1. Introduction ............................................................................................................................. 2
2. Focus of This Study .................................................................................................................. 2
3. Agency Coordination and Public Outreach ............................................................................. 3
4. Plan Goals and Objectives ....................................................................................................... 4
5. Planning Process ...................................................................................................................... 5
6. Developing Planning Cost Estimates ..................................................................................... 11
7. Impacts Associated with Implementation of Couplet Scenarios ............................................. 12
8. Public Involvement ................................................................................................................ 24
9. Summary ................................................................................................................................ 24
10. Next Steps .............................................................................................................................. 24
1. Introduction
Logan City has a large residential population and serves as the main shopping, recreation and employment center of the region. Logan City has a limited number of north/south alternatives to Main Street. Congestion on Main Street has caused travelers to use nearby parallel roads, affecting safety and other neighborhood impacts, associated with increased traffic. Because Logan has an excellent grid system, one-way couplets are potential tools for traffic congestion management.

2. Focus of This Study
Logan City is studying the feasibility of converting from a two-way road system to a one-way couplet system, for either a portion or the entire length of the Main Street corridor. The intent of this study is to determine the feasibility of one-way couplet scenarios for meeting the future traffic capacity requirements of the Main Street corridor. This study evaluates the five couplet scenarios identified in the Transportation Master Plan (2011) in greater detail to determine which, if any, are feasible and beneficial to the city. This study also evaluates traditional two-way street options and the improvements, planned as part of the 2040 Regional Transportation Plan projects, to compare the potential solutions for addressing future congestion. The study area, including the Main Street corridor, begins near the “Y” intersection of Highways 165 and 89-91 to 1500 North between 300 East and 300 West.

The City determined that the couplet concepts warrant further evaluation to better understand the full benefits and implication of each couplet scenario. This effort, which began in September 2012, aims to compare and contrast each couplet scenario to shed light on the potential impacts and select a preferred scenario by Spring 2013. If a non-couplet scenario is found to be effective for congestion relief and is consistent with the City’s general plan, it could also be advanced instead of a couplet scenario. The selection of a preferred concept does not mean it would be implemented in the near future, if ever. It simply means it appears feasible to implement, and appears to be preferred over other scenarios when considering the opinions of stakeholders, such as Logan’s elected officials, Cache Metropolitan Planning Organization (CMPO), City and UDOT professional staff, business leaders, and neighborhood groups.

Project Purpose:
- Evaluate scenarios for one-way couplets within the Main Street corridor that help meet the future traffic capacity requirements.
- Evaluate which one-way couplet scenario(s) and provide the best opportunity to meet capacity needs for increased vehicle mobility and minimize impacts to neighborhoods.
- Evaluate impacts on businesses and neighborhoods resulting from implementation of a one-way couplet scenario(s) including land use, transit, and pedestrian considerations.
• Evaluate acceptability with UDOT of the potential use of Main Street as part of the one-way couplet scenario(s), if determined necessary.
• Provide opportunities for public input by presenting analysis and results of the feasibility study at neighborhood council meetings and Logan municipal council meetings.

This study will also provide information on cost of implementation, amount of congestion relief each scenario would produce, any fatal flaws, and the best locations for couplets to start and end. For concepts that directly involve UDOT arterials, we analyzed whether or not the couplet scenario could be developed to meet UDOT standards.

7.2.1 Couplet Scenario Development
Each scenario was evaluated to determine if it is feasible and which scenario (if any) has the best overall performance. This study will also document issues, comments, and provide recommendations on what the next step should be for solving the congestion issue within the Main Street corridor.

Upon selection of a preferred scenario, the City will have the opportunity to update its Transportation Master Plan (2011) with the results, seek funding for additional study and eventual construction, and work with stakeholders to advance the preferred scenario to the next stage of analysis. In addition, a preferred solution will receive additional scrutiny and additional comment via a formal public process before being implemented.

3. Agency Coordination and Public Outreach
Public outreach efforts for this study builds on stakeholder, community, and agency input collected from the Transportation Master Plan (2011) and Downtown Logan Specific Plan (2012), and other relevant studies. Past participation efforts and input is being carried forward and will continue to be incorporated through ongoing outreach efforts. Stakeholders and interested parties may include:
  • Business owners
  • Regulatory agencies
  • Elected and appointed officials
  • Neighborhood councils
  • Special interest groups

To better understand what “success” looks like for the Logan City One-Way Couplets Feasibility Study, a stakeholder committee was formed to solicit input and expertise from community representatives. The group includes:
  • Gary Saxton – Downtown Alliance
  • Mark Nielsen – Logan Public Works
The stakeholder committee met to develop the goals and objectives of this study. The goals and objectives were used as evaluation criteria for analyzing each couplet scenario. Additionally, the following parties will be incorporated into the evaluation phase for input on resources specific to their expertise:

- Marshall Garrett – Logan City School District
- Steve Call – FHWA, Planning and Research Program Manager
- Kris Peterson – UDOT, Region 1 Director

Outreach activities for this study will include:
- Neighborhood council outreach
- City Council meetings and presentation
- Public meetings
- Distribution of information to Chamber of Commerce
- Outreach to businesses located within the study area

### 4. Plan Goals and Objectives

The goals and objectives for the *Logan City One-Way Couplets Feasibility Study* are to develop and provide the framework for evaluation of scenarios. The stakeholder team identified broad goals and more focused objectives.

**Goal:** Promote Regional Multi-Modal Mobility

**Objectives:**

- Solve the immediate problem (or prevent it from getting worse by 2020)
- Find the best performing scenarios over the long run (post 2040) and minimize delay times
- Improve level of service (LOS) on Main Street
- Improve LOS on adjacent roadways
- Meet UDOT’s Requirements and Standards
- Improve mobility for bikes, pedestrians, and transit
• Develop logical termini to roadways that can handle future traffic
• Address “missing links” in the transportation grid within project areas

**Goal:** Foster Positive Land Change and Economic Development

**Objectives:**
- Good access to local businesses (multi modal)
- Compatible with related/approved plans (Transportation Master Plan, Downtown Specific Plan, Envision Cache)
- Foster quality commercial and residential development
- Reduce pavement required for managing traffic
- Maintain high vehicle volumes on Main Street

**Goal:** Minimize Neighborhood and Environmental Impacts

**Objectives:**
- Community support
- Maintain effective emergency service access
- Minimize displacements and relocations
- Maintain or improve parking for businesses
- Minimize noise and air quality impacts (surrounding neighborhoods)
- Minimize impacts to parks, schools, and recreation areas
- Avoid or minimize impacts to historic buildings/properties

Couplet scenarios were evaluated in the context of how well they fulfill the project’s goals and meet its objectives. Evaluation measures to each objective were developed to be (to the degree possible) measurable and objective, and provide the means to gauge how well the scenarios can fulfill the objectives. See Section 5.2 Scenario Development for further detail.

