August 2014

Safe Routes to School Audit Report
Deerlake Middle School

Leon County Public Schools

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Acknowledgements

Renaissance Planning Group and Wendy Grey Land Use Planning, LLC would like to thank the following organizations for their input, guidance, and resources in developing this Safe Routes to School Audit report for Deerlake Middle School.

Capital Region Transportation Planning Agency (CRTPA)

Safe Routes to School (SRTS) National Partnership

Leon County Public Schools (LCS)

Florida Department of Transportation (FDOT)

Leon County Sheriff's Office (LCSO)

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RENAISSANCE PLANNING GROUP

WENDY GREY LAND USE PLANNING LLC

Chapter 1: Introduction

Project Purpose

The purpose of this Safe Routes to School (SRTS) audit report is to provide recommendations to improve student walking and bicycling rates to and from school. In addition, this report addresses other enhancements to improve the overall travel safety and convenience for students, parents and the school. Improvement recommendations are provided in the following categories: infrastructure, programs, and polices. This SRTS audit includes an array of considerations formulated from a range of research and analytical tools employed to better understand and comprehend the issues and concerns affecting current walking and bicycling rates of student to and from school. This report highlights a summary of students' school travel patterns through in-class student travel surveys, parent self-reported surveys, on-site meetings with school officials, and field reviews.

School Overview

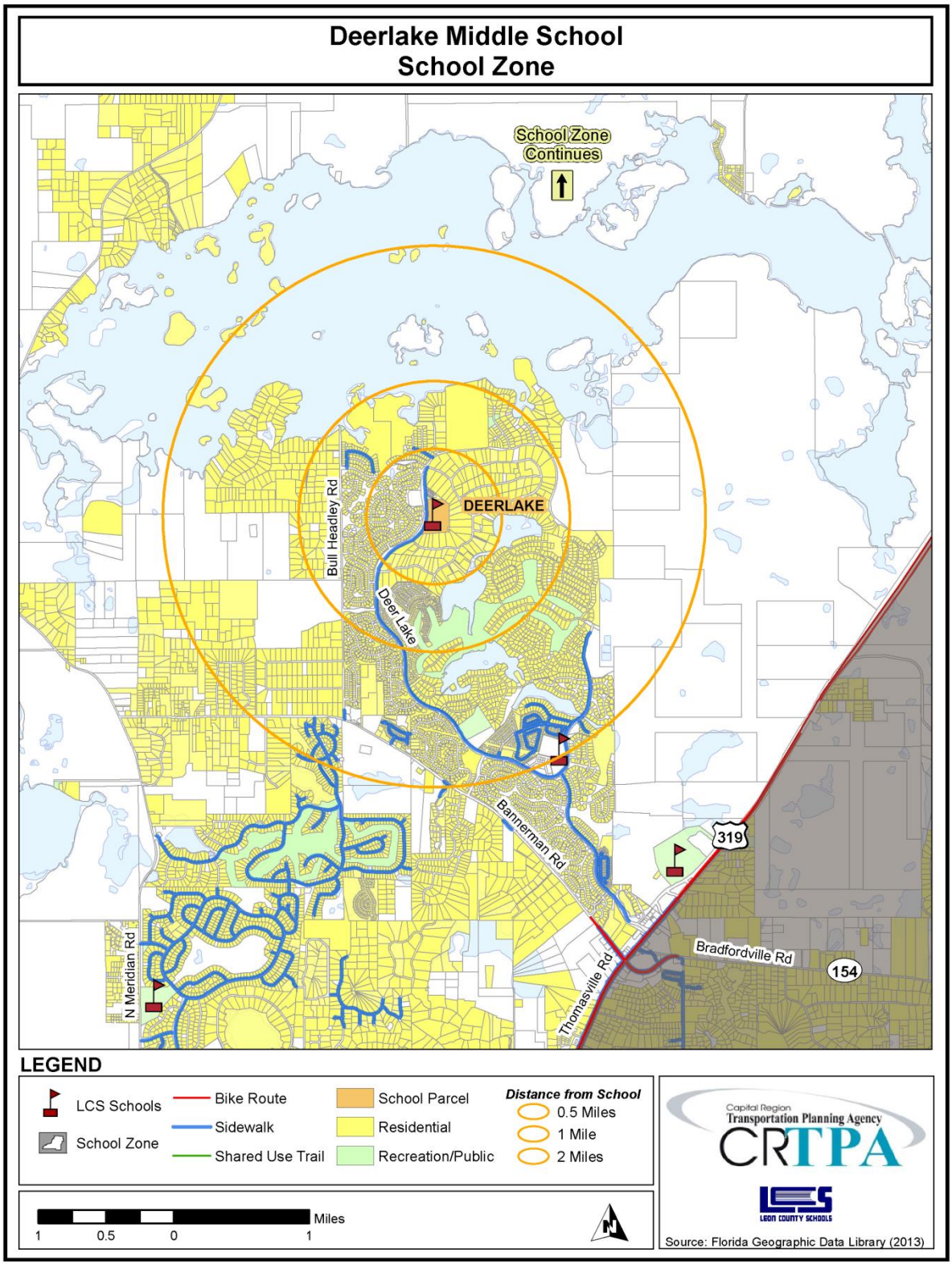
Deerlake Middle School is located at 9902 Deer Lake West, Tallahassee, 32312 in Leon County, Florida. It is part of the Leon County Public Schools system. The school was established in 1992. Regular school hours are from 9:30am to 3:50pm.

The number of students enrolled at the school, for the 2013 school year was 1,102. The school has a current capacity for 1,178 students. The school includes grade levels 6th to 8th grade.

Students attending this school feed from Hawks Rise or Killearn Lakes Elementary School and to Chiles High School.

School Zone

The Deerlake Middle school zone, located in the northern portion of Leon County, encompasses the neighborhoods of Killearn Lakes, Golden Eagle, Summerbrooke, and Ox Bottom Manor. Lake Iamonia, as well as, several smaller water bodies covers a significant amount of land within the school zone. Land uses within the school zone consist of mostly residential and recreational. The Deerlake school zone includes two major roadways. Thomasville Road runs southwest to northeast along the eastern portion of the zone. Bannerman Road runs northwest to southeast and bisects the zone into north and south. Hawks Rise Elementary School, Killearn Lakes Elementary School, and Chiles High School fall within the Deerlake school zone on Meadow Ridge Drive, Deer Lake East, and Lawton Chiles Lane, respectively. Recreational facilities within the school zone include mostly golf courses such as Golden Eagle and Summerbrooke.


Deerlake Middle School
School Zone
School Zone Continues
DEERLAKE
Bull Headley Rd
Deer Lake
Bannerman Rd
N Meridian Rd
Thomasville Rd
Bradfordville Rd
319
154
LEGEND
LCS Schools
School Zone
Bike Route
Sidewalk
Shared Use Trail
School Parcel
Residential
Recreation/Public
Distance from School
0.5 Miles
1 Mile
2 Miles
Miles
1
0.5
0
1
Capital Region Transportation Planning Agency
CRTPA
LEON COUNTY SCHOOLS
Source: Florida Geographic Data Library (2013)

Chapter 2: On-Site Meeting and Inventory

Date and Weather Conditions

The on-site inventory meeting was conducted on February 7th, 2013 with temperatures in the mid 60 degrees Fahrenheit.

Highlights and Key Observations of On-Site Meeting

During this visit, Deerlake Middle School representatives provided insight about students' travel to and from school and discussed what was working, or not working well. The meeting began by discussing current policies, programs, and administration related to students' travel to and from school. Examples of safety education programs discussed include crossing guards, safety patrols, and traffic education. Additionally, before- and after-school programs provided for students were discussed.

