

Pleasant Grove Bicycle & Pedestrian Master Plan

November 2013



The Pleasant Grove Bicycle & Pedestrian Master Plan has been prepared for:



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Executive Summary

The purpose of the Pleasant Grove Bicycle and Pedestrian Master Plan is to create a barrier-free network of safe, attractive bicycle and pedestrian facilities within Pleasant Grove that provides connections to key areas within the city (e.g., parks, schools, and economic activity centers) as well as adjacent communities.

BACKGROUND & MASTER PLAN DEVELOPMENT

Pleasant Grove City and the Mountainland Association of Governments (MAG) have undertaken the Pleasant Grove Bicycle and Pedestrian Master Plan as a joint effort, beginning in winter 2012. The development of the master plan focused on strategies to develop a high level of bicycle and pedestrian friendliness and make connections between key destinations within Pleasant Grove and among the surrounding areas. Overall, the master plan:

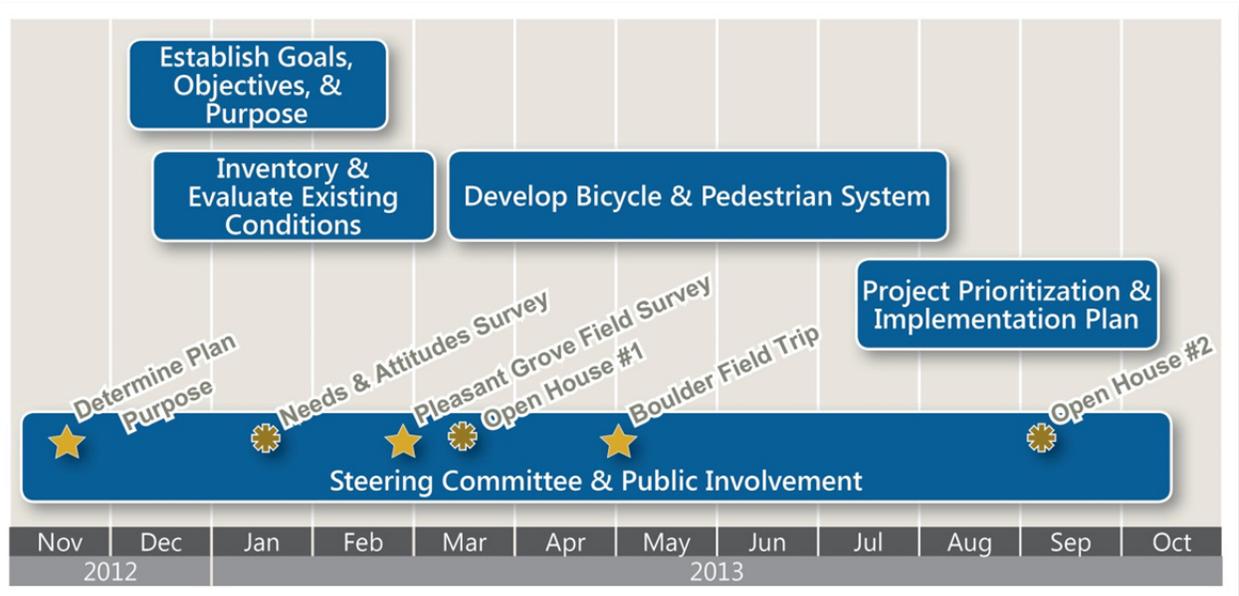
1. Identifies needs, obstacles, and opportunities for making biking and walking viable alternatives to vehicle use in Pleasant Grove.
2. Develops a foundation of goals, objectives, policies, and recommendations to improve the bicycle/pedestrian system and address the items identified in step 1.
3. Provides an implementation approach to address the goals and recommendations in step 2.

The following steps went into developing the Pleasant Grove Bicycle and Pedestrian Master Plan:

- Evaluation of existing conditions for bicyclists and pedestrians in Pleasant Grove (including a half-day field review)
- Utilization of data from the Utah Collaborative Active Transportation Study
- Analysis of accident and safety data
- Existing conditions mapping
- Public survey and public outreach program
- Steering committee input
- Field review of model system in Boulder, Colorado
- Development of proposed bicycle and pedestrian system and support facilities
- Development of conceptual bicycle park design
- Public and steering committee input on proposed system
- Development of screening criteria and project prioritization
- Development of implementation recommendations

Figure ES.1 provides an overview of the process undertaken for the plan. Ultimately, the bicycle and pedestrian recommendations were informed by balancing the existing conditions inventory, public involvement comments, steering committee input, feedback from field trips, and engineering judgment and constraints.

Figure ES.1: Master Plan Process and Timeline



GUIDED BY THE COMMUNITY

Community participation is a key ingredient in the delivery of good planning outcomes. Community involvement assists in the identification of local needs and problems, informs policy-making, provides feedback on implementation and fosters a sense of local ownership and civic pride. Community involvement for the Pleasant Grove Bicycle and Pedestrian Master Plan included the utilization of a steering committee to help guide the process and public outreach and participation to understand the public’s interest.

Steering Committee

A steering committee was developed to direct the course of the plan and make plan-related decisions throughout the process. The steering committee was comprised of a diverse range of individuals to obtain varying perspectives and build and maintain community support. Representatives were included from multiple Pleasant Grove City departments (Community and Economic Development, Engineering, Parks and Recreation, City Council, Police Department), MAG, the Utah Department of Transportation (UDOT), local residents and advocates, and key

members of the project consultant team. The steering committee met regularly throughout the course of developing the master plan, in addition to attending a half-day field review of Pleasant Grove and a one-day field trip to Boulder, Colorado.

Public Involvement

Efforts to solicit public interest and feedback included a survey and two public open houses. The needs and attitudes survey was created to assist in evaluating what Pleasant Grove residents want from future bike/pedestrian developments. The survey was available on the project website and was also administered via electronic polling at the first open house. The survey had 202 total respondents. A combined 156 participants provided input on bicycle and pedestrian issues and reviewed the project information and draft plan at the two public open houses held in March and September 2013.

PURPOSE, GOALS & OBJECTIVES

The purpose of the Pleasant Grove Bicycle and Pedestrian Plan is:

To create a barrier-free network of safe, attractive bicycle and pedestrian facilities within Pleasant Grove that provides connections to key areas within the city (e.g., parks, schools, and economic activity centers) as well as adjacent communities.

To realize the project vision, implementation of the Pleasant Grove Bicycle and Pedestrian Master Plan will focus on the following goals:

- 1. Implementation and Planning:** Create a connected network of bicycle and pedestrian facilities.
- 2. Education and Encouragement:** Identify and implement comprehensive education and encouragement programs for all ages.
- 3. Safety and Enforcement:** Ensure bicycle and pedestrian facilities are safe.
- 4. Evaluation:** Monitor successful implementation of the Bicycle and Pedestrian Master Plan.
- 5. Maintenance:** Ensure bicycle and pedestrian facilities are well maintained and usable.

PROPOSED SYSTEM & PROJECT PRIORITIZATION

Design of the proposed Pleasant Grove bicycle network and recommendations for pedestrian facilities and amenities was the result of a thorough existing conditions evaluation, input received from both the public and the project steering committee, understanding gathered during the Pleasant Grove field review and Boulder, Colorado, facilities review, and engineering technical judgment and expertise. To prioritize the proposed projects, the steering committee developed a preliminary list of evaluation criteria that was then presented to the public for feedback. Facility ranking criteria was checked for consistency against the previously developed mission statement and goals to ensure consistency. Implementation of the proposed projects will ultimately require input and direction from the Pleasant Grove City Council regarding the project facility types and order of construction.

Bicycle Projects

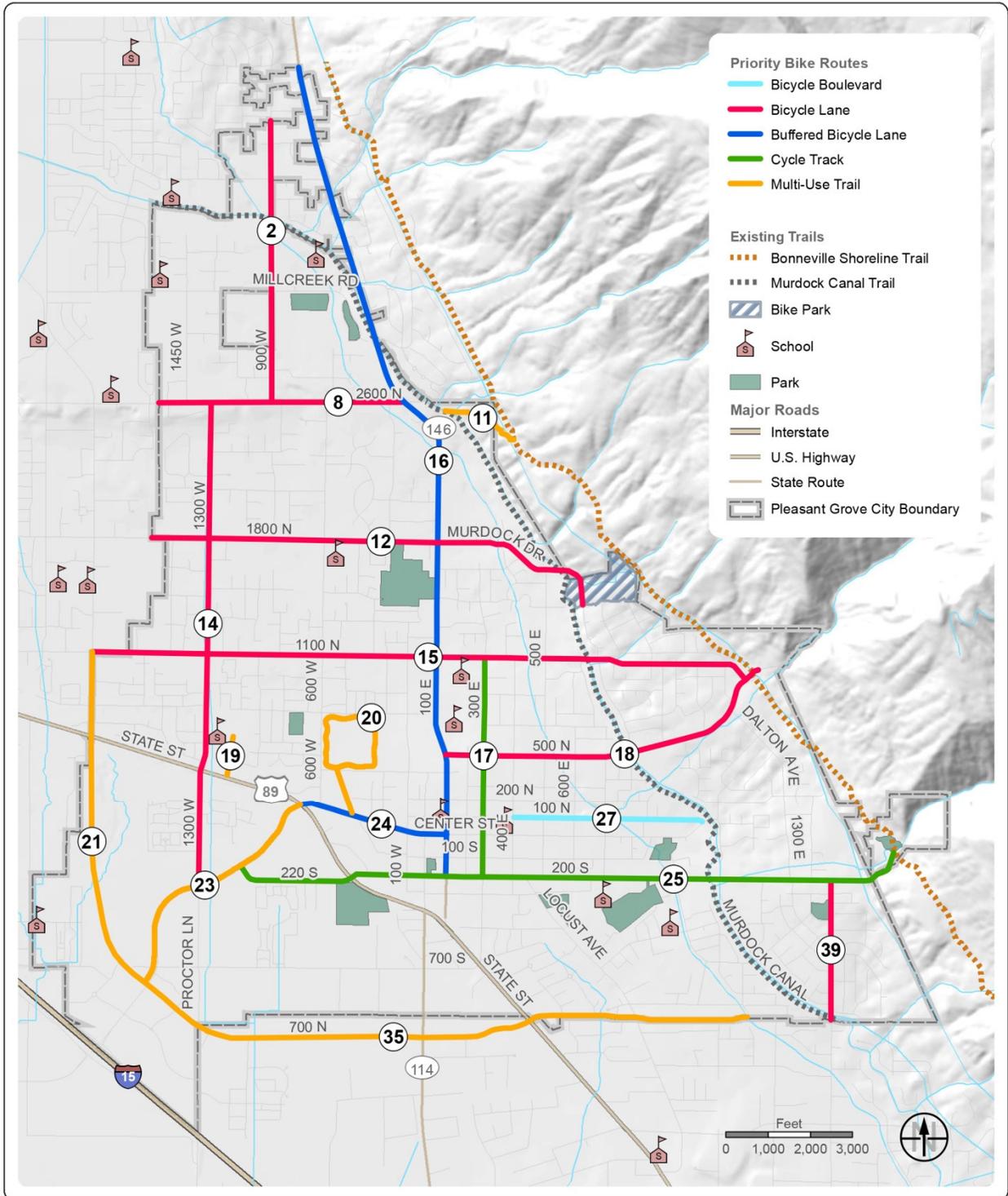
The proposed bicycle network for Pleasant Grove is listed in Table ES.1 and shown on Figure ES.2.

Table ES.1: Proposed Bicycle Projects and Ranking

Final Priority Ranking	Project No. on Bicycle Plan Map	Project Name	Facility Type
1	16	100 East/Canyon Road	Buffered Bicycle Lane
2	35	1000 South (Lindon 700 North) ¹	Multi-use Trail
3	15	1100 North	Bicycle Lanes
4	12	1800 North	Bicycle Lanes
5	24	Center Street ²	Buffered Bicycle Lane
6	23	Pleasant Grove Boulevard ³	Multi-use Trail
7	25	200 South	Cycle Track
8	11	Murdock to Bonneville Trail Connection (2600 North)	Multi-use Trail
9	8	2600 North	Bicycle Lanes
10	17	300 East	Cycle Track
11	14	1300 West	Bicycle Lanes
12	27	100 North	Bicycle Boulevard
13	21	North County Boulevard	Multi-use Trail
14	18	Grove Creek Drive (500 North)	Bicycle Lanes
15	19	Mahogany Trail Spur	Multi-use Trail
16	2	900 West	Bicycle Lanes
17	20	Old Pipe Site Trail Spur ⁴	Multi-use Trail
18	39	1500 East	Bicycle Lanes

1. Mountain to Lake Trail Connection; 2. Extension of existing bicycle lanes; 3. Existing trail (widened sidewalk); 4. Abandoned rail corridor

Figure ES.2: Proposed Prioritized Bicycle Network



Pedestrian Projects

Figure ES.3 shows the recommended prioritized group of pedestrian improvements that should be built as part of a broader network, including sidewalk segments and crosswalk improvements at several intersections. The recommended crosswalk improvements are also listed in Table ES.2.

Table ES.2: Recommended Crosswalk Treatments

Intersection	Recommendation
1100 North / 500 East	Standard crosswalk
500 North / 500 East	Standard crosswalk
100 East / 100 South*	High-visibility crosswalk

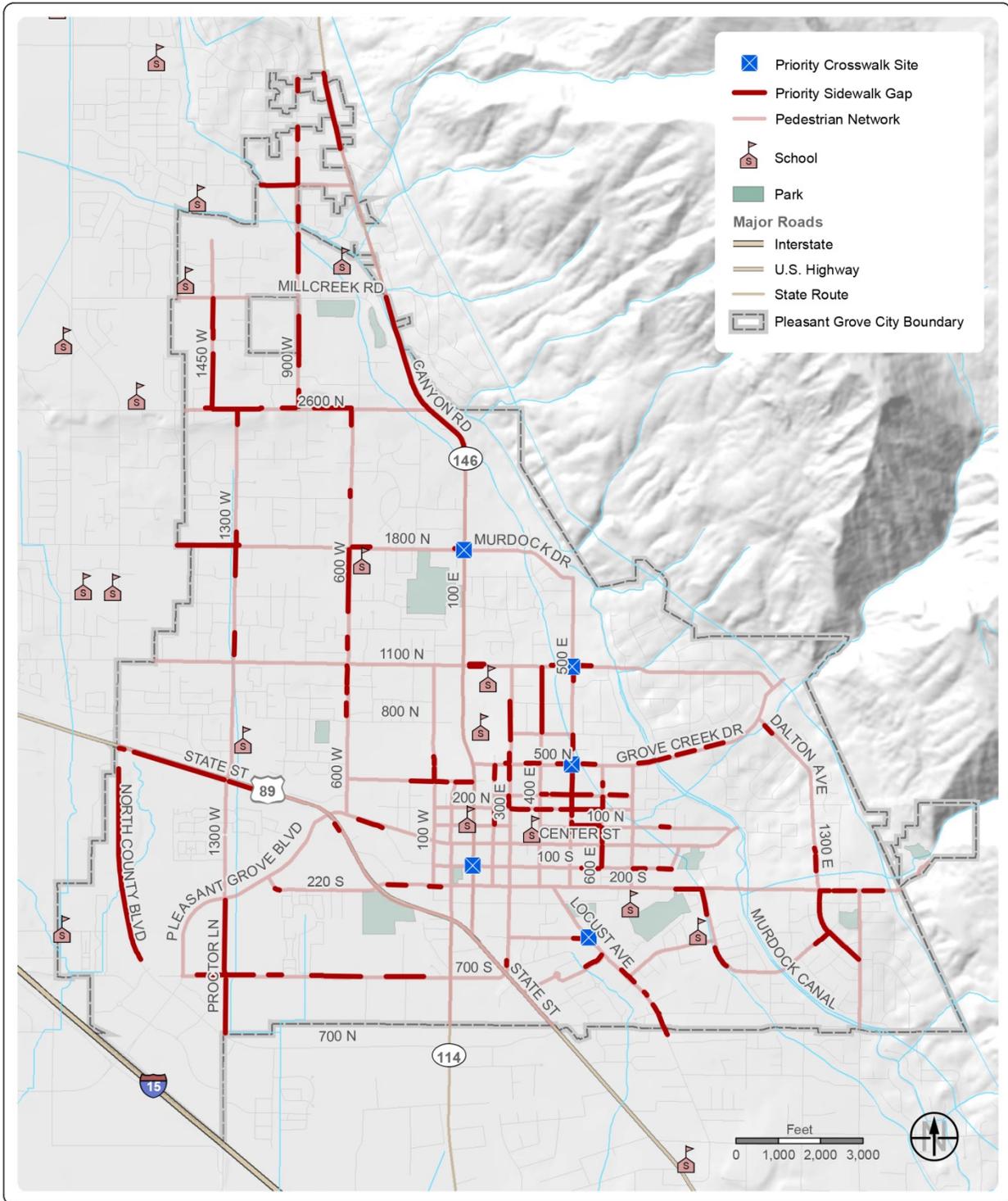
**Based on the traffic volumes at this intersection, a pedestrian refuge, overhead flashing beacons, or bulbouts should also be considered.*

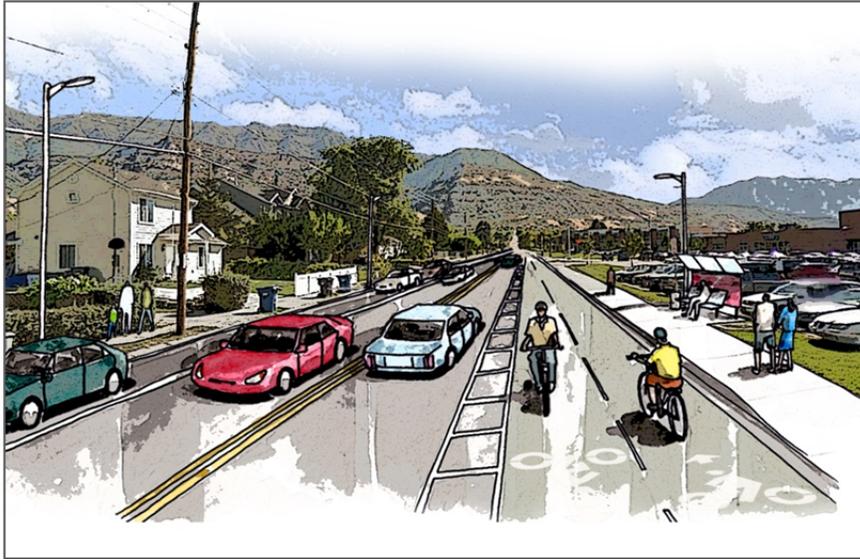
Support Facilities

Support facilities can enhance the user experience by improving safety (e.g., lighting and signage), convenience (e.g., bicycle racks), and enjoyment (e.g., street trees and street furniture). A conceptual streetscape and amenity plan for Pleasant Grove was presented to both the steering committee and the public for input. The project team worked closely with the steering committee to understand what amenity types were important to Pleasant Grove, as well as what styles and locations were appropriate. The following amenities were considered:

- Benches/seating
- Trash receptacles
- Street lighting
- Bike racks
- Signage and way-finding
- Pedestrian canopies
- Pocket parks

Figure ES.3: Prioritized Pedestrian Projects





Rendering of potential bicycle facilities, looking east on 200 South (Rendering created by CRSA)

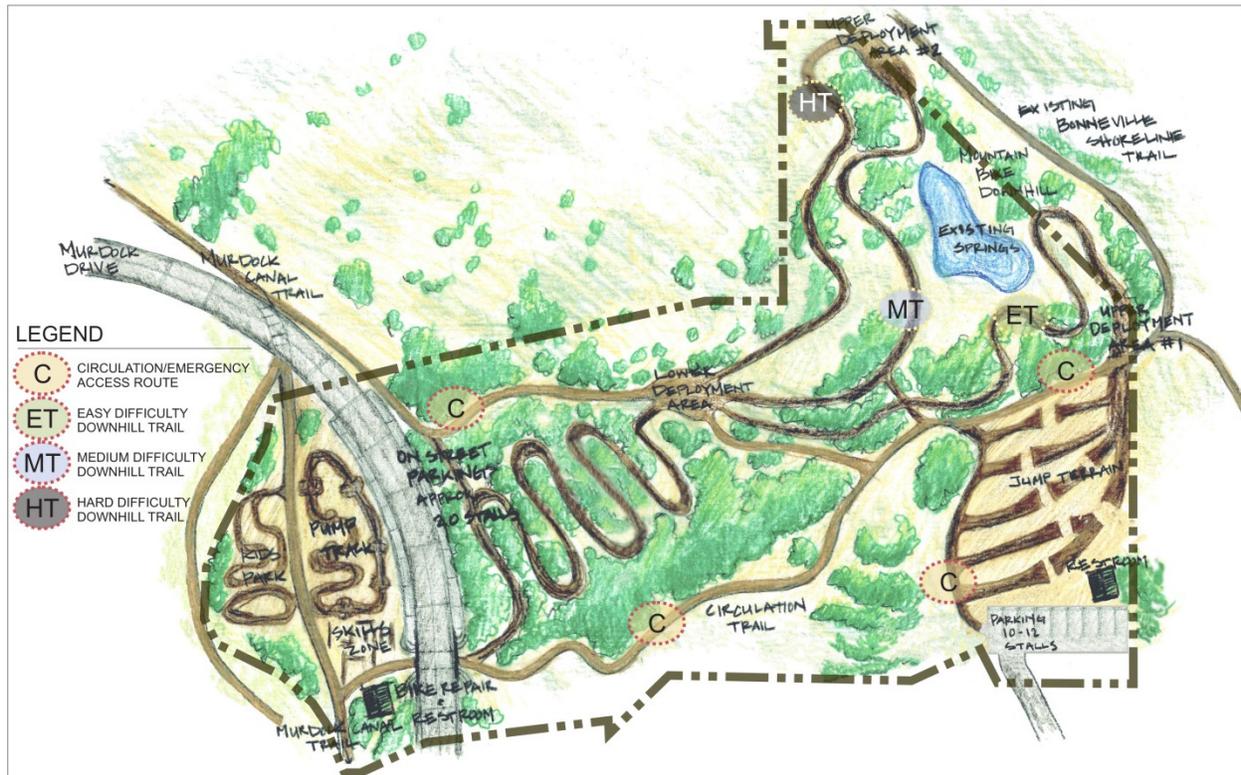


Rendering of potential bicycle facilities, looking east on 500 North (Rendering created by CRSA)

Bike Park Recommendations

Pleasant Grove is eager to provide opportunities for recreation and outdoor activities for the community. Two potential sites for bike parks were considered as part of the proposed system. The Wade Springs property was selected for further evaluation and conceptual design (Figure ES.4). This site was selected based on its proximity to the Murdock Canal Trail and existing trailhead and facilities at 1100 North; the property is already owned by the City; the terrain varies from flat to gently sloped, which lends itself to the different areas of a bike park; and opportunities for and use of existing parking and restroom facilities and water lines.

Figure ES.4: Draft Bike Park Concept, Wade Springs Site



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IMPLEMENTATION

The Pleasant Grove Bicycle and Pedestrian Master Plan is a blueprint that provides a path for improving bicycle and pedestrian activities in Pleasant Grove. Considerations for implementation include the following:

- Costs for construction of proposed improvements as well as future maintenance
- Funding, including local, state, federal, or private sources, or a combination thereof
- Bicycle facility maintenance
- Support programs and education techniques
- Prioritization by the City Council

1. Introduction

The purpose of the Pleasant Grove Bicycle and Pedestrian Master Plan is to create a barrier-free network of safe, attractive bicycle and pedestrian facilities within Pleasant Grove that provides connections to key areas within the city (e.g., parks, schools, and economic activity centers) as well as adjacent communities. The plan will be used to direct the future of bicycle and pedestrian facilities, policy and programs in Pleasant Grove.

1.1 BACKGROUND

Pleasant Grove City and the Mountainland Association of Governments (MAG) have undertaken the Pleasant Grove Bicycle and Pedestrian Master Plan as a joint effort, beginning in winter 2012. Development of the master plan focused on strategies to create a high level of bicycle and pedestrian friendliness and make connections between key destinations within Pleasant Grove and among the surrounding areas. Overall, the master plan:

1. Identifies needs, obstacles, and opportunities for making biking and walking viable alternatives to vehicle use in Pleasant Grove.
2. Develops a foundation of goals, objectives, policies, and recommendations to improve the bicycle/pedestrian system and address the items identified in step 1.
3. Provides an implementation approach to address the goals and recommendations in step 2.

1.2 STEERING COMMITTEE

A steering committee was developed to direct the course of the plan and make plan-related decisions throughout the process. The steering committee was comprised of a diverse range of individuals to obtain varying perspectives and build and maintain community support. Representatives were included from multiple Pleasant Grove City departments (Community and Economic Development, Engineering, Parks and Recreation, City Council, Police Department), MAG, the Utah Department of Transportation (UDOT), local residents and advocates, and key members of the project consultant team. Steering committee members are listed in Table 1.1.

The steering committee met regularly throughout the course of developing the master plan, in addition to attending a half-day field review of Pleasant Grove and a one-day field trip to Boulder, Colorado, as described in Chapter 4, Public Outreach and Input.

Table 1.1: Steering Committee Members

Name	Organization
Jim Price (Project Manager)	MAG
Ken Young (Project Manager)	Pleasant Grove City
Deon Giles	Pleasant Grove City
Degen Lewis	Pleasant Grove City
John Goodman	Pleasant Grove City
Mike Smith	Pleasant Grove City
Jay Meacham	Pleasant Grove City Council
Cindy Boyd	Pleasant Grove City Council
Kim Robinson	Pleasant Grove City Council
Julia Whetman	Planning Commission
Brian Fruit	Timp Cyclery
Rick Burgin	Resident Cyclist
Ryan Lemone	Resident Cyclist
Craig Hancock	UDOT
Evelyn Tuddenham	UDOT
Saffron Capson	Lochner (Consultant Team)
Chris Price	Lochner (Consultant Team)
Kerry Doane	Fehr & Peers (Consultant Team)
Kelly Gillman	CRSA (Consultant Team)

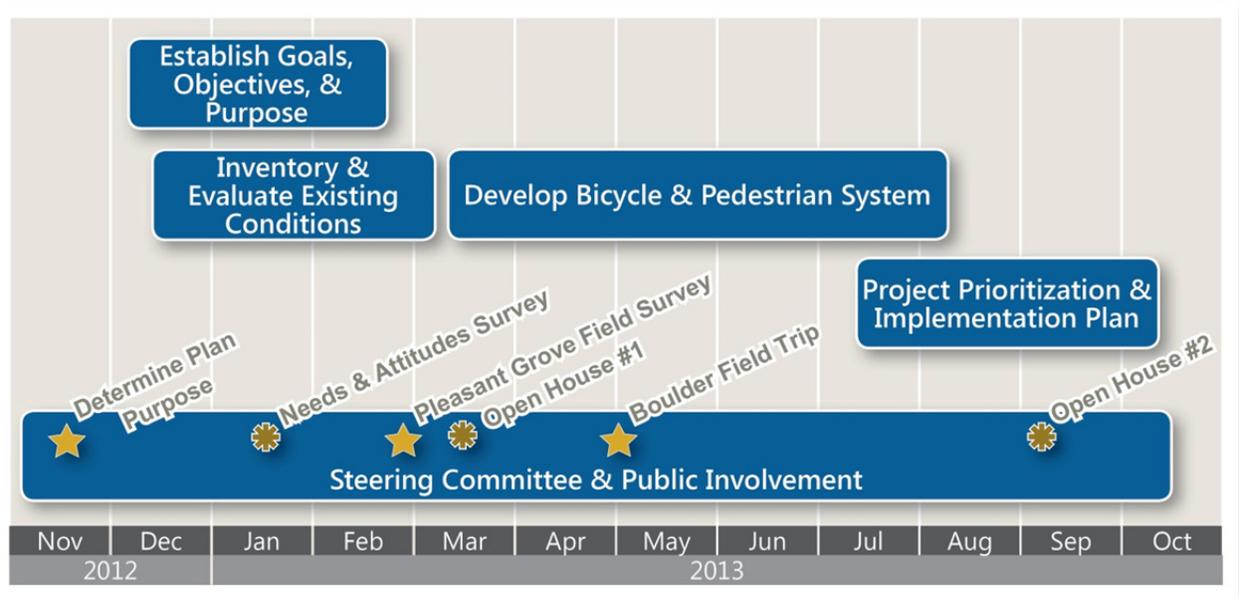
1.3 MASTER PLAN SUMMARY

Figure 1.1 provides an overview of the process undertaken for the Pleasant Grove Bicycle and Pedestrian Master Plan. Ultimately, the bicycle and pedestrian recommendations were informed by balancing the existing conditions inventory, public comments, steering committee input, and engineering judgment and constraints obtained through the following key tasks:

- Evaluation of existing conditions for bicyclists and pedestrians in Pleasant Grove (including a half-day field review)
- Utilization of data from the Utah Collaborative Active Transportation Study
- Analysis of accident and safety data
- Existing conditions mapping
- Public survey and public outreach program
- Steering committee input
- Field review of model system in Boulder, Colorado
- Development of proposed bicycle and pedestrian system and support facilities

- Development of conceptual bicycle park design
- Public and steering committee input on proposed system
- Development of screening criteria and project prioritization
- Development of implementation recommendations

Figure 1.1: Master Plan Process and Timeline



The aforementioned tasks and their outcomes are described in the following chapters:

- Chapter 1: Introduction
- Chapter 2: Goals, Objectives & Purpose
- Chapter 3: Existing Conditions Inventory
- Chapter 4: Public Outreach & Input
- Chapter 5: Proposed System & Project Prioritization
- Chapter 6: Bicycle Park Recommendations
- Chapter 7: Implementation

2. Goals, Objectives & Purpose

The project steering committee developed the purpose, goals and objectives for the Pleasant Grove Bicycle and Pedestrian Master Plan. These principles provide an overarching snapshot of how Pleasant Grove City would like bicycle and pedestrian improvements to look in the future, and will assist the City in making future public improvements, allocating city resources, operating bicycle- and pedestrian-focused programs, and determining priorities.

2.1 PLAN PURPOSE

The plan purpose describes how Pleasant Grove City would like to see itself in the future in terms of bicycle and pedestrian facilities, and provides clear direction for the project. In addition to meetings focused on the goals, objectives and purpose of the plan, members of the steering committee reviewed similar examples from previously developed bicycle and pedestrian master plans, including the Salt Lake City Bicycle Master Plan (2004), the Sacramento Pedestrian Master Plan (2006), and the Orem Bicycle Master Plan (2010).

The purpose of the Pleasant Grove Bicycle and Pedestrian Plan is:

To create a barrier-free network of safe, attractive bicycle and pedestrian facilities within Pleasant Grove that provides connections to key areas within the city (e.g., parks, schools, and economic activity centers) as well as adjacent communities.

2.2 GOALS & OBJECTIVES

The plan purpose serves as the foundation for the project goals, objectives and policies, which then provide actionable direction and specific steps to successfully realize the purpose of the plan. Project goals provide areas of focus to guide the City toward fulfilling the project vision. Three to six goals are typically identified for a master plan project and can focus on both existing and new actions and initiatives within the city. Objectives provide an action plan for accomplishing each goal. Objectives are measurable and allow the City to recognize progress toward each goal and the overall project vision.

To realize the project vision, implementation of the Pleasant Grove Bicycle and Pedestrian Master Plan will focus on the goals outlined below. The specific objectives for accomplishing each goal are provided in Table 2.1.

1. **Implementation and Planning:** Create a connected network of bicycle and pedestrian facilities.
2. **Education and Encouragement:** Identify and implement comprehensive education and encouragement programs for all ages.
3. **Safety and Enforcement:** Ensure bicycle and pedestrian facilities are safe.
4. **Evaluation:** Monitor successful implementation of the Bicycle and Pedestrian Master Plan.
5. **Maintenance:** Ensure bicycle and pedestrian facilities are well maintained and usable.

Table 2.1: Project Goals and Objectives

GOAL #1: IMPLEMENTATION AND PLANNING <i>Create a connected network of bicycle and pedestrian facilities.</i>	
Objectives:	
1A.	Pleasant Grove City Council to adopt the Pleasant Grove Bicycle and Pedestrian Master.
1B.	Create an ongoing source of funding within the annual city budget for implementing the Pleasant Grove Bicycle and Pedestrian Master Plan and maintaining new and existing facilities.
1C.	Require all Capital Improvement Projects to adhere to the Pleasant Grove Bicycle and Pedestrian Master Plan.
1D.	Prioritize projects that improve connectivity between key destinations (e.g., parks, schools, and economic activity centers) and with adjacent communities (Cedar Hills, Lindon, and American Fork).
1E.	Include a bicycle and pedestrian circulation element within the planning of any community, major development, and/or neighborhood plan.
1F.	Require private development projects to finance/install sidewalks, bicycle facilities, and multi-use trails as part of on-site improvements and off-site mitigation measures as appropriate.
1G.	Adhere to existing and future standards established by the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities and the Manual of Uniform Traffic Control Devices (MUTCD). Consider use of additional design guidelines presented in the National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide and as part of the Pleasant Grove Bicycle and Pedestrian Master Plan (where appropriate and feasible).
1H.	Identify opportunities for multi-jurisdictional funding applications with MAG and neighboring cities of Cedar Hills, American Fork, and Lindon.

Table 2.1: Project Goals and Objectives

1I. Update the Pleasant Grove Bicycle and Pedestrian Master Plan as new guidance and requirements for bicycle funding are released.
1J. Coordinate with UDOT on new state road construction projects relative to bicycle and pedestrian facilities, such as State Street and Main Street (Geneva Road).
1K. Coordinate with the Utah Transit Authority (UTA) to provide projects that improve multi-modal connections and enhance bicycle-transit trip linking.
GOAL #2: EDUCATION AND ENCOURAGEMENT
<i>Identify and implement comprehensive education and encouragement programs for all ages.</i>
Objectives:
2A. Ensure the consistency of the Bicycle and Pedestrian Master Plan with local school access plans.
2B. Promote bicycling and walking through City-sponsored education and encouragement events as outlined in the Bicycle and Pedestrian Master Plan (e.g., Paint the Pavement and Bike to Work Day, described in Chapter 7, Implementation.)
2C. Educate the public on bicycle and pedestrian safety issues with programs that target pedestrians, bicyclists, and motorists.
2D. Encourage local businesses to offer better access for bicycles and improved security for storage.
2E. Encourage employers to provide lockers and showers for employees who walk or cycle to work.
GOAL #3: SAFETY AND ENFORCEMENT
<i>Ensure bicycle and pedestrian facilities are safe.</i>
Objectives:
3A. Create safe linkages for pedestrians by limiting curb cuts, consolidating access points, and reducing conflicts.
3B. Provide user-friendly signage (e.g., placement at eye-level for bicyclists and pedestrians) and way-finding resources for bicycle and pedestrian facilities recommended as part of the Pleasant Grove Bicycle and Pedestrian Master Plan.
3C. Increase attention by law enforcement officers to bicycle-related violations by both motorists and bicyclists.
3D. Emphasize positive enforcement for safe bicycling behavior by children.

Table 2.1: Project Goals and Objectives

GOAL #4: EVALUATION	
<i>Monitor successful implementation of the Bicycle and Pedestrian Master Plan.</i>	
Objectives:	
4A.	Undertake annual evaluations to determine what percentage of the proposed bicycle and pedestrian network has been implemented and report findings to the Pleasant Grove City Council.
4B.	Conduct annual bicycle counts (refer to the National Bicycle and Pedestrian Documentation Project website).
GOAL #5: MAINTENANCE	
<i>Ensure bicycle and pedestrian facilities are well maintained and usable.</i>	
Objectives:	
5A.	Establish an annual maintenance budget for bikeways.
5B.	Dedicate additional funds for sidewalk improvements and repairs.
5C.	Incorporate bicycle network repair and maintenance needs into the regular roadway maintenance program as appropriate, paying particular attention to sweeping, pothole repair, snow removal, vegetation control, repainting pavement markings, repairing signs, etc., on priority bicycle facilities.
5D.	When performing street restriping or resurfacing, or during project design, evaluate streets for bike facilities based on the recommended projects within the Pleasant Grove Bicycle and Pedestrian Master Plan.
5E.	Address pedestrian and bicyclist safety during construction and maintenance activities including identifying safe routes for bicyclists and pedestrians through construction zones.
5F.	Through City correspondence, educate homeowners and businesses about their responsibility for maintaining passable sidewalks.
5G.	Review existing contract specifications for street rehabilitation and revise to help contractors implement a smoother riding surface for bicycles without gaps, steps, or grooves.
5H.	Inventory drainage grates within the city that are unfavorable to bicycles.