### 5. Planning Process

#### 5.1 Planning Context
The project team considered the local plans and policies related to land use and growth in the area in order to characterize the existing conditions.

Both the **Logan City General Plan** (2007) and the **Logan City Transportation Master Plan** (2011) identified a need to provide relief for traffic congestion on Main Street. The **Transportation Master Plan** identified multiple one-way couplet concepts that might be able to satisfy long-range demand, while at the same time staying within the existing right-of-way, blending in with the downtown vision, and potentially catalyzing high-quality downtown development. In 2012,
the city developed a *Downtown Specific Plan* aimed at attracting quality development consistent with their desires for a mixed-use, multi-modal environment as recommended by *Envision Cache*. Below is a summary of these plans as they apply to the *Logan City One-Way Couplets Feasibility Study*.

**Logan City General Plan (2007)**
The *General Plan* does not evaluate transportation in detail; however it does identify the following issues:

- Lack of capacity on Main Street (US 89/91)
- Lack of primary north-south roads
- Need to modify north-south routes to accommodate increasing traffic volumes

**Envision Cache (2009)**
Some of the recommendations of the *Envision Cache* as it relates to transportation include:

- **Improved Roadway Connections:**
  - Maximize connectivity providing multiple routes to destinations.
  - Better connections for local roads.
  - Enhanced public transportation scenarios.
  - Implement additional bike commute routes.
- **Provide Mobility for Everyone:**
  - Context sensitive design, construction and operation of streets to support all users including pedestrians, bicyclist and those riding public transportation.
- **Infrastructure Efficiency:**
  - Strive for a shorter road network that costs less to construct and maintain.

**UDOT’s SR-30 Study (2010)**
This corridor study was prepared by UDOT to identify the long-term (2035) east-west transportation needs on SR-30 (also known as 200 North) between 1400 West and Main Street (U.S. Route 89/91). The study incorporates couplets as follows:

- Suggested that if the couplet scenario were advanced, the couplet should begin east of 1000 West.
- Evaluated the full couplet with the eastbound leg, including a bridge over 1000 West, which meets the UDOT signal spacing requirements (1/2 mile).
- Introduced the theory of using a three-phase signal instead of a four-phase signal, but did not evaluate.
Cache County Regional Transportation Plan (RTP) 2035 (2011)
This plan was developed to identify specific projects that are needed to meet the
transportation demands of the Logan City urbanized area and the Utah portion of the greater
Cache Valley. The Cache Metropolitan Planning Organization partnered with Envision Utah to
engage the public through a comprehensive planning effort. This plan recognized that Logan’s
Main Street is often the point of convergence for north or south valley destinations and
travelers passing through.

This plan indicated that congestion on the Logan Main Street corridor needed to be addressed,
but did not specifically address couplets. However the RTP identified a need to conduct the
Logan City One-Way Couplets Feasibility Study as soon as funding is available.

Logan’s Transportation Master Plan (2011)
This plan guided the location and type of roadway facilities that are needed to meet projected
growth and development of Logan City. The plan incorporates couplets as follows:

- Examined a future scenario that incorporated a one-way couplet running north and
  south near Main Street.
- Analyzed the feasibility of implementing one-way couplets to ease the burden on US-
  89/91 for north-south movement.
- Indicated that there are only a few streets available for north-south travel due to some
  natural barriers, rivers, and steep unstable bluffs. These streets include: 200 East, 100
  East, Main Street, and 100 West.
- Identified that demand on these four roads will increase in the future as currently
  undeveloped areas of land on the eastern bench property in cities to the north and
  south of Logan develop.
- Indicated that western bypasses would not be adequate to meet future demand.
- Suggested that couplets offer the possibility of relieving Main Street congestion without
  major widening and minimal impacts to homes and businesses.

Downtown-Specific Plan (2012)
This plan was conducted to guide future development, transportation enhancements, and
provide recommendations for growth. Couplets are incorporated in the plan as follows:

- Recognized that couplets could benefit downtown.
- Recognized that couplets would be supportive for downtown and reduce congestion.
- Recognized that couplets would be supportive of a mixed-use and multi-modal
  environment.
5.2 Scenario Evaluation

The CMPO model results were an important factor in helping determine the best concepts to carry forward (see Appendix A, “Model and Ranking Results” for further detail). In addition, the steering committee utilized a spreadsheet to help account for various factors important to the community, and to place a relative importance on each factor. Quantitative screening evaluated delay times, vehicle volume, and number of displacements. Qualitative screening evaluated land use and economic development impacts, traffic issues, environmental factors, conceptual engineering factors, and public preference (to be added later). The alignment scenarios that remain after this screening will be advanced for more detailed consideration separate from the Logan City One-Way Couplet Feasibility Study process.

The mechanics of the evaluation methodology include using the evaluation measures and the couplet scenarios as the rows and columns of the matrix. Typically there are two sets of matrices – one with raw data (delay times, vehicle volume, number of displacements, etc.) and another that creates a score or ranking for the couplet scenarios derived from the raw data. The general process is to look at the range of the values of the raw data, then develop a division of the range (poor, adequate, good, very good and excellent). A value or score is assigned to the division of the range (2 = poor, 4 = adequate, 6 = good, 8 = very good and 10 = excellent). It should be noted that for some measures, the inverse of the data receives the highest score. For example, more displacements are less desirable than fewer displacements, because of the social costs to those displaced and economic cost to the project. An alignment scenario having the fewest displacements would receive the highest rank or score. The scores for the individual evaluation measures are then summed to establish an overall score for each of the couplet scenarios.
The evaluation matrices for each of the project components and the couplet scenarios are presented below in Figure 1:

**Figure 1. Evaluation Matrix**

<table>
<thead>
<tr>
<th>Alternatives</th>
<th>Multi-Modal Circulation</th>
<th>Economic Development</th>
<th>Minimize Impacts</th>
<th>Totals w/o Costs</th>
<th>Costs</th>
<th>Total plus Costs</th>
<th>Alternatives</th>
<th>Possible Points</th>
<th>Rank</th>
<th>Total Points</th>
<th>Rank</th>
<th>Total Points</th>
<th>Rank</th>
<th>Total Points</th>
<th>Rank</th>
<th>Total Points</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible Points</td>
<td>37</td>
<td>27</td>
<td>24</td>
<td>88</td>
<td>10</td>
<td>97.7</td>
<td>Possible Points</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTP 2040</td>
<td>6</td>
<td>10</td>
<td>7</td>
<td>31</td>
<td>10</td>
<td>40.8</td>
<td>RTP 2040</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two 2-ways</td>
<td>16</td>
<td>8</td>
<td>15</td>
<td>35</td>
<td>9</td>
<td>38.2</td>
<td>Two 2-ways</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A, 2-In</td>
<td>12</td>
<td>9</td>
<td>9</td>
<td>41</td>
<td>8</td>
<td>50.3</td>
<td>A, 2-In</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B, 3-In</td>
<td>22</td>
<td>7</td>
<td>21</td>
<td>57</td>
<td>3</td>
<td>63.2</td>
<td>B, 3-In</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B, 4-In</td>
<td>26</td>
<td>4</td>
<td>21</td>
<td>57</td>
<td>4</td>
<td>61.0</td>
<td>B, 4-In</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C, 3-In</td>
<td>22</td>
<td>5</td>
<td>24</td>
<td>55</td>
<td>7</td>
<td>60.1</td>
<td>C, 3-In</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D, 3-In</td>
<td>22</td>
<td>6</td>
<td>21</td>
<td>55</td>
<td>6</td>
<td>57.2</td>
<td>D, 3-In</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D, 4-In</td>
<td>28</td>
<td>3</td>
<td>21</td>
<td>56</td>
<td>5</td>
<td>55.9</td>
<td>D, 4-In</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E, 3-In</td>
<td>30</td>
<td>2</td>
<td>24</td>
<td>70</td>
<td>1</td>
<td>71.6</td>
<td>E, 3-In</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E, 4-In</td>
<td>33</td>
<td>1</td>
<td>23</td>
<td>68</td>
<td>2</td>
<td>68.3</td>
<td>E, 4-In</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**5.3 Couplet Scenarios Eliminated**

**Couplet Scenario A, 100 East (SB)/200 East (NB):** This scenario featured two lanes on each road and would not require widening of the existing roadway. This scenario would provide more capacity and would not result in impacts to land use, environmental or neighborhood resources. However, this scenario was eliminated from further consideration because it did not provide a long-term solution to relieving congestion on Main Street.

**Couplet Scenario B, Four Lanes, 100 West (SB)/Main Street (NB):** This option would convert today’s five-lane Main Street and three-lane 100 West, to three and four lanes northbound on Main Street and southbound on 100 West. Both 100 and 200 East would remain the same as they are now. This option would require Main Street to be widened to seven lanes north of the transition point between 750 and 1100 North. This would result in right-of-way impacts on Main Street, which would be harmful to businesses in the downtown area. This option required UDOT acceptance, implementation, and possible ownership of 100 West. Reducing Main Street to three or four lanes allowed for more room for redevelopment, infill and multi-modal uses.

**Couplet Scenario C Local, 100 East (NB)/100 West (SB):** This scenario would be constructed on local roads and could be designed to Logan City standards, which allows for greater flexibility than the UDOT standards. Under this scenario, Main Street would remain unchanged. The CMPO model does not indicate that traffic would move off of Main Street to fully utilize adjacent couplets. This scenario was eliminated from further review because it created impacts to properties at both the north and south transition points, and many properties in between. This scenario also had two blocks in between northbound and southbound couplets, and would have high costs associated with creating transitions between couplets and adjacent streets.
Couplet Scenario C, 100 East (NB)/100 West (SB), Pedestrian Mall: This scenario was similar to the above scenarios, but it diverted all traffic away from Main Street to create a pedestrian mall with one lane in each direction to access angled parking and potential transit mall shuttle. This scenario required an upgrade to 100 East and 100 West to meet UDOT design standards and handle additional traffic. This would require additional right-of-way on these roads and result in impacts to adjacent properties, not only on 100 East and West, but at transition points within the study area. This concept has potential for catalyzing economic development, but also comes with high cost and design challenges.

Although this scenario supported economic development and redevelopment of the downtown area, it was eliminated because it only provided adequate congestion relief and had a very high level of impact to the neighborhood and environment.

Couplet Scenario D, 100 West (SB)/Main Street (NB): This scenario is the same as scenario B, except at the northern transition. This scenario transitioned from 100 West to 200 West between 650 and 850 North and then continued on 200 West until about 1750 North. This scenario allowed Main Street to be narrowed from the existing five lanes to just three or four lanes, making Main Street more pedestrian friendly in this northern section. However, this northern portion of Main Street has larger retail and commercial uses, and is more auto-oriented than the downtown portion of Main Street. This scenario required acquisition (partial and total) of homes, parks, schools, and historic properties along the corridor. Scenario D was eliminated from further review because the right-of-way, neighborhood and environmental impacts outweigh the potential amount of congestion relief resulting from this scenario.

Two-way Scenario, Main Street/100 West: This scenario created additional capacity on Main Street and 100 West by widening both streets to five lanes. This scenario transferred from 100 West to 200 West at about 800 North and would also be widened to five lanes. The two-way scenario would have ten lanes total, five lanes on both Main Street and 100 West/200 West. However, two of these lanes would be center turn lanes which do not use the full capacity of Main Street or 100 West. In addition, the CMPO model did not indicate that this scenario would take traffic off of Main Street. The two-way scenario required far more property and right-of-way acquisition than any other scenario. This scenario was eliminated because it would result in a large amount of right-of-way, neighborhood and environmental impacts.

5.4 Short List of Couplet Scenarios

Couplet Scenario E, Three Lanes (Scenario A & B Together): This option is a combination of scenario A and B. The three lane concept means there would be three traffic lanes on Main Street and 100 West, but just two lanes on 100 East and 200 East. This scenario allowed for
increased capacity and the opportunity to reclaim two lanes on Main Street to make improvements in support of Logan’s future land use goals and the *Downtown Specific Plan* (2012). The three lane scenario also reduces neighborhood and right-of-way impacts on 100 West. This option provided good congestion relief, and a small impact to the neighborhood and environmental resources.

**Couplet Scenario E, Four Lanes (Scenario A & B Together):** The four lane concept increased Main Street/100 West to four lanes, but still leaves 100/200 East as two lanes each. This scenario provided the best travel time improvements and more overall capacity, which would help to improve regional mobility and local circulation through 2040. Although it would require an additional travel lane, it would still support redevelopment on Main Street and implementation of the *Downtown Specific Plan* (2012), because it still allowed space for implementation of pedestrian and bicycle friendly facilities along Main Street. This four-lane scenario would result in additional right-of-way impacts on 100 West to allow for an additional travel lane. This scenario created the most overall capacity increase of all other scenarios.

