DKS
720 SW Washington St.
Suite 500
Portland, OR 97205
503.243.3500
www.dksassociates.com

MEMORANDUM

DATE: August 14, 2012

TO: Brad Moore, Kennedy/Jenks Consultants
Brett Teel, Brown and Caldwell

FROM: Brian Copeland, P.E.
Monica Leal, EIT

SUBJECT: **West Linn Land Use Application - Traffic Control Strategy Memorandum for the Water Treatment Plant (WTP)** P11130-000

1.0. Introduction

This memorandum identifies and addresses the potential impacts to transportation facilities during the construction of the Lake Oswego-Tigard Water Treatment Plant (WTP) project in West Linn, Oregon. This document provides traffic control strategies applicable to the existing transportation network to be used to access the WTP project site.

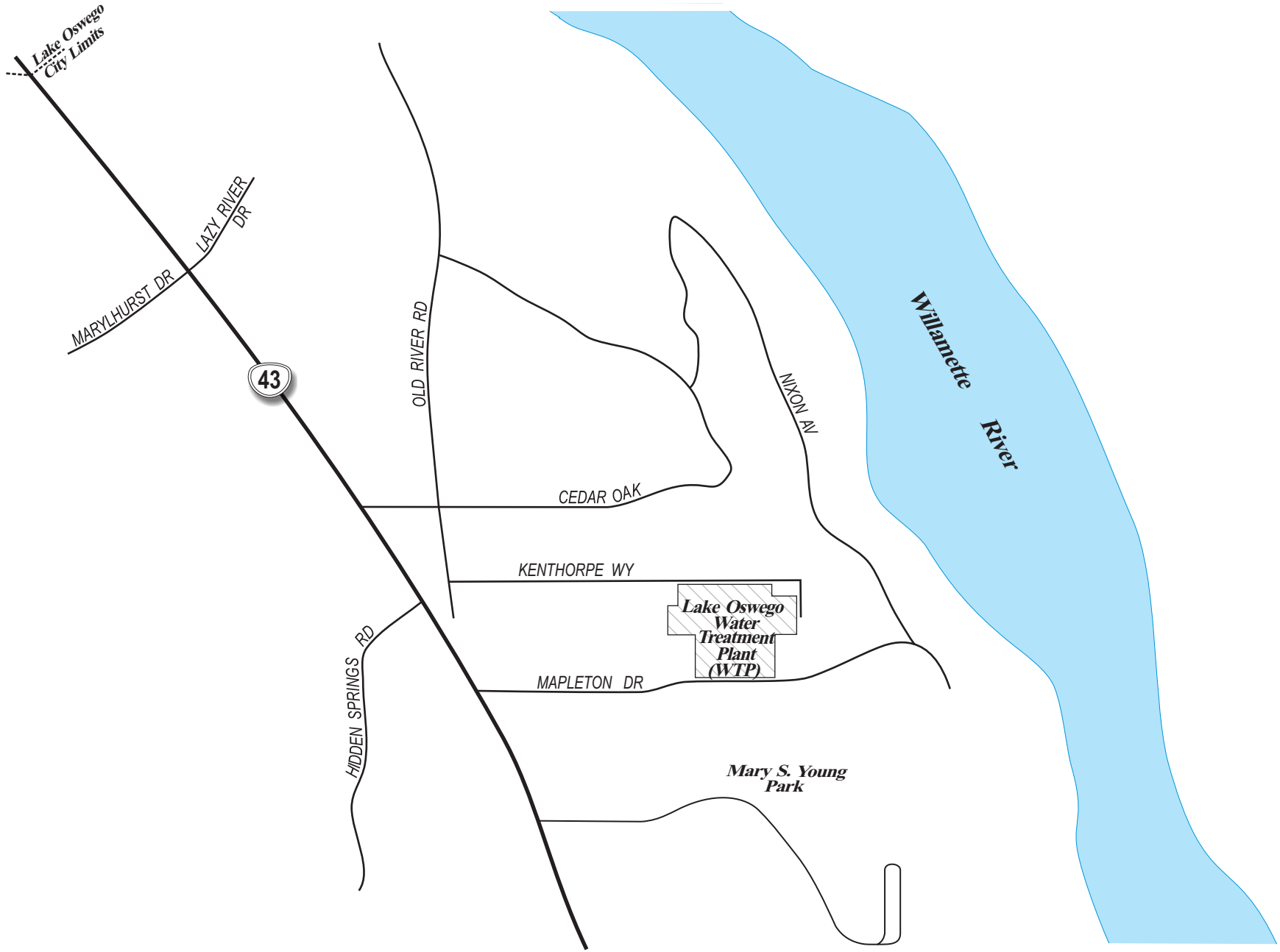
An inventory of existing transportation conditions is provided for the study area, along with estimated WTP construction traffic, general strategies for accommodating access and traffic during construction, and estimated average traffic delays due to construction traffic. Figure 1 shows the WTP study area. In addition to the plan provided in this document, the project team will work closely with the Lake Oswego-Tigard Water Partnership, City of West Linn, ODOT and Tualatin Valley Fire & Rescue (TVF&R) to ensure that the project is constructed in the safest possible way and construction impacts are kept to a minimum. This strategy is intended to assist in the establishment of traffic control provisions to be used during the WTP construction. Once engaged, the WTP construction contractor will be required to produce and submit detailed traffic control plans for review and approval.

2.0. Existing Transportation Conditions

The inventory of existing transportation conditions includes traffic volumes, transportation network characteristics, and transit information for the roadways to be used to access the project site.

2.1. Existing Traffic Volumes

New twenty-four hour directional counts and intersection turn movement counts were collected along Highway 43 (referred to herein as OR43) to help assess construction impacts to the traveling public. Collection of new traffic data in West Linn was focused on OR43 since it is a higher-volume roadway where construction could impact a significant number of drivers.



LEGEND

- WTP Construction

DKS

No Scale

Figure 1

WTP Study Area

The twenty-four hour counts were conducted on OR43 north of Robinwood Way. In addition, 24-hour traffic data was provided by the City of West Linn for Mapleton Drive and Kenthorpe Way.

New AM peak hour (7:00-9:00 a.m.) and PM peak hour (4:00-6:00 p.m.) vehicle turn movement counts were conducted at the following signalized intersections within West Linn:

- OR43/Lazy River Drive
- OR43/Cedar Oak Drive
- OR43/Hidden Springs Road

Figure 2 summarizes the twenty-four hour and turn movement counts available in the study area. Complete twenty-four hour count data can be found in Appendix A and complete turn movement traffic counts can be found in Appendix B.

2.2. Transportation Network

Transportation network characteristics include roadway jurisdiction, functional classification, Average Daily Traffic (ADT), posted speeds, number of travel lanes, roadway widths, and pedestrian and bicycle characteristics for the following five roadways within the study area:

- Mapleton Drive
- OR43
- Kenthorpe Way
- Cedar Oak Drive
- Old River Road

Table 1 shows a summary of the existing conditions for these roadways.

3.0. Estimated WTP Construction Traffic

The WTP construction will generate construction traffic volumes within the study area. The WTP construction traffic volumes used in this analysis are presented in Section 14A – Construction Management Plan (CMP) included as part of this application.

The CMP includes construction volume estimates for the entire 32-month construction period, for the peak 12 months of construction, and for the peak three months of construction. The estimates, expressed in trips per hour during daily a.m. and p.m. commute hours, are summarized in Table 2. Over the peak three months of construction, an estimated maximum of 35 one-way construction trips are anticipated during the a.m. and p.m. peak hours. These 35 one-way peak hour trips include 10 one-way truck trips (five in each direction) and 25 one-way contractor workforce trips. These numbers assume that the Contractor's craft-level personnel will be bussed to and from the site each day from an off-site parking location. Without the bussing provision, the estimated 35 one-way trips in each of the peak hours would become 117 trips. The estimated WTP construction volume estimates included in this section are used later in this technical memorandum to estimate additional vehicle delays that would be encountered during WTP construction.


1 OR43 / Hidden Springs Rd.
(856) 444
(216) 108
RT TH
LT TH
829 (532)
31 (79)
LT
(178) 299
(83) 89
RT
Collected in Nov. 2011
2 OR43 / Cedar Oak Dr.
(33) 18
(991) 410
TH LT
RT 69 (22)
LT 143 (121)
TH RT
148 (83)
945 (605)
Collected in Nov. 2011
3 OR43 / Marylhurst Dr. / Lazy River Dr.
(984) 356
(38) 10
(11) 8
RT TH LT
RT 16 (13)
TH 3 (2)
LT 14 (41)
LT TH RT
38 (15)
293 (514)
26 (70)
(25) 58
(0) 3
(39) 58
Collected in Nov. 2011
Lake Oswego City Limits
16,650 (Nov. 2011)
LAZY RIVER DR
MARYLHURST DR
43
OLD RIVER RD
NIXON AV
Willamette River
CEDAR OAK
(Mar. 2012) 200
KENTHORPE WY
Lake Oswego Water Treatment Plan (WTP)
HIDDEN SPRINGS RD
MAPLETON DR
(Mar. 2012) 350
Mary S. Young Park
LEGENDS
Intersection Turn Movements
- Study Intersection & Number
- Traffic Signal
- Lane Configuration
AM (PM) - Peak Hour Traffic Volume
LT TH RT Left•Thru•Right - Volume Turn Movement
24 Hour Traffic Counts
1 - OR43 - Between Robinwood Way & Arbor Dr.
2 - Kenthorpe Wy. - West of Lake Oswego WTP
3 - Mapleton Dr. - Between Or43 & Nixon Ave.
000 (XXX) - 24 Hour Count Vehicle (Date)
DKS
No Scale
Figure 2
WTP 24 Hour & Intersection Turn Movement Traffic Volumes

Table 1: Roadway Inventory Characteristics

Roadway	Roadway Jurisdiction	Functional Class.	Average Daily Traffic (ADT)	Posted Speed (mph)	Number of Travel Lanes	Approx. Lane Widths (feet)	Ex. Sidewalk	Ex. Bike Lanes
Mapleton Dr. (East of Water Treatment Plant)	West Linn	Collector/ Local [(1)(2)]	350	25	2 (one lane in each direction)	11	No	No
Mapleton Dr. (West of Water Treatment Plant)	West Linn	Collector [(1)]	350	25	2 (one lane in each direction)	11	No	No
OR43 - Lazy River Dr. to Mapleton Dr.	ODOT	Major Arterial/ Principal Arterial [(3)]	17,000 [(4)]	35	3 (one lane in each direction and a center turn lane)	12	No	Yes
Kenthorpe Way	West Linn	Local Street	200	25	2 (one lane in each direction)	10-12	No	No
Cedar Oak Dr.	West Linn	Neighborhood Route/Collector[(5)]	3,500	25	2 (one lane in each direction)	12	Partial	No
Old River Rd.	West Linn	Local Street/Collector[(6)]	n/a[(7)]	25	2 (one lane in each direction)	11	No	No

Notes:
[(1)] *Source: West Linn Transportation System Plan, October 2008*
[(2)] *Mapleton is classified as a collector between OR43 and Nixon Ave and as a local street south of Nixon Ave.*
[(3)] *OR43 is classified as a principal arterial by the City of West Linn and the Oregon Department of Transportation (ODOT), and as a major arterial by the City of Lake Oswego. Sources: West Linn Transportation System Plan (October 2008), City of Lake Oswego Transportation System Plan (June 1997), and Multnomah County Functional Classification Map, Oregon Department of Transportation (2009)*
[(4)] *Approx. 17,000 vehicles were recorded north of Robinwood Way (See Figure 2)*
[(5)] *Cedar Oak Drive is classified as a collector west of Old River Road, and as a neighborhood route east of Old River Road*
[(6)] *Old River Road is classified as a collector north of Cedar Oak Drive and as a local street south of Cedar Oak Drive*
[(7)] *Although traffic data is not available on Old River Road, the ADT would be comparable to that of Kenthrope Way.*

The highest burden on the existing transportation network occurs during a.m. and p.m. commute hours (rather than during typical WTP construction work hours) and includes both construction workforce trips and pro-rata construction truck trips arriving at the site by 7:00 a.m. and leaving the site starting at 4:00 p.m. on working days.

Table 2: WTP Construction Traffic Estimates

WATER TREATMENT PLANT - CONSTRUCTION TRAFFIC ESTIMATES	
Average Traffic Volume over 32 Month Construction Period	**Average Hourly Trips**
Truck trips(1)	3.5
Workforce trips (during commute hours) (2)	21.9
Average hourly trips (during commute hours) (3)	25.4
Peak 12 Month Trip Volume	**Peak 12 Month Hourly Trips**
Truck trips (1)	6.3
Workforce trips (during commute hours) (2)	29.3
Average hourly trips (during commute hours) (3)	35.5
Peak 3 Month Trip Volume	**Peak 3 Month Hourly Trips**
Truck Trips (1)	9.8
Workforce trips (during commute hours) (2)	25.0
Average Hourly Trips (during commute hours) (3)	34.8
Notes:	
(1) Hourly truck trips are based on daily truck trips per day spread over an 8 hour work period.	
(2) Workforce trips (commutes to / from the site) occur during A.M. and P.M. commute periods assumed as follows:	
- A.M. commute hour: 6:00 a.m. to 7:00 a.m.	
- P.M. commute hour: 4:00 p.m. to 5:00 p.m.	
(3) Highest construction traffic volume occurs during A.M. and P.M. workforce commute hours.	
Trip Dateline Information:	
A. Peak 12 month truck trip volume occurs during months 2 through 13.	
B. Peak 12 months of workforce trip volume occurs during months 10 through 21.	
C. Peak 3 months of truck and workforce trip volume occurs during months 9 through 11.	
D. See Submittal Section 14A Figure 14A-1 - "WTP Construction Schedule" for month number references.	

Source: Section 14A-Construction Management Plan

4.0. Proposed Traffic Control Strategies

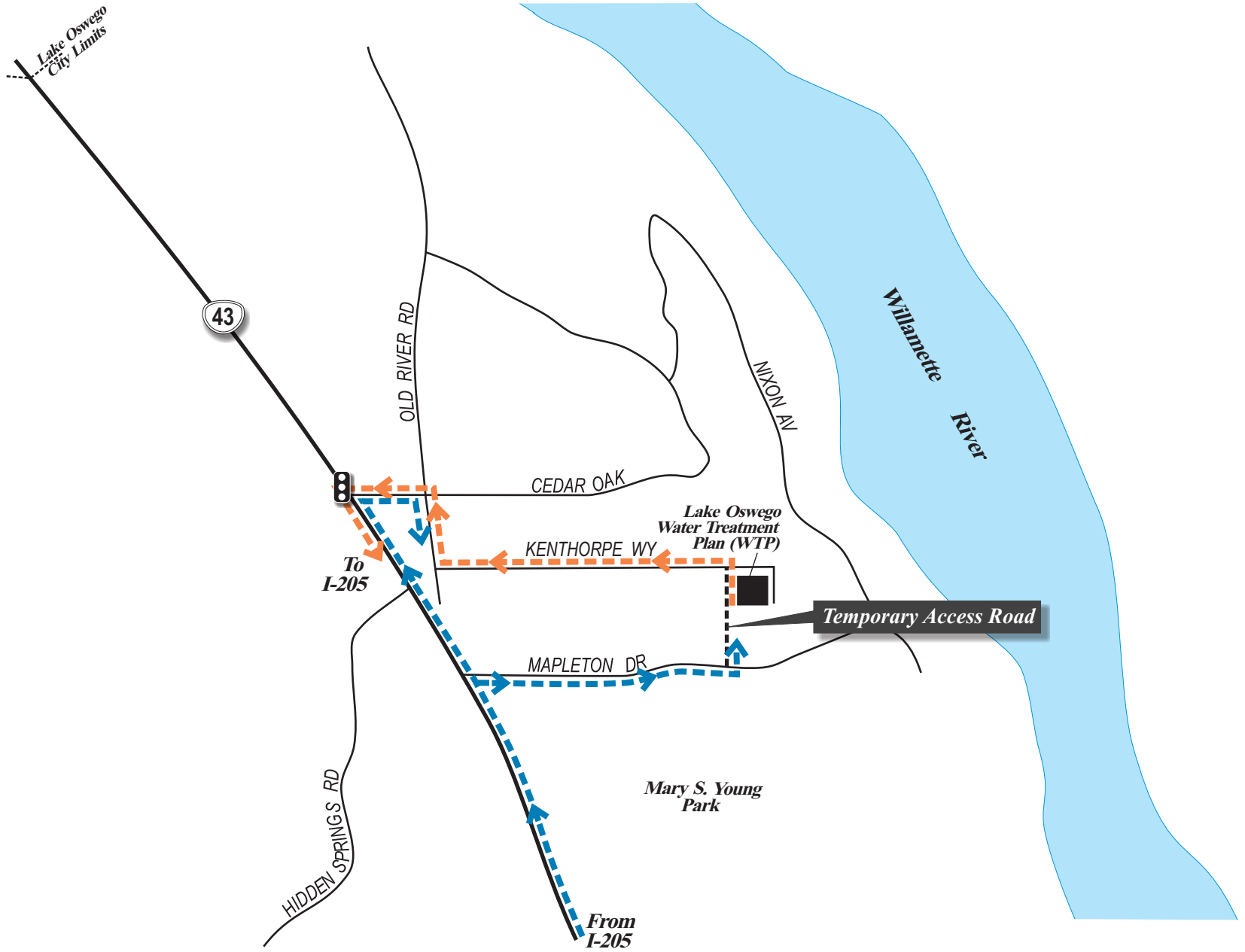
Temporary traffic control strategies to be used during the WTP construction have been evaluated in order to minimize traffic impacts during construction.

4.1. Construction Haul Routes

Two construction haul routes will be utilized for all WTP construction activities. The use of these haul routes will be critical to minimizing construction trip impacts to residential neighborhoods within the City of West Linn and to providing the best access for construction access to and from the construction area

OR43 South

Construction traffic to the WTP site will be routed from I-205 to OR43 northbound to the site via Cedar Oak Drive/Old River Road/Kenthorpe Way or Mapleton Drive to the WTP. Construction traffic from the site will be routed from the WTP via Kenthorpe Way/Old River Road/Cedar Oak Drive to OR43 southbound to I-205. Truck traffic will turn left onto OR43 southbound via the signalized intersection at OR43 and Cedar Oak Drive. Construction traffic entering and exiting Mapleton Drive at OR43 will be restricted to right turns only to minimize impacts to local residents and the surrounding transportation network. This haul route is shown in Figure 3.



LEGEND

- From I-205 to Construction Area
- From Construction Area to I-205
- Signalized Intersection

DKS

No Scale

Figure 3

WTP Construction Haul Route OR43 South

OR43 to Stafford Road
Construction traffic to the WTP site will be routed from I-205 to OR43 northbound to the WTP via Mapleton Drive or Cedar Oak Drive/Old River Road/Kenthorpe Way. Construction traffic from the site will be routed from the WTP via Mapleton Drive or Kenthrope Way/Old River Road/Cedar Oak Drive to OR43 and northbound to McVey Avenue and then Stafford Road to I-205. Construction traffic entering and exiting Mapleton Drive at OR43 will be restricted to right turns only to minimize impacts to local residents and the surrounding transportation network. This haul route is shown in Figure 4.

Construction traffic will utilize both haul routes described above depending on coordination and construction activities.