3. Existing Conditions Inventory

Understanding the existing bicycle and pedestrian system, in terms of both conditions and facilities, is key to planning a future system. The project team conducted a comprehensive effort to identify the existing conditions of bicycle and pedestrian facilities in Pleasant Grove, to ultimately understand the foundation upon which the Bicycle and Pedestrian Master Plan would build. This effort included a review of existing planning documents, data from the Utah Collaborative Active Transportation Study, and accident data to understand the context of the study area, as well as potential opportunities and constraints.

3.1 STUDY AREA CONTEXT

Pleasant Grove is situated in northern Utah County, neighboring American Fork to the west, Lindon to the south, and Cedar Hills to the north. The eastern boundary of Pleasant Grove is delineated by abrupt foothills that lead to the dramatic peaks of the Wasatch Mountains. The topography of Pleasant Grove is relatively flat throughout most of the city; the grade of east-west streets increases abruptly as they approach the mountain bench. The north-south roads have a minor incline because the northern area of the city is about 150 feet higher in elevation than the southern area.

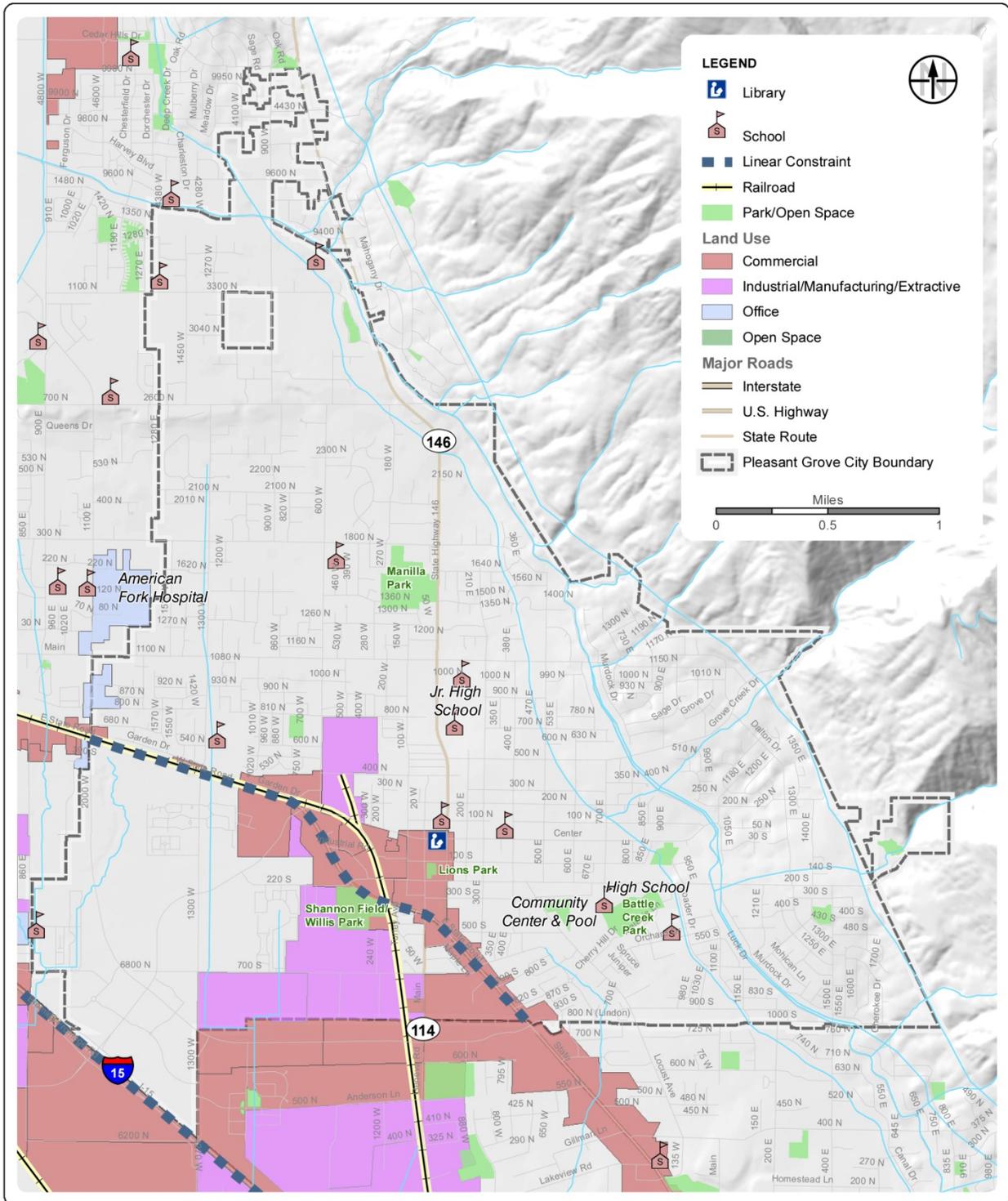
The roadway network is oriented in a grid system and provides many opportunities to develop a coherent bicycle network through a system of north-south and east-west routes. Regional cycling opportunities are abundant because Pleasant Grove's street network is well integrated with streets in neighboring cities.



Main Street, Pleasant Grove

Much of the land uses that support employment and commerce are located in the southern and western regions of the city (see Figure 3.1). State Street (US-89) is a significant regional arterial that provides direct access to a variety of commercial land uses. While State Street and Main Street (south of State Street) are important for regional vehicle mobility, carrying roughly 18,000 to 25,000 vehicles per day, the corridors are generally uninviting for pedestrians and cyclists and are considered constraints to active transportation infrastructure.

Figure 3.1: Land Use and Constraints



3.2 EXISTING PLANNING DOCUMENT REVIEW

The project team reviewed the following relevant existing planning documents to gain an understanding of existing conditions of bicycle and pedestrian facilities in Pleasant Grove:

- Pleasant Grove General Plan (2007)
- Pleasant Grove General Plan Survey (2011)
- Pleasant Grove Transportation Master Plan (2009)
- Pleasant Grove Municipal Code
- Transportation Capital Facilities Plan (2012)
- Pleasant Grove Downtown 2020 Action Plan (2008)
- 2040 Metropolitan Transportation Plan
- UDOT and adjacent community data

Pertinent information from each document is summarized below.

Pleasant Grove General Plan (2007)

The Pleasant Grove General Plan (2007) sets forth Pleasant Grove City's long-term goals and policies regarding growth and development. The plan defines the city's identity as "Utah's City of Trees." According to the plan, Pleasant Grove's estimated population in 2007 was approximately 30,903. The population of Pleasant Grove is projected to increase to more than 50,000 by the year 2030.

The median age of Pleasant Grove residents is 26.2, which is similar to the median age for Utah County, and 10 years younger than the national median age of 36.3. Pleasant Grove is a young city with 42.2 percent of residents under 18 years old. The portion of residents between the ages of 25 and 35 is 13.7 percent, which is approximately 5 percent less than the national average. The portion of residents over age 65 (5.8 percent) is half of the national average, though it is on par with Utah County.

The Pleasant Grove General Plan discusses plans for future bicycle and pedestrian facilities in various sections of the document. Pertinent information regarding these facilities is outlined below.

Land Use

Residential Land Uses: The plan explains that Pleasant Grove's objective for residential land uses is that "all residential areas will be developed or improved with an emphasis on creating safe, attractive neighborhoods." The plan also indicates that residential land uses will include

adequate open spaces and will be linked to schools, shopping areas, parks and other neighborhoods by landscaped pedestrian ways, bicycle paths, and residential scale streets.

Planning Principles: Key planning principles that incorporate consideration of bicycle and pedestrian facilities include the following components, as described in the general plan:

- **Making Connections:** The Grove and other growth areas should be connected to the rest of Pleasant Grove by streets and sidewalks, trails, and drainage. These connections are intended to be obvious and orderly.
- **Pedestrian Experience:** To support and encourage walking, sidewalks should be at least 6 feet wide (8 to 12 feet at buildings), set back from the travel lanes of the street by at least 4 feet and regularly sheltered by trees or awnings.
- **Signage:** Signs should be appropriate to the scale of the audience. Signs at the sidewalk should be intimate and at a pedestrian scale, and should be oriented to the visual perspective of passing pedestrians. Signs along streets should be at the eye level of the drivers and at a scale visible at 25 mph.

Transportation

Walkable Community: The transportation section of the general plan states that one of the challenges Pleasant Grove City faces is to connect the single-family residential core of the city (north and east of State Street) to the commercial/retail centers of the city, including the Grove, State Street, and the Downtown Central Business District.

The plan notes that with the proper implementation of trails, bicycle lanes, and future alternative modes of transit, residents will be able to safely and efficiently travel to the commercial, retail, entertainment, and historical attractions of the city. Even though the bulk of the city's residential population is located away from these attractions and the city has not been designed as a traditional walkable community, with good future planning, and with the installation of transit systems, the city can achieve an interconnectivity of elements without sacrificing the purpose and character of each element.

Goals and Strategies: Goals, strategies and actions pertaining to bicycle and pedestrian facilities are described in Chapter 5 of the general plan. Pertinent goals are summarized in Table 3.1.

Table 3.1: Transportation Goals from General Plan Pertinent to Bicycle and Pedestrian Facilities

Goals	Strategies	Actions
4. Achieve a <u>higher standard for street</u> beautification, function and safety.	A. Adopt and implement a new City standard for street design to include a park-strip between the roadway and the sidewalk with increased width.	i. Implement a new street design into new developments which includes a wider sidewalk and a park-strip. ii. Construct safe street perimeters to include a minimum 5' wide park-strip and 6' wide sidewalk.
5. Achieve a more <u>walkable community</u> that includes various modes of travel.	A. Increase City connectivity and access efficiency for all modes of travel with trails and bike lanes along all major arterials.	i. Update the City's master plan map for bike lanes and trails. ii. Integrate trails in plan reviews, where it is appropriate. iii. Require bike lanes along all Boulevards and major arterial streets to provide connectivity throughout the city.

Source: Pleasant Grove General Plan (2007)

Parks and Recreation

Recreational Trails: The general plan states:

The quality of life in a community is enhanced when it has a system of recreational trails and facilities. A trails system is also an asset to the city transportation network. Increased walking and bicycling due to the creation of trails will lead to a cleaner environment and a healthier population. Many local trips that Pleasant Grove residents currently make in their cars might be made on foot or by bicycle if they could do so on established safe trail corridors.

Where practical, bicycle and pedestrian paths in Pleasant Grove should: 1) be separated from vehicular traffic, 2) be constructed with separated bike and pedestrian lanes, and 3) provide connection between parks and open spaces.

The plan lists the following as priorities for Pleasant Grove trail developments:

1. Battle Creek Trailhead park
2. Bonneville Shoreline Trail and Trailhead parks – an upper trail to run along the base of the mountains, and a lower trail along the aqueduct road, both of which would accommodate pedestrians and equestrians
3. Wetlands in the Grove – connect the trail system in current developments through the wetlands and into other city trail systems
4. Bike paths (city wide) along existing roadways
5. Murdock Trail – a bicycle and pedestrian trail following the canal through the community

Goals and Strategies: Goals, strategies and actions pertaining to parks and recreation facilities are described in Chapter 7 of the general plan. Pertinent goals are summarized in Table 3.2.

Table 3.2: Transportation Goals Related to Recreational Trails

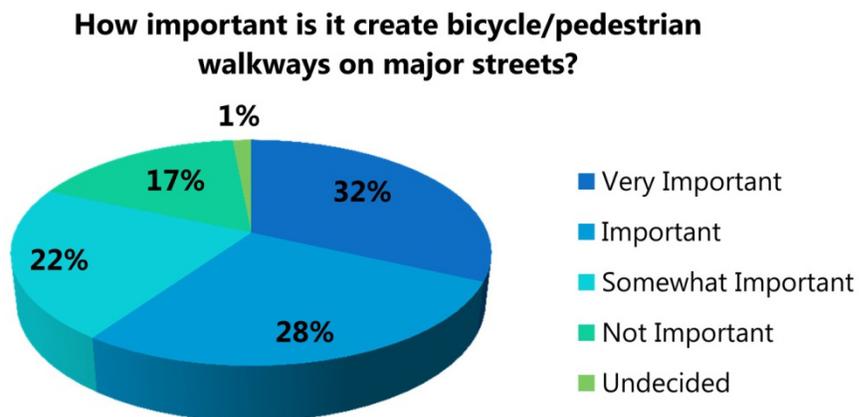
Goals	Strategies	Actions
2. Develop a <u>system of recreational trails</u> throughout the city	A. Finalize and amend recreational trails development as shown in this chapter and in the Parks and Recreation Master Plan.	i. Submit recommendations for trail concepts and priorities to the City Council. ii. Prepare a detailed trails engineering and development plan. iii. Seek and acquire any available funding.

Source: Pleasant Grove General Plan (2007)

General Plan Survey (2011)

As part of the Pleasant Grove General Plan update in 2011, a survey was distributed to the Pleasant Grove community in November 2011 to obtain public opinion regarding important community issues that should be covered in the updated Pleasant Grove General Plan. Findings pertaining to bicycle and pedestrian improvements are listed below:

- When asked how important it is to create bicycle/pedestrian walkways on major streets (assuming this could include the loss of some on-street parking), responses showed the following levels of support:



- If Pleasant Grove had to choose to spend its money between several needed improvements in the city, residents feel that the City’s money should be spent in the following order:
 1. Repairing/repaving roads
 2. Improving/adding sidewalks
 3. Developing pedestrian trails and bike paths
 4. Providing better crosswalks/longer signal times
 5. Providing additional transit options
- The top five recreational facilities residents would like are:
 1. Indoor swimming pool
 2. Bicycle/walking paths (58.2 percent)
 3. Library
 4. Expanded recreation center
 5. Children’s playgrounds
- 34 percent of Pleasant Grove residents would pay more taxes to have better sidewalks.

Pleasant Grove Transportation Master Plan (2009)

The Pleasant Grove Transportation Master Plan focuses on “various elements of transportation in Pleasant Grove City, including traffic volumes and conditions, roadway functional classification, typical street sections, alternative transportation modes, traffic signals, access management, corridor preservation and capital improvements.” The plan outlines the City’s commitment to encouraging and developing transportation alternatives to the automobile including public transit and bicycle/pedestrian facilities.

Chapter 2.0 of the Transportation Master Plan outlines the City’s goals, strategies, and actions regarding the future of transportation in Pleasant Grove. Those goals and strategies relating to bicycle and pedestrian facilities are outlined below.

Safe Transportation System

- *Strategy:* Provide pedestrian crossings for children, particularly near schools and recreation areas. Encourage development of school routing plans and recreation plans that minimize vehicle/pedestrian conflicts.
- *Strategy:* Upgrade or install pedestrian safety features at intersections and crossing areas as deemed necessary by city staff, which may include but are not limited to:

Quality Image through Streetscape Design

- *Strategy:* Upgrade and beautify sidewalks and other walkways to create a functional, but aesthetically pleasing pedestrian streetscape. Create pedestrian rest stops with places for park benches and additional landscaping. Explore alternatives for standard waste receptacles.

Pedestrian and Non-Motorized Circulation

- *Goal:* Achieve a more walkable community. Support and encourage bicycle, pedestrian and other non-motorized travel within the city. Coordinate with adjacent jurisdictions to offer continuous routes for travel and recreation between communities.
- *Strategy:* Increase connectivity and efficiency of bicycle and pedestrian facilities along all major arterial and collector streets.
- *Strategy:* Create a balance between bicycle and pedestrian facilities to satisfy both the transportation and recreational needs of residents.
- *Strategy:* Encourage alternative modes of transportation through carefully developed support systems.
- *Strategy:* Maintain safety and accessibility of pedestrian walkways.

Preserve Air Quality and Energy

- *Strategy:* Encourage other methods of travel within the city by constructing trails and larger sidewalks.

Based on observations made during the planning process, the Pleasant Grove Transportation Master Plan makes a number of suggestions pertaining to bicycle and pedestrian facility improvements. These include the following items:

- Install painted bike lanes – 4 to 5 feet wide next to the outside general purpose lane.
- Construct multi-use trails – Minimum of 10 feet wide, but up to 12 feet wide when possible and if there is enough room.
- Separate equestrian facilities from bike/pedestrian facilities; however, both can be accommodated within the same corridor.
- Provide connections between parks/schools and bike/pedestrian facilities.
- Connect mass transit facilities with bike/pedestrian facilities.
- Join sidewalks where gaps exist, particularly on busy, high-speed roads, and roads that have been designated as pedestrian routes.
- Prioritize the addition of sidewalks on streets where gaps exist throughout the city.

- Coordinate and interconnect trails with adjacent cities (Lindon, American Fork, Highland, and Cedar Hills), the county, and the Forest Service.
- Avoid placing bicycle facilities on high-speed and busy roads.
- Conduct planning/engineering studies with regards to bike, pedestrian, and other trail facilities for purposes of locating, designing, and acquiring right-of-way for the trails.
- Make plans to implement the “Trails” Plan (include the facilities in various street projects, as it is much more difficult to retrofit facilities).
- Develop multi-use trails in the urban environment.
- Maintain street pavement in good condition and pave roadway shoulders where bike lanes have been identified.
- Coordinate with UDOT relative to pedestrian and bike facilities on state roads (e.g., State Street, Geneva Road, 100 East).
- Note that bicycles are permitted on all roads in the state of Utah, with the exception of access-controlled freeways. The designation of certain roads as Class II (bike lane) or Class III (bike route) facilities is not intended to imply that these are the only roadways intended for bicycle use. Rather, the designation of a network of Class II and III on-street bikeways recognizes that certain roadways are optimal bicycle routes for reasons such as directness or access to significant destinations.

The plan notes that in the southeastern quadrant and various other locations of the city, bicycle and pedestrian facilities are scarce. Planned additions to create a more complete network include:

- 1300 East/Dalton Drive (200 South - Grove Creek Drive)
- Grove Creek Drive (100 East - 1100 North, approximately 1050 East)
- 500 East (200 South - Murdock Drive, approximately 1800 North)
- 400 North (100 East - 600 West)
- State Street (south of Pleasant Grove Boulevard)
- 700 South (1300 West - Pleasant Grove Boulevard)

Pleasant Grove Municipal Code

The Pleasant Grove Municipal Code (Section 10-11E-2-12) states that a minimum of one bicycle rack with four spaces be required for each vehicular parking area for commercial/retail and office developments in the downtown commercial subdistrict. The bicycle rack must be within the site development, adjacent to a landscaped area adjacent to the parking lot, and rear of a

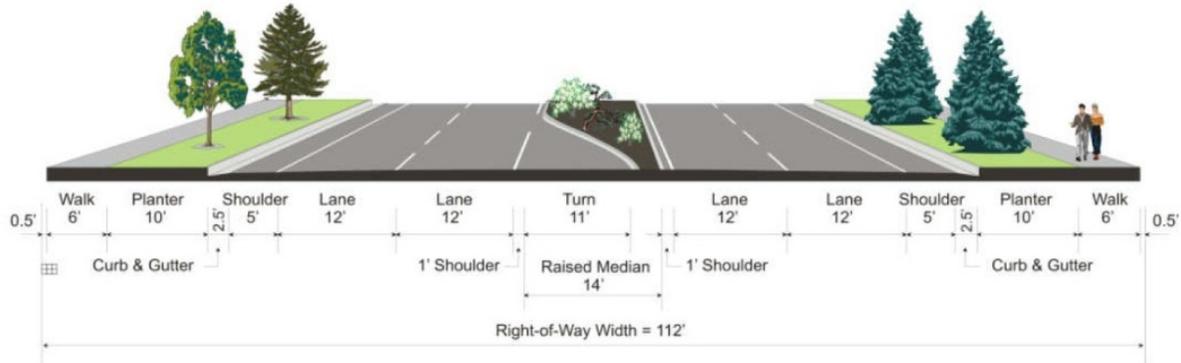
building or plaza. According to Section 10-11E-3-12, the same is required for each office, residential or mixed development in the downtown transitional subdistrict.

Transportation Capital Facilities Plan (2012)

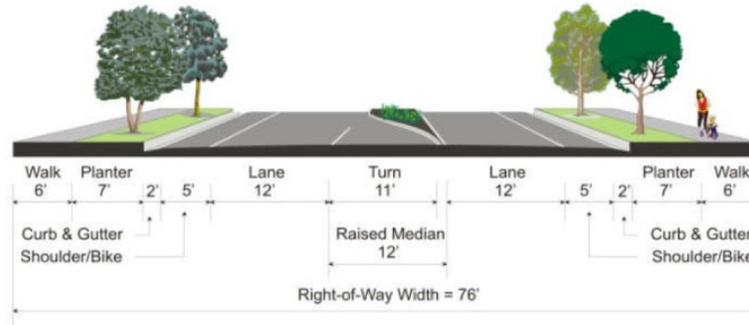
The Transportation Capital Facilities Plan outlines future roadway infrastructure needs in Pleasant Grove. Chapter 2 of the plan makes recommendations for pedestrian facilities by suggesting that typical cross sections include a 6-foot-wide sidewalk separated from the roadway with a park strip on all arterial and collector roadways to provide a buffer for pedestrians from vehicular traffic. Roadway functional classifications and recommended cross sections from the Transportation Capital Facilities Plan are shown in Figures 3.2 to 3.4.

Figure 3.3: Recommended Typical Sections – Arterial Roads

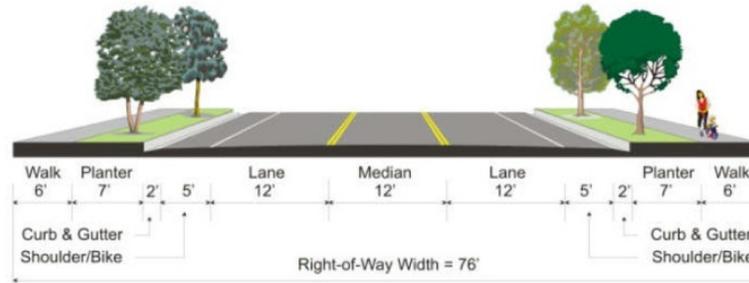
MAJOR ARTERIAL (112' ROW) - 5 Lanes



MINOR ARTERIAL (76' ROW) - 3 Lanes



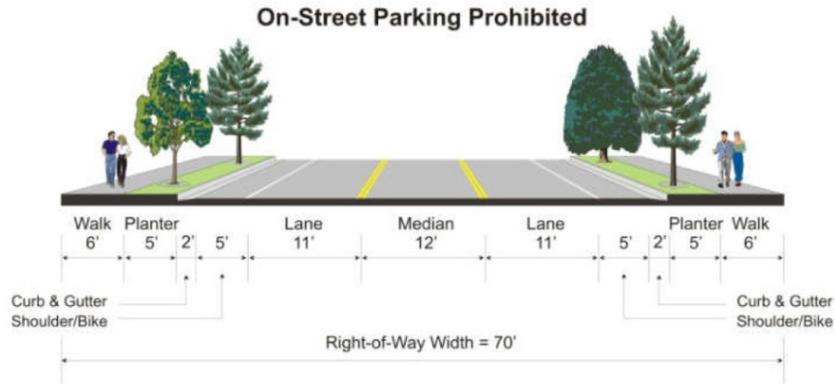
INDUSTRIAL ARTERIAL (76' ROW) - 3 Lanes



Source: Transportation Capital Facilities Plan (2012)

Figure 3.4: Recommended Typical Sections – Collector and Local Roads

COLLECTOR (70' ROW) - 3 Lanes



On-Street Parking



RESIDENTIAL LOCAL ROAD (56' ROW) - 2 Lanes



Source: Transportation Capital Facilities Plan (2012)

Pleasant Grove Downtown 2020 Action Plan (2008)

The Vision Statement for the Downtown 2020 Action Plan states that “Downtown Pleasant Grove will become a vibrant village of mixed uses, promoting a pedestrian friendly atmosphere and providing excellence in landscaping and architecture, in a setting which honors and reserves the past while promoting the future.”

Goals outlined in the plan regarding bicycle and pedestrian facilities include:

- Goal #17: Provide a system of downtown pedestrian paths, plazas and open spaces.
- Goal #18: Install streetscaping along all main downtown area streets.
- Goal #24: Plan for transit: train station, bus stops, bicycles, street trolleys, buggies, etc.
- Goal #26: Plan aesthetic design and pedestrian connection for State Street overpass.

The Downtown Action Plan outlines recommendations regarding pedestrian improvements, as described below.

Pedestrian Connections

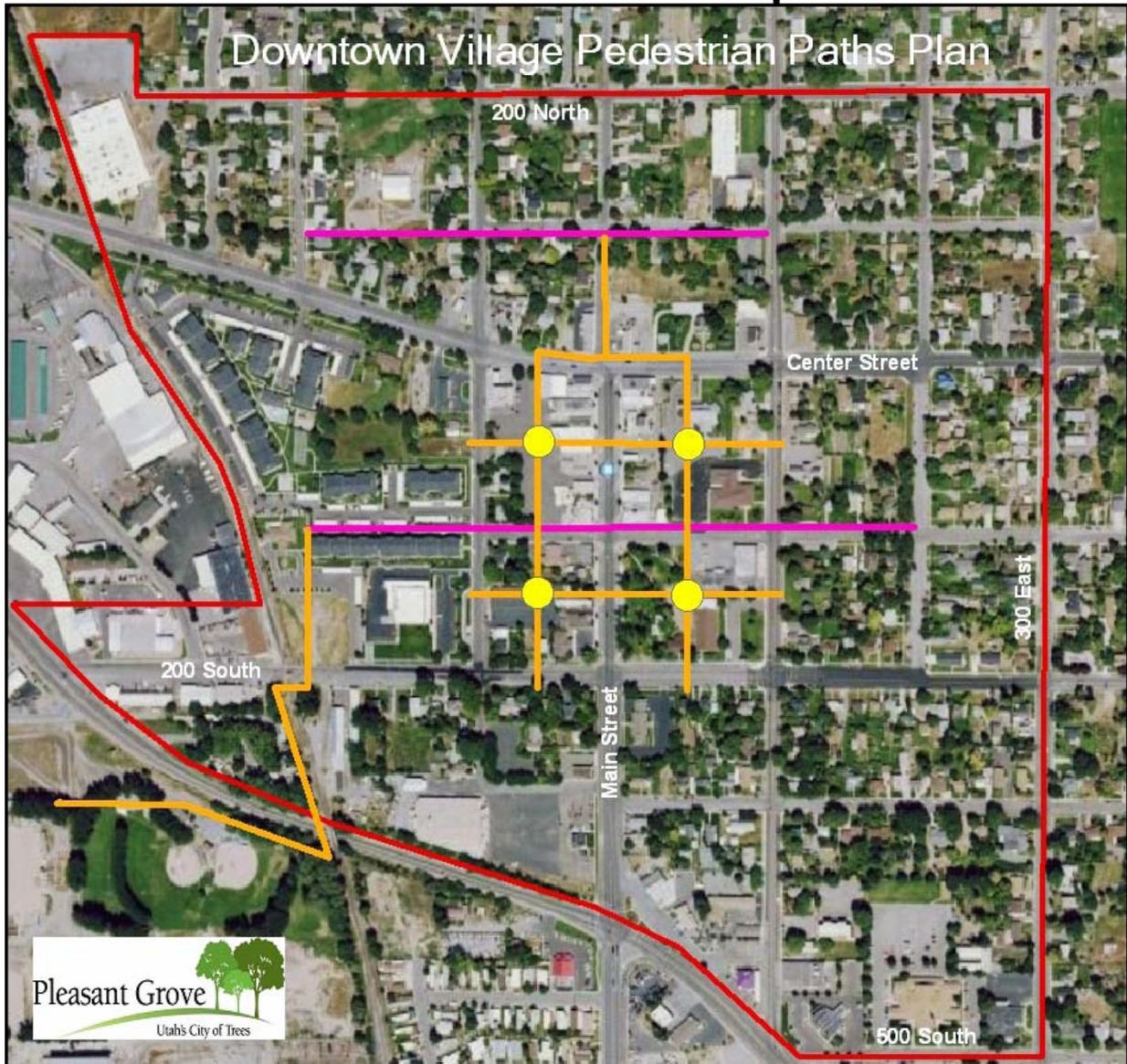
A plan for pedestrian walkways through downtown is shown in Figure 3.5 in a grid of mid-block connections, as well as an extension of the historic promenade along 100 South to 200 East. Public plazas can be built at the intersections of these four paths. Raised crosswalks at mid-block tying into sidewalks and streetscapes will help these paths to be effective connections.

Additionally, it is recommended that the City: 1) Plan for an effective pedestrian connection with the rodeo grounds and the Grove area west of State Street, and 2) Continue the historic promenade eastward on 100 South with markers as was required by the Thorneberry Apartments, as well as an historic promenade along 100 North. Historic markers should tie together with pedestrian walkways and parks.

2040 Metropolitan Transportation Plan

The Metropolitan Transportation Plan notes that “as Utah Valley continues to grow and urbanize, so does the need for multi-use paths, neighborhood connections, on-street bike lanes, sidewalks and pedestrian friendly development increases.” Bicycle and pedestrian projects outlined in the Metropolitan Transportation Plan are shown in Figure 3.6. Priority planned trails in Pleasant Grove include the Murdock Canal Trail (complete), State Street, 700 North, Main Street, Pleasant Grove Boulevard (I-15 to State Street) (complete), and 200 South. Priority bike routes (lanes, shoulders, signage) in Pleasant Grove include 2000 West, 100 East, 200 South, 1100 North and 2600 North.

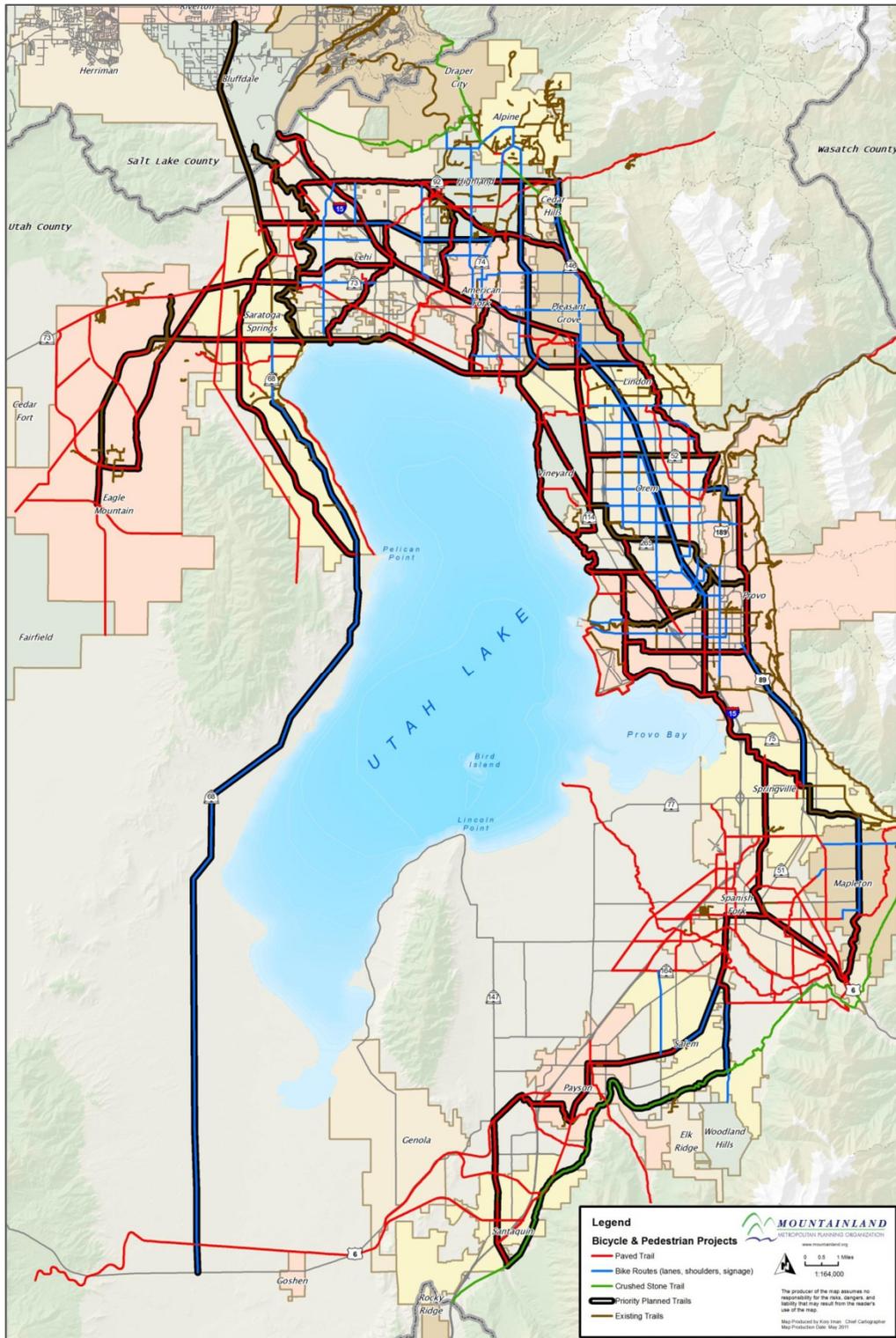
Figure 3.5: Downtown Village Pedestrian Paths Plan



- = Pedestrian path
- = Historic promenade
- = Public plaza
- = Zone boundaries

Source: Downtown 2020 Action Plan (2008)

Figure 3.6: Bicycle and Pedestrian Projects – 2040 Metropolitan Transportation Plan



Source: 2040 Metropolitan Transportation Plan

UDOT and Adjacent Community Data

UDOT Guidelines for Bicycle and Pedestrian Accommodations

This guideline outlines UDOT's responsibility in providing accommodations for pedestrian and bicyclists on UDOT roads. According to Utah Code, bicycles are defined as vehicles. On urban arterials, "Every effort should be made to include bicycle and pedestrian accommodations in all new construction and reconstruction projects on the state system. The specific level of accommodation will vary by project and should be determined by the Project Team, including the UDOT Bicycle and Pedestrian Coordinator."¹

UDOT Bicycle Priority Routes

In 2008, to address the increased bicycle facilities demand statewide, UDOT formed a planning team to prepare a statewide bicycle corridor priority routes analysis. This process included extensive public involvement (13 open houses statewide) and solicited significant public comment. As part of this analysis, an existing conditions inventory was undertaken to identify current route conditions for cycling. Within Pleasant Grove, roads classified as "very good" and "good" for cycling included 200 South, 1500 East, 400 North, State Street, 100 East, Main Street, Center Street (between 600 West and 100 West), 600 West, 1100 North, and 1800 North (between 600 West and 100 East). The portion of 100 East/Canyon Road (north of 1800 North) was classified as "poor." See Figure 3.7.

Geneva Road/Main Street (ending at State Street in Pleasant Grove) and 100 East/Canyon Road have been identified as a Level 1 priority on UDOT's bicycle priority routes list. Funding has not been secured for any of the identified priority improvements. UDOT and others are encouraged to make improvements to these routes as funding and opportunities permit in order to create a more bicycle-friendly transportation system.

Adjacent Communities – American Fork, Lindon and Cedar Hills

Pleasant Grove is bordered by American Fork to the west, Lindon to the south, and Cedar Hills to the north. American Fork is currently undertaking a bicycle and pedestrian master plan project. Proposed facilities as part of this project are shown in Figures 3.8 and 3.9. Lindon City is undertaking a similar process beginning in fall 2013. Existing and planned bicycle facilities in neighboring communities, which could serve as potential regional connections, were compiled as part of the Utah Collaborative Active Transportation Study and have been included as part of Figure 3.10.

¹ UDOT Policy 07-117: Routine Accommodations for Bicyclists and Pedestrians: An accommodation is defined as any facility, design feature, operational change or maintenance activity that improves the environment in which bicyclists and pedestrians travel. Examples of such accommodations include the provision of bike lanes, sidewalks, signs and the addition of paved shoulders. Bicycling and walking are successfully accommodated when travel by these modes is efficient and safe for the public. The level of accommodation should be considered on a project-by-project basis.