**Couplet Scenario B, Three Lanes, Main Street (NB)/100 West (SB):** The three lane scenario increased mobility on Main Street and surrounding streets. In addition, it allowed for complete streets concepts to be implemented on Main Street and 100 West by using just three travel lanes. This would minimize or eliminate any impacts to right-of-way, environment, or neighborhood characteristics on 100 West. This scenario allowed for space to be used for transit only lanes to improve transit service to the community.

### 6. Developing Planning Cost Estimates

In order to compare the cost of various scenarios, we assumed that each alternative would need to be reconstructed over the planning period from 2013 to 2040. Asphalt pavement has a 20 year design life, and in the design life of the pavement, regular maintenance must be done to preserve the functionality of the roadway. Rather than break down the pavement condition of each alternatives, which will vary considerably along each alignment, the assumption was that the cost of maintaining and extending the life of the pavement throughout the specified planning time, would not exceed the cost of total reconstruction. Using total reconstruction enabled the cost comparison of alignments to be normalized for documenting the cost differences between alternatives. Once the top three scenarios were identified, a higher level planning estimate was developed for each to determine the minimum cost of implementation.
Assumptions that were made to calculate the minimum cost to implement the selected couplet scenarios included:

- Existing local roads will require only regularly scheduled pavement maintenance (no pavement cost for implementation).
- 100 West will be constructed to meet minimum pavement standards for an arterial facility.
- Main Street will require only regularly scheduled pavement maintenance (no pavement cost for implementation).
- Main Street will not be widened (no cost for implementation).
- Sidewalk, curb and gutter will only be replaced in locations where the roadway is widened.
- Right-of-way will be acquired only if roadway (asphalt pavement) requires widening (no right-of-way will be acquired for sidewalk, park strip, or curb and gutter).

The implementation costs for the three top performing scenarios, E-3 Lanes, E-4 Lanes, and B-3 Lanes, range from $35M to $50.2M. Implementing only couplet A, has a minimum cost of just over $5.5M. Table 1 below identifies the planning estimates for both total reconstruction and minimum implementation.

<table>
<thead>
<tr>
<th>Couplet</th>
<th>Cost for Total Reconstruction</th>
<th>Minimum Implementation Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-3 Lanes</td>
<td>$53.4M</td>
<td>$35M</td>
</tr>
<tr>
<td>E-4 Lanes</td>
<td>$93.6M</td>
<td>$50.2M</td>
</tr>
<tr>
<td>E-3 Lanes</td>
<td>$82.1M</td>
<td>$40.5M</td>
</tr>
</tbody>
</table>

Planning cost estimates require a higher contingency percentage because of unknown risks and changing conditions over a longer time period. In these scenarios we used a 30% contingency on materials and a 50% contingency on right-of-way costs.

7. Impacts Associated with Implementation of Couplet Scenarios

7.1 Existing Mobility and Local Circulation

Currently, Main Street (US-89/91) functions as an arterial for through traffic movement and long trips. An arterial is designed to provide high levels of mobility and a lower level of access to land use around it. US-91 connects Logan to Preston, Idaho to the north; US-89/91 connects Logan to Brigham City to the south, US-89 connects Logan to Bear Lake to the east; and SR-30 connects Logan to Tremonton in the west. In addition, Logan has good local roadway connections to its neighbors to the north and south. US-91, 200 East, 600 East, SR-237 (800 East), 1200 East, and 1600 East all help Logan connect in the north to North Logan, Hyde Park, and Smithfield. US-89/91, SR-165 (Main Street), SR-238 (400 East), and 1000 East all help Logan connect in the south to River Heights, Providence, Millville, Nibley, Hyrum, and Wellsville.
Main Street is congested, especially during the AM/PM peak travel periods. Today Main Street carries upwards of 45,000 trips per day on some sections – far more than the 35,000 which is usually considered acceptable for most five lane arterial streets (Brown, 2013). Because of congestion on Main Street, traffic has begun to spread crowding to parallel streets. UDOT is currently upgrading 1000 West to alleviate congestion; however, traffic forecasts suggested that additional improvements will be needed to relieve congestion within Logan.

The parking study completed for the Downtown Specific Plan (2012) indicated that parking demand increased throughout the day, notably decreased by mid-afternoon and incrementally increased by the early evening hours. This trend is consistent with typical working hours for employees and visitors, and the presence of retail and restaurants within the downtown area. Analysis also indicated that on- and off-street parking in the downtown area is underutilized. Many of the block studies in the downtown area have multi-level surface parking lots. As a result, there is an abundant amount of available parking throughout the downtown area during a typical weekday.

Transit within the study area is very accessible. The Logan Intermodal Transit Center is located at 500 North between 100 East and 200 East. Transit service within the study area includes:

- Route 11 with stops on Main Street and between the Intermodal Transit Center and 3200 South in Nibley.
- Route 7 provides service along 100 West between the Intermodal Transit Center and the Logan River Golf Course area.
- Route 10 provides service along 100 East/300 East between the Intermodal Transit Center and 600 South.

The 2011 Transportation Master Plan identifies 10 and 20 year enhancement recommendations for transit. These improvements include increasing frequency of service, extending service hours, implementing circulator shuttles, branding of transit corridors, and the addition of bus rapid transit (BRT). The plan identifies a potential BRT route on Main Street between Smithfield and Hyrum. Service in North Logan and Logan would also serve communities east of Main Street. However, recent Cache Valley Transit District (CVTD) evaluation indicated that the mode and route for future high capacity transit needs further study. Therefore, CVTD has not adopted BRT or the proposed route identified in the Transportation Master Plan (CVTD, 2013).

The study area in general already has many excellent pedestrian characteristics. The good connectivity between blocks makes walking paths generally short relative to more suburban locations with winding streets and many cul-de-sacs. But Main Street itself is a serious
impediment that separates the east side from the west side. Further, extreme levels of traffic and inferior pedestrian space and amenities also mean there is room for improvement.

Logan has a large cycling community with many bicycle commuters (many USU students and staff), as well as recreational riders using the trail system throughout the City. However, on-road bicycle conditions in the study area are disjointed and intersections with poor visibility can make bicycle commuting difficult.