4.2. Construction Signing

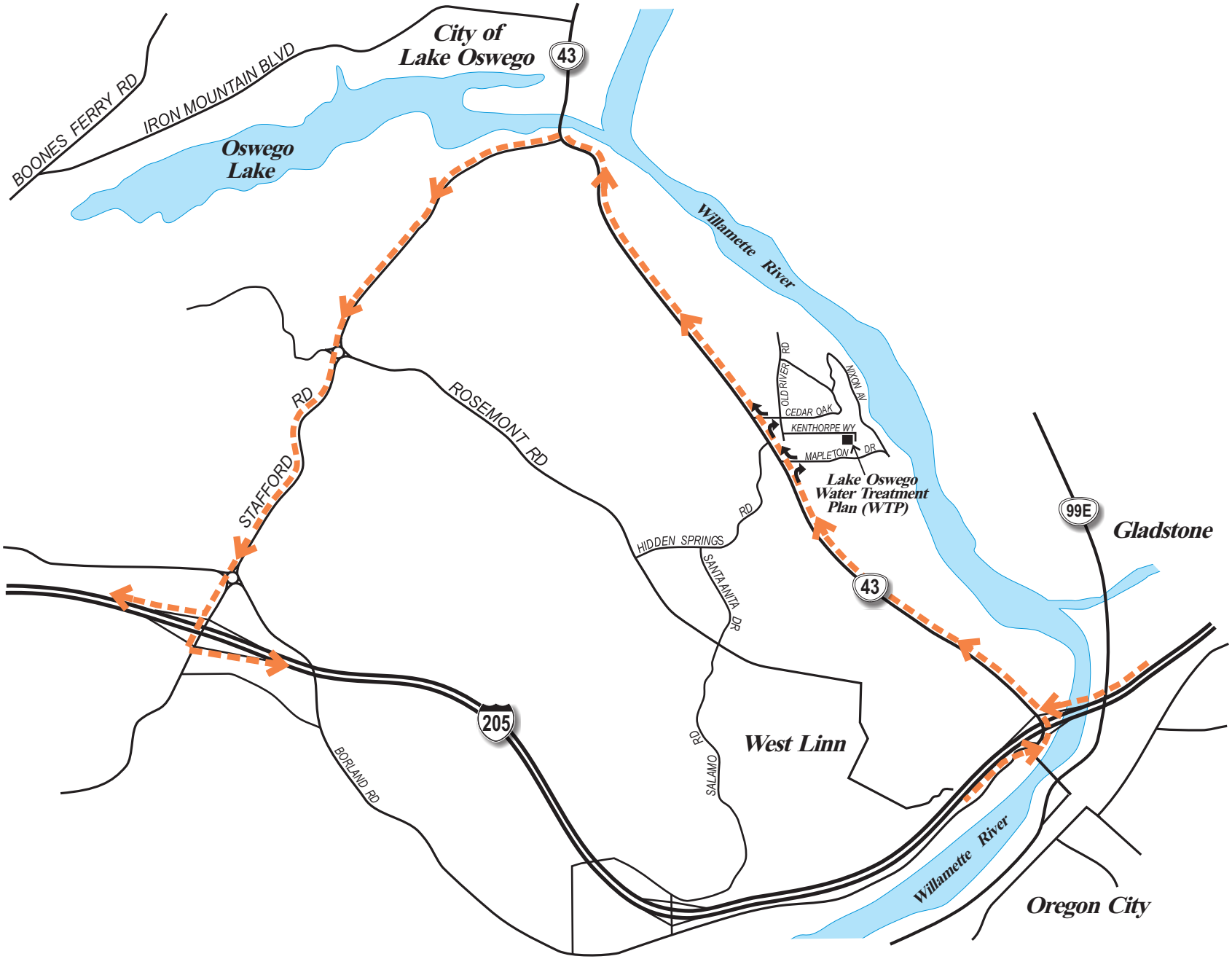
Since bicycle and pedestrian traffic will continue to share the roadway with vehicular traffic during construction, a "Combined Bicycle/Pedestrian Sign" with a "Share the Road" rider could be posted along the roadways to alert drivers of the presence of bicycles and pedestrians on the roadway. Additionally, a portable changeable message sign (PCMS) with a message such as "Trucks On Roadway/Use Caution" could be used to alert drivers to slow down during construction. Since the posted speed on these roadways is already low (25 mph), little to no benefit would likely be achieved by adding signs showing a reduced posted speed.

4.3. OR43/Cedar Oak Signal Mitigation

There are a few potential changes at the signalized intersection of OR43/Cedar Oak Drive that would help minimize the impacts associated with the additional construction-related traffic. First, the existing turn lanes on the east leg of the OR43/Cedar Oak intersection could be extended by about 50 feet to provide additional storage for construction-related traffic. Second, if excessive delays are experienced at the OR43/Cedar Oak Drive intersection during construction, the Lake-Oswego-Tigard Partnership will contact ODOT and request that additional green time be allowed for the east leg of the Cedar Oak intersection during the morning and afternoon peak periods. The current signal timings restrict the amount of green time on the side street (Cedar Oak) to between 12 and 16 seconds in the morning and afternoon peak periods.

4.4. Workforce Bussing

In efforts to minimize impacts to the transportation network, it is recommended that the Contractor's craft-level personnel be bussed to and from the site each day from an off-site parking location. This provision will reduce construction-related traffic by approximately 75 one-way trips in both the morning and afternoon peak periods.



LEGEND

- To/From Construction Site

DKS

No Scale

Figure 4

WTP Construction Haul Route
OR43 to Stafford Road

5.0. Estimated Traffic Delays

Traffic analysis was conducted to estimate the delays experienced by roadway users as a result of the additional WTP construction traffic. Traffic Analysis was based on the Highway Capacity Manual (HCM) methodology. Traffic delays were evaluated at the following two intersections:

- OR43/Cedar Oak Drive
- OR43/Mapleton Drive

For the capacity analysis of the two study intersections, three scenarios were considered. Detailed analysis results are included in Appendix C of this memorandum.

- ***Scenario 1***: This scenario assumes that the Contractor's craft-level personnel will be bussed to and from the site each day from an off-site parking area. For the purposed of analysis, the 35 additional hourly one-way trips were assumed to be split between the two available construction haul routes based on existing traffic patterns. It was also assumed that left turns at the OR43/Mapleton Drive intersection will not be allowed for construction traffic during WTP construction. Estimated construction trips were added to existing vehicle trips on the roadway network to represent total traffic volumes during construction. Average delays calculated for vehicles using Cedar Oak Drive or Mapleton Drive at OR43 were compared to average delays for these same vehicles during construction. Results of this analysis show that the *additional* average delay encountered by a vehicle using either Cedar Oak Drive or Mapleton Drive at OR43 would increase by less than fifteen seconds per vehicle during both a.m. and p.m. peak hours as a result of WTP construction.

- ***Scenario 1a***: This scenario is the same as for Scenario 1, but considers that that the 35 hourly one-way trips will use the OR43/Cedar Oak Drive intersection to access/exit the WTP construction site. This scenario will occur when the FWP construction work is in progress on Mapleton Drive, making it unavailable for WTP site access. Results of this analysis show that the *additional* average delay encountered by a vehicle using Cedar Oak Drive at OR43 would increase by less than fifteen seconds per vehicle during both a.m. and p.m. peak hours as a result of WTP construction.

- ***Scenario 2***: In order to assess the positive impacts of the bussing provision, this scenario assumes that the Contractor's craft-level personnel will *not* be bussed to and from the site each day from an off-site parking area. Without the bussing provision, construction-related trips will increase to 117 one-way trips during the morning and afternoon peak hours. For the purposed of analysis, all additional construction-related traffic will use the OR43/Cedar Oak Drive intersection to access/exit the WTP construction site. This scenario will occur when the FWP construction work is in progress on Mapleton Drive, making it unavailable for WTP site access. Results of this analysis show that the *additional* average delay

encountered by a vehicle using Cedar Oak Drive at OR43 would increase by as much as two minutes per vehicle during the p.m. peak hours as a result of WTP construction. The results of this analysis demonstrate that the bussing provision can significantly reduce impacts of construction-related traffic on the roadway network.

6.0. Proposed Access Strategies

Temporary access strategies to be used during the WTP construction have been evaluated in order to minimize traffic impacts during construction. Access strategies and associated provisions proposed to be incorporated into the WTP construction contract are identified below.

6.1. Pedestrian and Bicycle Accessibility

Existing pedestrian and bicycle facilities will be maintained during the WTP construction. Figure 5 shows the overall pedestrian and bicycle circulation and access plan to be maintained during the WTP construction.

Construction traffic added to the existing roadway network during WTP commute and workday hours will increase roadway usage between 6:00 a.m. and 5:00 p.m. each work day. Although roadway usage will be increased during construction, existing pedestrian and bicycle access will be maintained during construction. There are no sidewalks or dedicated bike travel lanes along the northern site access route (Old River Drive or Kenthorpe Way) or along the south access route (Mapleton Drive), beyond intermittent short sections of sidewalk. At present, along Old River Drive, Kenthorpe Way, and Mapleton Drive the public uses the paved roadway sections for pedestrian purposes. Sidewalks exist along Cedar Oak Drive and their usage is not anticipated to be impacted.

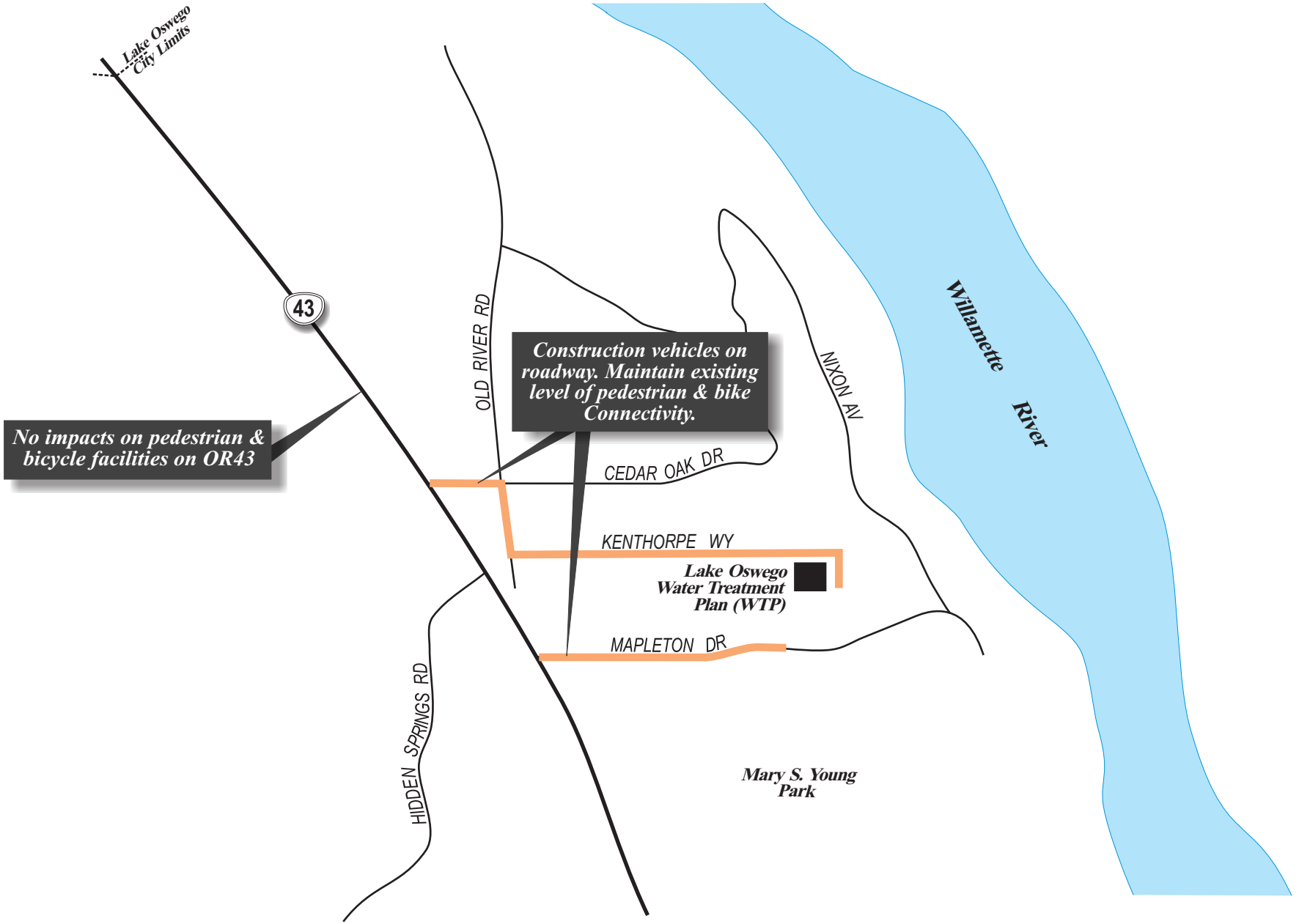
6.2. Transit and School Bus Access

6.2.1. Transit Bus Traffic

Transit service within the project limits is provided by TriMet. The following TriMet bus route travels along OR43 within the study area:

TriMet Route Number 35 travels through West Linn and Lake Oswego along OR43, connecting the Oregon City Transit Center with downtown Portland. There are multiple bus stops and shelters along OR43. It operates between approximately 4:30 AM and 1:30 AM during weekdays and between 5:30 AM and 1:30 AM during weekends. Average bus headways range from 13 and 60 minutes.

Impacts to Tri-Met Route Number 35 are expected to be minor. The WTP physical construction work does not extend to Hwy 43 and so will not impact the existing bus stops located near the OR43/Cedar Oak Drive and OR43/Mapleton Drive intersections beyond minor vehicle delays associated with the added construction traffic.



LEGEND

- Roadways to be Impacted by WTP Construction

DKS

No Scale

Figure 5

WTP Pedestrian & Bicycle Circulation & Access Plan

6.2.2. School Bus Traffic

The Rosemont Ridge Middle School, the West Linn High School, and the Cedaroak Park Primary School have school bus routes that travel along Cedar Oak Drive. Since the WTP physical construction work does not extend to Cedar Oak Drive, there will be no impact to school bus routes beyond minor vehicle delays associated with the added construction traffic.

6.3. Emergency Vehicle Access

The WTP contractor work in the public right-of-way along Mapleton Drive and Kenthorpe Way will be limited to utility connections and half-street improvements along site frontages. During this work the contractor will be required to provide 12-foot wide minimum emergency access at all times to all residential property impacted by this work.

The WTP contractor will be required to coordinate on a regular basis with Tualatin Valley Fire & Rescue (TVF&R) to ensure that, in the case of an emergency, emergency vehicle response times are not impacted. The WTP contractor will be required to notify TVF&R at least one week in advance of performing work in the public rights-of-way on Mapleton Drive and Kenthorpe Way for half street improvements. Additionally, a TVF&R representative will be invited to participate in weekly WTP construction progress meetings, or through other project communication measures, to ensure ongoing coordination and communication throughout project construction.

7.0. Conclusion

This memorandum addresses the potential impacts to transportation facilities during construction of the Lake Oswego-Tigard Water Treatment Plant in West Linn, Oregon. The existing transportation network capacity is adequate to accommodate existing and additional project-related construction traffic. Results of traffic analysis show that the *additional* average delay encountered by a vehicle entering or leaving either Cedar Oak Drive or Mapleton Drive at OR43 would increase by less than fifteen seconds per vehicle during both a.m. and p.m. peak hours as a result of WTP construction, assuming the Contractor's craft-level personnel are bussed to and from the site each day from an off-site location. Construction traffic entering and exiting Mapleton Drive at OR43 will be restricted to right turns only to minimize impacts to local residents and the surrounding transportation network. The traffic control strategies presented in this memorandum will minimize access and traffic-related impacts resulting from the construction of the WTP. Specific considerations have been made to maintain pedestrian and bicycle circulation and access, transit and school access, and emergency vehicle access during construction. Traffic control strategies are presented that will minimize construction-related traffic impacts and ensure that the WTP will be constructed as efficiently and safely as possible.

Appendix

Appendix A – 24-Hour Counts/Hourly Traffic Volume Profiles

Appendix B – Turn Movement Counts

Appendix C – Traffic Analysis Results

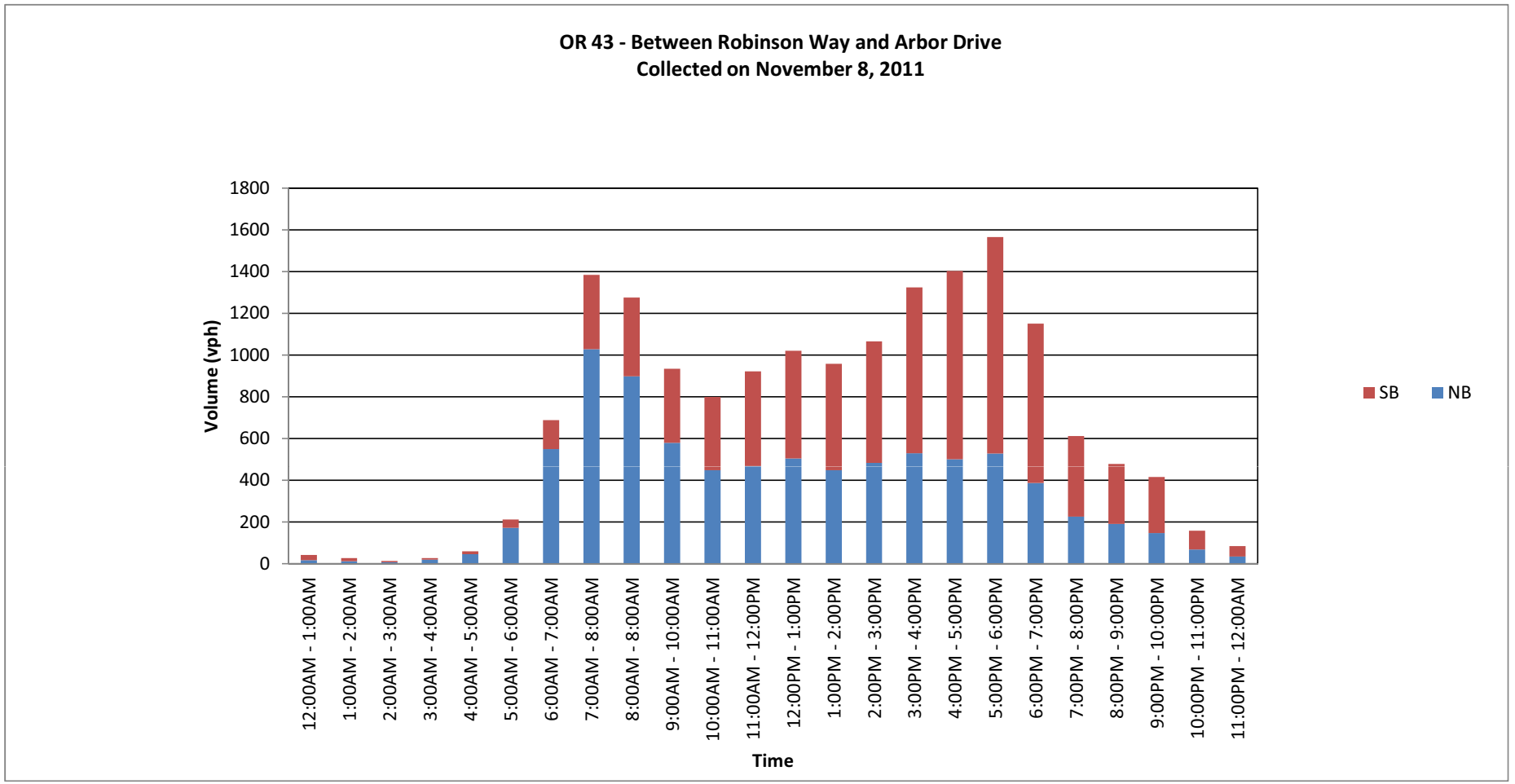
Appendix A – 24-Hour Counts/Hourly Traffic Volume Profiles

All Traffic Data Services, Inc.
15105 SE 17th St. Vancouver, WA. 98683
503-833-2740