Figure 3.7: UDOT Bicycle Priority Routes

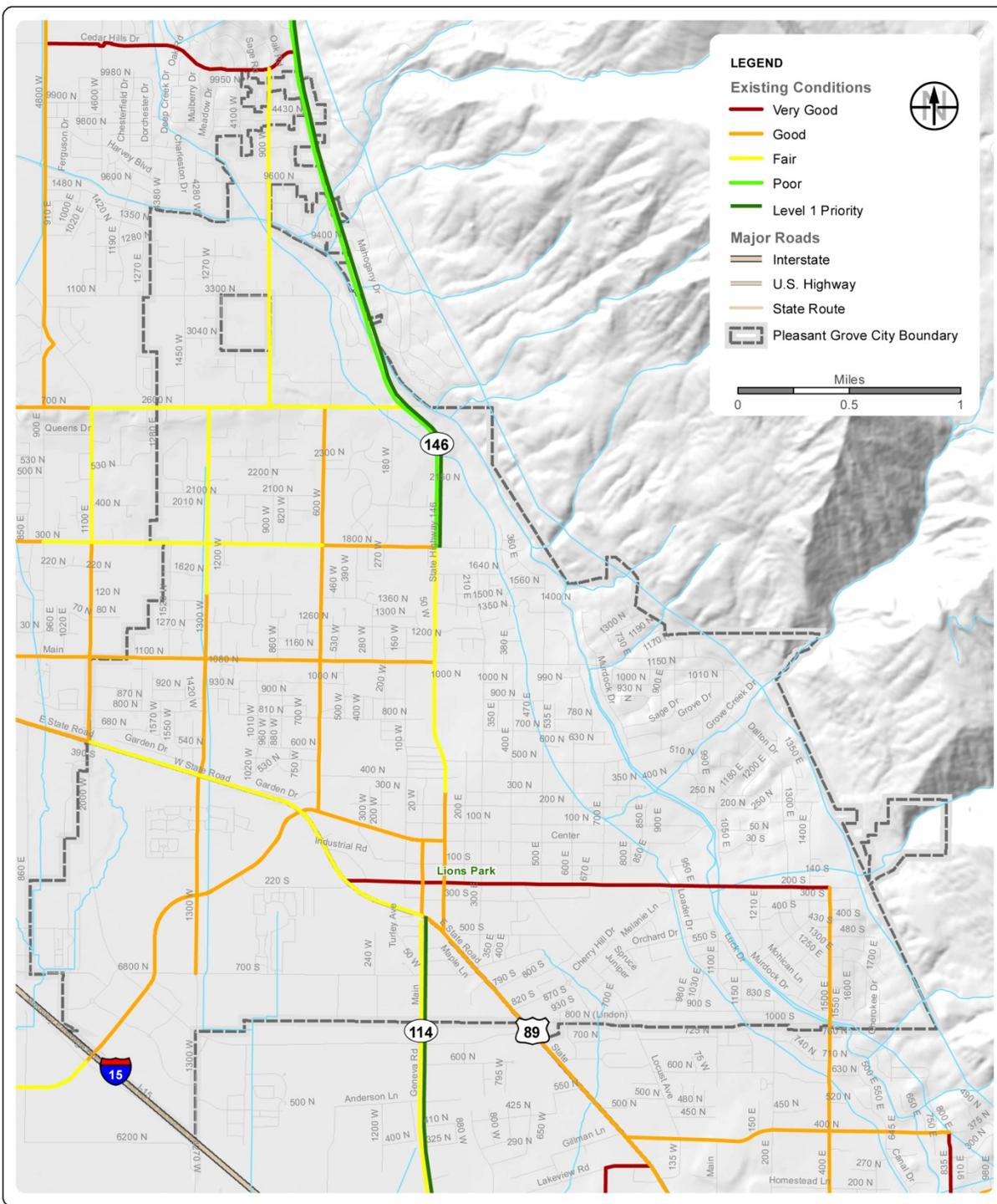
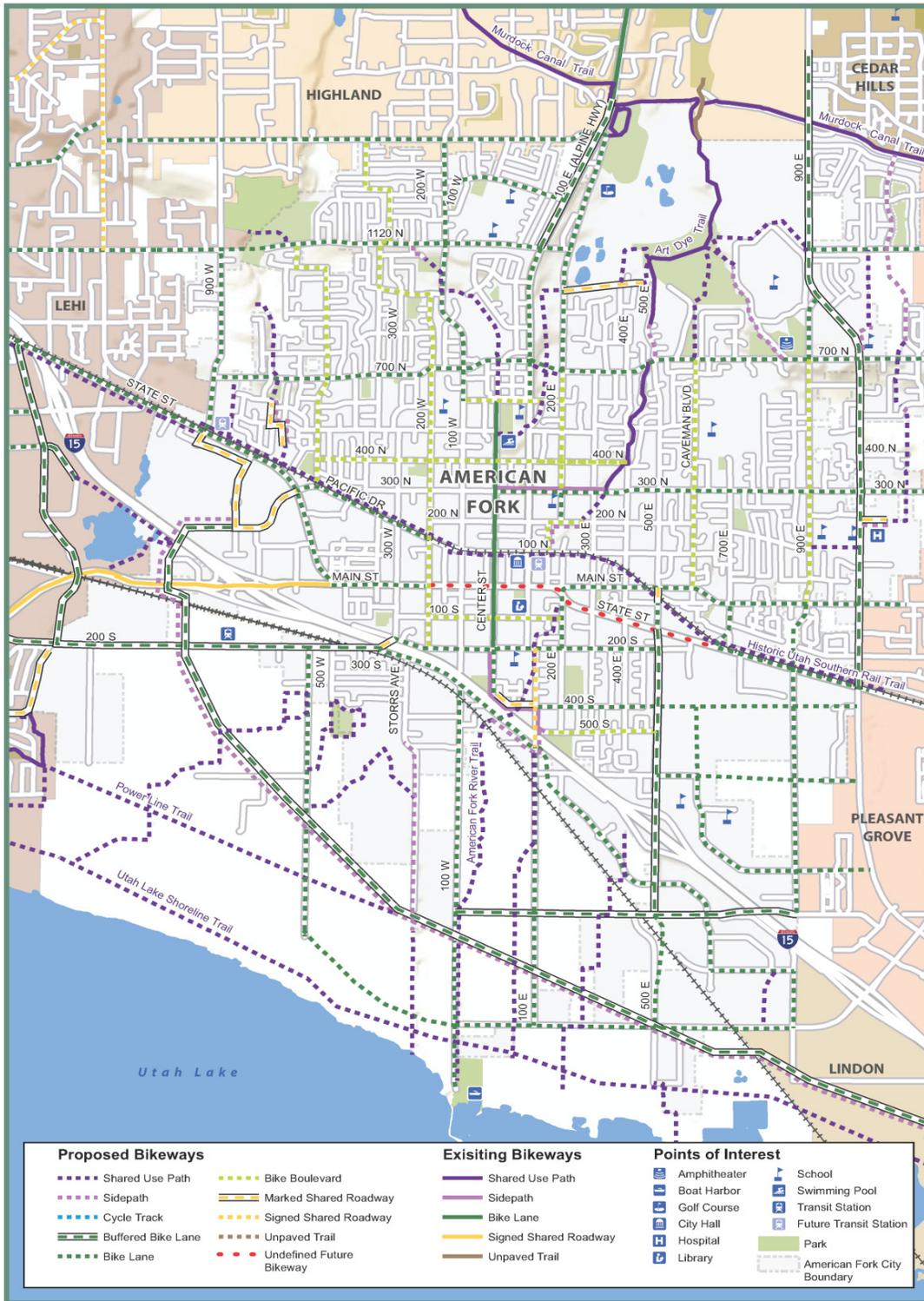


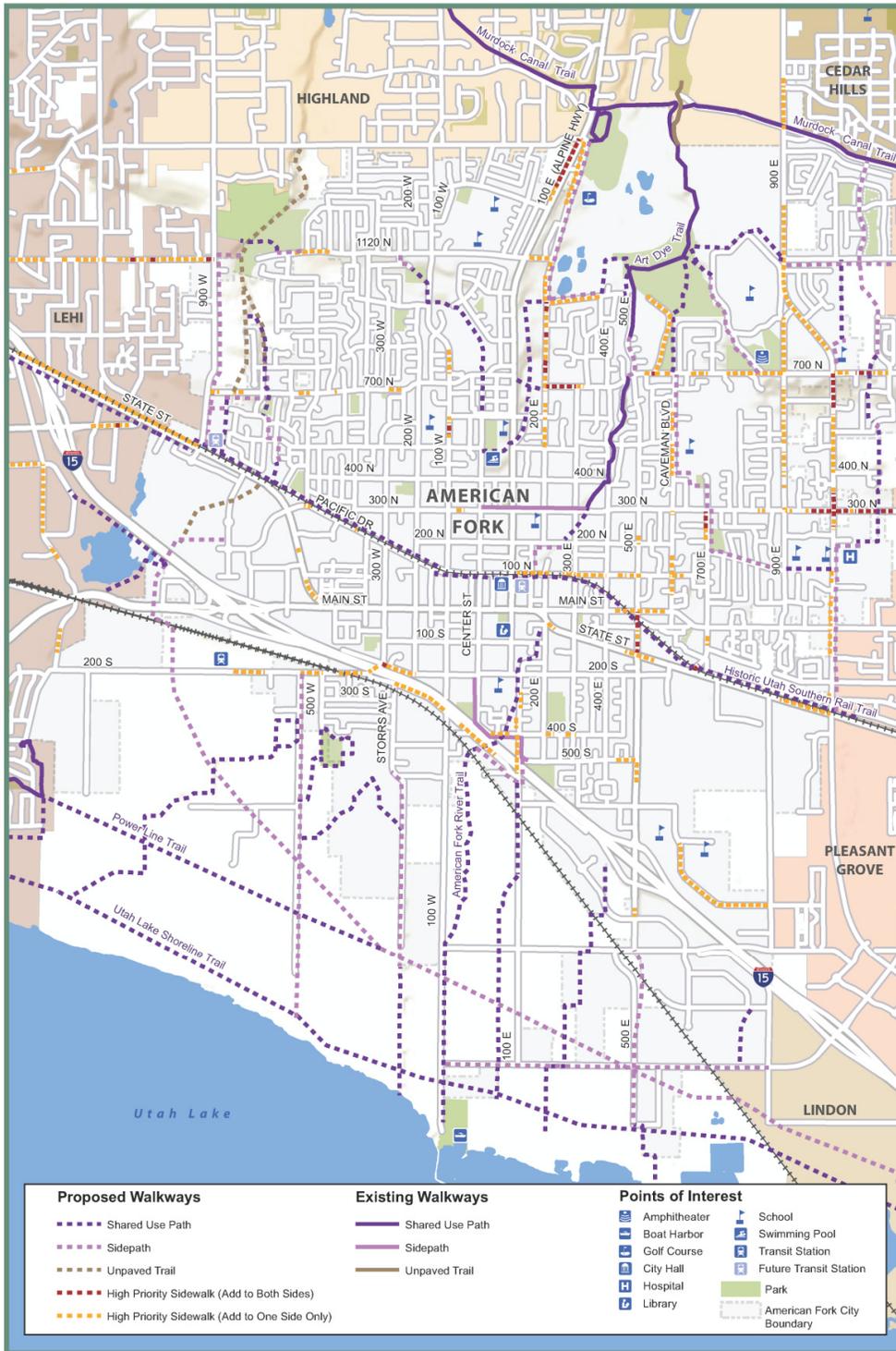
Figure 3.8: American Fork Proposed Bikeways



Proposed Bikeways



Figure 3.9: American Fork Proposed Walkways



Proposed Walkways



3.3 EXISTING AND PLANNED BICYCLE AND PEDESTRIAN FACILITIES

Bicycle Facilities

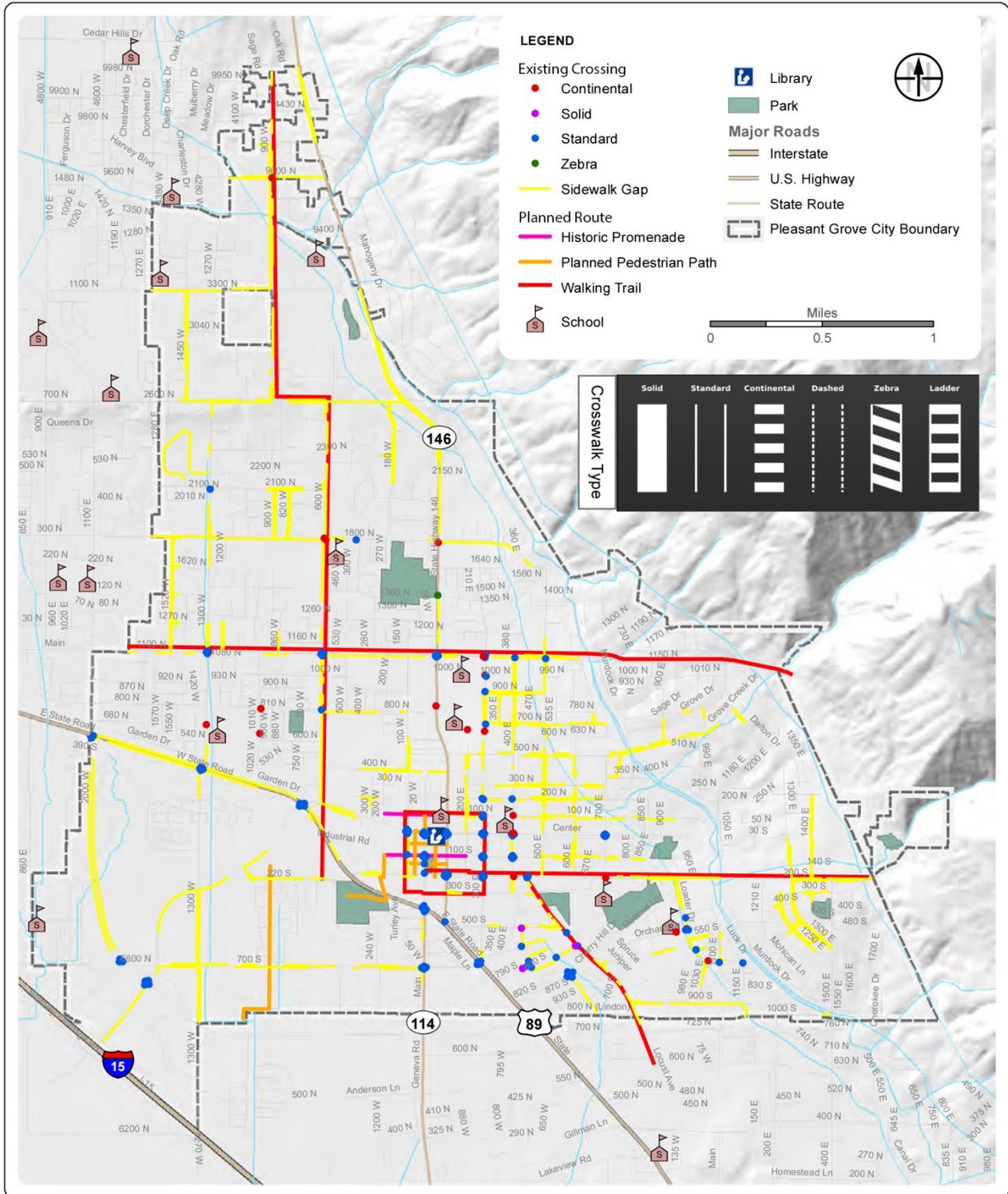
The Murdock Canal Trail and the Pleasant Grove Boulevard Trail are the only continuous bicycle facilities in Pleasant Grove. There are a few short segments of bike lanes on Main Street and Center Street in the historic downtown area; however, these segments are relatively short and do not connect to other cycling routes or paths. Figure 3.10 shows existing and planned bicycle facilities for Pleasant Grove and neighboring communities. This map is based on the most recent bicycle plans available from Pleasant Grove City's General Plan, data collected as part of the Utah Collaborative Active Transportation Study², Google Earth aerial imagery and an on-site field visit.

Pedestrian Facilities

Existing sidewalks in Pleasant Grove are typically 4 feet wide. The presence of a park strip varies by street. Significant corridors that do not currently have a sidewalk on both sides of the road include 2000 West (between 700 North and State Street), State Street (between 2000 West and Pleasant Grove Boulevard) and 100 East/Canyon Road (north of 2200 North). Gaps in the existing sidewalk network (based on Google Earth aerial imagery), existing crosswalks and planned pedestrian facilities are included on Figure 3.11. Planned pedestrian facilities are based on data available from Pleasant Grove City's General Plan and Downtown Action Plan.

² GIS files from MAG include: existing bike routes and trails (UC_Trails.shp), obtained 8/16/2012; proposed trail projects from the 2040 Metropolitan Transportation Plan (<http://www.mountainland.org/site/articles/view/1271>, accessed 9/7/2012).

Figure 3.11: Existing and Proposed Pedestrian Facilities



3.4 OPPORTUNITIES AND CONSTRAINTS

Opportunities

On-Street Parking

On-street parking is allowed on most roads in Pleasant Grove. For pedestrians, on-street parking creates a more comfortable experience by providing a buffer from traffic. On-street parking can pose a challenge for bicyclists who find themselves in harm's way when a parked car opens its door. Typically this is more of a problem in commercial areas than in residential areas where parking turnover is more frequent. In these areas used by cyclists, bicycle lanes should be 5 feet or wider to allow for safer travel of bicyclists adjacent to on-street parking. Narrower lane widths can be allowed in residential areas or areas where on-street parking is rarely used.

Roads

Some of Pleasant Grove's roadways appear to have greater capacity than is currently utilized. For example, some collector streets have curb-to-curb widths greater than 50 feet, which is much wider than needed to support one travel lane and on-street parking in each direction.

Wider roads present a significant opportunity to improve conditions for cyclists and pedestrians. Bicycle facilities on these streets could be developed through relatively simple and inexpensive treatments, such as roadway restriping. Extra roadway and shoulder width also provides room for sidewalks or other pedestrian facilities without requiring right-of-way from property owners.

Connectivity

Pleasant Grove is well situated to take advantage of facilities in neighboring communities, thus creating a regional connection. Connecting key destinations within the city with these facilities, including the Murdock Canal Trail, will encourage bike/pedestrian travel not just within Pleasant Grove but the entire region. The existing rail corridor through Pleasant Grove may offer an opportunity to create a "rails-with-trails" project.



*1100 North, Pleasant Grove
(Highlighting wide residential roads available
within the city)*

Constraints

Multiple linear constraints within Pleasant Grove limit bicycle and pedestrian travel. I-15 can only be crossed at the Pleasant Grove freeway interchange, 1300 West (Proctor Lane), and 700 South (Sam White Lane), and therefore poses a physical barrier. Bicycles are only accommodated along a portion of State Street, and there are large gaps in the existing sidewalk. In addition, the roadway width, travel speed and other characteristics of this road make it unfriendly for bicyclists and pedestrians to travel along or cross over.

3.5 UTAH COLLABORATIVE ACTIVE TRANSPORTATION STUDY DATA

Latent Demand Model

A bicycle and pedestrian latent demand model was created for the Utah Collaborative Active Transportation Study. Latent demand models estimate pedestrian and bicycling demand in an area based on land use, demographic, and built environment factors. The latent demand methodology evolved from research Fehr & Peers conducted for the U.S. Environmental Protection Agency (EPA) on the relationship between the built environment and travel patterns. Through this and subsequent studies, several factors have been shown to have significant effects on the number of people walking and bicycling in a given area.

The analysis uses a combination of existing GIS data and newly collected information to develop variables highly correlated with walking and bicycling activity. The weighting of each variable is based on the results of the EPA research described above, but tailored to each project. For the Utah Collaborative Active Transportation Study, this was based on the study's goals and objectives, for instance, proximity to rail stations and the use of the bicycle network.

Variables

Because pedestrian and bicycle activity are highly dependent on many factors, a number of variables were compiled to forecast pedestrian and bicycle demand. The variables are outlined in Table 3.3. Weighting factors and ranking criteria were then applied to these variables to create a scoring index for each street segment within the study area.

Table 3.3: Pedestrian and Bicycle Demand Variables

Factor	Type	Date	Source
Population Density	Polygon: TAZ	2007	Wasatch Front Regional Council (WFRC) Regional Model
Employment Density	Polygon: TAZ	2007	WFRC Regional Model
Land Use Mix	Polygon: Zoning	2012	BioWest
Schools	Point	2012	AGRC*
Parks and Trailheads	Polygon	2010	AGRC
Colleges	Polygon	2012	AGRC
Commercial Districts	Polygon	2012	Various
Bus Stops	Point	2011	UTA via AGRC
Rail Stops	Point	2011	UTA via AGRC
Age	Polygon: Census Tract	2010	Census 2010
Income	Polygon: Census Tract	2010	Census 2010
Vehicle Ownership	Polygon: Census Tract	2010	Census 2010
Street Segment Length	Polyline	2012	AGRC
Bicycle Network	Polyline	2012	Various

*Utah Automated Geographic Reference Center
Source: Fehr & Peers, 2012

Results

Results of the latent demand model are shown in Figures 3.12 and 3.13. Latent demand scores are based on an overall maximum score of 100. In Pleasant Grove, the highest pedestrian latent demand score is 50.2 and the highest bicycle latent demand score is 46.6. These scores are not as high as other areas within the Wasatch Front. However, within Pleasant Grove, the highest scoring areas are along State Street, Center Street, Main Street, 100 East, 100 South, and 200 South. These areas have most of the employment density and the commercial center of Pleasant Grove, as well as good access to bus routes. Schools and parks were a contributing factor to some of the higher scores in Pleasant Grove. The areas along the eastern edge of the city, bordering the foothills, have lower scores due to less land use mix and farther distances to destinations.

Figure 3.12: Latent Demand - Bicycle

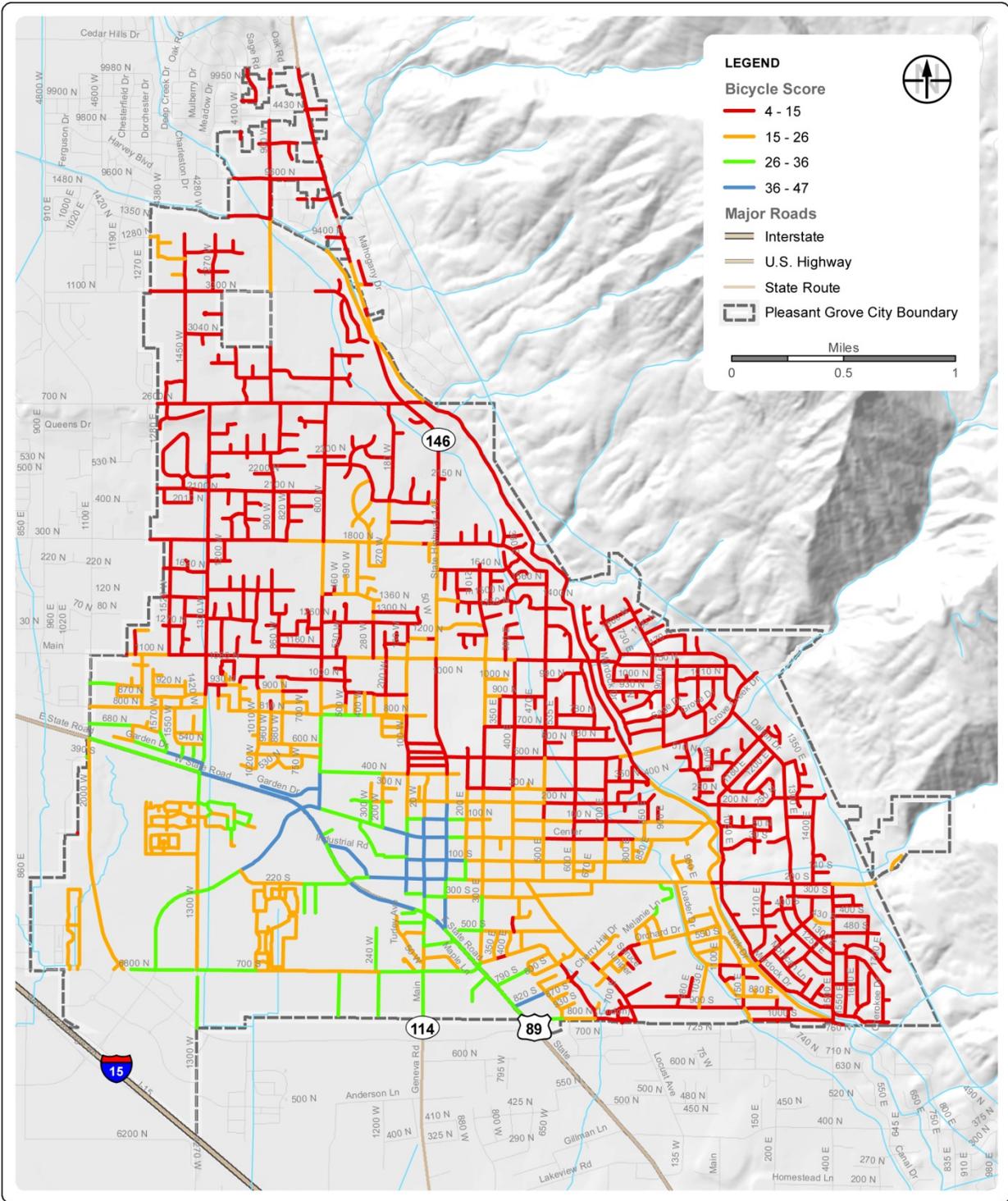
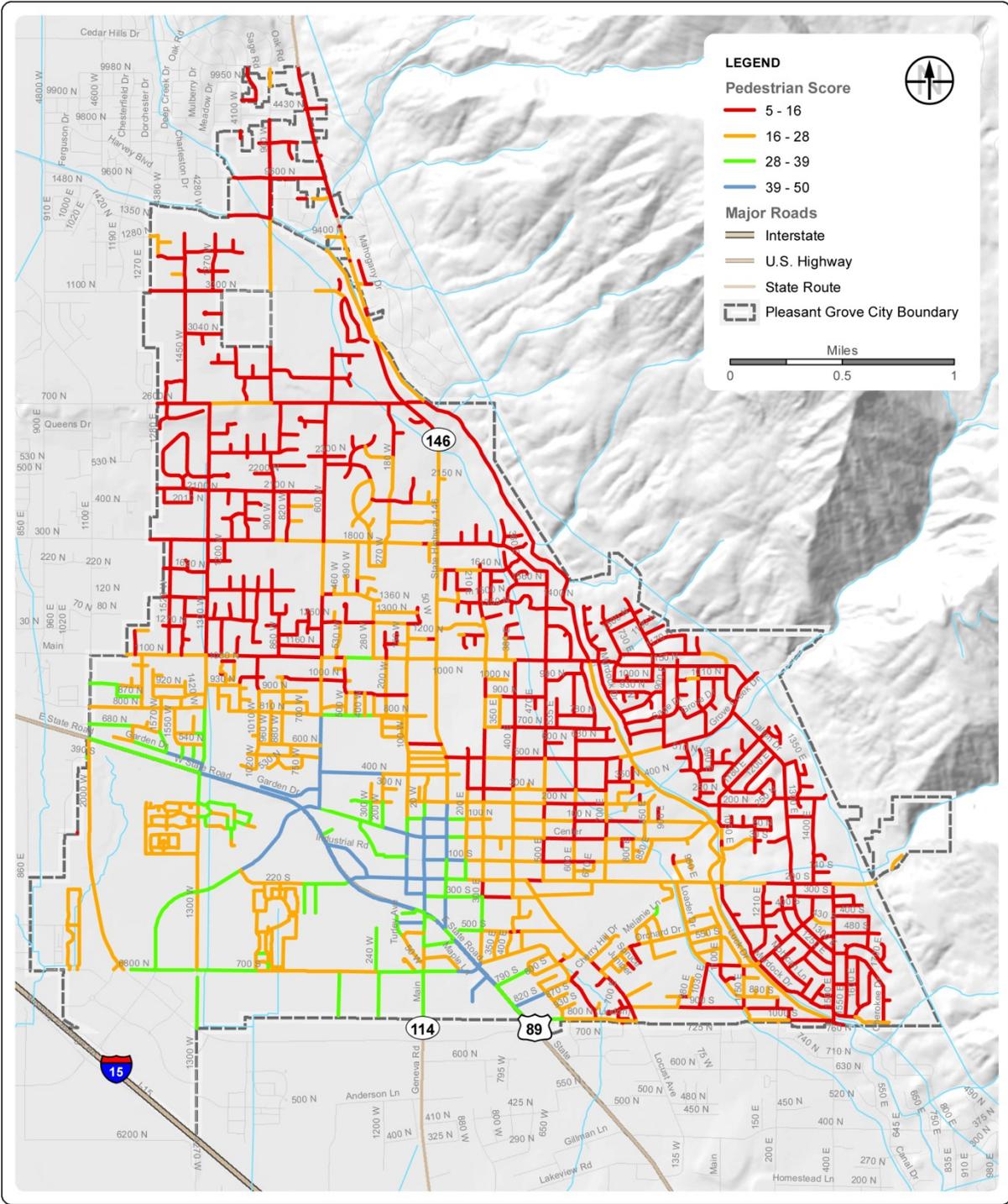


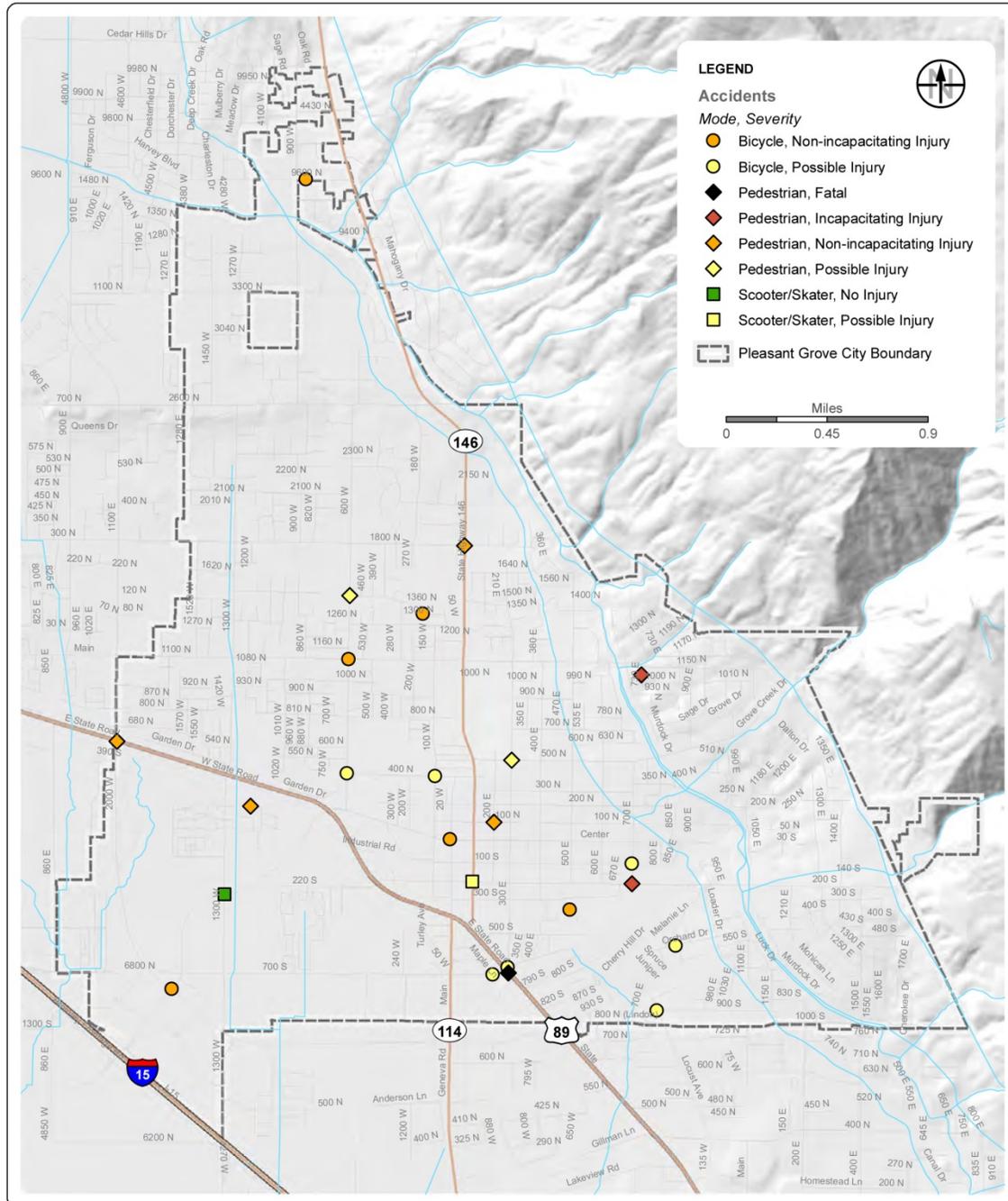
Figure 3.13: Latent Demand - Pedestrian



3.6 ACCIDENT DATA

Bicycle and pedestrian accident data was collected from the Utah Department of Public Safety for 2010 to 2012 for both local and state routes (see Figure 3.14). It should be noted that bicycle accidents often go unreported; therefore, this data may be incomplete.

Figure 3.14: Accidents



4. Public Outreach & Input

Input from the steering committee and the public was invaluable in developing the master plan. Various outreach and public involvement activities were conducted, including regular steering committee updates and opportunities to provide input, as well as open houses to solicit input from the general public.

4.1 PUBLIC OUTREACH OVERVIEW

Public outreach and input played a key role in the development of the Pleasant Grove Bicycle Facilities Master Plan, from working closely with the steering committee from the beginning of the process, to soliciting input from the public on multiple occasions. Table 4.1 provides a summary of the various outreach activities that were used.

Table 4.1: Public Outreach Summary

Date	Outreach Activity / Tool	Summary
Ongoing	Project Website	A project page was hosted on Pleasant Grove's website at: http://rec.plgrove.org/special-events-info/bicycle-pedestrian-plan . The page has provided an outlet for the public and interested stakeholders to receive updated project information and contact information.
January 5, 2013	Information Board at Health Fair	A booth at the Pleasant Grove Health and Fitness Fair contained information about the project, sign-up sheets for the stakeholder database, and hard copies of the needs and attitudes survey.
Multiple, beginning January 2013	Needs and Attitudes Survey	A needs and attitudes survey was created to assist in evaluating what Pleasant Grove stakeholders want from future bike/pedestrian developments. The survey was available from January to March 2013 on the project website, and was also administered via electronic polling at open house #1. The survey solicited input on the current condition of existing facilities, where improvements are needed, potential evaluation criteria, and preferences for potential solutions. The survey results (from 202 total respondents) are included in Appendix A.

Table 4.1: Public Outreach Summary

Date	Outreach Activity / Tool	Summary
Multiple	Steering Committee Meetings	Beginning with the project launch meeting on December 6, 2012, regular steering committee meetings kept committee members abreast of the project status and to solicit input as the planning efforts progressed. Meetings were held on January 31, March 7, April 25, June 12, and July 25.
February 28, 2013	Existing Conditions Field Review	Steering committee members and project team staff undertook a field review of existing bicycle and pedestrian facilities in Pleasant Grove. See Section 4.2 for details.
March 13, 2013	Open House #1	The purpose of the first open house was to obtain input from the public on bicycle/pedestrian issues and suggestions for improvements. The open house entailed interactive activities, including polling, and open comment forms. There were 82 attendees. See Appendix A for details regarding the open house as well as comments received.
May 1, 2013	Field Trip to Boulder, Colorado	Steering committee members participated in a one-day field trip to Boulder, Colorado, to see real-world applications of concepts, among other purposes. See Section 4.3 for details.
May 7, 2013	City Council Update	The project team updated the Pleasant Grove City Council on the work completed to date (including the existing conditions inventory; city field review; purpose, goals and objectives identification; and public involvement activities, such as the first open house).
September 11, 2013	Open House #2	The purpose of this open house was to present the Draft Pleasant Grove Bicycle and Pedestrian Master Plan and conceptual bike park design to the general public and obtain their input. There were 56 attendees. See Appendix A for details regarding the open house as well as comments received.