Biking throughout the study area would be considered uncomfortable and unsafe for some riders due to the high level of congestion. A recent survey conducted by CMPO indicated that there are many bicycle and pedestrian issues within the study area. Input from the community indicated that Main Street is too busy, making crossing very difficult and bicycle riding unsafe. There are fewer problem areas identified along the adjacent north-south running streets. The Cache County Regional Transportation Plan identified the following pedestrian and bicycle safety issues within the study area:

- Highway 89 (400 North) areas below Utah State University (street crossings)
- Downtown Logan (Main Street crossings)
- South Logan “Y” intersection area (Main Street and Highway 165 street crossings)
- 600 West (shoulder)

### 7.1.1 Potential Mobility Impacts

Analysis indicated that travel times between 1200 South and 1400 North on couplet scenarios was greatly improved over options that did not implement couplets in 2040 (see Table 2 below).
In general, four-lane couplet options fare better than three-lane options, simply because there are more lanes to help assure that congestion will not be a problem. Also two couplets reduce congestion better than one. Scenario E is the best performer because it reduces congestion better than any other scenario.

Analysis shows that it is possible to move traffic off of Main Street and maintain or improve travel time and vehicle throughput. This would maintain or improve capacity while making Main Street available for improvements, such as streetscaping, angled parking, family oriented businesses, community gathering places, and pedestrian and bicycle friendly features. Out-of-direction travel would be required for all one-way couplet scenarios. However, the improved mobility and circulation would likely make up for one block-of-out of direction travel. Scenario E also fared well with multi-modal circulation and emergency service response times, because both the major and minor couplets are separated by only one block. Therefore, transit patrons are not unduly affected, and any minor out-of-direction travel for emergency services and local circulation, is more than made up for by time savings due to less congestion and better mobility.

The implementation of the short-list couplet scenarios would not impact the ability to provide current or future transit service to the study area. Each couplet is separated by one block, which would limit the distance needed to walk to access transit in the southbound or
northbound directions. The potential for less congestion and faster transit service may outweigh the need to walk one block further to reach a bus stop. Implementing any of the short-list scenarios would make additional pavement available and allow for improved transit service, transit stations and amenities, pedestrian facilities, and bicycle lanes.

For 2040 within the study area, analysis determined that the existing two-way street configuration results in roughly 4,500 residents experiencing very good bicycle/pedestrian conditions immediately near their residence, but this number nearly doubles to 7,500 with Scenario E, Three Lanes. The effect on businesses is even more dramatic. Roughly 3,500 employees are within a very good walking environment, and that number nearly triples to 9,500 with the couplets. Therefore, all of the couplet scenarios would result in better pedestrian and bicycle conditions on one way streets within the entire study area. However, the Town Center area would realize the most benefit from lower congestion levels and smoother traffic flow on Main Street (ViaCity, 2013). See Appendix B, “Multi-Modal Analysis” for further information.

7.2 Existing Land Use Pattern
Land use within the study area consists of a mix of Town Center, commercial, and residential developments. Town center land use is concentrated between 500 North and 200 South, and 100 West and 200 East. This area consists of several land uses including governmental offices, shopping, theatres, restaurants, commercial business, hotels, banks, grocers, and residences, see Figure 2.

Larger scale commercial development (big box retail, grocery, home improvement) is concentrated north and south of the Main Street Town Center area and continues beyond the study area boundary. As land development moves east and west from Main Street, it consists of mixed residential, neighborhood residential, and transitions to single family residential at the outer limits of the study area. Over the past few years the homes along 100 West have been transitioning from residential to small commercial.
7.2.1 Neighborhood Characteristics

The study area contains a small portion of each of Logan City’s major neighborhoods, including Woodruff, Wilson, Ellis, Adams, and Bridger. Over the past ten years, many of Logan City’s neighborhoods have aged and experienced conversion to apartments and rental units. Conversion to rental units has resulted in general housing deterioration, including unattended landscaping, minimal maintenance, and illegal parking. As a result of this conversion to renter occupied housing, the home ownership rate in Logan City is about 41.1 percent compared to the Utah average of 70.7 percent. Table 3 below presents U.S. Census Bureau census tract information that identifies the tracts located within the study area. Within the study area there is 43 percent owner occupied housing, compared to 57 percent renter occupied housing (US Census, 2013).

<table>
<thead>
<tr>
<th>Census Tract</th>
<th>Total Housing</th>
<th>Occupied Housing</th>
<th>Owner Occupied</th>
<th>Renter Occupied</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.01</td>
<td>2,028</td>
<td>1,889</td>
<td>731</td>
<td>1,158</td>
</tr>
<tr>
<td>5.02</td>
<td>1,933</td>
<td>1,849</td>
<td>494</td>
<td>1,355</td>
</tr>
<tr>
<td>6</td>
<td>2,321</td>
<td>2,201</td>
<td>525</td>
<td>1,676</td>
</tr>
<tr>
<td>11.01</td>
<td>1,988</td>
<td>1,878</td>
<td>1,477</td>
<td>401</td>
</tr>
<tr>
<td>11.02</td>
<td>1,406</td>
<td>1,343</td>
<td>1,343</td>
<td>109</td>
</tr>
<tr>
<td>8</td>
<td>2,132</td>
<td>1980</td>
<td>405</td>
<td>1,575</td>
</tr>
<tr>
<td>9</td>
<td>1,383</td>
<td>1,301</td>
<td>529</td>
<td>772</td>
</tr>
<tr>
<td>10.02</td>
<td>1,848</td>
<td>1697</td>
<td>635</td>
<td>1,062</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau: 2013 10:48:32 EST

The Neighborhood Improvement Division was created at Logan City in response to the citizen’s desire to improve their community. In addition, the redevelopment initiatives identified in the *Downtown Specific Plan* (2012) would serve to the adjacent neighborhoods.

7.2.2 Major Activity Centers

Public or community facilities help define communities and also provide opportunities for residents to interact. Community facilities generally include (but are not limited to) churches, schools, parks, law enforcement facilities, fire stations, and government offices. Table 4 below identifies activity centers within the study area.
Table 4. Activity Centers within the Study Area