Site Code: 7
Hwy 43 N-O Robinwood Way

Start Time	08-Nov-11 Tue	NB	SB	Total
12:00 AM		17	25	42
01:00		13	14	27
02:00		8	6	14
03:00		20	8	28
04:00		46	14	60
05:00		172	40	212
06:00		550	138	688
07:00		**1028**	356	**1384**
08:00		898	377	1275
09:00		580	354	934
10:00		448	352	800
11:00		468	**454**	922
12:00 PM		504	516	1020
01:00		448	510	958
02:00		483	583	1066
03:00		**530**	794	1324
04:00		501	902	1403
05:00		528	**1037**	**1565**
06:00		387	763	1150
07:00		226	386	612
08:00		191	287	478
09:00		147	269	416
10:00		69	89	158
11:00		35	50	85
Total		8297	8324	16621
Percent		49.9%	50.1%	
AM Peak		07:00	11:00	07:00
Vol.		1028	454	1384
PM Peak		15:00	17:00	17:00
Vol.		530	1037	1565
Grand Total		8297	8324	16621
Percent		49.9%	50.1%	

ADT ADT 24,714 AADT 24,714


OR 43 - Between Robinson Way and Arbor Drive
Collected on November 8, 2011
Volume (vph)
1800
1600
1400
1200
1000
800
600
400
200
0
12:00AM - 1:00AM
1:00AM - 2:00AM
2:00AM - 3:00AM
3:00AM - 4:00AM
4:00AM - 5:00AM
5:00AM - 6:00AM
6:00AM - 7:00AM
7:00AM - 8:00AM
8:00AM - 8:00AM
9:00AM - 10:00AM
10:00AM - 11:00AM
11:00AM - 12:00PM
12:00PM - 1:00PM
1:00PM - 2:00PM
2:00PM - 3:00PM
3:00PM - 4:00PM
4:00PM - 5:00PM
5:00PM - 6:00PM
6:00PM - 7:00PM
7:00PM - 8:00PM
8:00PM - 9:00PM
9:00PM - 10:00PM
10:00PM - 11:00PM
11:00PM - 12:00AM
Time
SB
NB

City of West Linn Traffic Study

Hi-Starr ID#: 4280

Begin Date: 03/06/12 Time: 2:00PM End Date: 03/06/12 Time: 2:00 PM

Street: 4160 Kenthorpe Way

Lane Direction: W. Bound Total Hours: 48

Posted Speed: 25

Report

Total Volume: 210 Daily Average: 105

Speed	Volume
0-19	42
20-24	87
25-29	51
30-34	19
35-39	10
40-44	0
45-49	1
50-54	0

Average Speed: 24 MPH

85 Percentile: 29.94 MPH

Nu-Metrics Traffic Analyzer Study
Computer Generated Summary Report
City: West Linn
Street: Kenthorpe Way 4160

A study of vehicle traffic was conducted with HI-STAR unit number 4280. The study was done in the W. Bound lane on Kenthorpe Way 4160 in West Linn, OR in Clackamas county. The study began on 03/06/2012 at 02:00 PM and concluded on 03/08/2012 at 02:00 PM, lasting a total of 48 hours. Data was recorded in 15 minute time periods. The total recorded volume of traffic showed 212 vehicles passed through the location with a peak volume of 7 on 03/08/2012 at 12:45 PM and a minimum volume of 0 on 03/06/2012 at 02:00 PM. The AADT Count for this study was 106.

SPEED

Chart 1 lists the values of the speed bins and the total traffic volume for each bin.

Chart 1

0 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 >
0	8	34	87	51	19	10	0	1	0	1	0	0	0	0

At least half of the vehicles were traveling in the 20 - 24 mph range or a lower speed. The average speed for all classified vehicles was 24 mph with 38.8 percent exceeding the posted speed of 25 mph. The HI-STAR found 0.47 percent of the total vehicles were traveling in excess of 55 mph. The mode speed for this traffic study was 20 mph and the 85th percentile was 29.94 mph.

CLASSIFICATION

Chart 2 lists the values of the eight classification bins and the total traffic volume accumulated for each bin.

Chart 2

0 to 20	21 to 27	28 to 39	40 to 49	50 to 59	60 to 69	70 to 79	80 >
202	8	1	0	0	0	0	0

Most of the vehicles classified during the study were Passenger Cars. The number of Passenger Cars in the study was 210 which represents 99.50 percent of the total classified vehicles. The number of Small Trucks in the study was 1 which represents 0.50 percent of the total classified vehicles. The number of Trucks/Buses in the study was 0 which represents 0.00 percent of the total classified vehicles. The number of Tractor Trailers in the study was 0 which represents 0.00 percent of the total classified vehicles.

HEADWAY

During the peak time period, on 03/08/2012 at 12:45 PM the average headway between the vehicles was 112.5 seconds. The slowest traffic period was on 03/06/2012 at 02:00 PM. During this slowest period, the average headway was 900.0 seconds.

WEATHER

The roadway surface temperature over the period of the study varied between 33 and 83 degrees Fahrenheit. The HI-STAR determined that the roadway surface was Dry 100.00 percent of the time.

City of West Linn Traffic Study

Hi-Starr ID#: 388

Begin Date: 03/06/12 Time: 2:00PM End Date: 03/06/12 Time: 2:00 PM

Street: 4160 Kenthorpe Way

Lane Direction: E. Bound Total Hours: 48

Posted Speed: 25

Report

Total Volume: 187 Daily Average: 94

Speed	Volume
0-19	32
20-24	66
25-29	56
30-34	18
35-39	4
40-44	6
45-49	4
50-54	1

Average Speed: 26 MPH

85 Percentile: 31.85 MPH

Nu-Metrics Traffic Analyzer Study
Computer Generated Summary Report
City: West Linn
Street: Kenthorpe Way 4160

A study of vehicle traffic was conducted with HI-STAR unit number 4316. The study was done in the E. Bound lane on Kenthorpe Way 4160 in West Linn, OR in Clackamas county. The study began on 03/06/2012 at 02:00 PM and concluded on 03/08/2012 at 02:00 PM, lasting a total of 48 hours. Data was recorded in 15 minute time periods. The total recorded volume of traffic showed 190 vehicles passed through the location with a peak volume of 6 on 03/08/2012 at 08:30 AM and a minimum volume of 0 on 03/06/2012 at 02:00 PM. The AADT Count for this study was 95.

SPEED

Chart 1 lists the values of the speed bins and the total traffic volume for each bin.

Chart 1

0 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 >
0	6	26	66	56	18	4	6	4	1	0	1	0	1	0

At least half of the vehicles were traveling in the 20 - 24 mph range or a lower speed. The average speed for all classified vehicles was 26 mph with 48.1 percent exceeding the posted speed of 25 mph. The HI-STAR found 1.06 percent of the total vehicles were traveling in excess of 55 mph. The mode speed for this traffic study was 20 mph and the 85th percentile was 31.85 mph.

CLASSIFICATION

Chart 2 lists the values of the eight classification bins and the total traffic volume accumulated for each bin.

Chart 2

0 to 20	21 to 27	28 to 39	40 to 49	50 to 59	60 to 69	70 to 79	80 >
172	10	3	3	1	0	0	0

Most of the vehicles classified during the study were Passenger Cars. The number of Passenger Cars in the study was 182 which represents 96.30 percent of the total classified vehicles. The number of Small Trucks in the study was 3 which represents 1.60 percent of the total classified vehicles. The number of Trucks/Buses in the study was 3 which represents 1.60 percent of the total classified vehicles. The number of Tractor Trailers in the study was 1 which represents 0.50 percent of the total classified vehicles.

HEADWAY

During the peak time period, on 03/08/2012 at 08:30 AM the average headway between the vehicles was 128.57 seconds. The slowest traffic period was on 03/06/2012 at 02:00 PM. During this slowest period, the average headway was 900.0 seconds.

WEATHER

The roadway surface temperature over the period of the study varied between 33 and 76 degrees Fahrenheit. The HI-STAR determined that the roadway surface was Dry 100.00 percent of the time.

City of West Linn Traffic Study

Hi-Starr ID#: 388

Begin Date: 03/06/12 Time: 2:00PM End Date: 03/06/12 Time: 2:00 PM

Street: 4191 Mapleton DR

Lane Direction: E. Bound Total Hours: 48

Posted Speed: 25

Report

Total Volume: 319 Daily Average: 160

Speed	Volume
0-19	67
20-24	108
25-29	94
30-34	29
35-39	10
40-44	3
45-49	4
50-54	4

Average Speed: 27 MPH

85 Percentile: 32.42 MPH

Nu-Metrics Traffic Analyzer Study
Computer Generated Summary Report
City: West Linn
Street: Mapleton DR

A study of vehicle traffic was conducted with HI-STAR unit number 388. The study was done in the E. Bound lane on Mapleton DR in West Linn, OR in Clackamas county. The study began on 03/06/2012 at 02:00 PM and concluded on 03/08/2012 at 02:00 PM, lasting a total of 48 hours. Data was recorded in 15 minute time periods. The total recorded volume of traffic showed 334 vehicles passed through the location with a peak volume of 9 on 03/06/2012 at 05:30 PM and a minimum volume of 0 on 03/06/2012 at 09:15 PM. The AADT Count for this study was 167.

SPEED

Chart 1 lists the values of the speed bins and the total traffic volume for each bin.

Chart 1

0 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 >
0	16	51	108	94	29	10	3	4	4	0	3	2	3	6

At least half of the vehicles were traveling in the 20 - 24 mph range or a lower speed. The average speed for all classified vehicles was 27 mph with 47.4 percent exceeding the posted speed of 25 mph. The HI-STAR found 4.20 percent of the total vehicles were traveling in excess of 55 mph. The mode speed for this traffic study was 20 mph and the 85th percentile was 32.42 mph.

CLASSIFICATION

Chart 2 lists the values of the eight classification bins and the total traffic volume accumulated for each bin.

Chart 2

0 to 20	21 to 27	28 to 39	40 to 49	50 to 59	60 to 69	70 to 79	80 >
304	17	7	3	2	0	0	0

Most of the vehicles classified during the study were Passenger Cars. The number of Passenger Cars in the study was 321 which represents 96.40 percent of the total classified vehicles. The number of Small Trucks in the study was 7 which represents 2.10 percent of the total classified vehicles. The number of Trucks/Buses in the study was 3 which represents 0.90 percent of the total classified vehicles. The number of Tractor Trailers in the study was 2 which represents 0.60 percent of the total classified vehicles.

HEADWAY

During the peak time period, on 03/06/2012 at 05:30 PM the average headway between the vehicles was 90.0 seconds. The slowest traffic period was on 03/06/2012 at 09:15 PM. During this slowest period, the average headway was 900.0 seconds.

WEATHER

The roadway surface temperature over the period of the study varied between 31 and 76 degrees Fahrenheit. The HI-STAR determined that the roadway surface was Dry 100.00 percent of the time.

City of West Linn Traffic Study

Hi-Starr ID#: 3884

Begin Date: 03/06/12 Time: 2:00PM End Date: 03/06/12 Time: 2:00 PM

Street: 4191 Mapleton DR

Lane Direction: W. Bound Total Hours: 48

Posted Speed: 25

Report

Total Volume: 362 Daily Average: 181

Speed	Volume
0-19	56
20-24	103
25-29	131
30-34	56
35-39	14
40-44	0
45-49	2
50-54	0

Average Speed: 26 MPH

85 Percentile: 31.73 MPH

Nu-Metrics Traffic Analyzer Study
Computer Generated Summary Report
City: West Linn
Street: Mapleton DR 4191

A study of vehicle traffic was conducted with HI-STAR unit number 3884. The study was done in the W. Bound lane on Mapleton DR 4191 in West Linn, OR in Clackamas county. The study began on 03/06/2012 at 02:00 PM and concluded on 03/08/2012 at 02:00 PM, lasting a total of 48 hours. Data was recorded in 15 minute time periods. The total recorded volume of traffic showed 366 vehicles passed through the location with a peak volume of 10 on 03/08/2012 at 07:45 AM and a minimum volume of 0 on 03/06/2012 at 02:00 PM. The AADT Count for this study was 183.

SPEED

Chart 1 lists the values of the speed bins and the total traffic volume for each bin.

Chart 1

0 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 >
0	16	40	103	131	56	14	0	2	0	1	0	1	0	0

At least half of the vehicles were traveling in the 25 - 29 mph range or a lower speed. The average speed for all classified vehicles was 26 mph with 56.3 percent exceeding the posted speed of 25 mph. The HI-STAR found 0.55 percent of the total vehicles were traveling in excess of 55 mph. The mode speed for this traffic study was 25 mph and the 85th percentile was 31.73 mph.

CLASSIFICATION

Chart 2 lists the values of the eight classification bins and the total traffic volume accumulated for each bin.

Chart 2

0 to 20	21 to 27	28 to 39	40 to 49	50 to 59	60 to 69	70 to 79	80 >
339	16	9	0	0	0	0	0

Most of the vehicles classified during the study were Passenger Cars. The number of Passenger Cars in the study was 355 which represents 97.50 percent of the total classified vehicles. The number of Small Trucks in the study was 9 which represents 2.50 percent of the total classified vehicles. The number of Trucks/Buses in the study was 0 which represents 0.00 percent of the total classified vehicles. The number of Tractor Trailers in the study was 0 which represents 0.00 percent of the total classified vehicles.

HEADWAY

During the peak time period, on 03/08/2012 at 07:45 AM the average headway between the vehicles was 81.82 seconds. The slowest traffic period was on 03/06/2012 at 02:00 PM. During this slowest period, the average headway was 900.0 seconds.

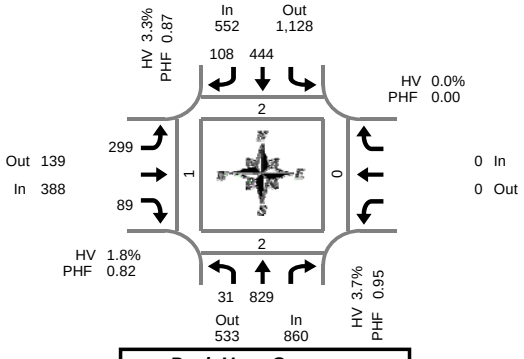
WEATHER

The roadway surface temperature over the period of the study varied between 33 and 70 degrees Fahrenheit. The HI-STAR determined that the roadway surface was Dry 100.00 percent of the time.

Appendix B – Turn Movement Counts

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
7:30 AM to 8:30 AM

Hwy 43 & Hidden Springs Rd

Tuesday, November 08, 2011
7:00 AM to 9:00 AM

5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Hidden Springs Rd				Westbound Hidden Springs Rd				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes	T	R	Bikes		L		R	Bikes				Bikes		North	South	East	West
7:00 AM	1	58		0	27	4	0		12		5	0				0	107	0	0	0	1
7:05 AM	2	66		0	30	1	0		16		2	0				0	117	0	0	0	0
7:10 AM	0	58		0	38	4	0		17		2	0				0	119	0	0	0	0
7:15 AM	2	68		0	33	2	0		21		7	0				0	133	1	0	0	0
7:20 AM	3	55		0	26	6	0		30		8	0				0	128	0	0	0	0
7:25 AM	2	64		0	24	3	1		30		3	0				0	126	0	0	0	1
7:30 AM	4	75		0	33	4	0		34		9	0				0	159	1	0	0	1
7:35 AM	1	72		0	34	9	0		31		4	0				0	151	0	1	0	0
7:40 AM	1	73		0	48	11	0		32		7	0				0	172	0	0	0	0
7:45 AM	3	59		0	36	10	0		37		7	0				0	152	0	0	0	0
7:50 AM	4	83		0	46	8	0		19		5	0				0	165	0	1	0	0
7:55 AM	4	74		0	35	12	0		21		7	0				0	153	0	0	0	0
8:00 AM	2	51		0	34	19	0		14		12	0				0	132	0	0	0	0
8:05 AM	3	69		0	44	8	1		23		7	0				0	154	0	0	0	0
8:10 AM	2	61		0	42	5	1		17		9	0				0	136	1	0	0	0
8:15 AM	2	70		0	32	6	0		26		8	0				0	144	0	0	0	0
8:20 AM	3	69		0	32	11	0		24		7	0				0	146	0	0	0	0
8:25 AM	2	73		0	28	5	0		21		7	0				0	136	0	0	0	0
8:30 AM	8	59		0	26	8	0		10		3	0				0	114	0	0	0	0
8:35 AM	2	64		0	41	5	0		20		4	0				0	136	0	0	0	0
8:40 AM	3	60		0	31	8	0		11		11	0				0	124	0	0	0	0
8:45 AM	2	60		0	47	6	0		21		8	0				0	144	0	0	0	0
8:50 AM	3	48		0	27	11	0		18		3	0				0	110	0	0	0	0
8:55 AM	3	48		0	30	5	0		14		5	0				0	105	0	0	0	0
Total Survey	62	1,537		0	824	171	3		519		150	0				0	3,263	3	2	0	3

15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Hidden Springs Rd				Westbound Hidden Springs Rd				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes	T	R	Bikes		L		R	Bikes				Bikes		North	South	East	West
7:00 AM	3	182		0	95	9	0		45		9	0				0	343	0	0	0	1
7:15 AM	7	187		0	83	11	1		81		18	0				0	387	1	0	0	1
7:30 AM	6	220		0	115	24	0		97		20	0				0	482	1	1	0	1
7:45 AM	11	216		0	117	30	0		77		19	0				0	470	0	1	0	0
8:00 AM	7	181		0	120	32	2		54		28	0				0	422	1	0	0	0
8:15 AM	7	212		0	92	22	0		71		22	0				0	426	0	0	0	0
8:30 AM	13	183		0	98	21	0		41		18	0				0	374	0	0	0	0
8:45 AM	8	156		0	104	22	0		53		16	0				0	359	0	0	0	0
Total Survey	62	1,537		0	824	171	3		519		150	0				0	3,263	3	2	0	3

Peak Hour Summary
7:30 AM to 8:30 AM

By Approach	Northbound Hwy 43				Southbound Hwy 43				Eastbound Hidden Springs Rd				Westbound Hidden Springs Rd				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	860	533	1,393	0	552	1,128	1,680	2	388	139	527	0	0	0	0	0	1,800	2	2	0	1
%HV	3.7%				3.3%				1.8%				0.0%				3.2%				
PHF	0.95				0.87				0.82				0.00				0.92				

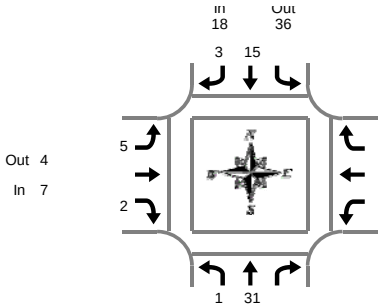
By Movement	Northbound Hwy 43				Southbound Hwy 43				Eastbound Hidden Springs Rd				Westbound Hidden Springs Rd				Total
	L	T		Total		T	R	Total	L		R	Total				Total	
Volume	31	829		860		444	108	552	299		89	388				0	1,800
%HV	3.2%	3.7%	NA	3.7%	NA	3.4%	2.8%	3.3%	1.7%	NA	2.2%	1.8%	NA	NA	NA	0.0%	3.2%
PHF	0.70	0.94		0.95		0.85	0.69	0.87	0.75		0.79	0.82				0.00	0.92

Rolling Hour Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Hidden Springs Rd				Westbound Hidden Springs Rd				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes	T	R	Bikes		L		R	Bikes				Bikes		North	South	East	West
7:00 AM	27	805		0	410	74	1		300		66	0				0	1,682	2	2	0	3
7:15 AM	31	804		0	435	97	3		309		85	0				0	1,761	3	2	0	2
7:30 AM	31	829		0	444	108	2		299		89	0				0	1,800	2	2	0	1
7:45 AM	38	792		0	427	105	2		243		87	0				0	1,692	1	1	0	0
8:00 AM	35	732		0	414	97	2		219		84	0				0	1,581	1	0	0	0

