# SKYLINE RECYCLING AND DISPOSAL FACILITY APPENDIX IIC TRANSPORTATION STUDY

SKYLINE LANDFILL < TRANSPORTATION STUDY >

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February 22, 2012

# **SKYLINE LANDFILL**

### < TRANSPORTATION STUDY >

Prepared for

## Waste Management of Texas, Inc.

Prepared by

## HDR Engineering, Inc.

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## SKYLINE LANDFILL

## < TRANSPORTATION STUDY >

#### INTRODUCTION

Total Control

This transportation study was conducted by HDR Engineering, Inc. at the request of Waste Management of Texas, Inc. to provide information concerning factors related to access roads and vehicular traffic with respect to the proposed expansion of the Skyline Landfill. The landfill site is located west of N Central Street (BR 45) between Avenue A and Malloy Bridge Road in Ferris, Texas. Access to the landfill site is provided via the existing Waste Management landfill driveway on N Central Street (BR 45). Based on the proposed expansion and current and projected waste receipts, the facility is expected to continue operation until the year 2044. Existing conditions and one future time period were analyzed as part of the study.

Section 330.61 of the Texas Administrative Code contains regulations of the Texas Commission on Environmental Quality (TCEQ) regarding solid waste facility applications. These regulations require the following technical issues related to access roads and associated restrictions be identified and/or analyzed:

- Provide data on the availability and adequacy of roads that the owner or operator will use to access the site.
- Provide data on the volume of vehicular traffic on access roads within one mile of the proposed facility, both existing and expected, during the expected life of the proposed facility.
- Project the volume of traffic expected to be generated by the facility on the access roads within one mile of the proposed facility.

Activities completed during the transportation study included research of records and/or contacts with personnel from the Texas Department of Transportation (TxDOT), Dallas County, Ellis County, City of Ferris, City of Wilmer, Ferris Independent School District, Dallas Independent School District, and Lancaster Independent School District for information pertaining to the transportation system serving the proposed landfill expansion, and collection

of vehicular traffic counts. Daily traffic volumes were obtained for the following roadways within one-mile of the proposed facility using 24-hour electronic tube counters:

- IH 45 Southbound Frontage Road, north of Malloy Bridge Road
- IH 45 Northbound Frontage Road, north of Malloy Bridge Road
- IH 45 Southbound Frontage Road, south of FM 660
- IH 45 Northbound Frontage Road, south of FM 660
- N Central Street (BR 45), north of Landfill Driveway
- N Central Street (BR 45), south of Landfill Driveway
- Malloy Bridge Road, east of IH 45
- FM 660, east of BR 45

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- FM 983, west of BR 45
- FM 664, west of FM 983
- E 5th Street, east of BR 45
- Skyline Landfill Driveway, west of BR 45

Turning movement counts were also collected at the following intersections:

- IH 45 and Malloy Bridge Road
- IH 45 and E 5th Street
- IH 45 and FM 660/E 8th Street
- N Central Street (BR 45)/S Dallas Avenue and Malloy Bridge Road
- N Central Street (BR 45) and Skyline Landfill Driveway
- Central Street (BR 45) and 5th Street
- S Central Street (BR 45) and FM 983/E 6th Street
- S Central Street (BR 45) and FM 660/W 8th Street
- FM 983 and FM 664

TxDOT, Dallas County, Ellis County, the City of Ferris, and the City of Wilmer were consulted regarding future roadway construction and load limits since area access roadways are under their jurisdictions. Information on population and traffic projections and proposed

transportation improvements was obtained from the North Central Texas Council of Governments (NCTCOG) Mobility 2035 Metropolitan Transportation Plan (Ref. 1) and the 2011-2014 Transportation Improvement Program for North Central Texas (Ref. 2). Historical traffic volume data were obtained from Texas Department of Transportation (TxDOT) AADT maps (Ref. 3). In addition, school bus route information was obtained for Ferris ISD, Lancaster ISD, and Dallas ISD for school bus routes in the vicinity of the landfill. The responses from TxDOT and Ellis Counties have been documented in the following sections and the Appendix.

Based upon the results of this study, conclusions are provided regarding the expected impact of the proposed landfill expansion with respect to existing access roadways.

#### **ROADWAY SYSTEM IN PROXIMITY TO SITE**

The landfill site is located west of N Central Street (BR 45) between Avenue A and Malloy Bridge Road in Ferris, Texas. Figure II.C-1 shows the roadway system serving the landfill. Access to the site is provided via the existing Waste Management landfill driveway on N Central Street, as shown in Figure II.C-2 and Figure II.C-3.

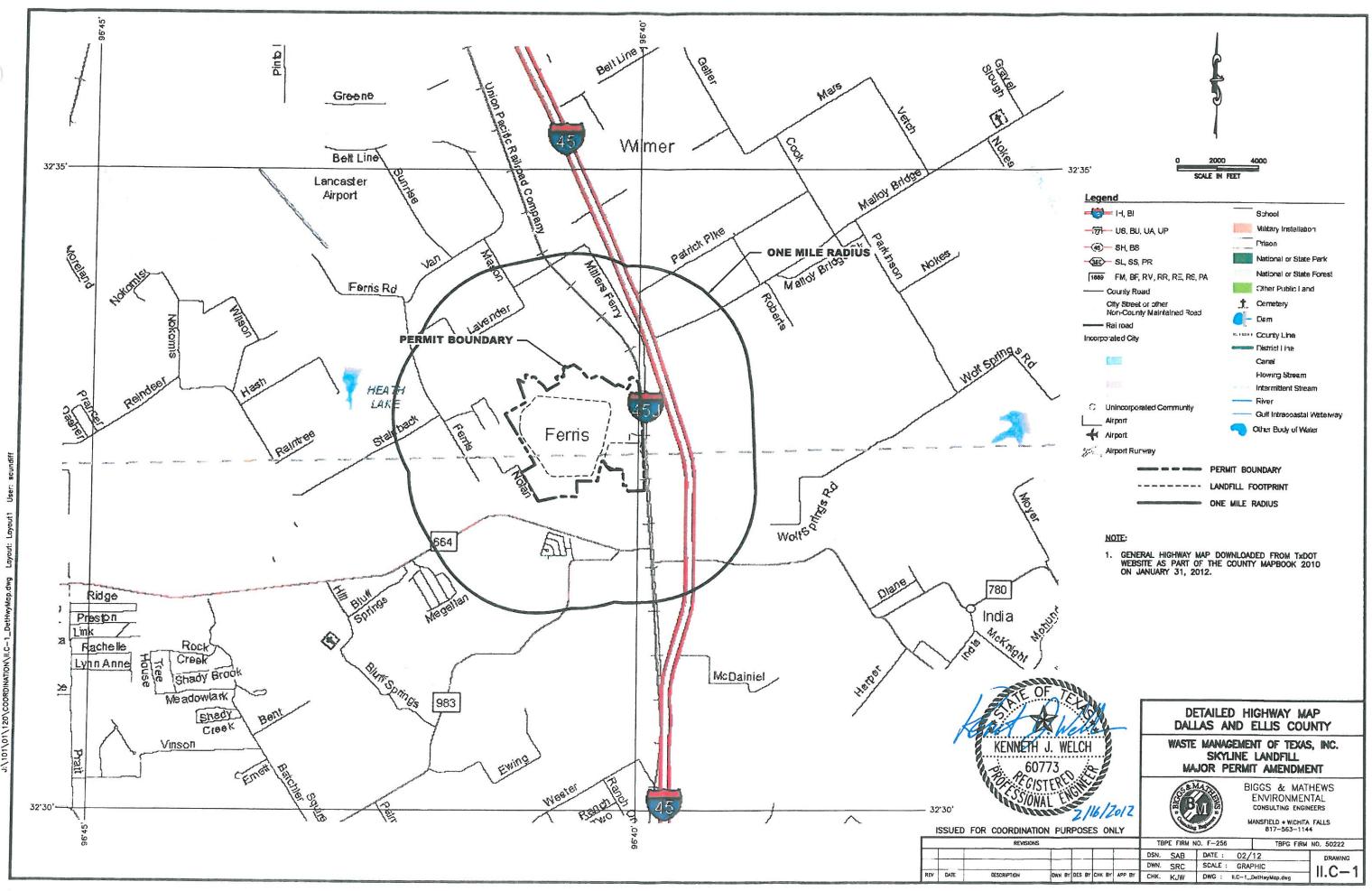
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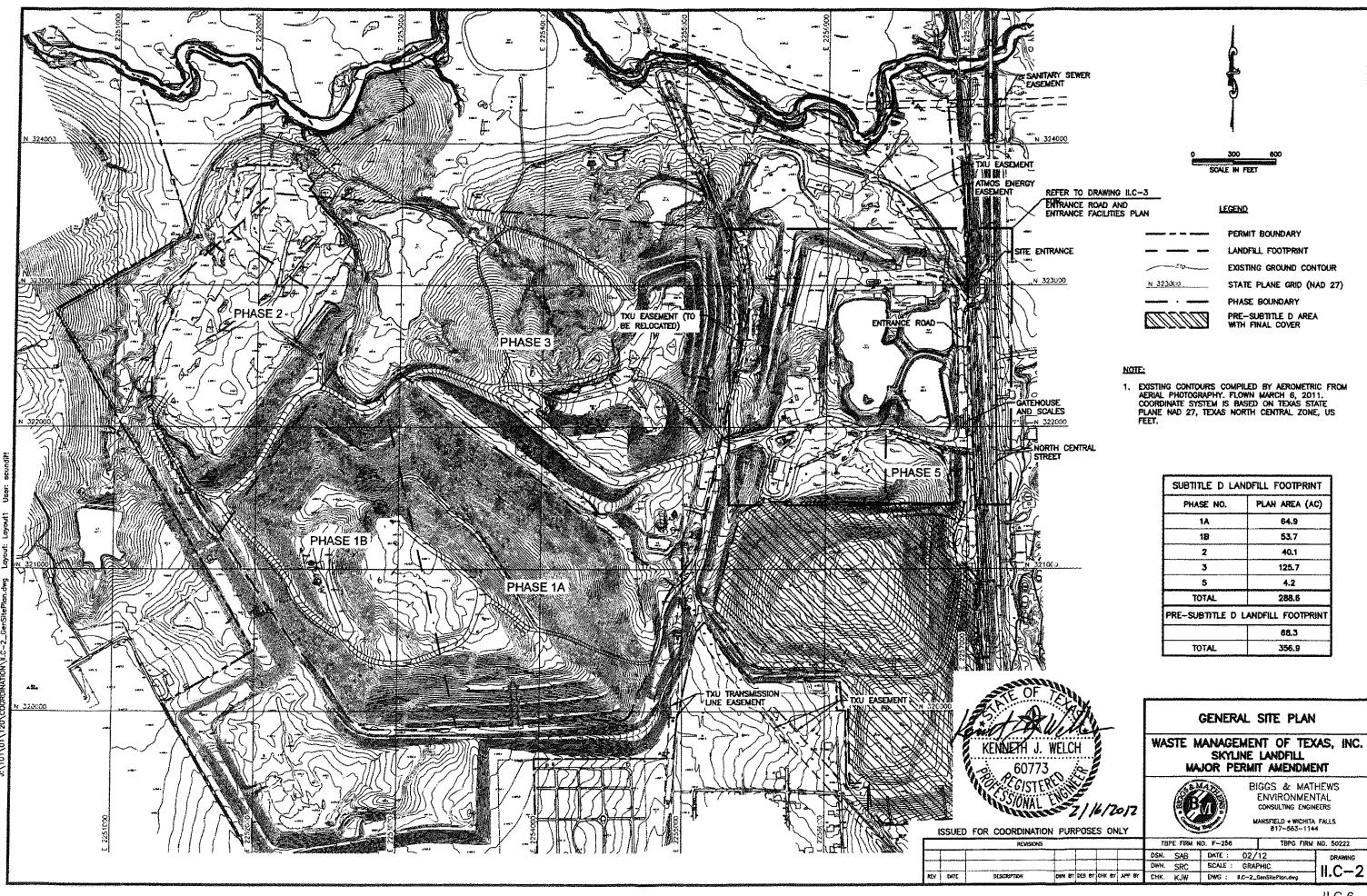
A field study was conducted to note roadway conditions and intersection design for roadways which could be used by vehicles accessing the landfill. This information, combined with the roadway capacity analysis, was utilized to assess the availability and adequacy of the area roadway network. Descriptions of the following area roadways within one mile of the landfill site are provided:

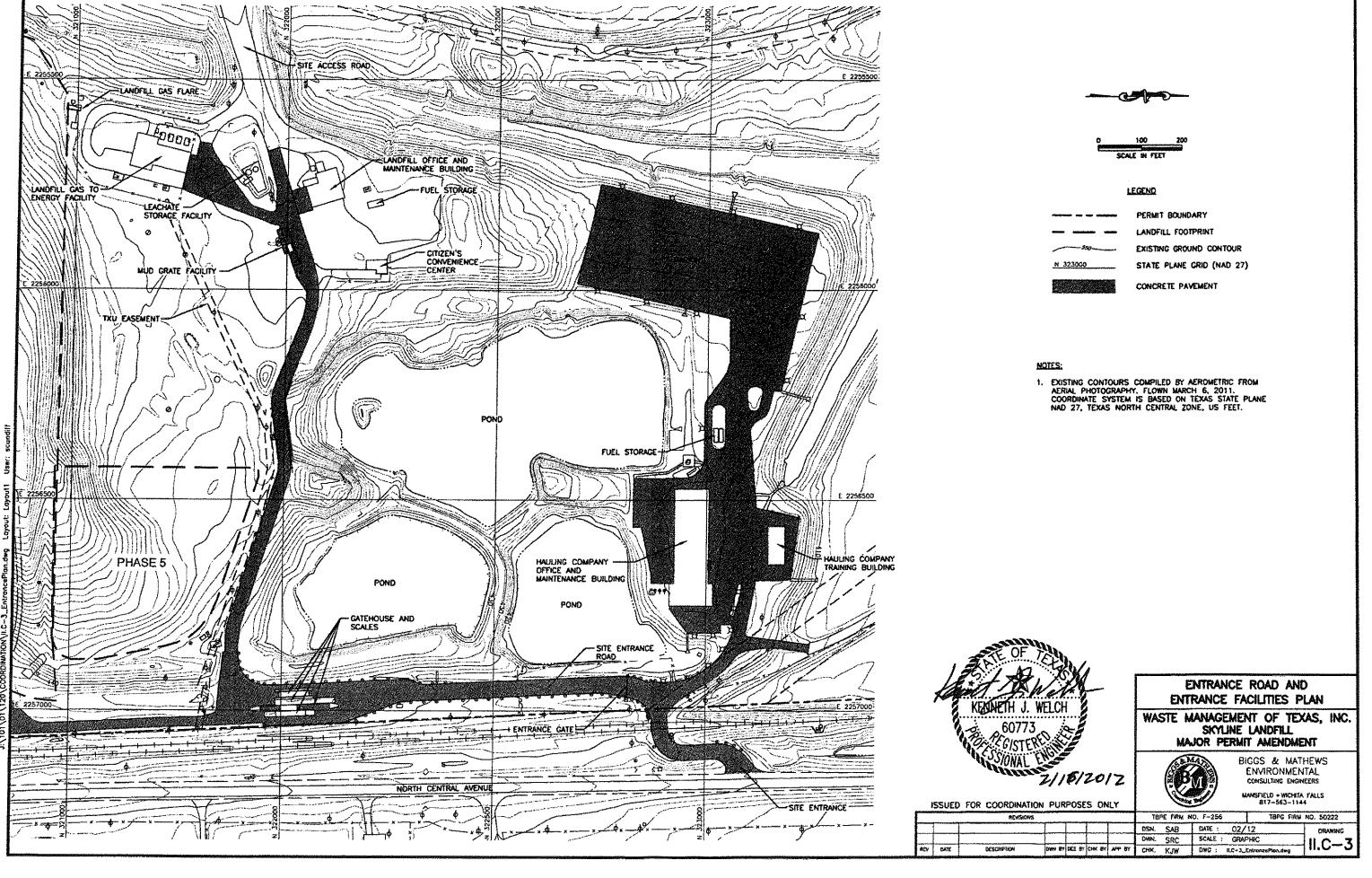
IH 45

- S Dallas Avenue/BR 45 (Central Street)
- FM 660 (8th Street)
- FM 983 (6th Street)
- FM 664
- 5th Street
- Malloy Bridge Road
- Loop 9 (Future)

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<u>IH 45</u> – IH 45 is currently a six-lane Portland cement concrete-surfaced freeway facility with intermittent frontage roads in the vicinity of the site. The 2010 daily traffic volume on IH 45 was 41,000 vehicles per day (vpd), north of 5<sup>th</sup> Street, according to TxDOT AADT maps. TxDOT and the Mobility 2035 Metropolitan Transportation Plan were consulted regarding future roadway upgrade plans for IH 45. No roadway improvements are currently planned along IH 45 in the study area. According to NCTCOG, TxDOT plans to install wireless incident detection and response system from IH 20 to the Dallas/Ellis County Line along IH 45. There are no known weight restrictions on IH 45 in the proximity of the site other than the maximum legal weight limit of 80,000 pounds.

Millers Ferry Road/BR 45 (Central Street) — Central Street is currently a two-lane Portland cement concrete-surfaced roadway consisting of 11-foot travel lanes and improved shoulders in the vicinity of the site. At various locations within the study area, Central Street is asphalt surfaced, and has lane widths that vary between 10 feet and 11 feet. Traffic volumes recorded during the study on Central Street, north and south of the Landfill Driveway, were 4,061 and 2,913 vpd, respectively. Dallas County, TxDOT and the Mobility 2035 Metropolitan Transportation Plan were consulted regarding future roadway upgrade plans for Miller's Ferry Road/Central Street. Based on the information obtained from Dallas County, TxDOT, and NCTCOG, no improvements are currently planned along this roadway. There are no known weight restrictions on Millers Ferry Road/Central Street in the proximity of the site other than the maximum legal weight limit of 80,000 pounds.

<u>FM 660 (8th Street)</u> – 8th Street is currently a two-lane asphalt-surfaced roadway consisting of 10.5-foot travel lanes in the vicinity of the site. At various locations within the study area, 8th Street is concrete surfaced, and has lane widths that vary between 10 and 12 feet. The traffic volume recorded during the study on 8th Street east of Central Street was 4,015 vpd. TxDOT, the City of Ferris, Ellis County, and the Mobility 2035 Metropolitan Transportation Plan were consulted regarding future roadway upgrade plans for 8th Street. The Ellis County Thoroughfare Plan designates FM 660 as a principal (6 lane) arterial. No time frame was provided for this upgrade, and no upgrade was assumed as part of this study. Based on the

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information provided by Ellis County and TxDOT, and obtained from the City of Ferris and NCTCOG, no improvements are currently planned for 8th Street/FM 660. The maximum allowable gross vehicle weight on FM 660 is 58,420 pounds.

FM 983 (6th Street) – FM 983 (6th Street) is currently a two-lane asphalt-surfaced roadway consisting of 11-foot travel lanes in the vicinity of the site. At various locations within the study area, FM 983 (6th Street) is Portland cement concrete-surfaced and has lane widths that vary between 11 and 15 feet. The traffic volume recorded during the study on 6th Street, west of Central Street, was 7,606 vpd. The City of Ferris, Ellis County, TxDOT and the Mobility 2035 Metropolitan Transportation Plan were consulted regarding future roadway upgrade plans for 6th Street/FM 983. The Ellis County Thoroughfare Plan designates FM 983 as a minor (4 lane) arterial. No time frame was provided for this upgrade, and no upgrade was assumed for this study. Based on the information provided by Ellis County and TxDOT, and obtained from the City of Ferris and NCTCOG, no improvements are currently planned for 6th Street/FM 983. The maximum allowable gross vehicle weight on FM 983 is 58,420 pounds.

<u>FM 664</u> – FM 664 is currently a two-lane asphalt-surfaced roadway consisting of 12-foot travel lanes and full-size shoulders west of FM 983. The traffic volume recorded during the study on FM 664, west of FM 983, was 6,676 vpd. Ellis County, TxDOT and the Mobility 2035 Regional Transportation Plan were consulted regarding future roadway upgrade plans for FM 664. The Ellis County Thoroughfare Plan designates FM 664 as a principal (6 lane) arterial. NCTCOG is funding a study to determine the feasibility of upgrading FM 664 to a four-lane divided roadway from US 287 in Waxahachie to IH 45 in Ferris. In addition, TxDOT is preparing a corridor study to examine realignment of FM 664 to the south in order to reduce pedestrian/vehicle conflicts in the downtown (Ferris) area. These potential improvements were not assumed as part of this study for analysis purposes. There are no known weight restrictions on FM 664 in the proximity of the site other than the maximum legal weight limit of 80,000 pounds.

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5th Street – 5th Street is currently a two-lane Portland cement concrete-surfaced divided roadway consisting of a 24-foot and an 18-foot unstriped pavement section east of BR 45. West of BR 45, 5th Street is an asphalt surfaced undivided roadway with a 25-foot pavement section and no striping. At various locations within the study area, 5th Street has lane widths that vary between 12 and 24 feet. Between Central Street and Campus Street, 5th Street is divided by a raised median. 5th Street is undivided elsewhere in the vicinity of the site. The traffic volume recorded during the study on 5th Street, east of Central Street, was 4,449 vpd. The City of Ferris and the Mobility 2035 Metropolitan Transportation Plan were consulted regarding future roadway upgrade plans for 5th Street. Based on the information obtained from the City of Ferris, and NCTCOG, no improvements are currently planned for 5th Street. There are no known weight restrictions on 5th Street in the proximity of the site other than the maximum legal weight limit of 80,000 pounds.

Malloy Bridge Road – Malloy Bridge Road is currently a two-lane Portland cement concrete surfaced roadway consisting of 12-foot travel lanes in the vicinity of the site. At various locations within the study area, Malloy Bridge Road is asphalt surfaced. The traffic volume recorded during the study on Malloy Bridge Road, east of IH 45, was 2,375 vpd. Dallas County and the Mobility 2035 Metropolitan Transportation Plan were consulted regarding future roadway upgrade plans for Malloy Bridge Road. Based on the information obtained from Dallas County and NCTCOG, no improvements are currently planned for Malloy Bridge Road. There are no known weight restrictions on Malloy Bridge Road in the proximity of the site other than the maximum legal weight limit of 80,000 pounds.