<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pioneer Park</td>
<td>245 East Poplar Avenue</td>
<td>Park</td>
</tr>
<tr>
<td>Logan Tabernacle</td>
<td>Bounded by Center, 1st North, Main, and 1st East Streets</td>
<td>Religious</td>
</tr>
<tr>
<td>Lyric Theatre</td>
<td>28 West Center Street</td>
<td>Arts/Community</td>
</tr>
<tr>
<td>St. John’s Episcopal Church</td>
<td>85 East 100 North</td>
<td>Religious</td>
</tr>
<tr>
<td>County Courthouse</td>
<td>135 N. 100 West</td>
<td>Public</td>
</tr>
<tr>
<td>Senior Center</td>
<td>240 North 100 East</td>
<td>Community</td>
</tr>
<tr>
<td>City Hall</td>
<td>290 North 100 West</td>
<td>Public</td>
</tr>
<tr>
<td>Logan Library</td>
<td>255 N. Main Street</td>
<td>Public</td>
</tr>
<tr>
<td>LDS Church</td>
<td>50 N Main Street</td>
<td>Religious</td>
</tr>
<tr>
<td>Logan High School</td>
<td>162 West 100 South</td>
<td>Educational</td>
</tr>
<tr>
<td>LDS Church</td>
<td>89 S. 200 W.</td>
<td>Religious</td>
</tr>
<tr>
<td>Cache County Clerk</td>
<td>179 N. Main St</td>
<td>Public</td>
</tr>
<tr>
<td>Cache County Attorney</td>
<td>North Main Street</td>
<td>Public</td>
</tr>
<tr>
<td>LDS Church</td>
<td>125 E 500 N</td>
<td>Religious</td>
</tr>
<tr>
<td>Tueller School of Dance</td>
<td>521 ½ N Main Street</td>
<td>Educational</td>
</tr>
<tr>
<td>Mt. Logan Middle School</td>
<td>875 North 200 East</td>
<td>Educational</td>
</tr>
<tr>
<td>Baha’I Faith</td>
<td>895 N 200 West</td>
<td>Religious</td>
</tr>
<tr>
<td>Fraternal Order of Eagles</td>
<td>170 West 900 North</td>
<td>Community</td>
</tr>
<tr>
<td>Logan Sports Complex</td>
<td>600 South 100 West</td>
<td>Community</td>
</tr>
<tr>
<td>Cache valley Bible Fellowship</td>
<td>1488 North 200 West</td>
<td>Religious</td>
</tr>
<tr>
<td>Logan Miniature Golf</td>
<td>650 North Main</td>
<td>Community</td>
</tr>
<tr>
<td>Cache Valley Mall</td>
<td>1300 North Main Street</td>
<td>Retail</td>
</tr>
<tr>
<td>Logan Mayor’s Office</td>
<td>290 North 100 West</td>
<td>Public</td>
</tr>
<tr>
<td>Logan LDS Temple</td>
<td>175 North 300 East</td>
<td>Religious</td>
</tr>
<tr>
<td>Logan Recreation Center</td>
<td>195 South 100 West</td>
<td>Community</td>
</tr>
<tr>
<td>LDS Church</td>
<td>94 West 600 South</td>
<td>Religious</td>
</tr>
<tr>
<td>Logan River Golf Course</td>
<td>550 West 1000 South</td>
<td>Public</td>
</tr>
<tr>
<td>Willow park zoo</td>
<td>419 West 700 South</td>
<td>Public</td>
</tr>
<tr>
<td>Cache Employment and Training Center</td>
<td>275 South 400 West</td>
<td>Public</td>
</tr>
<tr>
<td>Fair grounds</td>
<td>450 South 500 West</td>
<td>Public</td>
</tr>
<tr>
<td>Logan Regional Hospital</td>
<td>500 East 1400 North</td>
<td>Hospital</td>
</tr>
<tr>
<td>Logan River Trail</td>
<td>500 South Main Street</td>
<td>Public/Recreation</td>
</tr>
<tr>
<td>Logan City Park</td>
<td>195 South 100 West</td>
<td>Public/Recreation</td>
</tr>
<tr>
<td>Logan Justice Court</td>
<td>446 North 100 West</td>
<td>Public/Recreation</td>
</tr>
<tr>
<td>Logan City Park</td>
<td>195 South 100 West</td>
<td>Public/Recreation</td>
</tr>
<tr>
<td>Logan Hyde Park Canal</td>
<td>West Center Street</td>
<td>Public/Recreation</td>
</tr>
<tr>
<td>Garff Wayside Gardens</td>
<td>100 South Main Street</td>
<td>Public/Recreation</td>
</tr>
<tr>
<td>Merlin Olsen Park</td>
<td>300 East Center Street</td>
<td>Public/Recreation</td>
</tr>
<tr>
<td>Bridgerland Park</td>
<td>100 West 900 North</td>
<td>Public/Recreation</td>
</tr>
</tbody>
</table>
7.2.3 Future Land Use
The Logan City General Plan (2007) indicated that Main Street will continue to consist of mixed use within the Town Center, with larger commercial facilities north and south along Main Street. Redevelopment tools offered by Logan City indicated that businesses will be revitalized and infill development will likely occur in the study area. Homes along 100 West will continue to transition from residential to commercial. The Downtown Specific Plan (2012) identified a few areas in the Town Center, located along Main Street between 100 East and 100 West that could be redeveloped to provide new housing. Single family residential areas on the outer limits of the study area are not anticipated to change. These residential areas are dominated by detached residential, with small portions of mixed residential, that provides a range of housing for all stages of life and levels of income (General Plan, 2007).

7.2.4 Potential Land Use Impacts
The addition of couplet scenarios would not impact the ability of Logan City to realize the goals they have set for future land use in the study area. In contrast, relieving congestion and making the study area more accessible would help support the goals of creating a vibrant Town Center and more livable downtown area. In addition, implementation of any of the short list scenarios would improve accessibility to Logan City’s many activity centers within the study area. The implementation of the short list couplet scenarios would result in right-of-way takes and impacts as indicated in Table 5 below:

<table>
<thead>
<tr>
<th>Table 5. Right-of-Way Information for Short List Scenarios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario Name</td>
</tr>
<tr>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>Scenario E 3 Lanes</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Scenario E 4 Lanes</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Scenario B 3 Lanes</td>
</tr>
</tbody>
</table>

Note: Average right-of-way impacts will occur at specific spots along the roadway and are not meant to be applied to the entire roadway facility.

Four-lane scenarios would have greater impacts than three lane scenarios. No right-of-way would be needed to implement the two lane couplets on 100 East and 200 East.
Implementation of the short list scenarios would result in less pavement needed for automobiles, which will help most places become more walkable and require less right-of-way. If the project proceeds, potential impacts will be minimized through design optimization during the final design stage.

7.3 Ability to Foster Economic Development

7.3.1 Existing Development
Land and retail access along Main Street is a secondary function. This means that the function of a freeway arterial roadway is to move traffic between cities and states. Therefore, most commuters are not travelling on Main Street to visit shops or restaurants, but instead, are passing through. Transitioning through traffic away from Main Street and making it more inviting for shoppers, pedestrians, businesses, and community gatherings (as identified in the Downtown Specific Plan) would be consistent with the goals and objectives of Logan City. These goals for future land use within Town Center include:

- Mix of retail, office, residential and civic spaces
- Foster family oriented businesses
- Create pedestrian walkways
- Incorporate civic and community gathering spaces

The area between 200 North/200 South and 200 West/200 East also consists of a redevelopment area (RDA). The City promotes business development in this area through the Downtown Business Development Fund and the Downtown Façade Program to promote economic development in the downtown area. These programs allow Logan City to work in partnership with private development to enhance the social, economic, physical, and environmental vitality of a city.