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Hwy 43 & Hidden Springs Rd

Tuesday, November 08, 2011
7:00 AM to 9:00 AM

Peak Hour Summary
7:30 AM to 8:30 AM

Heavy Vehicle 5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Hidden Springs Rd				Westbound Hidden Springs Rd				Interval Total
	L	T		Total	T	R	Total		L		R	Total				Total	
7:00 AM	0	2		2	2	0	2		0		0	0				0	4
7:05 AM	0	3		3	1	0	1		0		0	0				0	4
7:10 AM	0	1		1	2	0	2		0		0	0				0	3
7:15 AM	0	2		2	0	0	0		0		0	0				0	2
7:20 AM	1	2		3	0	1	1		0		1	1				0	5
7:25 AM	0	2		2	1	0	1		3		0	3				0	6
7:30 AM	0	3		3	1	1	2		0		0	0				0	5
7:35 AM	0	3		3	1	0	1		2		0	2				0	6
7:40 AM	0	1		1	3	1	4		0		0	0				0	5
7:45 AM	0	2		2	2	0	2		1		0	1				0	5
7:50 AM	0	7		7	0	0	0		0		0	0				0	7
7:55 AM	0	1		1	3	1	4		0		1	1				0	6
8:00 AM	0	1		1	1	0	1		0		0	0				0	2
8:05 AM	1	1		2	1	0	1		1		0	1				0	4
8:10 AM	0	7		7	0	0	0		1		0	1				0	8
8:15 AM	0	1		1	0	0	0		0		0	0				0	1
8:20 AM	0	2		2	2	0	2		0		0	0				0	4
8:25 AM	0	2		2	1	0	1		0		1	1				0	4
8:30 AM	1	2		3	0	0	0		0		0	0				0	3
8:35 AM	0	3		3	1	1	2		1		1	2				0	7
8:40 AM	1	6		7	4	0	4		1		1	2				0	13
8:45 AM	0	2		2	4	0	4		0		0	0				0	6
8:50 AM	0	1		1	1	1	2		1		0	1				0	4
8:55 AM	0	2		2	1	0	1		0		0	0				0	3
Total Survey	4	59		63	32	6	38		11		5	16				0	117

Heavy Vehicle 15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Hidden Springs Rd				Westbound Hidden Springs Rd				Interval Total
	L	T		Total	T	R	Total		L		R	Total				Total	
7:00 AM	0	6		6	5	0	5		0		0	0				0	11
7:15 AM	1	6		7	1	1	2		3		1	4				0	13
7:30 AM	0	7		7	5	2	7		2		0	2				0	16
7:45 AM	0	10		10	5	1	6		1		1	2				0	18
8:00 AM	1	9		10	2	0	2		2		0	2				0	14
8:15 AM	0	5		5	3	0	3		0		1	1				0	9
8:30 AM	2	11		13	5	1	6		2		2	4				0	23
8:45 AM	0	5		5	6	1	7		1		0	1				0	13
Total Survey	4	59		63	32	6	38		11		5	16				0	117

Heavy Vehicle Peak Hour Summary
7:30 AM to 8:30 AM

By Approach	Northbound Hwy 43			Southbound Hwy 43			Eastbound Hidden Springs Rd			Westbound Hidden Springs Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	32	17	49	18	36	54	7	4	11	0	0	0	57
PHF	0.80			0.64			0.58			0.00			0.79

By Movement	Northbound Hwy 43				Southbound Hwy 43				Eastbound Hidden Springs Rd				Westbound Hidden Springs Rd				Total
	L	T		Total	T	R	Total		L		R	Total				Total	
Volume	1	31		32	15	3	18		5		2	7				0	57
PHF	0.25	0.78		0.80	0.63	0.38	0.64		0.42		0.50	0.58				0.00	0.79

Heavy Vehicle Rolling Hour Summary
7:00 AM to 9:00 AM

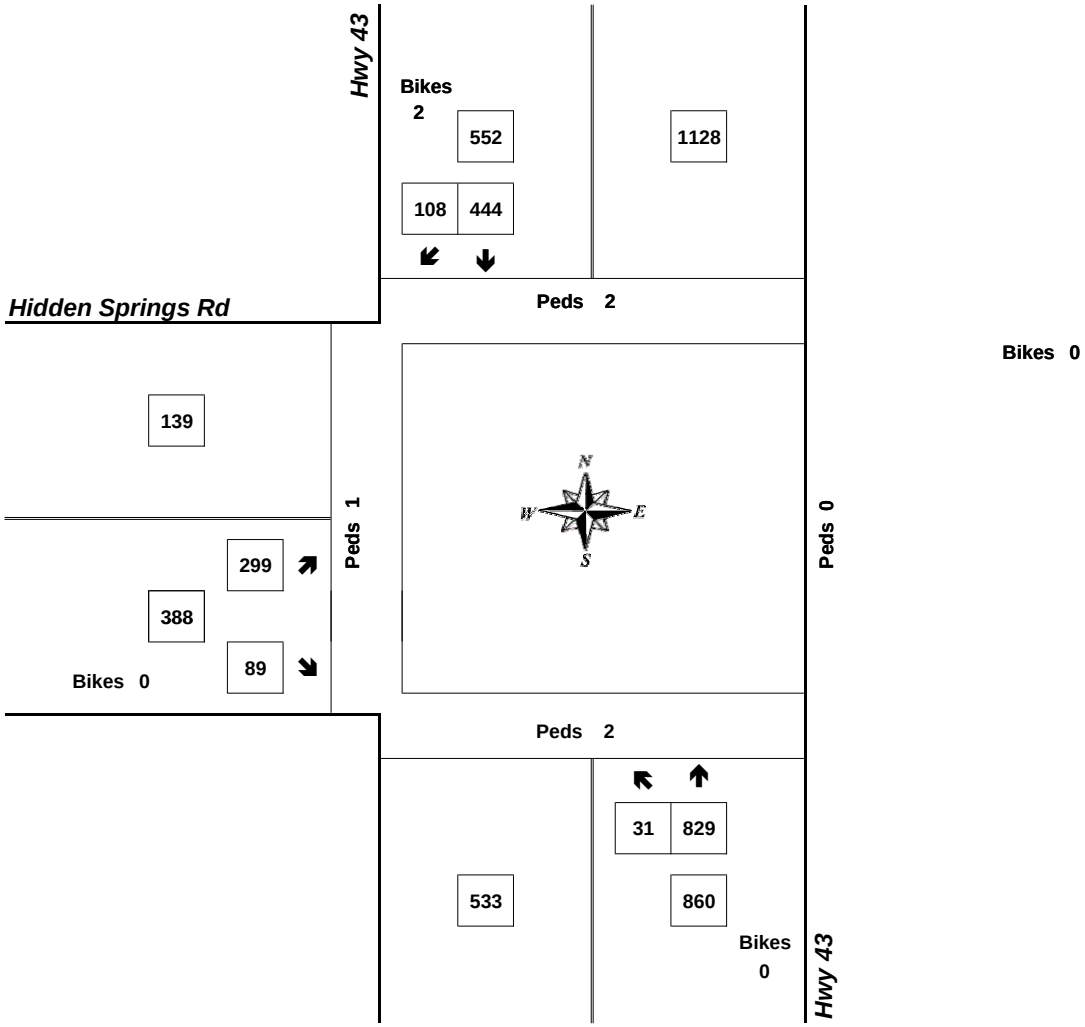
Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Hidden Springs Rd				Westbound Hidden Springs Rd				Interval Total
	L	T		Total	T	R	Total		L		R	Total				Total	
7:00 AM	1	29		30	16	4	20		6		2	8				0	58
7:15 AM	2	32		34	13	4	17		8		2	10				0	61
7:30 AM	1	31		32	15	3	18		5		2	7				0	57
7:45 AM	3	35		38	15	2	17		5		4	9				0	64
8:00 AM	3	30		33	16	2	18		5		3	8				0	59

Peak Hour Summary

Clay Carney
(503) 833-2740

Hwy 43 & Hidden Springs Rd

7:30 AM to 8:30 AM
Tuesday, November 08, 2011

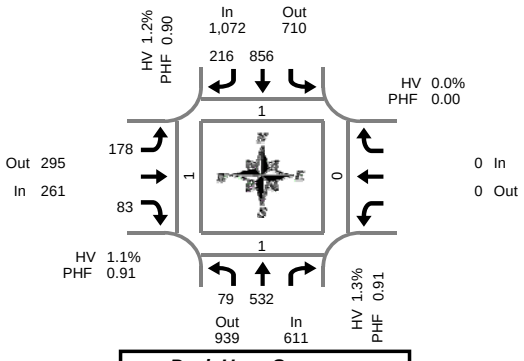


Approach	PHF	HV%	Volume
EB	0.82	1.8%	388
WB	0.00	0.0%	0
NB	0.95	3.7%	860
SB	0.87	3.3%	552
Intersection	0.92	3.2%	1,800

Count Period: 7:00 AM to 9:00 AM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
4:50 PM to 5:50 PM

Hwy 43 & Hidden Springs Rd

Tuesday, November 08, 2011
4:00 PM to 6:00 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Hidden Springs Rd				Westbound Hidden Springs Rd				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes	T	R	Bikes		L		R	Bikes				Bikes		North	South	East	West
4:00 PM	10	44		0	58	28	0		11		10	0				0	161	0	0	0	0
4:05 PM	10	33		0	65	24	0		13		11	0				0	156	0	2	0	1
4:10 PM	9	41		0	72	17	0		15		2	0				0	156	0	1	0	0
4:15 PM	3	43		0	53	16	0		8		10	0				0	133	0	1	0	0
4:20 PM	11	39		0	62	24	0		16		7	0				0	159	0	0	0	0
4:25 PM	5	32		0	60	14	0		18		9	0				0	138	0	0	0	0
4:30 PM	10	53		0	56	20	0		13		8	0				0	160	0	2	0	0
4:35 PM	5	41		0	66	17	0		8		10	0				0	147	0	0	0	1
4:40 PM	3	53		0	68	20	0		14		10	0				0	168	0	0	0	0
4:45 PM	7	36		0	74	17	0		11		3	0				0	148	0	0	0	0
4:50 PM	4	47		0	63	25	0		14		7	0				0	160	0	0	0	0
4:55 PM	8	57		0	70	23	0		10		10	0				0	178	0	0	0	0
5:00 PM	7	44		0	69	12	0		17		8	0				0	157	0	0	0	0
5:05 PM	7	45		0	69	16	0		19		8	0				0	164	0	0	0	0
5:10 PM	4	39		0	96	19	0		14		6	0				0	178	0	0	0	0
5:15 PM	10	57		0	76	21	0		15		5	0				0	184	0	0	0	0
5:20 PM	6	38		0	59	13	0		16		9	0				0	141	0	0	0	0
5:25 PM	8	35		0	73	15	0		17		5	0				0	153	0	0	0	0
5:30 PM	5	42		0	66	17	0		11		5	0				0	146	0	0	0	0
5:35 PM	10	42		0	68	17	0		12		8	0				0	157	0	0	0	0
5:40 PM	8	42		0	73	21	0		14		5	0				0	163	1	1	0	1
5:45 PM	2	44		0	74	17	0		19		7	0				0	163	0	0	0	0
5:50 PM	12	49		0	62	20	0		7		10	0				0	160	0	0	0	0
5:55 PM	3	36		0	65	12	0		23		7	0				0	146	0	0	0	0
Total Survey	167	1,032		0	1,617	445	0		335		180	0				0	3,776	1	7	0	3

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Hidden Springs Rd				Westbound Hidden Springs Rd				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes	T	R	Bikes		L		R	Bikes				Bikes		North	South	East	West
4:00 PM	29	118		0	195	69	0		39		23	0				0	473	0	3	0	1
4:15 PM	19	114		0	175	54	0		42		26	0				0	430	0	1	0	0
4:30 PM	18	147		0	190	57	0		35		28	0				0	475	0	2	0	1
4:45 PM	19	140		0	207	65	0		35		20	0				0	486	0	0	0	0
5:00 PM	18	128		0	234	47	0		50		22	0				0	499	0	0	0	0
5:15 PM	24	130		0	208	49	0		48		19	0				0	478	0	0	0	0
5:30 PM	23	126		0	207	55	0		37		18	0				0	466	1	1	0	1
5:45 PM	17	129		0	201	49	0		49		24	0				0	469	0	0	0	0
Total Survey	167	1,032		0	1,617	445	0		335		180	0				0	3,776	1	7	0	3

Peak Hour Summary
4:50 PM to 5:50 PM

By Approach	Northbound Hwy 43				Southbound Hwy 43				Eastbound Hidden Springs Rd				Westbound Hidden Springs Rd				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	611	939	1,550	0	1,072	710	1,782	0	261	295	556	0	0	0	0	0	1,944	1	1	0	1
%HV	1.3%				1.2%				1.1%				0.0%				1.2%				
PHF	0.91				0.90				0.91				0.00				0.92				

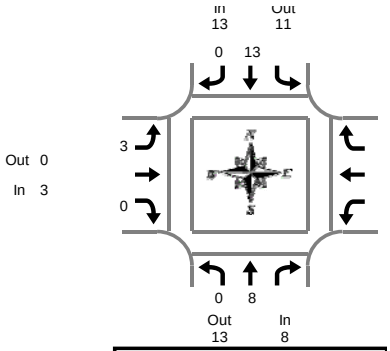
By Movement	Northbound Hwy 43				Southbound Hwy 43				Eastbound Hidden Springs Rd				Westbound Hidden Springs Rd				Total
	L	T		Total		T	R	Total	L		R	Total				Total	
Volume	79	532		611		856	216	1,072	178		83	261				0	1,944
%HV	0.0%	1.5%	NA	1.3%	NA	1.5%	0.0%	1.2%	1.7%	NA	0.0%	1.1%	NA	NA	NA	0.0%	1.2%
PHF	0.82	0.90		0.91		0.89	0.90	0.90	0.89		0.80	0.91				0.00	0.92

Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Hidden Springs Rd				Westbound Hidden Springs Rd				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes	T	R	Bikes		L		R	Bikes				Bikes		North	South	East	West
4:00 PM	85	519		0	767	245	0		151		97	0				0	1,864	0	6	0	2
4:15 PM	74	529		0	806	223	0		162		96	0				0	1,890	0	3	0	1
4:30 PM	79	545		0	839	218	0		168		89	0				0	1,938	0	2	0	1
4:45 PM	84	524		0	856	216	0		170		79	0				0	1,929	1	1	0	1
5:00 PM	82	513		0	850	200	0		184		83	0				0	1,912	1	1	0	1

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Hwy 43 & Hidden Springs Rd

Tuesday, November 08, 2011
4:00 PM to 6:00 PM

Peak Hour Summary
4:50 PM to 5:50 PM

Heavy Vehicle 5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Hidden Springs Rd				Westbound Hidden Springs Rd				Interval Total
	L	T		Total	T	R	Total		L		R	Total				Total	
4:00 PM	2	1		3	1	0	1		1		1	2				0	6
4:05 PM	0	0		0	2	0	2		1		0	1				0	3
4:10 PM	0	0		0	3	1	4		0		0	0				0	4
4:15 PM	1	1		2	4	0	4		0		2	2				0	8
4:20 PM	0	1		1	0	0	0		0		0	0				0	1
4:25 PM	1	0		1	0	1	1		0		0	0				0	2
4:30 PM	0	2		2	2	0	2		0		1	1				0	5
4:35 PM	0	1		1	1	0	1		1		1	2				0	4
4:40 PM	0	2		2	0	1	1		0		0	0				0	3
4:45 PM	0	1		1	1	0	1		0		0	0				0	2
4:50 PM	0	0		0	1	0	1		0		0	0				0	1
4:55 PM	0	1		1	1	0	1		1		0	1				0	3
5:00 PM	0	0		0	1	0	1		0		0	0				0	1
5:05 PM	0	0		0	0	0	0		0		0	0				0	0
5:10 PM	0	0		0	3	0	3		0		0	0				0	3
5:15 PM	0	2		2	1	0	1		0		0	0				0	3
5:20 PM	0	1		1	0	0	0		1		0	1				0	2
5:25 PM	0	1		1	1	0	1		0		0	0				0	2
5:30 PM	0	1		1	2	0	2		1		0	1				0	4
5:35 PM	0	0		0	2	0	2		0		0	0				0	2
5:40 PM	0	1		1	1	0	1		0		0	0				0	2
5:45 PM	0	1		1	0	0	0		0		0	0				0	1
5:50 PM	0	0		0	1	0	1		0		0	0				0	1
5:55 PM	0	0		0	1	0	1		0		0	0				0	1
Total Survey	4	17		21	29	3	32		6		5	11				0	64

Heavy Vehicle 15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Hidden Springs Rd				Westbound Hidden Springs Rd				Interval Total
	L	T		Total	T	R	Total		L		R	Total				Total	
4:00 PM	2	1		3	6	1	7		2		1	3				0	13
4:15 PM	2	2		4	4	1	5		0		2	2				0	11
4:30 PM	0	5		5	3	1	4		1		2	3				0	12
4:45 PM	0	2		2	3	0	3		1		0	1				0	6
5:00 PM	0	0		0	4	0	4		0		0	0				0	4
5:15 PM	0	4		4	2	0	2		1		0	1				0	7
5:30 PM	0	2		2	5	0	5		1		0	1				0	8
5:45 PM	0	1		1	2	0	2		0		0	0				0	3
Total Survey	4	17		21	29	3	32		6		5	11				0	64

Heavy Vehicle Peak Hour Summary
4:50 PM to 5:50 PM

By Approach	Northbound Hwy 43			Southbound Hwy 43			Eastbound Hidden Springs Rd			Westbound Hidden Springs Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	8	13	21	13	11	24	3	0	3	0	0	0	24
PHF	0.50			0.65			0.38			0.00			0.75

By Movement	Northbound Hwy 43				Southbound Hwy 43				Eastbound Hidden Springs Rd				Westbound Hidden Springs Rd				Total
	L	T		Total	T	R	Total		L		R	Total				Total	
Volume	0	8		8	13	0	13		3		0	3				0	24
PHF	0.00	0.50		0.50	0.65	0.00	0.65		0.38		0.00	0.38				0.00	0.75

Heavy Vehicle Rolling Hour Summary
4:00 PM to 6:00 PM

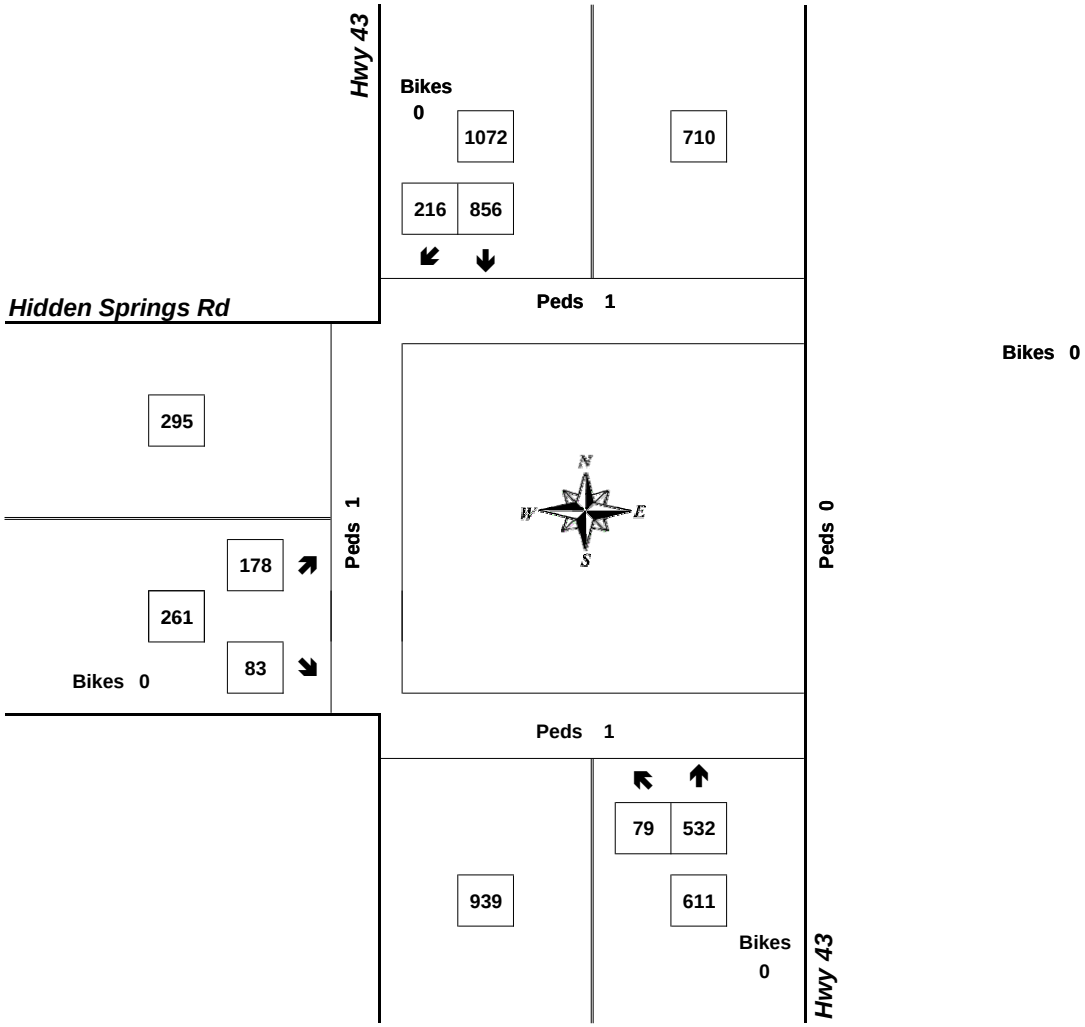
Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Hidden Springs Rd				Westbound Hidden Springs Rd				Interval Total
	L	T		Total	T	R	Total		L		R	Total				Total	
4:00 PM	4	10		14	16	3	19		4		5	9				0	42
4:15 PM	2	9		11	14	2	16		2		4	6				0	33
4:30 PM	0	11		11	12	1	13		3		2	5				0	29
4:45 PM	0	8		8	14	0	14		3		0	3				0	25
5:00 PM	0	7		7	13	0	13		2		0	2				0	22