<u>Loop 9 (Future)</u> – Loop 9 is a proposed freeway type facility that will circumvent the Dallas/Fort Worth Metroplex area, as proposed by NCTCOG. The proposed alignment of Loop 9 will run adjacent to the northern property boundary, and intersect with IH 45 in the vicinity of the current interchange of Malloy Bridge Road and IH 45. Currently, no proposed design plans are available for Loop 9, and no construction date has been set. Construction of Loop 9 will have significant impact on the roadway network in the vicinity of the landfill. It can be expected that

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upon completion, Loop 9 will reduce overall traffic demands on existing roadways within the study area network, although local traffic could increase near access points due to rerouting of trips. However, forecasting future travel demand on Loop 9 is outside the scope of this traffic study. For this reason, Loop 9 was not included as part of the existing or closing year analysis for the landfill facility.

Design factors and use restrictions for these roadways are summarized in Table II.C-1.

**Table II.C-1**. *Existing Access Roadway Characteristics* 

	Maximum Vehicle	Maximum Weight	Cross- Section <sup>1</sup>		Average Daily
	Height	(1,000's	(# of	Surface	Traffic
Roadway	(feet)	pounds)	Lanes)	Туре	(vpd)
IH 45, north of 5th Street	14	80.0	6	PC Concrete	41,0003
BR 45, north of Landfill Driveway	14	80.0	2	PC Concrete	4,061²
BR 45, south of Landfill Driveway	14	80.0	2	PC Concrete	2,913²
FM 660, east of BR 45	14	58.42	2	Asphalt	4,015 <sup>2</sup>
FM 983, west of BR 45	14	58.42	2	Asphalt	7,606 <sup>2</sup>
FM 664, west of FM 983	14	80.0	2	Asphalt	6,676 <sup>2</sup>
5th Street, east of BR 45	14	80.0	2	PC Concrete	4,449 <sup>2</sup>
Malloy Bridge Road, east of IH 45	14	80.0	2	Asphait	2,375 <sup>2</sup>

#### Notes:

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- 1. Cross-section shown is that for the primary portions of the roadway.
- 2. Average daily traffic volumes were obtained from 2011 HDR 24-hour electronic tube counts performed by Gram North Texas, as shown in Tables II.C-2 through II.C-13.
- 3. Average daily traffic volume obtained from TxDOT AADT traffic maps for year 2010.

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#### DATA COLLECTION

Traffic volume data collected during the study consisted of automatic tube counts and turning movement counts. Summaries of daily (24-hour) traffic volumes collected on September 13, 2011 and November 10, 2011 on the roadways mentioned previously are presented in Tables II.C-2 through II.C-13. Turning movement counts collected on September 13, 2011 were used to develop the summary of vehicle classifications and hourly traffic volumes presented in Tables II.C-14 through II.C-24. Due to limitations in data collection and availability of site traffic ticketing data, it was necessary to extrapolate hourly traffic volumes at certain locations. A detailed discussion of data collection and extrapolation methodology used for this study follows.

Daily traffic volumes were collected at the following locations:

- 1. Both directions on BR 45, north and south of Landfill Driveway
- 2. FM 660, east of BR 45
- 3. FM 983, west of BR 45
- 4. FM 664, west of FM 983
- 5. Malloy Bridge Road, east of IH 45
- 6. E 5th Street, east of BR 45
- 7. Skyline Landfill driveway, west of BR 45
- 8. IH 45 frontage roads, north of Malloy Bridge Road and south of FM 660

The results are reported in the following tables as collected.

All tube count data collected were validated by comparison with adjacent turning movement count data. It is expected that there will be minor discrepancies between the data collected, as the 24-hour volumes are collected by an automated pneumatic tube counter and adjusted to arrive at a reasonable volume estimate, whereas the turning movement count is performed by an individual observing and recording traffic data. There is additional potential for discrepancy when clock synchronicity, tube malfunction, and human error are considered. Given this expected potential for error between the counts, it was determined that all of the 24-hour traffic

volume data collected were reasonable, with the exception of the Skyline Landfill Driveway count. Based on discussions with Gram North Texas, the geometrics of this driveway did not provide for a reliable tube count; therefore, a supplemental turning movement count covering all of the operating hours of the facility was performed on November 10, 2011 in order to determine an accurate estimate of landfill trips.

The traffic volume results described previously can be expected to vary throughout the year. As noted in AASHTO (Ref. 4), "The amount by which the volume of an average day is exceeded on certain days is appreciable and varied. At typical rural locations, the volume on certain days may be significantly higher than the ADT [average daily traffic]."

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Table II.C-2. Hourly Traffic Volumes – Skyline Landfill Driveway, West of BR 45

Skyline Landfill Driveway			
West of BR 45			
	November	10, 2011	
Time	Eastbound	Westbound	Total
12:00 AM	_	-	-
1:00 AM	-	_	-
2:00 AM	-	_	_
3:00 AM	26	9	35
4:00 AM	3	22	25
5:00 AM	25	32	57
6:00 AM	29	44	73
7:00 AM	42	45	87
8:00 AM	42	62	104
9:00 AM	47	50	97
10:00 AM	57	48	105
11:00 AM	62	59	121
12:00 PM	66	59	125
1:00 PM	62	56	118
2:00 PM	51	55	106
3:00 PM	60	28	88
4:00 PM	26	11	37
5:00 PM	19	2	21
6:00 PM	8	1	9
7:00 PM	9	0	9
8:00 PM	-	-	-
9:00 PM	-	-	-
10:00 PM	-	-	-
11:00 PM	-	-	_
Total	634	<b>583</b> M or after 8:00 PM	1,217

Note: Data not collected before 3:00 AM or after 8:00 PM due to facility operating hours

Table II.C-3
Hourly Traffic Volumes – BR 45, North of Skyline Landfill Driveway

	BR -	45	
No	North of Skyline Landfill Driveway		
	September	13, 2011	
Time	Northbound	Southbound	Total
12:00 AM	11	6	17
1:00 AM	4	5	9
2:00 AM	6	21	27
3:00 AM	35	28	63
4:00 AM	36	17	53
5:00 AM	55	54	109
6:00 AM	122	102	224
7:00 AM	196	133	329
8:00 AM	138	101	239
9:00 AM	110	127	237
10:00 AM	105	116	221
11:00 AM	133	146	279
12:00 PM	139	137	276
1:00 PM	110	104	214
2:00 PM	126	172	298
3:00 PM	137	152	289
4:00 PM	109	164	273
5:00 PM	108	197	305
6:00 PM	93	124	217
7:00 PM	57	75	132
8:00 PM	39	54	93
9:00 PM	27	45	72
10:00 PM	30	23	53
11:00 PM	11	21	32
Total	1,937	2,124	4,061

**Table II.C-4.**Hourly Traffic Volumes – BR 45, South of Skyline Landfill Driveway

	BR 45			
Sou	South of Skyline Landfill Driveway			
	September	13, 2011		
Time	Northbound	Southbound	Total	
12:00 AM	13	7	20	
1:00 AM	1	5	6	
2:00 AM	7	5	12	
3:00 AM	8	8	16	
4:00 AM	15	5	20	
5:00 AM	41	16	57	
6:00 AM	87	43	130	
7:00 AM	172	115	287	
8:00 AM	120	73	193	
9:00 AM	58	75	133	
10:00 AM	63	80	143	
11:00 AM	74	75	149	
12:00 PM	83	85	168	
1:00 PM	72	70	142	
2:00 PM	66	110	176	
3:00 PM	90	105	195	
4:00 PM	83	132	215	
5:00 PM	86	195	281	
6:00 PM	70	115	185	
7:00 PM	52	81	133	
8:00 PM	41	52	93	
9:00 PM	29	42	71	
10:00 PM	30	24	54	
11:00 PM	11	23	34	
Total	1,372	1,541	2,913	

**Table II.C-5.** Hourly Traffic Volumes – IH 45 SBFR, North of Malloy Bridge Road

IH 4	IH 45 SBFR		
North of Ma	North of Malloy Bridge Road		
Septem	ber 13, 2011		
Time	Southbound		
12:00 AM	10		
1:00 AM	4		
2:00 AM	22		
3:00 AM	22		
4:00 AM	11		
5:00 AM	66		
6:00 AM	113		
7:00 AM	114		
8:00 AM	72		
9:00 AM	110		
10:00 AM	129		
11:00 AM	125		
12:00 PM	159		
1:00 PM	107		
2:00 PM	155		
3:00 PM	144		
4:00 PM	160		
5:00 PM	170		
6:00 PM	93		
7:00 PM	73		
8:00 PM	51		
9:00 PM	33		
10:00 PM	23		
11:00 PM	24		
Total	1,990		

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Table II.C-6. Hourly Traffic Volumes – IH 45 NBFR, North of Malloy Bridge Road

<del></del>			
	IH 45 NBFR		
	alloy Bridge Road		
Septem	ber 13, 2011		
Time	Northbound		
12:00 AM	9		
1:00 AM	9 3		
2:00 AM	6		
3:00 AM	33		
4:00 AM	29		
5:00 AM	64		
6:00 AM	128		
7:00 AM	157		
8:00 AM	123		
9:00 AM	125		
10:00 AM	95		
11:00 AM	136		
12:00 PM	119		
1:00 PM	119		
2:00 PM	133		
3:00 PM	149		
4:00 PM	102		
5:00 PM	71		
6:00 PM	75		
7:00 PM	36		
8:00 PM	26		
9:00 PM	16		
10:00 PM	24		
11:00 PM	12		
Total	1,790		

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Table II.C-7. Hourly Traffic Volumes – IH 45 SBFR, South of FM 660

IH 45 SBFR		
	of FM 660	
	ber 13, 2011	
Time	Southbound	
12:00 AM	4	
1:00 AM	3	
2:00 AM	0	
3:00 AM	4	
4:00 AM	5	
5:00 AM	39	
6:00 AM	60	
7:00 AM	92	
8:00 AM	50	
9:00 AM	59	
10:00 AM	50	
11:00 AM	65	
12:00 PM	61	
1:00 PM	37	
2:00 PM	57	
3:00 PM	91	
4:00 PM	67	
5:00 PM	86	
6:00 PM	49	
7:00 PM	63	
8:00 PM	52	
9:00 PM	33	
10:00 PM	15	
11:00 PM	6	
Total	1,048	

**Table II.C-8.** Hourly Traffic Volumes – IH 45 NBFR, South of FM 660

IH 4	IH 45 NBFR		
South	of FM 660		
Septem	ber 13, 2011		
Time	Northbound		
12:00 AM	1		
1:00 AM	2		
2:00 AM	3		
3:00 AM	1		
4:00 AM	3		
5:00 AM	38		
6:00 AM	61		
7:00 AM	129		
8:00 AM	79		
9:00 AM	46		
10:00 AM	49		
11:00 AM	40		
12:00 PM	44		
1:00 PM	47		
2:00 PM	50		
3:00 PM	73		
4:00 PM	85		
5:00 PM	96		
6:00 PM	72		
7:00 PM	37		
8:00 PM	42		
9:00 PM	19		
10:00 PM	9		
11:00 PM	5		
Total	1,031		

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**Table II.C-9.** Hourly Traffic Volumes – FM 660, East of BR 45

FM 660									
	East of								
September 13, 2011									
Time									
12:00 AM	13	14	27						
1:00 AM	5	4	9						
2:00 AM	2 1	1	3						
3:00 AM		3	4						
4:00 AM	3	8	11						
5:00 AM	32	35	67						
6:00 AM	84	70	154						
7:00 AM	177	153	330						
MA 00:8	183	147	330						
9:00 AM	111	88	199						
10:00 AM	83	98	181						
11:00 AM	100	103	203						
12:00 PM	123	111	234						
1:00 PM	103	97	200						
2:00 PM	126	162	288						
3:00 PM	231	153	384						
4:00 PM	226	216	442						
5:00 PM	142	126	268						
6:00 PM	82	81	163						
7:00 PM	77	99	176						
8:00 PM	59	66	125						
9:00 PM	51	53	104						
10:00 PM	38	31	69						
11:00 PM	26	18	44						
Total	2,078	1,937	4,015						

**Table II.C-10.** *Hourly Traffic Volumes – FM 983, West of BR 45* 

FM 983								
	West of	BR 45						
September 13, 2011								
Time	Eastbound Westbound Tota							
12:00 AM	15	9	24					
1:00 AM	11	10	21					
2:00 AM	12	9	21					
3:00 AM	14	14	28					
4:00 AM	43	15	58					
5:00 AM	113	42	155					
6:00 AM	263	148	411					
7:00 AM	386	363	749					
8:00 AM	284	237	521					
9:00 AM	188	151	339					
10:00 AM	168	179	347					
11:00 AM	181	208	389					
12:00 PM	212	194	406					
1:00 PM	176	174	350					
2:00 PM	228	294	522					
3:00 PM	258	303	561					
4:00 PM	242	349	591					
5:00 PM	273	390	663					
6:00 PM	213	294	507					
7:00 PM	147	214	361					
8:00 PM	111	175	286					
9:00 PM	73	100	173					
10:00 PM	37	35	72					
11:00 PM	21	30	51					
Total	3,669	3,937	7,606					

}

Table II.C-11.