7.3.2 Potential Impact to Economic Development
Relieving congestion and providing routes off of Main Street will open up opportunities for development on Main Street. Providing a Main Street corridor within the Town Center will foster a transit oriented and pedestrian friendly environment that could help to bring the community to the shops, restaurants, and civic facilities. Moving commuter through traffic away from Main Street will allow the City to better implement the goal of improving pedestrian comfort with less traffic, reduced speeds, mid-block crossing, angled parking, and enhanced crossing signals/crossing.

Scenario B and E, three lanes, would allow for existing pavement on Main Street to be converted to “complete street” uses, which will make it attractive to redevelop existing auto-
oriented uses into higher-density mixed uses. Also, the upgrade of 100 West will likewise encourage the expansion of downtown to 100 West and possibly beyond.

However, scenario E provides better overall ability of the four streets combined to handle a lot more multi-modal traffic trips. It will likewise help ensure that development that otherwise would have went to suburban locations, will instead find it attractive to locate in the historic core. Scenario E is a good compromise between the RTP, with its serious problems on Main Street, and scenario C (which routes all traffic away from Main Street). Scenario E maintains enough volume on Main Street for the auto visibility that existing businesses may be dependent on, but also opens opportunities on Main Street for it to emerge as an attractive complete street corridor. A more detailed study with microsimulation analysis should determine if three or four lanes are ultimately needed on Main Street.

### 7.4 Existing Historic Resources

Because the study area encompasses the downtown portion of Logan City, there are many historic buildings that should be considered in analysis. Center Street Historic District is located in the heart of Logan City between 200 North and 200 South, and 200 East and 600 West. The district is significant because it is representative of classic revival, prairie school, and Late Victorian architecture. The area consists of 358 buildings. A few buildings listed on the National Register of Historic Places (NRHP) are located adjacent to one-way couplet scenarios including County Court House, Tabernacle Square, LDS Tabernacle, Blue Bird, and St. John’s Episcopal Church. In addition, many buildings and homes built during historic periods may exist within the study area.

#### 7.4.1 Potential Historic Resource Impacts

A high level historical resources analysis was conducted using available Geographic Information System (GIS) information from the National Register of Historic Places. Each of the short-list couplet scenarios would potentially have an effect on NHRP property due to the potential to widen 100 East near the William McNeil House and near the Logan LDS Sixth Ward Church on Main Street. However, final design of the preferred couplet scenario would avoid or minimize any potential right-of-way impacts near these historic resources.

### 7.5 Existing Air Quality and Noise Conditions

Pursuant to the federal Clean Air Act (CAA) of 1970, the United States Environmental Protection Agency (EPA) established National Ambient Air Quality Standards (NAAQS). The NAAQS were established for six major pollutants, termed “criteria” pollutants. The six criteria pollutants are O₃, CO, particulate matter (PM), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and lead (Pb). PM
includes particulate matter less than 2.5 microns in diameter (PM$_{2.5}$) and particulate matter smaller than 10 microns in diameter (PM$_{10}$).

The Cache Valley is a narrow valley bordered by mountains. The topography and cold weather cause cold pools and result in the condition known as inversion. This condition is concerning because of the potential for inhaling fine particles (PM$_{2.5}$) when molecules are 10 micrometers in diameter or smaller.

The major air pollutants of concern within the study area are carbon monoxide (CO), particulate matter (PM$_{10}$ and PM$_{2.5}$) and ozone (O$_3$). CO is emitted by vehicles as a product of the combustion process and is of concern due to its tendency to reduce the amount of oxygen carried in the bloodstream. The pollutant PM$_{10}$ is produced by vehicle emissions, agricultural activities, industrial activities, wintertime roadway sanding, and other emissions. O$_3$ is a secondary pollutant formed from the combination of other primary emissions that chemically react in the presence of sunlight and heat to create smog.

Currently Logan City is within a nonattainment area for PM$_{2.5}$ (EPA Greenbook, 2012). This means that the amount of PM$_{2.5}$ in Cache Valley exceeds the standard as defined in the National Ambient Air Quality Standards (NAAQS) set by the US EPA.

Utah Division of Air Quality (UDAQ), maintains a PM$_{2.5}$ monitor in downtown Logan City. Monitored values from this site indicated that the ambient concentrations of PM$_{2.5}$ in Logan City are often elevated during the winter months. The elevated concentrations of PM$_{2.5}$ during the winter months occur when strong inversions develop in the valley and keep air pollution from escaping.

Logan City, together with UDAQ and Bear River Health Department, has taken proactive steps to address air quality issues in the Logan area. These efforts include:

- Synchronized traffic lights in Logan City.
- Free rapid transit bus services during red and yellow air quality days.
- Replacement of USU coal-fired heating plant with a modern natural gas plant.
- Natural gas fueled buses for USU campus shuttles.
- Conversion of the municipal power plant from diesel to natural gas.
- Red-yellow-green wood-burning control program.
- Smoking vehicle program (UDEQ, 2013).

Noise conditions in the study area are representative of an urban area. Most of the residential communities identified within the study area represent active urban or suburban land uses that currently experience high volumes of traffic and noise.
7.5.1 Potential Air Quality and Noise Impacts

The Utah Department of Air Quality indicates that 57 percent of Utah’s air pollution comes from vehicles. Long-term emissions would improve from the enhanced traffic flow within the Logan area. Any of the short-list scenarios would lessen traffic congestion and improve public safety. These scenarios are not expected to generate any additional traffic. Regional traffic trips would remain similar. Therefore, no new long-term regional emissions would result from implementation of any of these scenarios. The short-list scenarios would improve mobility and improve congestion, and therefore, would lower associated pollutants emitted by vehicles. In addition, reducing automobile congestion could provide opportunity for increased transit service. This could include improvements on existing services or the addition of a high capacity transit service to the city and/or region.

The potential widening of certain roadways may result in increased noise due to more cars passing through and bringing traffic closer to businesses and residences. It is not likely that noise levels within the study area would notably increase due to the implementation of a couplet scenario. These areas are currently congested; the addition of couplets would introduce background noise (e.g. an increase in traffic noise compared to existing traffic noise) that is similar in character to existing conditions.