Peak Hour Summary

Clay Carney
(503) 833-2740

Hwy 43 & Hidden Springs Rd

4:50 PM to 5:50 PM
Tuesday, November 08, 2011

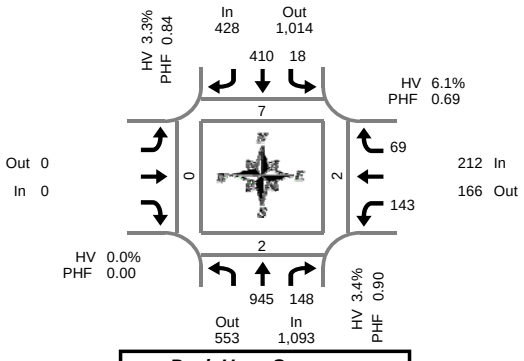


Approach	PHF	HV%	Volume
EB	0.91	1.1%	261
WB	0.00	0.0%	0
NB	0.91	1.3%	611
SB	0.90	1.2%	1,072
Intersection	0.92	1.2%	1,944

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
7:30 AM to 8:30 AM

Hwy 43 & Cedar Oak Dr

Tuesday, November 08, 2011
7:00 AM to 9:00 AM

5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Cedar Oak Dr				Westbound Cedar Oak Dr				Interval Total	Pedestrians Crosswalk			
	T	R	Bikes		L	T		Bikes				Bikes	L		R	Bikes		North	South	East	West
7:00 AM	72	6	0		1	22		0				0	6		5	0	112	0	0	0	0
7:05 AM	67	4	0		1	31		0				0	5		6	0	114	0	0	0	0
7:10 AM	77	4	0		0	31		0				0	3		4	0	119	0	0	0	0
7:15 AM	70	5	0		2	31		0				0	7		2	0	117	0	0	0	0
7:20 AM	76	4	0		0	29		0				0	4		4	0	117	0	0	0	0
7:25 AM	82	13	0		0	25		0				0	3		6	0	129	0	0	0	0
7:30 AM	90	13	0		2	36		0				0	3		3	0	147	0	0	0	0
7:35 AM	80	22	0		0	30		0				0	10		2	0	144	0	0	0	0
7:40 AM	79	18	0		1	38		2				0	14		8	0	158	0	0	0	0
7:45 AM	72	29	0		2	32		0				0	16		11	0	162	0	0	0	0
7:50 AM	82	11	0		0	32		0				0	20		6	0	151	1	0	0	0
7:55 AM	89	10	0		0	40		0				0	11		13	0	163	3	0	1	0
8:00 AM	61	7	0		5	40		0				0	12		5	0	130	0	0	1	0
8:05 AM	65	8	0		3	39		0				0	19		7	0	141	0	1	0	0
8:10 AM	79	4	0		1	35		0				0	8		4	0	131	0	0	0	0
8:15 AM	80	11	0		1	31		0				0	9		4	0	136	0	1	0	0
8:20 AM	77	9	1		2	35		0				0	11		3	0	137	2	0	0	0
8:25 AM	91	6	0		1	22		0				0	10		3	0	133	1	0	0	0
8:30 AM	66	6	0		0	38		0				0	2		3	0	115	0	2	0	0
8:35 AM	72	3	1		2	38		0				0	6		0	0	121	3	1	1	0
8:40 AM	68	5	0		3	31		0				0	10		3	0	120	0	1	1	0
8:45 AM	80	3	0		1	40		0				0	8		6	0	138	0	0	0	0
8:50 AM	62	5	1		0	35		0				0	7		2	0	111	0	0	0	0
8:55 AM	57	5	0		1	29		0				0	6		3	0	101	0	0	0	0
Total Survey	1,794	211	3		29	790		2				0	210		113	0	3,147	10	6	4	0

15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Cedar Oak Dr				Westbound Cedar Oak Dr				Interval Total	Pedestrians Crosswalk			
	T	R	Bikes		L	T		Bikes				Bikes	L		R	Bikes		North	South	East	West
7:00 AM	216	14	0		2	84		0				0	14		15	0	345	0	0	0	0
7:15 AM	228	22	0		2	85		0				0	14		12	0	363	0	0	0	0
7:30 AM	249	53	0		3	104		2				0	27		13	0	449	0	0	0	0
7:45 AM	243	50	0		2	104		0				0	47		30	0	476	4	0	1	0
8:00 AM	205	19	0		9	114		0				0	39		16	0	402	0	1	1	0
8:15 AM	248	26	1		4	88		0				0	30		10	0	406	3	1	0	0
8:30 AM	206	14	1		5	107		0				0	18		6	0	356	3	4	2	0
8:45 AM	199	13	1		2	104		0				0	21		11	0	350	0	0	0	0
Total Survey	1,794	211	3		29	790		2				0	210		113	0	3,147	10	6	4	0

Peak Hour Summary
7:30 AM to 8:30 AM

By Approach	Northbound Hwy 43				Southbound Hwy 43				Eastbound Cedar Oak Dr				Westbound Cedar Oak Dr				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	1,093	553	1,646	1	428	1,014	1,442	2	0	0	0	0	212	166	378	0	1,733	7	2	2	0
%HV	3.4%				3.3%				0.0%				6.1%				3.7%				
PHF	0.90				0.84				0.00				0.69				0.91				

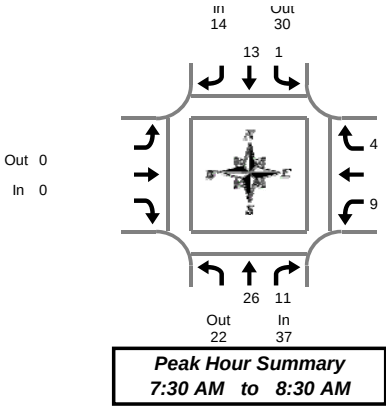
By Movement	Northbound Hwy 43				Southbound Hwy 43				Eastbound Cedar Oak Dr				Westbound Cedar Oak Dr				Total
		T	R	Total	L	T		Total				Total	L		R	Total	
Volume		945	148	1,093	18	410		428				0	143		69	212	1,733
%HV	NA	2.8%	7.4%	3.4%	5.6%	3.2%	NA	3.3%	NA	NA	NA	0.0%	6.3%	NA	5.8%	6.1%	3.7%
PHF		0.95	0.54	0.90	0.50	0.86		0.84				0.00	0.72		0.58	0.69	0.91

Rolling Hour Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Cedar Oak Dr				Westbound Cedar Oak Dr				Interval Total	Pedestrians Crosswalk			
	T	R	Bikes		L	T		Bikes				Bikes	L		R	Bikes		North	South	East	West
7:00 AM	936	139	0		9	377		2				0	102		70	0	1,633	4	0	1	0
7:15 AM	925	144	0		16	407		2				0	127		71	0	1,690	4	1	2	0
7:30 AM	945	148	1		18	410		2				0	143		69	0	1,733	7	2	2	0
7:45 AM	902	109	2		20	413		0				0	134		62	0	1,640	10	6	4	0
8:00 AM	858	72	3		20	413		0				0	108		43	0	1,514	6	6	3	0

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Hwy 43 & Cedar Oak Dr

Tuesday, November 08, 2011
7:00 AM to 9:00 AM

Peak Hour Summary
7:30 AM to 8:30 AM

Heavy Vehicle 5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Cedar Oak Dr				Westbound Cedar Oak Dr				Interval Total
		T	R	Total	L	T		Total				Total	L		R	Total	
7:00 AM		2	0	2	0	0		0				0	0		0	0	2
7:05 AM		3	0	3	0	1		1				0	0		0	0	4
7:10 AM		2	0	2	0	2		2				0	0		0	0	4
7:15 AM		0	0	0	0	1		1				0	0		0	0	1
7:20 AM		3	0	3	0	1		1				0	0		0	0	4
7:25 AM		2	1	3	0	0		0				0	0		0	0	3
7:30 AM		4	2	6	1	3		4				0	0		0	0	10
7:35 AM		2	4	6	0	1		1				0	0		0	0	7
7:40 AM		0	1	1	0	1		1				0	3		2	5	7
7:45 AM		1	1	2	0	1		1				0	0		0	0	3
7:50 AM		2	1	3	0	0		0				0	1		0	1	4
7:55 AM		5	1	6	0	2		2				0	1		0	1	9
8:00 AM		1	0	1	0	0		0				0	2		1	3	4
8:05 AM		1	0	1	0	1		1				0	1		1	2	4
8:10 AM		5	0	5	0	0		0				0	0		0	0	5
8:15 AM		2	0	2	0	1		1				0	0		0	0	3
8:20 AM		1	1	2	0	2		2				0	1		0	1	5
8:25 AM		2	0	2	0	1		1				0	0		0	0	3
8:30 AM		0	1	1	0	1		1				0	0		1	1	3
8:35 AM		3	0	3	0	2		2				0	0		0	0	5
8:40 AM		4	2	6	0	2		2				0	1		0	1	9
8:45 AM		1	0	1	0	0		0				0	2		0	2	3
8:50 AM		1	1	2	0	4		4				0	0		0	0	6
8:55 AM		1	1	2	0	1		1				0	1		0	1	4
Total Survey		48	17	65	1	28		29				0	13		5	18	112

Heavy Vehicle 15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Cedar Oak Dr				Westbound Cedar Oak Dr				Interval Total
		T	R	Total	L	T		Total				Total	L		R	Total	
7:00 AM		7	0	7	0	3		3				0	0		0	0	10
7:15 AM		5	1	6	0	2		2				0	0		0	0	8
7:30 AM		6	7	13	1	5		6				0	3		2	5	24
7:45 AM		8	3	11	0	3		3				0	2		0	2	16
8:00 AM		7	0	7	0	1		1				0	3		2	5	13
8:15 AM		5	1	6	0	4		4				0	1		0	1	11
8:30 AM		7	3	10	0	5		5				0	1		1	2	17
8:45 AM		3	2	5	0	5		5				0	3		0	3	13
Total Survey		48	17	65	1	28		29				0	13		5	18	112

Heavy Vehicle Peak Hour Summary
7:30 AM to 8:30 AM

By Approach	Northbound Hwy 43			Southbound Hwy 43			Eastbound Cedar Oak Dr			Westbound Cedar Oak Dr			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	37	22	59	14	30	44	0	0	0	13	12	25	64
PHF	0.71			0.58			0.00			0.54			0.67

By Movement	Northbound Hwy 43				Southbound Hwy 43				Eastbound Cedar Oak Dr				Westbound Cedar Oak Dr				Total
		T	R	Total	L	T		Total				Total	L		R	Total	
Volume		26	11	37	1	13		14				0	9		4	13	64
PHF		0.81	0.39	0.71	0.25	0.65		0.58				0.00	0.56		0.50	0.54	0.67

Heavy Vehicle Rolling Hour Summary
7:00 AM to 9:00 AM

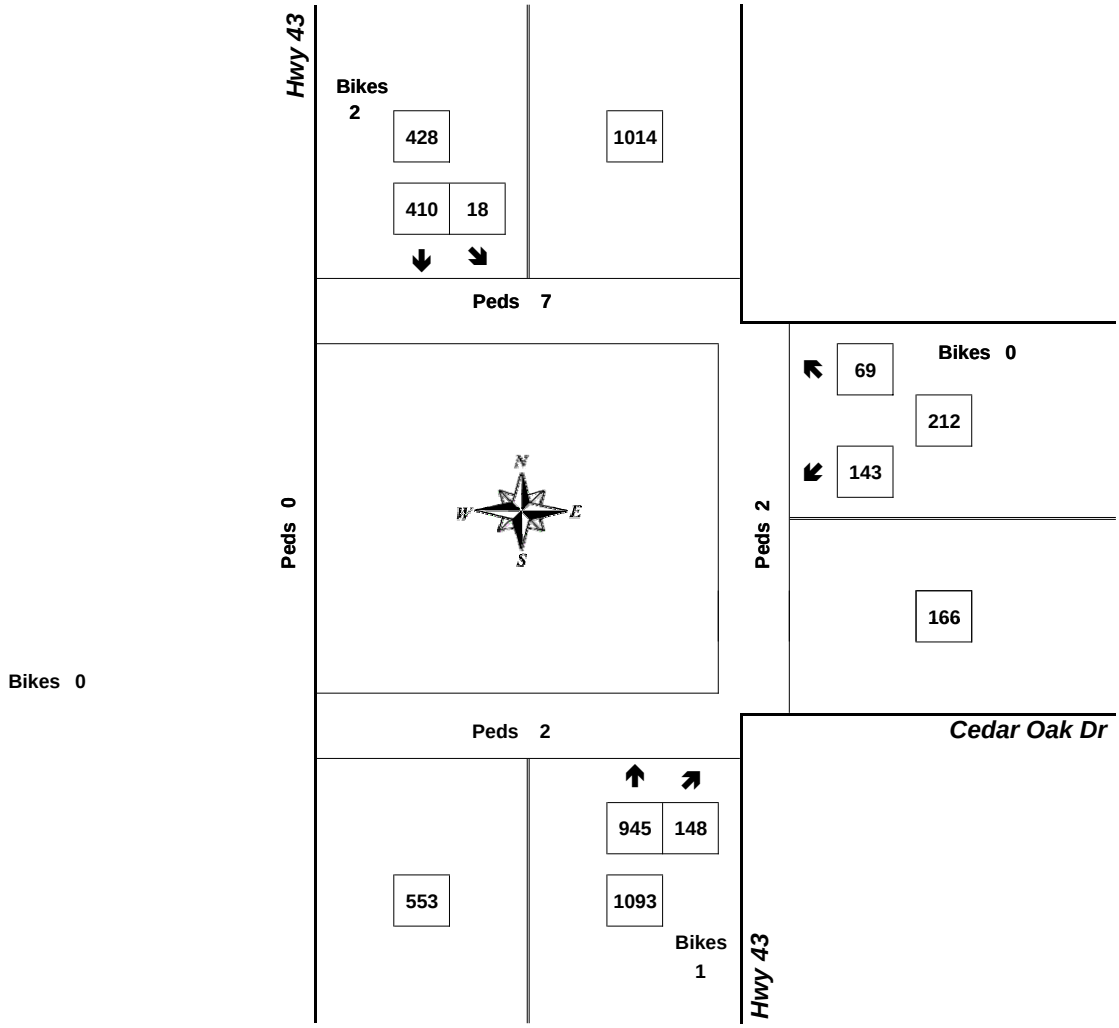
Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Cedar Oak Dr				Westbound Cedar Oak Dr				Interval Total
		T	R	Total	L	T		Total				Total	L		R	Total	
7:00 AM		26	11	37	1	13		14				0	5		2	7	58
7:15 AM		26	11	37	1	11		12				0	8		4	12	61
7:30 AM		26	11	37	1	13		14				0	9		4	13	64
7:45 AM		27	7	34	0	13		13				0	7		3	10	57
8:00 AM		22	6	28	0	15		15				0	8		3	11	54

Peak Hour Summary

Clay Carney
(503) 833-2740

Hwy 43 & Cedar Oak Dr

7:30 AM to 8:30 AM
Tuesday, November 08, 2011

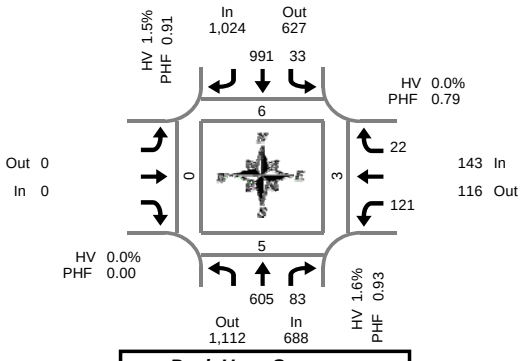


Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.69	6.1%	212
NB	0.90	3.4%	1,093
SB	0.84	3.3%	428
Intersection	0.91	3.7%	1,733

Count Period: 7:00 AM to 9:00 AM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
4:50 PM to 5:50 PM

Hwy 43 & Cedar Oak Dr

Tuesday, November 08, 2011
4:00 PM to 6:00 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Cedar Oak Dr				Westbound Cedar Oak Dr				Interval Total	Pedestrians Crosswalk			
	T	R	Bikes		L	T		Bikes				Bikes	L		R	Bikes		North	South	East	West
4:00 PM	43	4	0		4	64		0				0	11		1	0	127	0	0	0	0
4:05 PM	54	6	0		2	83		0				0	7		3	0	155	0	0	0	0
4:10 PM	43	7	0		5	91		0				0	11		2	0	159	0	2	0	0
4:15 PM	42	5	0		3	65		0				0	7		4	1	126	0	1	0	0
4:20 PM	36	16	0		0	69		0				0	5		3	0	129	0	1	0	0
4:25 PM	50	3	0		3	69		0				0	9		2	0	136	0	0	0	0
4:30 PM	51	11	1		1	69		0				0	8		3	0	143	0	4	0	0
4:35 PM	44	3	0		0	76		0				0	9		7	0	139	1	0	0	0
4:40 PM	51	9	0		0	77		0				0	7		2	0	146	0	1	0	0
4:45 PM	43	9	0		3	75		0				0	9		2	0	141	1	8	0	0
4:50 PM	44	11	0		4	80		0				0	20		1	0	160	0	0	0	0
4:55 PM	50	13	0		3	70		0				0	11		1	0	148	1	0	0	0
5:00 PM	55	5	0		2	81		0				0	4		1	0	148	1	3	0	0
5:05 PM	55	6	0		3	82		0				0	9		1	0	156	0	0	2	0
5:10 PM	53	4	0		2	98		0				0	15		2	0	174	2	0	0	0
5:15 PM	58	6	0		4	93		0				0	11		2	0	174	0	0	0	0
5:20 PM	50	6	0		2	70		0				0	10		5	0	143	0	0	0	0
5:25 PM	48	4	0		3	84		1				0	7		2	0	148	1	1	0	0
5:30 PM	52	3	0		2	72		0				0	8		2	0	139	0	0	1	0
5:35 PM	49	10	0		4	83		0				0	3		2	0	151	0	0	0	0
5:40 PM	34	7	0		3	93		0				0	9		2	0	148	1	0	0	0
5:45 PM	57	8	0		1	85		0				0	14		1	0	166	0	1	0	0
5:50 PM	46	11	0		1	72		0				0	11		4	0	145	1	0	0	0
5:55 PM	41	9	0		3	66		0				0	8		3	0	130	1	1	0	0
Total Survey	1,149	176	1		58	1,867		1				0	223		58	1	3,531	10	23	3	0