4.2 EXISTING CONDITIONS FIELD REVIEW

Steering committee and project team members undertook a field review of Pleasant Grove on February 28, 2013. The purpose of the field review was to observe and document the existing infrastructure, gap locations in the existing bicycle and pedestrian network, and improvement types and locations. This review included site visits for key destinations within the city and review of major connecting facilities. Members of the steering committee provided input on the

use of these facilities, noted deficiencies, and offered ideas for improvement of the facilities and new facility connections.

These observations were used to develop an inventory of the existing system based on a range of indicators including whether or not bicycle and pedestrian facilities are designed to current best practices, continuity and consistency of striping and signing, safety hazards, compliance with the Americans with Disabilities Act (ADA), etc. The existing system inventory was then paired with other existing data to provide the steering committee and project team a comprehensive picture of the context of the study area and the existing bicycle and pedestrian network. This information was then used as part of the development of the proposed bicycle network. Key observations are summarized in Appendix A.

4.3 FIELD TRIP TO BOULDER, COLORADO

On May 1, 2013, 13 members of the project steering committee took a one-day field trip to Boulder, Colorado. The purpose of this trip included the following:

- Educating the decision-makers by showing the real-world application of concepts
- Building consensus
- Enabling decision-makers to see and experience model facilities being implemented in other cities
- Helping decision-makers experience improvements from the perspective of a cyclist or pedestrian

The field trip included a tour of multiple different on-street and off-street facilities; meetings with Marni Ratzel, a well-known bike and pedestrian transportation planner for the City of Boulder, and Zane Selvans, a member of the Boulder City Transportation Advisory Board and a local bicycle advocate; and a tour of Valmont Bike Park.



Steering committee members participate in a one-day bicycling field trip in Boulder, Colorado, to see the real-world application of concepts proposed in the Pleasant Grove Bicycle and Facilities Master Plan

5. Proposed System & Project Prioritization

Design of the proposed Pleasant Grove bicycle network and recommendations for pedestrian facilities and amenities was the result of a thorough existing conditions evaluation, input received from both the public and the project steering committee, understanding gathered during the Pleasant Grove field review and Boulder, Colorado, facilities review, and engineering technical judgment and expertise. To prioritize the proposed projects, the steering committee developed a preliminary list of evaluation criteria that was then presented to the public for feedback. Facility ranking criteria was checked for consistency against the previously developed mission statement and goals to ensure consistency.

5.1 BICYCLE FACILITIES

Bicycle Network Design Methodology

In addition to the utilization of steering committee and public input, the design team worked closely with the City Engineer to identify and comply with relevant city standards, including roadway classifications, typical sections, and the Pleasant Grove Streets Master Plan. This information was used to determine appropriate bicycle facilities for the planned roadway classifications and locations within the city. Additional key points of consideration included the location and type of allowed on-street parking, and the design of multi-use trails to accommodate all users, including equestrians.

Steps in Bicycle Network Development

The following process was used, incorporating the information above, to develop a recommended bicycle network within Pleasant Grove:

1. The project team referred to the following vision statement when developing the bicycle network:

To create a barrier-free network of safe, attractive bicycle and pedestrian facilities within Pleasant Grove that provides connections to key areas within the city (e.g., parks, schools, and economic activity centers) as well as adjacent communities.

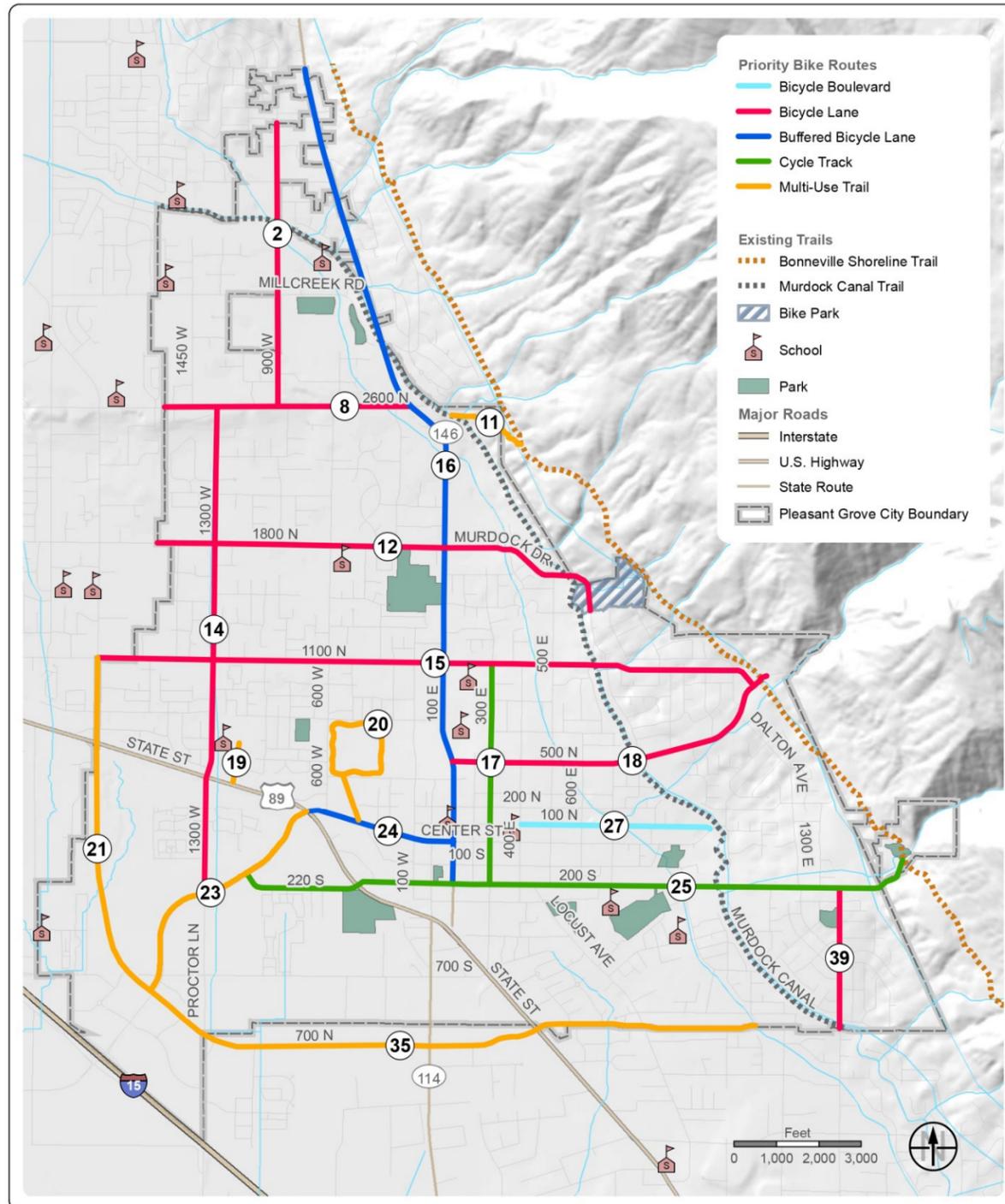
2. Using information from public input, the steering committee, and a field review, the project team developed a preliminary network of primary bicycle routes to connect key destinations.
3. Existing bicycle routes from adjacent cities' bicycle plans were considered to determine connectivity to adjacent communities.
4. Gaps in the bicycle network were identified and evaluated for potential connecting facilities to ensure an interconnected network for bicycle transportation.
5. Initial bicycle facility types were determined based on public input and existing roadway condition.
6. The Pleasant Grove 2040 Streets Master Plan was used to determine the future roadway classification for each roadway where a bicycle facility was proposed.
7. The NACTO "Urban Bikeway Design Guide" was used as a reference for bicycle facility types, typical sections, and appropriate use based on roadway classification and context.
8. As a key component to the plan, a corridor was defined as the "Mountains to Lake" trail connection, connecting the Murdock Canal Trail to the future Utah Lake Trail. The 1000 South corridor was determined to be the best area due to limited existing development and limitations along other east-west corridors.
9. In addition to the bicycle network, several undeveloped areas of the city were identified for use as off-street multi-use trail corridors. This trail network was defined in large undeveloped areas and along features such as creeks and abandoned rail corridors to provide connectivity to key areas such as parks and schools.
10. Connectivity to the Murdock Canal Trail and Bonneville Shoreline Trail was important; connection points to these trails were evaluated and recommended in the bicycle plan.
11. The complete bicycle network was reviewed with the design team. The final network was checked for connectivity (internal connections and adjacent city plans), completeness, and compatibility with existing infrastructure.

Proposed Bicycle Network & Facility Types

Figure 5.1 shows the proposed bicycle network for Pleasant Grove. Specific bicycle facility types are described below.

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Figure 5.1: Prioritized Bicycle Projects



Bicycle Boulevard

Bicycle boulevards are streets with low motorized traffic volumes and speeds designated and designed to give bicycle travel priority. In addition, bicycle boulevards:

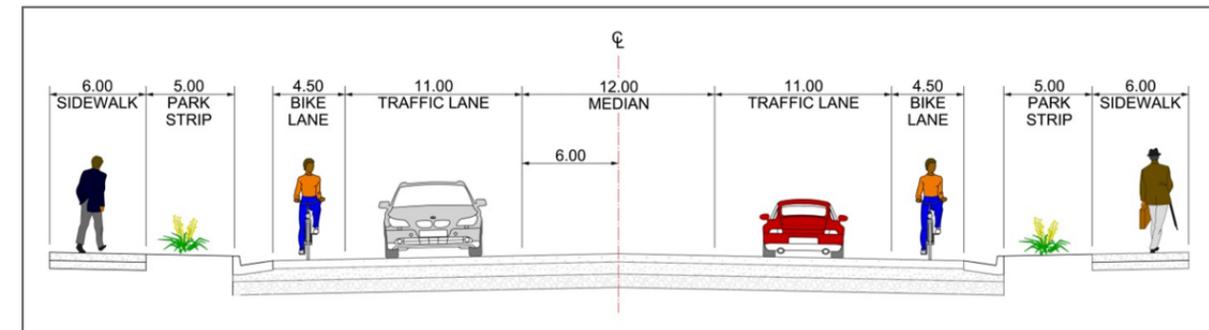
- Use signs, pavement markings, and speed and volume management measures to discourage through trips by motor vehicles
- Provide a low-stress experience
- Are suitable for low traffic volumes/speeds
- Create safe, convenient bicycle crossings of busy arterial streets



Bicycle Lanes



A bike lane is a portion of the roadway that has been designated specifically for bicycles by striping, signage, and pavement markings. Bike lanes enable bicyclists to ride at their preferred speed without interference from prevailing traffic conditions and facilitate predictable behavior and movements between bicyclists and motorists (NACTO). Bicycle lanes are typically best used on major roads, provide direct access to key areas, and include one-way travel.



Bicycle lanes for three-lane collector

Buffered Bicycle Lanes

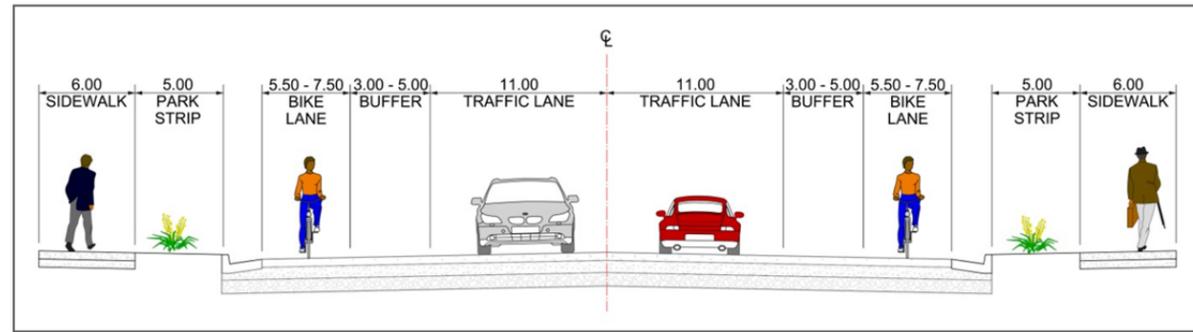


Buffered bike lanes are conventional bicycle lanes paired with a designated buffer space separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane (NACTO).

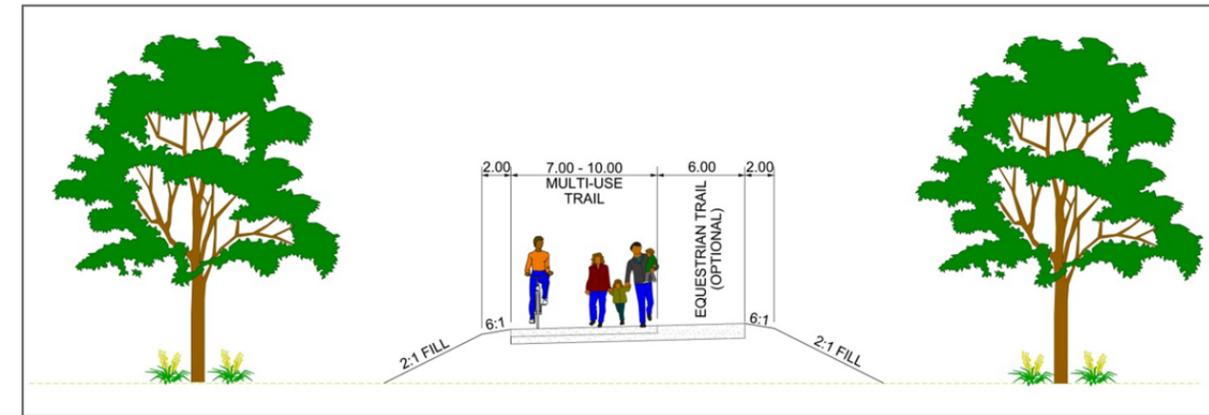
Multi-Use Trails



Multi-use trails are paths, tracks or other routes or thoroughfares that are shared by bicyclists, pedestrians, and other users. Depending on location, some multi-use trails are also used for equestrian activity or snow sports such as snowshoeing or cross-country skiing. Multi-use trails are separated from the roadway by open space or barrier, and may be used for two-way travel.



Buffered bicycle lanes

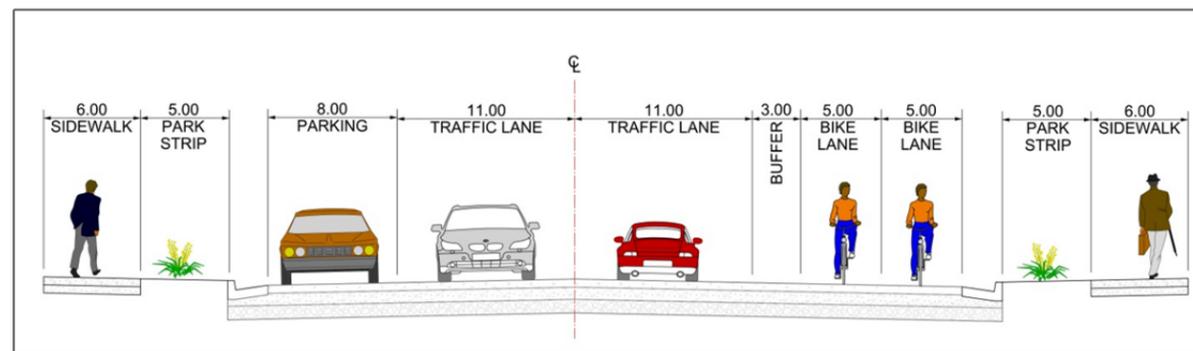


Multi-use trail

Cycle Tracks



A cycle track is an exclusive bike facility that combines the user experience of a separated path (see below) with the on-street infrastructure of a conventional bike lane. A cycle track is physically separated from motor traffic and distinct from the sidewalk. Cycle tracks have different forms but all share common elements—they provide space that is intended to be exclusively or primarily used for bicycles, are separated from motor vehicle travel lanes, parking lanes and sidewalks, may be used for one- or two-way traffic, and provide a higher level of security.

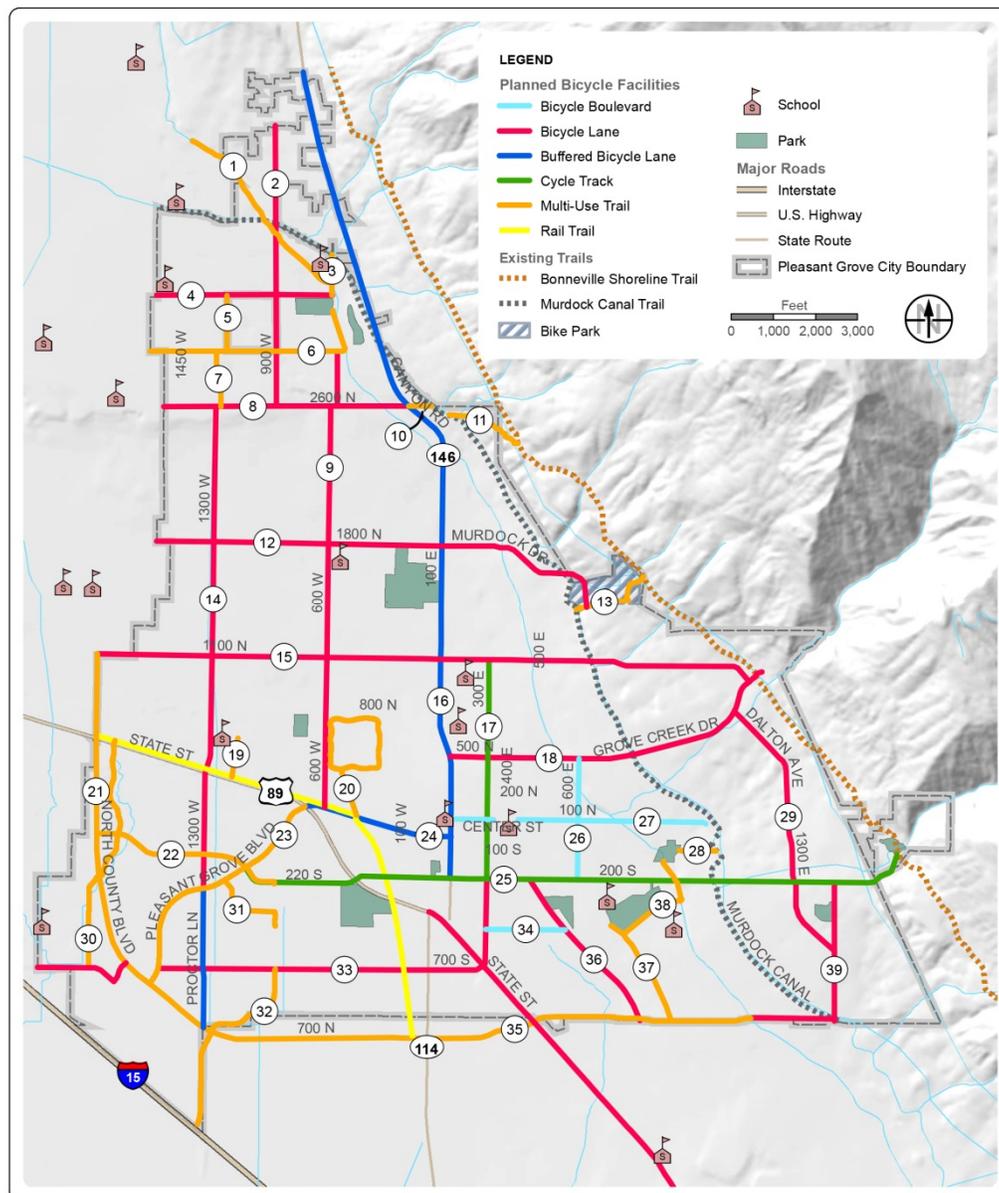


Two-way separated cycle track

Bicycle Project Prioritization

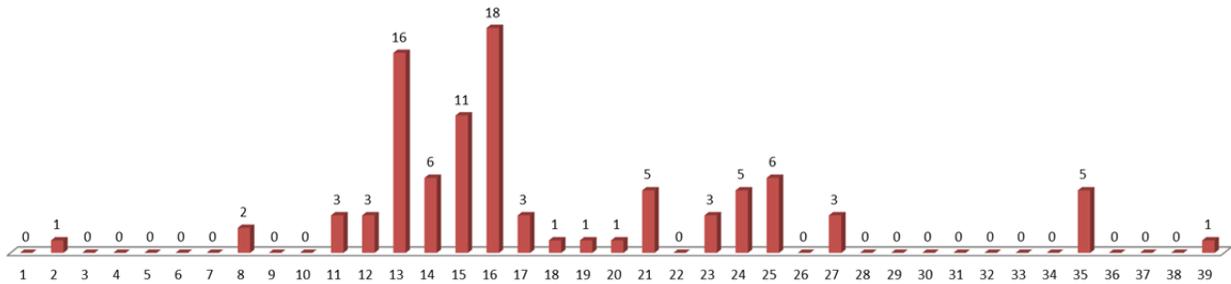
Public involvement and feedback on criteria and future projects is critical to plan adoption and future project implementation. As a result, the project evaluation criteria and the prioritization of projects were central elements of the open house held on September 11, 2013. At the meeting, the 56 attendees were asked to select their top project priorities identified on the draft Bicycle Master Facilities Plan board (see Figure 5.2). Ranking from the public open house and the application of evaluation criteria were utilized to determine the final prioritized list of projects.

Figure 5.2: Draft Bicycle Facilities Plan Presented at Public Open House



Results of the prioritization exercise are shown in Figure 5.3. Projects with little to no support were eliminated from the prioritization process. The remaining projects were then ranked based on the support received (see Table 5.1).

Figure 5.3: Bicycle Priorities



Note: At the public open house meeting, a draft conceptual design for a future bike park was presented (included as part of facility #13). It is suspected that facility #13 received significant support because it was shown as part of the bike park property (see Figure 5.2). Without the bike park, it is unlikely that facility #13 would have received so much support.

Table 5.1: Bicycle Priority Support

Project No. per Bicycle Plan Map	Project Name	Facility Type	Public Meeting Support
16	100 East/Canyon Road	Buffered Bicycle Lane	18
15	1100 North	Bicycle Lanes	11
14	1300 West	Bicycle Lanes	6
25	200 South	Cycle Track	6
21	North County Boulevard	Multi-use Trail	5
24	Center Street	Buffered Bicycle Lane	5
35	1000 South (Lindon 700 North)	Multi-use Trail	5
11	Murdock to Bonneville Trail Connection (2600 North)	Multi-use Trail	3
12	1800 North	Bicycle Lanes	3
17	300 East	Cycle Track	3
23	Pleasant Grove Boulevard	Multi-use Trail	3
27	100 North	Bicycle Boulevard	3
8	2600 North	Bicycle Lanes	2
2	900 West	Bicycle Lanes	1
18	Grove Creek Drive (500 North)	Bicycle Lanes	1
19	Mahogany Trail Spur	Multi-use Trail	1
20	Old Pipe Site Trail Spur	Multi-use Trail	1
39	1500 East	Bicycle Lanes	1

Project Evaluation Criteria & Utilization

Based on the project goals and objectives and public feedback, four criteria were selected to determine the final bicycle prioritization list:

1. *Public Support* – Interest based on public meeting feedback
2. *Serves Key Destinations* – A facility that provides safe access to public facilities, schools, commercial locations and neighborhoods
3. *Closure of Critical Gaps* – A critical gap is the connection of a new project to an existing bicycle facility, including existing bicycle lanes and/or trails
4. *Connection to Adjacent Facilities* – Any connection to an existing facility in an adjacent community or a proposed facility in an adjacent community

The methodology for incorporating the four criteria is as follows:

1. *Public Support* – Projects in this category are ranked 1 through 7 based on public support (7 represents the number of public meeting support scores, such as 18, 11, 6, in Table 5.1). The score is calculated as the ranking divided by 7, giving a value between 0 and 1.
2. *Serves Key Destinations* – The total number of these destinations along the project corridors comprises the score for this category. The maximum number of destinations served by any of the prioritized projects is 5. The score is calculated by dividing the number of destinations served by a total of 5, giving a value between 0 and 1.
3. *Closure of Critical Gap* – Each project is given a score of 1 if it completes a gap and a score of 0 if it does not.
4. *Connection to Adjacent Communities* – If a connection is present the project receives a score of 1 and if not it receives a 0.

The individual scores for each criterion were then summed to give a composite score for each project. The total composite score provides the final project ranking on the priority list. See Table 5.2 and Figure 5.1.

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Table 5.2: Project Ranking and Criteria

Final Priority Ranking	Project No. on Bicycle Plan Map	Project Name	Facility Type	Public Support	Serves Key Destinations	Closure of Critical Gap	Connection to Adjacent Communities	Composite Score	Key Destinations
1	16	100 East/Canyon Road	Buffered Bicycle Lane	7	5	0	1	3.00	City Center, 3 Schools, Discovery Park
2	35	1000 South (Lindon 700 North) ¹	Multi-use Trail	4	0	1	1	2.57	N/A
3	15	1100 North	Bicycle Lanes	6	1	0	1	2.06	Grove Creek Park/Canyon
4	12	1800 North	Bicycle Lanes	3	3	0	1	2.03	1 School, 1 Park, Future Bicycle Park
5	24	Center Street ²	Buffered Bicycle Lane	4	1	1	0	1.77	City Center
6	23	Pleasant Grove Boulevard ³	Multi-use Trail	3	1	0	1	1.63	City Center
7	25	200 South	Cycle Track	5	4	0	0	1.51	1 School, Recreation Center, Battle Creek Park, Rodeo Grounds/Park
8	11	Murdock to Bonneville Trail Connection (2600 North)	Multi-use Trail	3	0	1	0	1.43	N/A
9	8	2600 North	Bicycle Lanes	2	0	0	1	1.29	N/A
10	17	300 East	Cycle Track	3	3	0	0	1.03	3 Schools
11	14	1300 West	Bicycle Lanes	5	1	0	0	0.91	1 School
12	27	100 North	Bicycle Boulevard	3	2	0	0	0.83	2 Schools
13	21	North County Boulevard	Multi-use Trail	4	0	0	0	0.57	N/A
14	18	Grove Creek Drive (500 North)	Bicycle Lanes	1	2	0	0	0.54	1 School, 1 Park (Grove Creek)
15	19	Mahogany Trail Spur	Multi-use Trail	1	2	0	0	0.54	1 School, 1 Park (Mahogany)
16	2	900 West	Bicycle Lanes	1	1	0	0	0.34	1 Park (Manila Creek)
17	20	Old Pipe Site Trail Spur ⁴	Multi-use Trail	1	1	0	0	0.34	1 Park (Future)
18	39	1500 East	Bicycle Lanes	1	1	0	0	0.34	1 Park

- 1. Mountain to Lake Trail Connection
- 2. Extension of existing bicycle lanes
- 3. Existing trail (widened sidewalk)
- 4. Abandoned rail corridor

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Right-of-Way Impacts Associated with Bicycle Projects

The majority of the prioritized projects could be implemented with little to no additional right-of-way. Although additional right-of-way may not be needed to implement these projects, other trade-offs may be necessary, such as elimination of on-street parking, narrower lanes, or removal of turning lanes. Multiple projects would require additional or new right-of-way as well as access easements (see Table 5.3). Development of these projects may require additional analysis to document that the actions do not have environmental impacts. In addition, right-of-way acquisitions would require fair compensation for property owners and be completed in accordance to federal and state guidelines. A final determination of right-of-way needs would be identified as projects are implemented.

Table 5.3: Projects Requiring Right-of-Way

Project Name	Facility Type	Right-of-Way Required
1000 South (Lindon 700 North)	Multi-use Trail	The trail would require all new right-of-way throughout the entire length.
North County Boulevard	Multi-use Trail	The trail would require all new right-of-way throughout the entire length.
900 West	Multi-use Trail	A small portion of the trail connector is outside city-owned property.

5.2 PEDESTRIAN FACILITIES

A critical element of any city's pedestrian network is the availability and connectivity of its sidewalk facilities. This section describes how sidewalk gaps within the city were evaluated to determine which missing sections should be prioritized for future construction. It recommends a prioritized group of sidewalk segments that should be built as part of a broader network. It also recommends proposed crosswalk improvements at several intersections in Pleasant Grove.

Methodology

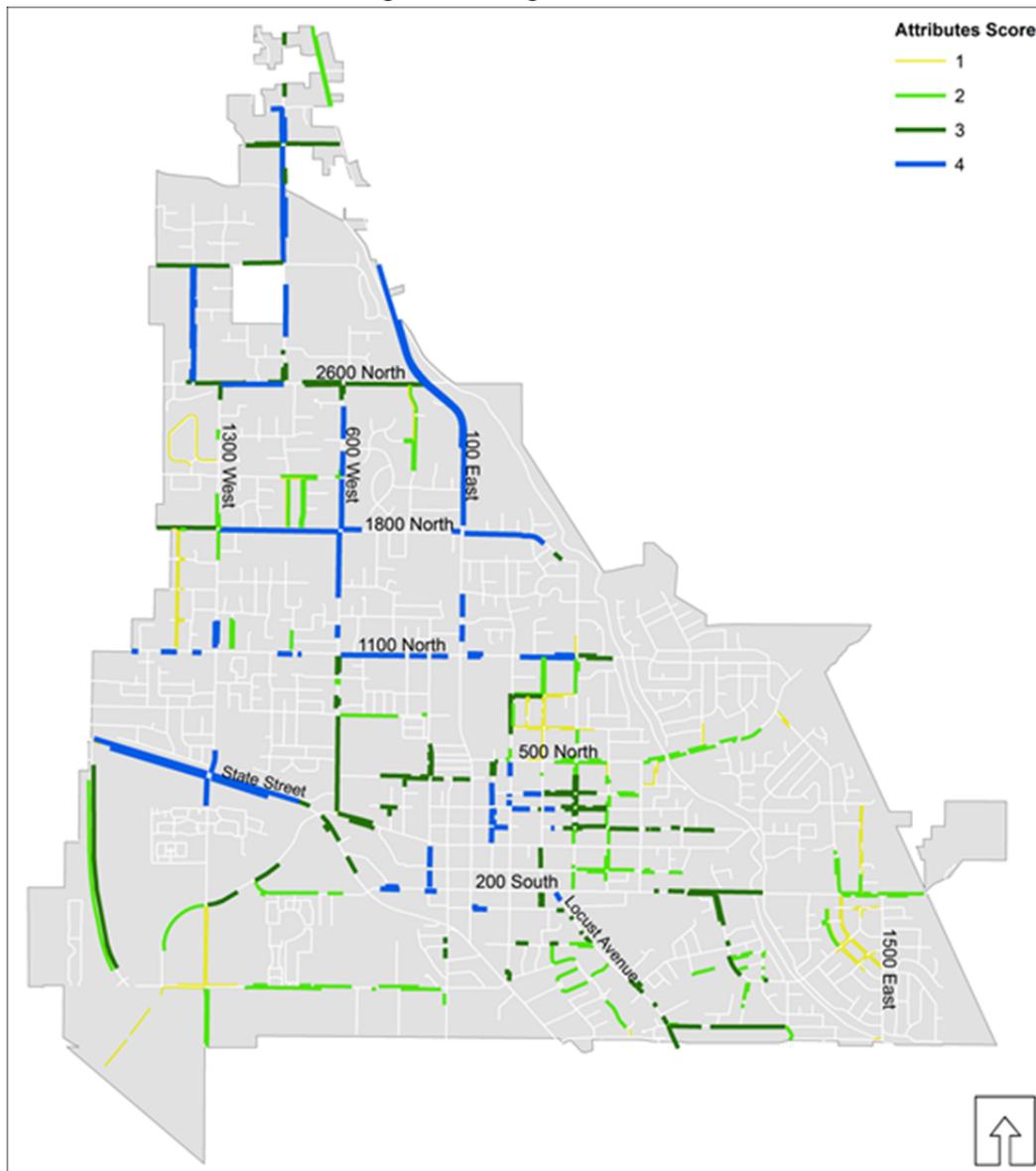
Analyze Sidewalk Attributes

The sidewalk gaps were mapped in GIS for the roadway network. The analysis addressed gaps on either side of the road, which meant some roadway segments had sidewalk gaps on alternating sides or both sides of the right-of-way. Sidewalk segments were then evaluated based on several key criteria, including:

- Proximity to schools
- Proximity to parks
- Within a commercial zone
- On a major transportation corridor
- Public request for a facility

Each segment was rated based on how many criteria were met (1 point each). The maximum possible score was 5; however, no segments received that rating (see Figure 5.4).

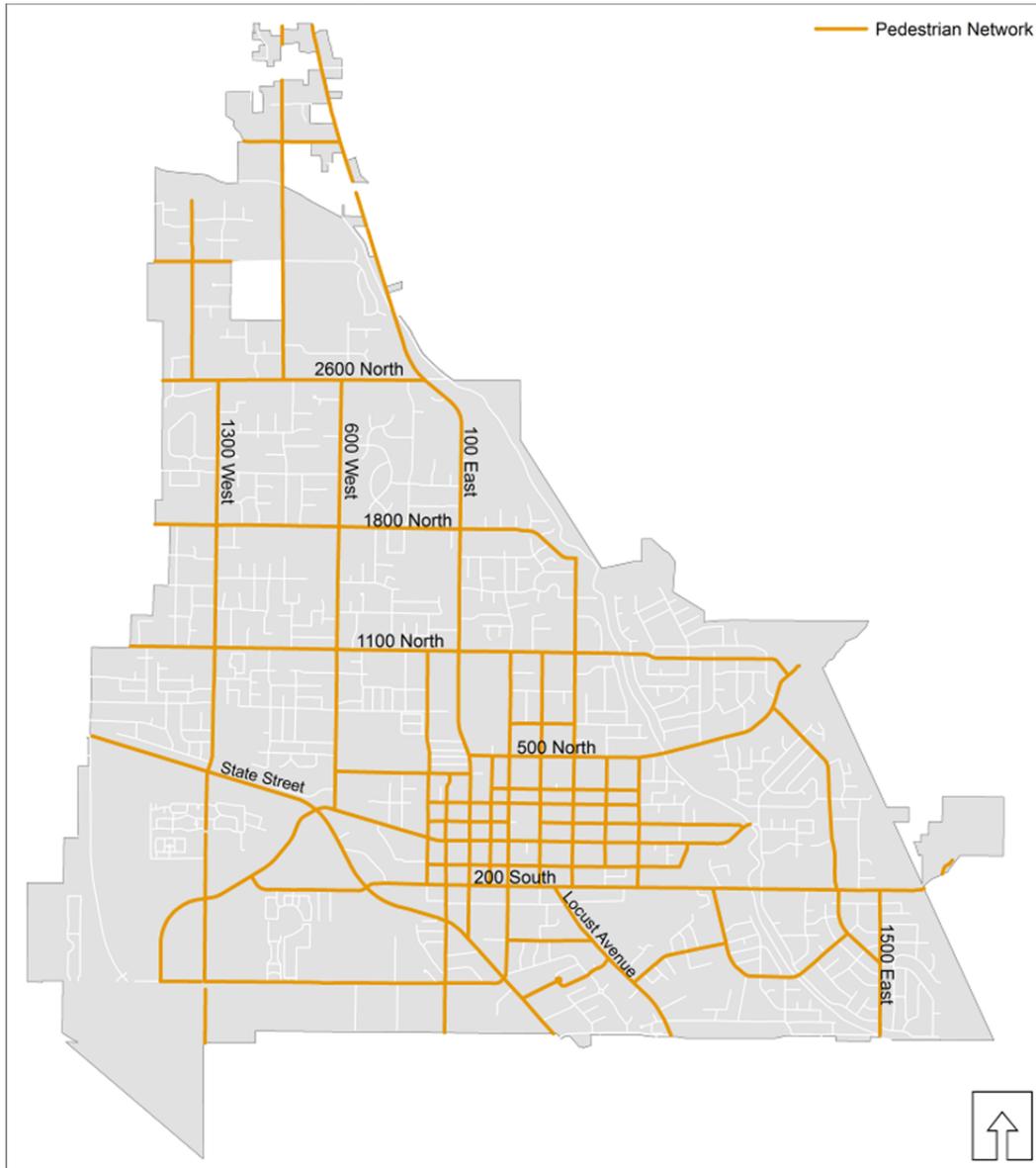
Figure 5.4: Segment Scores



Develop Pedestrian Network

The highest-scoring segments were combined with existing sidewalks to create a backbone pedestrian network, which serves high-demand areas but also provides coverage to all of Pleasant Grove. The pedestrian network is shown in Figure 5.5.