The school has the standard assortment of programs and activities common to middle schools in Leon County. There is fee-based before school care that begins at 7:30am; however, school administrators noted that very few students use the program. Students can begin arriving officially on campus at 8:45am and there is breakfast available at that time as well, if so desired. There are also seasonal sports practices and events on some mornings and afternoons. School officials noted that the occurrence of neighborhood crime as well as auto-related accidents is relatively low.

The Deerlake Middle School campus has a highly functional layout and design. There are reasonably sized and positioned areas for circulating, congregating and staging activities to assist in school transportation. Also, the transportation infrastructure is in good condition and of good quality, and school employees assist in the morning and afternoon with arrival and departure logistics, mostly with the automobile and bus drop-off/pick-up zones, respectfully. The campus is adequately connected to on-street sidewalks and bicycle lanes with generous signage and safety amenities. There are two crossing guards located near the main entrance along Deer Lake West. There is no student safety patrol program.

Regardless of the school's progressive involvement in the arrival and departure processes along with the campus's physical benefits, school administrators and staff noted a number of challenges facing Deer Lake Middle School. Most of these challenges point to the inordinate number of students arriving and departing by automobile. Especially for a neighborhood-oriented school rich with non-motorized facility infrastructure, walking and bicycling rates are lower than expected; not to mention, the school utilizes busing within the standard two-mile bus radius, thus, further pushing down the non-motorized commuting numbers. School administrators noted that oftentimes, especially in the afternoon, school buses and cars can obstruct one another near the south end driveways. Another challenge, which is actually more of a concern, is the presence of parents that avoid the drop-off/pick-up zones altogether and, instead, park along Deer Lake West and drop of their child.

Circulation

During a tour of the school, school representatives provided explanations of school circulation patterns as to where and how children were entering and exiting school grounds via walking or bicycle and arriving and departing by automobile or school bus.

Deerlake Middle School is relatively quite accessible for walking and bicycling. The school is surrounded by pockets of residential subdivisions that connect to the sidewalk and bicycle lane network along Deer Lake West. As a Leon County middle school; however, the school zone covers an expansive region, so there is a large area that is outside of a reasonable walking or bicycling distance. This fact along with an already relatively low percentage of students actively walking or bicycling within a reasonable distance, as well as expanded school bus service within a two mile radius, result in many automobiles and buses traversing through campus in the morning and afternoon.

All modes of travel connect to campus via Deer Lake West. Adequate sidewalks and bicycle lanes extend north and south of campus along the corridor, although a sidewalk is only located on the eastern, school side of the street. There are two designated crosswalks equipped with crossing guards to guide students from the non-sidewalk side of the street to the school. Some students bicycle to school and there are three bicycle racks located conveniently in front of the building.

Although there are many school buses, the bus drop-off and pick-up zone mostly functions adequately, with the exception of some obstructions due to conflicts with automobiles at the entry/exit driveway along Deer Lake West. There are ushers to help guide students arriving and departing school with minimal difficulty and conflict. The zone for arrival and departure is covered and leads directly to the school where students congregate before class.

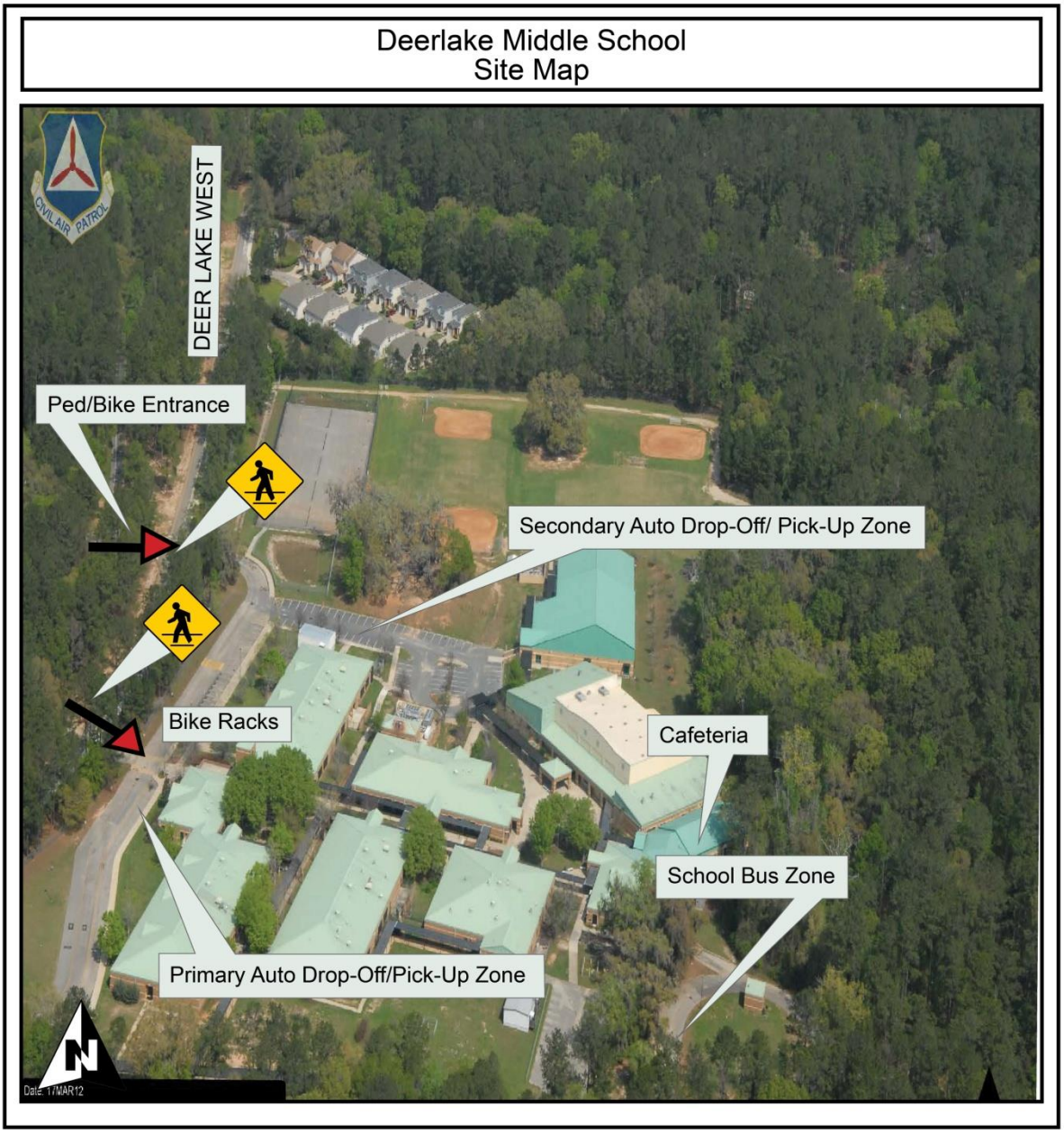
The parent drop-off and pick-up zone is a busy place during mornings and afternoons. For the amount of traffic that it handles in a given day, it actually functions fairly adequately. However, cars do sometimes backup onto Deer Lake West, disrupting neighborhood traffic flow, especially in the afternoon. The location of the school and configuration of the property may offer an opportunity to make some changes that may help to alleviate some of the congestion issues in this area. (This is addressed further in the *Issues and Opportunities* subsection, below.) There are reports of drivers not obeying the rules and directions for student drop-off/pick-up, which adds stress on neighborhood traffic along Deer Lake West. Some drivers reportedly drop-off students along the side of the roadway or in the median, leaving children to cross this corridor during peak congestion timeframes.

Inventory Map

An aerial photograph showing Deer Lake Middle School is located on the following page. As shown in the photo, the school fronts Deer Lake West. Students can access campus from this street at two different points. Bicycle parking racks are located near the front entrance of the school.

Standard width sidewalks are located along the school-side of Deer Lake West. Additionally, there are midblock crosswalks available that connect directly to sidewalks that enter onto campus.

