Millcreek, Utah

# Transportation Master Plan

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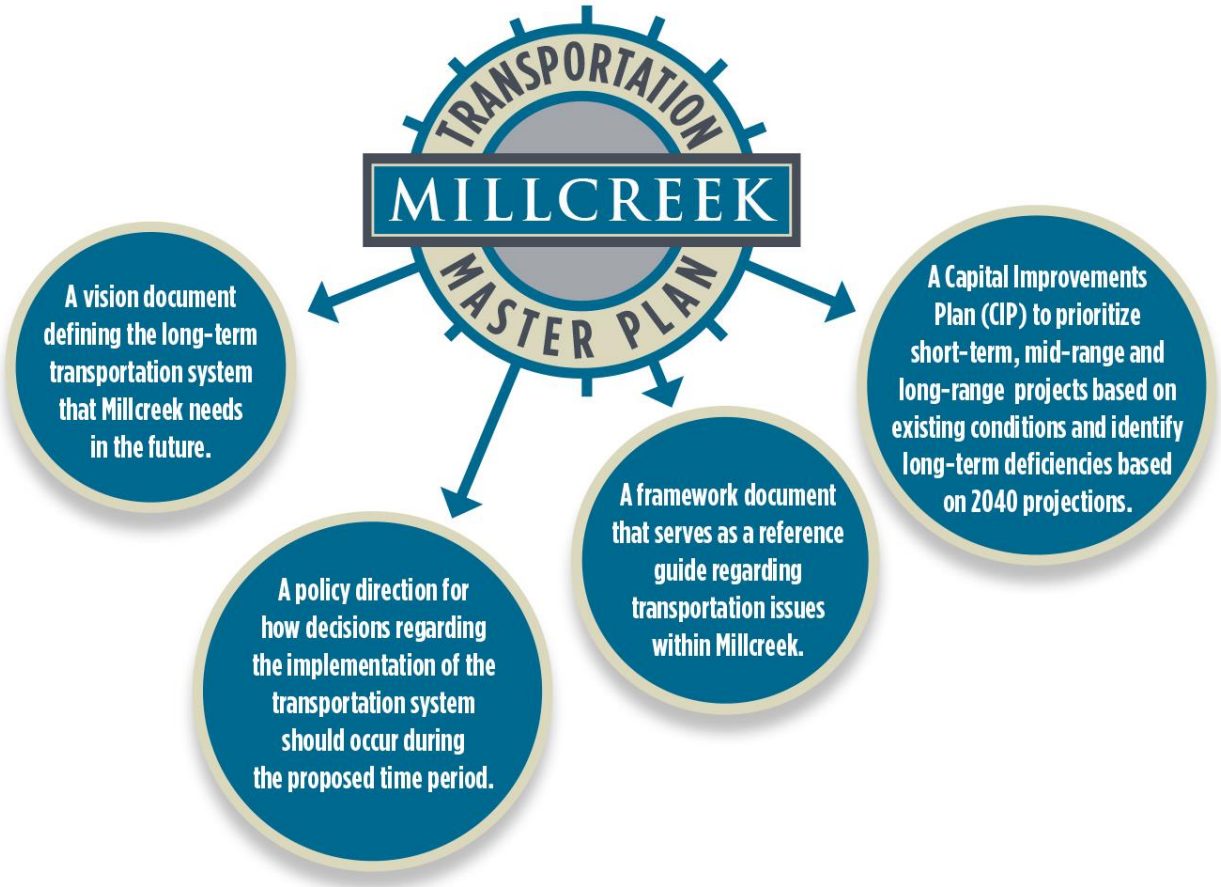
# 1 Introduction

This is Millcreek's first Transportation Master Plan (TMP) developed collaboratively with Millcreek Staff and stakeholders, and in coordination with the development of Millcreek's General Plan and the Salt Lake County's Active Transportation Improvement Plan. To assist Millcreek as a newly incorporated entity, the 2018 Millcreek TMP contains goals, objectives, policy guidance, and an overview of the transportation strategies Millcreek intends to accomplish by 2040. The TMP also describes Millcreek's long-range vision to accommodate travel and mobility needs now and in the future.

Millcreek is a built out community that is currently experiencing redevelopment and infill throughout the incorporated areas and this trend is expected to continue into the future. Millcreek is essentially land locked with a transportation network that is incomplete and rapidly deteriorating. In addition, pass through trips to/from the adjacent cities and communities further burden Millcreek's transportation system.

## 1.1 Purpose of the Transportation Master Plan

This TMP serves a variety of purposes, including the following:




When Millcreek was an unincorporated township within the Salt Lake County, the County globally implemented transportation goals and policies throughout the unincorporated communities under its jurisdiction. As a result, transportation master planning has become dated and obsolete, lacking guidance specific to the needs and desires of individual communities. This TMP reflects

Millcreek's desire to provide an improved and complete multi-modal transportation system specific to Millcreek. Millcreek is committed to creating a balanced transportation system that provides its residents with transportation mobility choices for sustaining a high quality of life. Millcreek aims to achieve this by integrating land-use planning in the Millcreek General Plan with the transportation system described in this document.

Transportation planning must be fluid to adapt to Millcreek's changing land use. Significant land use changes not reflected in the General Plan need independent evaluation within the framework of the TMP goals, to be consistent with and adhere to Millcreek policies, standards and guidelines. The framework allows amendments to the TMP without making the plan null or obsolete.

This TMP provides the goals, principles, technical documentation, priorities and policies that will aid Millcreek in making informed decisions to enhance Millcreek's transportation system. Required improvements by development, as well as Millcreek's Capital Improvement Projects, should be consistent with the roadway functionality, design standards and guidance documents. The TMP should be updated every 3 to 5 years, depending on the needs and changes within Millcreek.

The recommended Capital Improvements Plan (CIP), which aligns with regional plans developed by the Utah Department of Transportation (UDOT) and the Wasatch Front Regional Council (WFRC), prioritizes projects to improve deficiencies in the existing transportation system. Additionally, the CIP looks forward 20 plus years to 2040 by using estimated growth and projected transportation system volumes. These projections are the basis for a list of long-term projects that require advance planning and funding for implementation. Short-term (2018 – 2024), mid (2025 – 2034) and long-range (2035 – 2040) projects are necessary to accommodate future transportation demands. Prioritization of these capital projects should improve mobility and safety for motorized and non-motorized travel while working towards the ultimate transportation system, based on projected transportation system conditions and land use opportunities Millcreek is striving to achieve.

## 1.2 Plan Development Process

### Existing Plan Review and Coordination with General Plan

This TMP is the result of collaboration and guidance of Millcreek Staff and Millcreek's General Plan consultant. Incorporation of existing County documents and plans from neighboring jurisdictions created a cohesive transportation master plan that aligns with the surrounding community plans.

Relevant documents include:

1. Salt Lake City Road Diet
2. Wasatch Front Regional Council Travel Demand Model
3. Wasatch Front Regional Council's Regional Transportation Plan
4. Salt Lake County Bicycle Transportation Improvement Program
5. Salt Lake County Active Transportation Improvement Program
6. Salt Lake County Standard Drawings
7. Millcreek Right-of-Way and Pavement Design Statute 14.12.100
8. Millcreek General Plan
9. Millcreek Storm Drain Masterplan
10. Millcreek Utility Maintenance Fee Study Guidance Memo
11. Utah Department of Transportation's Statewide Transportation Improvement Plan
12. Neighboring Community Plans

## Land Use and Population Projections

Millcreek's surrounding municipal jurisdictions include Murray, Taylorsville, West Valley City, Salt Lake City, South Salt Lake, Holladay and Salt Lake County. Millcreek is largely land locked to the north, south, and west, and abuts the Wasatch Mountains in unincorporated Salt Lake County to the east. Subsequent sections of this Transportation Master Plan further discuss the existing and future land use in Millcreek.

## Transportation Master Plan Goals

Goals for this Transportation Master Plan reflect the desire for integrating transportation and land use planning in Millcreek, Utah. The goals developed by Millcreek for this TMP included receiving feedback at public outreach meetings during the development of the General Plan, workshops and in collaboration with Millcreek staff. The process began by defining what Millcreek desires now and in the future for its transportation system. The following TMP goals were developed:

1. Improve existing transportation facilities and network to meet current and future travel demand.
2. Incorporate full accessibility for both motorized and non-motorized travel in all new street design.
3. Provide safe and efficient mobility throughout the community by implementing national standards and guidelines for pedestrian and vehicular travel.
4. Incorporate bicycle routes and trails into new street designs when possible, or create separate bicycle facilities.
5. Integrate regional plans for public transportation to meet rider needs.
6. Optimize available local, State and Federal funding sources.
7. Identify future roadway classifications to preserve right-of-way widths.
8. Implement access management strategies for all future roadway improvement projects.
9. Develop transportation facilities that are an asset to the community and are compatible with the natural and built environment.
10. Meet the State of Utah requirement, which requires Cities to prepare and adopt a Transportation Master Plan and Capital Facilities Plan (CIP).
11. Encourage street design that promotes traffic calming opportunities.
12. Consider transportation alternatives that minimize or reduce impacts to the environment to the greatest possibility.
13. The characteristics identified in that process serve as the basis for refining the vision and goals. Revisions to these items then helped shape the direction for changes in other policy related issues.
14. The TMP 5-year CIP that integrates recommendations and timelines of storm drain collection system improvements that minimize impacts on the roadways.

## 1.3 Plan Document Structure

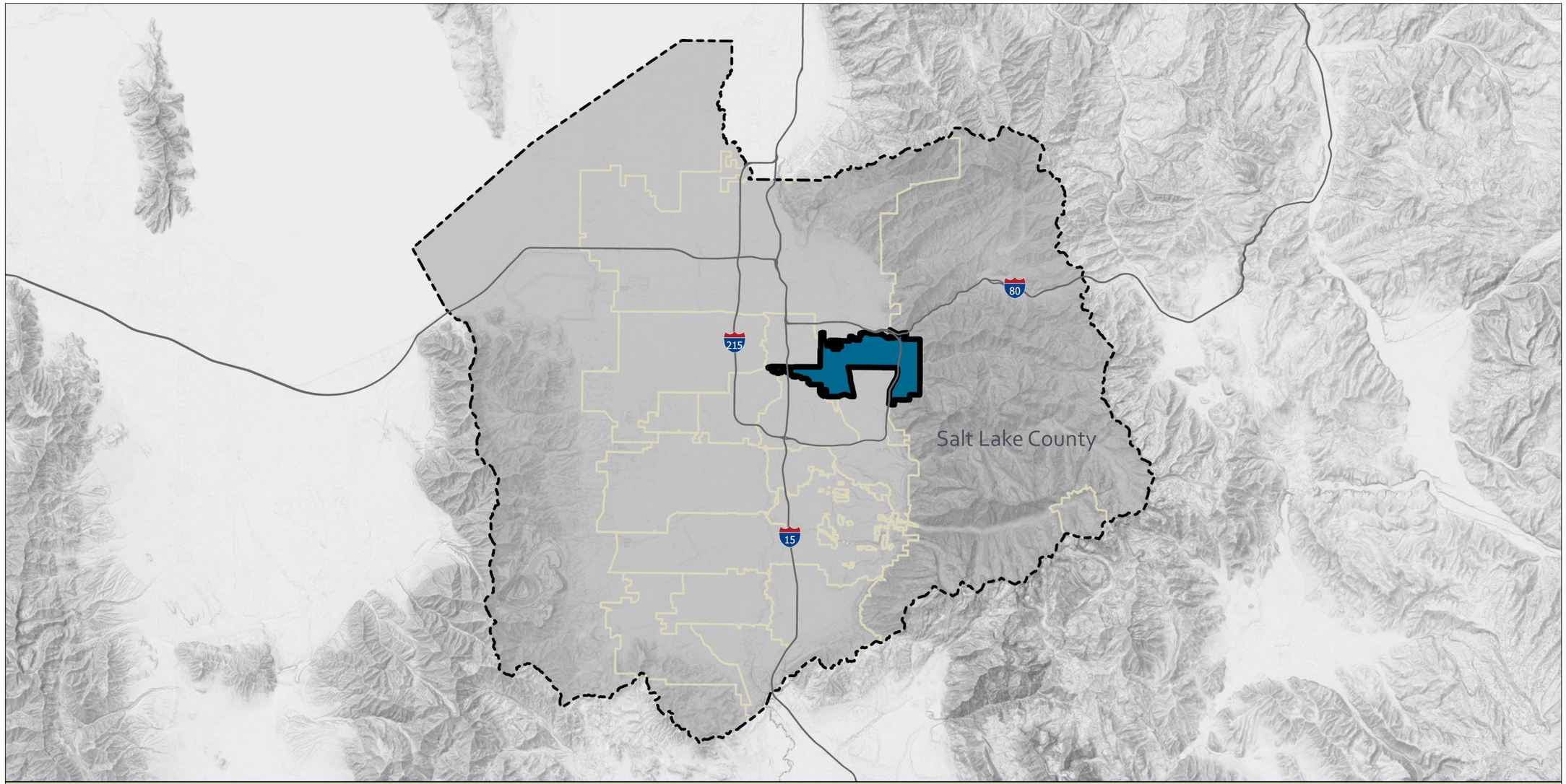
This plan contains a summary of all analysis and recommendations resulting from the analyses performed. Specific sections of this TMP include:

- **Chapter 1 – Introduction** – discusses the purpose of the document, the process followed to develop the document, planning goals to meet existing and future travel demand for both motorized and non-motorized travel, the document structure, and the study area.
- **Chapter 2 – Existing System Evaluation** – discusses the existing conditions inventory that was conducted.
- **Chapter 3 – Future System Analysis** – discusses the use of the Wasatch Front Regional Council (WFRC) travel demand model to support the development of the Transportation Master Plan.
- **Chapter 4 – Recommendations** – summarizes the roadway, intersection, active transportation, and transit facility improvements needed to enhance the transportation system.
- **Appendix A – Level of Service Analysis, Traffic Count Data and Traffic Analysis Results**.
- **Appendix B – Crash Data.**
- **References**

## 1.4 Study Area

The incorporated boundary of Millcreek defines the study area and considers land use and transportation connections with the adjacent cities of Murray, Taylorsville, West Valley City, Salt Lake City, South Salt Lake, Holladay and Salt Lake County. **Figure 1-1** depicts a vicinity map for the Millcreek boundary, study area and surrounding communities.

**Figure 1-1 – Millcreek Boundary**



# 2 Existing System Evaluation

## 2.1 Land Use

Millcreek land use consists of approximately 75 percent residential areas and 25 percent commercial areas dispersed throughout Millcreek. A majority of these residential zones consist of single-family homes, with some multi-family zoned areas along the major routes. There are major commercial corridors along 3900 S, 3300 S, 900 E, 700 E, State Street, Highland Drive, Wasatch Boulevard and others; many of these major commercial areas front state routes and are under UDOT's jurisdiction. The open land within Millcreek's boundary is limited to a few small agriculturally zoned areas and forestry areas to the east near the mountains. **Figure 2-1** depicts the existing land use for Millcreek.

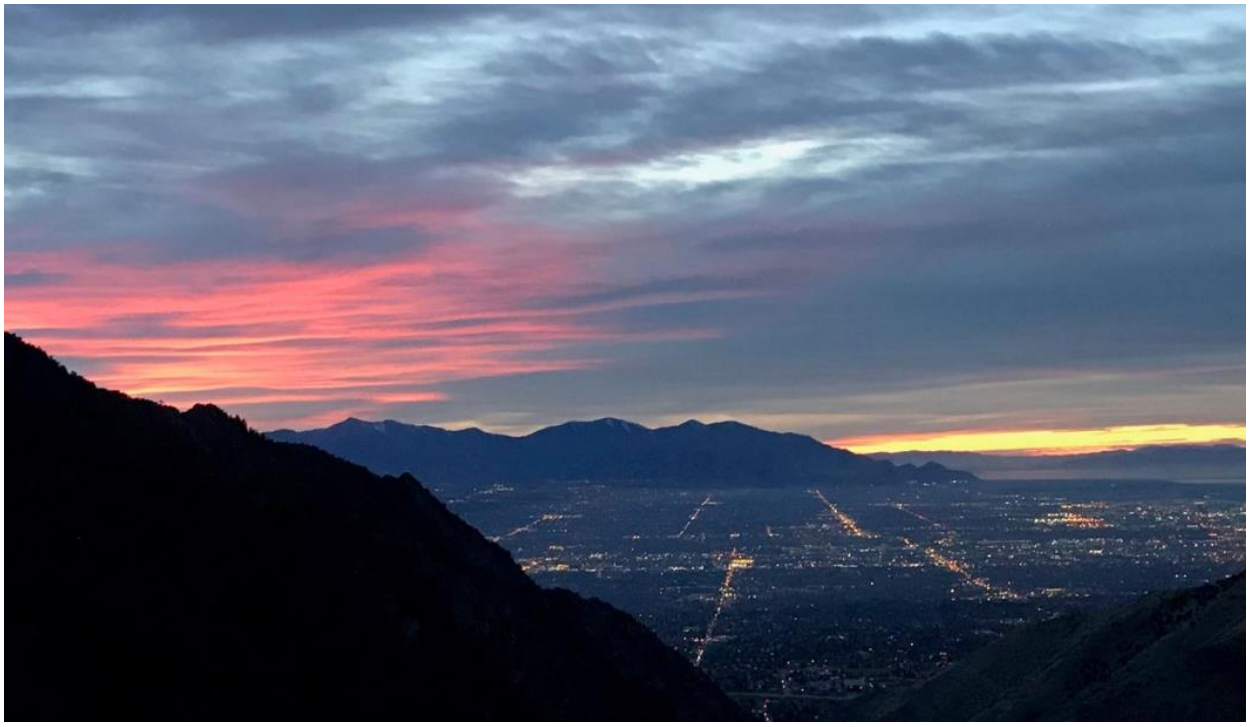
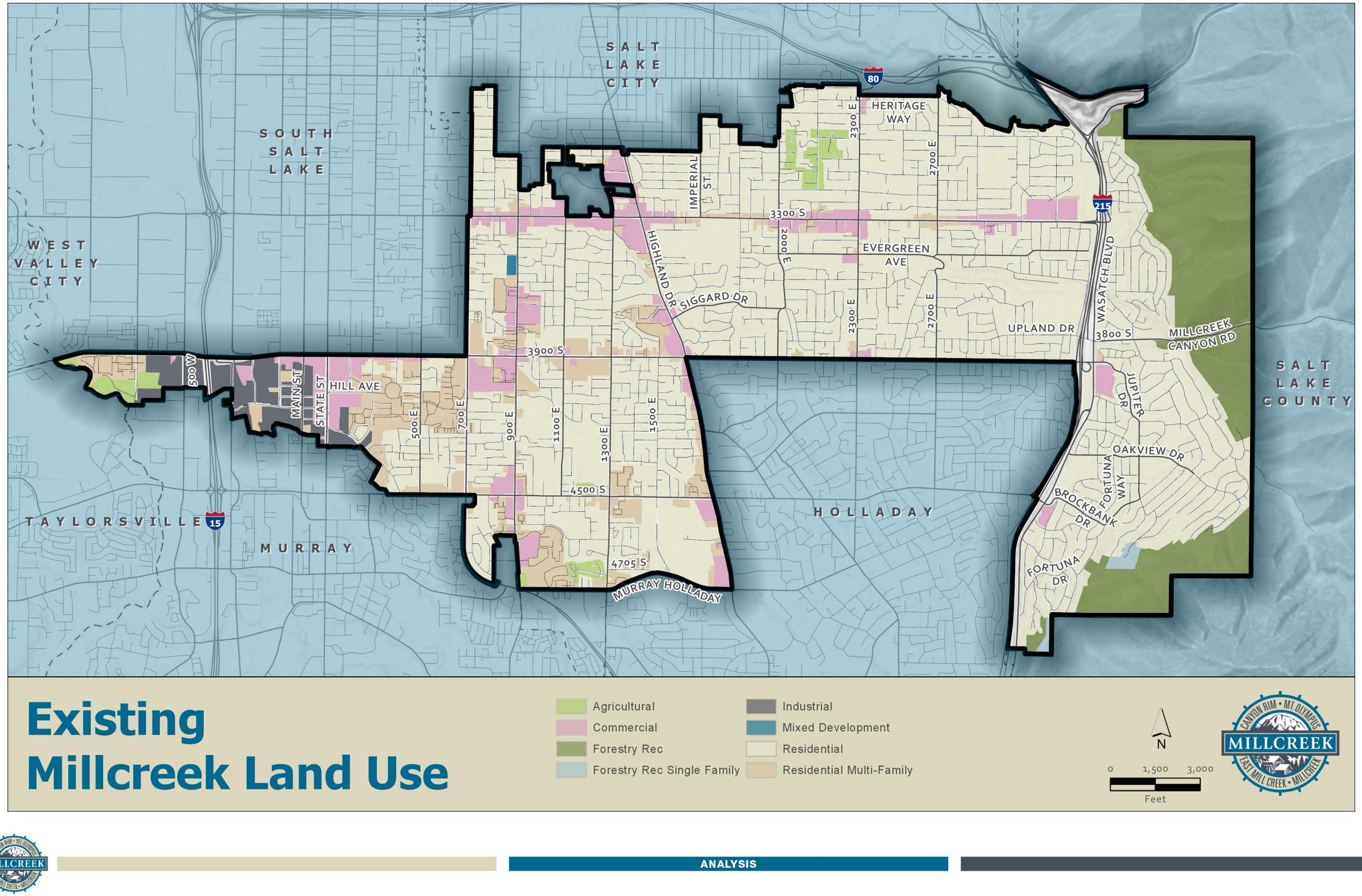