Figure 5.5: Pedestrian Network



Prioritize Sidewalk Gaps in the Network

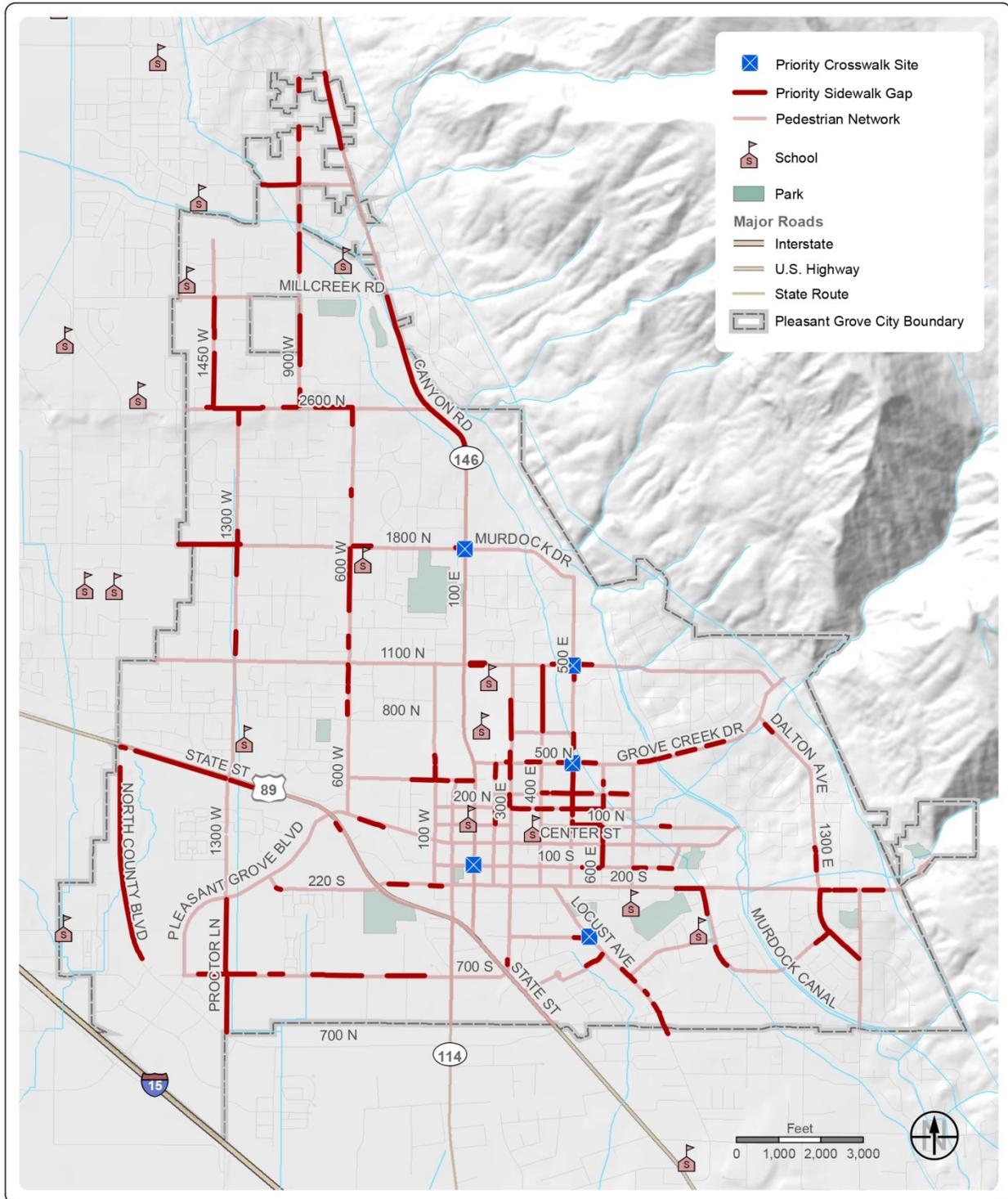
Many sidewalk gaps exist in the recommended pedestrian network. The best practice is to provide sidewalks on both sides of a street. However, if funding or right-of-way constraints prevent that condition, a sidewalk on one side of the street still helps pedestrians reach their destinations. The project team evaluated sidewalk gaps in Pleasant Grove to identify high-priority sections where improvements were most needed. Sidewalk gaps were prioritized based on the following principles (see Figure 5.6):

1. It occurs on the proposed pedestrian network.
2. It is on the side of the street with a greater percentage of existing sidewalks.

Based on the analysis, the following sidewalk gaps are recommended for construction first:

1. West side of Canyon Road from 3300 North to approximately 2300 North
2. Four different gaps on the east side of 900 West between the northern city border and 2600 North
3. East side of 1450 West between 3300 North and 2600 North
4. Finish sidewalks around Manila Elementary School on the north side of 1800 North and east side of 600 West
5. Gaps on both sides of 1100 North just east of 100 East around Grovecrest Elementary School
6. South side of State Street between 2000 West and Pleasant Grove Boulevard
7. West side of 300 East between 500 North and 200 North
8. South side of 200 North between 300 East and 500 East
9. East of 200 East between 200 North and 100 North
10. South side of 200 South between State Street and Main Street

Figure 5.6: Prioritized Pedestrian Projects



Crosswalks

Crosswalk Analysis

The pedestrian network reveals intersections where adjacent sidewalk paths meet and represent where pedestrians want to walk. In order for the network to be connected, these intersections should allow and encourage pedestrians to continue on the route. However, the majority of pedestrian collisions occur at intersections. To improve the safety and attractiveness of the pedestrian network, providing improvements at key crosswalks is recommended. Five key locations were evaluated for crosswalk improvements, including:

- 1800 North and 100 East
- 1100 North and 500 East
- 500 North and 500 East
- 100 South and 100 East
- 500 South and Locust

Analysis of traffic volumes, roadway geometry, and sight distance was applied using the decision process shown in Figure 5.7. Table 5.4 provides the information used to analyze crosswalk needs at the key locations.

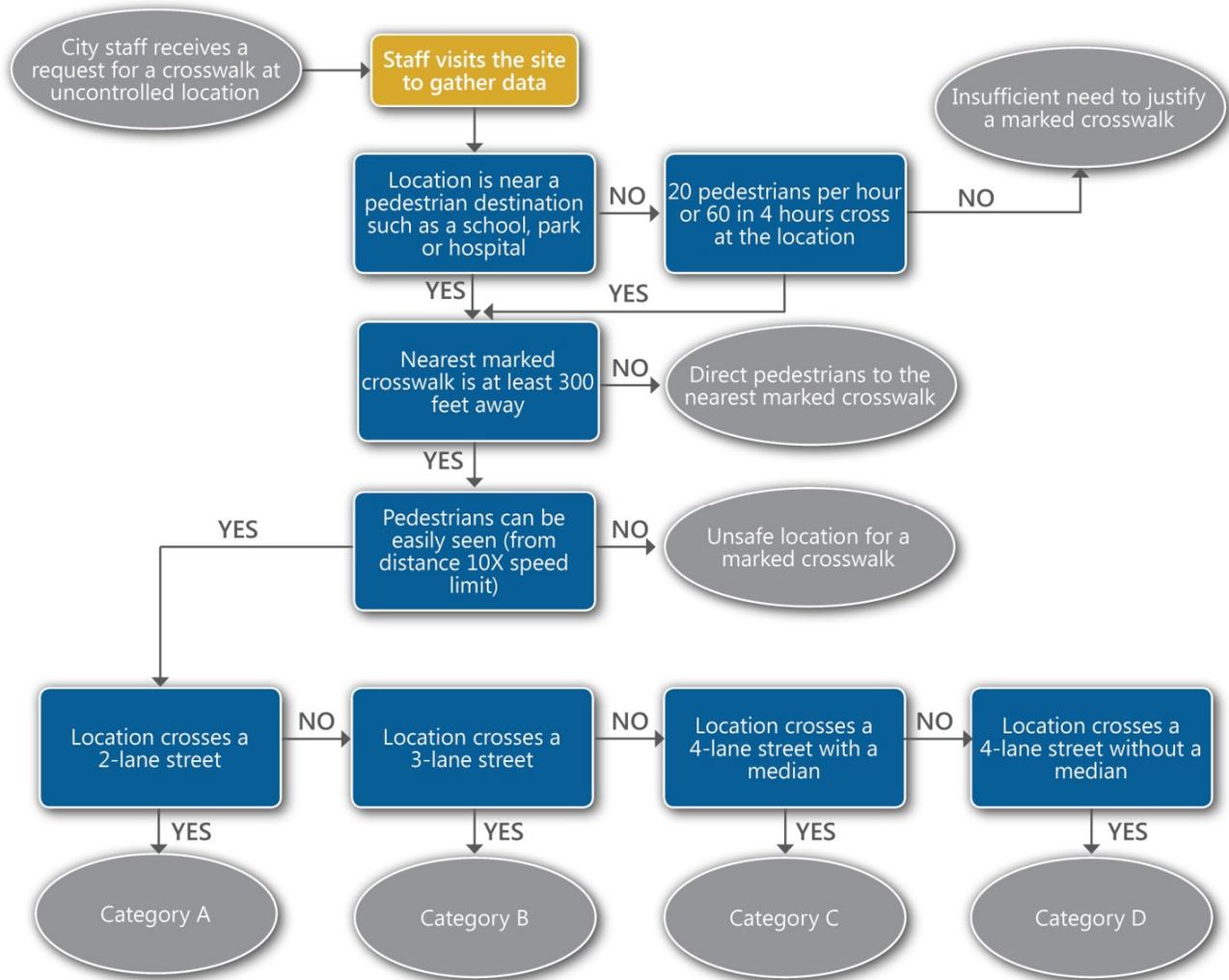
Table 5.4: Crosswalk Analysis

NS Road	EW Road	Auto Control (Restricted Movement / Minor Road)	Nearest Crosswalk (feet)	No. of Lanes at Intersection		Auto Volumes (AADT)*		Speed Limit (mph)	
				Major	Minor	Major	Minor	Major	Minor
100 East	1800 North	2-way Stop (1800 North)	1,300	3	2	12,000	2,000	35	25
500 East	1100 North	2-way Stop (500 East)	1,400	2	2	4,000	500	25	25
500 East	500 North	2-way Stop (500 East)	700	2	2	3,000	N/A	25	25
Locust Ave.	500 South	1-way Stop (Locust Ave.)	190	2	2	4,500	N/A	25	25
100 East	100 South	2-way Stop (100 South)	500	3	3	15,500	N/A	30	25

*Average Annual Daily Traffic, as reported in the 2009 Pleasant Grove Transportation Master Plan

All of the intersections are close enough to a school, park or the Pleasant Grove central business district to forward them in the flowchart without providing pedestrian counts. Because there is a crosswalk less than 300 feet (to the south) from the Locust and 500 South intersection, it is recommended that pedestrians be directed to the existing crosswalk as opposed to creating an additional one at Locust. Therefore the Locust and 500 South intersection does not continue through the rest of the analysis.

Figure 5.7: Decision Process for Crosswalk Placement for Uncontrolled Locations



Crosswalk Recommendations

The remaining four crosswalks can all be classified into improvement category A or B (last step in Figure 5.7). Treatments are recommended based on the type of road (two-lane or three-lane), the number of cars (or average daily traffic), and posted speed limits. Based on the speed and traffic volumes, the following treatments at the four study crosswalks are recommended (Table 5.5). The phasing of building the crosswalks should coincide with filling in priority sidewalk gaps of the pedestrian network. Examples of high-visibility crosswalks are shown below.

Table 5.5: Recommended Crosswalk Treatments

Intersection	Recommendation
1100 North / 500 East	Standard crosswalk
500 North / 500 East	Standard crosswalk
100 East / 100 South*	High-visibility crosswalk

*Based on the traffic volumes at this intersection, a pedestrian refuge, overhead flashing beacons, or bulbouts should also be considered.

Triple-Four



Source: Eric Fredericks, neighborhoods.org

Textured Pavement



Source: graniterock.com

Ladder



Source: Federal Highway Administration

Broken Ladder



Source: Stockton.gov

5.3 SUPPORT FACILITIES

Support facilities can enhance the user experience by improving safety (e.g., lighting and signage), convenience (e.g., bicycle racks), and enjoyment (e.g., street trees and street furniture). A conceptual streetscape and amenity plan for Pleasant Grove was presented to both the steering committee and the public for input. The project team worked closely with the steering committee to understand what amenity types were important to Pleasant Grove, as well as what styles and locations were appropriate.

“When thinking about bicycle facilities, think about making it easy and safe for people to go where they go most: schools, grocery stores, neighborhood commercial districts and transit hubs. That means not only making it safe to get there, but making it easy to lock up your bike once you’re there, find the appropriate bike route, way-finding, and connect to transit.”
(seattle.gov)

Prospective Amenities & Locations

The project steering committee expressed a positive response to the concept of adding additional amenities to support existing and proposed facilities. Amenities that would enhance the user experience for pedestrians were put into groupings based on amenities typically found together for usability purposes, and were shown on a map showing potential amenity locations (shown with blue dots on Figure 5.8). A high percentage of chosen amenity locations were placed on highly-used thoroughfares. The criteria used to generally select the locations are as follows:

- Proximity to existing and/or proposed bicycle facilities
- Potential number of users along a facility
- Adjacency to multiple facilities (primarily intersections)
- Proximity to adjacent facilities

More detailed criteria were considered to determine the distribution of the different amenity types. Not all amenity types are recommended at each location where amenities should be added, as location recommendations were based on the relevant use of the amenity (see Table 5.6). The total number of these locations can increase or decrease in accordance with future findings and analysis.

Table 5.6: Initial Recommended Amenity Locations

Group	Description	General Locations
Group 1	Bench/Trash/Lighting	Key intersections
Group 2	Bike Racks	Shopping centers and other destinations
Group 3	Signage/Way-finding	Key intersections/ multiple facilities
Group 4	Pocket Parks with Canopy	Evenly spaced along key routes

Table 5.7 provides additional details for the top potential sites and recommended amenities, and Figure 5.8 indicates the location in the city where specific amenity groups are recommended. Not all amenities are necessarily recommended at each location. The map indicates locations where some of the amenities should be considered initially. In some cases amenities suggested are near shopping centers and businesses. The exact location of a bike rack, for example, might be within a parking area owned by a private business. The plan recommends that the City coordinate with the business to find an appropriate mechanism for adding the amenity recommended.

Table 5.7: Top-Priority Amenity Sites

Priority	Location	Facility Type	Recommended Amenities
#1	Wade Spring Bike Park	Multi-Use Path	Group 1, 2, & 3 + Bike Facilities
#2	Mountain to Lake Multi-Use Trail, near 1000 South	Multi-Use Path	Group 1
#3	North County Blvd. Area/ near Pleasant Grove Blvd.	Multi-Use Path	Groups 1 & 2
#4	1800 North and 1300 West	Bike Lane	Group 1

Pocket Parks

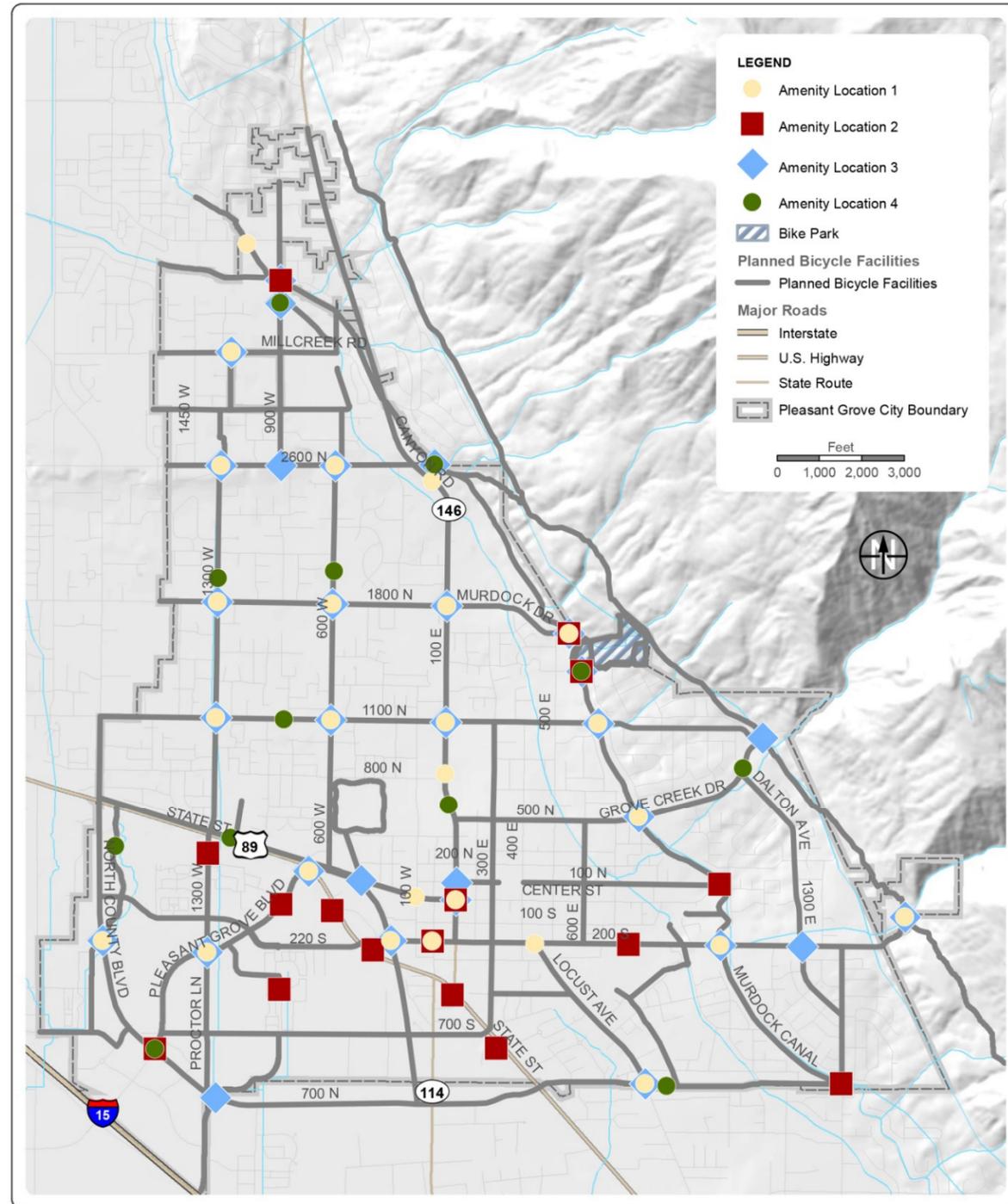
The steering committee expressed a positive response to images of pocket parks. It is understood users of the Murdock Trail have found an existing park very useful. The following criteria were developed for choosing locations for additional pocket parks:

- Proximity to existing and/or proposed bicycle facilities
- Potential number of users along a facility
- Existing open space
- Potential availability of land
- Distance to next park or usable open space



Using this criteria, approximately 14 pocket parks were initially sited throughout the boundaries of Pleasant Grove. Figure 5.8 includes the recommended locations for pocket parks, including the top five priorities listed in the chart. It is also recommended that each pocket park include some of the amenities that are recommended in other areas of the city.

Figure 5.8: Amenity and Pocket Park Locations



Bench/Seating



Benches and seating provide locations for users to stop and rest along transportation facilities; they are sometimes used in conjunction with a canopy. Styles and materials vary, from wood to metal to concrete, and each amenity was chosen for its potential to highlight its designated context within Pleasant Grove. Results reveal that the wood selections were least favored, while metal and concrete were more acceptable.

Bike Rack/Locker



Bike racks or lockers provide safe, secure places to lock bicycles, such as at a shopping center or near a transportation facility. In some instances bike racks may exist and should be considered for expansion or upgrades.

Trash Receptacle



These amenities provide a location for trash to be deposited where other trash facilities are not likely. Favored options were the classical/historic.

Signage/Way-finding



These amenities are placed at key intersections to guide users. Signage was felt to be a visual improvement in most regards; specifics favored signage with multiple text options and two colors only.

Street Lighting



Street lighting increases safety and security at locations along transportation facilities where automobile-oriented lighting isn't sufficient. The most popular proved to be a tall, modern design with an extended light arm, though a shorter (bollard) lighting system received nearly identical support.

Pedestrian Canopy



Canopies are placed at key locations where users might stop to rest, and may be used in conjunction with pocket parks and benches. It was noted that one option resembled existing Pleasant Grove pedestrian shelters and was, therefore, the choice among the consensus.

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Visual Renderings

Renderings for two key locations where bicycle and pedestrian facilities have been proposed (200 South) and (500 North) are shown below.



Rendering of how amenities might be integrated into an existing street with upgraded amenities, looking east on 200 South (Rendering created by CRSA)



Rendering of how amenities might be integrated into an existing street with upgraded amenities, looking east on 500 North (Rendering created by CRSA)

6. Bicycle Park Recommendations

Pleasant Grove is eager to provide opportunities for recreation and outdoor activities for the community. Two potential sites for bike parks were considered as part of the proposed system. The Wade Springs property was selected for further evaluation and conceptual design.

Bicycle Park Locations

At the beginning of the project, Pleasant Grove City identified two possible locations for a future bicycle park. The purpose was to find a location on the foothills that would provide good connectivity to existing and planned bicycle facilities, was easily accessible, had appropriate terrain, and would be supported by the public. These two sites were:

1. Grove Creek area (south of Grove Creek Drive and east of Dalton Drive)
2. Wade Springs area (north of 1400 North and east of Murdock Canal)

The project team spoke with City staff, City Council members, and local bicycle advocates about the suitability of each location for a future bicycle park. The characteristics of each site are summarized in Table 6.1.

Table 6.1: Park Site Characteristics

	Grove Creek	Wade Springs
Location / Access	Vehicle access from existing trailhead at Grove Creek Canyon and roadway connections to 1100 North and Grove Creek Drive.	Vehicle access from existing Murdock Canal trailhead at 1100 North and potential future access at 850 East. Roadway connections to 850 East and 1100 North.
Trail Connectivity	Connections to Bonneville Shoreline Trail (north/south) and Grove Creek Trail (east).	Connections to Murdock Canal Trail (north/south) and Shoreline Trail (north/south).
Land Ownership	Approximately 40 acres privately owned (City would need to purchase property).	Approximately 23 acres already owned by the City.
Terrain	Gently sloping east to west, sparse vegetation, and some flat areas along western and northern edges of property.	Gently sloping east to west, pockets of dense vegetation, and some flat areas along Murdock Trail on western edge of property and near aqueduct on eastern edge of property.

Table 6.1: Park Site Characteristics

	Grove Creek	Wade Springs
Facilities / Infrastructure	Existing parking lot and restroom at Grove Creek trailhead that could be expanded if needed. New bridge crossing over Grove Creek would be needed for access to park area. New water access would be needed from Grove Creek Drive or Homestead.	Existing parking lot and restroom at Murdock Canal trailhead. Potential additional parking and access from 850 East. New water access would be needed from Murdock Drive or 850 East.

Recommended Bicycle Park Location

The Wade Springs site was recommended for the location of the Pleasant Grove Bicycle Park for several reasons:

- Proximity to the Murdock Canal Trail and existing trailhead and facilities at 1100 North.** The lower portion of the Wade Springs property is approximately 400 yards from the trailhead and allows existing facilities to be used for the Murdock Canal Trail and the proposed bicycle park. Additional access is also available at 850 East if the existing trailhead is inadequate to handle visitors to the bicycle park.
- Property Ownership.** The property is already owned by the City, which eliminates the need for lengthy or expensive property acquisition.
- Terrain.** The Wade Springs property has a variety of terrain from flat to gently sloped. Flat areas along the eastern or western edges of the property could be used for dirt jump or free-ride facilities, and steeper interior areas could be used for downhill trails. The adjacent Murdock Canal Trail also offers a paved entry-level or road biking facility.
- Facilities/Infrastructure.** The existing Murdock Canal trailhead at 1100 North provides parking and restrooms that could be used by bicycle park patrons. If parking is inadequate at this trailhead, additional spaces can be constructed at the north end of 850 East, which also provides access to the upper portion of the property. Water lines are also located in nearby residential neighborhoods and an extension line to the park property could be easily constructed to provide a permanent water source. Water access is necessary for construction and maintenance of bicycle park facilities (see below).

Bicycle Park Design Considerations

Many important considerations should be taken into account when selecting a location and designing a bicycle park. The following is a list of key elements that were either considered for the conceptual bicycle plan or should be in the future:

- **Community Support** – As with skate parks and other city recreation facilities, community buy-in is critical. The City must consider the opinions of neighbors and community members and how the proposed facility will impact them.
- **Access/Infrastructure** – The park must be easy to access and provide basic facilities to maintain user comfort, such as restrooms and drinking fountains.
- **Permanent Water Source** – It is absolutely necessary to provide a permanent water source to a bicycle park. This water is used to build and maintain trails, jumps, and tracks. Without water, these facilities will degrade and will see decreased use.
- **Management Plan** – It is important to consider the use of the facility beyond construction. Who will maintain the park? Who will develop safety rules and enforce them? Will there be curfews on use? It is important to develop a long-term management plan to ensure a safe and lasting environment at the park.
- **Signage** – Signs are important to direct people to the park and to mark trails and facilities within the park. If users have difficulty navigating the area they may be less inclined to return.
- **Insurance** – It is important for the City to protect itself from liability claims. The City may already have an insurance policy for other recreation facilities that can be modified to cover the new park.
- **Track/Trail/Jump Design** – Designing a park that will flow and encourage ridership can be a difficult process. It is important to seek the advice of experienced riders at all levels and be flexible in design and construction to allow modifications as the facility is tested by cyclists. The riding experience on a trail or jump system is hard to predict in design and is a dynamic system to be fine-tuned over time. It is also important to provide a variety of features for all skill levels. Continuously seek input from active users to ensure modifications or improvements are relevant.
- **Stewardship** – Create an environment where users feel invested in the creation and maintenance of the park. If community members feel that their concerns are being addressed, they'll be more likely to use and help maintain the facility. Utilize volunteer groups to build and maintain facilities and create a sense of community ownership in the park.

Draft Bike Park Concept, Wade Springs Site

Figure 6.1 shows the conceptual design for a potential bike park at the Wade Springs property. Located at 1100 North and 600 East, Wade Springs is a critical drinking water source for the residents of Pleasant Grove. While access and activities would be restricted throughout the site, the site's location and terrain make it a viable location for a future bike park. The proposed bike park plan will consist of various types of tracks, courses and terrain — each of varying difficulty and purpose. The conceptual plan delineates areas, tracks and thoroughfares, loosely outlining where each activity will take place. The concept plan for the Wade Springs Bike Park represents a master plan for the complete site acreage (see Figure 6.1). It is anticipated that the design and construction of the plan will take place in phases. An extension of Murdock Drive is planned that will divide the site into two pieces, which are described below.

The draft conceptual design for the bike park at Wade Springs was presented at the second public open house meeting in September 2013. Handouts of the design along with example facility type pictures, e.g., pump tracks and restroom, were provided. The public was asked to provide input on the proposed facility; in general, there was widespread support. Comments received regarding the bike park are included in Appendix A.

Figure 6.1: Draft Bike Park Concept, Wade Springs Site



CRSA, 2013

Lower Park

The lower park will be situated west of the planned Murdock Drive extension and adjacent to the Murdock Canal Trail (see Figure 6.1). This site may be considered a pocket park or small community park and is shown as such on Figure 5.8. It is recommended that the following amenities, beyond the amenities suggested in other pocket parks, be included at this park location:

- Restrooms
- Bicycle repair station
- Children's playground
- Small play areas
- Children's bicycle practice areas
- Circulation paths

Upper Park

The upper park will be situated east of the Murdock Drive extension and encompass the balance of the Wade Springs property owned by the City. It is envisioned that the lower park will be connected to the upper park via a grade-separated underpass under Murdock Drive. The following bike park amenities are planned:

- Pedestrian/emergency access circulation paths
- Deployment areas for the following features:
 - Downhill bike trails, ranging in difficulty from easy to hard
 - Built stunt terrain
 - BMX track
- Track catchment areas (end of trail)

7. Implementation

The Pleasant Grove Bicycle and Pedestrian Master Plan is a blueprint that provides a path for improving bicycle and pedestrian activities in Pleasant Grove. This chapter provides recommendations to move from planning to implementation.

7.1 NEXT STEPS

The Pleasant Grove Bicycle and Pedestrian Master Plan will serve as a guide for elected officials and City staff. Ultimately, final decisions regarding implementation will be determined by the Pleasant Grove City Council. Based on the recommendations presented in this plan, the City Council will determine what facility types will be implemented as part of the City system, how those projects will be prioritized, and how the projects will be funded.

7.2 COSTS & FUNDING

Estimates have been provided for costs associated with the different bicycle facility types recommended in the plan (see Tables 7.1 and 7.2 on the following pages). Cost estimates for proposed improvements have been based on the most recent unit costs available, both from UDOT and from other similar local government projects in the area. Additional constraints may be identified during preliminary engineering that could potentially increase the cost of a facility.

Many avenues and sources exist for funding bicycle and pedestrian planning projects, including local, state, and federal sources; many can be combined with one another. Funding is required for implementation or construction as well as for ongoing operations and maintenance. Table 7.3 provides a list of funding sources that may be applicable to projects identified in this plan.

Additional funding strategies include:

- Finalize project priorities (City Council), and fund high-priority projects first. The plan includes a clear direction of the projects that have the greatest potential impact on ridership and safety and represent the greatest opportunity to get more people riding and walking immediately.
- Include bicycle projects in the capital investment program (or CIP). The inclusion of projects in the capital investment program could buffer prioritized projects from the political instability of annual budgets and move Pleasant Grove to implementation.
- Fund projects through major capital projects.
- Develop a city-wide investment approach that integrates bicycle facility development in capital projects and roadway maintenance projects

Table 7.1: Unit Costs for Proposed Bicycle Facilities^{1,2}

Facility Type	Cost per Mile	Cost per Foot
Bicycle Lanes ³	\$33,221.47	\$6.29
Buffered Bicycle Lanes	\$36,333.89	\$6.88
Cycle Track	\$34,583.16	\$6.55
Multi-use Trail ⁴	\$235,304.98	\$44.57

Assumptions:

1. Costs for bicycle facilities located within roadways (Bicycle Lanes, Buffered Bicycle Lanes, and Cycle Tracks) assume that the full roadway section is built out according to the Pleasant Grove City Streets Master Plan. Costs are not included for roadway widening or improvement needed to match the roadway width defined in the master plan. Costs only include signing and striping required for bicycle facilities. It is recommended that bicycle facilities be incorporated and constructed with other roadway improvement projects.
2. Cost estimates do not reflect existing conditions at all facilities. Costs for implementing bicycle facilities can vary greatly from these values based on the existing roadway conditions, pavement condition, utilities, right-of-way, and other unknown circumstances. These estimates are meant to give a general idea of cost related to the construction of bicycle facilities, but specific site conditions should be evaluated to determine real costs.
3. Collector streets with bicycle lanes will not have on-street parking and will include a median turn lane. Costs for bicycle lanes assume removal of existing centerline and include new striping of median lane in addition to bicycle lane striping.
4. Costs for multi-use trails include an assumed 2' deep fill section, pavement section, signing, and striping. Trail costs do not include right-of-way, drainage, or landscaping.

Table 7.2: Costs for Bicycle Options by Facility Type

Facility Type	Item	Quantity	Unit	Unit Cost	Total Cost / Mile	Description
Bicycle Lane	Remove Pavement Markings	10,560	ft	\$1.25	\$13,200.00	Removal of existing median stripe (assume double stripe)
	4" Pavement Marking Tape - Outside Stripes	56	gal	\$28.00	\$1,556.21	Solid stripe (190 ft/gal); assume no stripe on outside of bicycle lane
	4" Pavement Marking Tape - Median Stripes	69	gal	\$28.00	\$1,945.26	Broken and solid (152 ft/gal)
	Pavement Message (Preformed Thermoplastic)	84	each	\$155.00	\$13,020.00	Bicycle lane marker, arrow marker, and intersection arrows; assume 6 markers per block each direction (1 bicycle lane and arrow at each end of block, 1 bicycle and arrow in each intersection); assume 7 blocks per mile
	Signs	28	each	\$125.00	\$3,500.00	Assume 2 signs per block each direction; assume 7 blocks per mile
	Total: \$33,221.47					
					\$6.29	Per foot of roadway
Buffered Bicycle Lane	Remove Pavement Markings	10,560	ft	\$1.25	\$13,200.00	Removal of existing median stripe (assume double stripe)
	4" Pavement Marking Tape - Outside Stripes	167	gal	\$28.00	\$4,668.63	Double solid stripe (190 ft/gal) plus 5' long diagonal stripe every 5', assume no stripe on outside of bicycle lane
	4" Pavement Marking Tape - Median Stripes	69	gal	\$28.00	\$1,945.26	Broken and solid (152 ft/gal)
	Pavement Message (Preformed Thermoplastic)	84	each	\$155.00	\$13,020.00	Bicycle lane marker, arrow marker, and intersection arrows; assume 6 markers per block each direction (1 bicycle lane and arrow at each end of block, 1 bicycle and arrow in each intersection); assume 7 blocks per mile
	Signs	28	each	\$125.00	\$3,500.00	Assume 2 signs per block each direction; assume 7 blocks per mile
	Total: \$36,333.89					
					\$6.88	Per foot of roadway
Cycle Track	Remove Pavement Markings	10,560	ft	\$1.25	\$13,200.00	Removal of existing median stripe (assume double stripe)
	4" Pavement Marking Tape - Outside Stripes	111	gal	\$28.00	\$3,112.42	Double solid stripe (190 ft/gal) plus 5' long diagonal stripe every 5' on one side, single stripe on opposite side; assume no stripe on outside of bicycle lane
	4" Pavement Marking Tape - Median Stripes	56	gal	\$28.00	\$1,556.21	Double solid (95 ft/gal) in center of road
	4" Pavement Marking Tape - Median Stripes	7	gal	\$28.00	\$194.53	Dashed yellow (760 ft/gal) in center bike lane
	Pavement Message (Preformed Thermoplastic)	84	each	\$155.00	\$13,020.00	Bicycle lane marker, arrow marker, and intersection arrows; assume 6 markers per block each direction (1 bicycle lane and arrow at each end of block, 1 bicycle and arrow in each intersection); assume 7 blocks per mile
	Total: \$34,583.16					
					\$6.55	Per foot of roadway
Multi-Use Trail*	Clearing and Grubbing	3	acre	\$3,500.00	\$11,878.79	28' wide clearing area
	Embankment	9,387	cu yd	\$18.00	\$168,960.00	Assume trail prism at assumed 2' depth minus pavement section
	Untreated Base Course	1,564	cu yd	\$24.00	\$37,546.67	Assume 6" thickness
	HMA – 1/2"	165	ton	\$75.00	\$12,375.00	Assume 150 lb/cu ft
	4" Pavement Marking Tape - Median Stripes	7	gal	\$28.00	\$194.53	Dashed yellow (760 ft/gal) in center
	Pavement Message (Preformed Thermoplastic)	20	each	\$155.00	\$3,100.00	Bicycle/trail lane marker and arrow marker; assume 1 of each marker every 1,000' in each direction
	Signs	10	each	\$125.00	\$1,250.00	Assume 1 sign every 1000' in each direction
Total: \$235,304.98						Per mile of trail
					\$44.57	Per foot of trail

*Cost does not include drainage, right-of-way, or landscaping.