The main automobile pick-up and drop-off zone is located directly in front of the school's main entrance. A secondary automobile pick-up and drop-off zone is located on the north side of the building. Automobiles, for either location, both enter and exit the zones at separate driveways along Deer Lake West. Parking spaces are located in both the primary and secondary automobile pick-up/drop-off areas. The bus drop-off and pick-up zone is separately located in the south side and rear of the school. Buses enter the zone from and exit onto Deer Lake West. Students congregate in the cafeteria and either of the two enclosed courtyards before school begins and prior to afternoon pick-up.


Deerlake Middle School
Site Map
DEER LAKE WEST
Ped/Bike Entrance
Secondary Auto Drop-Off/ Pick-Up Zone
Bike Racks
Cafeteria
School Bus Zone
Primary Auto Drop-Off/Pick-Up Zone
Date: 17MAR12

Issues and Opportunities

School-specific issues, opportunities, and impediments concerning the SRTS program were discussed.

With many opportunities and few impediments to walking and bicycling to school, the primary issues are mostly addressable through policies and programs. Addressing the potential for increasing walking and bicycling rates should also work to alleviate some of the stress with the automobile drop-off/pick-up zone, with fewer cars necessary to service. Regardless, there may be some opportunity to improve the flow of traffic through the automobile drop-off/pick-up zone with some potential design changes.

The location of the school and configuration of the property may offer an opportunity to make some changes that may help to alleviate some of the congestion issues in this area. The point of pick-up is currently located close to the entrance driveway along Deer Lake West, at the south end of the zone. There may be an opportunity to move this area further north along the service drive, swapping locations with the existing parking spaces at the north end of the service drive. This would allow existing stacking space on-site and potentially alleviate some of the congestion and disruption along Deer Lake West.

Chapter 3: Student Travel Survey – Summary of Results

School administrators carried out a school-wide travel survey to evaluate the ways in which students from 6th to 8th grade traveled to their school from home during a one week period. (A copy of the student travel survey can be found in **Appendix A**.)

The survey indicates that more than half of the students at Deerlake Middle School – approximately three out of five students – are dropped-off at school by car. Riding a school bus and walking to school ranked a distant second and third place at approximately 34 percent and six percent of students, respectively. A low percentage of students, only three percent, reporting biking to school and none of the students arrived to school by public bus. (A detailed description of the analysis by mode can be found in **Appendix B**.)

SUMMARY OF SCHOOL-WIDE RESULTS

	Walk	Bicycle	Automobile	School Bus	Public Bus
Average Overall	6 %	3 %	57 %	34 %	0 %

Chapter 4: Parent Survey – Summary of Results

School administrators carried out a school-wide survey to better understand the neighborhood safety issues and concerns of parents and the factors influencing their decision to allow their children to walk or bicycle to school. (A copy of the parent survey can be found in **Appendix C**.)

Parent survey results were counted and analyzed by grade level groupings of 6th-8th Grade. (A detailed description of results for the parent surveys can be found in **Appendix D**.)

The surveys of students living within two miles from the school indicate that a greater percentage of Deerlake Middle School students arrive by car in the morning, while fewer return home by the same modes in the afternoon. The car-to-school average for a typical week is 47% in the morning and decreases to 36% in the afternoon. In the afternoon, there are greater percentages of students returning home by school bus and walking. Overall, approximately one-third of students in the morning and one-third of students in the afternoon commute to and from school by walking or biking. The walk-to-school and bike-to-school average for a typical week are 20% and 11% in the morning, and 25% and 11% in the afternoon, respectively. The school bus-to-school average for a typical week is 20% in the morning and increases to 27% in the afternoon. The alternative commute mode-to school average for a typical week is 1% in both the morning and afternoon. None of the students rode a public bus in the morning or afternoon.

Neighborhood safety concerns for parents of middle-school-aged (6th-8th) children include three main concerns including issues with speeding vehicles, sidewalks/walking, and crime. There were approximately 31 comments of concern regarding issues with speeding vehicles. Specific locations where high-speed vehicles tend to be a problem are Deer Lake West, Copperfield Circle, Chadwick Way, and Bull Headley Road. Additionally, there were 11 comments of concern regarding sidewalks and walking. General concerns include the lack of sidewalks, broken sidewalks, dead animals on sidewalks, and the lack of signage to warn drivers to watch for walkers/bikers. Parents also mentioned motorists who drive in the bike lane along roads, concern for child walking when there is inclement weather, and sidewalks overgrown with shrubbery. Lastly, there were approximately five comments of concern regarding issues with crime. General concerns include lack of adult supervision in areas where jail/prison crews frequently work in neighborhoods, pedophiles, high-school students bullying middle-school students, and loose dogs.

With regard to factors that might influence their decision to allow their child to walk or bike to school, survey responses indicate that factors such as enforcing speed limits in school zones, having continuous and separated bicycle/pedestrian pathways, and accompanying children (other children) were agreed upon by parents from 6th-8th grade.

Chapter 5: Neighborhood Field Review

A neighborhood field review was conducted on February 21st, 2013. The review consisted of an assessment of accessibility, connectivity and safety along neighborhood roadways within proximity to Deerlake Middle School. On the day of the field review, temperatures were in the 50's degree Fahrenheit. Following the field review, a walk/bike shed area was delineated on a map within the school zone, surrounding the school. This chapter includes a Walk/Bike Shed section describing the approach to defining the area and an associated map for Deerlake Middle School.

Character of Neighborhood Area

Deerlake Middle School is located among suburban residential neighborhoods and subdivisions primarily comprised of single-family homes. There are few residential uses immediately north of the school due to the presence of Lake Iamonia. The neighborhood street pattern throughout the area includes mostly cul-de-sacs and curvilinear streets, many of which empty onto Deer Lake West. For the most part, streets in the area do not have high volumes of traffic and are mostly residential in nature. Bike-ped infrastructure within a two-mile radius of the school is mostly limited to the Deer Lake West roadway and the neighborhoods just north of Chiles High School. Additionally, this area is heavily forested and there are no streetlights present along roadways.

Major roadways in the school zone include:

- Thomasville Road, a southwest-northeast highway. It transitions from a four lane 60-65mph roadway north of Bannerman Road to a 40-45mph six lane roadway south of Bannerman Road.
- Bannerman Road/Bradfordville Road, a mostly east-west two lane roadway, has a posted speed limit of 45mph.
- Bull Headley Road, a two-lane rural collector roadway without shoulders, has a posted speed limit of 45mph.
- Deer Lake West, a two lane circuitous, mostly north-south roadway has a posted speed limit of 30mph.

Crash Data

Crash data were collected from the Florida Department of Transportation's (FDOT) State Safety Office for years 2009-2011. Crashes reported include any crashes within Leon County and on any local and major roadways. The data were collected for a typical school year, August 15th to May 30th. Additionally, only bicycle and pedestrian crashes that occurred during typical school commute hours, 7:00A to 9:30A and 1:50P to 4:20P, and school days, Monday to Friday, were examined.

There were no bicycle or pedestrian crashes reported within the theoretical two-mile walk/bike radius of Deerlake Middle School between 2009 and 2011.

Neighborhood Assessment

With only nine Leon County public schools serving middle school students, Deerlake Middle School is responsible for a sizeable area covering much of the northwest region of the County. However, the

school functions more like a neighborhood school with the majority of students coming from the immediately surrounding neighborhoods such as Killearn Lakes and Golden Eagle.

The overall neighborhood surrounding Deerlake Middle School lends itself well to walkability. There are numerous subdivisions with low-volume traffic streets that empty onto Deer Lake West, connecting to the school. While most of these subdivisions do not have pedestrian infrastructure, safety for pedestrians and bicyclists isn't of serious concern due to the low and slow traffic present. Most of the streets that connect to Deer Lake West have designated, marked and signed crosswalks that lead to the sidewalk system.