**Figure 2-1 – Existing Millcreek Land Use Map**



## 2.2 Existing Roadway Functional Classification

Functional classification of the existing roadways is in accordance with guidelines prepared by the Federal Highway Administration (FHWA) (2013 Edition). Federal funding programs specifically apply to roadways with functional classifications of collector and above. Roadway classification is in relation to their function, with respect to both mobility and access. For example, an interstate freeway occupies one end of a spectrum between mobility and access, providing traffic with greater mobility, and limited access to adjacent lands. A cul-de-sac at the opposite end of this spectrum provides access to land but offers inefficient movement of traffic.

To enable functionality of streets and highways, the planning and design development of the facilities should consider those elements that support the intended functions. **Table 2-1** provides typical descriptions of the various roadway functional types and related planning and design development considerations.

## Table 2-1 – Typical Roadway Functional Classifications

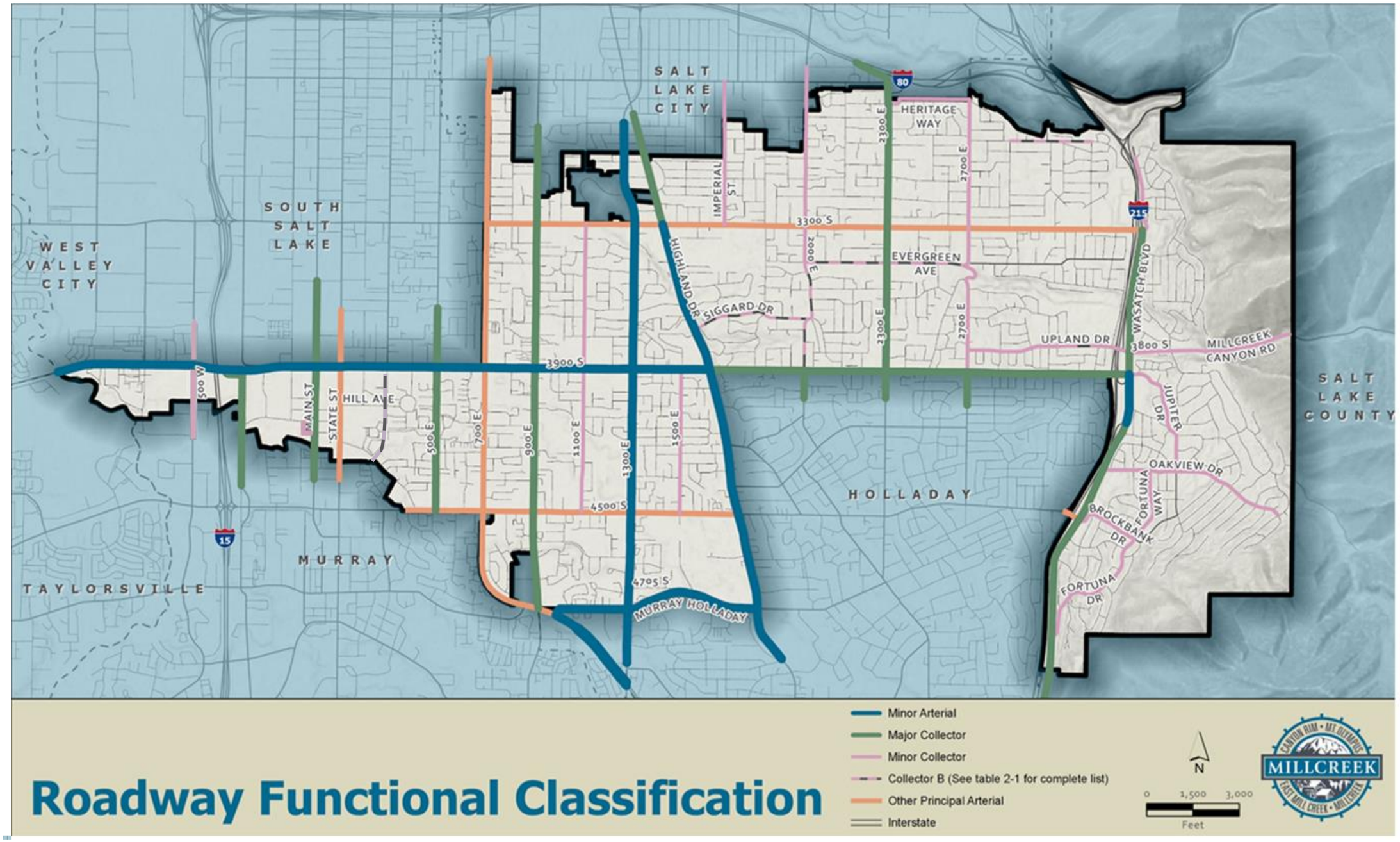
| Roadway Classification | Description | Examples |
|---|---|---|
| Interstate | Interstates promote movement of traffic with limited access, high speeds, separated directional lanes, adequate geometries, and grade-separated intersections. The interstate freeway is essentially a specialized Principal Arterial and prohibits Active Transportation facilities. | I-15<br>I-215<br>I-80 |
| Principal Arterial | Principal arterials are generally high traffic volume roads within a study area. These roadways contain the greatest proportion of through or long-distance travel. Roadway access should be limited to promote efficient traffic movement. Speeds are generally 35 to 45 mph range in urban situations, and parking and Active Transportation is usually prohibited except for pedestrian movements. Arterials are approximately a mile apart, but may be spaced at half-mile separations. Many of the intersections will be signalized, and signal placement and coordination are critical to the operation of the arterial. | 4500 South<br>3300 South<br>700 East |
| Minor Arterial | Roadways that connect principal arterials and collectors are classified as minor arterials. Minor arterials usually have capacity sufficient to carry 3 or 4 lanes of traffic and have curb, gutter and sidewalk along both sides. The predominant function of a minor arterial is to provide movement of through traffic, but it also provides considerable access for local traffic that originates or is destined to points along the roadway and Active Transportation. Often minor arterials become boundaries to neighborhoods, and serve less concentrated developments such as neighborhood shopping centers or schools. Urban speeds are generally 35 to 40 mph. Access may be restricted and parking is often prohibited in an urban situation. | 3900 South<br>1300 East<br>Highland Dr |
| Major Collector / Minor Collector | A collector is intended to concentrate residential and rural traffic and direct it to the arterial system. Collectors usually have capacity to carry 2 or 3 lanes of traffic, and have curb, gutter and sidewalk along both sides and accommodate Active Transportation. To preserve neighborhoods, collectors are generally spaced every half mile. Direct access to adjoining property is common and often essential. Operating speeds are generally 25 to 35 mph. Parking is acceptable, but may be limited. Collectors are sometimes sub-categorized into major and minor collectors. Major collectors tend to connect important regional facilities directly to the arterials, while minor collectors usually connect to the local roads.<br><br>Collector A: All collectors not listed in Collector B list below.<br><br>Collector B (roads where traffic calming speed humps are introduced):<br>• Evergreen Avenue (2000 E to 2700 E)<br>• Siggard Drive (2000 E to Highland Drive)<br>• 2000 E (Evergreen Avenue to 3900 E)<br>• Upland Drive (3140 East to Grandeur Park Lane)<br>• E Louise Avenue (2900 E to South Valley Street)<br>• E Kenton Drive ( S Metropolitan Way to South Valley Street)<br>• 2900 S (S 2700 E to S 2420 E St)<br>• Claybourne Ave (Connor St to 2300 E)<br>• Atkin Ave (2000 E to 2300 E)<br>• Millcreek Rd (Wasatch Blvd to Gilroy Rd)<br>• 300 E (Gordon Ln to 3900 S)<br>• 1500 E (4500 S to 3900 S)<br>• Lambourne Ave (2000 E to 2300 E)<br>• Lisa Dr (Nila Way to 3925 S) | *Major Collectors:*<br>900 East<br>2300 East<br>Wasatch Blvd<br><br>*Minor Collectors:*<br>*1100 East*<br>*2000 East*<br>*2700 East*<br>*Upland Dr* |
| Local Streets | Local streets typically consist of 2 lanes and shoulders, with curb, gutter and sidewalks present in some locations and accommodate Active Transportation. Local roads are the capillaries of a transportation network, providing direct access to public facilities, businesses, and private property. The typical speed limit on local streets is 20 to 25 mph and parking is usually permitted. | Local streets constitute all the Millcreek-owned roads that are not classified under the preceding categories. Some local roads may also be private streets. |

**Table 2-2** summarizes proposed functional class changes by Millcreek Staff to the approved road functional classifications to the existing transportation system network**.** However, some segments of these roadways were not constructed to the adopted and/or recommended standards and do not have sufficient pavement width and/or sidewalks. **Appendix A Table 5-6** includes a more comprehensive review of Millcreek's Transportation Network that provides more detailed information regarding the approximate pavement widths and characteristics of the functionally classified roadways.

**Table 2-2 – Millcreek Adopted Functional Class Modifications**

| Road Segment | Previous Functional Classification | Newly Adopted Function Classification |
|---|---|---|
| Highland Drive from North City Boundary to South City Boundary | Minor Arterial | Major Collector |
| 2700 East from 3300 South to 3900 South | Major Collector | Minor Collector |

**Figure 2-2 – 2019 Roadway Functional Classification Map**



## 2.3 Level of Service Analysis

Regional forecasts and plans assisted the development of Millcreek's Transportation Master Plan. The Wasatch Front Regional Council (WFRC) Travel Demand Model version 8.2 Year 2011 is a tool to measure existing and future street network performance based on the anticipated growth forecasts of Millcreek and its neighboring communities. The Model predicts the performance of the future street network along with deficiencies within the system.

Recommendations in the TMP assume achieving a minimum Level of Service (LOS) D in the year 2040. There may be instances where Millcreek elects to operate intersections and roadways at higher congestion levels than the adopted LOS D standard. For an intersection or roadway section, excessive cost to achieve LOS D or willful intent to tolerate congestion within a commercial district are just two examples where Millcreek may opt to do so on a case by case basis.

### Roadways

*Description of Level of Service*

Level of Service is a measure of the performance of an element of traffic infrastructure and qualitatively describes levels of congestion. An intersection, a rural roadway, or an urban road segment are graded, A through F, based on the adequacy of their performance under given traffic conditions.

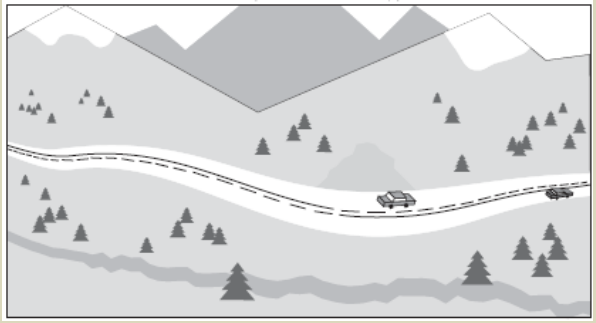
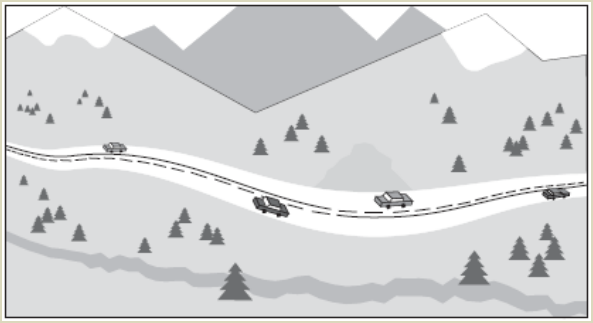
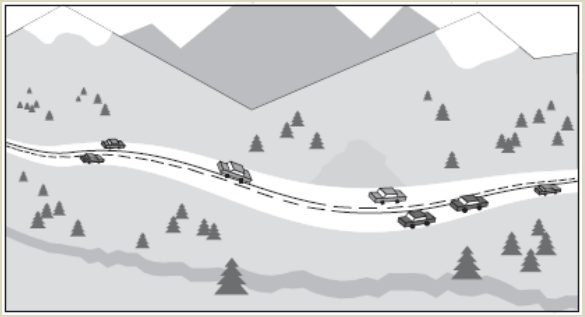
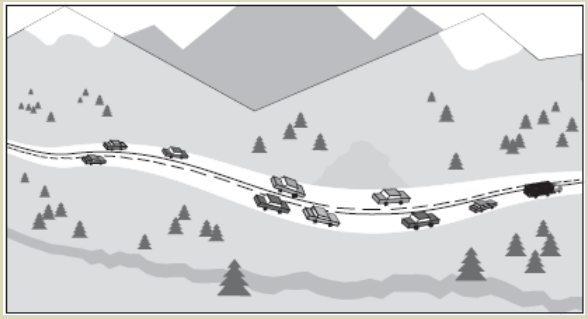
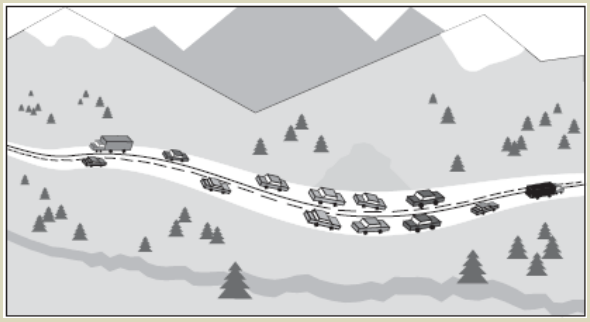
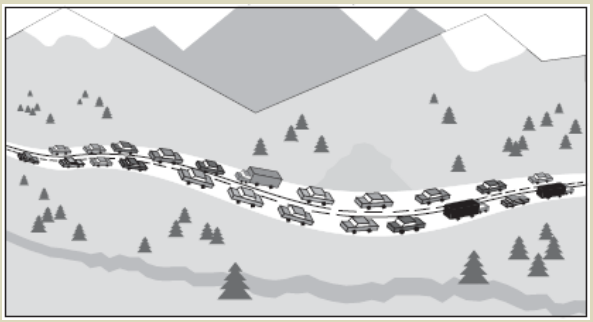
LOS qualitatively describes how well a roadway or intersection operates and using a letter grade from "A" to "F," similar to letter grades in school. LOS A represents traffic conditions that permit free vehicle movement with little to no congestion, and Level of Service F is where traffic conditions are very congested and vehicles may experience severe delay. Some congestion occurs at a level of Service D, but the transportation system is assumed to be adequate (not failing) at this level.

LOS is a description of different operating conditions that occur when accommodating various traffic volumes. It is a qualitative measure of the effect of traffic flow factors, such as speed, travel time, interruptions and delays, freedom to maneuver, and driver comfort and convenience. The LOS for roadways and unsignalized intersections ranges from "free flow" to "highly congested flow."

In rural areas, traffic flow is uninterrupted; but in an urban situation, traffic controls at intersections, lower speed limits, numerous approaches, and, in some cases, parking interrupt roadways. These interruptions in urban situations usually provide the necessary gaps for vehicular access onto other roadways. Rural roadways with no gaps can often compromise vehicular safety because vehicle speed is unpredictable and roadway interruptions are not consistent as compared to urban areas.