Hourly Traffic Volumes – FM 664, West of FM 983

			····						
	FM 6								
	West of FM 983								
	September 13, 2011								
Time	Eastbound	Westbound	Total						
12:00 AM	14	11	25						
1:00 AM	12	9	21						
2:00 AM	7	4	11						
3:00 AM	11	14	25						
4:00 AM	28	14	42						
5:00 AM	91	40	131						
6:00 AM	259	114	373						
7:00 AM	494	303	797						
8:00 AM	263	178	441						
9:00 AM	160	145	305						
10:00 AM	145	145	290						
11:00 AM	161	168	329						
12:00 PM	170	176	346						
1:00 PM	143	148	291						
2:00 PM	172	211	383						
3:00 PM	233	309	542						
4:00 PM	227	260	487						
5:00 PM	235	340	575						
6:00 PM	179	237	416						
7:00 PM	136	176	312						
8:00 PM	108	156	264						
9:00 PM	62	89	151						
10:00 PM	34	40	74						
11:00 PM	19	26	45						
Total	3,363	3,313	6,676						

**Table II.C-12.**Hourly Traffic Volumes – East 5th Street, East of BR 45

East 5th Street									
	East of								
Time	September 13, 2011 Time Eastbound Westbound Total								
12:00 AM			Total						
	10	11	21						
1:00 AM	5	5	10						
2:00 AM	7	5	12						
3:00 AM	5	9	14						
4:00 AM	19	5	24						
5:00 AM	89	17	106						
6:00 AM	193	67	260						
7:00 AM	316	169	485						
8:00 AM	161	108	269						
9:00 AM	90	94	184						
10:00 AM	91	100	191						
11:00 AM	107	124	231						
12:00 PM	90	121	211						
1:00 PM	92	109	201						
2:00 PM	105	143	248						
3:00 PM	166	227	393						
4:00 PM	110	214	324						
5:00 PM	129	239	368						
6:00 PM	98	160	258						
7:00 PM	93	105	198						
8:00 PM	69	91	160						
9:00 PM	66	79	145						
10:00 PM	38	43	81						
11:00 PM	28	27	55						
Total	2,177	2,272	4,449						

}

Table II.C-13. Hourly Traffic Volumes – Malloy Bridge Road, East of IH 45

Malloy Bridge Road									
	East of	IH 45							
	September 13, 2011								
<del></del>	Time Eastbound Westbound Tota								
12:00 AM	8	2	10						
1:00 AM	9	2 5	11						
2:00 AM	3		8						
3:00 AM	4	12	16						
4:00 AM	6	12	18						
5:00 AM	38	47	85						
6:00 AM	89	83	172						
7:00 AM	108	102	210						
8:00 AM	66	64	130						
9:00 AM	63	86	149						
10:00 AM	61	47	108						
11:00 AM	54	79	133						
12:00 PM	64	47	111						
1:00 PM	53	50	103						
2:00 PM	69	78	147						
3:00 PM	95	90	185						
4:00 PM	100	117	217						
5:00 PM	84	87	171						
6:00 PM	69	80	149						
7:00 PM	51	36	87						
8:00 PM	47	31	78						
9:00 PM	15	19	34						
10:00 PM	8	17	25						
11:00 PM	7	11	18						
Total	1,171	1,204	2,375						

}}

Table II.C-14. Existing Vehicle Classification – BR 45, North of Skyline Landfill Driveway

	<del>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</del>		BR 45				
	No	orth of Sk	yline Lan	dfill Drive	way		
		Septe	ember 13	, 2011	- ···		
		1	Vorthbou	nd			
Time Period	Heavy \	Vehicles	Waste '	Vehicles	Other V	ehicles	Tatal
Time renou	No.	%	No.	%	No.	%	Total
7:00 - 8:00 AM	5	3%	24	13%	157	84%	186
8:00 - 9:00 AM	1	1%	23	18%	104	81%	128
4:00 - 5:00 PM	0	0%	14	14%	86	86%	100
5:00 - 6:00 PM	4	4%	11	11%	85	85%	100
NB SUBTOTAL	10	2%	72	14%	432	84%	514
		S	outhbour	nd			
Time Period	Heavy \	Vehicles   Waste Vehicles			Other Vehicles		T-1-1
Time Penou	No.	%	No.	%	No.	%	Total
7:00 - 8:00 AM	1	1%	23	18%	105	81%	129
8:00 - 9:00 AM	2	2%	24	25%	71	73%	97
4:00 - 5:00 PM	3	2%	24	15%	131	83%	158
5:00 - 6:00 PM	2	1%	7	4%	183	95%	192
SB SUBTOTAL	8	1%	78	14%	490	85%	576
TOTAL	18	2%	150	14%	922	84%	1,090

Table II.C-15.

Existing Vehicle Classification – BR 45, South of Skyline Landfill Driveway

			BR 45	····			·
	So	uth of Sk		dfill Drive	way		
			ember 13				
		ľ	Vorthbou	nd			
Time Period	Heavy '	Vehicles	Waste '	Vehicles	Other \	/ehicles	T-1-1
Finite Feriou	No.	%	No.	%	No.	%	Total
7:00 - 8:00 AM	5	3%	4	2%	159	95%	168
8:00 - 9:00 AM	1	1%	8	7%	103	92%	112
4:00 - 5:00 PM	1	1%	6	8%	67	91%	74
5:00 - 6:00 PM	4	5%	2	3%	73	92%	79
NB SUBTOTAL	11	3%	20	5%	402	92%	433
		S	outhbour	nd			<del>*************************************</del>
Time Period	Heavy Vehicles		Waste Vehicles		Other Vehicles		<b>-</b> , ,
Time Fenou	No.	%	No.	%	No.	%	Total
7:00 - 8:00 AM	1	1%	8	7%	99	92%	108
8:00 - 9:00 AM	2	3%	2	3%	68	94%	72
4:00 - 5:00 PM	2	1%	5	4%	131	95%	138
5:00 - 6:00 PM	2	1%	1	1%	184	98%	187
SB SUBTOTAL	7	1%	16	3%	482	96%	505
TOTAL	18	2%	36	4%	884	94%	938

Table II.C-16. Existing Vehicle Classification – IH 45 SBFR, North of Malloy Bridge Road

	7,0,000	I	H 45 SB	FR			
		North of	Malloy B	ridge Road	<u> </u>		
		Septe	ember 13	3, 2011			
		5	Southbou	nd			
Time Period	Heavy '	Vehicles	Waste Vehicles		Other Vehicles		
Time renod	No.	%	No.	%	No.	%	Total
7:00 - 8:00 AM	3	3%	16	13%	101	84%	120
8:00 - 9:00 AM	5	6%	20	24%	59	70%	84
4:00 - 5:00 PM	3	2%	21	13%	141	85%	165
5:00 - 6:00 PM	2	1%	8	5%	157	94%	167
TOTAL	13	2%	65	12%	458	86%	536

Table II.C-17. Existing Vehicle Classification – IH 45 NBFR, North of Malloy Bridge Road

		1	H 45 NB	FR			
		North of I	Malloy Bi	idge Road	ď		
		Septe	ember 13	3, 2011			
		١	lorthbou	nd			
Time Period	Heavy \	Vehicles	Waste Vehicles		Other Vehicles		<b>T</b> . ( . )
	No.	%	No.	%	No.	%	Total
7:00 - 8:00 AM	7	5%	8	5%	131	90%	146
8:00 - 9:00 AM	6	7%	12	14%	70	79%	88
4:00 - 5:00 PM	0	0%	9	10%	81	90%	90
5:00 - 6:00 PM	3	5%	5	8%	54	87%	62
TOTAL	16	4%	34	9%	336	87%	386

)}

Table II.C-18. Existing Vehicle Classification – IH 45 SBFR, South of FM 660

			H 45 SB	FR			***************************************
		So	uth of FM	1660			
		Sept	ember 13	3, 2011			
		(	Southbou	nd			
Time Period	Heavy	Vehicles	Waste Vehicles		Other Vehicles		
rine renou	No.	%	No.	%	No.	%	Total
7:00 - 8:00 AM	0	0%	0	0%	87	100%	87
8:00 - 9:00 AM	0	0%	0	0%	39	100%	39
4:00 - 5:00 PM	0	0%	0	0%	64	100%	64
5:00 - 6:00 PM	0	0%	0	0%	82	100%	82
TOTAL	0	0%	0	0%	272	100%	272

Table II.C-19. Existing Vehicle Classification – IH 45 NBFR, South of FM 660

		ł	H 45 NB	FR			
		So	uth of FN	660			
		Sept	ember 13	, 2011			
			Vorthbou	nd	···		···
Time Period	Heavy	Vehicles	Waste Vehicles		Other Vehicles		T . ( . )
Time renou	No.	%	No.	%	No.	%	Total
7:00 - 8:00 AM	0	0%	0	0%	132	100%	132
8:00 - 9:00 AM	0	0%	0	0%	72	100%	72
4:00 - 5:00 PM	3	4%	0	0%	77	96%	80
5:00 - 6:00 PM	0	0%	0	0%	92	100%	92
TOTAL	3	1%	0	0%	373	99%	376

Table II.C-20 Existing Vehicle Classification – FM 660, East of BR 45

			FM 660	)			·····
		E	ast of BF	45			
		Sept	ember 13	3, 2011			
			Eastbour	nd			The state of the s
Time Period	Heavy '	Vehicles	Waste '	Vehicles	Other \	/ehicles	Total
Time renod	No.	%	No.	%	No.	%	Total
7:00 - 8:00 AM	0	0%	0	0%	163	100%	163
8:00 - 9:00 AM	0	0%	0	0%	179	100%	179
4:00 - 5:00 PM	0	0%	0	0%	224	100%	224
5:00 - 6:00 PM	0	0%	0	0%	136	100%	136
EB SUBTOTAL	0	0%	0	0%	702	100%	702
		1	Westbour	nd			
Time Period	Heavy \	/ehicles	Waste \	/ehicles	Other \	/ehicles	T - 4 - 4
Hille Fellou	No.	%	No.	%	No.	%	Total
7:00 - 8:00 AM	1	1%	0	0%	148	99%	149
8:00 - 9:00 AM	0	0%	0	0%	152	100%	152
4:00 - 5:00 PM	1	<1%	1	<1%	202	99%	204
5:00 - 6:00 PM	0	0%	0	0%	128	100%	128
WB SUBTOTAL	2	<1%	1	<1%	630	99%	633
TOTAL	2	<1%	1	<1%	1,332	99%	1,335

Table II.C-21.