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Cedar Oak Dr				Westbound Cedar Oak Dr				Interval Total	Pedestrians Crosswalk			
	T	R	Bikes		L	T		Bikes				Bikes	L		R	Bikes		North	South	East	West
4:00 PM	140	17	0		11	238		0				0	29		6	0	441	0	2	0	0
4:15 PM	128	24	0		6	203		0				0	21		9	1	391	0	2	0	0
4:30 PM	146	23	1		1	222		0				0	24		12	0	428	1	5	0	0
4:45 PM	137	33	0		10	225		0				0	40		4	0	449	2	8	0	0
5:00 PM	163	15	0		7	261		0				0	28		4	0	478	3	3	2	0
5:15 PM	156	16	0		9	247		1				0	28		9	0	465	1	1	0	0
5:30 PM	135	20	0		9	248		0				0	20		6	0	438	1	0	1	0
5:45 PM	144	28	0		5	223		0				0	33		8	0	441	2	2	0	0
Total Survey	1,149	176	1		58	1,867		1				0	223		58	1	3,531	10	23	3	0

Peak Hour Summary
4:50 PM to 5:50 PM

By Approach	Northbound Hwy 43				Southbound Hwy 43				Eastbound Cedar Oak Dr				Westbound Cedar Oak Dr				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	688	1,112	1,800	0	1,024	627	1,651	1	0	0	0	0	143	116	259	0	1,855	6	5	3	0
%HV	1.6%				1.5%				0.0%				0.0%				1.4%				
PHF	0.93				0.91				0.00				0.79				0.92				

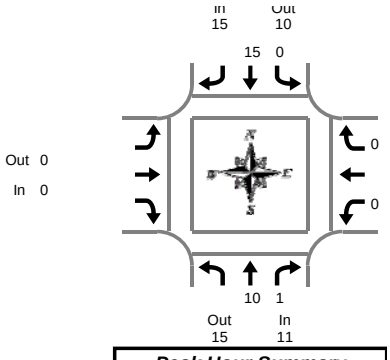
By Movement	Northbound Hwy 43				Southbound Hwy 43				Eastbound Cedar Oak Dr				Westbound Cedar Oak Dr				Total
	T	R	Total		L	T		Total				Total	L		R	Total	
Volume	605	83	688		33	991		1,024				0	121		22	143	1,855
%HV	NA	1.7%	1.2%	1.6%	0.0%	1.5%	NA	1.5%	NA	NA	NA	0.0%	0.0%	NA	0.0%	0.0%	1.4%
PHF		0.91	0.72	0.93	0.92	0.91		0.91				0.00	0.84		0.61	0.79	0.92

Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Cedar Oak Dr				Westbound Cedar Oak Dr				Interval Total	Pedestrians Crosswalk			
	T	R	Bikes		L	T		Bikes				Bikes	L		R	Bikes		North	South	East	West
4:00 PM	551	97	1		28	888		0				0	114		31	1	1,709	3	17	0	0
4:15 PM	574	95	1		24	911		0				0	113		29	1	1,746	6	18	2	0
4:30 PM	602	87	1		27	955		1				0	120		29	0	1,820	7	17	2	0
4:45 PM	591	84	0		35	981		1				0	116		23	0	1,830	7	12	3	0
5:00 PM	598	79	0		30	979		1				0	109		27	0	1,822	7	6	3	0

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Hwy 43 & Cedar Oak Dr

Tuesday, November 08, 2011
4:00 PM to 6:00 PM

Peak Hour Summary
4:50 PM to 5:50 PM

Heavy Vehicle 5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Cedar Oak Dr				Westbound Cedar Oak Dr				Interval Total
		T	R	Total	L	T		Total				Total	L		R	Total	
4:00 PM		2	1	3	1	1		2				0	0		0	0	5
4:05 PM		0	0	0	0	2		2				0	0		0	0	2
4:10 PM		0	1	1	0	4		4				0	0		0	0	5
4:15 PM		1	0	1	0	3		3				0	1		0	1	5
4:20 PM		0	1	1	0	1		1				0	0		0	0	2
4:25 PM		0	0	0	0	2		2				0	0		0	0	2
4:30 PM		2	0	2	0	2		2				0	0		0	0	4
4:35 PM		2	0	2	0	1		1				0	0		0	0	3
4:40 PM		1	0	1	0	1		1				0	0		0	0	2
4:45 PM		1	0	1	0	1		1				0	0		0	0	2
4:50 PM		0	0	0	0	1		1				0	0		0	0	1
4:55 PM		1	0	1	0	2		2				0	0		0	0	3
5:00 PM		2	0	2	0	3		3				0	0		0	0	5
5:05 PM		0	0	0	0	0		0				0	0		0	0	0
5:10 PM		0	0	0	0	2		2				0	0		0	0	2
5:15 PM		2	0	2	0	2		2				0	0		0	0	4
5:20 PM		1	0	1	0	0		0				0	0		0	0	1
5:25 PM		1	1	2	0	1		1				0	0		0	0	3
5:30 PM		1	0	1	0	1		1				0	0		0	0	2
5:35 PM		0	0	0	0	2		2				0	0		0	0	2
5:40 PM		1	0	1	0	1		1				0	0		0	0	2
5:45 PM		1	0	1	0	0		0				0	0		0	0	1
5:50 PM		0	0	0	0	1		1				0	0		0	0	1
5:55 PM		0	0	0	0	1		1				0	0		0	0	1
Total Survey		19	4	23	1	35		36				0	1		0	1	60

Heavy Vehicle 15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Cedar Oak Dr				Westbound Cedar Oak Dr				Interval Total
		T	R	Total	L	T		Total				Total	L		R	Total	
4:00 PM		2	2	4	1	7		8				0	0		0	0	12
4:15 PM		1	1	2	0	6		6				0	1		0	1	9
4:30 PM		5	0	5	0	4		4				0	0		0	0	9
4:45 PM		2	0	2	0	4		4				0	0		0	0	6
5:00 PM		2	0	2	0	5		5				0	0		0	0	7
5:15 PM		4	1	5	0	3		3				0	0		0	0	8
5:30 PM		2	0	2	0	4		4				0	0		0	0	6
5:45 PM		1	0	1	0	2		2				0	0		0	0	3
Total Survey		19	4	23	1	35		36				0	1		0	1	60

Heavy Vehicle Peak Hour Summary
4:50 PM to 5:50 PM

By Approach	Northbound Hwy 43			Southbound Hwy 43			Eastbound Cedar Oak Dr			Westbound Cedar Oak Dr			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	11	15	26	15	10	25	0	0	0	0	1	1	26
PHF	0.55			0.63			0.00			0.00			0.72

By Movement	Northbound Hwy 43				Southbound Hwy 43				Eastbound Cedar Oak Dr				Westbound Cedar Oak Dr				Total
		T	R	Total	L	T		Total				Total	L		R	Total	
Volume		10	1	11	0	15		15				0	0		0	0	26
PHF		0.63	0.25	0.55	0.00	0.63		0.63				0.00	0.00		0.00	0.00	0.72

Heavy Vehicle Rolling Hour Summary
4:00 PM to 6:00 PM

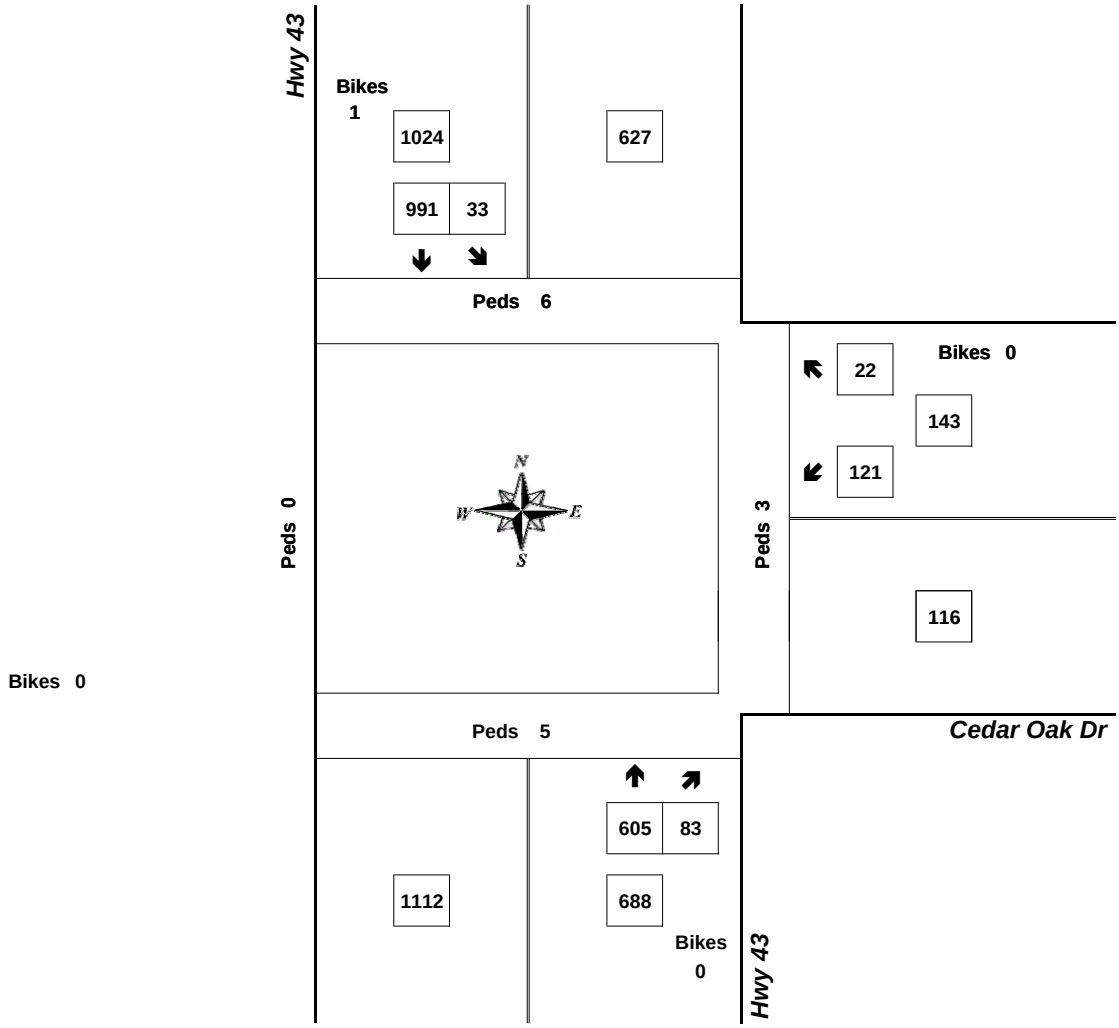
Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Cedar Oak Dr				Westbound Cedar Oak Dr				Interval Total
		T	R	Total	L	T		Total				Total	L		R	Total	
4:00 PM		10	3	13	1	21		22				0	1		0	1	36
4:15 PM		10	1	11	0	19		19				0	1		0	1	31
4:30 PM		13	1	14	0	16		16				0	0		0	0	30
4:45 PM		10	1	11	0	16		16				0	0		0	0	27
5:00 PM		9	1	10	0	14		14				0	0		0	0	24

Peak Hour Summary

Clay Carney
(503) 833-2740

Hwy 43 & Cedar Oak Dr

4:50 PM to 5:50 PM
Tuesday, November 08, 2011

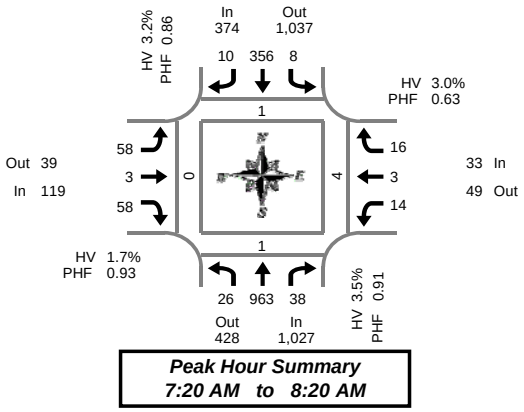


Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.79	0.0%	143
NB	0.93	1.6%	688
SB	0.91	1.5%	1,024
Intersection	0.92	1.4%	1,855

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary

Clay Carney
(503) 833-2740



Hwy 43 & Marylhurst Dr

Tuesday, November 08, 2011
7:00 AM to 9:00 AM

5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Marylhurst Dr				Westbound Marylhurst Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	2	66	1	0	1	20	1	0	4	0	6	0	2	0	2	0	105	0	0	0	1
7:05 AM	0	80	1	0	1	17	0	0	6	0	8	0	0	0	1	0	114	0	0	0	0
7:10 AM	4	67	2	0	1	36	0	0	5	0	3	0	2	0	1	0	121	0	0	1	0
7:15 AM	1	79	2	0	0	22	1	1	9	0	5	0	0	0	3	0	122	0	0	1	0
7:20 AM	2	76	8	0	1	21	0	0	7	1	9	0	0	0	2	0	127	0	0	0	0
7:25 AM	3	84	2	0	0	28	0	0	4	0	3	0	1	0	4	0	129	0	0	0	0
7:30 AM	2	88	0	0	1	22	0	0	2	0	4	0	3	0	3	0	125	0	0	0	0
7:35 AM	1	76	4	0	1	34	1	0	6	0	4	0	2	0	0	0	129	0	0	0	0
7:40 AM	4	83	1	0	0	35	1	1	8	1	6	0	2	0	1	0	142	0	0	0	0
7:45 AM	2	87	3	0	0	24	1	0	5	0	1	0	0	0	1	0	124	1	0	0	0
7:50 AM	1	80	3	1	2	35	3	2	7	0	3	0	1	2	0	0	137	0	1	0	0
7:55 AM	2	97	6	0	0	35	1	0	1	0	4	0	1	0	1	0	148	0	0	1	0
8:00 AM	2	63	2	0	0	32	1	0	6	0	5	0	0	0	3	0	114	0	0	0	0
8:05 AM	2	63	4	0	3	35	0	0	4	1	5	0	3	1	0	0	121	0	0	3	0
8:10 AM	4	76	2	0	0	31	0	0	2	0	3	0	0	0	0	0	118	0	0	0	0
8:15 AM	1	90	3	0	0	24	2	0	6	0	11	0	1	0	1	0	139	0	0	0	0
8:20 AM	0	81	0	0	2	20	2	0	5	0	5	0	1	1	0	0	117	0	0	1	0
8:25 AM	1	84	4	1	0	23	1	0	3	0	3	0	2	0	1	0	122	0	0	0	0
8:30 AM	1	64	4	0	1	26	1	0	3	0	0	0	0	0	1	0	101	0	0	1	0
8:35 AM	3	61	5	0	0	34	0	1	3	0	4	0	1	0	0	1	111	0	0	0	0
8:40 AM	1	73	3	0	2	28	1	0	4	0	3	0	3	0	0	0	118	0	0	1	0
8:45 AM	5	69	4	0	1	34	1	0	2	0	6	0	0	0	0	0	122	0	0	0	0
8:50 AM	0	59	2	0	3	32	0	0	5	0	5	0	0	0	2	0	108	0	0	0	0
8:55 AM	1	60	2	0	1	28	1	0	4	0	3	0	0	0	0	0	100	0	0	0	0
Total Survey	45	1,806	68	2	21	676	19	5	111	3	109	0	25	4	27	1	2,914	1	1	9	1

15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Marylhurst Dr				Westbound Marylhurst Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	6	213	4	0	3	73	1	0	15	0	17	0	4	0	4	0	340	0	0	1	1
7:15 AM	6	239	12	0	1	71	1	1	20	1	17	0	1	0	9	0	378	0	0	1	0
7:30 AM	7	247	5	0	2	91	2	1	16	1	14	0	7	0	4	0	396	0	0	0	0
7:45 AM	5	264	12	1	2	94	5	2	13	0	8	0	2	2	2	0	409	1	1	1	0
8:00 AM	8	202	8	0	3	98	1	0	12	1	13	0	3	1	3	0	353	0	0	3	0
8:15 AM	2	255	7	1	2	67	5	0	14	0	19	0	4	1	2	0	378	0	0	1	0
8:30 AM	5	198	12	0	3	88	2	1	10	0	7	0	4	0	1	1	330	0	0	2	0
8:45 AM	6	188	8	0	5	94	2	0	11	0	14	0	0	0	2	0	330	0	0	0	0
Total Survey	45	1,806	68	2	21	676	19	5	111	3	109	0	25	4	27	1	2,914	1	1	9	1

Peak Hour Summary
7:20 AM to 8:20 AM

By Approach	Northbound Hwy 43				Southbound Hwy 43				Eastbound Marylhurst Dr				Westbound Marylhurst Dr				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	1,027	428	1,455	1	374	1,037	1,411	3	119	39	158	0	33	49	82	0	1,553	1	1	4	0
%HV	3.5%				3.2%				1.7%				3.0%				3.3%				
PHF	0.91				0.86				0.93				0.63				0.95				

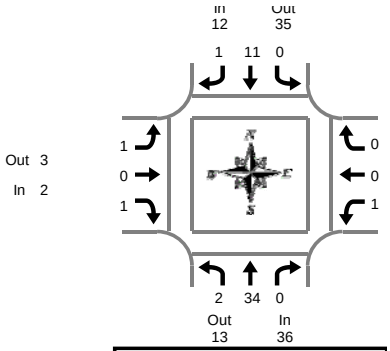
By Movement	Northbound Hwy 43				Southbound Hwy 43				Eastbound Marylhurst Dr				Westbound Marylhurst Dr				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	26	963	38	1,027	8	356	10	374	58	3	58	119	14	3	16	33	1,553
%HV	7.7%	3.5%	0.0%	3.5%	0.0%	3.1%	10.0%	3.2%	1.7%	0.0%	1.7%	1.7%	7.1%	0.0%	0.0%	3.0%	3.3%
PHF	0.81	0.91	0.79	0.91	0.67	0.87	0.50	0.86	0.73	0.75	0.76	0.93	0.50	0.38	0.44	0.63	0.95

Rolling Hour Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Marylhurst Dr				Westbound Marylhurst Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	24	963	33	1	8	329	9	4	64	2	56	0	14	2	19	0	1,523	1	1	3	1
7:15 AM	26	952	37	1	8	354	9	4	61	3	52	0	13	3	18	0	1,536	1	1	5	0
7:30 AM	22	968	32	2	9	350	13	3	55	2	54	0	16	4	11	0	1,536	1	1	5	0
7:45 AM	20	919	39	2	10	347	13	3	49	1	47	0	13	4	8	1	1,470	1	1	7	0
8:00 AM	21	843	35	1	13	347	10	1	47	1	53	0	11	2	8	1	1,391	0	0	6	0