All of the roadways within Millcreek qualify as urban for their LOS evaluation. Flows divided into six levels of service are depicted in **Table 2-3 Level of Service for Roadways**:

**Table 2-3 – Level of Service (LOS) for Roadways**

| | |
|---|---|
|  <br>**Level A**<br>Free flow, low volumes and densities, high speeds. Drivers can maintain their desired speeds with little or no delay. |  <br>**Level B**<br>Stable flow, operating speeds beginning to be restricted somewhat by traffic conditions. Drivers still have reasonable freedom to select their speed. Suitable for rural design standards. |
|  <br>**Level C**<br>Stable flow, but speeds and higher volumes more closely control maneuverability. Suitable for urban design standards. |  <br>**Level D**<br>Approaches unstable flow, tolerable operating speeds and considerably affected by operating conditions. Drivers have little freedom to maneuver. |
|  <br>**Level E**<br>Unstable flow, with yet lower operating speeds and, perhaps, stoppages of momentary duration. Volumes at or near capacity. |  <br>**Level F**<br>Forced flow, both speed and volumes can drop to zero. Stoppages may occur for short or long periods. These conditions usually result from queues of vehicles backing up from a restriction downstream. |

To determine the LOS of an urban roadway, numerous factors are considered. For planning purposes, the factors to focus on are the number of travel lanes and the road's cross-section. The cross section includes the associated curbs, gutters, sidewalks, park strips, bike lanes,

parking lanes and medians. These elements influence the efficiency, safety and function of a roadway.

Urban roadways are typically constrained by the operation of intersections, so much of the analysis focuses on intersection operations. On roadways where intersections are present, the intersections generally dictate the capacity of an urban roadway section. Traffic operational performance at major intersections control LOS on urban roadways.

*Roadway LOS Analysis*

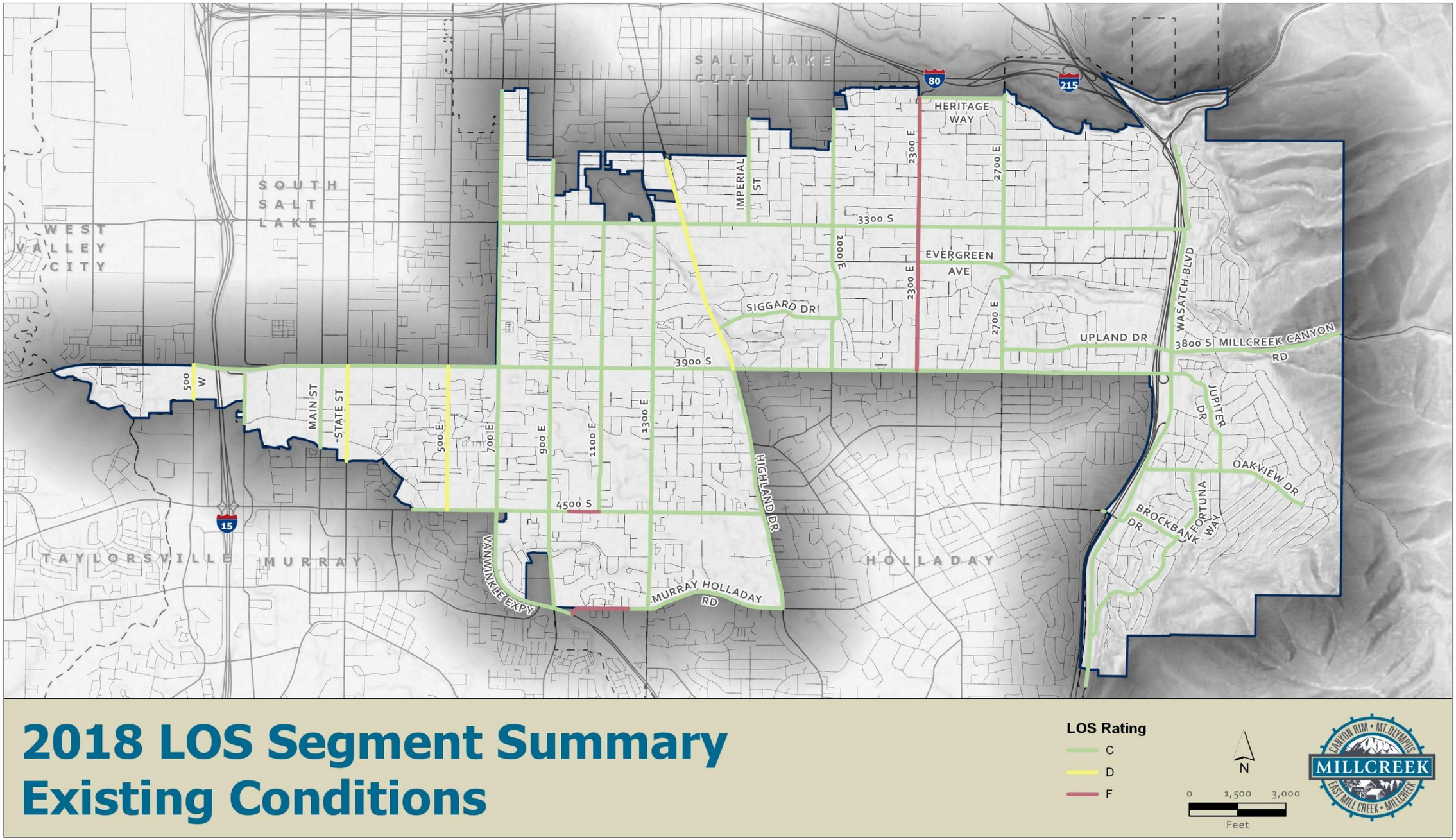
For this analysis, the existing (2018) roadway annual daily traffic (ADT) volumes are a linear interpolation of the 2011 and 2040 daily traffic volumes obtained from the WFRC model. Peak hour turning movement counts at six (6) intersections within Millcreek were identified and field documentation was collected to provide verification of the growth rates for the estimated 2018 ADTs. For planning purposes, the 2018 ADT volumes are appropriate for roadway segment analysis existing LOS estimation based on the description above. **Appendix A** includes the LOS calculation criteria and adjustment factors.

**Table** summarizes the failing roadway segments on the existing system within Millcreek. **Figure 2-3** depicts existing (2018) Millcreek Roadway Segment LOS. **Table A-3** provides more in-depth details for the levels of service for other roadways in Millcreek's transportation system.

**Table 2-4 – Existing (2018) Failing Level of Service**

| Roadway | From | To | Functional Classification | Lanes (2018) | 2018 AADT | LOS |
|---|---|---|---|---|---|---|
| Murray Holladay Road | Van Winkle Expy | Coopers Hawk Bay | Minor Arterial | 2 | 15,498 | F |
| 2300 E | North City Limits | 3900 S | Major Collector | 2 | 15,014 | F |
| 4500 South | Garden Dr | 1100 E | UDOT - Other Principal Arterial | 2 | 20,967 | E/F |

**Figure 2-3 – Existing (2018) Millcreek Roadway Segment LOS**



## Intersections

*Description of Level of Service*

For short-range planning purposes, intersection peak hour turning movement count data is the input for conducting an intersection capacity analysis using the Highway Capacity Manual (HCM) method. Average Control Delay per vehicle at intersections based on control type determines the corresponding LOS for overall intersection, intersection approach or movement. **Table 2-5** summarizes the HCM LOS criteria for signalized and unsignalized intersections.

**Table 2-5 – Level of Service (LOS) for Intersections**

| Level of Service (LOS) | Average Control Delay (seconds/vehicle) | |
|---|---|---|
| | Signalized Intersections | Unsignalized Intersections |
| A | <=10 | <=10 |
| B | >10 - < 20 | >10 - < 15 |
| C | >20 - < 35 | >15 - < 25 |
| D | >35 - < 55 | >25 - < 35 |
| E | >55 - < 80 | >35 - < 50 |
| F | >80 | >50 |

**Source: Highway Capacity Manual 2000, Transportation Research Board, National Research Council, Washington, D.C., 2000.**

The HCM method calculates delay based on the capacity available to service the various movements at an intersection. For signalized intersections, the amount of green-light time provided for each movement and the impacts of any conflicting movements determine capacity. For unsignalized intersections, the availability of gaps in the major street to allow minor street movements to occur determines the delay experienced and corresponding LOS. Delay results in driver frustration and anxiety, loss of time and increased fuel consumption.

For a signalized intersection, an intersection LOS of “D” is acceptable. A key component to improve the intersection LOS is to assure signals are adequately timed to discharge traffic volumes at each approach.

Millcreek identified six (6) major intersections for analyses. These intersections include:

1. Evergreen Avenue and 2000 East,
2. Evergreen Avenue and 2700 East,
3. Wasatch Boulevard and 3900 South,
4. Highland Drive and 3900 South,
5. 2300 East and 3900 South, and;
6. 1300 East and 3900 South.

An analysis of each intersection included traffic count data, a level of service and traffic analysis for the AM and PM conditions:

A. turning movement counts,
B. where LOS E and F occur,
C. the intersection LOS for signalized intersections,
D. worst movement LOS for stop-controlled intersections.

**Appendix A** includes the results of our analysis.

## 2.4 Crash History/Hot Spots

Numetric crash data maintained by UDOT is the data resource for analyzing hot spots or locations within Millcreek with severe and/or reoccurring crashes. Millcreek's recent incorporation as a municipality necessitated two separate data study methods. The methods include:

1. Determining the point locations with the highest number of crashes since the incorporation of Millcreek, and;
2. Determining the segments with the highest crash rate between 2010 and 2017.

Generally, crash analysis for a 5-year period is industry accepted. However, due to Millcreek's incorporation in December 2016, it is difficult to sort the previous data (2015 and earlier) by Millcreek boundary. The first method looked at each roadway in Millcreek from 2016 to 2018 by a tenth of a mile (point location). Detailed crash analyses for the four (4) locations with the highest number of crashes helped determine any improvements that could eliminate or reduce those types of reoccurring crashes.

The second method to determine the segments with the highest crash rates used Numetrics data, which is set up to include crash rates as output. Therefore, this crash study relies on the crash rates provided by Numetrics without additional calculations. Detailed crash analyses for the three (3) segments with the highest crash rate between 2010 and 2017 helped determine reoccurring crash types and contributing circumstances and develop recommendations to reduce or eliminate future crashes.

In some instances, there was overlap between the point locations with the highest crashes and those segments with the highest crash rates. **Table B-1** lists the four point locations with the highest number of crashes and the three segments with the highest crash rates for the timeframes described above. The crash data for each of the hotspot locations is available in Appendix B of this Transportation Master Plan.

Analyses of these locations and the characteristics of each crash helped identify recommendations in the Capital Improvements Project List to reduce the likelihood of similar crashes in the future. **Table B-2** summarizes the reoccurring crash characteristics found at each point location and segment hotspot. The recommendations associated with each identified crash hot spot are included in **Section 4** of this Transportation Master Plan.

## 2.5 Alternative Transportation Modes

### Bicycle and Pedestrian Facilities

Salt Lake County recently completed an Active Transportation Implementation Plan (ATIP). This plan builds upon the previous Bicycle Transportation Improvement Plan (BTIP) by incorporating elements of all forms of alternative transportation. This BTIP identifies a high comfort bicycle network for all communities located in Salt Lake County, including Millcreek. This ATIP recommended network is the current Millcreek Plan and includes existing and proposed facilities. Millcreek's General Plan identifies the bicycle facility types as:

1. ***Shared Roadway:*** Simply consisting of signage and/or 'sharrow' markings on the pavement, shared roadways are only suitable along streets with low traffic speeds and volumes where most bicyclists are already comfortable sharing space with motor vehicles. Bike boulevard treatments, including speed humps and curb extensions, could be considered to reduce vehicle speeds. An example of an existing shared roadway is 2700 East between 3300 South and Tanner Park.
2. ***Bike Lane:*** Bike lanes provide a dedicated space for biking with striping and painted symbols. They are intended for one-way travel and should be provided on both sides of a street, with a minimum preferred width of 5'. 2300 East is an example of a roadway with existing bike lanes.
3. ***Buffered Bike Lane***: Buffered bike lanes provide a higher level of comfort than standard bike lanes by providing an additional painted buffer zone between bike lanes and motor vehicle lanes. This added buffer area should be at least 18" wide. Millcreek has a small section of an existing buffered bike lane on 900 East between 4500 South and Murray Holladay Road.
4. ***Separated Bike Lane:*** Separated bike lanes provide physical separation between cyclists and motor vehicles, while also keeping the cyclists separate from pedestrians. Rather than a painted buffer zone like buffered bike lanes, the buffer zone of a protected bike lane includes a vertical element such as bollards or planters. They can also be elevated to sidewalk-level. In certain situations, two-way separated bike lanes carrying both directions of bicycle traffic on one side of the street may be appropriate.
5. ***Sidepath:*** Sidepaths are two-way shared-use facilities running parallel to streets at sidewalk-level. They are intended for use by cyclists, pedestrians, and other non-motorized users and should be at least 10' wide to safely accommodate all movements. The PRATT trail is a type of sidepath.

**Figure 2-4** (provided by Millcreek's General Plan Consultant Logan Simpson Design Consultants) depicts Millcreek's Great Connections Bicycle Network Map included in the Millcreek's General Plan. Additionally, Millcreek's General Plan has identified High Priority and Moderate Priority Sidewalk Connections as well as crossing improvement locations. **Figure 2-5** (provided by Millcreek's General Plan Consultant) depicts Millcreek's Great Connections: Walkability map included in the General Plan. It is recommended that a collaborative effort to develop a bicycle study between Millcreek and its neighbors. See section **4 Recommendations.**

## Transit and Transit Routes

Most of the functionally classified roads within Millcreek contain at least one bus route. Millcreek's General Plan Transit Network Framework focuses on enhancing existing bus stops by providing amenities including shelters at key stop locations. **Figure 2-6** (provided by Millcreek's General Plan Consultant) depicts the roads within Millcreek with bus routes and the existing bus stops with proposed shelters.