7.6 Existing Biological Resources

In general, the study area is highly developed and urbanized, and consists of residential and commercial areas with a few remaining agricultural remnants. The dominant vegetation types are landscaped, ornamental plants; agricultural species; and invasive weedy species.

There is National Wetland Inventory (NWI) wetland vegetation located in the southern portion of the study area (700 South). These NWI wetland areas are concentrated near the Logan City Golf Course. In addition, other wetland areas could be present throughout the study area.

Wildlife species are generally concentrated in floodplain, wetland, and natural areas close to the Logan River. Wildlife species found in the study area are indicative of species that are found in urban and suburban areas. Habitat for small mammals and migratory birds are likely concentrated around NWI and other potential wetland areas. However, habitat within the study is limited due to mowing (residential and agricultural), and proximity to residential homes and roadways.

7.6.1 Potential Impacts to Biological Resources

Potential impacts to wetlands and wildlife habitat would be site specific if a couplet scenario is implemented. If impacts occur, they would be concentrated at transition points where
roadways currently do not exist and new construction could change or remove vegetation and habitat.

8. Public Involvement
Stanley Consultants held a Public House meeting on July 17, 2013 at the Logan City Offices from 5:30 to 7:30 PM. About 30 people attended the meeting (27 utilized the sign-in sheet). The meeting format consisted of a brief presentation giving an overview of the project purpose, analysis method and project findings. The public was invited to view project information, ask questions and submit comments both written or via email from July 1 to July 31.

The project team received eight comments during the comment period. Of these comments three are positive, four are negative and one is neutral. In addition, the Herald Journal published two editorials on the project during the month of July. Comments on these editorials were added to the below comment summary in order to capture the input of community members. Comments received and materials distributed to the public on the Logan City website and presented at the public meeting are in Appendix C “Public Involvement Materials”.

9. Summary
The findings of this feasibility study conclude that Scenario E, three lanes should be retained as the best performing scenario. This alternative best meets the project goals and objectives with good congestion relief and a small impact to the neighborhood and environmental resources. Input from public involvement activities indicated that the community is concerned about additional traffic on 100 West, project cost, and which amenities would be incorporated into a new Main Street design; see Appendix C, “Public Involvement Materials” for further detail.

10. Next Steps
A National Environmental Policy Act (NEPA) analysis is needed to evaluate a no – action alternative and the alternative scenario E, three lanes. Future detailed design and analysis of the couplet scenarios which should include traffic modeling and simulation, economic analysis, and evaluation of the built and natural environment as part of the NEPA process. Logan City may also consider conducting supplemental studies including market analysis of downtown in order to better understand the true economic development potential of the downtown area and how it may affect adjacent residents. These efforts will clarify what the potential impacts from the proposed project would be in identifying a preferred alternative for potential federal or state funding.
The following additional information could be used when deciding to pursue further study of one-way couplets:

- Economic Evaluation of potential impact to downtown businesses
- Microsimulation analysis of the preferred couplet scenario to determine if three or four lanes are ultimately needed.
- Signal Warrant Studies for 1st and 2nd East
- Public Outreach with focus on Neighborhood Council and local businesses

If the project proceeds to the next phase, more detailed evaluation and analysis of the built and natural environment will be necessary.

Logan City will need to coordinate closely with UDOT on any State owned facility and maintain compliance with design standards. The project team should demonstrate to UDOT that the implementation of couplets would mitigate congestion, improve travel time, and maintain or improve regional mobility.

A supplement to the recently completed parking analysis would help better understand how parking needs may change due to the implementation of couplets.

A detailed analysis of land uses along the corridor of the preferred couplet scenario would identify potential impacts from project implementation. In addition, a 4(f) resource analysis will be necessary to determine the potential affect to public lands, including publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites to further analyze opportunities to avoid or minimize potential impacts.

A detailed economic analysis would identify potential impacts to businesses in the Town Center. An in-depth economic analysis can be crafted to include a market analysis of the potential land value under the no-action alternative and after the implementation of the preferred couplet scenario. In addition, it may be useful to incorporate Envision Utah’s Envision Tomorrow Plus (ET+) tool to analyze different development scenarios for areas within downtown. This tool compares a range of indicators relating to land use, housing, demographics, economic growth, development feasibility, fiscal impacts, transportation, environmental factors, and quality of life. This tool would be useful in determining what development would look like, and how couplets fit in to the future.
A historic property assessment will be necessary in order to comply with the National Historic Preservation Act (NHPA) to evaluate districts, sites, buildings, structures, and objects that could be eligible for the National Register of Historic Places (NRHP). Section 106 of the NHPA requires federal agencies to consider the effects of their undertakings. In addition, a 4(f) resource analysis will be necessary to determine the potential affect to historic properties and further analyze scenarios to avoid or minimize potential impacts.

If construction will occur in previously undisturbed areas, it may also be necessary to conduct a field inventory for paleontological resources that could be eligible for inclusion in the Utah State Paleontological Register.

A detailed analysis air quality will be necessary to determine existing conditions, potential impact to the six criteria pollutants, and mobile source air toxics that are commonly monitored and regulated for their effects on human health. It will be necessary to inventory on-road mobile sources of pollutants using EPA’s MOVES model, in conjunction with information generated by travel demand models such as vehicle speeds and miles traveled. Noise modeling will be necessary to determine impacts in more detail in accordance with the Utah Department of Transportation (UDOT) Noise Abatement Policy 08A2-1 and Federal Highway Administration (FHWA) criteria for evaluating noise impacts. This analysis should focus on sensitive receptors including hospitals, schools, residences, motels, hotels, recreational areas, parks, and places of worship.

Biological resources

Next steps will also include evaluation of potential wildlife habitat, and the presence of threatened and endangered species, as well as state sensitive species. In addition, wetland delineation will be required to assess the present wetlands or waters of the United States for the selected scenario. Delineation would especially be necessary near the Logan River Golf Course at the southern end of the study area.
References:

**Cache County**

**Cache Metropolitan Planning Organization**
2011 Cache County Regional Transportation Plan 2035. Prepared in partnership with UDOT, CVTD, FHWA, BPAC and FTA. Final June 2011

**Cache Valley Transit District**

**City of Logan**

**Metro Analytics**
2013 Technical Memorandum on Multi-Modal Analysis. Prepared by Metro Analytics and ViaCity. Final April 2013

**United States Census Bureau**
2013 UT Cache County Census Tracts Downloaded from U.S. Census Bureau: 2013 10:48:32 EST.

**U.S. Environmental Protection Agency**

**Utah Department of Air Quality**
PM/Background/CacheValleyBackground.htm Accessed December 2012 by Dana Holmes of Stanley Consultants.

Utah Department of Transportation