West of Bull Headley Road, the character becomes much more rural. Bull Headley Road is a two-lane rural roadway with no sidewalks or shoulders. It is not conducive to walking, especially for middle school-age children; therefore, the few residential homes west of this roadway are considered to be outside of a safe walk area. Bannerman Road is another barrier to walking and bicycling for students. It has a similar cross section to Bull Headley Road, however with higher traffic volumes. It is also considered to be outside of a safe walk area.

Project-specific recommendations can be found in the Findings and Recommendations chapter of this report.

Walk/Bike Shed

As mentioned previously, a walk/bike shed area was delineated on a map within the school zone, surrounding the school. The Deerlake Middle School walk/bike shed map is included on the following page.

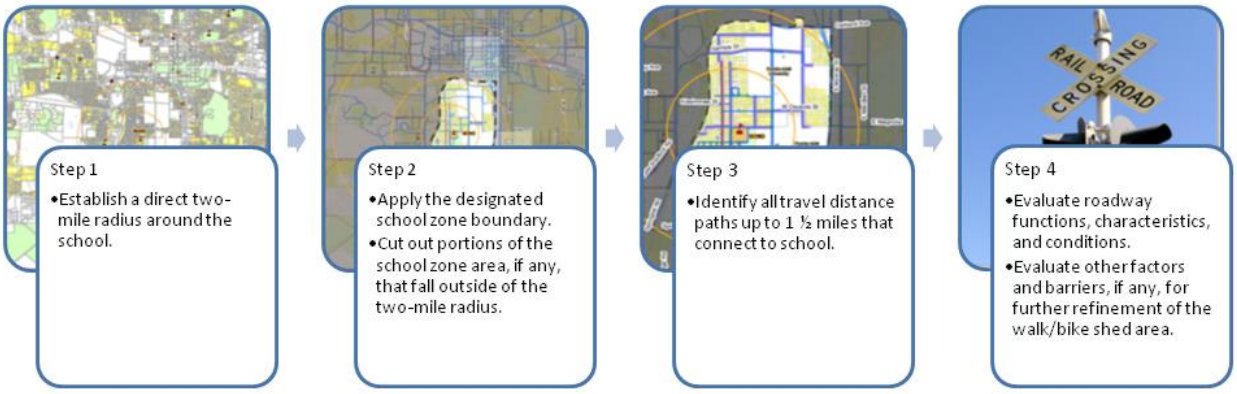
The walk/bike shed area and associated map are not meant to suggest that middle school students of all ages, maturity level, and experience should commute to and/or from school within the area delineated. Certainly, all students are not expected to walk or bike to school from practically any distance without the accompaniment of either a parent or older sibling. Also, students without the appropriate experience or maturity level will likewise be more limited in their accessibility to school. Therefore, the walk/bike shed map functions more as a guide for parents, school administrators and students to evaluate and identify areas potentially commutable and conducive to walking and bicycling to school. The final decision to walk or bicycle to school is still at the discretion of the parents.

The walk/bike shed for Deerlake Middle School extends northward to Lake Iamonia and westward to Bull Headley Road. To the east, the zone mostly follows the limits of residential neighborhoods connecting to Deer Lake West and Deer Lake East. Bannerman Road forms the southwest boundary while Tekesta Drive and Deer Lake South generally form the southeast boundary.

It should be noted that certain improvement recommendations could potentially expand the potential walk/bike shed area, due to improved conditions for walking and bicycling.

Methodology

Many factors were evaluated to ultimately determine the limits of the walk/bike shed area. The general methodology for identifying the shed included the following steps:



Evaluating Roadways

Four types of safety hazards were evaluated pertaining to roadways. They include:

- Sidewalks along roadways
- Roadways without sidewalks
- Roadway crossing points
- Railroad crossing points (along roadways)

Primary hazard conditions include, but are not necessarily limited to factors such as:

- Sidewalk width (where present)
- Separation between the walking/bicycling space and the vehicular travel space
- Intersection control measures for crossing
- Number of rail tracks (for railroad crossings)
- Traffic volume
- Traffic speed
- Roadway geometry
- Length of a hazardous condition present

Multiple factors are no doubt present for each hazard. And no two factors or situations are the same. This makes evaluation as much of an art as a science. Nonetheless, there are certain conditions in and of themselves that are considered decisive limitations to middle school children walking and/or bicycling to school. Such conditions where walking and/or bicycling are deemed hazardous include the following.

It should be noted that only one condition from either table needs to be met for a situation to be deemed hazardous.

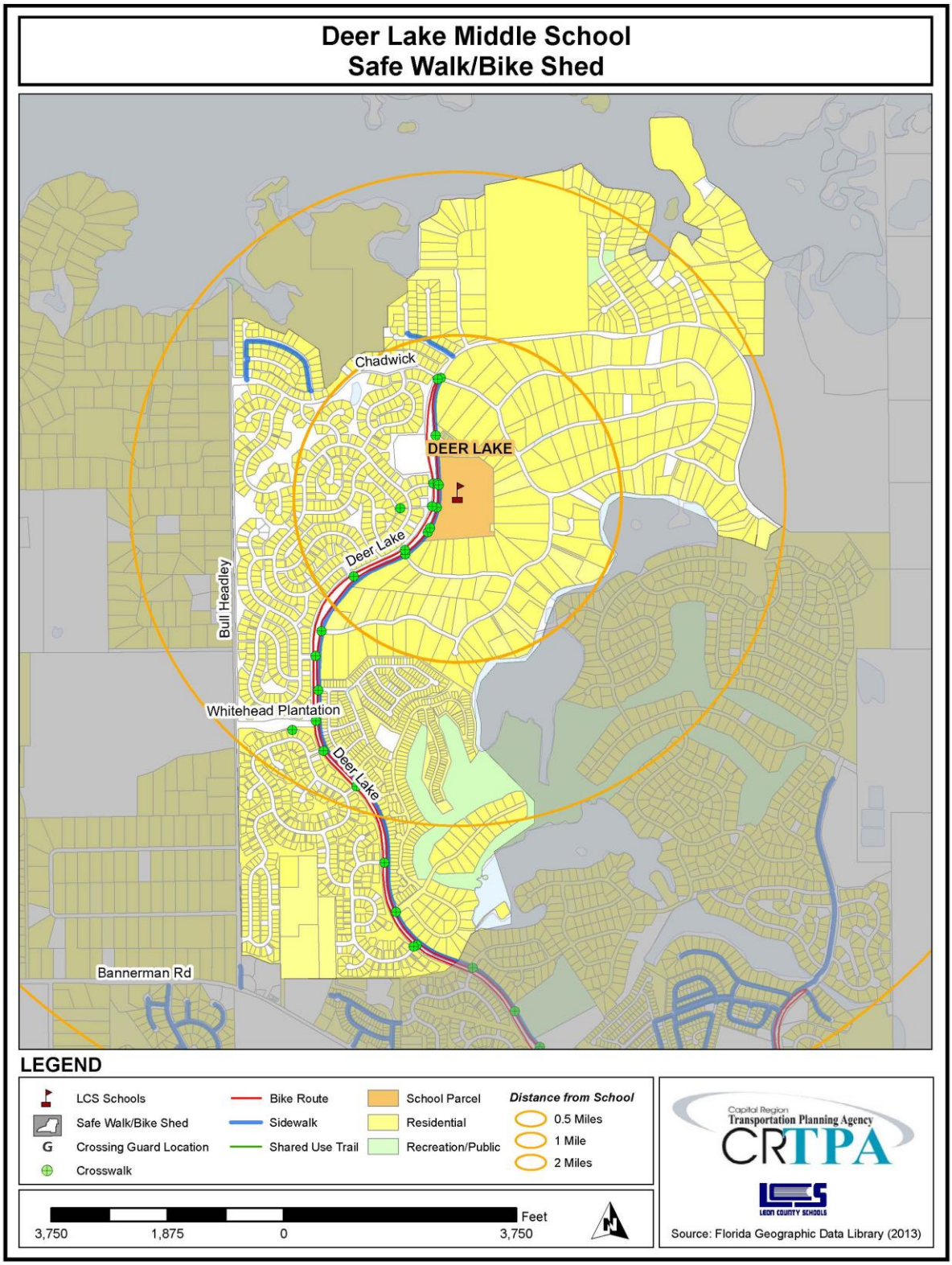
Travel Along Roadways				
Sidewalk Type	**Hazardous Conditions**			
	Type of Road	**Posted Speed Limit**	**Peak Hour Traffic**	**Length**
< 2' wide sidewalk OR without sidewalk	All roadways other than local, neighborhood streets	N/A	N/A	Exceeding 0.5 miles in length
</= 3' wide sidewalk OR </= 4' separation from traffic	More than 2 travel lanes	Greater than 35 mph	Greater than 2,000	Exceeding 1 mile in length
> 4' wide sidewalk AND >/= 4' separation from traffic	More than 4 travel lanes	Greater than 45 mph	Greater than 3,500	Exceeding 2 miles in length