**Figure 2-4 – Millcreek Bicycle Network (Included in the Millcreek General Plan)**

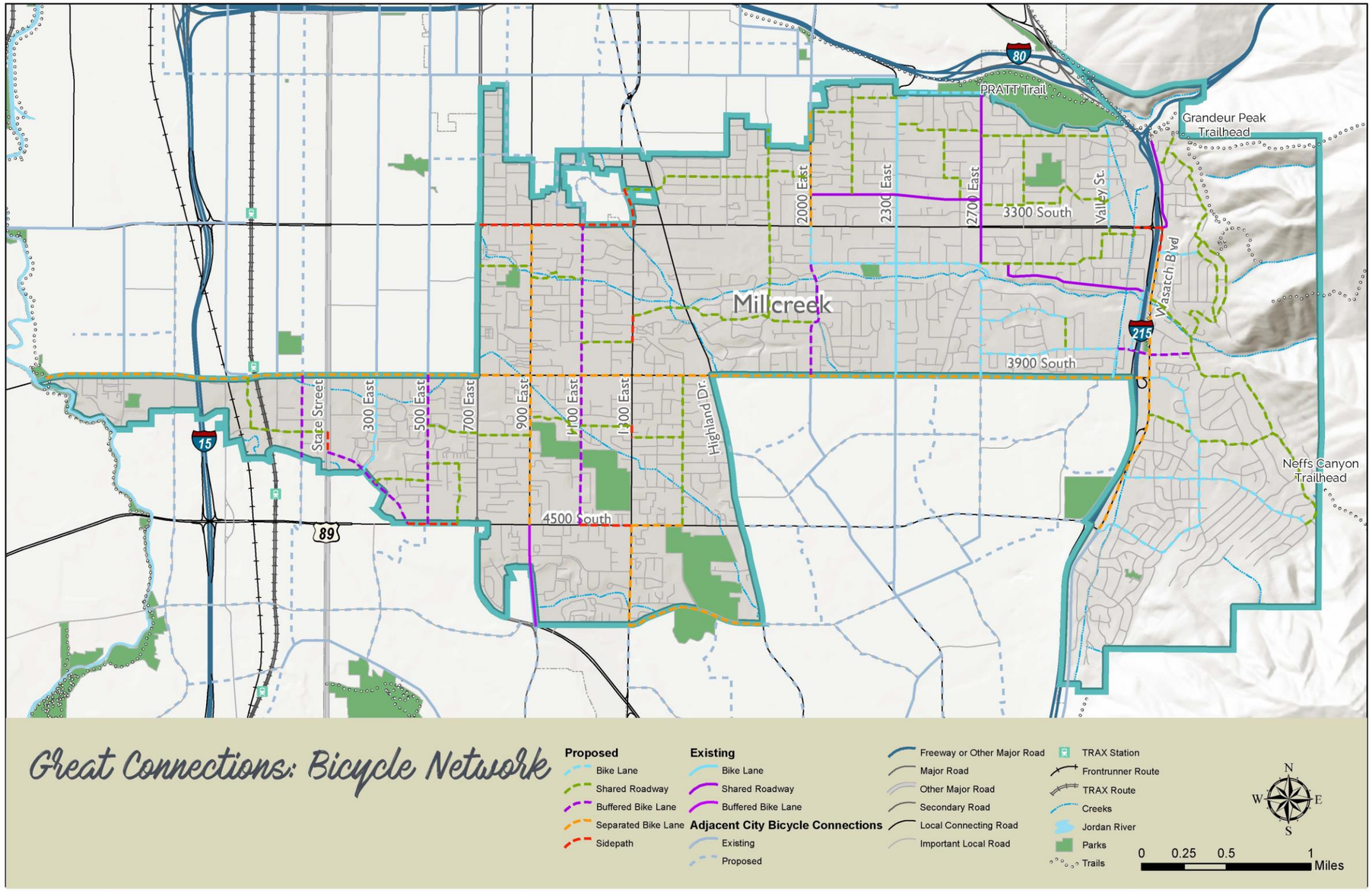


**Figure 2-5** – **Millcreek Walkability Network (Included in the Millcreek General Plan)**

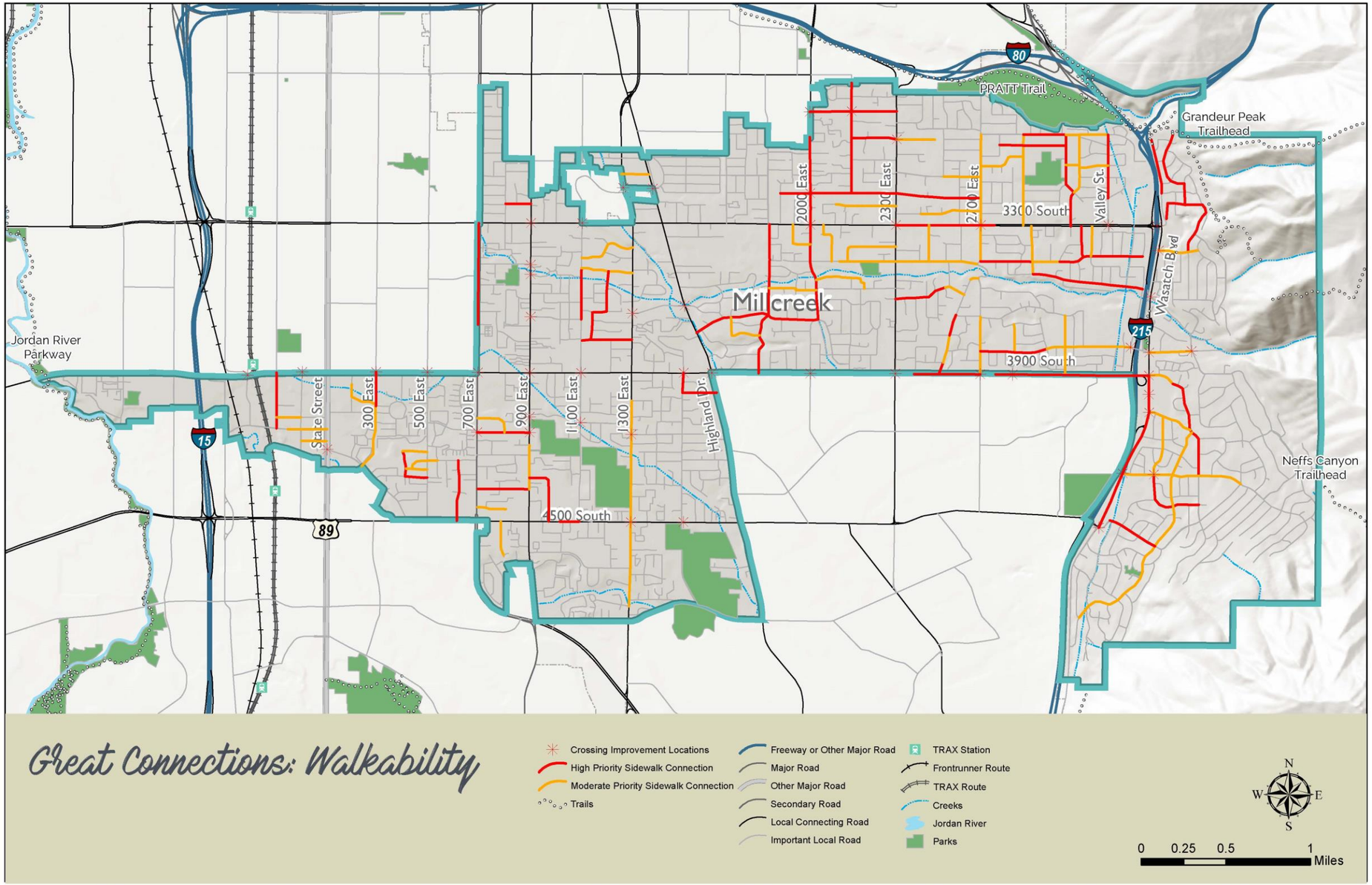
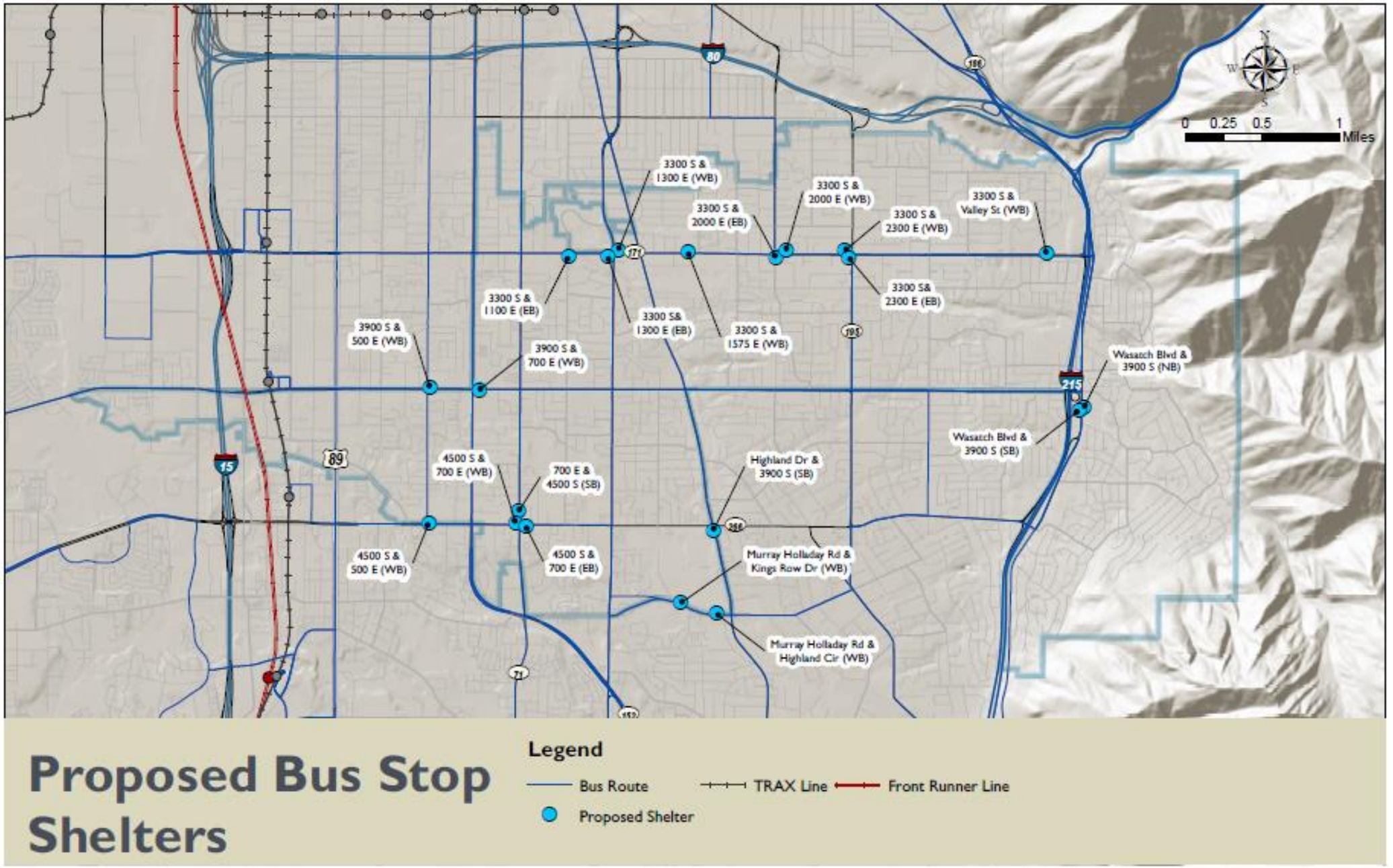


**Figure 2-6 – Network with Bus Routes and Proposed Bus Stop Shelters (Included in the Millcreek General Plan)**



## 2.6 Jurisdiction of Roadways in Millcreek

Utah Department of Transportation (UDOT) owns and operates several of the major roadways in the Millcreek transportation network. These roads include major thoroughfares such as 3300 South, 4500 South, and 700 East. Millcreek cannot propose changes to the functional classification or lane configuration without proper traffic analysis to support the proposed changes and UDOT's endorsement. Therefore, no changes to the functional classification or lane configuration on these roads have been analyzed or proposed.

If Millcreek desires to change these roadways in the future, a local government project study in coordination with UDOT is required to ensure the proposed revisions accommodate the projected traffic. Projects have been included on the Capital Improvements Plan (CIP) for some UDOT roads that do not change lane configuration or functional classification, rather reconstruction of the road to meet typical sections including utility relocation and active transportation reconstruction. These proposed roadway improvements are included in UDOT's Statewide Transportation Improvement Program.

Millcreek has included projects on the Capital Improvement Plan (CIP) for UDOT roads including 3300 South and 4500 South. These projects do not change the functional classification or lane configuration of the roadways; rather improve safety through sidewalk improvements and utility relocation to create a safer typical section. It is recommended that Millcreek undertake a 3300S corridor study, as a minimum, from Wasatch Blvd to the east and 700 E on the west. Furthermore, it may be beneficial to extend the study limit to the I-15 Freeway through the South Salt Lake City boundary. See section **4 RECOMMENDATIONS.**

# 3 Future System Analysis

This TMP considers current and future transportation needs within Millcreek. The accommodation of future travel demand is an essential part of transportation planning, and helps identify transportation needs that may not be apparent with existing demand. Input from the Millcreek staff and travel demand models prepared and endorsed by WFRC and UDOT are primary tools that have been used to determine the future traffic demand for the study area. Several localized changes made in the base model represent Millcreek local conditions reflective of known and potential developments within Millcreek.

This section summarizes land use assumptions, including population and employment for the study area. This information utilized in the transportation modeling process reflects traffic forecast volumes for functionally classified roadways within Millcreek. These traffic forecasts in turn help identify future deficiencies in the transportation system.

## 3.1 Travel Demand Modeling Overview and Definition

The WFRC projections from the Travel Demand Model Version 8.2 are the basis for this Transportation Master Plan. This model was modified through a localized/sub area validation process, narrowed to the focus on Millcreek only. The WFRC regional model includes data for multiple counties and local jurisdictions along the Wasatch Front. A sub area validation of the model verified that the travel demand model is consistent with field conditions.

Existing UDOT traffic counts were compared to travel demand outputs in the travel demand model. Discrepancies between the two data sets necessitated slight modifications to lane configurations and connections to validate the model and reflect actual field conditions.

Utah does not have a recommended validation process. Therefore, the project team used the Root Mean Square Error (RMSE) methodology for subarea or corridor validation detailed in the Florida DOT Project Development and Environment Manual (Part 2, Chapter 2 Traffic Analysis). This process extracts a smaller area from a regional model with the goal of improving statistics for trips within the subarea. This volume-over-count methodology compares the volumes from the model to field count data. **Table A-4** depicts the recommended validation standards for volume-over-count ratios for each functional classification. A higher level of statistical validity is a generally recommended industry practice for higher order facilities.

UDOT and WFRC reviewed the travel demand model, including assumptions, and provided endorsement in May 2018. Both agencies have endorsed the model as of the date of publication of this TMP.

## 3.2 Future Land Use

Millcreek area was formerly a part of unincorporated Salt Lake County, until incorporation in December 2016. Millcreek is largely a residential community with single and multi-family residential units along with several points of commercial and industrial development. The eastern edge of Millcreek is largely undeveloped mountainous terrain with homes located on the bench near the bottom of the Wasatch Mountains. Millcreek is landlocked to the north, south, and west

by neighboring municipalities including Murray, Taylorsville, West Valley City, Salt Lake City, South Salt Lake, Holladay and Salt Lake County.

Although predominantly residential, there are several central business districts and industrial facilities within Millcreek. These areas not only provide local services and shopping opportunities, but also job opportunities for residents. The central business districts identified in Millcreek's General Plan are in **Figure 2-1** of this plan.

The relationship between various land uses is an important component in developing traffic forecasts, especially since land use helps determine the number, purpose, route, mode, and daily distribution of trips. For example, since the majority of land use in Millcreek is residential, it is reasonable to expect that a large percentage of work and work related trips are to/from employment areas outside Millcreek.

For developing traffic forecasts for the TMP, Millcreek elected to use the WFRC projections. The WFRC, recognized as our Regional Metropolitan Planning Organization, develops and maintains population, housing, and employment estimates and projections on a wider geographic scale, and their socio-economic data is widely used by parties interested in planning and analysis.

**Table A-5** summarizes the 2040 model socio-economic input totals representing 44 demographic areas or traffic analysis zones (TAZs) in Millcreek. These inputs, while based upon the City's land use plan, also reflect the regional land use projections by the WFRC for Salt Lake County. Based upon these model assumptions, the population within Millcreek is expected to increase by approximately 0.72% by 2040. The model also assumes the population in Millcreek will be 57,506 residents. Given that the 2010 census data was compiled for Millcreek prior to its incorporation, a more accurate Millcreek resident population will be available following the 2020 census. Millcreek can update this TMP at that time. For the purposes of this TMP, we have assumed that the demographic data in the WFRC model is acceptable and will not make an appreciable difference in the findings and results of the model for Millcreek's transportation network system. Millcreek's future TMP update in 3 to 5 years will have the benefit of using the 2020 census data and WFRC has adopted 2050 model.

## 3.3 Regional Plans

The Federal government requires WFRC to develop and approve a Regional Transportation Plan (RTP) and update it every four years. The RTP usually covers a time span of 25-30 years, and governs regionally significant highway and transit development across the urbanized areas of Salt Lake, Davis and Weber Counties. Through a collaborative process, the WFRC and the Utah Department of Transportation (UDOT) use the RTP to prioritize long-term state funding for roadway improvements.

To address future state roadway needs, the most recent WFRC RTP, adopted in May 2015, identifies planned improvements for several sections of roads administered by Utah State and local governments. **Table 3-1** depicts improvements that directly or indirectly influence Millcreek.

**Table 3-1 – Improvements Influencing Millcreek**

| Roadway | From/To | Improvement | Phase |
|---|---|---|---|
| State Street | 600 N to I-215 | Operational | 2 (S-108) |
| Highland Drive | 3900 South to Van Winkle Expwy | Widening | 2 (S-115) |
| 4500 South | 900 East to Highland Drive | Widening | 3 (S-19) |
| Wasatch Boulevard | 4500 South to 6200 South | Widening | 2 (S-192) |
| 1300 East | 1300 South to Van Winkle Expwy | Operational | 1 (S-190) |
| 900 East | 3300 South to 4500 South | Operational | 1 (S-111) |
| I-215 | Interchanges at 4500 South (East) | Upgrade | Highway (S-162) |
| 3300 South | I-215 West to Highland Drive | Operational | 2 (S-11) |
| Parley's IC EIS | I-80/I-215/Foothill Blvd IC | Upgrade | EIS |
| 3900 S/I-215 IC | 3900 S/I-215 IC | Operational | Traffic Study |

After WFRC prioritizes a project on the RTP, UDOT may include it on the Statewide Transportation Improvement Program (STIP). UDOT manages the STIP through its Systems Planning and Programming Division on a five-year planning basis. The STIP, updated annually, includes transportation projects on the state, city and county highway systems as well as projects in the national parks, national forests, and Indian reservations. Highway and transit projects identified on the STIP are financially constrained, and have specific funding identified for the proposed improvement. These projects use various federal, state, and local funding programs. The 2018 STIP process identified funding for the following projects in the Millcreek area:

1. PIN 14948 3300 S; 3018 E to 3040 E – Sidewalk Improvements ($199,507)
2. PIN 15911 900 East; 3900 S to 4500 S – Safety/Reconstruction ($4.3 million)

Outside of Millcreek, but affects Millcreek Traffic:

1. PIN 15908 1300 East; 2100 S to Highland Drive – Reconstruction (no widening) ($3.9 million)
2. PIN 14552 I-80/I-215/Foothill Blvd Environmental Impact Study (no design and construction funding identified at this time)
3. PIN 16822 3900 S/I-215 Traffic Study (no design and construction funding identified at this time)

## 3.4 Traffic Forecasts and Analysis

### Roadways

Estimated average daily traffic (ADT) data for each functionally classified road from the 2040 WFRC base model compared against the same LOS thresholds from FDOT methodology, described in the **2.3 Level of Service Analysis** section of this report, determined the future LOS for the Millcreek road network. **Table 3-2** depicts projected failing roadways and **Figure 3-1** depicts the future 2040 LOS by segment. **Appendix A** depicts the comprehensive capacity

analysis of roadways within Millcreek. Millcreek growth is relatively flat and only one-segment changes in LOS, Main Street from the north city limits to the south city limits, from LOS C to LOS D by 2040.

**Table 3-2 – Future (2040) Segment LOS Failing Roadways**

| Roadway | From | To | Functional Classification | Lanes (2018) | 2040 AADT | LOS | Growth Rate |
|---|---|---|---|---|---|---|---|
| Murray Holladay Road | Van Winkle Expy | Coopers Hawk Bay | Minor Arterial | 2 | 16,887 | F | 0.4% |
| 2300 E | North City Limits | 3900 S | Major Collector | 2 | 15,125 | F | 0.0% |
| 4500 South | Garden Dr | 1100 E | UDOT - Other Principal Arterial | 2 | 24,055 | E/F | 0.7% |

## Intersections

**Figures 3-1 and 3-2** depict the movement volumes and intersection LOS for the six (6) selected intersections for the existing 2018 and future 2040 years. These intersections were selected because they are not part of UDOT's transportation network, yet have local significance. Many of the movements with LOS E and F in the existing conditions are no longer anticipated to operate at LOS E or F due to anticipated improvements to the roadway network and the expected of corresponding re-routing to the improved or widened roads.