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Hwy 43 & Marylhurst Dr

Tuesday, November 08, 2011
7:00 AM to 9:00 AM

Peak Hour Summary
7:20 AM to 8:20 AM

Heavy Vehicle 5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Marylhurst Dr				Westbound Marylhurst Dr				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	2	0	2	1	0	0	1	0	0	0	0	1	0	0	1	4
7:05 AM	0	4	0	4	0	1	0	1	0	0	0	0	0	0	0	0	5
7:10 AM	2	1	0	3	0	2	0	2	0	0	0	0	0	0	0	0	5
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:20 AM	0	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	3
7:25 AM	0	5	0	5	0	1	0	1	1	0	1	2	0	0	0	0	8
7:30 AM	0	2	0	2	0	2	0	2	0	0	0	0	1	0	0	1	5
7:35 AM	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
7:40 AM	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
7:45 AM	0	5	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
7:50 AM	0	2	0	2	0	4	0	4	0	0	0	0	0	0	0	0	6
7:55 AM	0	7	0	7	0	0	1	1	0	0	0	0	0	0	0	0	8
8:00 AM	0	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	3
8:05 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
8:10 AM	1	5	0	6	0	0	0	0	0	0	0	0	0	0	0	0	6
8:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
8:20 AM	0	1	0	1	0	2	0	2	0	0	0	0	0	0	0	0	3
8:25 AM	0	2	0	2	0	2	0	2	0	0	0	0	0	0	0	0	4
8:30 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
8:35 AM	0	1	0	1	0	2	0	2	0	0	0	0	0	0	0	0	3
8:40 AM	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
8:45 AM	1	3	0	4	0	2	0	2	0	0	1	1	0	0	0	0	7
8:50 AM	0	3	0	3	0	2	0	2	0	0	0	0	0	0	0	0	5
8:55 AM	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
Total Survey	5	57	0	62	1	25	1	27	1	0	2	3	2	0	0	2	94

Heavy Vehicle 15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Marylhurst Dr				Westbound Marylhurst Dr				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	2	7	0	9	1	3	0	4	0	0	0	0	1	0	0	1	14
7:15 AM	0	7	0	7	0	2	0	2	1	0	1	2	0	0	0	0	11
7:30 AM	1	5	0	6	0	3	0	3	0	0	0	0	1	0	0	1	10
7:45 AM	0	14	0	14	0	4	1	5	0	0	0	0	0	0	0	0	19
8:00 AM	1	8	0	9	0	1	0	1	0	0	0	0	0	0	0	0	10
8:15 AM	0	3	0	3	0	5	0	5	0	0	0	0	0	0	0	0	8
8:30 AM	0	6	0	6	0	2	0	2	0	0	0	0	0	0	0	0	8
8:45 AM	1	7	0	8	0	5	0	5	0	0	1	1	0	0	0	0	14
Total Survey	5	57	0	62	1	25	1	27	1	0	2	3	2	0	0	2	94

Heavy Vehicle Peak Hour Summary
7:20 AM to 8:20 AM

By Approach	Northbound Hwy 43			Southbound Hwy 43			Eastbound Marylhurst Dr			Westbound Marylhurst Dr			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	36	13	49	12	35	47	2	3	5	1	0	1	51
PHF	0.64			0.50			0.25			0.25			0.67

By Movement	Northbound Hwy 43				Southbound Hwy 43				Eastbound Marylhurst Dr				Westbound Marylhurst Dr				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	2	34	0	36	0	11	1	12	1	0	1	2	1	0	0	1	51
PHF	0.50	0.61	0.00	0.64	0.00	0.55	0.25	0.50	0.25	0.00	0.25	0.25	0.25	0.00	0.00	0.25	0.67

Heavy Vehicle Rolling Hour Summary
7:00 AM to 9:00 AM

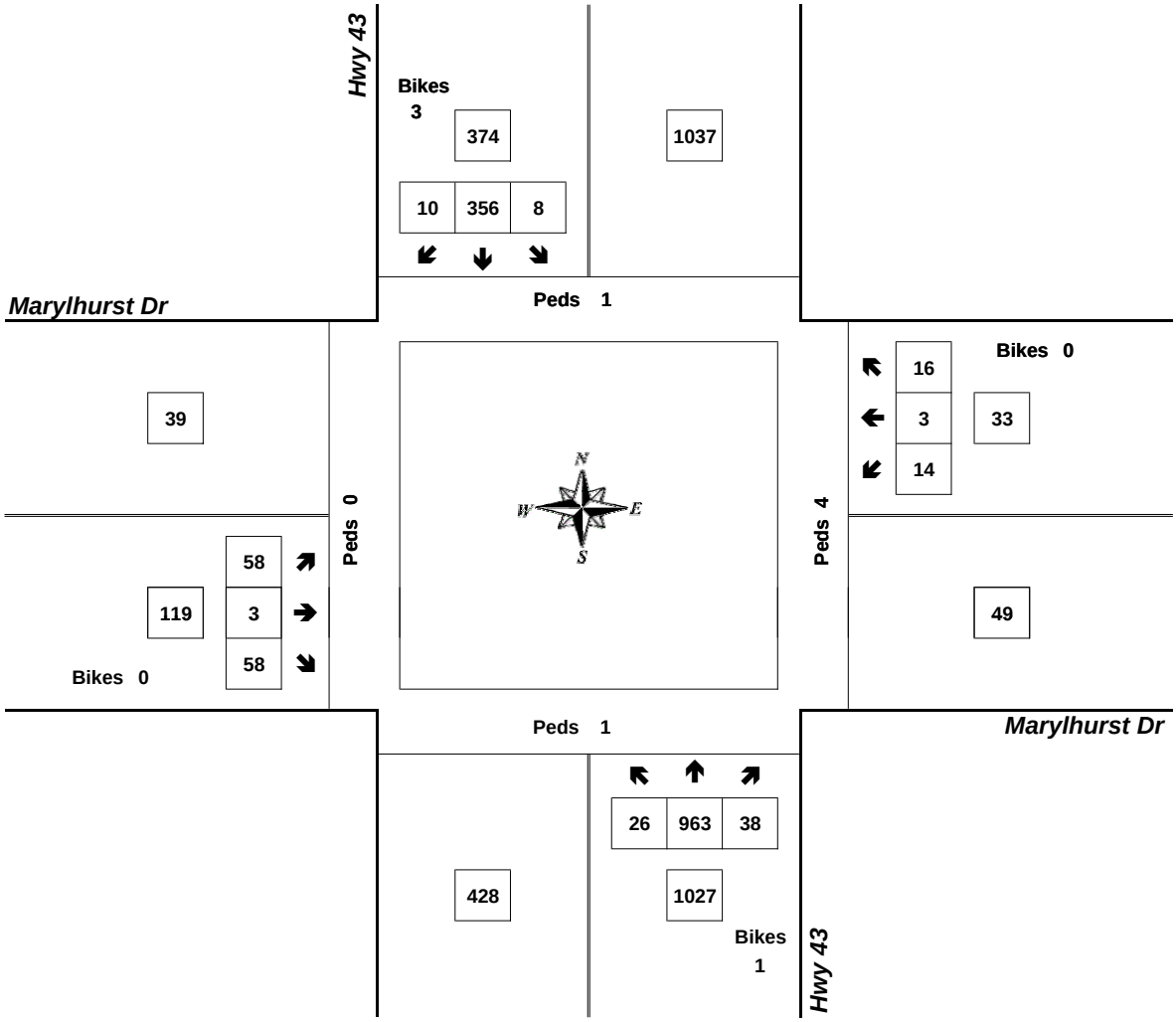
Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Marylhurst Dr				Westbound Marylhurst Dr				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	3	33	0	36	1	12	1	14	1	0	1	2	2	0	0	2	54
7:15 AM	2	34	0	36	0	10	1	11	1	0	1	2	1	0	0	1	50
7:30 AM	2	30	0	32	0	13	1	14	0	0	0	0	1	0	0	1	47
7:45 AM	1	31	0	32	0	12	1	13	0	0	0	0	0	0	0	0	45
8:00 AM	2	24	0	26	0	13	0	13	0	0	1	1	0	0	0	0	40

Peak Hour Summary

Clay Carney
(503) 833-2740

Hwy 43 & Marylhurst Dr

7:20 AM to 8:20 AM
Tuesday, November 08, 2011

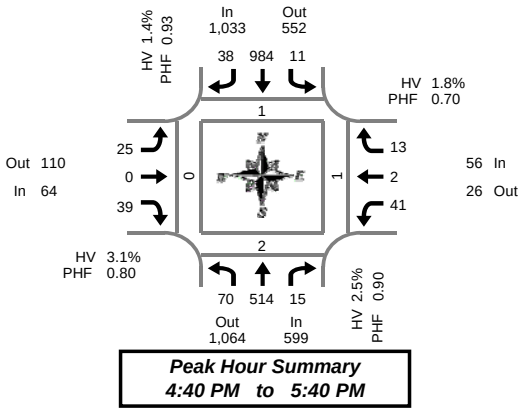


Approach	PHF	HV%	Volume
EB	0.93	1.7%	119
WB	0.63	3.0%	33
NB	0.91	3.5%	1,027
SB	0.86	3.2%	374
Intersection	0.95	3.3%	1,553

Count Period: 7:00 AM to 9:00 AM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
4:40 PM to 5:40 PM

Hwy 43 & Marylhurst Dr

Tuesday, November 08, 2011
4:00 PM to 6:00 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Marylhurst Dr				Westbound Marylhurst Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	5	28	3	0	1	64	1	0	4	1	5	0	2	0	0	0	114	0	0	0	0
4:05 PM	6	48	2	0	0	72	4	0	1	0	3	0	7	0	0	0	143	0	0	0	0
4:10 PM	1	34	2	0	2	78	2	0	2	0	1	0	1	0	0	0	123	0	1	1	0
4:15 PM	6	43	1	0	0	58	3	0	2	0	4	0	6	0	1	0	124	0	0	0	0
4:20 PM	8	27	0	0	0	67	1	0	2	0	4	0	2	0	0	0	111	0	0	0	0
4:25 PM	4	36	4	0	1	73	0	0	5	0	2	0	2	0	0	0	127	0	2	0	0
4:30 PM	8	43	0	0	1	63	5	0	1	0	7	0	3	0	0	0	131	0	0	0	0
4:35 PM	6	46	1	0	0	60	3	0	2	0	3	0	3	1	0	0	125	0	0	0	0
4:40 PM	3	41	1	0	4	92	1	0	3	0	4	0	2	0	0	0	151	0	0	0	0
4:45 PM	8	41	2	0	1	82	4	0	0	0	2	0	1	1	0	0	142	0	1	0	0
4:50 PM	5	35	2	0	1	77	3	0	3	0	4	0	4	0	1	0	135	1	0	0	0
4:55 PM	8	44	0	0	0	67	3	0	2	0	6	0	2	0	2	0	134	0	1	1	0
5:00 PM	4	42	1	0	1	86	2	0	1	0	1	0	3	0	1	0	142	0	0	0	0
5:05 PM	6	45	3	0	0	81	0	0	3	0	2	0	5	0	0	0	145	0	0	0	0
5:10 PM	1	49	2	0	1	104	4	0	1	0	4	0	7	1	1	0	175	0	0	0	0
5:15 PM	10	49	1	0	0	62	8	0	3	0	3	0	4	0	2	0	142	0	0	0	0
5:20 PM	4	46	2	0	1	72	1	0	5	0	4	0	0	0	2	0	137	0	0	0	0
5:25 PM	8	41	0	0	2	115	5	0	1	0	3	0	4	0	2	0	181	0	0	0	0
5:30 PM	6	44	1	0	0	73	2	0	2	0	1	0	1	0	1	0	131	0	0	0	0
5:35 PM	7	37	0	0	0	73	5	0	1	0	5	0	8	0	1	0	137	0	0	0	0
5:40 PM	1	30	2	0	1	92	3	0	0	0	6	0	1	0	1	0	137	0	0	0	0
5:45 PM	6	40	3	0	1	74	7	0	1	0	2	0	3	0	0	0	137	0	0	0	0
5:50 PM	6	43	0	0	1	64	8	0	0	0	2	0	0	0	0	0	124	0	0	0	0
5:55 PM	1	37	0	0	3	71	3	0	3	0	1	0	7	0	1	0	127	0	0	0	0
Total Survey	128	969	33	0	22	1,820	78	0	48	1	79	0	78	3	16	0	3,275	1	5	2	0

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Marylhurst Dr				Westbound Marylhurst Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	12	110	7	0	3	214	7	0	7	1	9	0	10	0	0	0	380	0	1	1	0
4:15 PM	18	106	5	0	1	198	4	0	9	0	10	0	10	0	1	0	362	0	2	0	0
4:30 PM	17	130	2	0	5	215	9	0	6	0	14	0	8	1	0	0	407	0	0	0	0
4:45 PM	21	120	4	0	2	226	10	0	5	0	12	0	7	1	3	0	411	1	2	1	0
5:00 PM	11	136	6	0	2	271	6	0	5	0	7	0	15	1	2	0	462	0	0	0	0
5:15 PM	22	136	3	0	3	249	14	0	9	0	10	0	8	0	6	0	460	0	0	0	0
5:30 PM	14	111	3	0	1	238	10	0	3	0	12	0	10	0	3	0	405	0	0	0	0
5:45 PM	13	120	3	0	5	209	18	0	4	0	5	0	10	0	1	0	388	0	0	0	0
Total Survey	128	969	33	0	22	1,820	78	0	48	1	79	0	78	3	16	0	3,275	1	5	2	0

Peak Hour Summary
4:40 PM to 5:40 PM

By Approach	Northbound Hwy 43				Southbound Hwy 43				Eastbound Marylhurst Dr				Westbound Marylhurst Dr				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	599	1,064	1,663	0	1,033	552	1,585	0	64	110	174	0	56	26	82	0	1,752	1	2	1	0
%HV	2.5%				1.4%				3.1%				1.8%				1.8%				
PHF	0.90				0.93				0.80				0.70				0.95				

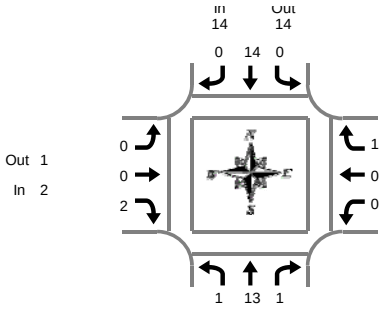
By Movement	Northbound Hwy 43				Southbound Hwy 43				Eastbound Marylhurst Dr				Westbound Marylhurst Dr				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	70	514	15	599	11	984	38	1,033	25	0	39	64	41	2	13	56	1,752
%HV	1.4%	2.5%	6.7%	2.5%	0.0%	1.4%	0.0%	1.4%	0.0%	0.0%	5.1%	3.1%	0.0%	0.0%	7.7%	1.8%	1.8%
PHF	0.80	0.89	0.63	0.90	0.46	0.91	0.68	0.93	0.69	0.00	0.81	0.80	0.64	0.50	0.54	0.70	0.95

Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Marylhurst Dr				Westbound Marylhurst Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	68	466	18	0	11	853	30	0	27	1	45	0	35	2	4	0	1,560	1	5	2	0
4:15 PM	67	492	17	0	10	910	29	0	25	0	43	0	40	3	6	0	1,642	1	4	1	0
4:30 PM	71	522	15	0	12	961	39	0	25	0	43	0	38	3	11	0	1,740	1	2	1	0
4:45 PM	68	503	16	0	8	984	40	0	22	0	41	0	40	2	14	0	1,738	1	2	1	0
5:00 PM	60	503	15	0	11	967	48	0	21	0	34	0	43	1	12	0	1,715	0	0	0	0

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Hwy 43 & Marylhurst Dr

Tuesday, November 08, 2011
4:00 PM to 6:00 PM

Peak Hour Summary
4:40 PM to 5:40 PM

Heavy Vehicle 5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Marylhurst Dr				Westbound Marylhurst Dr				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
4:05 PM	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	1	2
4:10 PM	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3
4:15 PM	1	1	0	2	0	2	0	2	0	0	0	0	0	0	0	0	4
4:20 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
4:25 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
4:30 PM	0	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	3
4:35 PM	1	1	0	2	0	1	0	1	0	0	0	0	0	0	0	0	3
4:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	3
4:50 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
4:55 PM	0	2	0	2	0	3	0	3	0	0	0	0	0	0	0	0	5
5:00 PM	0	1	0	1	0	1	0	1	0	0	1	1	0	0	0	0	3
5:05 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
5:10 PM	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
5:15 PM	0	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	3
5:20 PM	0	1	1	2	0	2	0	2	0	0	0	0	0	0	0	0	4
5:25 PM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	1	2	0	3	0	1	0	1	0	0	0	0	0	0	1	1	5
5:35 PM	0	0	0	0	0	2	0	2	0	0	1	1	0	0	0	0	3
5:40 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
5:50 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
5:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	4	21	1	26	0	27	0	27	0	0	2	2	1	0	1	2	57

Heavy Vehicle 15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Marylhurst Dr				Westbound Marylhurst Dr				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	1	0	0	1	0	5	0	5	0	0	0	0	1	0	0	1	7
4:15 PM	1	1	0	2	0	5	0	5	0	0	0	0	0	0	0	0	7
4:30 PM	1	3	0	4	0	2	0	2	0	0	0	0	0	0	0	0	6
4:45 PM	0	4	0	4	0	5	0	5	0	0	0	0	0	0	0	0	9
5:00 PM	0	2	0	2	0	3	0	3	0	0	1	1	0	0	0	0	6
5:15 PM	0	5	1	6	0	3	0	3	0	0	0	0	0	0	0	0	9
5:30 PM	1	3	0	4	0	3	0	3	0	0	1	1	0	0	1	1	9
5:45 PM	0	3	0	3	0	1	0	1	0	0	0	0	0	0	0	0	4
Total Survey	4	21	1	26	0	27	0	27	0	0	2	2	1	0	1	2	57

Heavy Vehicle Peak Hour Summary
4:40 PM to 5:40 PM

By Approach	Northbound Hwy 43			Southbound Hwy 43			Eastbound Marylhurst Dr			Westbound Marylhurst Dr			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	15	16	31	14	14	28	2	1	3	1	1	2	32
PHF	0.54			0.70			0.50			0.25			0.73

By Movement	Northbound Hwy 43				Southbound Hwy 43				Eastbound Marylhurst Dr				Westbound Marylhurst Dr				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	1	13	1	15	0	14	0	14	0	0	2	2	0	0	1	1	32
PHF	0.25	0.65	0.25	0.54	0.00	0.70	0.00	0.70	0.00	0.00	0.50	0.50	0.00	0.00	0.25	0.25	0.73