Roadway Crossing Points				
Crosswalk Type	**Hazardous Conditions**			
	Type of Road	**Posted Speed Limit**	**Peak Hour Traffic**	**Length**
Unmarked Crosswalk Unsignalized Crosswalk	More than 2 travel lanes	Greater than 25 mph	Greater than 1,500	N/A
Marked Crosswalk Signalized Crosswalk	Greater than 4 travel lanes	Greater than 40 mph	Greater than 2,000	N/A

Evaluating Other Factors and Barriers

In addition to that identified above, information collected from the field review, anecdotal comments from parent surveys, discussions with school administrators and staff, and general research findings were applied to determine the ultimate walk/bike shed area commuting limits for the school. Such additional information evaluated included the following:

- Barriers such as water bodies and high-speed, restricted access highways
- Historic travel accident patterns
- Poor quality pedestrian infrastructure along routes
- Pathways of excessive length through nonresidential areas as well as excessive intersecting vehicular access drives


Deer Lake Middle School
Safe Walk/Bike Shed
Chadwick
DEER LAKE
Deer Lake
Bull Headley
Whitehead Plantation
Deer Lake
Bannerman Rd
LEGEND
LCS Schools
Safe Walk/Bike Shed
Crossing Guard Location
Crosswalk
Bike Route
Sidewalk
Shared Use Trail
School Parcel
Residential
Recreation/Public
Distance from School
0.5 Miles
1 Mile
2 Miles
Feet
3,750
1,875
0
3,750
Capital Region Transportation Planning Agency
CRTPA
LEON COUNTY SCHOOLS
Source: Florida Geographic Data Library (2013)

Chapter 6: Findings and Recommendations

The existing points of access for walkers and bicyclists to Deerlake Middle School provide efficient access onto campus from Deer Lake West. For those requiring or desiring automobile access, there may be potential to improve the situation with some reconfiguration changes to the automobile drop-off/pick-up zone; however, this area functions quite well already, and the problem is really more related to volume rather than policy, protocol or enforcement. Basically, there are probably more parents transporting their children to school than necessary, given the proximity of homes, layout of roadways and the quality of street infrastructure. This chapter includes some policy and programmatic recommendations for the school's consideration that might help to ease concerns of parents regarding speeding vehicles and increase walking and bicycling to and from school (and likewise provide some relief to both the car line and bus zone).

The neighborhood surrounding Deerlake Middle School is fairly well-connected to the school. And while there are many streets without sidewalks, most of these streets are internal residential subdivision streets with low-volume traffic that empty onto Deer Lake West. Most can be navigated by walkers and bicyclists with a fair amount of ease. Still, parents are apprehensive primarily with regard to potentially speeding vehicles along Deer Lake West. There are a number of infrastructure recommendations that would provide some benefit toward improving existing conditions, Including potentially expanding the walk/bike shed further westward across Bull Headley Road.

Infrastructure Improvements

The following recommendations supplement the current walk/bike shed area as delineated on the map, addressing infrastructure needs and improvements that would enhance walking and bicycling safety and convenience to and from Deerlake Middle School. They include both on- and off-site improvements as follows:

Deerlake Middle School On- and Off-Site Recommendations

	Improvement: On-Site	Location	From	To	Geography	Direction	Length	Comments
A1	Reconfiguration of parent drop-off/pick-up zone; optional canopy structure	Primary access drive in front of school	N/A		Front of school	N - S	approx 200-250 feet	This potential improvement should be studied further for feasibility before attempting to implement
A2	Complete Sidewalk gap	North side of north school driveway	South terminus of existing S/W on west side of Deer Lake West	West terminus of existing S/W along north side of driveway	Northwest of main building	E-W	approx 70 feet	May require relocating some signage and railing

	Improvement: Off-Site	Location	From	To	Geography	Direction	Length	Comments
B1	Easement/improved trail connection	Deer Lake West / Copperfield Circle	East side Copperfield Circle	West side of Deer Lake West	Narrow strip of property between Copperfield Circle and Deer Lake West, in front of school main entrance	E-W	approx 360 feet	Use of KLHOA greenway for a trail connection would need to be evaluated as the greenways are designated drainage easements
B2	Pedestrian activated signalized Crosswalk	Bull Headley Road	West side of Bull Headley Road to east side		South of Chadwick Way	E - W	N/A	Approx 100 feet south of intersection; project would include B4 and B5
B3	New Sidewalk	Bull Headley Road	Manor House Drive	Lloyds Cove Road	West side of Bull Headley Road	N - S	Approx 1,600 feet	Project would include B3 and B5
B4	New Sidewalk	Chadwick Way	East side of Bull Headley Road	West side of Deer Lake West	South Side of Chadwick Way	W - E	approx 3,600 feet	Project would include B3 and B4

The table, above, corresponds to an infrastructure recommendations map on the following page.

On-Site Recommendations

A1) Reconfiguration of parent drop-off/pick-up zone – There may be an opportunity to move this zone further northward, north of the main entryway. It would generally include swapping the existing drop zone with the existing parking along this service drive and restriping the through lanes. This change would allow for greater on-site stacking length of automobiles in the drop zone queuing line, helping to prevent the line from spilling into Deer Lake West. It could also provide some relief to both automobiles and buses that block each other on Deer Lake West from time to time. An optional inclusion to this improvement recommendation would be the addition of a canopy structure over the new drop zone, as it is slightly further away from the main building entrance. This potential improvement should be studied further in greater detail for feasibility before attempting to implement.

A2) Sidewalk gap connection – Complete sidewalk gap along the north side of the north driveway from the east side of Deer Lake West to the existing western sidewalk terminus. This improvement would include moving a couple existing signs and a guard rail. Currently students must walk into the busy exit lane of the driveway to continue to the other sidewalk.