**Figure 3-1 – Existing (2018) Intersection Traffic Volumes and Level-of-Service**

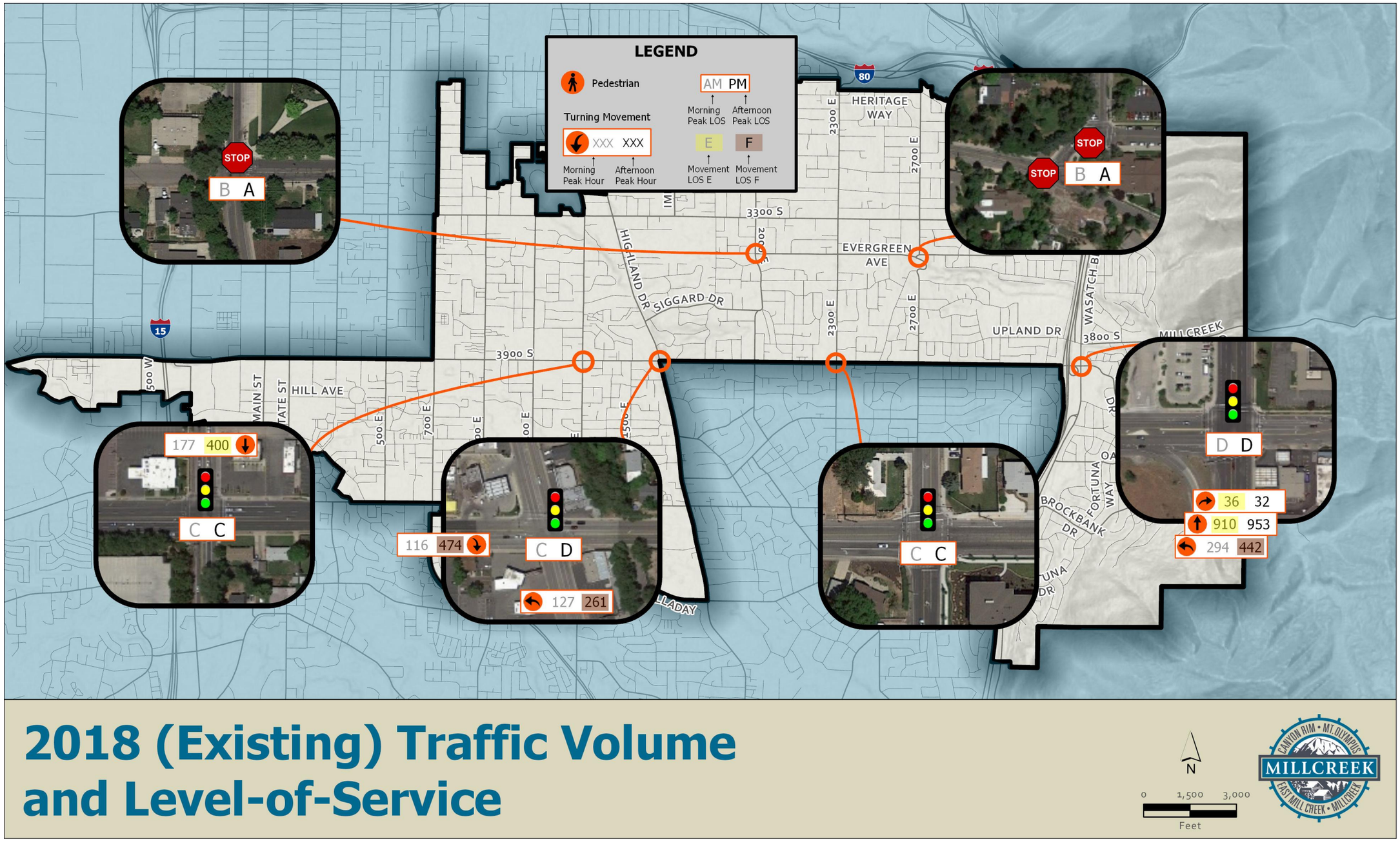
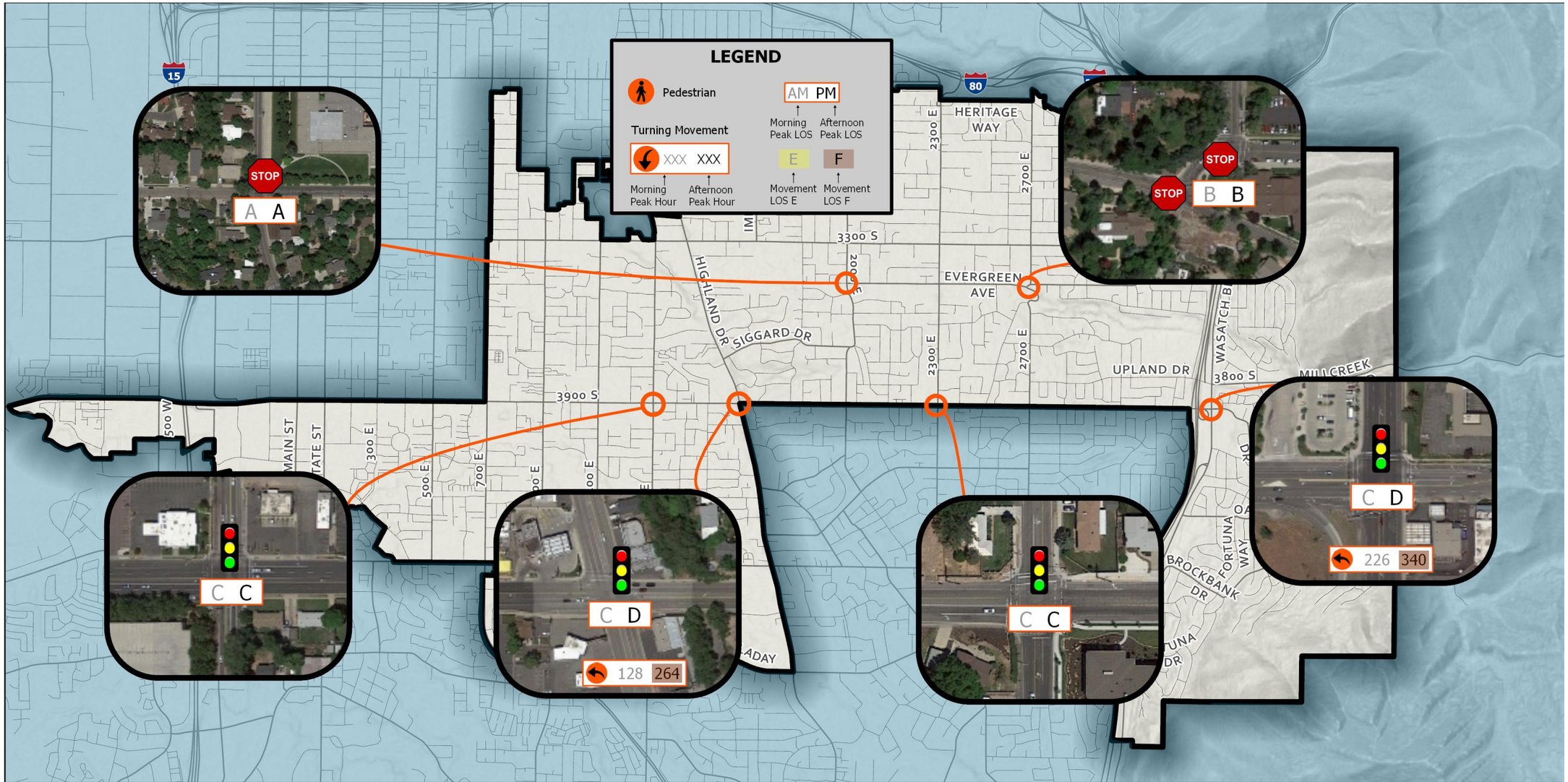


**Figure 3-2 – Future (2040) Intersection Traffic Volumes and Level-of-Service**



# 4 Recommendations

## 4.1 Millcreek, UDOT and WFRC Identified Capital Improvement Projects

Projects identified on the UDOT STIP and WFRC Regional Transportation Plan (RTP), including planned year and estimated project funding, have been included and prioritized in the Millcreek CIP based on available funding and project need. Should funding become available for a project earlier than planned, the project may be approved by Millcreek or the jurisdiction with responsibility of that project. Any time a change is proposed for a Transportation Project, Millcreek should verify the timing is consistent with the Stormdrain Master Plan Capital Facilities Plan to ensure that storm drains are constructed prior to roadway construction and surfacing.

**Table 4-1 depicts** short, mid and long-range project recommendations for roadways and intersections that have been developed with Millcreek input, analysis from this TMP, UDOT and WFRC planning studies. The recommendations include order of magnitude cost estimates are for planning purposes only and are in 2018 dollars. More detailed cost analysis is required to develop refined estimates.

Additionally, it is recommended that a collaborative study with neighboring communities be performed to develop a detailed implementation plan for bicycle facilities that includes comprehensive public outreach specific to the east side and support from elected officials of the newly formed City of Millcreek. Millcreek should also collaborate efforts with UDOT to conduct a corridor study of 3300 S to quantify roadway section widths, needed improvements, impacts to utilities and property owners, budgetary estimate of costs, etc.

## Table 4-1 – Short, Mid and Long-range Project Recommendations

**CIP PHASING PERIODS**

2018-2024 | 2025-2034 | 2035-2040

| Project Number | Priority | Range S=Short M=Mid L=Long | Pin | Street | Description | Project Type | Estimated Construction Cost | Notes |
|---|---|---|---|---|---|---|---|---|
| 1 | 1 | S | 14948 | 3300 S | 3018 E to 3040 E | Sidewalk | $ 199,507 | From UDOT STIP |
| 2 | 2 | S | 15911 | 900 E | 3900 S to 4500 S | Safety/Reconstruction | $ 4,300,000 | From UDOT STIP/WFRC RTP and identified by Millcreek |
| 3 | 3 | S | | Highland Drive | at 3900 S NBL | Modify signal timing. Perform a study to determine if dual left is warranted. | $ 3,000 | From Existing Capacity Improvements. Have not identified improvements, these are just locations with LOS worse than D. |
| 4 | 4 | S | | 2700 E | 3300 S to 3900 S | 3300 S to 3900 S - Curve signage (lighted signs), lighting, shoulder widening, guard rail, shoulder rumble strips, speed enforcement. Speed bump. Flashing Speed Limit sign. Realignment. | $ 300,000 | Numetric Crash Data - Top 3 highest Severe Crash Rate |
| 5 | 5 | S | | 900 E | 4500 S to Vanwinkle | 4500 S to Vanwinkle. Consider eliminating dog house signal heads at 4500 S and replacing with flashing yellow signal/ eliminate permitted left turn movements/ modify signal timing. Between 4600 S and 4680 S there are multiple stop controlled side streets/parking lot accesses that are not aligned consider closing/aligning accesses to reduce turning conflicts. Consider medians and access management. Consider changing posted speed limit. | $ 75,000 | Numetric Crash Data - Top 3 highest Severe Crash Rate |
| 6 | 6 | S | | 500 E | 3900 S to 4500 S | 3900 S to 4500 S - enforce parking within the parking limits. Several - hit parked cars incidents (12). Consider right turn lanes or left turn lanes at side streets to reduce rear end crashes. Eliminate Parking. Revise speed limit (existing is 35 mph). Enhanced parking facilities, traffic calming/bulb outs. Add bike lane. | $ 75,000 | Numetric Crash Data - Top 3 highest Severe Crash Rate. Identified by Millcreek and Salt Lake County's Active Transportation Plan (ATIP) |
| 7 | 7 | S | | 3900 S | Intersection at State Street | Consider eliminating dog house signal heads and replacing with flashing yellow signal/ eliminate permitted left turn movements/ modify signal timing. Consider access management techniques. High number of angle crashes | $ 5,000 | Numetric Crash Data - Top 4 highest number of injury crashes |
| 8 | 8 | S | | 900 E | Intersection at 4500 S | Consider eliminating dog house signal heads and replacing with flashing yellow signal/ eliminate permitted left turn movements/ modify signal timing | $ 5,000 | Numetric Crash Data - Top 4 highest number of injury crashes |
| 9 | 9 | S | | 3900 S | Intersection at Highland Drive | Consider eliminating dog house signal heads and replacing with flashing yellow signal/ eliminate permitted left turn movements/ modify signal timing. High number of angle crashes. Perform intersection safety analysis (sight distance). Manage accesses near intersection | $ 5,000 | Numetric Crash Data - Top 4 highest number of injury crashes |
| 10 | 10 | S | | 3900 S | Intersection at 1100 E | Consider adding flashing yellow signal/ eliminate permitted left turn movements/ modify signal timing. High number of angle crashes | $ 5,000 | Numetric Crash Data - Top 4 highest number of injury crashes |
| 11 | 11 | S | | Wasatch Boulevard | at 3900 S NBL | Consider eliminating dog house signal heads and replacing with flashing yellow signal/ eliminate permitted left turn movements/ modify signal timing. Consider dual left turn lane warrant. High number of angle crashes. Consider NB LT, NBTL, NBT, NBR and split timing to fix operation issues and safety issues. Similar layout for SB lanes | $ 5,000 | From Existing Capacity Improvements. Have not identified improvements, these are just locations with LOS worse than D. |
| 12 | 12 | S | | 2000 E | 3000 S to 3900 S | Bike Lane | $ 3,000 | Identified by Millcreek and Salt Lake County's Active Transportation Plan (ATIP) |
| 13 | 13 | S | | Siggard Drive | | Uphill bike lane and neighborhood byway | $ 100,000 | Identified by Millcreek and Salt Lake County's Active Transportation Plan (ATIP) |
| 14 | 14 | S | | 1100 E | Brickyard to Vanwinkle Expressway | Bike Lane | $ 3,000 | Identified by Millcreek and Salt Lake County's Active Transportation Plan (ATIP) |
| 15 | 15 | S | | 3900 S | Wasatch Blvd to Jordan River | Bike Lane | $ 3,000 | Identified by Millcreek and Salt Lake County's Active Transportation Plan (ATIP) |
| 16 | 16 | S | | Wasatch Blvd | 3900 S to Parleys Canyon Trail | Bike Lane | $ 3,000 | Identified by Millcreek and Salt Lake County's Active Transportation Plan (ATIP) |
| 17 | 17 | S | | Jupiter Loop | | Bike Lane | $ 2,000 | Identified by Millcreek and Salt Lake County's Active Transportation Plan (ATIP) |
| 18 | 18 | S | | Melbourne St/Honeycutt Rd | | Neighborhood byway | $ 275,000 | Identified by Millcreek and Salt Lake County's Active Transportation Plan (ATIP) |
| 19 | 19 | S | | Upland Drive | | Bike lane and neighborhood byway | $ 150,000 | Identified by Millcreek and Salt Lake County's Active Transportation Plan (ATIP) |
| 20 | 20 | S | S-190 (WFRC RTP) | 1300 E | 1300 South to Vanwinkle Expressway (Entire Project Length) | Overal 5.7 mile project includes the portion of operational improvements (Phase 1) S-190 from 3000 S to Murray Holladay Road | $ 17,000,000 | From WFRC RTP: Needed Phase 1; Funded Phase 1 |
| 21 | 21 | S | S-11 (WFRC RTP) | 3300 S | I-215 West to Highland Drive | Operational Improvements (Phase 2) S-11 | $ 23,400,000 | From WFRC RTP: Needed Phase 1; Funded Phase 2 |
| 22 | 22 | S | | City-wide | Bike Study | Collaborative study with neighboring communities to develop a detailed implementation plan for bicycle facilities | $ 250,000 | Identified by Millcreek |
| 23 | 23 | S | | 3300 S | I-15 to I-215 | Corridor study to quantify roadway section widths, needed improvements, impacts to utilities and property owners, budgetary estimate of costs, etc. | $ 500,000 | Identified by Millcreek |
| 24 | 24 | S | | 3900 S | Wasatch Blvd to 2300 E | Reconstruction | $ 8,600,000 | transportation, right turn lanes, etc. |
| 25 | 25 | M | | 3300 S | 700 E to I-215 | Reconstruction including complete streets improvements and utility relocations. Coordination with UDOT req'd | $ 10,000,000 | |
| 26 | 26 | M | | 1300 E | 3300 S to 4500 South | Sidewalk and Transit Improvements | $ 2,000,000 | Identified by Millcreek - Also include an overlay |
| 27 | 27 | M | S-108 (WFRC RTP) | State Street | 600 N to I-215 (Entire Project Length) | Overall 8.6 mile project includes the portion of State Street Operational Improvements (Phase 2) S-108 from 3900 S to E Fireclay Avenue in Millcreek | $ 38,700,000 | From WFRC RTP: Needed Phase 1; Funded Phase 2 |
| 28 | 28 | M | S-115 (WFRC RTP) | Highland Drive | 3900 South to Van Winkle Expressway (Entire Project Length) | Overall 3.4 mile project includes the portion of Highland Drive operational improvements (Phase 2) S-115 from 3900 S to Murray Holladay Road | $ 15,300,000 | From WFRC RTP: Needed Phase 1; Funded Phase 2 |
| 29 | 29 | M | S-162 (WFRC RTP) | I-215 Interchange at 4500 South (East) | Freeway Interchange Upgrade Improvements (Highway Point Project) S-162 | Upgrade Improvements (Highway Point Project) S-162 | $ 27,000,000 | From WFRC RTP: Needed Phase 2; Funded Phase 2 |
| 30 | 30 | L | S-19 (WFRC RTP) | 4500 S | 900 East to Highland Drive (Entire Project Length) | Overall 1.3 mile widening improvements (Phase 3) S-19 | $ 29,700,000 | From WFRC RTP: Needed Phase 2; Funded Phase 3 |
| 31 | 31 | L | | Murray Holladay | 900 E to 1300 E | Realign intersection, modify intersection control (slip lanes), widening roadway, reconfigure lanes based on destination | $ 500,000 | |
| 32 | 32 | L | S-192 (WFRC RTP) | Wasatch Boulevard | 4500 South to 6200 South (Entire Project Length) | Overall 3.2 mile project includes the portion of Wasatch Blvd widening improvements (Phase 3) S-192 from 4500 S to 4943 South | $ 60,700,000 | From WFRC RTP: Needed Phase 3; Funded Phase 3 |
| | | | | | | **Short Range Subtotal** | $ 55,266,507 | |
| | | | | | | **Mid Range Subtotal** | $ 93,000,000 | |
| | | | | | | **Long Range Subtotal** | $ 90,900,000 | |

The 2018-2040 Millcreek Capital Improvement Plan (CIP) List is shown in **Table 4-1**. These projects have been prioritized based on available funding and appropriate timing with the Storm Drain Master Plan Capital Funding Program of Projects.