Existing Vehicle Classification – FM 983, West of BR 45

			FM 983	}		·····	
		V	Vest of Bi	₹ 45			
		Sept	tember 13	3, 2011			
			Eastbou	nd			
Time Period	Time Period Heavy Vehicles Waste Vehicles Other Vehicles						7-4-1
Time Lenou	No.	%	No.	%	No.	%	Total
7:00 - 8:00 AM	11	<1%	1	<1%	371	99%	373
8:00 - 9:00 AM	2	1%	5	2%	281	97%	288
4:00 - 5:00 PM	1	<1%	4	2%	228	98%	233
5:00 - 6:00 PM	1	<1%	1	<1%	268	99%	270
EB SUBTOTAL	5	<1%	11	1%	1,148	99%	1,164
		1	Westbour	nd			*
Time Period	Heavy \	/ehicles	Waste \	/ehicles	Other \	/ehicles	<b>-</b> , ,
TITIC FERIOU	No.	%	No.	%	No.	%	Total
7:00 - 8:00 AM	1	<1%	1	<1%	334	99%	336
8:00 - 9:00 AM	0	0%	0	0%	226	100%	226
4:00 – 5:00 PM	0	0%	2	1%	328	99%	330
5:00 - 6:00 PM	0	0%	1	<1%	386	99%	387
WB SUBTOTAL	1	<1%	4	<1%	1,274	99%	1,279
TOTAL	6	<1%	15	1%	2,422	99%	2,443

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Table II.C-22.

Existing Vehicle Classification – FM 664, West of FM 983

			FM 664				· · · · · · · · · · · · · · · · · · ·
		W	est of FM	983			
		Sept	ember 13	3, 2011			
			Eastbou	nd			
Time Period Heavy Vehicles Waste Vehicles Other Vehicles							T-1-1
Time Lenou	No.	%	No.	%	No.	%	Total
7:00 - 8:00 AM	3	1%	1	<1%	474	99%	478
8:00 - 9:00 AM	3	1%	5	2%	239	97%	247
4:00 – 5:00 PM	2	1%	4	2%	206	97%	212
5:00 - 6:00 PM	1	<1%	1	<1%	241	99%	243
EB SUBTOTAL	9	1%	11	1%	1,160	98%	1,180
		1	Westboui	nd		· · · · · · · · · · · · · · · · · · ·	
Time Period	Heavy \	/ehicles	Waste \	/ehicles	Other \	/ehicles	T
THIE FEIIUU	No.	%	No.	%	No.	%	Total
7:00 - 8:00 AM	0	0%	0	0%	305	100%	305
8:00 - 9:00 AM	0	0%	0	0%	180	100%	180
4:00 – 5:00 PM	2	1%	2	1%	257	98%	261
5:00 - 6:00 PM	1	<1%	1	<1%	347	99%	349
WB SUBTOTAL	3	<1%	3	<1%	1,089	99%	1,095
TOTAL	12	1%	14	1%	2,249	98%	2,275

}

**Table II.C-23.** Existing Vehicle Classification – East 5<sup>th</sup> Street, East of BR 45

		E	ast 5th St	reet			
		E	ast of BF	₹ 45			
		Sept	ember 13	3, 2011			
			Eastbour	nd			
Time Period	Heavy '	Vehicles	Waste	Vehicles	Other \	Vehicles	Tatal
Time Lenou	No.	%	No.	%	No.	%	Total
7:00 - 8:00 AM	0	0%	0	0%	324	100%	324
8:00 - 9:00 AM	0	0%	0	0%	149	100%	149
4:00 - 5:00 PM	0	0%	0	0%	112	100%	112
5:00 - 6:00 PM	0	0%	0	0%	128	100%	128
EB SUBTOTAL	0	0%	0	0%	713	100%	713
		١	Westbour	nd		-	
Time Period	Heavy \	/ehicles	Waste \	/ehicles	Other \	/ehicles	
Fille Fellou	No.	%	No.	%	No.	%	Total
7:00 - 8:00 AM	0	0%	0	0%	162	100%	162
8:00 - 9:00 AM	0	0%	0	0%	106	100%	106
4:00 – 5:00 PM	0	0%	0	0%	188	100%	188
5:00 - 6:00 PM	0	0%	0	0%	246	100%	246
WB SUBTOTAL	0	0%	0	0%	702	100%	702
TOTAL	0	0%	0	0%	1,415	100%	1,415

Table II.C-24. Existing Vehicle Classification – Malloy Bridge Road, East of IH 45

		Malle	oy Bridg	e Road			
		E	ast of IH	45			***************************************
		Sept	ember 13	3, 2011	. "		
			Eastbour	nd			
Time Period	Heavy Vehicles   Waste Vehicles   Other Vehicles					Tatal	
Finite Feriod	No.	%	No.	%	No.	%	Total
7:00 - 8:00 AM	0	0%	4	5%	84	95%	88
8:00 - 9:00 AM	0	0%	3	6%	51	94%	54
4:00 - 5:00 PM	1	1%	1	1%	79	98%	81
5:00 - 6:00 PM	0	0%	0	0%	78	100%	78
EB SUBTOTAL	1	<1%	8	3%	292	97%	301
		1	Westbour	nd		***************************************	
Time Period	Heavy \	/ehicles	Waste \	/ehicles	Other \	/ehicles	<b>T</b> , ,
Time renou	No.	%	No.	%	No.	%	Total
7:00 - 8:00 AM	8	8%	1	1%	89	91%	98
8:00 - 9:00 AM	4	7%	4	7%	51	86%	59
4:00 - 5:00 PM	1	1%	1	1%	106	98%	108
5:00 - 6:00 PM	1	1%	0	0%	82	99%	83
WB SUBTOTAL	14	4%	6	2%	328	94%	348
TOTAL	15	2%	14	2%	620	96%	649

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#### **EXISTING TRAFFIC ANALYSIS**

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## Roadway Capacity Analysis Methodology

The Highway Capacity Manual (Ref. 5) provides methodologies for estimating roadway operating levels of service (LOS) in terms of comparing expected speed-flow and density-flow relationships. Roadway LOS is characterized by four performance measures:

- Density of the traffic lane (passenger cars per mile per lane)
- Speed of the traffic (miles per hour)
- Volume to capacity ratio of the travel lane
- Percent time spent following

Each of these measures affects the overall roadway operating level of service. In general, overall operating levels of service A to D are typically deemed acceptable, while an overall LOS of E or F is unacceptable, in terms of the roadway capacity. Each level of service is described in detail within the Highway Capacity Manual and is summarized below:

- Level of Service A Under LOS A, the roadway operates at free flow conditions. There
  is very little interaction among vehicles on the roadway. All drivers can travel at the
  posted speed limit if they desire and maneuverability is good.
- Level of Service B Under LOS B, drivers start to notice other vehicles on the roadway but operations are still at free flow conditions. Maneuverability is somewhat limited due to the presence of vehicles.
- Level of Service C Under LOS C, drivers are affected by the presence of other vehicles on the roadway. The speed at which drivers can travel has become clearly affected and maneuverability is limited due to the presence of vehicles. Due to the higher number of vehicles, a minor incident can easily turn into a major traffic problem.
- Level of Service D Under LOS D conditions, the driver's ability to maneuver is severely impaired. Due to the high volume of vehicles, the travel speed has become greatly reduced.

- Level of Service E Under LOS E conditions, the roadway is operating at or near capacity. Vehicle headways have reached minimum spacing, and incidents cannot be easily absorbed into the system.
- Level of Service F Under LOS F conditions, the roadway has reached capacity and is experiencing breakdown flow. Long queues are easily formed due to vehicles arriving at a rate that is faster than they can be discharged.

Based on the criteria given in the Highway Capacity Manual, the first step in the analysis of the roadway network was to categorize the roadways within one mile of the landfill facility for analysis purposes. Based on its operating characteristics, IH 45 was classified as a freeway facility; however, the IH 45 frontage roads operate as multilane highway facilities. BR 45, FM 660, FM 983, and East 5th Street also operate as urban street facilities. Further discussion of urban street facilities and analysis methodologies used for each follows. FM 664 and Malloy Bridge Road were classified as rural two-lane highways based on their functional characteristics.

Urban street facilities are roadways that experience interrupted flow. Stop signs, traffic signals, and/or roundabout intersections located within two mile intervals along the roadway effectively meter the flow of traffic on the roadway. For this reason, urban street facilities experience level of service differently than rural two-lane and multilane highway facilities. However, since roadway capacity is a function of roadway cross-section, analysis of urban streets using rural highway analysis methodologies provides a baseline value for the effectiveness of the facility. For this reason, BR 45, FM 660, FM 983, and East 5th Street were analyzed as two-lane rural highways using the microcomputer software program HCS2000 (Ref 6.). In order to quantify the factors related to urban street levels of service on these facilities, intersection analysis was also performed for major intersections within the study area, using the microcomputer software program "Synchro 7.0" (Ref. 7), which is based on the methodology specified in the Highway Capacity Manual.

1

The existing traffic volumes on study area roadways are listed in Table II.C-25. Estimated daily landfill trips and landfill trip distribution were provided by Biggs & Matthews Environmental. Tables II.C-26 and II.C-27 summarize the volumes and LOS results.