Table 7.3: Funding Opportunities by Funding Source

Funding Source	Funding Opportunity	Qualifications	Lead Agency	Submittal Specifics
Municipal	Bond Financing	Varies	Varies	Bonds can be approved by voters to fund a range of projects. A local successful precedent is the 2012 Parks and Trails Bond in Salt Lake County, which authorized \$47 million in bond funds to complete the Jordan River Parkway, the Parley's Trail, and acquire land for and construct new parks throughout the County.
	Sales Tax	Varies	Varies	Possible to pass a specified sales tax that could be used to fund active transportation improvements. Precedents include the San Diego region, which approves a half-cent sales tax in 2008 to generate funds for highway, transit, and local road (including bicycle and pedestrian) projects; and the Great Rivers Greenway in the St Louis area, where voters passed a proposition in 2000 to create a 0.1% sales tax for parks, open space and trails.
	Special Assessment or Taxing Districts	Varies	Local Government	Local municipalities can establish special assessment districts for infrastructure improvements. For example, Urbandale, Iowa established a special assessment program in 1996 for building sidewalks in existing developments where they were missing. Exception clauses allowed residents to apply for hardship status, or to allow residents to petition for sidewalks on only one side of the street rather than both.
	Parking Fees or Increased Meter Fees	Varies	Local Government	Some cities have instituted parking fees to pay for infrastructure improvements. Pasadena, California, installed paid parking meters to gather revenue to maintain streets, alleys, and sidewalks in Old Pasadena, and also to provide new signs, lighting, pedestrian-friendly alleys, and other aesthetic improvements.
State	ADA Ramps	For missing ADA ramps on State routes only	UDOT	Find missing ramp in UDOT database from recent survey of ramps. Contact Region Coordinator. http://www.udot.utah.gov/main/uconowner.gf?n=13652716548952568
	Safe Sidewalks Program	Sidewalks on State routes only	UDOT	Submit application to Region Safe Sidewalk Program coordinator, requires scope and cost estimate. Local jurisdiction must agree to maintenance, must be built within one year of money allocation. http://www.udot.utah.gov/main/uconowner.gf?n=10467522336432843
	Community Development Block Grants- State Administered Program	Best if benefits low- or moderate-income populations. Part of a Consolidated Plan.	HUD, State and Local Gov't	Grantee is not a principal city of a metropolitan statistical area a city with less than 50,000, or a county with a population with less than 200,000. Grantees submit applications to State. http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs/stateadmin

Table 7.3: Funding Opportunities by Funding Source

Funding Source	Funding Opportunity	Qualifications	Lead Agency	Submittal Specifics
	State Legislation	Legislation Dependent	State of Utah	<p>Oregon's "bike bill" was passed by the state Legislature in 1971. It requires including bicycle and pedestrian facilities when any road, street or highway is built or rebuilt. It applies to the Oregon Department of Transportation, cities and counties. These agencies are also required to spend "reasonable" portions of their state highway funds on active transportation facilities. This amount is interpreted to be at least 1% of the state highway fund received by the Oregon Department of Transportation, a city or county. This doesn't mean that 1% is what's considered "reasonable", nor that agencies can only spend 1% on active transportation facilities; 1% is a minimum. Also, they are not required to spend a minimum of 1% each year; it can be stockpiled to a reserve fund and used for projects for a period of 10 years. The 1% minimum requirement doesn't release agencies from the obligation to provide bikeways and walkways as part of road construction. Rather, cities and counties that spend more than 1% on bicycle and pedestrian facilities must still provide bikeways and walkways as part of all new construction projects. More online at http://www.oregon.gov/ODOT/HWY/BIKEPED/Pages/bike_bill.aspx</p> <p>The California Streets and Highway Code Section 2106 established the Bicycle Transportation Account, which provides state funds to cities and counties wishing to improve safety and convenience for bicycle commuters. Caltrans typically allots \$7.2 million for the BTA; these funds are then allocated to local jurisdictions on a 90/10 match basis. Eligible projects include planning, engineering, construction, and right-of-way acquisition for bicycle facilities; bike parking; bikes-on-transit amenities; traffic signal bike detection; safety improvements; and maintenance of facilities, among other elements. More online at http://www.dot.ca.gov/hq/LocalPrograms/bta/btawebPag_e.htm</p>
Federal	Transportation Alternatives Program	Funds can be used for construction, planning and design of on- and off-road facilities including sidewalks, trails, bicycle facilities, signals, traffic calming, lighting and safety infrastructure, and ADA improvements. Rails-to-trails conversions are also allowed. The Recreational Trails Program is included in Transportation Alternatives, as is the Safe Routes to School program.	WFRC, MAG, UDOT	<p>WFRC and UDOT funds are already allocated for the 2013/2014 fiscal years. MAG has roughly \$300,000 in Transportation Alternatives funds for FY2014 that has not yet been allocated. MAG funds will be distributed to projects during the next Transportation Improvement Plan project selection process. Most Transportation Alternatives Program projects will have an 80/20 federal/local match split.</p> <p>http://www.fhwa.dot.gov/map21/tap.cfm http://www.wfrc.org/new_wfrc/index.php/plans/transportation-improvement-p</p>
	Community Development Block Grants- Entitlement Communities Program	Best if benefits low- or moderate-income populations.	HUD and Local Gov't	<p>Grantee is a principal city of a metropolitan statistical area, a city with a population over 50,000, or a county with a population over 200,000. Part of a Consolidated Plan.</p> <p>http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs/entitlement</p>
	Surface Transportation Program	Generally not used on local minor collectors with exceptions for bicycle/pedestrian walkways.	UDOT	<p>Concept reports due to the Metropolitan Planning Organization for consideration of programming funds.</p> <p>http://www.fhwa.dot.gov/map21/stp.cfm</p>
	Congestion Mitigation and Air Quality	Reduce congestion or improve air quality in nonattainment or maintenance areas by shifting travel demand to non-automobile modes.	WFRC, MAG	<p>Projects must be included in the Transportation Improvement Plan. WFRC and MAG call for projects from local communities each year.</p> <p>http://www.fhwa.dot.gov/map21/cmaq.cfm</p>

Table 7.3: Funding Opportunities by Funding Source

Funding Source	Funding Opportunity	Qualifications	Lead Agency	Submittal Specifics
	Land and Water Conservation Fund	The Land and Water Conservation Fund provides grants to projects that create outdoor recreation facilities, or land acquisition for public outdoor recreation. Projects have to address an outdoor recreation need in the 2009 Utah State Comprehensive Outdoor Recreation Plan. Planning and engineering activities may be eligible in addition to acquisition and construction.	DNR	50/50 match is required, and the grant recipient must be able to fund the project completely while seeking reimbursements for eligible expenses. Program funding is uncertain, however, and there was no call for projects in 2013. http://stateparks.utah.gov/resources/grants/land-and-water-conservation-fund
	Federal Lands Access Program	Projects must be on, adjacent to, or provide access to federal lands.	UDOT	Fund is administered through UDOT in coordination with the Central Federal Lands Highway Division, which develops a Programming Decisions Committee. The Committee prioritizes projects, establishes selection criteria, and calls for projects. Next call for projects is anticipated for 2015. http://www.fhwa.dot.gov/map21/flap.cfm , http://www.cflhd.gov/programs/flap/ut/
	Rivers, Trails, and Conservation Assistance Program	Staff support for facilitation and planning.	National Park Service	Projects need to be related to conservation and recreation, with broad community support, and supporting the National Park Service's mission. Applicants must submit National Park Service applications by August 1 annually, including basic information as well as letters of support. The local contact is Marcy DeMillion, at 801-741-1012 or marcy_demillion@nps.gov . http://www.nps.gov/ncrc/programs/rtca/contactus/cu_apply.html
	Federal Transit Administration (FTA) Joint Development	Must be part of a transit-oriented development project on federal or FTA property, or on a FTA-assisted project owned by another party.	FTA, UTA	Projects must provide a public transportation benefit (by establishing new or enhanced coordination between public transportation and other transportation), along with other criteria. Potential applicants should coordinate with FTA through initial submittal of a Joint Development checklist. http://www.fta.dot.gov/documents/2013-03-07_Proposed_Joint_Development_Circular_(FINAL)_2).pdf
Private or Corporate	The Regence Foundation	Projects must improve access to healthy foods, recreation facilities, and encourage healthy behavior for families.	Cambia Health Foundation	Grants are typically in \$50,000 - \$100,000 range. Focus is on programs. Contact foundation staff at cambiahealthfoundation@cambiahealth.org for additional information.
	Bikes Belong Foundation	Projects must improve the cycling environment	Bikes Belong	Bike Belong partnered with REI to provide grants supporting the Green Lane Project. Grant applications are not currently being accepted, however. http://www.bikesbelong.org/bikes-belong-foundation/foundation-grants/rei-grant-program
	Community Fundraising	Small dollar amounts	Local agency or non-profit	Lead agency manages the details, marketing, and range of a community fundraising campaign. Successful examples include Softwalks' Kickstarter campaign for sidewalk amenities in New York City, and use of volunteer labor for trail construction in Springdale, Utah. Follow link below for more ideas. http://www.bicyclinginfo.org/funding/sources-community.cfm

7.3 BICYCLE FACILITY MAINTENANCE

Bicycles are more susceptible to pavement irregularities such as cracks, potholes, broken glass, sand, gravel and storm yard and vegetation debris. An ongoing maintenance program to repair and remove debris is critical to provide usable, safe and comfortable conditions for cyclists.

Strategies include:

- Streetsweeping – Motor vehicles travel along the roadway, and debris is pushed to the outside lanes and shoulders, as well as the center of intersections. Roads that also serve as bikeways should be swept more frequently than roads without designated bikeways, and should include removing debris on the shoulder and at intersections.
- Minor repairs and improvements – Potholes and cracks along the shoulders of roadways primarily affect bicyclists. All repairs should be completed in a timely manner.
- Street resurfacing – When streets are resurfaced, utility covers, grates, and other in-street items should be brought up to the new asphalt and should be tapered to meet the gutter edge and provide a smooth transition between the roadway and the gutter pan. When only partial resurfacing is needed, resurfacing should include the bike lane. This will ensure a smoother, more bicycle-friendly riding surface.
- Proactive identification and response to maintenance needs
- Active coordination with maintenance workers
- Drainage grates – When repaving or maintaining roadways, drainage grate patterns should be perpendicular to the road so bicycle wheels cannot fall between grates.

"Many North American cities develop policy statements that integrate bicycle facility maintenance into project development. In most cases, the intent of maintenance funding policy is to preserve the network in "a state of good repair." Yet, few cities develop actionable funding plans or mechanisms that dedicate adequate city funds to this purpose. Two cities break this mold: Minneapolis and Santa Monica. Each city has committed 8 to 10 percent of its total bicycle capital investment program toward maintaining new capital improvements. Minneapolis estimates \$2 per linear foot to maintain its network of trails, bike boulevards, and bike lanes." (seattle.gov)

7.4 BICYCLE PARK IMPLEMENTATION

The conceptual design and location of the bicycle park were very well received by the steering committee and the public (see Figure 7.1). Next steps toward implementation include:

- Encourage additional public support
- Define budget for design and construction
- Identify funding sources
- Prepare preliminary designs
- Prepare operations and maintenance plan
- Construction
- Promote the park through marketing efforts to encourage local and regional use

Figure 7.1: Draft Bike Park Concept, Wade Springs Site



CRSA, 2013

7.5 SUPPORT PROGRAMS & EDUCATION TECHNIQUES

Integral to a successful bicycle and pedestrian plan is the use of programs and educational tools to increase awareness of safety issues, provide information about future improvements, and encourage all members of the community to get involved in active transportation. These techniques also help to achieve some of the goals and objectives outlined for the project. Various support programs have been identified that will promote and increase active transportation use within Pleasant Grove. These programs provide a low-cost option for enhancing the experience of pedestrians and cyclists. They are designed to complement the infrastructure improvements made as part of the Bicycle and Pedestrian Master Plan.

Education Programs

Education programs are used to inform members of the public as well as city departments about various bicycle- and pedestrian-related topics to create a safer environment for non-motorists. By targeting a wider audience to build knowledge about safety and riding opportunities, program strategies and actions can support the achievement of plan goals.

Recommendations:

To effectively implement the support programs and education techniques, it is recommended that the City consider dedicating half of a full-time employee's time to bicycle and pedestrian coordination. In addition, it is likely that approximately \$10,000 to \$15,000 would be needed for ancillary needs such as advertising, print collateral, etc.

Driver Awareness Campaign



Priority: Short to Medium Term

Responsibility: Police Department

Resources: <http://www.fcgov.com/bicycling/coexist.php>;
<http://www.sctransit.com/bikesafe/motoristinfo.htm>;
<http://www.onestreet.org/resources-for-increasing-bicycling/48-bicyclist-a-driver-education-including-the-helmet-problem>

Summary: Education campaign to teach motorists and cyclists about their unique responsibility to interact safely with one another. Materials targeted at motorists should promote the statewide 3' passing law and remind motorists that every corner is a crosswalk (both marked and unmarked).

Bicycle Safety Education

Priority: Short to Medium Term

Responsibility: Police Department, Parks and Recreation, Alpine School District

Resources: <http://www.bikesmart.org/>

Summary: School-based bicycle education program to teach students the proper use of bicycle equipment, street-crossing skills, and the rules of the road. It should include a significant amount of practical teaching. These types of education programs are typically a joint effort between a city and school district that includes appointed parents, teachers, student representatives, administrators, police, active bicyclists, and public works department staff.

Police Department Bicycle Training and Outreach

Priority: Medium to Long Term

Responsibility: Police Department

Resources: <http://www.webike.org/services/enforcement>

Summary: Education courses targeted at law enforcement professionals to help improve public safety and enforce existing laws more effectively by providing them with the training they need. (Law enforcement professionals do not typically receive training regarding bicycle handling, laws, or safety.) Courses should include information regarding:

- Bicycling laws/statutes
- Common crash types and causes
- How to prevent serious offences
- Safety materials that can be handed out during a traffic stop or public event.

Outreach Programs

Outreach programs help increase public awareness of bicycle- and pedestrian-related programs and tools available for their use.

Bicycling/Walking Website & Maps

Priority: Short to Medium Term

Responsibility: Parks and Recreation, School Community Council

Resources: <https://bouldercolorado.gov/goboulder/bike>;

<http://www.velo.qc.ca/english/index.php>; <http://www.portlandoregon.gov/transportation/39402>

Summary: Comprehensive website dedicated to providing bicycle- and pedestrian-related resources that benefit both visitors and local residents. This website can include:

- Information about bicycle- and pedestrian-related events
- Up-to-date maps and brochures (local and regional facilities)
- Laws and statutes related to bicycling
- Local bike shop information
- A comment form to submit maintenance issues and improvement suggestions
- Information about current projects

Up-to-date maps and guides are one of the most effective ways to encourage people to bike and walk by showing how easy it is to access different parts of the city using active transportation. In addition to posting maps on the website, hard copies should be available in all public locations.

Encouragement Programs

Encouragement programs are designed to engage the community and create a sense of excitement for biking/walking.

Bike to Work Month/Week/Day

Priority: Short Term

Responsibility: Pleasant Grove City

Resources: <http://www.bikeleague.org/content/plan-bike-month-event>

Summary: Program to encourage bicycling to work through community activities and incentives. Activities can include:

- Bike with the mayor
- Educational workshops about commuter cycling (prior to event)
- Group rides (to increase comfort for new commuter cyclists)
- Incentive stations along major bicycle commuter routes
- Workplace/team bicycling challenges
- Community pancake breakfast

Bicycle-Friendly Business Promotion

Priority: Medium to Long Term

Responsibility: Pleasant Grove City

Resources: <http://www.bikeleague.org/content/business>

Summary: Programs that recognize employers' efforts to encourage a more bicycle-friendly atmosphere for employees and customers. These programs honor innovative bike-friendly efforts and provide technical assistance and information to help companies and organizations become even better for bicyclists. This program can be created by the City or the existing national Bicycle Friendly Business certification program (run by the League of American Bicyclists (LAB)), and can be promoted locally. As of spring 2013 there were no LAB-certified Bicycle Friendly Businesses in Pleasant Grove.

Walking School Bus Program



Priority: Short Term

Responsibility: Alpine School District, PTA, School Community Council

Resources: <http://www.walkingschoolbus.org/>

Summary: Program that provides adult supervision — shared among several parents — for children walking to school.

Evaluation & Monitoring Programs

Evaluation and monitoring programs allow the City to track progress made as they implement their bicycle and pedestrian master plans.

Annual Bicycle Counts



Priority: Short Term

Responsibility: Parks and Recreation (in association with MAG)

Resources: <http://bikepeddocumentation.org>

Summary: Annual bicycle counts to allow the City to determine the plan's success at meeting bicycle and pedestrian goals. This program should quantify the number of cyclists at key locations around the city (same location counted every year). MAG is already in the process of establishing automated counting systems; some of these should be placed within Pleasant Grove to gauge ridership. The data collection program uses methodology developed by the National Bicycle and Pedestrian Documentation Project.

Annual Walking & Bicycling Report Card

Priority: Short to Medium Term

Responsibility: Parks and Recreation

Resources: http://www.sfbike.org/download/reportcard_2006/SF_bike_report_card_2006.pdf

Summary: Annual evaluations to determine what percentage of the proposed bicycle and pedestrian network has been implemented. Findings should be reported to the Pleasant Grove City Council and the public.

Appendix A: Public Open House Summaries, Comments & Survey Results

SUMMARY OF PUBLIC OPEN HOUSE #1

The first of two public open house meetings for the Pleasant Grove Bicycle and Pedestrian Master Plan Project was held on March 13, 2013, at the Pleasant Grove Community Center from 6 PM to 8 PM. The meeting was advertised in the following ways:

- Flyers distributed at public locations throughout the city (see appendices for copy)
- Board-sized display of meeting notice posted at the Community and Economic Development Building, City Hall, Community Center and the Public Library
- Flyer distributed in the City Newsletter two weeks prior to the meeting
- Flyers provided to each of the neighborhood chairs for distribution
- Emails sent to the project stakeholder distribution list
- Emails sent to parents by some local schools within Alpine School District
- Banner with information regarding the open house posted on the City website's home page

The purpose of the public open house meeting was to provide members of the public with an opportunity to provide input on bicycle- and pedestrian-related issues and to give suggestions for improvements within Pleasant Grove. This meeting was well attended with approximately 82 participants. Meeting attendees were invited to participate in three activities (described below).

Activity #1

Meeting attendees were given three 11x17 maps showing the City road network. Participants used pens to highlight personal trips within the city boundary made by bicycle, walking, and motor vehicle. Completed maps were posted on meeting room wall for viewing. Participants were encouraged to highlight their top two routes for each mode. Copies of maps are included in the appendices.

Bicycle Routes

The most utilized bike route in the city by far is the Murdock Canal Trail. Riders are accessing the trail (and the canyons farther east) primarily from 1100 North, 1800 North, and 500 North (Grove Creek). Other key destinations include: the downtown area (library, rec center), accessed mainly

from 100 East and 300 East (north and south) and 300 East and Locust Avenue (east and west); and Manila Discovery Park, accessed from 1800 North and 600 West and 900 West. One surprising trend is the large number of bikers who ride on State Street (possibly for commuting).

Drive Routes

State Street and Pleasant Grove Boulevard are the routes with the heaviest vehicle travel, usually accessed by 100 East, 200 East, or 1300 West. Major east-west routes are 1800 North, 1100 North, Center Street, and 200 South/Locust Avenue. Main Street is the major north-south route.

Walking Routes

The most utilized walking routes are more random, with some based on walking kids to and from home and elementary school. A lot of people walk the Canal Trail and the hiking trails farther east. Some popular routes are: 500 North, 1100 North, and 1800 North to the Canal Trail and Canyons; and 100 East, 200 East, 300 East, and Center Street in downtown.

Activity #2

Meeting attendees were provided three colored dot stickers. On a scroll plot showing the city (including the road network and major destinations), participants were asked to indicate the three key destinations within the city that they most regularly visit (not including their home).

Participants identified the following locations as key destinations within the city:

- Pleasant Grove High
- Pleasant Grove Community Center
- Downtown Pleasant Grove (library area)
- Macey's on State Street
- Kiwanis Park
- LDS Stake Center (730 East 1170 North)
- Murdock Canal Trail
- Anderson Park
- Grovecrest Elementary
- Pleasant Grove Junior High
- Manila Elementary
- Manila Discovery Park
- Manila Creek Park

Activity #3

Participants were asked to show the following on two scroll plots (one for bicycle facilities and one for pedestrian facilities):

- Red line or dot = Indicated areas where bicycle/pedestrian improvement is needed
- Green line or dot = Indicated areas where current conditions are good for pedestrian/cyclists

Markers were provided so general comments/notes could be written on the scroll plots.

Comments written on the bicycle facility map included the following:

- Bike lane/repaving needed on Locust Avenue
- Bike lane or shoulder needed on 200 South between 100 East and Kiwanis Park
- Bike lane needed on 100 East/Canyon Road
- Shoulder is too narrow on 100 East/Canyon Road. Traffic is too fast.
- Bike lane needed on 1800 North. Sweeping needed in this location.
- 900 West has deteriorating shoulder and there is little room for bikes. This road connects to the Murdock Canal Trail.
- Narrow segment of road along 1300 West between 1800 North and 2600 North.
- Holes in asphalt (approximately 1800 North and 1300 West)
- Shoulders needed on Geneva Road (too narrow)
- Troublesome locations for bikes – Intersections: 100 East/500 North and 100 East/1800 North
- Mountain bike facility needed on the foothills connecting Lindon and Cedar Hills
- Road sweeping needed on all roads throughout the city
- Trash and water facilities needed on Murdock Canal Trail

Additional locations indicated as needing bicycle improvements included:

- 2600 North
- 600 West
- State Street
- Center Street (between State Street and 100 East)
- 1100 North
- 300 East (between 600 North and 1100 North)
- 500 East (between 600 North and 1100 North)
- 400 East (between 500 North and 200 South)

- 1500 East
- 1000 South (between Locust Avenue and 200 East)
- 500 North/Grove Creek Drive
- Dalton Ave/1300 East
- Cedar Hills Drive

Comments written on the pedestrian facility map included the following:

- Sidewalk path needed on 900 South between Locust Ave and 1150 East
- Connection to the Murdock Canal Trail is needed at 2600 North and Canyon Road (through Private Property)
- Connection to Murdock Canal needed from Murdock Drive/1600 North area.
- Sidewalk and road widening needed on 1800 North between 1300 West and 1520 West.
- Sidewalk needed on the corner of 1800 North and Canyon Road.
- Sidewalk and lighting needed along Grove Creek Drive
- Sidewalk needed along Battle Creek Drive. Suggestion for a meandering shared-use path adjacent to Orchard Property. This would connect Kiwanis Park to the Murdock Canal Trail.
- Sidewalk on 1100 North between 300 East and the Murdock Canal Trail
- Sidewalk on 300 East between 100 North and 1100 North
- Sidewalks along Locust Avenue
- Sidewalks along 500 South between 300 East and Locust Avenue
- Sidewalk on 500 East between 100 North and 1100 North
- Sidewalks on 500 North, 300 North and 200 North between 600 East and 400 East
- Dips in the road on 100 North between 100 East and 300 East
- Sidewalk on 100 North between 400 East and Murdock Canal Trail
- Sidewalk on 100 East between 200 North and 400 North
- Sidewalk needed on Sam White Lane. Residential neighborhood not connected via sidewalk. Busy road with industrial vehicles.
- Create pedestrian zone in central downtown along Main Street
- Beware not to do bulbouts/neckdowns on approach to roundabouts. This is dangerous for bicyclists.
- Left turns along 100 East and 300 East are dangerous due to drivers pulling out around turning cars (creates danger for peds). Driver education needed.

Interactive Polling Presentation

At 7 PM, the project team gave a presentation that included an interactive electronic polling component. The presentation materials included the following:

- General overview of the project
- Existing conditions summary
- Electronic polling questions regarding what type of cyclists/pedestrians were present
- Educational materials regarding bicycle and pedestrian facility types
- Electronic polling questions regarding preferences for different facility types

A copy of the presentation is included in the appendices. Many of the electronic polling questions were similar to questions included in the online public survey; therefore, responses have been combined under "public survey" below.

COMMENTS FROM OPEN HOUSE #1

Open-ended comment forms were provided at the public open house to capture any additional input attendees wanted to provide. The following table lists the comments received verbatim.

Public Open House #1 Comments

General Comments
More tracks for recreational mountain bikes & racing (dirt)
Lighting (sidewalk) around 1300 West
1. Coordinate with neighboring cities (Lindon, AF, Lehi) connect trails/bike lanes. 2. Turn Main Street near old rec center/library into pedestrian zone. This will vastly improve the business climate there & turn it into a destination instead of an eyesore that we drive through as fast as possible to get somewhere else.
The sidewalks & roadways in general in PG leave a lot to be desired. 1100 North is one example of huge amounts walkers & no sidewalk most of the way. (Especially dangerous for school kids.) When you walk on sidewalks there are lots of trip hazards & walk on roads there are pot holes etc!
We need more sidewalks and painted bike lanes
I would love to see a sidewalk & bike lane on 900 W. from 2800 N. to 3300 N. so that my children can safely ride their bikes to school (Quail Run). It would also help for our family outings up to the Manilla Pond. It's a very busy stretch of road that is currently not safe enough for me to allow them to travel it. Also, the stretch of road from 600 W. to 900 W. on 2600 N. could use a sidewalk/bike lane as well.
I like the improvements being made. Connecting sidewalks in Manilla area - several places where sidewalks were never put in.
Ped. Walk signs should include visual signals for the deaf as well as auditory signals for the blind.

Public Open House #1 Comments

General Comments

Busy roadways are difficult for Deaf and hard of hearing to navigate because we can't hear emergency vehicles behind us coming our way such as Ambulances. Homeowners need to be educated to trim trees that over hang onto sidewalks & paths. They pose a danger to peds & bikers.

Better street sweeping & maintenance is needed for safer bike commuting. More frequent repainting of crosswalks & bike lanes would help with pedestrian/bike safety.

I like the use of cycle tracks for commuting as they are in Europe. With the cycle track along the road but raised a bit from the road (two way traffic on the cycle track for narrow roads.) The sidewalk is raised a bit more from the cycle track. These seem even more safe than a bike lane to me.

My husband and I are new at biking. We currently ride a route that takes us into AF (Art Dye Park) up to Cedar Hills golf course then to Murdock Trail. We just would like to know other safe routes to take us to other parts of the city. We are very excited about the Murdock Trail! And would like to have more trails like this or marked routes. Would also like to see better shoulders along 1800 N from AF to 600 w.

Extremely narrow shoulder on 100 E (140) Would be ideal to connect to other cities paths as well. More smaller connector trails to access Murdock lane/trail like in neighborhoods.

1. Roads are terrible in the area 2. Downtown neighborhoods shoulders and sidewalks very bad 3. Need to improve shoulders on Major Arteries 4. Better lighting in neighborhoods

Safe cycling lanes to AF Train - Fronrunner. Shoulder along Battlecreek - bike lane especially east of High School

1100 North is going to get someone killed! This needs to be done way before extra bike lanes etc... Please fix this been promised this for 10 years and have seen many close calls. Thanks for police patrol. However the speed sign adds danger for children walking!!

We need more single track for mountain biking. I coach the high school mountain bike team and there is a huge amount of kids and parents looking for more trails. A bike park would be a great improvement.

Pleasant Grove has a lack of or just minimal shoulder area for bikes to ride on. I would like to see as opportunity permits to make room for bicycles.

I have seen so many near misses on my walk to and from Grovecrest Elem. So many kids & no sidewalk for just a part of it between 1100 N & 500 N on 300 E. SO scary! Sidewalks would be so great! I would hate to have a child fatality before anyone does anything. I walk my kids almost every day - rain or shine - but no sidewalk makes it almost deadly.

Mark bike lanes through intersections (see back) intersections are where lane making matter most! Mark turn lanes with Dashed lines - thanks for listening!

At main trails & Murdock Canal. Put stands for dog poop bags. Dog poop is bad at mouth/start of trails - especially Grove Creek Trail Head. Create a serpentine walk/trail along the north side of Battle Creek Drive from Murdock Canal trail to trailhead at Kiwanis Park. 25-30 section - w/meandering trail w/plantings.

1. White lines on 500 North - Grove Creek Drive

Public Open House #1 Comments

General Comments

Make the canal trail for bikes and walking only. I am scared to walk and ride on it because of how many 4-wheelers are on it. More than once I have seen someone almost hit because of it. I think bikers and walkers need a safe place. I also think lines need to be painted for bikes and walking. This will help keep the walkers safe.

Are dogs, 4x4, motor bikes/horses allowed on the walking trail? We see dog and horse tracks on the walking area why? When will the bathrooms be open? The same time the trail opens? What to do when the 4x4's race up the walking trail? Or motor bikes?

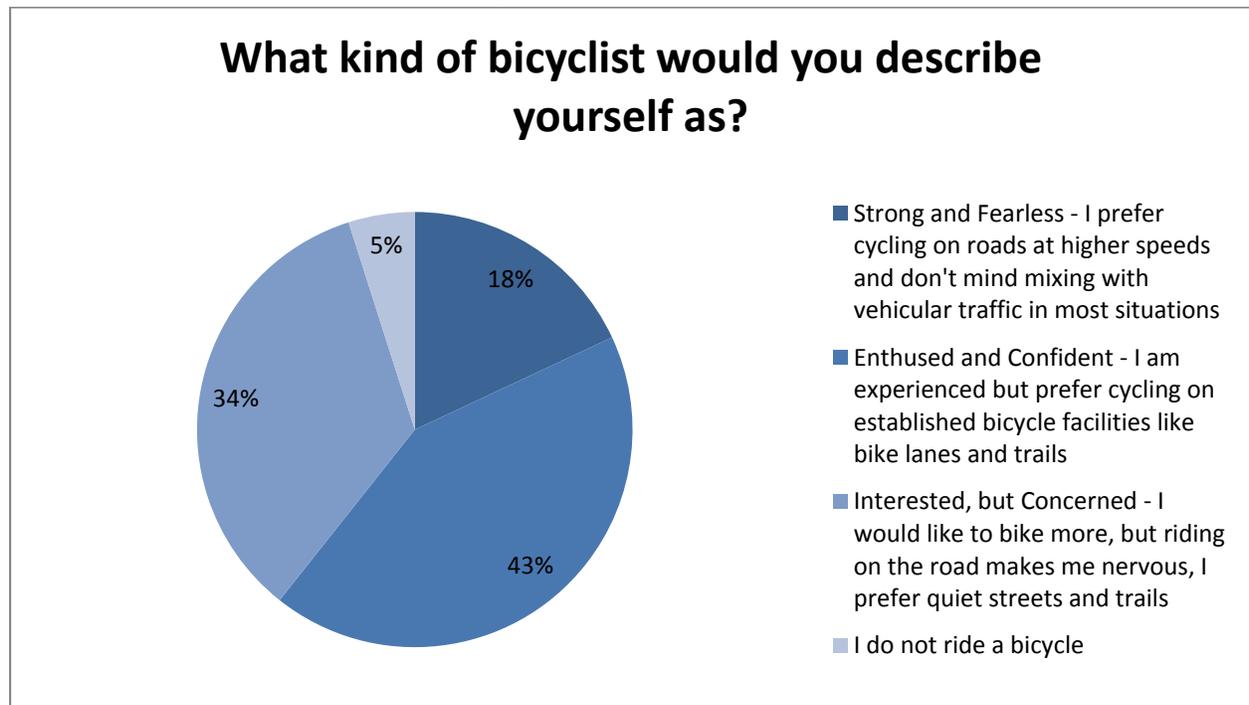
Please make strong ordinances against dogs off lease on the trail. It has been a problem.

PUBLIC SURVEY RESULTS

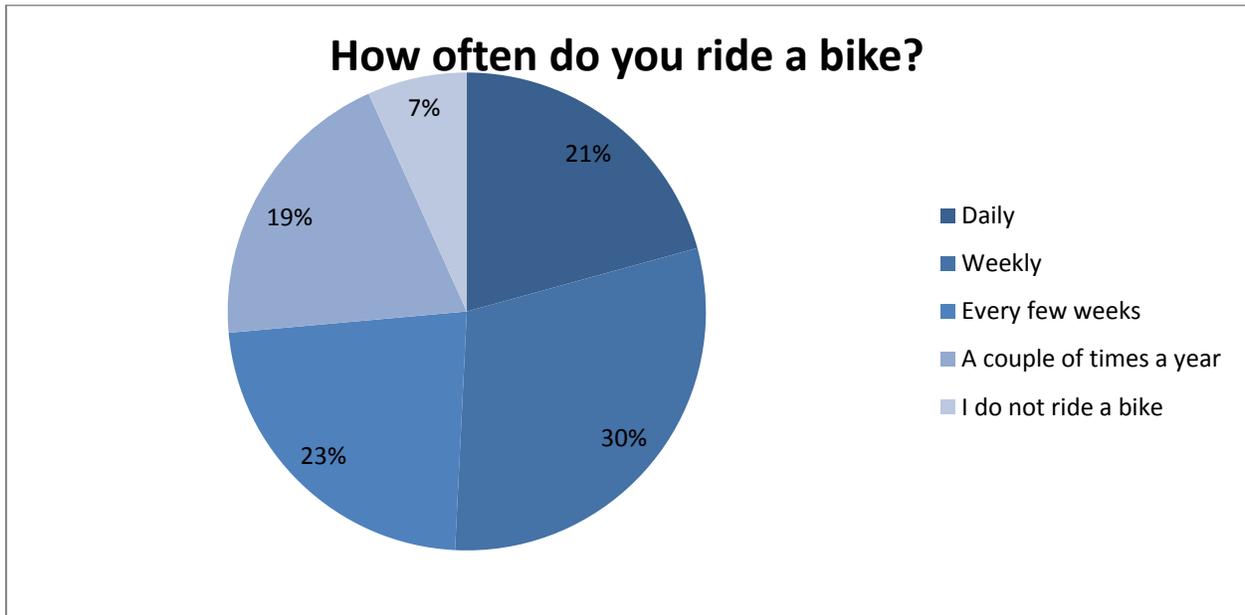
An online public survey was created for the project. A link to the survey was posted on the Pleasant Grove website both on the main home page as well as under the Recreation tab (where general information about the project was listed). A screen shot of this web page is included in the appendices.

A total of 148 surveys were completed online. Questions and responses are included below. Where public survey questions were the same as those administered during the electronic polling presentation at the public open house meeting (described above), results have been combined (and is indicated below). (Note: Approximately 54 people participated in the electronic polling activity at the public open house meeting).