Heavy Vehicle Rolling Hour Summary
4:00 PM to 6:00 PM

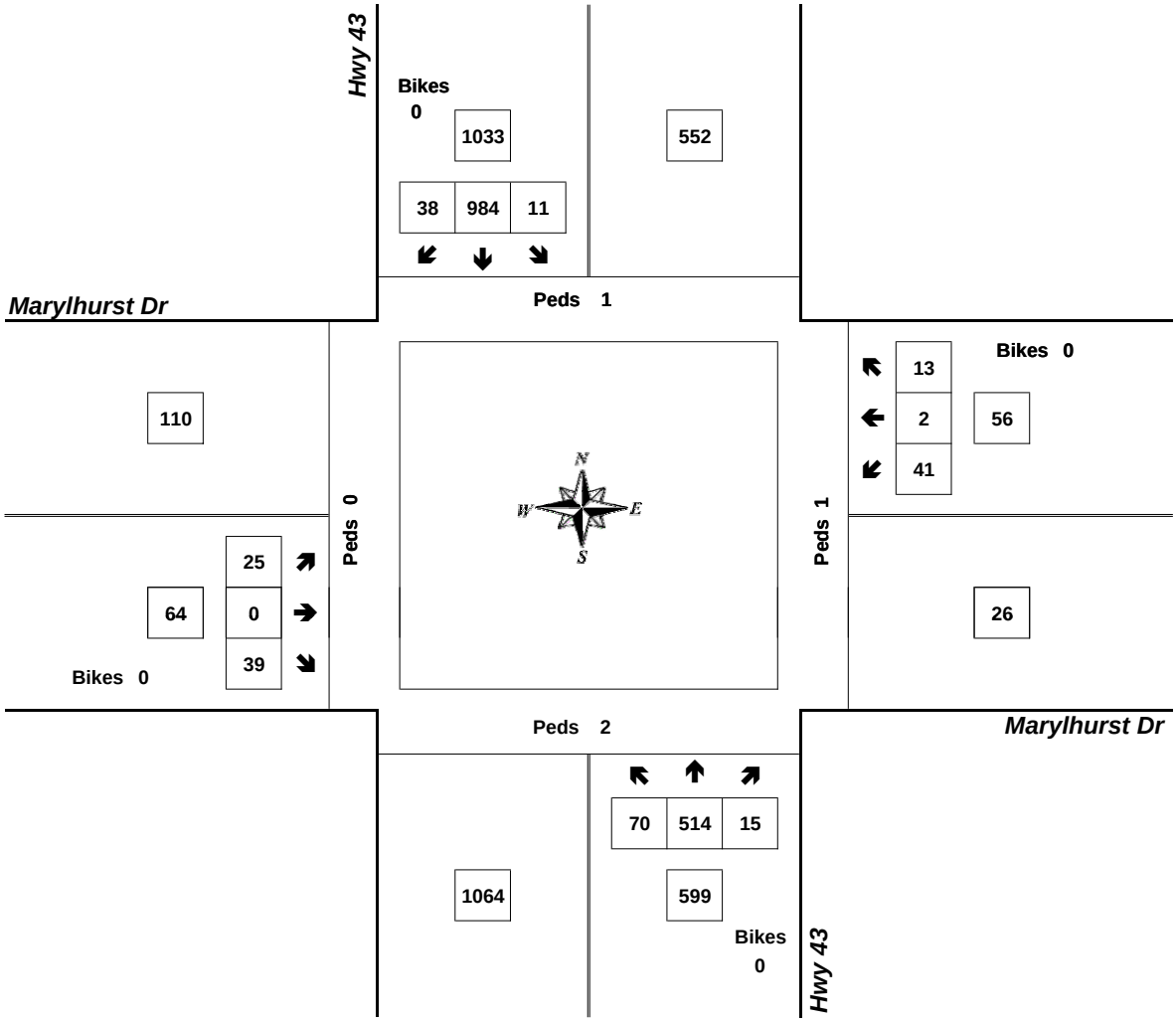
Interval Start Time	Northbound Hwy 43				Southbound Hwy 43				Eastbound Marylhurst Dr				Westbound Marylhurst Dr				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	3	8	0	11	0	17	0	17	0	0	0	0	1	0	0	1	29
4:15 PM	2	10	0	12	0	15	0	15	0	0	1	1	0	0	0	0	28
4:30 PM	1	14	1	16	0	13	0	13	0	0	1	1	0	0	0	0	30
4:45 PM	1	14	1	16	0	14	0	14	0	0	2	2	0	0	1	1	33
5:00 PM	1	13	1	15	0	10	0	10	0	0	2	2	0	0	1	1	28

Peak Hour Summary

Clay Carney
(503) 833-2740

Hwy 43 & Marylhurst Dr

4:40 PM to 5:40 PM
Tuesday, November 08, 2011



Approach	PHF	HV%	Volume
EB	0.80	3.1%	64
WB	0.70	1.8%	56
NB	0.90	2.5%	599
SB	0.93	1.4%	1,033
Intersection	0.95	1.8%	1,752

Count Period: 4:00 PM to 6:00 PM

Appendix C – Traffic Analysis Results

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	5	0	0	25	2	551	5	0	1088	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	5	0	0	27	2	599	5	0	1183	9
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1241				
pX, platoon unblocked												
vC, conflicting volume	1816	1797	602	1796	1796	1187	1191			604		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1816	1797	602	1796	1796	1187	1191			604		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.3			2.2		
p0 queue free %	100	100	99	100	100	88	100			100		
cM capacity (veh/h)	53	80	500	61	80	225	572			973		

Direction, Lane #	EB 1	WB 1	SE 1	SE 2	NW 1	NW 2
Volume Total	5	27	2	604	0	1191
Volume Left	0	0	2	0	0	0
Volume Right	5	27	0	5	0	9
cSH	500	225	572	1700	1700	1700
Volume to Capacity	0.01	0.12	0.00	0.36	0.00	0.70
Queue Length 95th (ft)	1	10	0	0	0	0
Control Delay (s)	12.3	23.2	11.3	0.0	0.0	0.0
Lane LOS	B	C	B			
Approach Delay (s)	12.3	23.2	0.0		0.0	
Approach LOS	B	C				

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	67.7%	ICU Level of Service	C	
Analysis Period (min)	15			

Average delay encountered by vehicles using Mapleton Drive

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↱			↱	
Volume (veh/h)	0	0	5	0	0	26	2	551	5	0	1088	21
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	5	0	0	28	2	599	5	0	1183	23
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1241				
pX, platoon unblocked												
vC, conflicting volume	1817	1811	602	1803	1803	1194	1205			604		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1817	1811	602	1803	1803	1194	1205			604		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.3			2.2		
p0 queue free %	100	100	99	100	100	87	100			100		
cM capacity (veh/h)	52	78	500	61	79	217	565			973		

Direction, Lane #	EB 1	WB 1	SE 1	SE 2	NW 1	NW 2
Volume Total	5	28	2	604	0	1205
Volume Left	0	0	2	0	0	0
Volume Right	5	28	0	5	0	23
cSH	500	217	565	1700	1700	1700
Volume to Capacity	0.01	0.13	0.00	0.36	0.00	0.71
Queue Length 95th (ft)	1	11	0	0	0	0
Control Delay (s)	12.3	24.1	11.4	0.0	0.0	0.0
Lane LOS	B	C	B			
Approach Delay (s)	12.3	24.1	0.0		0.0	
Approach LOS	B	C				

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	68.5%	ICU Level of Service	C	
Analysis Period (min)	15			

Average delay encountered by vehicles using Mapleton Drive

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	5	0	0	15	5	1107	5	0	685	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	5	0	0	16	5	1203	5	0	745	16
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1241				
pX, platoon unblocked	0.21	0.21	0.21	0.21	0.21					0.21		
vC, conflicting volume	1978	1978	1206	1972	1972	753	761			1209		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	3778	3778	98	3753	3753	753	761			111		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	96	99			100		
cM capacity (veh/h)	0	1	201	0	1	410	851			310		

Direction, Lane #	EB 1	WB 1	SE 1	SE 2	NW 1	NW 2
Volume Total	5	16	5	1209	0	761
Volume Left	0	0	5	0	0	0
Volume Right	5	16	0	5	0	16
cSH	201	410	851	1700	1700	1700
Volume to Capacity	0.03	0.04	0.01	0.71	0.00	0.45
Queue Length 95th (ft)	2	3	0	0	0	0
Control Delay (s)	23.4	14.1	9.3	0.0	0.0	0.0
Lane LOS	C	B	A			
Approach Delay (s)	23.4	14.1	0.0		0.0	
Approach LOS	C	B				

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	68.6%	ICU Level of Service	C	
Analysis Period (min)	15			

Average delay encountered by vehicles using Mapleton Drive

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	5	0	0	18	5	1107	5	0	685	17
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	5	0	0	20	5	1203	5	0	745	18
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1241				
pX, platoon unblocked	0.22	0.22	0.22	0.22	0.22					0.22		
vC, conflicting volume	1981	1980	1206	1973	1973	754	763			1209		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	3730	3725	137	3695	3695	754	763			150		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.2			2.2		
p0 queue free %	100	100	97	100	100	95	99			100		
cM capacity (veh/h)	0	1	197	1	1	403	850			309		

Direction, Lane #	EB 1	WB 1	SE 1	SE 2	NW 1	NW 2
Volume Total	5	20	5	1209	0	763
Volume Left	0	0	5	0	0	0
Volume Right	5	20	0	5	0	18
cSH	197	403	850	1700	1700	1700
Volume to Capacity	0.03	0.05	0.01	0.71	0.00	0.45
Queue Length 95th (ft)	2	4	0	0	0	0
Control Delay (s)	23.8	14.4	9.3	0.0	0.0	0.0
Lane LOS	C	B	A			
Approach Delay (s)	23.8	14.4	0.0		0.0	
Approach LOS	C	B				

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	68.6%	ICU Level of Service	C	
Analysis Period (min)	15			

Average delay encountered by vehicles using Mapleton Drive

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Volume (vph)	143	69	18	410	945	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1687	1524	1703	3539	1793	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1687	1524	1703	3539	1793	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	157	76	20	451	1038	163
RTOR Reduction (vph)	0	67	0	0	4	0
Lane Group Flow (vph)	157	9	20	451	1197	0
Confl. Peds. (#/hr)	2	7	2			2
Heavy Vehicles (%)	7%	6%	6%	2%	3%	8%
Turn Type		Prot	Prot			
Protected Phases	8	8	1	6	2	
Permitted Phases						
Actuated Green, G (s)	11.6	11.6	3.2	79.4	72.2	
Effective Green, g (s)	11.6	11.6	3.2	79.4	72.2	
Actuated g/C Ratio	0.12	0.12	0.03	0.79	0.72	
Clearance Time (s)	4.0	4.0	4.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	196	177	54	2810	1295	
v/s Ratio Prot	c0.09	0.01	c0.01	0.13	c0.67	
v/s Ratio Perm						
v/c Ratio	0.80	0.05	0.37	0.16	0.92	
Uniform Delay, d1	43.1	39.3	47.4	2.4	11.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	20.5	0.1	4.2	0.1	12.4	
Delay (s)	63.5	39.4	51.7	2.6	24.0	
Level of Service	E	D	D	A	C	
Approach Delay (s)	55.7			4.6	24.0	
Approach LOS	E			A	C	

Intersection Summary			
HCM Average Control Delay	23.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Average delay encountered by vehicles using Cedar Oak Drive

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Volume (vph)	146	70	22	410	945	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1656	1509	1656	3539	1787	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1656	1509	1656	3539	1787	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	160	77	24	451	1038	177
RTOR Reduction (vph)	0	68	0	0	5	0
Lane Group Flow (vph)	160	9	24	451	1210	0
Confl. Peds. (#/hr)	2	7	2			2
Heavy Vehicles (%)	9%	7%	9%	2%	3%	9%
Turn Type		Prot	Prot			
Protected Phases	8	8	1	6	2	
Permitted Phases						
Actuated Green, G (s)	11.7	11.7	3.4	79.3	71.9	
Effective Green, g (s)	11.7	11.7	3.4	79.3	71.9	
Actuated g/C Ratio	0.12	0.12	0.03	0.79	0.72	
Clearance Time (s)	4.0	4.0	4.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	194	177	56	2806	1285	
v/s Ratio Prot	c0.10	0.01	c0.01	0.13	c0.68	
v/s Ratio Perm						
v/c Ratio	0.82	0.05	0.43	0.16	0.94	
Uniform Delay, d1	43.1	39.2	47.3	2.5	12.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	23.9	0.1	5.2	0.1	14.6	
Delay (s)	67.0	39.3	52.5	2.6	26.8	
Level of Service	E	D	D	A	C	
Approach Delay (s)	58.0			5.1	26.8	
Approach LOS	E			A	C	

Intersection Summary			
HCM Average Control Delay	25.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Average delay encountered by vehicles using Cedar Oak Drive

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Volume (vph)	147	70	22	410	945	174
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1641	1509	1656	3539	1783	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1641	1509	1656	3539	1783	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	162	77	24	451	1038	191
RTOR Reduction (vph)	0	68	0	0	5	0
Lane Group Flow (vph)	162	9	24	451	1224	0
Confl. Peds. (#/hr)	2	7	2			2
Heavy Vehicles (%)	10%	7%	9%	2%	3%	9%
Turn Type		Prot	Prot			
Protected Phases	8	8	1	6	2	
Permitted Phases						
Actuated Green, G (s)	11.7	11.7	3.4	79.3	71.9	
Effective Green, g (s)	11.7	11.7	3.4	79.3	71.9	
Actuated g/C Ratio	0.12	0.12	0.03	0.79	0.72	
Clearance Time (s)	4.0	4.0	4.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	192	177	56	2806	1282	
v/s Ratio Prot	c0.10	0.01	c0.01	0.13	c0.69	
v/s Ratio Perm						
v/c Ratio	0.84	0.05	0.43	0.16	0.95	
Uniform Delay, d1	43.3	39.2	47.3	2.5	12.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	27.2	0.1	5.2	0.1	16.4	
Delay (s)	70.4	39.3	52.5	2.6	29.0	
Level of Service	E	D	D	A	C	
Approach Delay (s)	60.4			5.1	29.0	
Approach LOS	E			A	C	

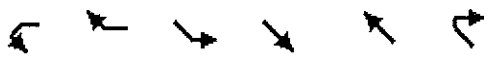
Intersection Summary			
HCM Average Control Delay	27.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Average delay encountered by vehicles using Cedar Oak Drive

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Volume (vph)	147	70	31	410	945	247
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.97	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1641	1509	1687	3539	1770	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1641	1509	1687	3539	1770	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	162	77	34	451	1038	271
RTOR Reduction (vph)	0	68	0	0	7	0
Lane Group Flow (vph)	162	9	34	451	1302	0
Confl. Peds. (#/hr)	2	7	2			2
Heavy Vehicles (%)	10%	7%	7%	2%	3%	7%
Turn Type		Prot	Prot			
Protected Phases	8	8	1	6	2	
Permitted Phases						
Actuated Green, G (s)	11.7	11.7	5.2	79.3	70.1	
Effective Green, g (s)	11.7	11.7	5.2	79.3	70.1	
Actuated g/C Ratio	0.12	0.12	0.05	0.79	0.70	
Clearance Time (s)	4.0	4.0	4.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	192	177	88	2806	1241	
v/s Ratio Prot	c0.10	0.01	c0.02	0.13	c0.74	
v/s Ratio Perm						
v/c Ratio	0.84	0.05	0.39	0.16	1.05	
Uniform Delay, d1	43.3	39.2	45.9	2.5	15.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	27.2	0.1	2.8	0.1	39.3	
Delay (s)	70.4	39.3	48.7	2.6	54.3	
Level of Service	E	D	D	A	D	
Approach Delay (s)	60.4			5.8	54.3	
Approach LOS	E			A	D	

Intersection Summary			
HCM Average Control Delay	43.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	82.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

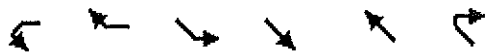
Average delay encountered by vehicles using Cedar Oak Drive



Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Volume (vph)	121	22	33	991	605	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	3539	1826	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1583	1770	3539	1826	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	132	24	36	1077	658	90
RTOR Reduction (vph)	0	22	0	0	4	0
Lane Group Flow (vph)	132	2	36	1077	744	0
Confl. Peds. (#/hr)	5	6	3			3
Turn Type		Prot	Prot			
Protected Phases	8	8	1	6	2	
Permitted Phases						
Actuated Green, G (s)	11.3	11.3	4.7	89.7	81.0	
Effective Green, g (s)	11.3	11.3	4.7	89.7	81.0	
Actuated g/C Ratio	0.10	0.10	0.04	0.82	0.74	
Clearance Time (s)	4.0	4.0	4.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	182	163	76	2886	1345	
v/s Ratio Prot	c0.07	0.00	0.02	c0.30	c0.41	
v/s Ratio Perm						
v/c Ratio	0.73	0.02	0.47	0.37	0.55	
Uniform Delay, d1	47.8	44.3	51.4	2.7	6.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	13.4	0.0	4.6	0.4	1.6	
Delay (s)	61.2	44.4	56.0	3.1	8.1	
Level of Service	E	D	E	A	A	
Approach Delay (s)	58.6			4.8	8.1	
Approach LOS	E			A	A	

Intersection Summary			
HCM Average Control Delay	10.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		
Description:			
c Critical Lane Group			

Average delay encountered by vehicles using Cedar Oak Drive



Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Volume (vph)	145	25	34	991	605	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1553	1752	3539	1819	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1553	1752	3539	1819	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	158	27	37	1077	658	92
RTOR Reduction (vph)	0	24	0	0	4	0
Lane Group Flow (vph)	158	3	37	1077	746	0
Confl. Peds. (#/hr)	5	6	3			3
Heavy Vehicles (%)	2%	4%	3%	2%	2%	5%
Turn Type		Prot	Prot			
Protected Phases	8	8	1	6	2	
Permitted Phases						
Actuated Green, G (s)	11.7	11.7	4.7	89.3	80.6	
Effective Green, g (s)	11.7	11.7	4.7	89.3	80.6	
Actuated g/C Ratio	0.11	0.11	0.04	0.81	0.73	
Clearance Time (s)	4.0	4.0	4.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	188	165	75	2873	1333	
v/s Ratio Prot	c0.09	0.00	0.02	c0.30	c0.41	
v/s Ratio Perm						
v/c Ratio	0.84	0.02	0.49	0.37	0.56	
Uniform Delay, d1	48.2	44.0	51.5	2.8	6.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	27.2	0.0	5.0	0.4	1.7	
Delay (s)	75.4	44.0	56.5	3.2	8.4	
Level of Service	E	D	E	A	A	
Approach Delay (s)	70.9			4.9	8.4	
Approach LOS	E			A	A	

Intersection Summary			
HCM Average Control Delay	12.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Average delay encountered by vehicles using Cedar Oak Drive

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Volume (vph)	147	26	34	991	605	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1752	1553	1752	3539	1813	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1752	1553	1752	3539	1813	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	160	28	37	1077	658	95
RTOR Reduction (vph)	0	25	0	0	4	0
Lane Group Flow (vph)	160	3	37	1077	749	0
Confl. Peds. (#/hr)	5	6	3			3
Heavy Vehicles (%)	3%	4%	3%	2%	2%	7%
Turn Type		Prot	Prot			
Protected Phases	8	8	1	6	2	
Permitted Phases						
Actuated Green, G (s)	11.8	11.8	4.7	89.2	80.5	
Effective Green, g (s)	11.8	11.8	4.7	89.2	80.5	
Actuated g/C Ratio	0.11	0.11	0.04	0.81	0.73	
Clearance Time (s)	4.0	4.0	4.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	188	167	75	2870	1327	
v/s Ratio Prot	c0.09	0.00	0.02	c0.30	c0.41	
v/s Ratio Perm						
v/c Ratio	0.85	0.02	0.49	0.38	0.56	
Uniform Delay, d1	48.2	43.9	51.5	2.8	6.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	29.0	0.0	5.0	0.4	1.7	
Delay (s)	77.3	44.0	56.5	3.2	8.5	
Level of Service	E	D	E	A	A	
Approach Delay (s)	72.3			5.0	8.5	
Approach LOS	E			A	A	

Intersection Summary			
HCM Average Control Delay	12.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Average delay encountered by vehicles using Cedar Oak Drive

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Volume (vph)	215	40	34	991	605	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1568	1752	3539	1818	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1568	1752	3539	1818	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	234	43	37	1077	658	95
RTOR Reduction (vph)	0	30	0	0	4	0
Lane Group Flow (vph)	234	13	37	1077	749	0
Confl. Peds. (#/hr)	5	6	3			3
Heavy Vehicles (%)	2%	3%	3%	2%	2%	5%
Turn Type		Prot	Prot			
Protected Phases	8	8	1	6	2	
Permitted Phases						
Actuated Green, G (s)	12.0	12.0	4.7	89.0	80.3	
Effective Green, g (s)	12.0	12.0	4.7	89.0	80.3	
Actuated g/C Ratio	0.11	0.11	0.04	0.81	0.73	
Clearance Time (s)	4.0	4.0	4.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	193	171	75	2863	1327	
v/s Ratio Prot	c0.13	0.01	0.02	c0.30	c0.41	
v/s Ratio Perm						
v/c Ratio	1.21	0.07	0.49	0.38	0.56	
Uniform Delay, d1	49.0	44.0	51.5	2.9	6.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	133.7	0.2	5.0	0.4	1.7	
Delay (s)	182.7	44.2	56.5	3.3	8.6	
Level of Service	F	D	E	A	A	
Approach Delay (s)	161.2			5.0	8.6	
Approach LOS	F			A	A	

Intersection Summary			
HCM Average Control Delay	26.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Average delay encountered by vehicles using Cedar Oak Drive