Off-Site Recommendations

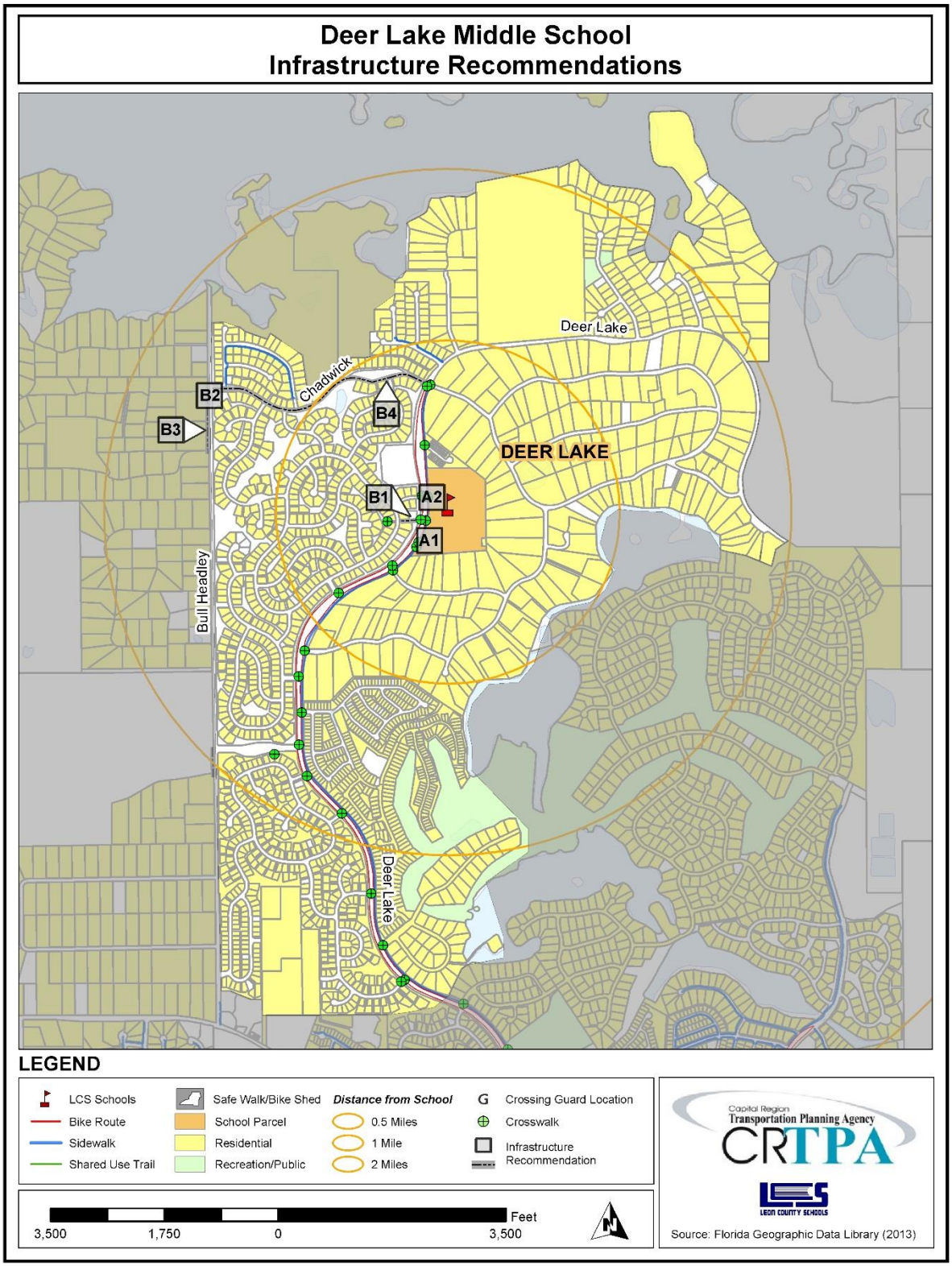
B1) There is an existing trail that connects Copperfield Circle to the western crosswalk terminus on the west side of Deer Lake West. This trail appears to be within an existing easement and provides an additional east-west connection to subdivisions west of Deer Lake West. Currently, the trail shows signs of erosion, likely from excessive use and lack of upkeep. The trail should be resurfaced to allow for safer, more convenient walking. Also, a protective railing along the edge of Deer Lake West should be considered, extending the few feet northward from the end of the trail to the beginning of the crosswalk, if feasible.

B2-B4) The following three improvement recommendations show the possibility of extending the safe walk/bike shed west of Bull Headley Road to capture additional households and current and future middle school students. Recommendations B3-B5 would ideally be programmed, respectively, and completed as packages.

B2) Install a pedestrian activated signal and crosswalk (including signage) along Bull Headley Road just south of the Chadwick Way intersection.

B3) Add a new sidewalk on west side of Bull Headley Road from the north side of Manor House Drive to the south side of Lloyds Cove Road.

B4) Add a new sidewalk on south side of Chadwick Way from east side of Bull Headley Road to the west side of Deer Lake West.


Deer Lake Middle School
Infrastructure Recommendations
Deer Lake
Chadwick
B2
B3
B4
DEER LAKE
B1
A2
A1
Bull Headley
Deer Lake
LEGEND
LCS Schools
Bike Route
Sidewalk
Shared Use Trail
Safe Walk/Bike Shed
School Parcel
Residential
Recreation/Public
Distance from School
0.5 Miles
1 Mile
2 Miles
Crossing Guard Location
Crosswalk
Infrastructure Recommendation
Feet
3,500
1,750
0
3,500
Capital Region Transportation Planning Agency
CRTPA
LEON COUNTY SCHOOLS
Source: Florida Geographic Data Library (2013)

Programs

C1) Walk and bicycle encouragement literature – Send home literature to parents, as well as make it available on the school website, about the benefits of children walking and bicycling to school. Information and statistics from the National Safe Routes to School organization can be used to highlight health and safety benefits. The literature provided to parents should highlight some specific examples of how parents and the community can make walking and bicycling to school safe and fun. Examples of programs to promote walking and bicycling include encouraging parents to coordinate with other parents to establish walking and bicycling groups (i.e. buddy programs) to help ease safety concerns; participating in Walk/Bike to School Days; creating a mileage club where students or entire classrooms keep track of how much they walk or bike to school to compete for prizes or certificates..

C2) Parent drop-off/pick-up zone protocol encouragement– Send home literature to parents, as well as make it available on the school website, about the proper drop-off and pick-up process for the school, particularly at the start of a new school year or after an extended school break. Maps of the drop-off/pick-up zone, as well as, the traffic flow pattern can be very helpful to parents. The literature available to parents should remind them to be patient and courteous to other parent drivers and clearly discourage parents from letting children out in the parking lot before the drop zone, releasing them on the side of the road, or parking on the side of the road (to wait for their child). Providing small rewards, such as gift certificates or snacks during lunch, to students whose parents follow the proper drop-off/pick-up process is typically more beneficial than punishing improper behavior.

Policies

D1) Increased enforcement along Deer Lake West – The primary concern of parents pertains to speeding vehicles. Likewise, many parents noted that they would be more willing to allow their child to walk/bike to school if speed limits were better enforced. As such greater enforcement along with speed awareness could improve walking and bicycling rates to and from school. Random, however persistent, enforcement of speed limits along Deer Lake West could help to increase speed compliance overall. Also, speed record/reveal trailers that show motorists how fast they are traveling could be placed along Deer Lake West, both north and south of the school. These temporary sign devices are known to improve speed limit compliance.

D2) Parent drop-off/pick-up zone protocol – Setting protocol for the parent drop-off/pick-up process improves the traffic conditions and creates a safer environment for automobiles, as well as, pedestrians and bicyclists.

Drop-Off Procedures

- Please stay in vehicle and pull forward to the front of either the primary or secondary parent drop-off/pick-up zone.
- Please continue to queue the line for parent drop-off along Deer Lake West, but please do not block driveways or intersections.

- Please be prepared to promptly help your child(ren) exit the vehicle with their belongings upon arriving at the drop-off point. Someone will be outside to assist and direct children into school each morning.
- If you must enter the school, please park your vehicle in the parking lot out front or on the north side of the school. Do not park in the parent drop-off/pick-up zone as this will delay others trying to drop-off their children.

Pick-Up Procedures

- Please stay in vehicle and pull forward to the front of either the primary or secondary parent drop-off/pick-up zone.
- Please continue to queue the line for parent pick-off along Deer Lake West, but please do not block driveways or intersections.
- Please be prepared to promptly assist your child(ren) entering your vehicle at the pick-up point.
- As soon as your child(ren) are securely in the car with their belongings, pull forward and exit the drop-off/pick-up zone so that other cars may pull forward and pick up their children.
- If you must enter the school, please park your vehicle in the parking lot out front or on the north side of the school. Do not park in the parent drop-off/pick-up zone as this will delay others trying to pick-up their children.