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Table II.C-25. 2011 Existing Traffic Volumes

		Exist	ing Traffic	Volumes 2	2011	
		Daily				
Location	Landfill Trips <sup>1</sup>	Non- Landfill Trips <sup>2</sup>	Total	Landfill Trips	Non- Landfill Trips	Total
BR 45, North of Skyline Landfill Driveway	569	3,492	4,061	67	272	339
BR 45, South of Skyline Landfill Driveway	117	2,796	2,913	11	276	287
IH 45 SBFR, North of Malloy Bridge Road	239	1,751	1,990	21	144	165
IH 45 NBFR, North of Malloy Bridge Road	161	1,629	1,790	15	138	153
IH 45 SBFR, South of FM 660	0	1,048	1,048	0	85	85
IH 45 NBFR, South of FM 660	0	1,031	1,031	0	134	134
FM 660, East of BR 45	3	4,012	4,015	0	534	534
FM 983, West of BR 45	76	7,530	7,606	0	1,170	1,170
FM 664, West of FM 983	67	6,609	6,676	0	797	797
East 5th Street, East of BR 45	0	4,449	4,449	0	525	525
Malloy Bridge Road, East of IH 45	48	2,327	2,375	2	189	191

Notes:

 $<sup>\</sup>begin{array}{l} 1-\text{Calculated from waste vehicle percentages in vehicle classification counts} \\ 2-\text{Total 24 hour volume minus calculated landfill trips} \end{array}$ 

Table II.C-26. Level of Service for 2011 Existing Traffic Volumes (Two-Lane Highway Analysis)

	Roadway	Peak Hour	% of Access Road	нсм	% of Roadway Capacity Used by Existing
Location	Capacity (pc/hr)	Volume (veh/hr)	Capacity Used1	Roadway	Landfill
BR 45, North of Landfill Drwy	3,200	339	10.6	n/a <sup>3</sup>	Vehicles <sup>1</sup> 2.1
FM 660	3,200	534	16.7	n/a <sup>3</sup>	<0.1
FM 983	3,200	1,170	36.6	n/a <sup>3</sup>	<0.1
FM 664	3,200	797	24.9	D	<0.1
East 5th Street	3,200	525	16.4	n/a³	<0.1
Malloy Bridge Road	3,200	191	6.0	Α	0.1

Notes:

1 – Based on traffic volumes (veh/hr) compared with capacity (pc/hr).
2 – Refer to HCM Exhibit 20-3 for Class I LOS criteria and Exhibit 20-4 for Class II LOS Criteria

3 - Two-lane rural highway analysis LOS not applicable on urban streets - Refer to intersection analyses for LOS

Table II.C-27. Level of Service for 2011 Existing Traffic Volumes (Multilane Highway Analysis)

Location IH 45 SBFR, North of Malloy Bridge Road	Access Road Capacity (Calculated) 2,090 pc/hr/ln	One Way Peak Hour Volume (veh/hr) 165	% of Access Road Capacity Used <sup>1</sup> 3.9	HCM Roadway LOS A	Landfill Vehicles % of One Way Capacity - Peak Hour <sup>1</sup> 0.5
IH 45 NBFR, North of Malloy Bridge Road	2,056 pc/hr/ln	153	3.7	Α	0.4
IH 45 SBFR, South of FM 660	1,900 pc/hr/ln²	85	2.2	Α	<0.1
IH 45 NBFR, South of FM 660	1,902 pc/hr/ln	134	3.5	А	<0.1

1 - Based on traffic volumes (veh/hr) compared with capacity (pc/hr)

2 - Minimum access road capacity used - calculated free flow speed < 45 mph.

HDR Engineering, Inc.

II.C-39

### Intersection Analysis

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### BR 45 and Skyline Landfill Driveway

The Waste Management Driveway forms the stop-controlled eastbound approach at this unsignalized "T" intersection. The northbound approach of BR 45 provides one left turn/through shared lane, and the southbound approach provides one through/right turn shared lane. The eastbound approach of Skyline Landfill Driveway provides one left turn/right turn shared lane. Current overall LOS is A during both the AM and PM peak periods. No sight distance limitations were observed during field review of intersection operations.

## IH 45 and Malloy Bridge Road (East Intersection)

Malloy Bridge Road and the IH 45 Northbound Frontage Road form an all-way stop controlled intersection. The IH 45 Northbound Frontage Road provides one left turn/through/right turn shared lane. The eastbound approach of Malloy Bridge Road provides one left turn/through shared lane, and the westbound approach provides one through/right turn shared lane. Current overall LOS is A during both the AM and PM peak periods. No sight distance limitations or other safety factors were observed during field review of intersection operations.

# IH 45 and Malloy Bridge Road/BR 45/Millers Ferry Road (West Intersection)

Malloy Bridge Road, the IH 45 Southbound Frontage Road, Millers Ferry Road, and BR 45 form an all-way stop controlled intersection. The northbound approach of BR 45 provides one left turn/right turn shared lane. The IH 45 Southbound Frontage Road provides one left turn lane and one through/right turn shared lane. The eastbound approach of Millers Ferry Road provides one through/right turn lane. The westbound approach of Malloy Bridge Road provides one left turn/through lane. Immediately to the east of the intersection, Malloy Bridge Road provides an eastbound right turn and a westbound left turn onto the southbound IH 45 on-ramp. Current overall LOS is A during both the AM and PM peak periods. No sight distance limitations or other safety factors were observed during field review of intersection operations.

## BR 45 and FM 660/West 8th Street

BR 45 and FM 660/West 8th Street form an all-way stop controlled intersection. The northbound and southbound approaches of BR 45 each provide one left turn/through/right turn shared lane. The eastbound approach of West 8th Street is unstriped, but provides one left turn/through/right turn shared lane. The westbound approach of FM 660 provides one left turn/through/right turn shared lane. Current overall LOS is A and B during the AM and PM peak periods, respectively. No sight distance limitations or other safety factors were observed during field review of intersection operations.

#### BR 45 and FM 983

BR 45 and FM 983/East 6th Street form an all-way stop controlled intersection. The northbound and southbound approaches of BR 45 each provide one left turn/through/right turn shared lane. The eastbound approach of FM 983 provides one left turn/through/right turn shared lane. The westbound approach of East 6th Street is unstriped, but provides one left turn/through/right turn shared lane. Current overall LOS is B during both the AM and PM peak periods. No sight distance limitations or other safety factors were observed during field review of intersection operations.

#### BR 45 and 5th Street

BR 45 and 5<sup>th</sup> Street form an all-way stop controlled intersection. The northbound and southbound approaches of BR 45 each provide one left turn/through/right turn shared lane. The eastbound and westbound approaches of 5<sup>th</sup> Street each provide one left turn/through/right turn shared lane. Current overall LOS is B and A during the AM and PM peak periods, respectively. No sight distance limitations or other safety factors were observed during field review of intersection operations.

#### FM 983 and FM 664

The south leg of FM 983 forms the stop-controlled northbound approach of this "T"-intersection. The south and east legs of this intersection are designated as FM 983, and the

west leg is designated as FM 664. The northbound approach of FM 983 provides one left turn/right turn shared lane. The eastbound approach of FM 664 provides one through/right turn shared lane. The westbound approach of FM 983 provides one left turn lane and one through lane. Current overall LOS is A during both the AM and PM peak periods. No sight distance limitations or other safety factors were observed during field review of intersection operations.

## IH 45 and FM 660 (East Intersection)

The IH 45 Northbound Frontage Road and FM 660 form an all-way stop controlled intersection. The IH 45 Northbound Frontage Road provides one left turn/through shared lane and one through/right turn shared lane; however, due to the offset alignment of the IH 45 Northbound Frontage Road through the intersection, the left turn/through shared lane operates as a de facto left turn lane. The eastbound approach of FM 660 provides one left turn/through shared lane, and the westbound approach provides one through/right turn shared lane. Current overall LOS is C and B during the AM and PM peak periods, respectively. No sight distance limitations or other safety factors were observed during field review of intersection operations.

#### IH 45 and FM 660 (West Intersection)

The IH 45 Southbound Frontage Road and FM 660 form an all-way stop controlled intersection. The IH 45 Southbound Frontage Road provides one left turn/through shared lane and one through/right turn shared lane. The eastbound approach of FM 660 provides one through/right turn shared lane, and the westbound approach provides one left turn/through shared lane. Current overall LOS is B during both the AM and PM peak periods. No sight distance limitations or other safety factors were observed during field review of intersection operations.

#### IH 45 and East 5th Street (East Intersection)

The IH 45 Northbound Frontage Road and East 5th Street form an all-way stop controlled intersection. The IH 45 Northbound Frontage Road provides one left turn/through shared lane

and one through/right turn shared lane. The eastbound approach of East 5th Street provides one left turn/through shared lane, and the westbound approach provides one through/right turn shared lane. Current overall LOS is B and A during the AM and PM peak periods, respectively. No sight distance limitations or other safety factors were observed during field review of intersection operations.

## IH 45 and East 5th Street (West Intersection)

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The IH 45 Southbound Frontage Road and East 5th Street form an all-way stop controlled intersection. The IH 45 Southbound Frontage Road provides one left turn/through shared lane and one through/right turn shared lane. The eastbound approach of East 5th Street provides one through/right turn shared lane, and the westbound approach provides one left turn/through shared lane. Current overall LOS is B and A during the AM and PM peak periods, respectively. No sight distance limitations or other safety factors were observed during field review of intersection operations.

## **FUTURE TRAFFIC ANALYSIS**

Projected landfill traffic volumes include the following contributing elements:

- Private vehicles belonging to facility personnel
- Waste shipment vehicles
- Hauling facility (Waste Management) vehicles staged on-site

Existing and future site-generated vehicular traffic volumes were provided by Biggs & Matthews Environmental. Existing and proposed landfill trip distributions were calculated based on existing turning movement and classification data collected during the study. Estimated daily site-generated traffic is shown in Table II.C-28. Biggs & Matthews Environmental provided the following description of projected landfill operations:

- Landfill traffic growth was developed independently of background traffic. Existing classification counts noted in Tables II.C-14 through II.C-24 above provided the basis for determining future landfill trip distribution. All landfill traffic will enter and exit the site to BR 45 via the landfill driveway. Based on classification counts collected during the study, approximately 83 percent of all landfill traffic will enter and exit from the north on BR 45, and approximately 17 percent of all landfill traffic will enter and exit from the south on BR 45.
- Under the expanded operational permit being proposed by the landfill facility, the landfill
  is projected to be operational 24-hours per day, Monday through Friday, and 12:00 AM
  through 3:00 PM on Saturday.

**Table II.C-28.** *Estimated Average Daily Traffic Volumes for the Landfill* 

Year 2011	Year 2044
Number of	Projected
Existing	Number of
Trips	Trips
1,004	1,567

Background traffic growth rates were determined based on information obtained from TxDOT Historical ADT Traffic Maps (Ref. 3), and the Skyline Landfill Facility Traffic Projections table prepared as part of this permit application and attached in the appendix (Ref. 8). Based on the data obtained during the study, it was assumed that background traffic (or non-site traffic) within the study area will increase annually at a rate of one (1) percent over the life of the facility.

The projected traffic volumes on each study area roadway are listed in Table II.C-29.

## **Roadway Capacity Analysis**

In order to determine the roadway level of service under existing and 2044 traffic conditions, a comparison between the expected speed-flow and density-flow was made. Traffic volumes were projected using the traffic counts collected by HDR as the base value. All roadway improvements noted within this report were assumed to be completed prior to design year 2044 conditions. Tables II.C-30 and II.C-31 summarize peak hour volume projections and capacity analysis results for year 2044. As shown, traffic generated by the landfill will represent a very small portion of the capacity of each study area roadway during the peak hour: 3.3 percent on BR 45, 0.8 percent on IH 45 SBFR, 0.6 percent on IH 45 NBFR, 0.1 percent on Malloy Bridge Road, and less than 0.1 percent on FM 660, FM 664, FM 983, and East 5th Street.

It should be noted that these calculations are based on traffic volumes assumed to occur during the peak period of traffic flow for each roadway, not on daily traffic volumes. It is more appropriate to evaluate a roadway based on its peak hour volume rather than the 24-hour volume, since peak hour volumes provide a better indication of the operating conditions of the roadway. Peak hour flows were determined based on existing traffic turning movement counts collected by HDR during the study. The future peak hour volumes were determined using historical count data obtained from TxDOT and the Skyline Landfill Traffic Projections included as part of this permit application. Projected landfill site traffic volumes were based on the

projected waste acceptance rate provided by Biggs & Matthews Environmental. It should be noted that the proposed change to the operational hours of the facility may have an impact on the peak hour landfill traffic accessing the site. However, this impact is likely to be minor – the distribution of waste acceptance vehicles is not uniform throughout the day – and will generally result in fewer vehicles per hour for each hour of operation, including the peak hour of operation. For this reason, and to provide a reasonable and conservative estimation of landfill trips, the current landfill trip distribution was maintained for future projection of landfill based trips.