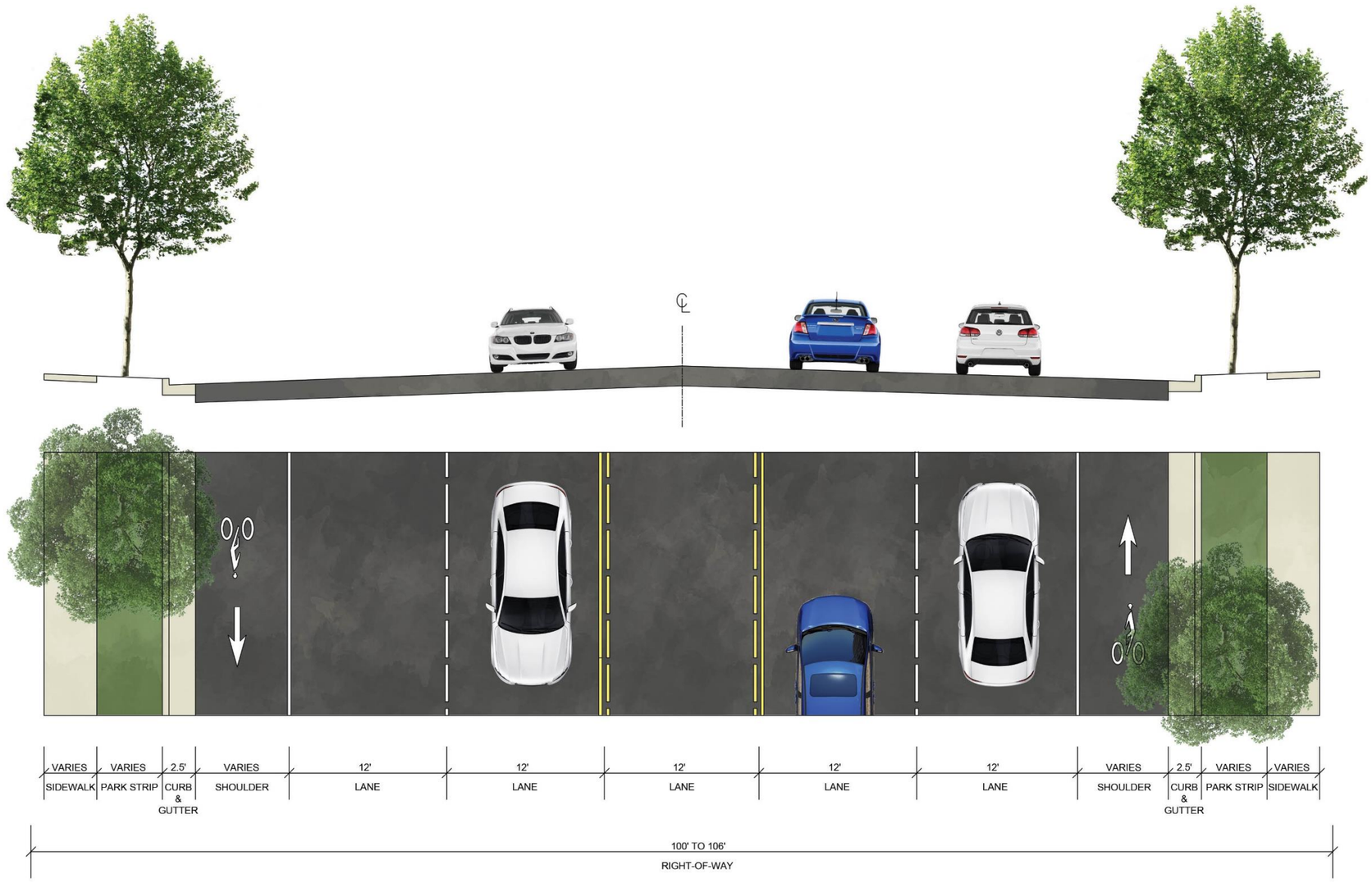
### Logical Completion of Projects

Special care was given to prioritizing transportation projects for the Millcreek's CIP. This plan was developed concurrently to the City's Storm Water Master Plan, and projects were prioritized to ensure storm water projects occur prior to transportation projects when applicable. If any changes in priority are proposed, Millcreek should make an effort to coordinate storm water projects appropriately based on available funding and project need.

## 4.2 Typical Street Cross Sections

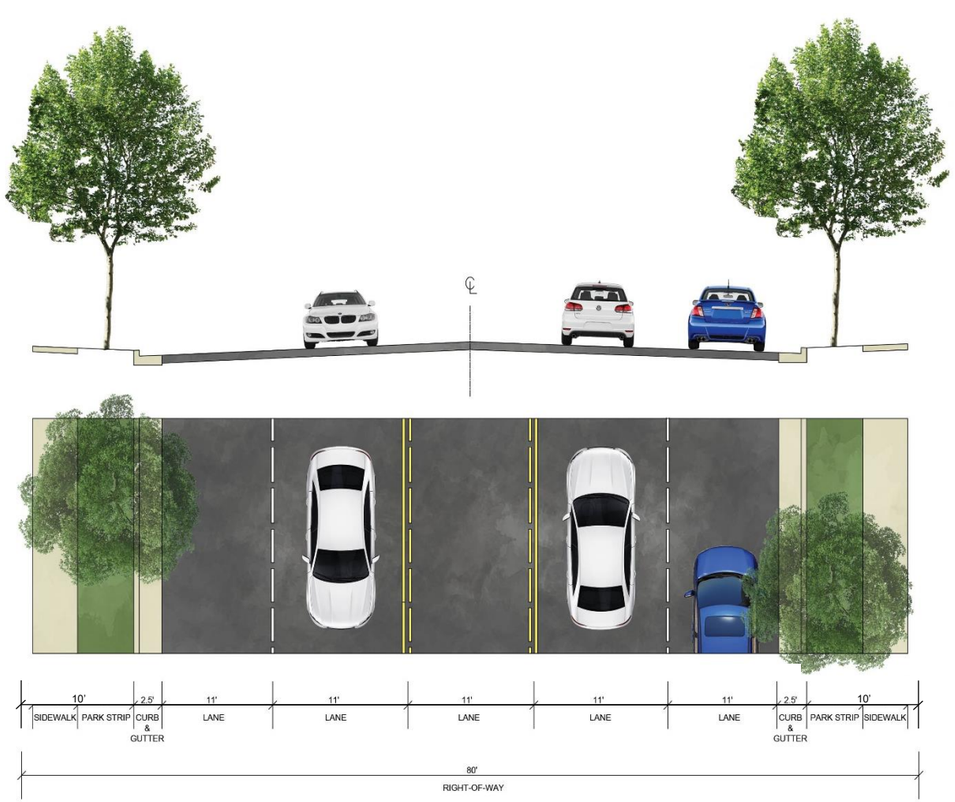
Millcreek's typical roadway cross sections and street width standards are depicted in **Figure 4-1 Millcreek Typical Street Cross Sections**. To achieve safety and mobility benefits, streets should be required to meet Millcreek Typical Sections as identified in this plan. Modifications to these standards may be recommended by Millcreek on a case-by-case basis. Modifications require a review and final acceptance from the City Engineer based on functional classification, proximity to intersections and accesses, crash history, transition to existing roadways, and other related technical criteria and factors as deemed applicable. Millcreek may require higher standards based on reasonable engineering judgment related to the safe operation and progression of traffic flow.

**Figure 4-1 – Millcreek Typical Street Cross Sections**

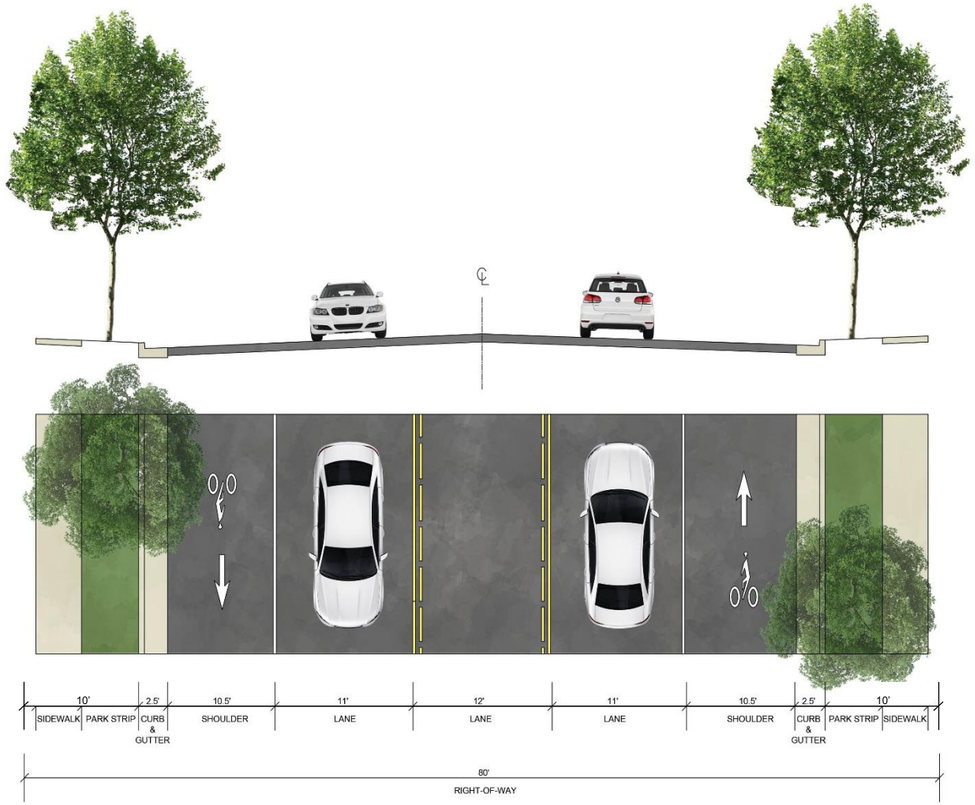



MINOR ARTERIAL 106 FOOT (TYPICAL)
5 LANES 35-40 MPH

BIKE LANES ARE NOT TYPICAL EXCEPT AS IDENTIFIED IN THE GENERAL PLAN.

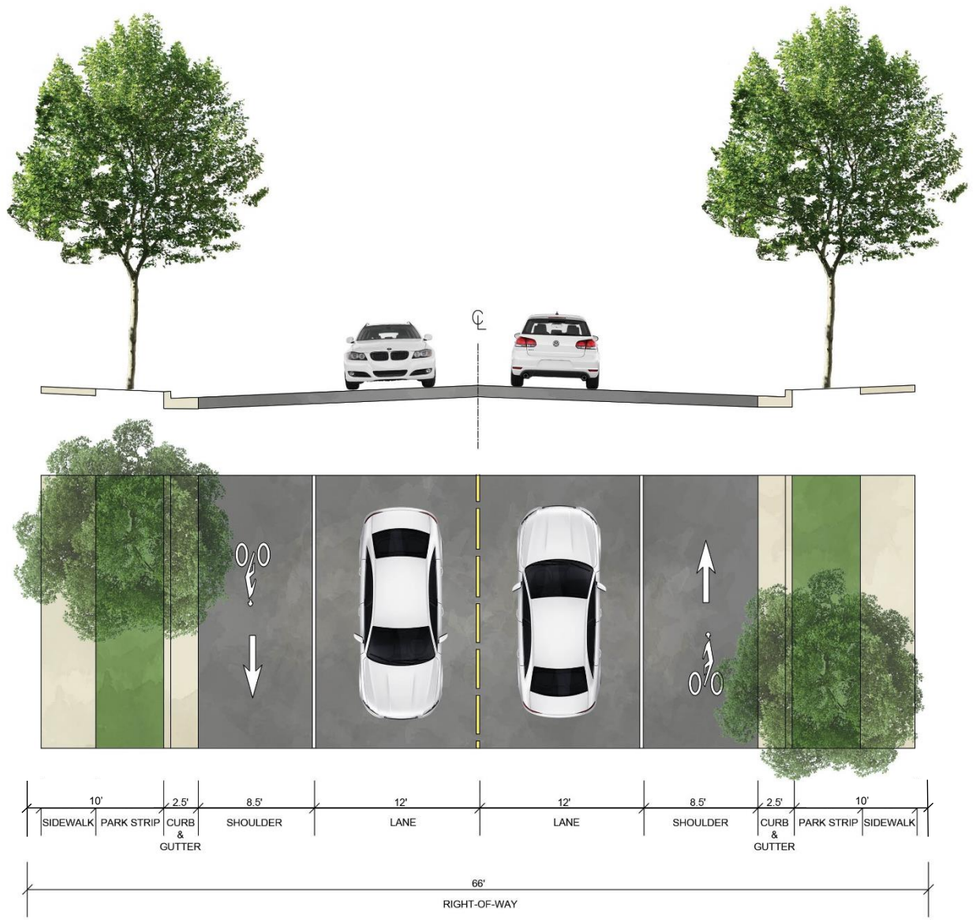



MINOR ARTERIAL: 80-FOOT (BY APPROVAL ONLY)
5 LANES 30-40 MPH



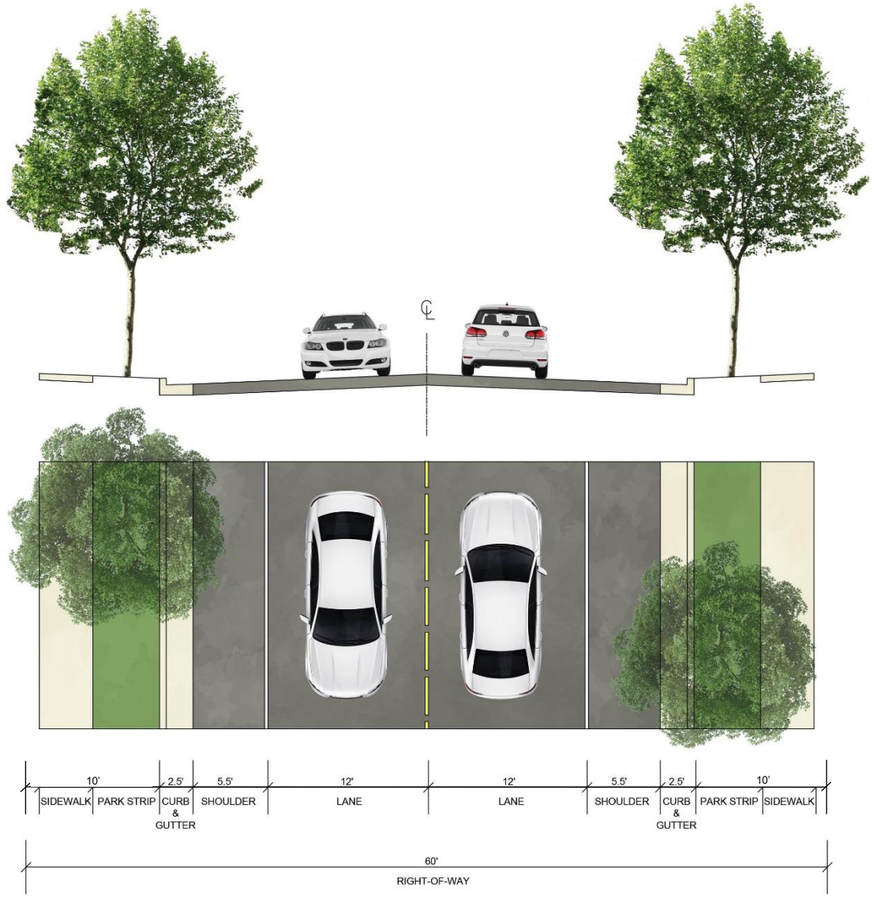

MAJOR COLLECTOR: 80-FOOT (TYPICAL)
3 LANES 25-35 MPH

BIKE LANES ARE NOT TYPICAL EXCEPT AS IDENTIFIED IN THE GENERAL PLAN.

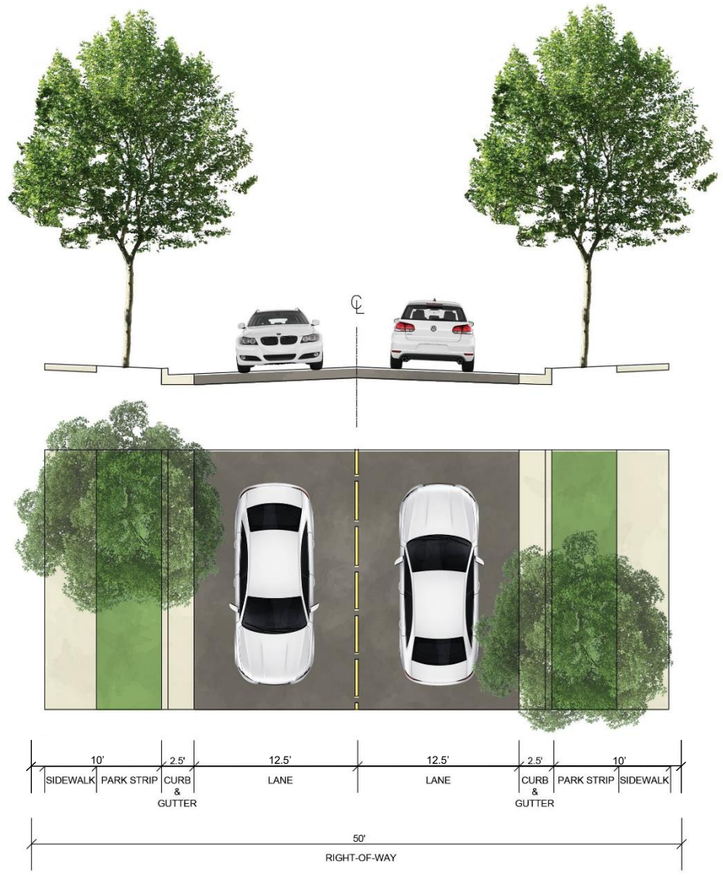



MINOR COLLECTOR: 66-FOOT (TYPICAL)
2 LANES 25-35 MPH

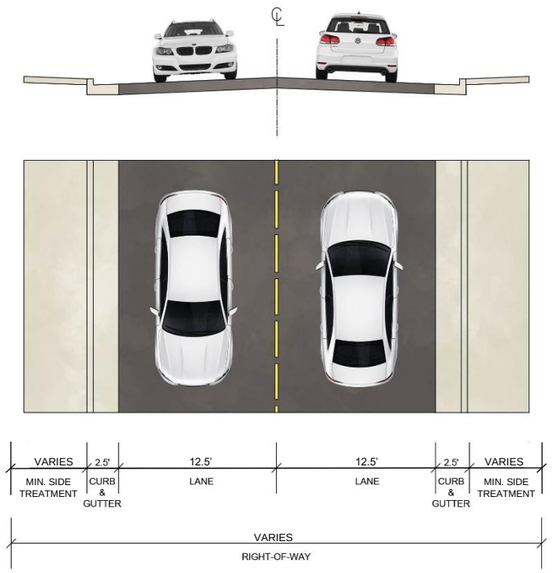
BIKE LANES ARE NOT TYPICAL EXCEPT AS IDENTIFIED IN THE GENERAL PLAN.




LOCAL STREET: 60-FOOT
2 LANES ≤ 25 MPH




LOCAL STREET: 50-FOOT (TYPICAL)
2 LANES ≤ 25 MPH




PRIVATE STREET: VARIES (BY APPROVAL ONLY)
2 LANES ≤ 25 MPH

Millcreek shall be the reviewing jurisdiction of intersections along collector and higher road functional classifications and evaluate the need for turn lanes and other geometric improvements. The City Engineer may allow variations to the design standards if implementation provides better traffic flow and safer operation. Financial considerations, right of way and proximity impacts may also weigh into decisions allowing design variations.