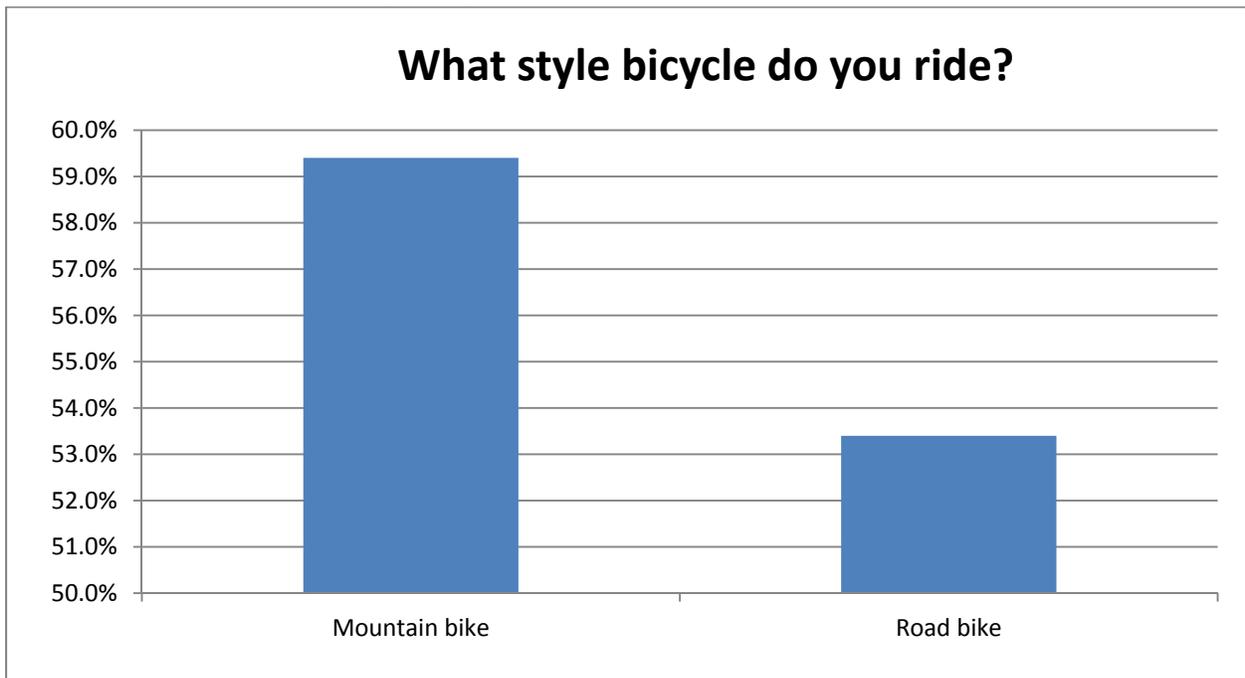
Question 1 (Combined – 122 responses)



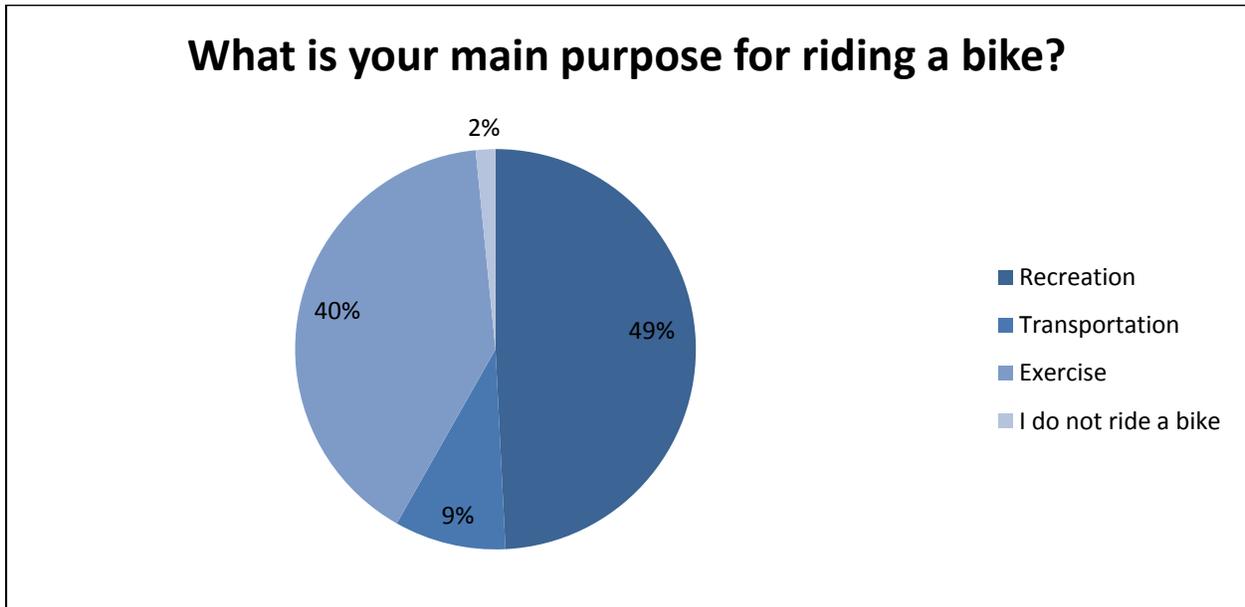
Question 2 (Combined – 193 responses)



Question 3 (Online Survey Only – 133 responses)



Question 4 (Combined – 189 responses)



Question 5 (Online Survey Only – 35 responses)

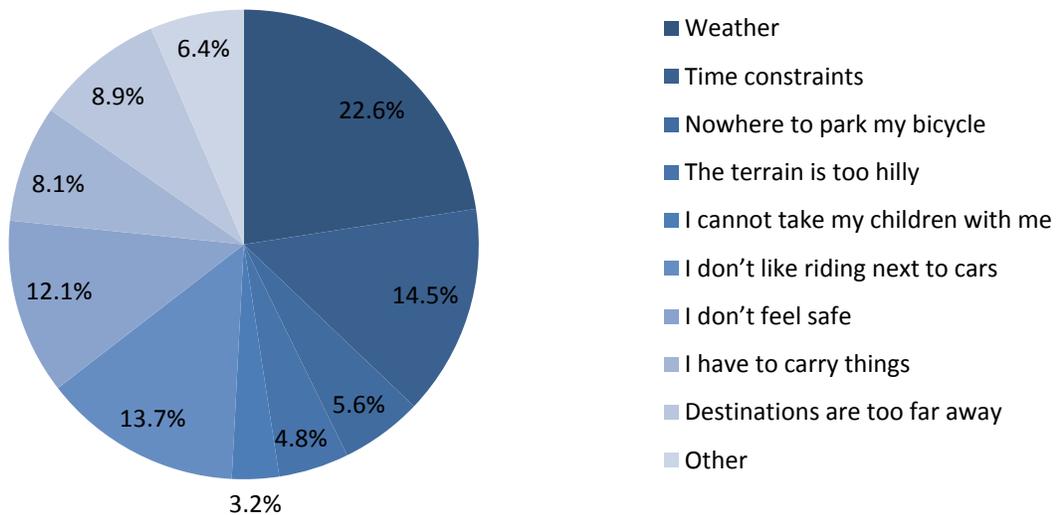
If you do not ride a bike, what is the primary reason?

- Don't like to ride on city's road system
- Don't have one yet
- Not enough safe, clean, unobstructed lanes and or trails on level surfaces away from the narrow shoulder of some of our streets and highways..
- Traffic
- There are not very many trails or places to ride a bike.
- Cold
- BAD WEATHER
- Because you are tired
- Bad air quality, destination distance or errand purpose doesn't support cycling very efficiently.
- Bike was stolen and no real safe areas to ride with family nearby.
- Safety
- No sidewalks near us or on the way to my kids' school (Deerfield)
- Weather or health
- More safe walkways
- Scared of traffic
- Sidewalks
- Runner
- Need to tune-up my bike.

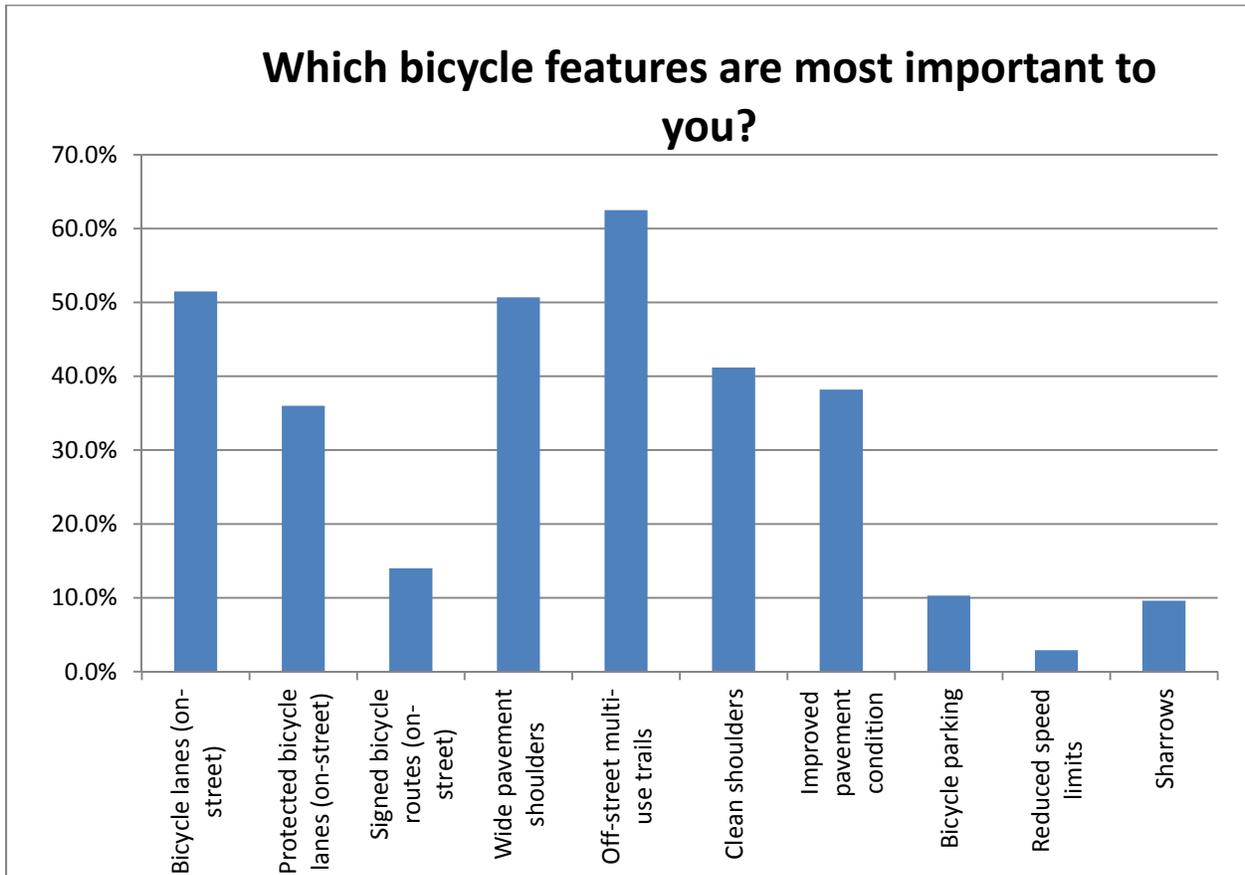
- Dangerous on main roads
- Time
- Getting older
- Prefer running
- I would ride more if I felt safe and had a good bike repairman
- Fun
- Time
- Other hobbies
- Like walking better
- Don't enjoy climbing mountain to get home
- Cost, lack of riding trails
- Roads
- Run, gym, hike instead
- Safety
- Time
- Fitness
- Spouse bought me a male bike/far too dangerous - new womens bike

Question 6 (Electronic Polling Question Only – 124 responses (multiple choice))

If you do not ride a bike, what is the primary reason? (Top 3 answers)

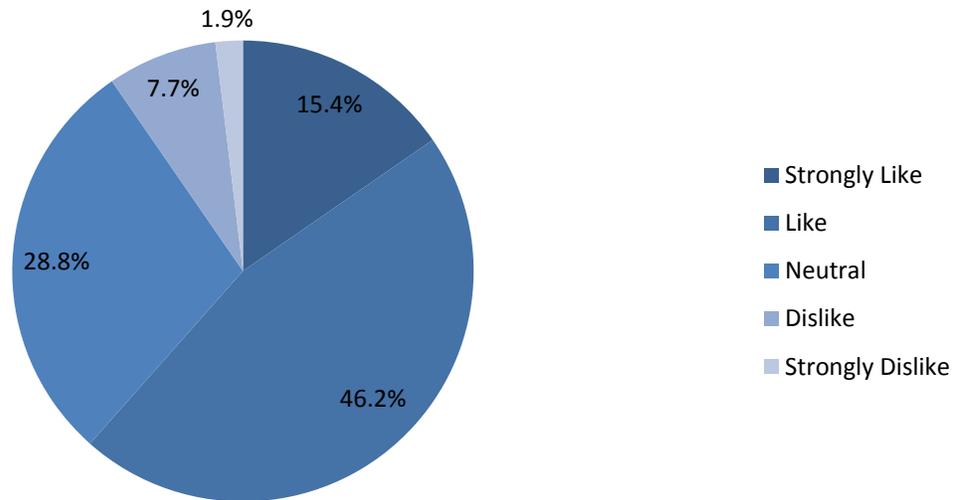


Question 7 (Online Survey Only – 136 Responses)



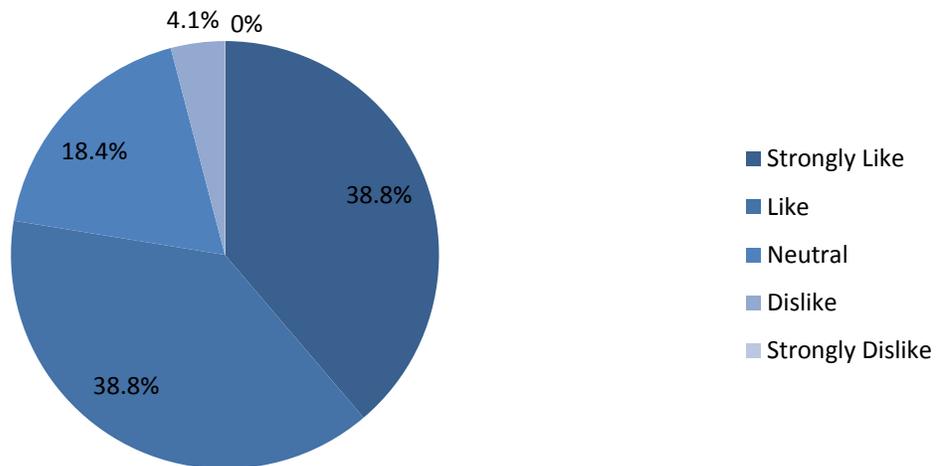
Question 8 (Electronic Polling Question Only – 52 Responses)

How do you feel about Bicycle Boulevards?



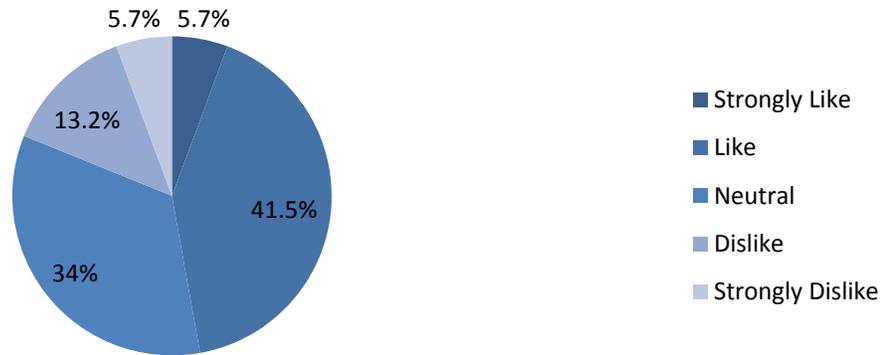
Question 9 (Electronic Polling Question Only – 49 Responses)

How do you feel about Bicycle Lanes?



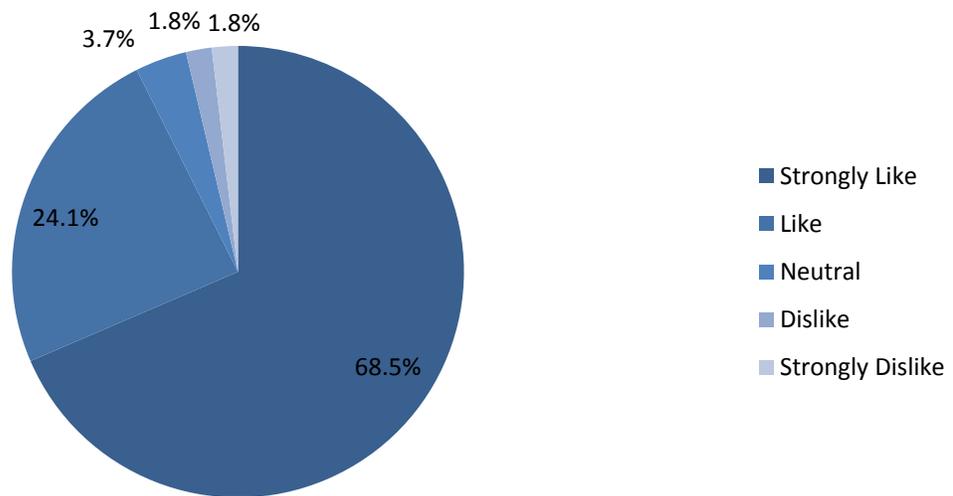
Question 10 (Electronic Polling Question Only – 53 Responses)

How do you feel about Marked Shared Lanes?



Question 11 (Electronic Polling Question Only – 54 Responses)

How do you feel about Shared Use Paths?



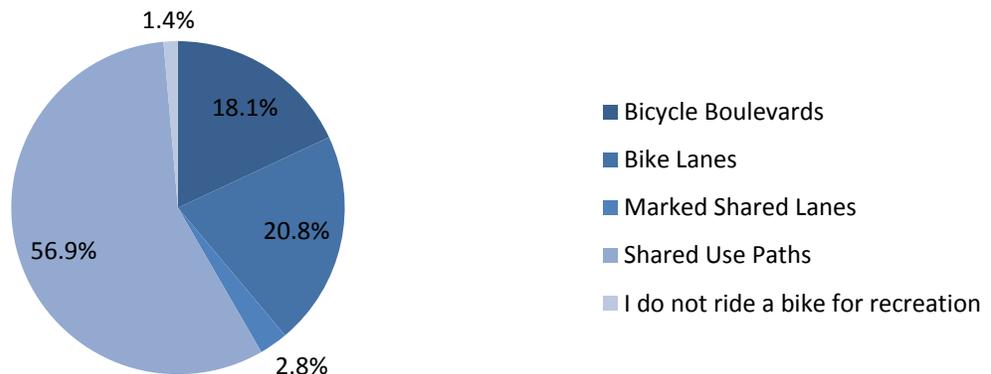
Question 12 (Electronic Polling Question Only – 75 Responses (multiple choice))

As a commuting cyclist, which facilities would best meet your needs?



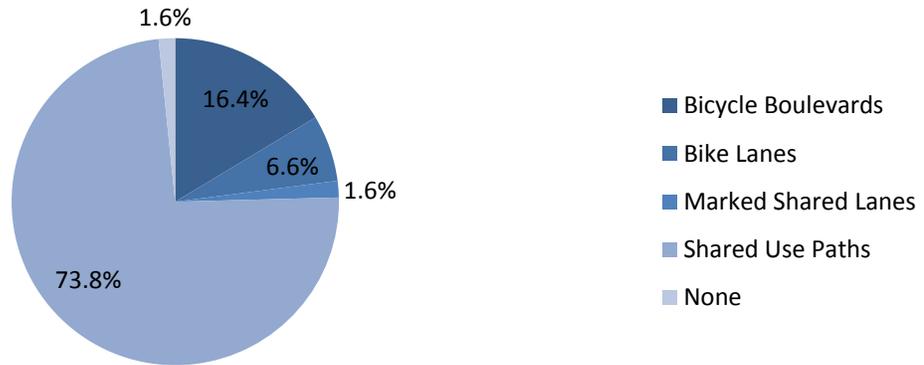
Question 13 (Electronic Polling Question Only – 72 Responses (multiple choice))

As a recreational cyclist, which facilities would best meet your needs?



Question 14 (Electronic Polling Question Only – 61 Responses (multiple choice))

If you have small children who ride, which bicycle facilities would best serve their needs?



Question 15 (Online Survey Only – 78 Responses)

Are there specific destinations within Pleasant Grove City where you would like to see bicycle facility improvements made? If yes, please describe the location and type of improvement.

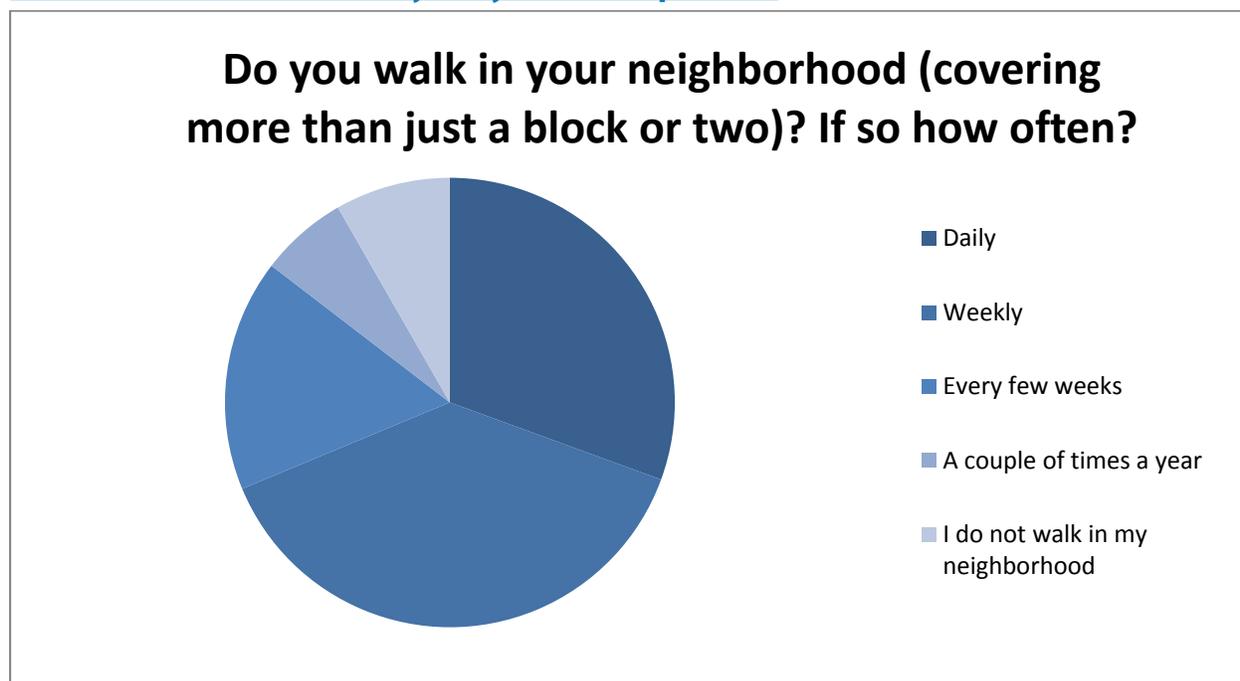
Location	Type of Improvement?
- Access to Murdock Canal Trail	
- 900 West, from 2800 N. to Manila Pond	- Bike Lane
- Locust avenue	- Fewer potholes, smoother, better shoulders
- Kiwanis park	- Help improve connection to the Bonneville Shoreline Trail
- Canyon Road	- Clean shoulder
- In the down town and extended shopping areas. On all residential streets there should be required to have sidewalks.	- Marked bicycle lanes that are kept clean of burs and roadside bubble gravel, etc., repair stations (vending machines) where a rider can purchase help needed along their way (like what is done in Provo).
- Where it is less congested. Away from businesses and traffic.	- As natural as possible
- Along Canyon Rd, Locust Ave, North County Blvd, Grove area	- Widen shoulder for bike lane, green space walking/biking trails like in St. George
- Canyon Road	- Wide bike lane
- Paved paths along all canals	- Bike lanes connecting schools
- Battle Creek area	- Bike skills park

Location	Type of Improvement?
- State street, PG Blvd, Geneva	- wider paved shoulders or bike lanes
- 1100 N	- Fix potholes, clean street,
- Almost everywhere	- The pavement is in terrible condition. It needs to be fixed.
- Grove creek canyon	- Nicer tracks keep four-wheelers off
- Canyon Highway	- Road conditions (shoulders), street lighting
- 900 west. From 2600 north to Harvey Boulevard.	- Sidewalk needed or pedestrian trail. I love to walk to the pond and Deer Creek elementary, but it is dangerous with a stroller. Cars go so fast and there is no shoulder on the road.
- 100 East up to American Fork Canyon and American Fork Canyon	- Bike/jogging path separated from the car lanes with safe distance way.
- Throughout the entire city	- More bike trails to get around mainly around state street area but throughout the entire city
- Highway Area	- Finish a secondary road to let cyclist cross I-15 at the lower traffic 700 S bridge instead of the higher traffic On/Off Ramp.
- All the main streets	- Road improvement, bike lanes
- Other side of town	
- Manilla Park & Manilla Creek Pond	- Make 'walking paths' wider
- We would to have a bike path parallel to canyon road, where we could bike downtown to restaurants and shops	- Bike paths
- 1100 East	- A bike lane and sidewalk
- Manila Area, 900 West, 3300 North	- Widen the shoulders of the roads
- State Street or other route from PG to FrontRunner in American Fork	- Painted Bike Path
- 100 East / Canyon Road	- There is no shoulder and the roadway is torn up and pot-holed along the edges. Dangerous to ride
- We have the canal trail now. Don't see a need for anything else.	
- 100 east, 200 south, 1100 North	- Bicycle lanes and wide ones. I've almost been hit on these roads before.
- To Provo Canyon	- Bike trail

Location	Type of Improvement?
- Sidewalks along 300 East adjacent to the schools and down to State Street.	- Sidewalks
- Geneva Road, State Street	- Wider shoulders or proper bike lane
- State Street	
- Non traffic free lanes	
- Connection from Lindon to PG	
- Grove Creek Drive, 100 E.	- Bike lane
- Along 300 East	- Bike lanes or shoulders
- Around the city by Macey's and downtown	- More lanes and room for bikers
- 100 E (Canyon Rd)	- Wider near John Hancock to State Street
- All roads downtown PG	
- Finish Canal faster	
- Library	- Accessible bike racks at the library
- More bike lanes and better LIGHTING!!! for twilight rides	- I just LOVE the canal road now. It was better for running before but now its better for bikes!
- Foot Hills	- Water
- 1050 East and Battlecreek	- sidewalks and shoulder with bike lane
	- Bike lanes, wider shoulders, street sweepers, better road construction to avoid potholes and repair of those that exist. Thanks
- The road that leads up to Manila Road (2800 N?)	- Sidewalk!
- 100 East, Road conditions in general	- Widening
- Near city center, toward new rec. center	- Actual lines/lanes in widened roads designated for bikes only
- Murdock Trail	
- Narrow roads, 1300	- No room
	- Bike paths
- Canal	- We want it open
- Road improvement with bike lanes	
- Locust	- The road is in horrible condition, with sparse sidewalks. Either fix the road or make a steady sidewalk that both timid bicyclists and joggers could use.
- Everywhere	- Bike lanes
- Canyon Road	- Bike lane
- City buildings and library	- Bicycle rack
	- More shoulder space on the road for safety

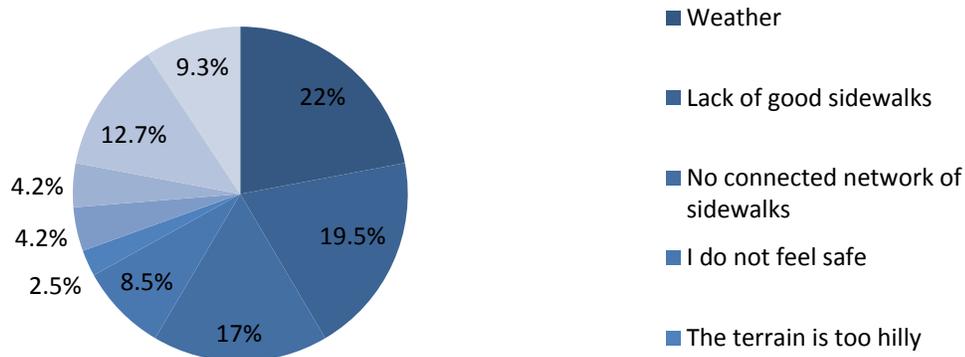
Location	Type of Improvement?
- Main streets like State, Center, 200 North	- Bike lanes, continuous sidewalks
- 2600 N and north	- Sidewalks
- On roads	- Bike lanes
- Canal	- Benches
- Canal	- Pave, bike lanes on main roads
- Along mountain	- Paved path
- 100 East, 1100 North (West of 100 East)	- Sidewalks, lane shoulder markings
- Canal trails	- More trees and benches
- 100 E to Cedar Hills/most streets	- Bike lane/Pavement is very rough for road bike
- Border of PG and Lindon	- Bathrooms - Maintenance free landscaping

Question 16 (Online Survey Only – 144 Responses)



Question 17 (Electronic Polling Question Only – 118 Responses (multiple choice))

If you do not walk within your neighborhood, what is the primary reason? (Top 3 answers)



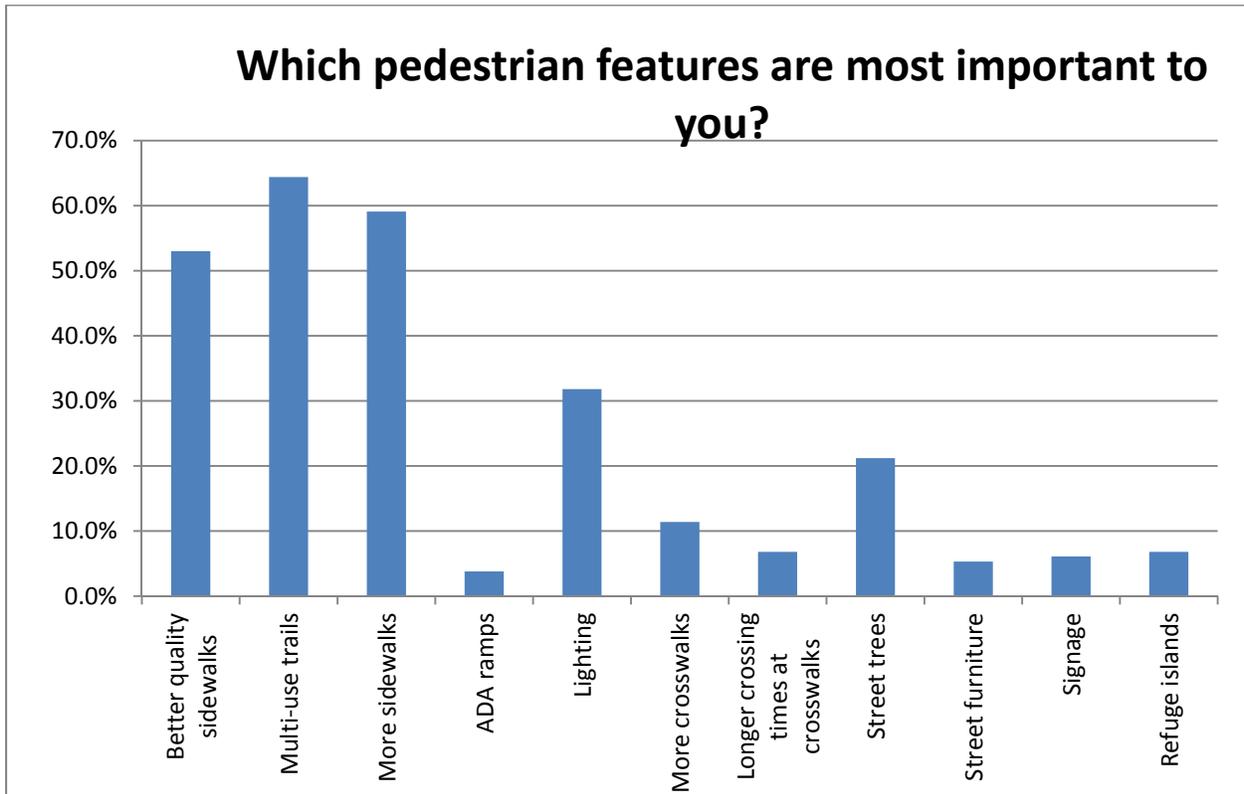
Question 18 (Online Survey Only – 42 Responses)

If you do not walk in your neighborhood, what is the primary reason?

- I am on my bike instead
- I do walk, but I wish that neighborhoods were larger, with greater distance between busy roads
- Obstructed sidewalks with low or protruding foliage; broken sidewalks, or no sidewalks provided at all.
- I do walk, but many streets have no sidewalk.
- Exercise
- Lack of sidewalks, or clean open shoulders
- I'm on my bike
- Cycling instead
- Because you are tired
- Bad air quality, destination distance is not time-efficient.
- Traffic is my biggest concern--no shoulder to walk on or sidewalks on several streets
- I live in Bryant estates, but I hate walking on 900 West.
- Stress relief and exercise
- Weather- time of year.
- Not many good pretty destinations or parks
- Time
- Lack of sidewalks
- The sidewalks are very poorly maintained, it's very hard to push a stroller around.

- Nowhere to go
- Nothing close to my house
- No sidewalks
- It's too cold presently
- Running
- Sidewalks/lack of
- I live close to busy streets/heavy traffic
- Exercise
- Too cold
- Because I ride my bike
- Exercise
- Weather
- Exercise
- Time, weather
- I try to take my jogging stroller out with me but every time I come home with a flat tire
- Not at home
- None
- The lack of sidewalks/walking paths
- Cars, no safe walkways
- Exercise
- Weather
- Too many hills
- Exercise
- Pavement too hard for feet, need different surface

Question 19 (Online Survey Only – 132 Responses)



Question 20 (Online Survey Only – 72 Responses)

Are there specific destinations within Pleasant Grove City where you would like to see pedestrian facility improvements made?

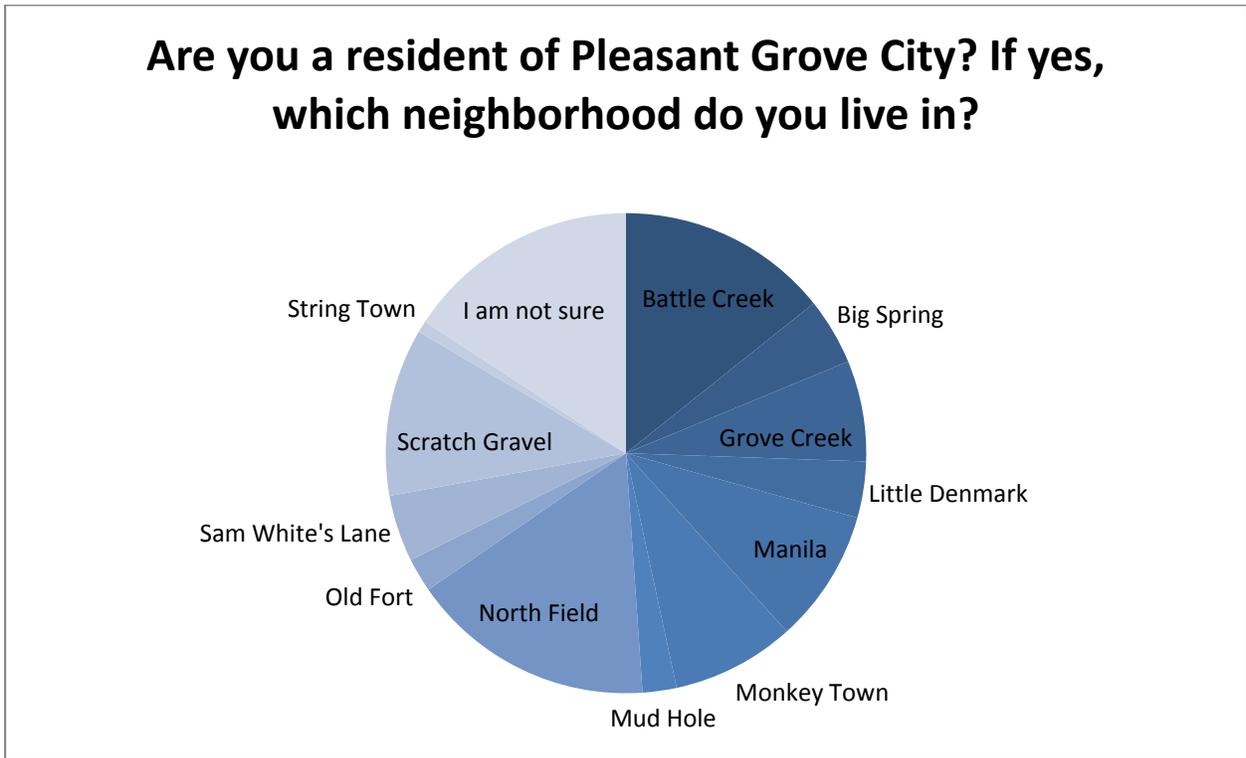
Location	Type of Improvement?
- On side streets	- More sidewalks
- On and around State Street	
- 900 West, from 2800 N. to Manila Pond	- Sidewalk
- No I would like the roads fixed before making pedestrian improvements	- Roads, please
- Main street	- Turn to pedestrian zone--it will improve business in that area
- Along Canyon Highway, every residential street should be side walked on both sides, and especially streets approaching down town and other shopping areas, like Center Street, State Street (especially out on the west end of town towards Am. Fk., 2nd South, 3rd East, 1100 North,	- Sidewalks provided, sidewalk to street transition corners so bikes don't have to jump a curb. Clear away clutter and hiding places along the Murdock and other trails, where illicit behavior could occur.

Location	Type of Improvement?
- Most neighborhood areas are great to walk through	- I like the old neighborhoods and things that are more historic. They are more interesting
- Downtown, Grove Area	- More connecting walking/biking
- Near PGJHS/ Grovecrest	- East of the junior high, there are no sidewalks and it makes walking very nerve wracking. Especially along 1100 N
- Pleasant Grove Blvd and 220 South	- Park and trails
- Locust Ave & Orchard Drive, Loader Ave	- Sidewalks
- Locust, 300 East through 700 East, Loader	- Sidewalks
- 1100 North East of 100 East	- Sidewalk
- Grove creek canyon	- Newer
- Canyon Highway	- Wider and continuous sidewalks, more street trees, safer street crossings
- Bottom of road -end of 500 south-below Valley view	- Need sidewalks
- 200 south 950 east area	- Sidewalks, or some type of shoulder
- 900 west and 2600 north	- Side walk or pedestrian lane
East Bench	- Trail that connects north and south, east with west
- 1800 North and 1300 West between 1800 N and 2600 N and State Street between 1300 W and Maceys	- Add sidewalks--especially on state street
- 1100 North, east of 100 E; 2600 North is very scary to run on as well	- Sidewalks are badly needed!
- Northfield	- Please put in asphalt running trails!!!! NOT CONCRETE!!!!
- Hiking trail to G.	- Mark the trail.
- 600 West between Center Street & 1100 North	- Sidewalks along the entire street
- Corner of Orchard and Locust	- Side walks
- On the bench	- More trail offerings
- Park to park	
- 100 North between 400 East and 600 East	- Sidewalks, please!!
- Yes!! Sidewalks needed along 900 west!! And Harvey boulevard	
- Manila Area 900 West street, 3300 North street	- Widen the shoulders along the roads
- We have plenty of places to walk. No need to make more.	