Planning-Level Cost Estimates

Planning-level cost estimates are included in the table, below. They are intended to be used as a guide. Specific, detailed cost estimates for individual projects will require closer assessment of project conditions and constructability at the time of improvement.

General Unit Cost Estimates[1]

Item	Assumptions	Unit	Average Unit Cost ($)
sidewalk	concrete sidewalk (5' wide)	linear foot	32
sidewalk	concrete sidewalk + curb (5' wide)	linear foot	150
shared-use path	multi-use trail – paved (at least 8' wide)	mile	481,140
shared-use path	multi-use trail – unpaved (at least 8' wide)	mile	121,390
pavement symbol	pedestrian crossing	Each	360
pavement symbol	shared lane/bicycle marking	each	180
pavement symbol	school crossing	each	470
paved shoulder	asphalt material	square foot	5.56
crosswalk	high visibility crosswalk (ladder or zebra striping)	each	2,540
crosswalk	standard parallel lines crosswalk	each	770
signage	bike route sign	each	160
signage	stop/yield sign	each	300
signage	no turn on red (standard metal sign)	each	220
signage	no turn on red (electronic sign)	each	3,200
signage	trail regulation sign	each	160
flashing beacon	standard beacon (system + labor/materials)	each	10,010
flashing beacon	rectangular rapid flashing beacon (system + labor/materials)	each	22,250
ped hybrid beacon	high intensity activated crosswalk (HAWK) signal	each	57,680
ped/bike detection	push button	each	350
signal	audible pedestrian signal	each	800
signal	countdown timer module	each	740

[1]Bushell, M. A., Poole, B. W., Zegeer, C. V., & Rodriuez, D. A. (2013). *Costs for Pedestrian and Bicyclist Infrastructure Improvements: A Resource for Researchers, Engineers, Planners, and the General Public.* Federal Highway Administration.

Chapter 7: Conclusion

The setup for Deerlake Middle School and surrounding neighborhoods makes it fairly easy to walk or bicycle to school within relative distance. The school is located along and accessible from Deer Lake West, which is a divided residential collector roadway equipped with six-foot wide sidewalks, bicycle lanes and adequately spaced signed and marked crosswalks. Residential subdivisions near the school include low volume streets that mostly empty onto Deer Lake West, allowing safe, convenient non-motorized travel. Regardless, the school doesn't show a correlation between such convenience and walking/bicycling rates of students. Overall, approximately 20-25% of students within a relative safe distance commute to and from school walking, while approximately 11% commute by bicycle. Relatively speaking, these percentages appear low, given that Deerlake Middle School is by and large a neighborhood-oriented school.

Some reasons for such low rates are clear while others are more complicated. One thing made clear by parents is that there are concerns with speeding vehicles, which obviously correlates with Deer Lake West, as it is one of the busier streets around. This roadway is well designed, divided, and includes many pedestrian elements to encourage walking and bicycling. Regardless, it is a residential collector that encourages higher than posted speeds for motorists connecting to major roadways that lead to primary destinations as well as specific subdivision streets that lead to home. Goals that involve increasing walking and bicycling to school must consider the need to maintain tolerable speeds along Deer Lake West.

More complicated are perceptions and methods of convenience. The surrounding neighborhoods are relatively safe with low crime rates; however, the perception of crime is real and pervasive most everywhere, with parents naturally concerned with their children's safety. To this regard, greater education and understanding of reality verses perception regarding crime can help put matters into better perspective and potentially and hopefully increase walking and bicycling rates. Besides, the more people participating in such commuting, especially in groups, also lend eyes, ears and an overall presence that criminal behavior typically avoids. Efforts made to make parents better informed of both the realities of crime in the neighborhoods and the benefits of a larger cohort of people on the street are important.

Finally, there are proven health benefits to children riding and bicycling to school. Besides the obvious physical fitness benefits, it has been shown that children who walk and bike to school are more alert and comprehensive in their daily learning. This is another point of education that is beneficial for parents and educators to know.

Deerlake Middle School has most of the physical elements to improve walking and bicycling to school. Not to mention, the school is well organized when it comes to procedure and assistance in getting kids on and off campus safely and efficiently. There are, however, a few measures that should be explored to help improve overall walking and bicycling rates to and from school, as laid out in the previous recommendations chapter. These measures along with what is already occurring in and around Deerlake Middle School will no doubt help to improve walking and bicycling safety and increase non-motorized commuting rates.

Appendices

Appendix A: Student Travel Survey

Leon County Schools

STUDENT TRAVEL SURVEY

NAME OF SCHOOL: _____

Dear Teacher:
Your help is needed to assist with a school-wide survey of how students travel to and from school each day. Beginning Monday, for each day of that week, please record the number of children in your class that came to school by school bus, city bus, car, bicycle, or by walking. Please send the results back to the office on this form, along with your name and class grade, and number of students present each day.

Please follow the script below to gather the information from your students. (The students should only be raising their hands for one mode of travel):

1) If you walked to school today, raise your hand.
2a) If you rode a bicycle to school today, raise your hand.
b) If you used a bicycle helmet today, raise your hand.
3a) If you came in a car, with either your parents or with someone else, raise your hand.
b) If you used your seat belt in a car today, raise your hand.
4) If you came by school bus, raise your hand.
5) If you came by city bus, raise your hand.

Day of Week	Number of Students						
	Question 1	Question 2a/b		Question 3a/b		Question 4	Question 5
Day 1							
Day 2							
Day 3							
Day 4							
Day 5							

TEACHER'S NAME: _____ GRADE: _____

DATE: _____ NUMBER OF STUDENTS IN CLASS TODAY:_____

Please complete and return this form to the principal's office FRIDAY. This information will allow us to better plan ways for our children to get to and from school each day.

Note to Principals:
Please reproduce and distribute this form to all homeroom or 1st period teachers at your school. It is important that **all classes are surveyed on the same day**. Project consultants will collect all survey forms the following week. THANK YOU.

Capital Region Transportation Planning Agency

Appendix B: Student Travel Survey – Detailed Analysis

The survey consisted of a one-page sheet with a script of questions for homeroom teachers to read to students as they took morning attendance. Surveys were conducted each morning during a typical week of the school year for a total of five straight days, Monday to Friday. The script prompted teachers to ask and record the number of children in their class that came to school by walking, bicycling, car, school bus, or city bus. The student travel survey was conducted in March, 2013. Twenty-four classrooms participated in the survey for a total of 506 student responses recorded. Student travel survey results were counted and analyzed for the school as a whole.

SUMMARY OF STUDENT TRAVEL SURVEY POPULATION

Total Number of Participating Classrooms	24
Total Students Surveyed (6^{th} – 8^{th})	506

Walking and Bicycling

Students were first asked if they walked to school. Then students were asked if they rode a bicycle to school. Students that rode their bike to school were further asked if they wore a bicycle helmet.

Walking and Bicycling School-Wide Travel Patterns

The school-wide student travel surveys indicate that the walk-to-school average for the week ranged from 5% to 6%, with an overall average of 6%. Overall, the bike-to-school average for the week ranged from 3% to 4%, with an overall average of 3%. Of the students that bike to school, an overall average of 27% wore a bicycle helmet. In total, the combined walk-bike average for the week ranged from 8% to 10%, with an overall average of 9%.

SUMMARY OF WALKING AND BICYCLE SCHOOL-WIDE TRAVEL PATTERNS

	Walk	**Bicycle**	**Helmet Use**	**Total Walk + Bike**
Average Overall	6 %	3 %	27 %	9 %
Highest Day	6 %	4 %	36 %	10 %
Lowest Day	5 %	3 %	21 %	8 %

Bus and Automobile Drop-Off

Students were asked if they arrived to school by automobile, with either their parents or someone else. Students that arrived by automobile to school were further asked if they had wore their seat belt. Additionally, students were asked if they arrived to school by bus, including either Leon County School buses or Star Metro public transit buses.

