were also identified as a concern based on the safety analysis, however both roads experience well under the 250 ADT Threshold. Pavement improvements are not justified at this time. The Elkol Road and Shute Creek Road are seeing increased industrial traffic.

Safety

The following roadway segments were identified in the safety analysis sections as having a high crash incidence as well as crash rates over WYDOT averages.

- CR 137
- CR 135
- CR 122
- CR 126
- CR 117
- CR 304
- CR 141
- CR 340
- CR 140
- CR 315
- CR 207

Improved signing, delineation, width and geometry can be used to reduce crashes. Site specific studies should be conducted to establish specific mitigation measures. This safety investigation should take place at the crash location clusters identified in the Figures 1.1 - 1.5 in the report, in conjunction with the above identified county road locations. Roadway segments as well as intersections should be investigated. The ITE Traffic Engineering Handbook Table 7-13 and 7-14 identifies potential countermeasures used to address roadway improvements at crash locations.
FUTURE GROWTH RELATED IMPROVEMENTS

Predicted future roadway capacity needs do not justify additional travel lanes however intersection improvements to improve levels of service and widening of the traveled way on various roadways to meet current AASHTO criteria are justified. Growth anticipated through the 2030 planning year identified three county controlled intersections that will experience LOS below D. These include the intersections of US 89/CR 116-SR 239 and US 89/CR 108-CR 106 expected to operate at LOS E and the intersection of US 89/CR 126-CR 192 expected to operate at LOS F by the 2030 planning year. Proposed improvements include changes in lane configurations, providing dedicated left turn bays and possible signalization as WYDOT signal warrants are met. WYDOT signal warrant information is included in Appendix E.

Roadway/Shoulder Widening

An evaluation for the need of roadway/shoulder widening was conducted based on the 2030 planning year projected ADT values, design speed and criteria based on the Wyoming County Road Fund Manual, Chapter IC, Design Standards Table 10. In general, roadways functionally classified as a rural collector with speeds over 45 miles per hour and ADT between 400 and 650 vehicles per day should have a roadway width of 30 feet including two 11 foot lanes and two four foot graded shoulders. Total right of way width of 66 feet will allow for proper side treatments and drainage. For ADT’s between 650 to 2000 vehicles per day, the roadway width should be increased to 34 feet, providing two 11 foot lanes and two 6 foot shoulders. Local roads with speeds less than 40 mph should have a roadway width of 26 feet, providing two 11 foot lanes with two 2 foot graded shoulders.

<table>
<thead>
<tr>
<th>Roadway Type &amp; ADT Number of Lanes</th>
<th>Lane Width</th>
<th>Graded Shoulder Width</th>
<th>Roadway Width/Right of Way Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collector 400 to 650 ADT</td>
<td>2</td>
<td>11</td>
<td>32/66</td>
</tr>
<tr>
<td>Collector 650 to 2000 ADT</td>
<td>2</td>
<td>11</td>
<td>36/66</td>
</tr>
<tr>
<td>Local &lt;400 ADT</td>
<td>2</td>
<td>11</td>
<td>26/50</td>
</tr>
</tbody>
</table>

Widening should be considered as part of overall roadway improvements or reconstruction. Improvements to these sections should consider traffic volumes, safety and economic benefit. Some of these improvements should be considered as development occurs and incorporated into the costs associated with that development. If development contributes to increased traffic, that development should be responsible for these improvements.

Summarized below are recommended improvements based on the future forecasts and traffic analysis:
Intersection Modifications:

<table>
<thead>
<tr>
<th>Intersection Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>US89/CIRR116/SR239</td>
</tr>
<tr>
<td>US89/CIR106/CIR192</td>
</tr>
<tr>
<td>US89/CIR126/CIR192</td>
</tr>
</tbody>
</table>

*Must meet current WYDOT signal warrants.

Widening Based on ADT and Assumed Design Speed

<table>
<thead>
<tr>
<th>Roadway Segment</th>
<th>Current Road Width (feet)</th>
<th>Assumed Design Speed (mph)</th>
<th>Proposed Road Width (feet)</th>
<th>Graded Shoulder Width (feet)</th>
<th>ADT (Veh/Day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strawberry Creek (CR 126)</td>
<td>20</td>
<td>45</td>
<td>22</td>
<td>6</td>
<td>2030</td>
</tr>
<tr>
<td>Lost Creek (CR 120)</td>
<td>20</td>
<td>45</td>
<td>22</td>
<td>6</td>
<td>1150</td>
</tr>
<tr>
<td>East Etna (CR 110)</td>
<td>19</td>
<td>45</td>
<td>22</td>
<td>6</td>
<td>720</td>
</tr>
<tr>
<td>Stewart Trail (CR 106)</td>
<td>18</td>
<td>45</td>
<td>22</td>
<td>6</td>
<td>880</td>
</tr>
<tr>
<td>State Line (CR 164)</td>
<td>22</td>
<td>45</td>
<td>22</td>
<td>6</td>
<td>1330</td>
</tr>
<tr>
<td>State Line (CR 114)</td>
<td>21</td>
<td>45</td>
<td>22</td>
<td>6</td>
<td>1890</td>
</tr>
<tr>
<td>Riverview Ranchettes (CR 173s)</td>
<td>20</td>
<td>45</td>
<td>22</td>
<td>6</td>
<td>640</td>
</tr>
</tbody>
</table>

NEW TRANSPORTATION LINKS

Although no additional travel lane improvements were determined from the analysis, it is apparent that additional transportation links would benefit the overall transportation network. As development continues to occur in the lower valley, the need for additional north/south corridors will ease the traffic demand along adjacent and parallel roadways. As Star Valley Ranch continues to develop and build out, the benefit of integrating a north/south corridor for connectivity purposes will be beneficial. Improvements to existing north/south roadways along with corridor preservation should be considered in addressing these links. Although not capacity driven, the following improvements to the transportation network are recommended.