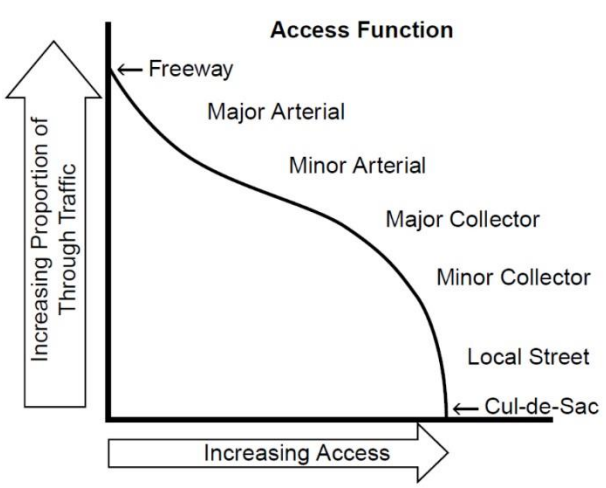
## 4.3 Access Management

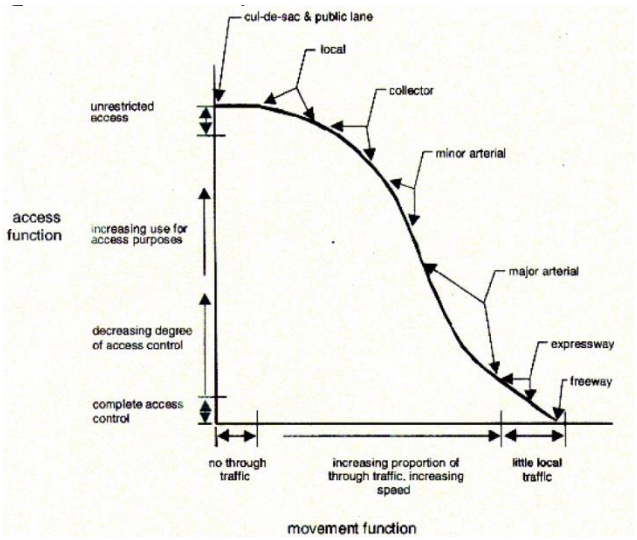
Three main tenets of supporting an efficient transportation system are safety, mobility, and access. Of these, access or the management of access, has the greatest impact. Access points create additional conflict points that result in the potential for additional crashes. Additionally, as the number of access points increase, the number of vehicles slowing for turning increases. This slowing of traffic increases congestion and decreases mobility. Therefore, it is critical to employ an access management plan strategies, with emphasis on collector and arterial roadways in Millcreek.

UDOT, as part of their Statewide Access Management Program, uses five criteria when considering and permitting access. It is recommended that Millcreek follow UDOT's access management considerations:

1. **Limit the number of conflict points at driveway locations** - Conflict points are good indicators of the potential for crashes. The more conflict points at an intersection or driveway, the higher the potential for vehicular crashes. When left turns and cross street through movements are restricted, the number of conflict points is significantly reduced.
2. **Separate highway conflict areas** - Intersections created by public streets and driveways represent basic conflict areas. Adequate spacing between intersections allows drivers to react to one intersection at a time thereby reducing potential conflicts. Driveways and intersections aligned directly opposite of each other without offsets help lessen the size of the conflict area and define turning movements.
3. **Reduce interference to through traffic** - Through traffic often needs to slow down for vehicles exiting, entering, or turning across the roadway. Turning traffic separates from through traffic quicker with the provision of turning lanes, designing driveways with large turning radii, and restricting turning movements in and out of driveways.
4. **Adequately space at-grade signalized and unsignalized intersections** - Good spacing of intersections and median openings reduces multiple conflict areas and increases the potential for smooth traffic progression. Uniform roadway and access design ease driver expectation and judgment.

The following graphics depict access conditions and characteristics adjacent to functional roadways:




From these items, some key parameters to consider in an access management plan include:

- New requests for access onto collectors or arterials should consider sharing existing accesses where feasible.
- No new individual residence accesses allowed onto major collectors or arterials.
- For “arterials”, UDOT has categorized 3300 South, 4500 South, State Street, 700 East as Category 5, Regional Priority Urban, with the following minimum spacing standards measured centerline to centerline:
    - Minimum signal spacing 2,640 feet.
    - Minimum street spacing 660 feet.
    - Minimum driveway spacing 350 feet.
- The UDOT categorization that best resembles a “collector” is Category 8, Community Urban, with the following minimum spacing:
    - Minimum signal spacing 1,320 feet.
    - Minimum street spacing 300 feet.
    - Minimum driveway spacing 150 feet.

As traffic volumes on Millcreek roads increase, having an adequate access management plan will help create a transportation system that meets mobility needs and safety goals, as well as provide for the access needs of individual property owners.

# Appendix A – Level of Service Analysis, Traffic Count Data and Traffic Analysis Results

**Table A-1 – Level of Service (LOS) Criteria (Class)**

| Class I Criteria using AADT (40 mph or higher posted speed limit) | | | | | |
|---|---|---|---|---|---|
| Lanes | Median | B | C | D | E |
| 2 | Undivided | * | 16,800 | 17,700 | 0 |
| 3 | Divided | * | 27,350 | 28,750 | 0 |
| 4 | Divided | * | 37,900 | 39,800 | 0 |
| 6 | Divided | * | 58,400 | 59,900 | 0 |
| 8 | Divided | * | 78,800 | 80,100 | 0 |
| **Class II Criteria using AADT (35 mph or slower posted speed limit)** | | | | | |
| Lanes | Median | B | C | D | E |
| 2 | Undivided | * | 7,300 | 14,800 | 15,600 |
| 3 | Divided | * | 10,900 | 23,600 | 24,700 |
| 4 | Divided | * | 14,500 | 32,400 | 33,800 |
| 6 | Divided | * | 23,300 | 50,000 | 50,900 |
| 8 | Divided | * | 32,000 | 67,300 | 68,100 |

**Table A-2 – Level of Service (LOS) Criteria – Adjustment Factors**

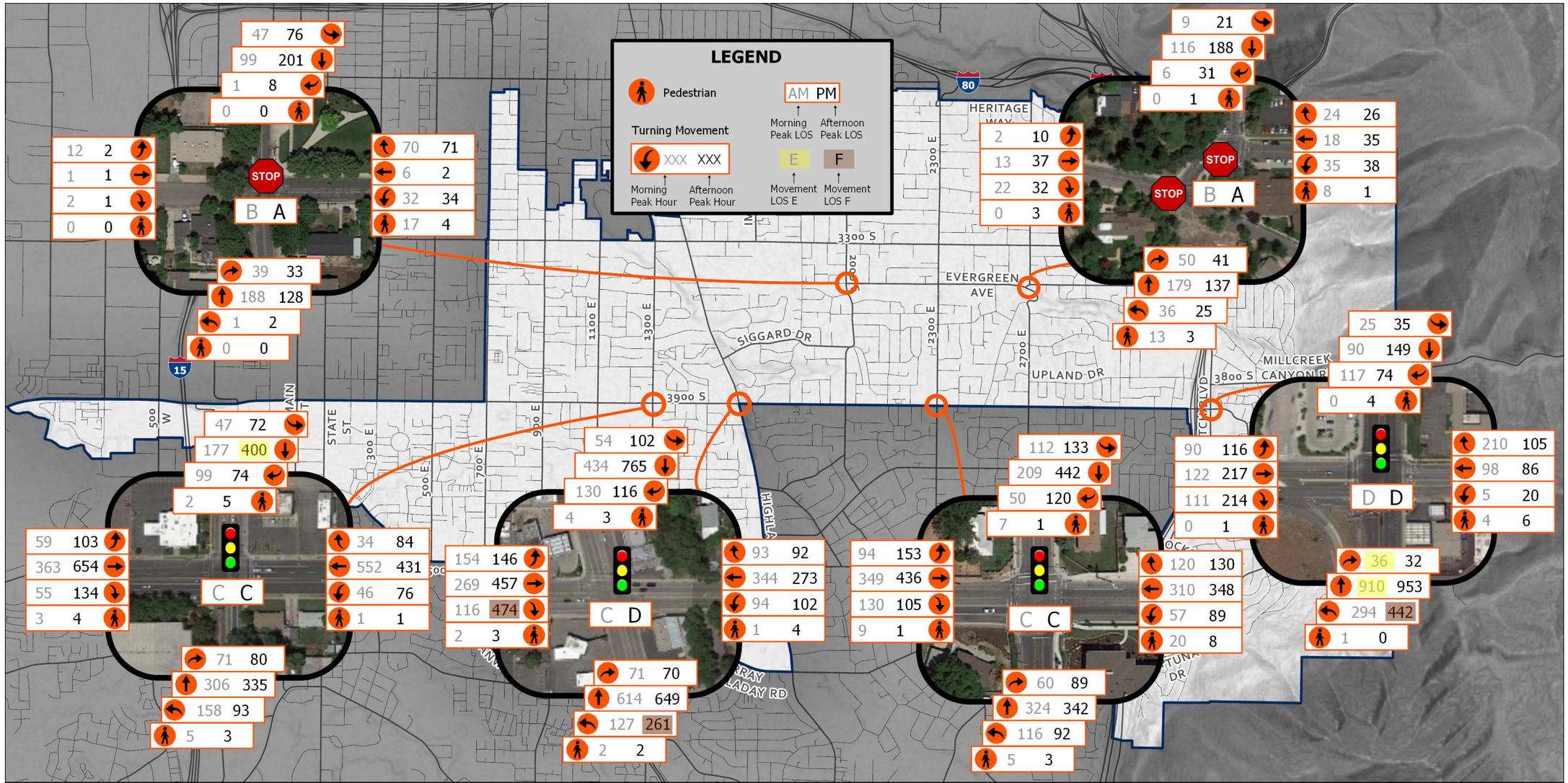
| Lanes | Median | Exclusive Left Lanes | Exclusive Right Lanes | Adjustment Factors |
|---|---|---|---|---|
| 2 | Divided | Yes | No | 5% |
| 2 | Undivided | No | No | -20% |
| Multi | Undivided | Yes | No | -5% |
| Multi | Undivided | No | No | -25% |
| - | - | - | Yes | 5% |

**Table A-3 – Existing (2018) Segment LOS and Failing Level of Service**

| Roadway | From | To | Functional Classification | Lanes (2018) | 2018 AADT | LOS |
|---|---|---|---|---|---|---|
| Murray Holladay Road | Van Winkle Expy | Coopers Hawk Bay | Minor Arterial | 2 | 15,498 | F |
| Murray Holladay Road | Coopers Hawk Bay | Highland Drive | Minor Arterial | 4 | 14,506 | C |
| 3900 South | West City Limits | 700 E | Minor Arterial | 4 | 22,998 | C |
| 3900 South | 700 E | Highland Drive | Minor Arterial | 4 | 17,168 | C |
| 3900 South | Highland Drive | Wasatch Boulevard | Minor Arterial | 2 | 10,593 | C |
| Heritage Way | 2300 E | 2700 E | Minor Collector | 2 | 6,264 | C |
| 500 W | North City Limits | South City Limits | Major Collector | 2 | 11,805 | D |
| Commerce Drive | North City Limits | South City Limits | Major Collector | 2 | 6,446 | C |
| Main Street | North City Limits | South City Limits | Major Collector | 2 | 4,931 | C |
| 500 E | 3900 S | 4500 S | Major Collector | 2 | 5,659 | D |
| 900 E | North City Limits | 3300 S | Major Collector | 2 | 3,516 | C |
| 900 E | 3300 S | 3900 S | Major Collector | 2 | 6,721 | C |
| 900 E | 3900 S | South City Limits | Major Collector | 2 | 6,225 | C |
| 1100 E | 3300 S | 4500 S | Minor Collector | 2 | 3,226 | C |
| 1300 E | North City Limits | 4500 S | Minor Arterial | 4 | 19,406 | C |
| 1300 E | 4500 S | South City Limits | Minor Arterial | 2 | 16,458 | C |
| Highland Drive | North City Limits | 3900 S | Major Collector | 4 | 23,501 | D |
| Highland Drive | 3900 S | South City Limits | Major Collector | 4 | 18,902 | C |
| Imperial St | North City Limits | 3300 S | Minor Collector | 2 | 3,256 | C |
| Siggard Dr | Highland Drive | 2000 E | Minor Collector | 2 | 1,391 | C |
| 2000 E | North City Limits | 3900 S | Minor Collector | 2 | 4,138 | C |
| 2300 E | North City Limits | 3900 S | Major Collector | 2 | 15,014 | F |
| 2700 E | North City Limits | Evergreen Ave | Minor Collector | 2 | 2,680 | C |
| 2700 E | Evergreen Ave | Hillside | Minor Collector | 2 | 3,682 | C |
| 2700 E | Hillside | 3900 S | Minor Collector | 2 | 2,257 | C |
| Evergreen Ave | 2300 E | 2700 E | Minor Collector | 2 | 1,897 | C |
| Upland Dr | 2700 E | Laurelcrest Street | Minor Collector | 2 | 1,725 | C |
| Upland Dr | Laurelcrest Street | Wasatch Boulevard | Minor Collector | 2 | 2,220 | C |
| Wasatch Boulevard | South City Limits | Oakcliff Dr | Major Collector | 2 | 728 | C |
| Wasatch Boulevard | Oakcliff Dr | Apollo Dr | Major Collector | 2 | 4,820 | C |
| Wasatch Boulevard | Apollo Dr | 3900 S | Minor Arterial | 2 | 10,894 | C |
| Wasatch Boulevard | 3900 S | 3680 S (Monza Dr) | Minor Arterial | 4 | 9,712 | C |
| Wasatch Boulevard | 3680 S | 3300 S | Major Collector | 2 | 5,437 | C |
| Wasatch Boulevard | 3300 S | North City Limits | Minor Collector | 2 | 2,226 | C |
| Fortuna Way | Oakview Dr | Wasatch Boulevard | Minor Collector | 2 | 481 | C |
| Oakview Dr | Wasatch Boulevard | Gilead Way | Minor Collector | 2 | 649 | C |
| Brockbank Dr | I-215 | Fortuna Way | Minor Collector | 2 | 3,297 | C |
| Jupiter Dr | Wasatch Boulevard | Oakview Dr | Minor Collector | 2 | 3,380 | C |

| Roadway | From | To | Functional Classification | Lanes (2018) | 2018 AADT | LOS |
|---|---|---|---|---|---|---|
| 3800 S Millcreek Canyon Road | Wasatch Boulevard | East City Limits | Minor Collector | 2 | 1,687 | C |
| 4500 South | West City Limits | 700 E | UDOT - Other Principal Arterial | 6 | 55,289 | C |
| 4500 South | 700 E | Garden Dr | UDOT - Other Principal Arterial | 4 | 27,475 | C |
| 4500 South | Garden Dr | 1100 E | UDOT - Other Principal Arterial | 2 | 20,967 | E/F |
| 4500 South | 1100 E | 1500 E | UDOT - Other Principal Arterial | 3 | 18,485 | C |
| 4500 South | 1500 E | Highland Drive | UDOT - Other Principal Arterial | 2 | 13,425 | C |
| 3300 South | 700 E | 2300 E | UDOT - Other Principal Arterial | 4 | 24,608 | C |
| 3300 South | 2300 E | 2700 E | UDOT - Other Principal Arterial | 4 | 10,949 | C |
| 3300 South | 2700 E | Wasatch Boulevard | UDOT - Other Principal Arterial | 6 | 8,504 | C |
| State Street | North City Limits | South City Limits | UDOT - Other Principal Arterial | 6 | 30,160 | D |
| 700 E | North City Limits | Murray Holladay Road | UDOT - Other Principal Arterial | 8 | 44,205 | C |
| 4430 S | I-215 off ramp | I-215 | UDOT - Other Principal Arterial | 2 | 8,888 | C |

**Figure A-1 – Existing Intersection Traffic Volumes and Level-of-Service all Movements**



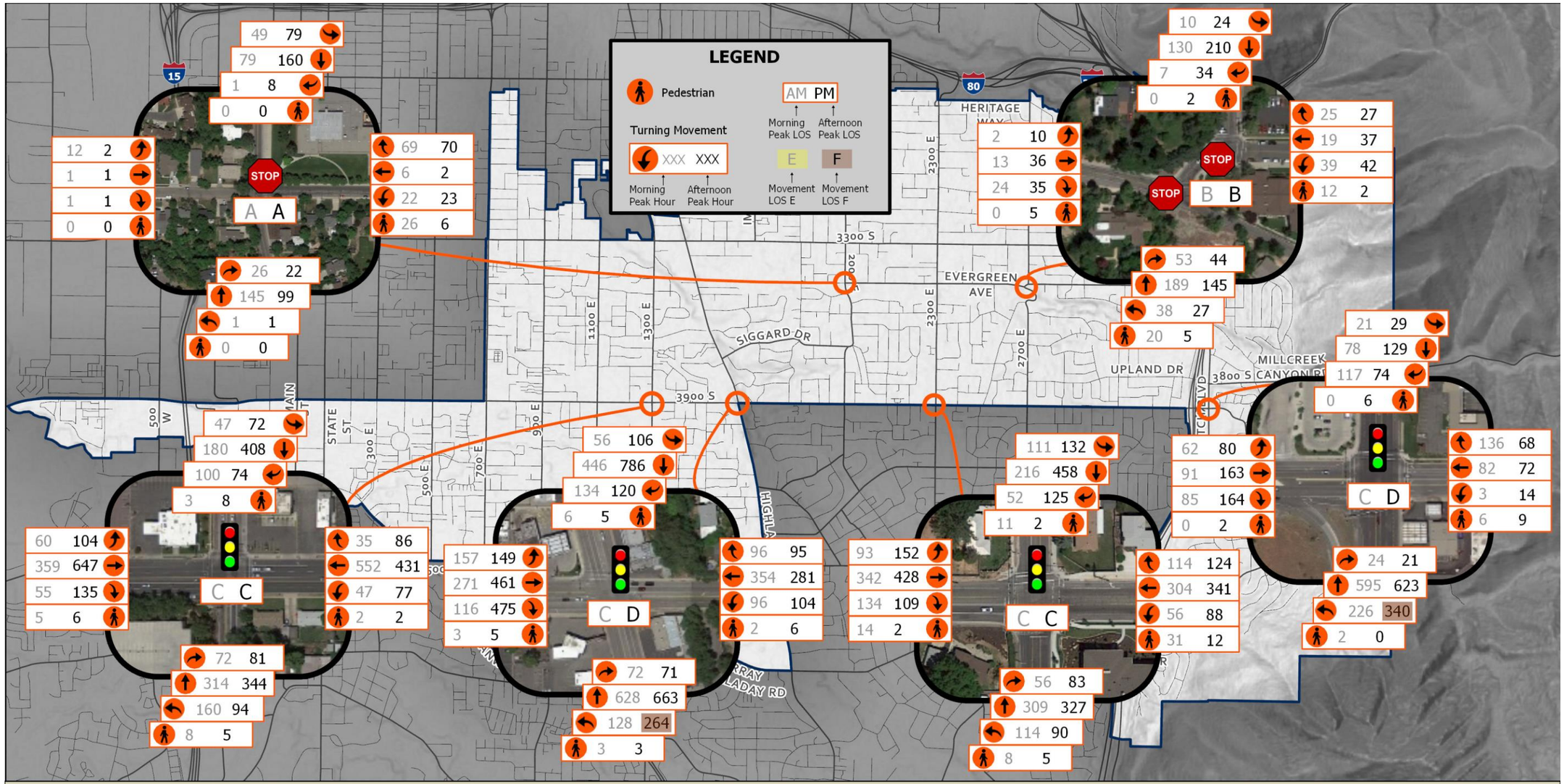

# 2018 (Existing) Traffic Volume and Level-of-Service

N

0 1,500 3,000

Feet

**Figure A-2 – Future (2040) Intersection Traffic Volumes and Level-of-Service all Movements**




# 2040 (Future) Traffic Volume and Level-of-Service

**Table A-4 – Volume-Over-Count Ratios and Percent Error**

| Statistic | Standards | |
|---|---|---|
| | Acceptable | Preferable |
| Freeway Volume-over-Count (FT1x, FT8x, FT9x) | ± 7% | ± 6% |
| Divided Arterial Volume-over-Count (FT2x) | ± 15% | ±10 % |
| Undivided Arterial Volume-over-Count (FT3x) | ± 15% | ±10 % |
| Collector Volume-over-Count (FT4x) | ± 25% | ± 20% |
| One way/Frontage Road Volume-over-Count (FT6x) | ± 25% | ± 20% |
| Freeway Peak Volume-over-Count | 75% of links @ ± 20% | 50% of links @ ± 10% |
| Major Arterial Peak Volume-over-Count | 75% of links @ ± 30% | 50% of links @ ± 15% |
| Assigned VMT-over-Count Areawide | ± 5% | ± 2% |
| Assigned VHT-over-Count Areawide | ± 5% | ± 2% |
| Assigned VMT-over-Count by FT/AT/NL | ± 25% | ± 15% |
| Assigned VHT-over-Count FT/AT/NL | ± 25% | ± 15% |