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**Table II.C-29.** 2044 Forecasted Traffic Volumes

		Projected Tr	raffic Volume	e at 2044 Fa	cility Closur	e
		Daily			Peak Hour	
	Landfill	Non- Landfill		Landfill	Non- Landfill	
Location	Trips	Trips	Total	Trips	Trips	Total
BR 45, North of Skyline Landfill Driveway	888	4,854	5,742	105	378	483
BR 45, South of Skyline Landfill Driveway	183	3,886	4,069	17	384	401
IH 45 SBFR, North of Malloy Bridge Road	373	2,434	2,807	33	200	233
IH 45 NBFR, North of Malloy Bridge Road	251	2,264	2,515	23	192	215
IH 45 SBFR, South of FM 660	0	1,457	1,457	0	118	118
IH 45 NBFR, South of FM 660	0	1,433	1,433	0	186	186
FM 660, East of BR 45	5	5,577	5,582	0	742	742
FM 983, West of BR 45	119	10,467	10,586	0	1,626	1,626
FM 664, West of FM 983	105	9,187	9,292	0	1,108	1,108
East 5 <sup>th</sup> Street, East of BR 45	0	6,184	6,184	0	730	730
Malloy Bridge Road, East of IH 45	75	3,235	3,310	3	263	266

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Table II.C-30. Level of Service for 2044 Forecasted Traffic Volumes (Two-Lane Highway Analysis)

	Roadway Capacity	Peak Hour Volume	% of Access Road Capacity	HCM Roadway	% of Roadway Capacity Used by Forecasted Landfill
Location	(pc/hr)	(veh/hr)	Used1	LOS <sup>2</sup>	Vehicles <sup>1</sup>
BR 45, North of Landfill Drwy	3,200	483	15.1	n/a³	3.3
FM 660	3,200	742	23.2	n/a³	<0.1
FM 983	3,200	1,626	50.8	n/a³	<0.1
FM 664	3,200	1,108	34.6	E	<0.1
East 5th Street	3,200	730	22.8	n/a <sup>3</sup>	<0.1
Malloy Bridge Road	3,200	266	8.3	Α	0.1

Note:

1 – Based on traffic volumes (veh/hr) compared to capacity (pc/hr)
2 – Refer to HCM Exhibit 20-3 for Class I LOS criteria and Exhibit 20-4 for Class II LOS Criteria

3 - Two-lane rural highway analysis LOS not applicable on urban streets - Refer to intersection analyses for LOS

Table II.C-31 Level of Service for 2044 Forecasted Traffic Volumes (Multilane Highway Analysis)

Location	Access Road Capacity (Calculated)	One Way Peak Hour Volume (veh/hr)	% of Access Road Capacity Used <sup>1</sup>	Roadway LOS	Landfill Vehicles % of One Way Capacity - Peak Hour <sup>1</sup>
IH 45 SBFR, North of Malloy Bridge Road	2,090 pc/hr/ln	233	5.6	A	0.8
IH 45 NBFR, North of Malloy Bridge Road	2,056 pc/hr/ln	215	5.2	Α	0.6
IH 45 SBFR, South of FM 660	1,900 pc/hr/ln <sup>2</sup>	118	3.1	Α	<0.1
IH 45 NBFR, South of FM 660	1,902 pc/hr/ln	186	4.9	А	<0.1

1 - Based on volumes (veh/hr) compared to capacity (pc/hr)

2 - Minimum access road capacity used - calculated free flow speed < 45 mph.

HDR Engineering, Inc.

## **Intersection Analysis**

#### BR 45 and Skyline Landfill Driveway

This intersection will operate at LOS A during both the AM and PM peak periods under 2044 forecasted conditions, assuming existing geometrics and traffic controls are maintained.

## IH 45 and Malloy Bridge Road (East Intersection)

This intersection will operate at LOS A during both the AM and PM peak periods under 2044 forecasted conditions, assuming existing geometrics and traffic controls are maintained. No improvements are recommended at this intersection.

## IH 45 and Malloy Bridge Road/BR 45/Millers Ferry Road (West Intersection)

This intersection will operate at LOS A during both the AM and PM peak periods under 2044 forecasted conditions, assuming existing geometrics and traffic controls are maintained. No improvements are recommended at this intersection.

### BR 45 and FM 660

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This intersection will operate at LOS B and F during the AM and PM peak periods, respectively, under 2044 forecasted conditions, assuming existing geometrics and traffic controls are maintained. It should be noted that landfill traffic does not cause this intersection to operate at unacceptable levels of service; therefore, no improvements are recommended at this intersection as part of this transportation study.

#### BR 45 and FM 983

This intersection will operate at LOS E and C during the AM and PM peak periods, respectively, under 2044 forecasted conditions, assuming existing geometrics and traffic controls are maintained. It should be noted that landfill traffic does not cause this intersection to operate at unacceptable levels of service; therefore, no improvements are recommended at this intersection as part of this transportation study.

### BR 45 and East 5th Street

This intersection will operate at LOS C and B during the AM and PM peak periods, respectively, under 2044 forecasted conditions, assuming existing geometrics and traffic controls are maintained. No improvements are recommended at this intersection.

#### FM 983 and FM 664

This intersection will operate at LOS F and A during the AM and PM peak periods, respectively, under 2044 forecasted conditions, assuming existing geometrics and traffic controls are maintained. It should be noted that landfill traffic does not cause this intersection to operate at unacceptable levels of service; therefore, no improvements are recommended at this intersection as part of this transportation study.

### IH 45 and FM 660 (East Intersection)

This intersection will operate at LOS F and C during the AM and PM peak periods, respectively, under 2044 forecasted conditions, assuming existing geometrics and traffic controls are maintained. It should be noted that landfill traffic does not cause this intersection to operate at unacceptable levels of service; therefore, no improvements are recommended at this intersection as part of this transportation study.

# IH 45 and FM 660 (West Intersection)

This intersection will operate at LOS C and B during the AM and PM peak periods, respectively, under 2044 forecasted conditions, assuming existing geometrics and traffic controls are maintained. No improvements are recommended at this intersection.

# IH 45 and East 5th Street (East Intersection)

This intersection will operate at LOS C and A during the AM and PM peak periods, respectively, under 2044 forecasted conditions, assuming existing geometrics and traffic controls are maintained. No improvements are recommended at this intersection.

# IH 45 and East 5th Street (West Intersection)

This intersection will operate at LOS C and B during the AM and PM peak periods, respectively under 2044 forecasted conditions, assuming existing geometrics and traffic controls are maintained. No improvements are recommended at this intersection.

HDR Engineering, Inc.

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## **CONCLUSIONS AND RECOMMENDATIONS**

Based upon the information gathered during this transportation study, the following conclusions are made concerning the impact of the proposed expansion of the Skyline Landfill Facility on the local transportation system serving the site.

- FM 660 and FM 983 have maximum gross vehicle weights of 58,420 lbs. All other access roadways within one mile of the site have maximum gross vehicle weight limits of 80,000 lbs.
- Roadway improvements currently planned or under construction within the study area include construction of a six lane toll-road running east-west through the roadway network (Loop 9) between US 287 and IH 20, installation of wireless incident detection and response system on IH 45 from IH 20 to the Dallas/Ellis County line, a feasibility study to widen FM 664 from two to four lanes between US 287 and IH 45, and a study to realign FM 664 to the south of downtown Ferris. For the purpose of this study, none of these improvements were assumed to be constructed prior to 2044 conditions. Implementation of these improvements, and others identified and implemented during the life of the facility, will have an impact on the operation of the roadway network, prediction of which is beyond the scope of this study.
- Based on the roadway capacity analysis, all main access roadways within one mile of the site will operate at acceptable levels of service, with the exception of FM 664.
- FM 664 will operate at an unacceptable level of service under 2044 forecasted conditions, with or without facility related traffic. Addition of site traffic does not result in a deterioration of LOS on this roadway. Upgrade/realignment of FM 664, as proposed by NCTCOG and TxDOT, will have a significant positive impact on the level of service of this facility.
- Based on the intersection capacity analysis, the intersections of BR 45 with FM 660 and FM 983, FM 983 with FM 664, and FM 660 with the IH 45 Southbound Frontage Road will operate at unacceptable levels of service under 2044 forecasted conditions, with or without facility related traffic. It should be noted that site traffic does not result in a deterioration of LOS for any of the study area intersections.

- As detailed in Tables II.C-26 and II.C-27, 2011 existing landfill traffic accounts for less than three (3) percent of the overall roadway capacity on each of the study area roadways during the observed peak hour for each.
- As detailed in Tables II.C-30 and II.C-31, under 2044 forecasted traffic conditions, the landfill traffic will account for less than four (4) percent of the overall roadway capacity on each of the study area roadways during the observed peak hour for each.
- No sight distance limitations were observed during field review of intersection operations.
- Based on the information presented previously, there are no existing or future restrictions on the main access roadways within one mile of the site that would preclude safe and efficient operations for landfill vehicles and other traffic in the area.

#### REFERENCES

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- Mobility 2035: The Metropolitan Transportation Plan for North Central Texas, North Central Texas Council of Governments, Arlington, Texas, March 2011.
- 2011-2014 Transportation Improvement Program for North Central Texas, North Central Texas Council of Governments, Arlington, Texas, Approved on June 3, 2010, Amended on March 10, 2011.
- 3. 2000 2010 Traffic Maps, Dallas District, Texas Department of Transportation, <a href="http://www.txdot.gov/travel/planning\_map.htm">http://www.txdot.gov/travel/planning\_map.htm</a>, Austin, Texas.
- 4. A Policy on Geometric Design of Highways and Streets, Sixth Edition, American Association of State Highway and Transportation Officials, Washington, D.C., 2011.
- 5. Highway Capacity Manual, Transportation Research Board, Washington, D.C., 2010.
- 6. HCS2000 Highway Capacity Software, v4.1f, McTrans Center, University of Florida, Gainesville, Florida, 2003.
- 7. David Husch, John Albeck, "Synchro 7.0", Trafficware, Albany, California, 2007
- 8. Skyline Landfill Traffic Projections, WMI Skyline Landfill Permit Amendment, Prepared by Biggs & Matthews Environmental, January 24, 2012.

#### **APPENDIX**

- 1. TxDOT-Dallas Coordination Letter
- 2. TxDOT-Ellis Coordination Letter
- 3. City of Ferris Coordination Letter
- 4. City of Wilmer Coordination Letter
- 5. Dallas County Coordination Letter
- 6. Ellis County Coordination Letter
- 7. Ferris I.S.D. Coordination Letter
- 8. Dallas I.S.D. Coordination Letter
- 9. Lancaster I.S.D. Coordination Letter
- 10. TxDOT-Ellis Formal Response
- 11. Ellis County Formal Response
- 12. Skyline Landfill Traffic Projections
- 13. Site Traffic Distribution Worksheets
- 14. HCS Analysis Worksheets
- 15. Synchro Analysis Worksheets



October 10, 2011

Mr. Paul Williams, P.E.
Area Engineer
TxDOT Dallas District – Dallas East
P.O. Box 3067
Dallas, Texas 75221

Subject: Skyline Landfill, Ferris, Texas

#### Dear Mr. Williams:

Waste Management of Texas, Inc. is preparing a permit application for the proposed expansion of the Skyline Landfill located in Ferris, Texas. The purpose of this letter is to document coordination with the Texas Department of Transportation (TxDOT) consistent with the requirements of the municipal solid waste regulations, 30 Texas Administrative Code Chapter 330 (30 TAC §330.61(i)(4)). Additionally we are requesting information regarding any traffic or location restrictions or proposed roadway improvements in the vicinity of the site.