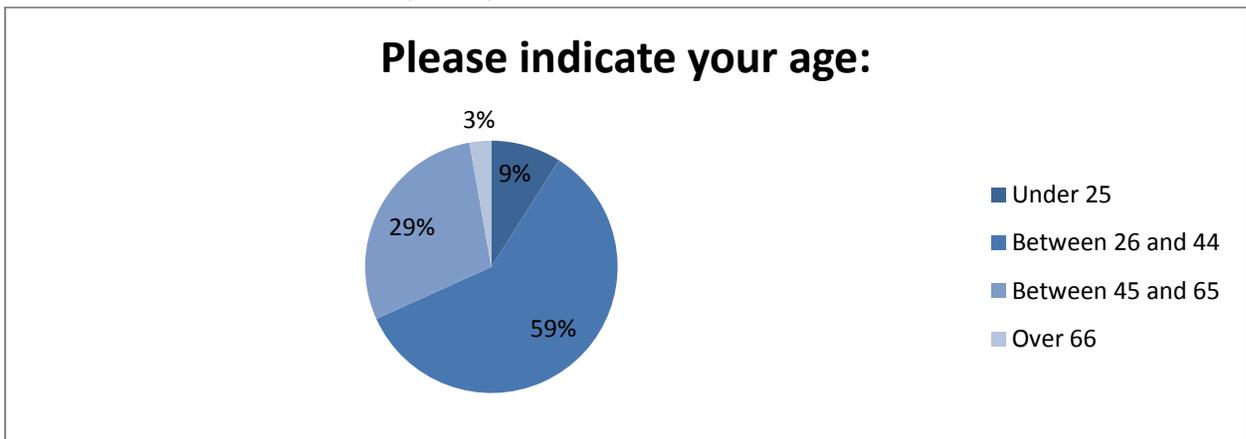
Location	Type of Improvement?
- Locust	- Very busy road but the sidewalks are terrible!
- To schools and parks	
- Along 300 East needs sidewalks. There are 3 schools along this road and no sidewalks near them.	- Build sidewalks
- Many city streets have broken uneven pavement	- Level sidewalks & repairs
- 1100 N 100 E	- Longer time to cross E/W, pedestrian flags. Anything to improve safety. I cross 3x day with group of school kids.
- 1000 S	- Salt on sidewalks
- Orchard Drive/corner Orchard Locust	- Sidewalks - An elementary school is only 3 blocks away very unsafe corner!
	- Not so many slopes on the side its awkward for runners
- 400 E between 200 S & 300 S	- Put in sidewalks
- 100 E downtown/to cemetery	- Sidewalks
- SCHOOL ZONES! Grovecrest to JH on 300 E.	- Sidewalks - kids almost get hit daily
- 1300 E, 1100 N, 600 W	- More run/bike lanes even terrain on the roads please repave/repair
- Canyon Rd, 1800 N and the main road going N/S by old Manila Church	- Sidewalks
- Close to downtown	- Better sidewalks
- 600 West	- Sidewalk
- 600 West-1300 West	- Sidewalks
- Murdock	- Trail-head
- 1050 E Battlecreek	- Sidewalks
- Same as #6	- Sidewalks!
- 1300 E	- No sidewalks
- Sidewalks	- Put them in
- All over town	- Clean shoulders
- By Valley View Elem, no sidewalks	
- 500 N and 1100 N	- Sidewalks both sides
- Above jr high and Grovecrest	- Sidewalks
- Walking trails near the ditch?	

Location	Type of Improvement?
- Southern Pleasant Grove	- Cleaner sidewalks and streets (no broken glass)
- Near the mountains	- Trail
- 1100 N	- Sidewalk all the way down the hill for school kids on both sides.
	- Sidewalks where none exist
- Center St, Battlecreek, Grove Creek, 1100 North	- Continuous sidewalks
	- Sidewalks that connect - to stay off the road
- 2600 N	- Sidewalks
- Running/bike paths up to Manila Pond	
- 1100 N	- Sidewalks
- Sides (both) of main roads	
- 1100 N East of 100 E	- Better shoulders
- All through town	- Crosswalks marked better
- If not neighborhood - around parks	

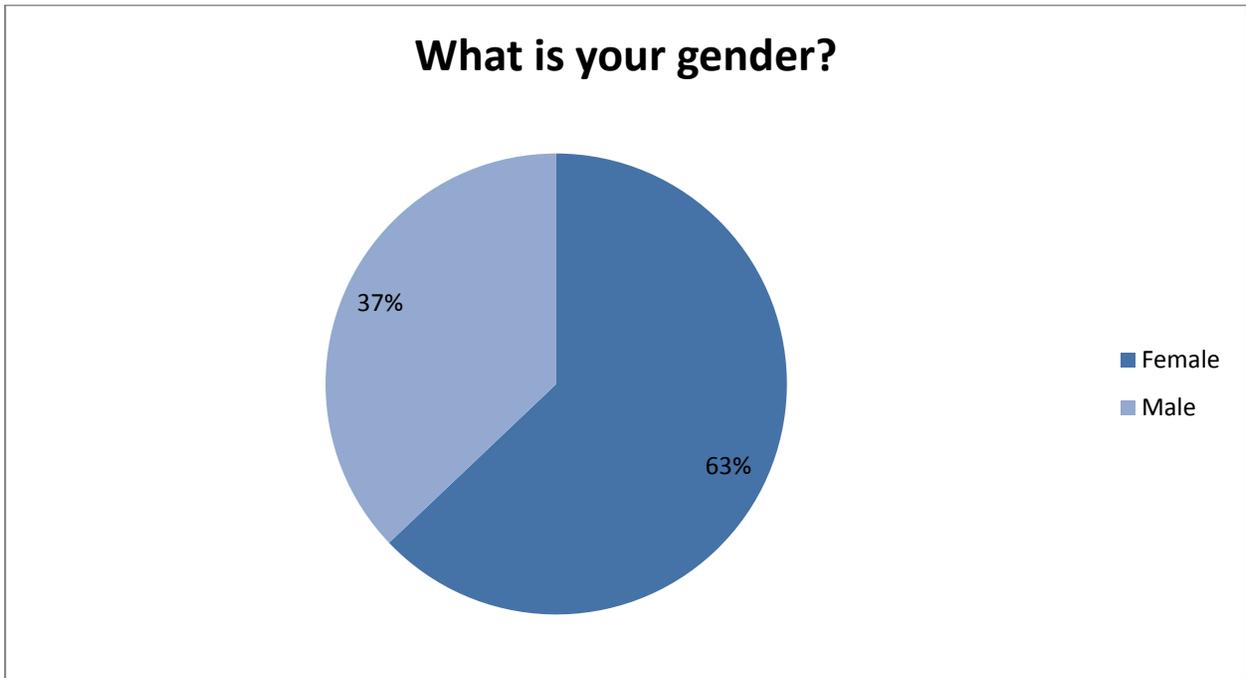
Question 21 (Online Survey Only – 133 responses)



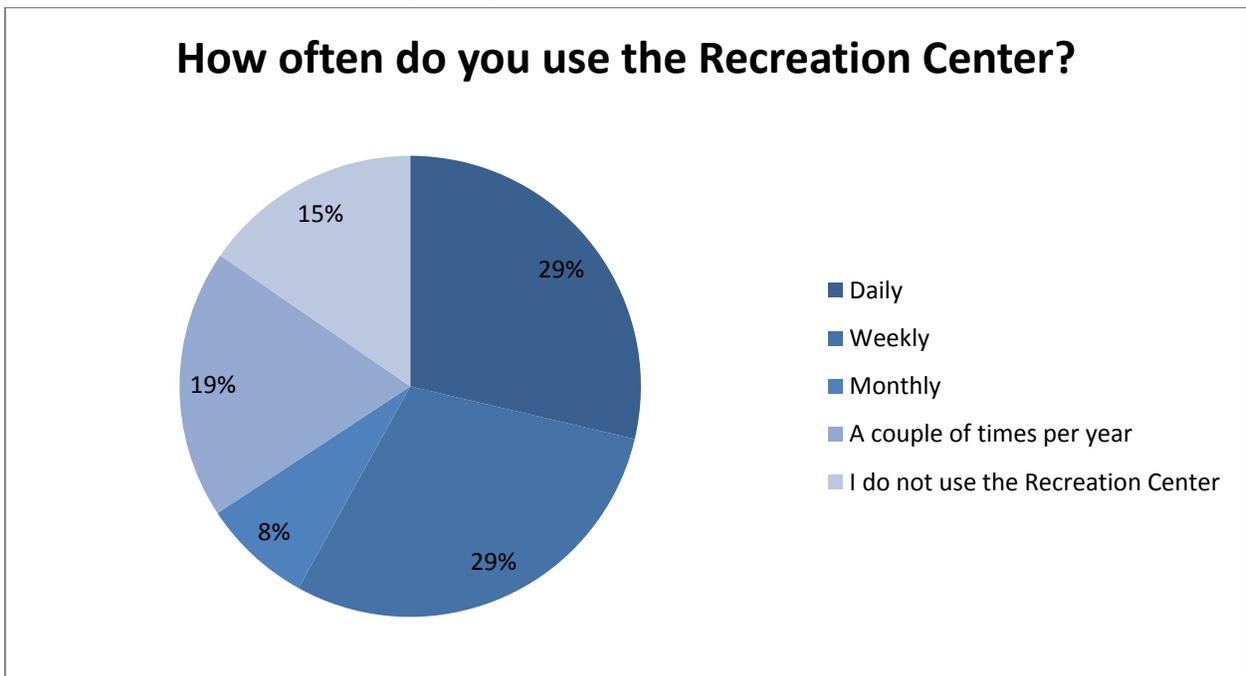
Question 22 (Online Survey Only – 145 Responses)



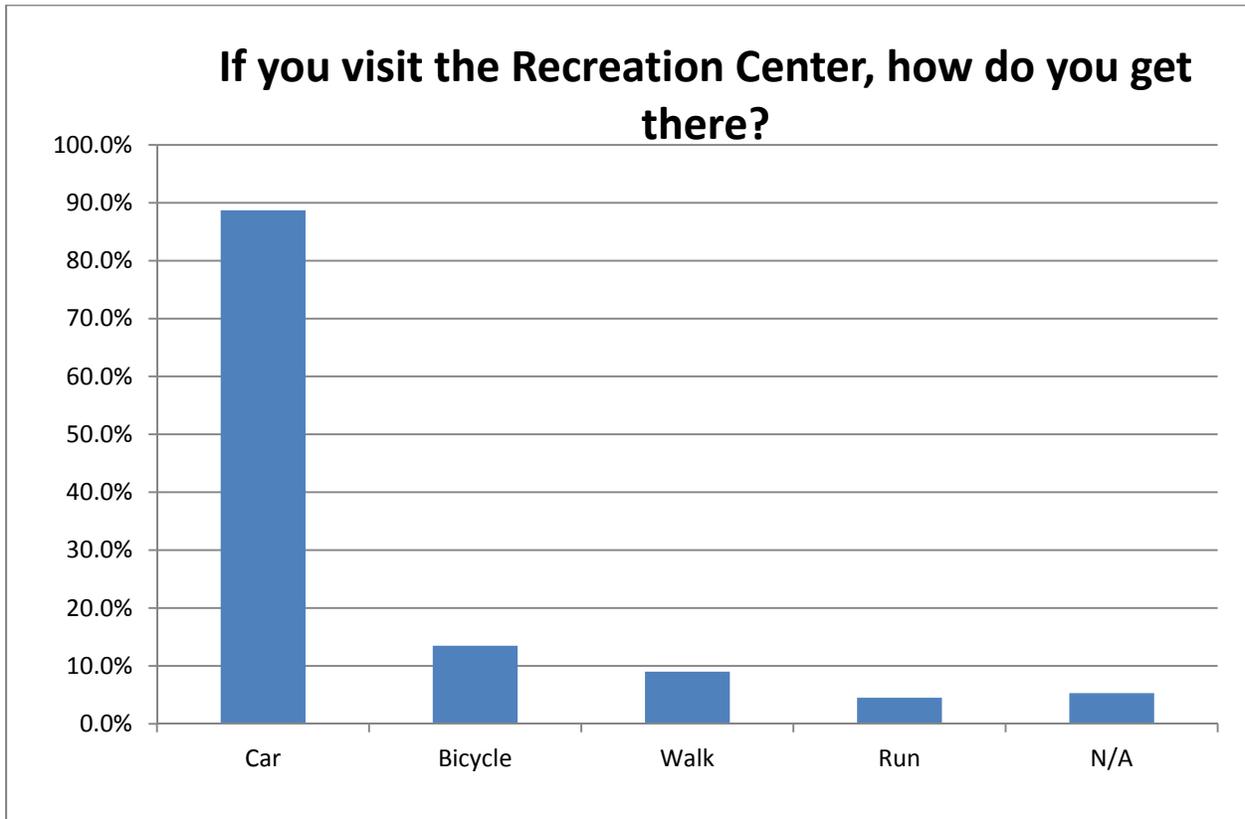
Question 23 (Online Survey Only – 143 Responses)



Question 24 (Online Survey Only – 143 Responses)

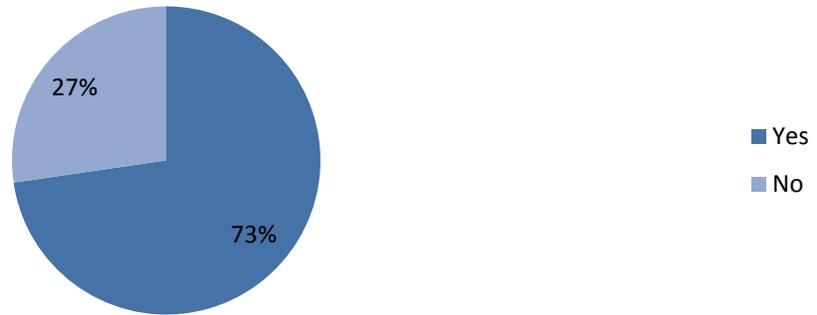


Question 25 (Online Survey Only – 133 Responses)



Question 26 (Online Survey Only – 139 Responses)

Would you be likely to use active transportation (walk, bike etc) to get to the Recreation Center if there were improved bicycle and pedestrian connections or facilities?



SUMMARY OF PUBLIC OPEN HOUSE #2

The second public open house was held on September 11, 2013, at the Pleasant Grove Community Center. A total of 56 people attended the meeting, which was advertised in the following ways:

- Board-sized display of meeting notice posted at the Community and Economic Development Building and the Community Center
- Emails sent to the project stakeholder distribution list

The purpose of this open house was to present the Draft Pleasant Grove Bicycle and Pedestrian Master Plan to the general public. The following information was presented:

- Amenities plan map and amenities process
- Bike park conceptual design
- Draft pedestrian priorities map
- Draft bicycle priorities map
- Crosswalk analysis results
- Education/encouragement techniques
- Cross sections and facility type examples
- Evaluation criteria

Meeting participants were provided with colored dots and asked to prioritize the planned facilities, evaluation criteria and education/encouragement programs.

The draft conceptual design for the bike park at Wade Springs was presented at Public Open House meeting #2. Handouts of the design along with example facility type pictures, e.g. pump tracks and restrooms, were provided. The public was asked to provide input on the proposed facility. Open-ended comment forms were also provided for input regarding the bike park conceptual design. In general there was widespread support for the bike park project:

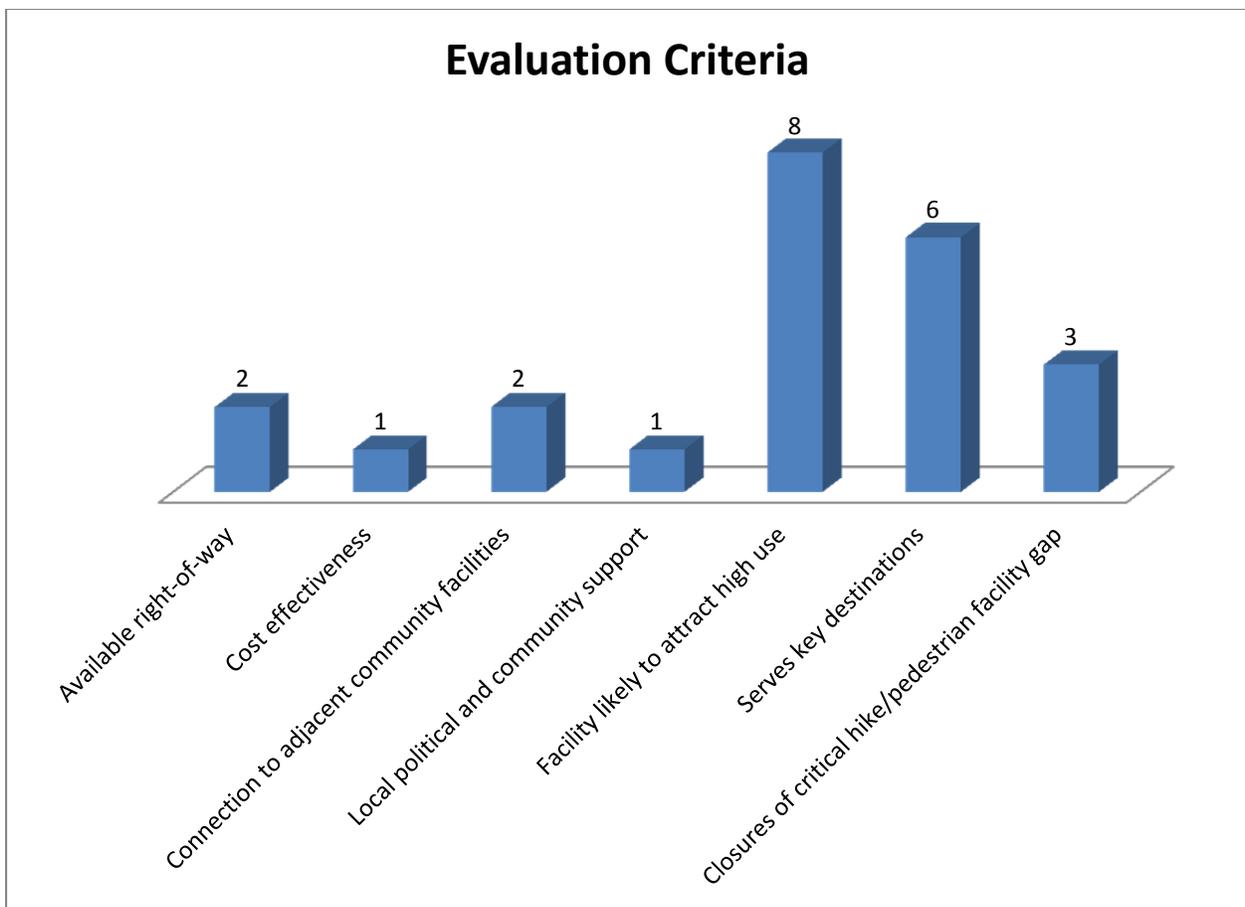
COMMENTS & SURVEY RESULTS FROM PUBLIC OPEN HOUSE #2

Bike Park Comments

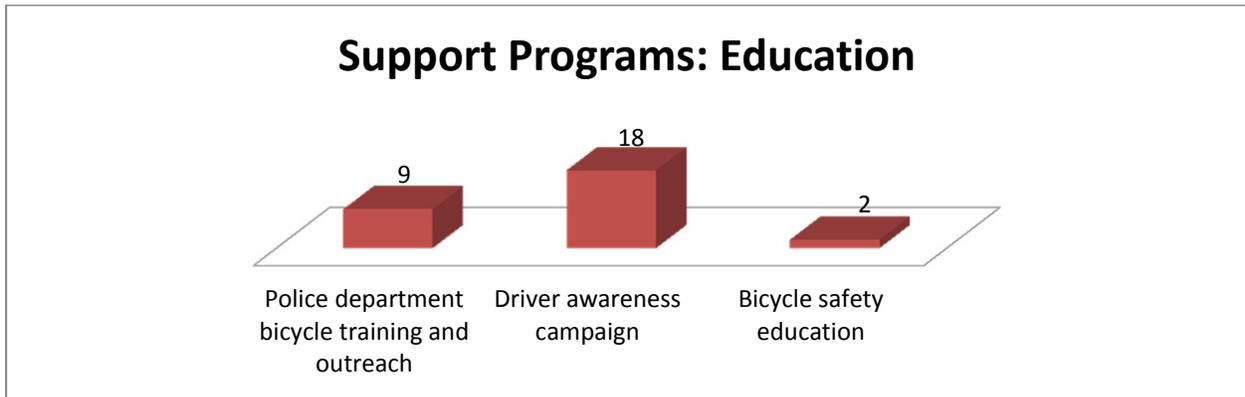
The following verbatim comments were received via the open-ended bike park comment forms:

- Looks great. Good mix of accessibility- easy and challenging terrain. Water drinking fountains should be available in deployment areas.
- The bike park would be Pleasant Grove destination for PG residents and visitors
- Bike park is excellent idea. Pump track yes. Lots of single track options is great. Difficulty levels is a good idea. Kids area should be kept to a minimum. Connecting to Shoreline trail is definite plus. Mountain bikers should have a lot of input, get local teams to spend time at site and volunteer in planning
- Make it happen!!! Could be a huge brand opportunity for PG.
- Looks good, the people like this.

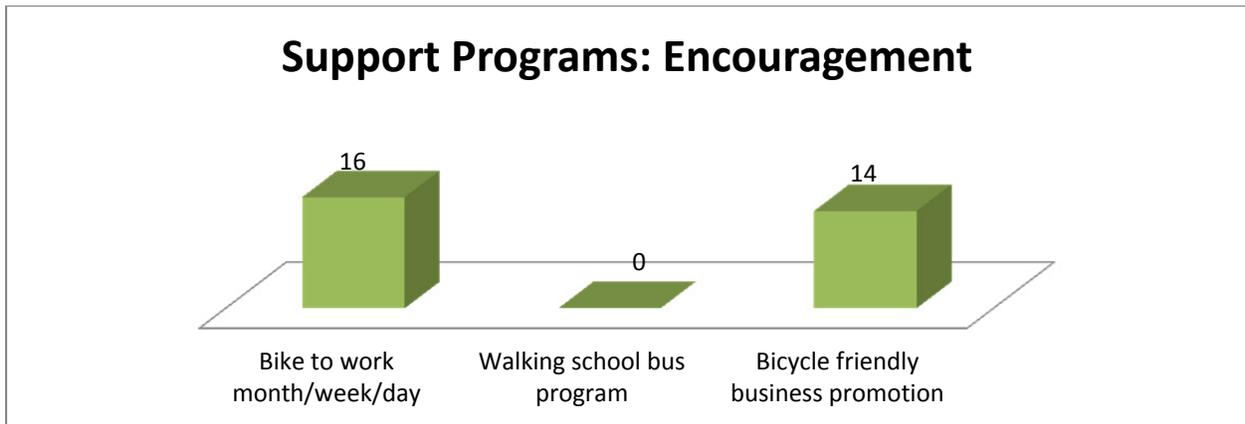
Evaluation Criteria



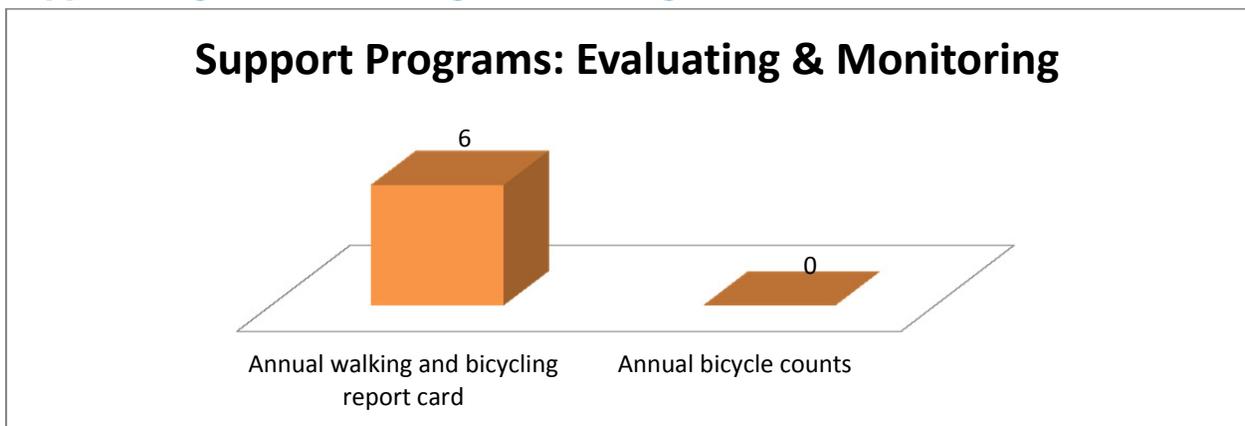
Support Programs: Education



Support Programs: Encouragement

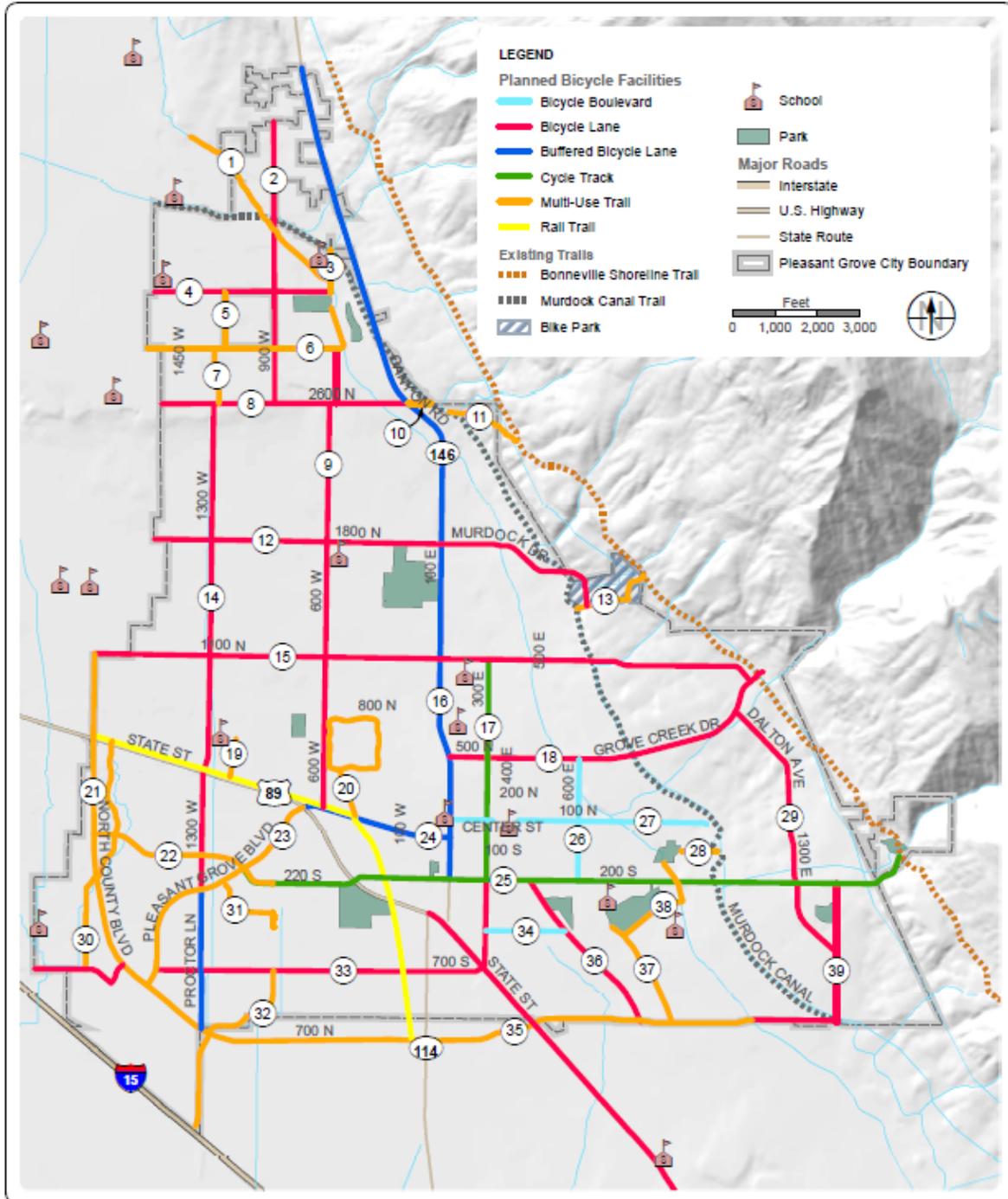


Support Programs: Evaluating & Monitoring

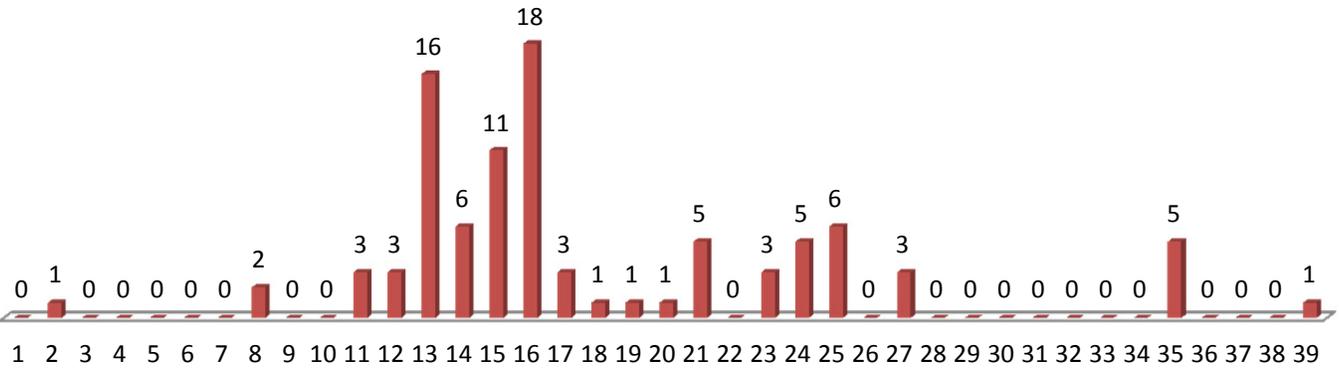


Bicycle Priorities

At the meeting, attendees were asked to select their top project priorities identified on the draft Bicycle Master Facilities Plan board shown below). Results of the prioritization exercise are shown in the following graph.



Bicycle Priorities



Note: At the public open house meeting, a draft conceptual design for a future bike park was presented (included as part of facility #13). It is suspected that facility #13 received significant support because it was shown as part of the bike park property. Without the bike park, it is unlikely that facility #13 would have received so much support.

Please List your Top 3 Pedestrian Priority Locations:

1. 1300 W at State Street (especially the South side)
2. North County Blvd.
3. State Street between PG Blvd. and N. County Blvd.
1. Fix road for entire length of 100 South. Road quality is horrible.
1. Sidewalks completed full length of 300 East, West and East sides
1. 1800 N. between 1300 We and 600 W.
2. 600 W between 1800 N. and 1100 N.
3. Canyon road from about 2300 W. on up (to the north)
1. good
1. 100 E. 300 S. recommending crosswalk paint.
2. 300 E. 300 S. recommending crosswalk paint.
3. 300 S. between 100 E and 300 S sidewalk
1. 1100 N 100 W intersection. There has always been a crosswalk at this intersection until 1100 N was repaved 2-3 years ago. 1 block from Grovecrest, 2 blocks from Jr. High- many students cross here every day going to and coming from school, especially the Jr. High.
2. please put a crosswalk back here- 600 West has crosswalk, N, S, E and W on 1100 N 600 W.
3. We need a crosswalk on 1100 N 100 W.

EXISTING CONDITIONS FIELD REVIEW SUMMARY

Stop No. & Description	Key Observations
1 & 2, Downtown Park and Pioneer Park	<ul style="list-style-type: none"> - Commercial business area with several parks and local business. - One block of 200 South has a bicycle lane but the lane ends at Main Street. 200 South appears to be a good east-west corridor to travel through the city. There are no bicycle facilities east of downtown but the street is fairly wide and would make a nice bicycle corridor. This road is also used by cyclists traveling from downtown to the high school as and cyclists going to the foothills for mountain biking.
3, High School and Recreation Center	<ul style="list-style-type: none"> - This area appears to see a lot of bicycle and pedestrian traffic as well as significant vehicle traffic. - Angled parking on 300 South can be hazardous to on-street cyclists. - Several different entrances to the high school area from all directions appear to allow bicycle and pedestrian access from adjacent neighborhoods. - The city performs maintenance on the rec center, and the school district maintains the school lots. - A new field house is being constructed; want to ensure connection between Battle Creek Park trail and new field house area.
4, Battle Creek Park	<ul style="list-style-type: none"> - Small park with trails connecting to high school area - No ADA ramps where trails cross parking areas
5, Anderson Park	<ul style="list-style-type: none"> - Park used for Boy Scout camping - Close proximity to Murdock Trail - Several existing bridge crossings over canal ditch in park - Want to maintain "natural" state of park - Park has a shortage of parking during larger events
6, Hill Park	<ul style="list-style-type: none"> - Water tank covered and converted to park - Nice loop trail used frequently for walking/jogging - Located on 1500 East, which is a good north/south connector route between Lindon/Orem and Pleasant Grove
7, Kiwanis Park	<ul style="list-style-type: none"> - Provides access to several mountain biking and hiking trails - Terminus of 200 South; many cyclists use 200 South to ride to this trailhead - Most existing mountain biking trails here are fairly technical and for more experienced riders

Stop No. & Description	Key Observations
8, Grove Creek Trailhead	<ul style="list-style-type: none"> - Access to mountain biking and hiking trails, potential city bike park location in this area - City would need to purchase property for bicycle park in this area (could work out property arrangement with Forest Service as to who owns adjacent land to the east) - Would need bridge over Grove Creek to access bicycle park site - Dalton Avenue/1300 East is a good north/south bicycle route "on the contour," which is fairly low grade and maintains elevation on the bench. - Appears to be a fairly low traffic residential area - Provides good access to adjacent mountain biking trails
9, Wade Springs Park	<ul style="list-style-type: none"> - Primary site for potential bike park - Area is protected water source and this would need consideration depending on the use - Good terrain for bicycle park, but thick brush in areas would need removal - Would connect to Murdock Trail on the west end of the property - City already owns the property
10, Murdock Canal Trailhead	<ul style="list-style-type: none"> - Recently completed trailhead for new Murdock Canal Trail - Trailhead facility with parking lot and multi-use trail along canal alignment - 1100 North is a good east/west corridor through the city and provides good connection point at Murdock Trail
14, Manila Creek Park	<ul style="list-style-type: none"> - Urban fishery with trail around reservoir - Trail sees active use from runners/joggers - 2600 North also appears to be good east/west corridor
600 West/Center Street Intersection	<ul style="list-style-type: none"> - Future rail trail along UTA corridor in this area - Will need to look closer at connection between Pleasant Grove Boulevard, State Street, Center Street, and UTA corridor in this area. - Area does not have existing pedestrian/bicycle facilities and appears to cause dangerous pedestrian and bicycle movements
18, Grove Area Park	<ul style="list-style-type: none"> - Future park site - Need to look at trail connection from here to "Slough Trail" to be added by developers, which will require crossing of North County Boulevard
19, Grove Wetlands Park	<ul style="list-style-type: none"> - "Natural" area to be converted to park on 220 South - Would work well with connectivity to trail running south through existing development and connection to Will Park and Rodeo Arena
20, Will Park, Shannon Fields, Rodeo Arena	<ul style="list-style-type: none"> - Trail access could come from rail trail northeast of the park area. Bridge crossing under State Street is wide enough to accommodate a trail here.