A private north/south roadway currently exists from Clark Lane (CR 115) to Etna-Forest (CR 112) and ties into the north/south East Etna (CR 110) roadway. As part of this transportation plan it is recommended this section of road be acquired and used/maintained as a county road. Additionally, a north/south road should be constructed from Clark Lane south to Perkins Road (CR 119), and continue south and tie into the town of Thayne at Thayne Bedford Road (CR 122). Alignment alternatives will need to be considered for the section between CR119 and CR122 to overcome terrain issues. A two lane roadway will be adequate since this is not a capacity driven recommendation, however this will remove traffic from the US 89 corridor and allow interconnectivity among the residential and commercial development which is anticipated to occur in this area.

ES-16
A private north/south roadway currently exists from Thayne Bedford (CR 122) to Lost Creek (CR 120). As part of this transportation plan it is recommended this section of road be purchased and used/maintained as a county road. A north/south road should be constructed to tie in this existing private road from Lost Creek (CR 120) to Perkins/Extension (CR 119). Another north/south road should be constructed from CR Thayne Bedford (CR 122) to Strawberry Creek (CR 126). This is not a capacity driven recommendation, therefore a two lane roadway will be adequate. This proposed roadway construction will improve interconnectivity and mobility in the area of this recommended improvement.

Development should drive these additional links. In planning and approving development in the area, the county should work with property owners to preserve corridors that would allow these links in the future. In the interim improvements to CR-117 (Muddy String) will address much of the needs outlined above. These improvements may include adequate shoulder width, intersection improvements, pavement reconstruction as necessary, and drainage improvements to improve maintainability and to allow the road to handle additional traffic and enhance safety.

Additional Links that should be considered include linking the Shute Creek Road with the BLM road that extends on into Sweetwater County. Links should also be considered with existing BLM and Forest Service roads throughout Lincoln County.

Upper valley links include links from CR-136 to SR238 or SR237. These improvements should be development driven, and made if and when the area develops.

FUNCTIONAL CLASSIFICATION UPGRADES

The functional classification of roadways was investigated for recommendations and updates based on the 2030 planning year ADT values. All functional classification recommendations are consistent with the WYDOT access manual functional classification standards and practices. Table 2-10 below indicates the proposed functional classification updates recommended to occur before the 2030 planning year.

<table>
<thead>
<tr>
<th>Roadway</th>
<th>CR #</th>
<th>Existing Functional Class</th>
<th>Proposed Functional Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stewart Trail</td>
<td>106</td>
<td>Rural Local</td>
<td>Rural Minor Collector</td>
</tr>
<tr>
<td>Swimming Pool</td>
<td>108</td>
<td>Rural Local</td>
<td>Rural Major Collector</td>
</tr>
<tr>
<td>Prater Canyon</td>
<td>116</td>
<td>Rural Local</td>
<td>Rural Major Collector</td>
</tr>
<tr>
<td>Cedar Creek</td>
<td>118</td>
<td>Rural Local</td>
<td>Rural Major Collector</td>
</tr>
<tr>
<td>Perkins</td>
<td>119</td>
<td>Rural Local</td>
<td>Rural Minor Collector</td>
</tr>
<tr>
<td>Strawberry Creek</td>
<td>126</td>
<td>Rural Minor Collector</td>
<td>Rural Major Collector</td>
</tr>
<tr>
<td>Allred Lane</td>
<td>135</td>
<td>Rural Local</td>
<td>Rural Minor Collector</td>
</tr>
<tr>
<td>Swift Creek Lane</td>
<td>137</td>
<td>Rural Local</td>
<td>Rural Minor Collector</td>
</tr>
</tbody>
</table>
Roadway Jurisdiction:

There are several roads on the County and State systems that should be considered for jurisdictional transfers, from state control to county control and county control to state control. These jurisdictional transfers are generally based on functional classification. Roadways generally serve two purposes, traffic mobility and access to property. The more that a roadway serves access, the poorer it functions serving mobility. As a general rule, counties and local government agencies are more concerned with providing local access, where the state is charged with providing mobility. Further analysis of the county road network; including state, county and local roads, should be conducted along with discussions with WYDOT regarding the appropriate roadway jurisdiction as it relates to the functions of each road.

Many of the subdivisions throughout the county consist of primarily private roadways, owned and maintained by the subdivision property owners or associations. The county has a long held policy of leaving those roadways in private jurisdiction. Roads may be considered for public jurisdiction based on the following criteria:

1. Does the roadway serve the general public?
2. Does the roadway provide connectivity between other county, state or federal roads?
3. Would including the roadway on the public system enhance the operations of school bus and emergency equipment?
4. Is there a compelling reason for the county to accept jurisdiction?

In accepting roadways currently under private jurisdiction, or in vacating public roadways, the county should follow current state and county laws and ordinances.

Pavement Management/Maintenance Strategies:

With increased industrial uses of some of the Lincoln County Roadways, it becomes more important that the county continue and further refine their pavement management systems. Through the use of these management systems, maintenance strategies should be developed that optimize the pavement life cycle. Appropriate maintenance applied at the appropriate times will increase the life cycle of the roadway and save money in the long run. Application of asphalt seal coats and asphalt overlays will extend the life of a roadway and help to avoid costly reconstruction.

A summary of the proposed transportation improvements along with cost estimates and priority are included in this report. Priorities are based on traffic volumes, problems identified in the existing conditions analysis, safety and future need. The priorities are broken out into a low medium and high priority. Those issues dealing with safety generally are higher on the priority, as are those indicated by immediate need and relatively low costs.