**Table A-5 – Demographic Projections Based on WFRC Model**

| TAZID | 2011 | | | 2040 | | | 2011-2040 Growth | |
|---|---|---|---|---|---|---|---|---|
| | Households | Population | Employment | Households | Population | Employment | Households | Employment |
| 724 | 670 | 1,626 | 1729 | 671 | 1,568 | 1,743 | 1 | 14 |
| 1055 | 2 | 4 | 541 | 2 | 4 | 545 | 0 | 4 |
| 1056 | 3 | 3 | 340 | 7 | 11 | 342 | 4 | 2 |
| 1057 | 40 | 72 | 1,285 | 644 | 1,403 | 2,397 | 604 | 1,112 |
| 1065 | 149 | 371 | 667 | 149 | 358 | 673 | 0 | 6 |
| 1066 | 752 | 1,914 | 175 | 754 | 1,845 | 177 | 3 | 2 |
| 1067 | 360 | 815 | 93 | 365 | 786 | 94 | 5 | 1 |
| 1068 | 435 | 1,130 | 110 | 436 | 1,090 | 111 | 1 | 1 |
| 1069 | 972 | 1,967 | 4,640 | 974 | 1,897 | 4,677 | 2 | 37 |
| 1115 | 231 | 538 | 24 | 232 | 519 | 30 | 1 | 6 |
| 1119 | 382 | 957 | 220 | 384 | 922 | 222 | 2 | 2 |
| 1121 | 86 | 147 | 1,202 | 86 | 141 | 1,212 | 0 | 10 |
| 1124 | 416 | 1,016 | 240 | 417 | 979 | 241 | 1 | 2 |
| 1125 | 292 | 746 | 23 | 295 | 719 | 31 | 3 | 8 |
| 1126 | 461 | 1,116 | 283 | 463 | 1,076 | 285 | 2 | 3 |
| 1127 | 376 | 1,014 | 67 | 377 | 977 | 68 | 1 | 1 |
| 1128 | 313 | 767 | 80 | 314 | 739 | 81 | 1 | 1 |
| 1129 | 351 | 888 | 187 | 353 | 856 | 189 | 2 | 2 |
| 1130 | 475 | 1,277 | 276 | 479 | 1,231 | 489 | 4 | 214 |

| TAZID | 2011 | | | 2040 | | | 2011-2040 Growth | |
|---|---|---|---|---|---|---|---|---|
| | Households | Population | Employment | Households | Population | Employment | Households | Employment |
| 1131 | 384 | 1,053 | 255 | 387 | 1,015 | 257 | 3 | 3 |
| 1132 | 985 | 2,820 | 1,293 | 987 | 2,719 | 1,304 | 2 | 11 |
| 1133 | 665 | 1,778 | 126 | 666 | 1,714 | 127 | 1 | 1 |
| 1134 | 734 | 1,955 | 477 | 735 | 1,885 | 481 | 1 | 4 |
| 1135 | 787 | 2,127 | 621 | 789 | 2,051 | 626 | 2 | 5 |
| 1136 | 1,006 | 2,019 | 876 | 1,008 | 1,947 | 883 | 2 | 7 |
| 1137 | 680 | 1,670 | 493 | 681 | 1,610 | 497 | 1 | 4 |
| 1138 | 585 | 1,458 | 1,059 | 647 | 1,432 | 1,068 | 62 | 9 |
| 1139 | 1,035 | 2,218 | 1,393 | 1,038 | 2,139 | 1,404 | 3 | 12 |
| 1140 | 432 | 1,253 | 341 | 433 | 1,208 | 343 | 1 | 2 |
| 1141 | 493 | 1,326 | 186 | 494 | 1,278 | 188 | 1 | 2 |
| 1142 | 498 | 1,248 | 560 | 500 | 1,203 | 565 | 2 | 5 |
| 1143 | 348 | 1,069 | 244 | 351 | 1,031 | 245 | 3 | 2 |
| 1144 | 343 | 861 | 191 | 345 | 830 | 193 | 2 | 2 |
| 1145 | 666 | 1,922 | 747 | 667 | 1,853 | 753 | 2 | 6 |
| 1146 | 434 | 1,325 | 44 | 435 | 1,277 | 44 | 1 | 0 |
| 1147 | 668 | 2,067 | 630 | 669 | 1,993 | 635 | 2 | 5 |
| 1148 | 655 | 1,457 | 3,374 | 656 | 1,405 | 3,402 | 2 | 28 |
| 1149 | 725 | 1,626 | 439 | 726 | 1,568 | 528 | 2 | 89 |
| 1150 | 352 | 806 | 2,891 | 354 | 777 | 2,914 | 2 | 24 |
| 1151 | 391 | 968 | 857 | 393 | 933 | 863 | 2 | 6 |
| 1152 | 1,413 | 2,527 | 883 | 1,418 | 2,437 | 890 | 5 | 7 |
| 1153 | 841 | 2,180 | 79 | 862 | 2,102 | 90 | 21 | 11 |
| 1154 | 632 | 1,491 | 686 | 763 | 1,626 | 692 | 131 | 6 |
| 1155 | 704 | 1,512 | 994 | 1,163 | 2,352 | 1,002 | 460 | 8 |
| **Total** | **23,221** | **57096** | **31,920** | **24,569** | **57,506** | **33,601** | **1,348** | **1,681** |

## Table A-6 – Comprehensive Review of Millcreek's Transportation Network

| Street Name | Approx. E/W & N/S | TS Width as Provided by Millcreek | TS Width as Observed on Google Earth | Millcreek TS Matches Approximate Google Earth Existing Roadway Yes/No | Existing Bike Path or Proposed Yes/No | Bike lane Width | Type of Street | UDOT Route | Pavement width | East or South Side | | | West or North Side | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | C&G | Park Strip | SW | C&G | Park Strip | SW | |
| 4025 South | 1051 E & 4025 S | 50 | | Yes | No | - | Local Street | | 25 | 2.5 | 4.5 | 4 | 2.5 | 5 | 4 | |
| Siggard Dr | 1334 E & 3707 S | 50 | | No | Proposed | TBD- Shared? | Minor Collector | | 25 | 2 | - | 7 | - | - | - | ROW appears to be present for 50 ft TS. |
| Stillwood Dr | 1391 E & 4649 S | 50 | | Yes | No | - | Local Street | | 25 | 2.5 | 5 | 4 | 2.5 | 5 | 4 | |
| Melbourne ST | 1850 E & 3008 S | 50 | | No | No | - | Local Street | | 25 | 2.5 | - | 5 | 2.5 | 4.5 | 4 | Almost a minor Collector, ROW appears to be 50 ft |
| Greenbriar Way | 2060 E & 3700 S | 50 | | Yes | No | - | Local Street | | 25.5 | 2.5 | 4.5 | 4 | 2.5 | 4.5 | 4 | |
| Evergreen Ave | 2540 E & 3435 S | 50 | | No | No | - | Minor Collector | | 35 | - | - | - | 2.5 | - | 5 | Irrigation ditch on North Side |
| 3685 East | 3685 E & 3429 S | 50 | | Yes | No | - | Local Street | | 25 | 2.5 | 4.5 | 4.5 | 2.5 | 4.5 | 4.5 | |
| Doreen St | 384 E & 4290 S | 50 | | Yes | No | - | Local Street | | 25 | 2.5 | 4.5 | 4 | 2.5 | 5 | 4 | Older neighborhood |
| Bonner Way | 1233 E & 4706 S | 60 | | Yes | No | - | Local Street | | 35 | 2.5 | 4.5 | 4.5 | 2.5 | 4.5 | 4 | Older neighborhood |
| 2300 East | 2300 E & 3070 S | 60 | | No | No | - | Major Collector | | 37.5 | - | - | - | - | - | - | ROW appears to be 60 ft wide |
| 2700 East | 2700 E & 3695 S | 60 | | Yes | No | - | Local Street | | 41 | 2.5 | 4.5 | 4 | 2.5 | - | 5.5 | |
| Upland Dr | 3035 E & 3770 S | 60 | | Yes | Proposed | TBD- 5 ft? | Minor Collector | | 35 | 2.5 | - | - | 2.5 | 4 | 5 | |
| Mill Creek Canyon Rd | 3584 E & 3800S | 60 | | No | No | - | Minor Collector | | 42 | 2.5 | 4.5 | 4 | - | - | - | Classification from UDOT Uplan, ROW appears to be 60 ft wide |
| Brockbank Dr | 3650 E & 4500 S | 60 | | Yes | Proposed | TBD- 5 ft? | Minor Collector | | 35 | 2.5 | 5 | 5 | 2.5 | 5 | 5 | |
| Jupiter Dr | 3700 E & 4302 S | 60 | | Yes | Proposed | TBD- 5 ft? | Minor Collector | | 35 | 2.5 | 5 | 5 | 2.5 | 5 | 5 | |
| Oakview Dr | 4040 E & 4370 S | 60 | | Yes | No | - | Minor Collector | | 34 | 2.5 | 5 | 5 | 2.5 | 5 | 5 | Classification from UDOT Uplan |
| 1100 East | 1100 E & 3484 S | 66 | | Yes | No | - | Minor Collector | | 41 | 2.5 | 5 | 4 | 2.5 | 5 | 4 | |
| 1100 East | 1100 E & 4057 S | 66 | | Yes | No | - | Minor Collector | | 43 | 2.5 | 5 | 4 | 2.5 | - | 9 | |
| 1300 East | 1300 E & 4680 S | 66 | | Yes | No | - | Minor Arterial | | 47 | 2.5 | 5 | 4 | - | - | - | No C&G, bike lane, or sidewalk on West side |
| 4705 South | 1340 E & 4705 S | 66 | | Yes | No | - | Minor Collector | | 44 | 2.5 | 5 | 4 | 2.5 | 2 | 4 | No striping |
| 1500 East | 1500 E & 4390 S | 66 | | Yes | No | - | Collector B | | 41 | 2.5 | 5 | 4 | 2.5 | 5 | 4 | |
| 2000 East | 2000 E & 3232 S | 66 | | Yes | No | - | Minor Collector | | 44 | 2.5 | 5 | 4 | 2.5 | 5 | 4 | |
| Hill Avenue | 290 E & 4050 S | 66 | | Yes | No | - | Minor Collector | | 42 | 2.5 | 5 | 4 | 2.5 | 5 | 4 | |
| 500 East | 500 E & 3960 S | 66 | | Yes | No | - | Major Collector | | 41 | 2.5 | 5 | 4 | 2.5 | 5 | 4 | |
| 500 East | 500 E & 4030 S | 73 | | Yes | No | - | Major Collector | | 48 | 2.5 | 5 | 4 | 2.5 | 5 | 4 | Classification from UDOT Uplan |
| 4500 South | 790 E & 4500 S | 80 | | Yes | No | - | Principal Arterial | SR -266 | 65.5 | 2.5 | - | 5 | 2.5 | - | 5.5 | Roadway width varies |
| 900 East | 900 E & 3700 S | 80 | | Yes | Yes, both sides | 5 ft | Major Collector | | 55 | 2.5 | 5 | 4 | 2.5 | 5 | 4 | |
| 3900 South | 950 E & 3900 S | 80 | | Yes | No | - | Minor Arterial | | 54 | 2.5 | 5.5 | 4 | 2.5 | 5 | 4 | Classification from UDOT Uplan. 40 mph |
| Redtail Hawk Bay | 1200 E & 4755 S | | 41 | No | No | - | Local Street | | 25 | 2.5 | - | 5.5 | 2.5 | - | 5.5 | Newer neighborhood with could sac at end |
| 3150 South | 1553 E & 3150 S | | 45 | No | No | - | Local Street | | 31 | 2.5 | - | 4.5 | 2.5 | - | 4.5 | Entire development uses this TS |
| 4620 South | 1721 E & 4620 S | | 49 | No | No | - | Local Street | | 29 | 2 | 4 | 4 | 2 | 4 | 4 | sidewalk is hit and miss on this road, ROW does not appear to be 50 ft wide |
| Coolege St | 986 E & 4580 S | | 49 | No | No | - | Local Street | | 29 | 2.5 | - | 5.5 | 2.5 | 5 | 4 | sidewalk and C&G is hit and miss |
| 1300 East | 1300 E & 3555 S | | 66 | No | No | - | Minor Arterial | | 46 | 2.5 | 2.5 | 4 | 2.5 | 2.5 | 4 | Classification from UDOT Uplan |
| Highland Dr | 1550 E & 3690 S | | 73 | No | No | - | Minor Arterial | | 54.5 | 2.5 | - | 4 | 2.5 | 5 | 4 | Classification from UDOT Uplan |
| 3300 South | 2855 E & 3300 S | | 100 | No | No | - | Principal Arterial | SR-171 | 80 | 2.5 | 4 | 4 | 2.5 | 4 | 4 | Classification from UDOT Uplan |
| Wasatch BLVD | 3750 E & 3880 S | | 100 | No | Yes, both sides | Shared shoulder | Major Collector | | 78 | 2.5 | 2.5 | 5.5 | 2.5 | - | 7 | Classification from UDOT Uplan |
| 4500 South | 1372 E & 4500 S | | 105 | No | No | - | Principal Arterial | SR-266 | 81.5 | 2.5 | 5 | 4.5 | 2.5 | 5 | 4 | Roadway and ROW width varies, this section was newer and fully developed |
| 700 East | 700 E & 4055 S | | 127 | | No | - | Principal Arterial | SR-71 | 106 | 2.5 | 3 | 4 | 2.5 | 5 | 4 | |

# Appendix B – Crash Data

**Table B-1 - Crash Hot Spots**

| Location | Limits | Total No. of Crashes/ Severe Crash Rate* | Notes |
|---|---|---|---|
| **3900 S** | Intersection at State Street | 25 Crashes | Top 4 highest number of injury crashes |
| **900 E** | Intersection at 4500 S | 80 Crashes | Top 4 highest number of injury crashes |
| **3900 S** | Intersection at Highland Drive | 25 Crashes | Top 4 highest number of injury crashes |
| **3900 S** | Intersection at 1100 E | 25 Crashes | Top 4 highest number of injury crashes |
| **2700 E** | 3300 S to 3900 S | 105.83 | Top 3 highest Severe Crash Rate |
| **900 E** | 4500 S to VanWinkle | 28.93 | Top 3 highest Severe Crash Rate |
| **500 E** | 3900 S to 4500 S | 30.11 | Top 3 highest Severe Crash Rate |

***Crash rates are expressed as crashes per year per million-vehicle miles**

**Table B-2 - Crash Hot Spot Crash Summaries**

| Location | Limits | Crash Summary |
|---|---|---|
| **3900 S** | Intersection at State Street (point location) | 11 of 25 crashes were angle crashes (generally left turning), two pedestrian/bike crashes. |
| **900 E** | Intersection at 4500 S (point location) | 33 of 80 crashes were angle crashes (generally left turning), 28 rear end collisions, 6 pedestrian/bike crashes (1 serious injury). |
| **3900 S** | Intersection at Highland Drive (point location) | 13 of 25 crashes were angle crashes including 1 fatality and 1 serious injury (generally left turning). |
| **3900 S** | Intersection at 1100 E (point location) | 17 of 25 crashes were angle crashes (generally left turning). |
| **2700 E** | 3300 S to 3900 S (segment) | 7 of 13 crashes were single vehicle crashes into a barrier or fixed object |
| **900 E** | 4500 S to Van Winkle (segment) | 358 crashes on this segment. 138 were angle crashes. 4 of the 7 serious crashes were angle crashes. |
| **500 E** | 3900 S to 4500 S (segment) | 12 instances of collisions with parked cars of 47 total crashes on segment, 11 angle crashes. |

# References


- AASHTO A Policy on Geometric Design of Highways and Streets, 6th edition 2011
- AASHTO Roadside Design Guide, 4th edition 2011
- AASHTO Guide for the Development of Bicycle Facilities, 4th edition 2012
- APWA Utah Chapter, Manual of Standard Plans, 2017
- Highway Capacity Manual, 6th edition
- Manual on Uniform Traffic Control Devices for Streets and Highways, 2009 edition
- NACTO Urban Bikeway Design Guide, April 2011 edition
- Salt Lake County Standard Plans For Public works Construction
- Salt Lake County, Utah – Municipal Code, Chapter 14.12 -Standards For Roadway Development