Bus and Automobile School-Wide Travel Patterns

The school-wide student travel surveys indicate that the automobile-to-school average for the week ranged from 56% to 59%, with an overall average of 57%. Of the students that ride to school in an automobile, an overall average of 77% wore a seatbelt. Overall, the school bus-to-school average for the week ranged from 32% to 35%, with an overall average of 34%. None of the students surveyed reported riding a public bus to school.

SUMMARY OF BUS AND AUTOMOBILE DROP-OFF SCHOOL-WIDE TRAVEL PATTERNS

	Automobile	Seat Belt	School Bus	Public Bus
Average Overall	57 %	77 %	34 %	0 %
Highest Day	59 %	80 %	35 %	0 %
Lowest Day	56 %	73 %	32 %	0 %

Appendix C: Parent Survey

Leon County Schools

PARENT SURVEY

Dear Parents: In an effort to improve traffic safety in and around our schools, we are looking for ways to reduce the amount and speed of cars, improve walking and bicycling conditions and encourage enforcement and safety education programs. Please help us by providing your opinions to the following questions. **The name of my child's school is**: _____.

1. Please provide the sex, age and grade of your child:

Sex: Male Female
Age: _____
Grade: _____

2. Approximately how far do you live from your child's school? *(circle closest answer):*

1. 1/2 mile or less
2. 1/2 mile to 1 mile
3. between 1 and 2 miles
4. over 2 miles

If you live over two miles from the school, please stop here and turn in your survey. Thank you for participating. If you live within two miles of the school, please help us by completing the questions on the following pages.

3. How does your child usually go to and from school: (*place a check on the appropriate line*)

	In the morning?	In the afternoon?
a. School bus	_____	_____
b. Car	_____	_____
c. Walk	_____	_____
d. Bicycle	_____	_____
e. City bus	_____	_____
f. Other (please explain)	_____	_____

4. Please identify specific safety problems of concern to you in your neighborhood or around your child's school *(i.e. broken sidewalks, crime areas, high-speed vehicles, etc.)* and indicate the street locations:

_____
_____
_____

Capital Region Transportation Planning Agency

Leon County Schools

5. Which of the following factors would influence your decision to allow your child to walk or bicycle to school. On a scale of 1 to 5 (1= not important to 5= very important), please rate each statement's importance as it applies to your child. If the statement does not apply, circle "NA".

I would allow my child to walk or bicycle to school more often if:	Not Important				Very Important	Not Applicable
a) Accompanied by other children	**1**	**2**	**3**	**4**	**5**	**NA**
b) Accompanied by myself or other parents	**1**	**2**	**3**	**4**	**5**	**NA**
c) Schools provided more walking and bicycling safety training for students	**1**	**2**	**3**	**4**	**5**	**NA**
d) Additional crossing guards were provided at busy intersections	**1**	**2**	**3**	**4**	**5**	**NA**
e) Crossing guards were more effective	**1**	**2**	**3**	**4**	**5**	**NA**
f) There were continuous sidewalks or bike paths from my neighborhood to school	**1**	**2**	**3**	**4**	**5**	**NA**
g) There were bicycle/pedestrian pathways separated from traffic from the neighborhood to the school	**1**	**2**	**3**	**4**	**5**	**NA**
h) We lived closer to school	**1**	**2**	**3**	**4**	**5**	**NA**
i) Speed limits were strictly enforced in school speed zones	**1**	**2**	**3**	**4**	**5**	**NA**
j) School speed zones were marked with flashing signs	**1**	**2**	**3**	**4**	**5**	**NA**
k) School speed zones were a greater distance surrounding school	**1**	**2**	**3**	**4**	**5**	**NA**
l) The school provided a secure place for storing bicycles	**1**	**2**	**3**	**4**	**5**	**NA**
m) There was a greater adult presence of parent volunteers or police officers along walk routes to school	**1**	**2**	**3**	**4**	**5**	**NA**
n) There was better street lighting along walk routes to school	**1**	**2**	**3**	**4**	**5**	**NA**
o) Please write below any additional factors that might influence you to let your child walk or bicycle to school more often:						

_____

_____

_____

_____

Capital Region Transportation Planning Agency

Appendix D: Parent Survey – Detailed Analysis

The survey consisted of a one-page double-sided sheet of paper with five questions for parents to answer. Survey copies were sent home with students early in the week. They were instructed to deliver the survey to their parents (or guardians), asking them to complete the survey and send it back with their children by the end of the week.

Parents were first asked general demographic questions pertaining to the sex and age of their child, as well as grade level. Then, parents were asked approximately how far they lived from their child's school. Families living over two miles from school were instructed to return the survey without completing the remainder of questions pertaining to walking and bicycling to school. Those claiming to reside within two miles were asked, next, how their child typically gets to and from school (for morning and afternoon, respectively). Then, they were asked to identify any safety problems of concern in their neighborhood. Finally, parents were asked to consider a range of safety and convenience factors, and how each factor might influence their decision to allow their child to walk or bike to school.

The parent surveys were conducted during the winter/spring semester of 2013. There were 274 parent surveys returned. Of those, 83 (30%) claimed to reside within the theoretical two-mile walk/bike radius of the school.

SUMMARY OF PARENT SURVEY PARTICIPATION

Total Enrollment	1,102
Total Number of Parent Surveys	274
Total Number within 2 Miles	83
Percentage of Surveys within 2 Miles	30 %

Commuting to/from School

Parents living within two miles from the school were asked how their child usually traveled to and from school, in the morning and afternoon. Choices of travel modes included: school bus, car, walk, bicycle, public bus, and other (where they were asked to explain).

SUMMARY OF SCHOOL-WIDE COMMUTING RESULTS

Morning	Average Overall
Car	47 %
Walk	20 %
School Bus	20 %
Bicycle	11 %
Other	1 %
Public Bus	0 %
Afternoon	
Car	36 %
School Bus	27 %
Walk	25 %
Bicycle	11 %
Other	1 %
Public Bus	0 %

Neighborhood Safety Concerns

Parents were asked to identify specific safety problems of concern in their neighborhood or around their child's school including problems such as broken sidewalks, crime areas, high speed vehicles, etc.). They were also asked to indicate specific street locations, where possible. Parents provided answers anecdotally. Summaries of the top neighborhood safety concerns are provided.

SUMMARY OF TOP NEIGHBORHOOD SAFETY CONCERNS

Neighborhood Safety Concern	Number of Comments
Speeding Vehicles	31
Issues with Sidewalks/Walking	11
Issues with Crime	5

Factors Influencing Decisions to Allow Students to Walk or Bicycle to School

Parents were asked about 15 different factors related to their children walking or biking to school. Parents rated each statement's importance on a scale of 1 to 5 (1=Not Important to 5=Very Important), as it applied to their child, to determine what influenced their decision to allow their child to walk or bike to school. If statements did not apply, parents marked N/A (Not Applicable).

TOP RANKING INFLUENTIAL FACTORS FOR MIDDLE-SCHOOL-AGED CHILDREN

	SCALE	1	2	3	4	5	N/A
I would allow my child to walk or bicycle to school more often if:							
#1 Speed limits were strictly enforced in school speed zones		*4*	*3*	*9*	*17*	*36*	9
#2 There were continuous sidewalks or bike paths from my neighborhood to school		*1*	*5*	*9*	*16*	*35*	12
#3 Accompanied by other children		*5*	*4*	*14*	*16*	*33*	6
#4 There were bicycle/pedestrian pathways separated from traffic from the neighborhood to the school		*2*	*3*	*12*	*19*	*28*	14