The site entrance is located on BR 45 (N Central Street), approximately 3,100 feet south of Malloy Bridge Road. The primary access route to the Skyline Landfill facility is BR 45. Enclosed Figure 1 shows the location of the site prepared from Texas Department of Transportation maps.

Listed below are specific issues that we would like TxDOT to confirm or address in written form:

- Traffic volume projections: Please provide an annual traffic volume growth rate for the following roadways in the vicinity of the site. This information will be used to compare the traffic anticipated to be generated by the Skyline Landfill with the TxDOT traffic projections:
  - 1. BR 45 (North Central Street)
  - 2. IH 45
- Please provide the capacity determined by TxDOT for the roadways listed above in the vicinity of the site.
- Please provide any information regarding planned maintenance or construction improvements in the vicinity of the site, specifically on roadways listed above. Also please include any existing information regarding traffic volume counts and studies performed in the vicinity of the site.

504 Lavaca Street, #1175 Austin, Texas 78701 512-904-3700

- Please provide information on any load-zoned roadways in the vicinity of the site that have gross vehicle weight limits less than 80,000 pounds.
- Please provide any special design criteria that may be required for the operation of the landfill.
- Please provide existing cross-section data showing travel lane and shoulder widths for the roadways listed above in the vicinity of the site.

We appreciate your review of this information and your written response. Please feel free to contact Mike McInturff or me if you have any questions.

Sincerely.

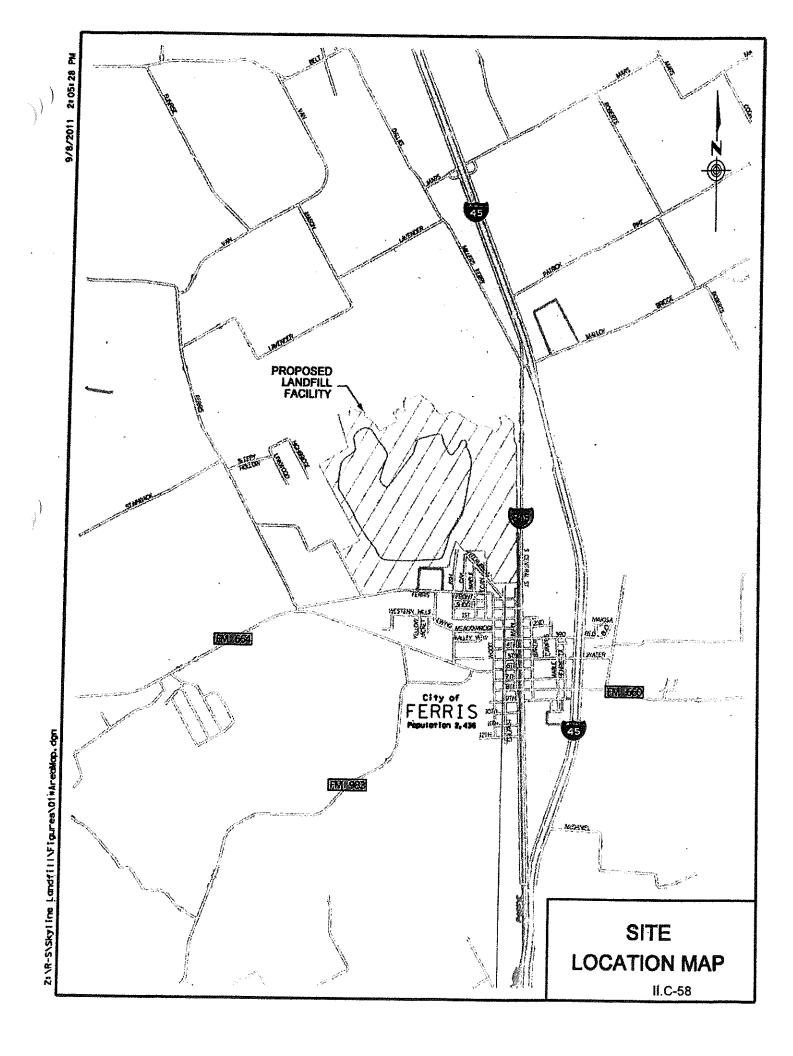
Timothy Grimes, P.E., PTOE

**Project Engineer** 

**Enclosure** 

cc: Mike McInturff, P.E., PTOE, HDR

Kenneth Welch, P.E., Biggs & Matthews Environmental





October 10, 2011

Mr. Bill Pierce, P.E.
Area Engineer
TxDOT Dallas District – Ellis
124 FM 876
Waxahachie, Texas 75167

Subject: Skyline Landfill, Ferris, Texas

Dear Mr. Pierce:

Waste Management of Texas, Inc. Is preparing a permit application for the proposed expansion of the Skyline Landfill located in Ferris, Texas. The purpose of this letter is to document coordination with the Texas Department of Transportation (TxDOT) consistent with the requirements of the municipal solid waste regulations, 30 Texas Administrative Code Chapter 330 (30 TAC §330.61(i)(4)). Additionally we are requesting information regarding any traffic or location restrictions or proposed roadway improvements in the vicinity of the site.

The site entrance is located on BR 45 (N Central Street), approximately 3,100 feet south of Malloy Bridge Road. The primary access route to the Skyline Landfill facility is BR 45. Enclosed Figure 1 shows the location of the site prepared from Texas Department of Transportation maps.

Listed below are specific issues that we would like TxDOT to confirm or address in written form:

- Traffic volume projections: Please provide an annual traffic volume growth rate for the following roadways in the vicinity of the site. This information will be used to compare the traffic anticipated to be generated by the Skyline Landfill with the TxDOT traffic projections:
  - 1. BR 45 (Central Street)
  - 2. IH 45
  - 3. FM 660
  - 4. FM 983
  - FM 664
- Please provide the capacity determined by TxDOT for the roadways listed above in the vicinity of the site.

504 Lavaca Street, #1175 Austin, Texas 78701 512-904-3700

- Please provide any information regarding planned maintenance or construction improvements in the vicinity of the site, specifically on roadways listed above. Also please include any existing information regarding traffic volume counts and studies performed in the vicinity of the site.
- Please provide information on any load-zoned roadways in the vicinity of the site that have gross vehicle weight limits less than 80,000 pounds.
- Please provide any special design criteria that may be required for the operation of the landfill.
- Please provide existing cross-section data showing travel lane and shoulder widths for the roadways listed above in the vicinity of the site.

We appreciate your review of this information and your written response. Please feel free to contact Mike McInturff or me if you have any questions.

Sincerely,

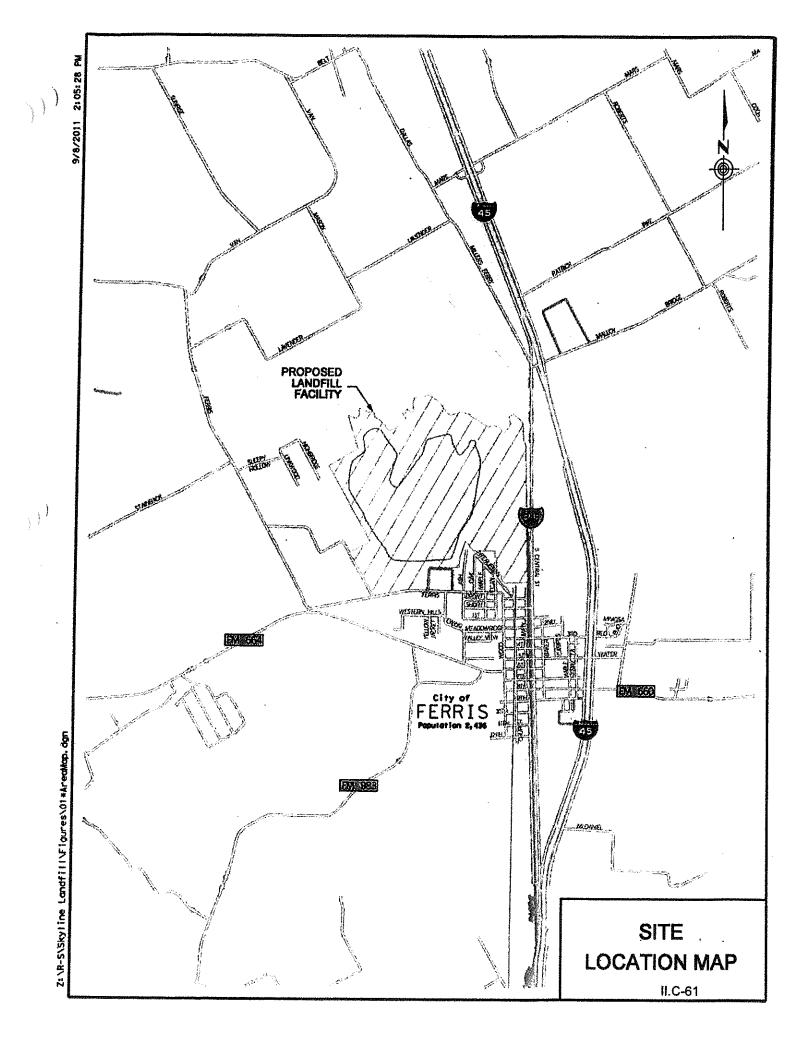
Timothy Grimes, P.E., PTOE

Project Engineer

**Enclosure** 

cc: Mike McInturff, P.E., PTOE, HDR

Kenneth Welch, P.E., Biggs & Matthews Environmental





October 10, 2011

Mr. Eric Strong
City Manager
City of Ferris, Texas
100 Town Plaza
Ferris, Texas 75125

Subject: Skyline Landfill, Ferris, Texas

#### Dear Mr. Strong:

Waste Management of Texas, Inc. is preparing a permit application for the proposed expansion of the Skyline Landfill located in Ferris, Texas. The purpose of this letter is to document coordination with the City of Ferris consistent with the requirements of the municipal solid waste regulations, 30 Texas Administrative Code Chapter 330 (30 TAC §330.61(i)(4)). Additionally we are requesting information regarding any traffic or location restrictions or proposed roadway improvements in the vicinity of the site.

The site entrance is located on N Central Street (BR 45), approximately 3,100 feet south of Malloy Bridge Road. The primary access route to the Skyline Landfill facility is N Central Street. Enclosed Figure 1 shows the location of the site prepared from Texas Department of Transportation maps.

Listed below are specific issues that we would like the City to confirm or address in written form:

- Traffic volume projections: Please provide an annual traffic volume growth rate for the following roadways in the vicinity of the site. This information will be used to compare the traffic anticipated to be generated by the Skyline Landfill with the City's traffic projections:
  - 1. Central Street
    - 2. 5th Street
    - 3. E 6th Street
    - 4. W 8th Street
- Please provide the capacity determined by the City for the roadways listed above within the City limits, if available.

504 Lavaca Street, #1175 Austin, Texas 78701 512-904-3700

- Please provide any information regarding planned maintenance or construction improvements in the vicinity of the site, specifically along the roadways listed above. Also please include any existing information regarding traffic volume counts and studies performed in the vicinity of the site.
- Please provide information on any load-zoned roadways in the vicinity of the site that have gross vehicle weight limits less than 80,000 pounds.
- Please provide any special design criteria that may be required for the operation of the landfill.

We appreciate your review of this information and your written response. Please feel free to contact Mike McInturff or me if you have any questions.

Sincerely,

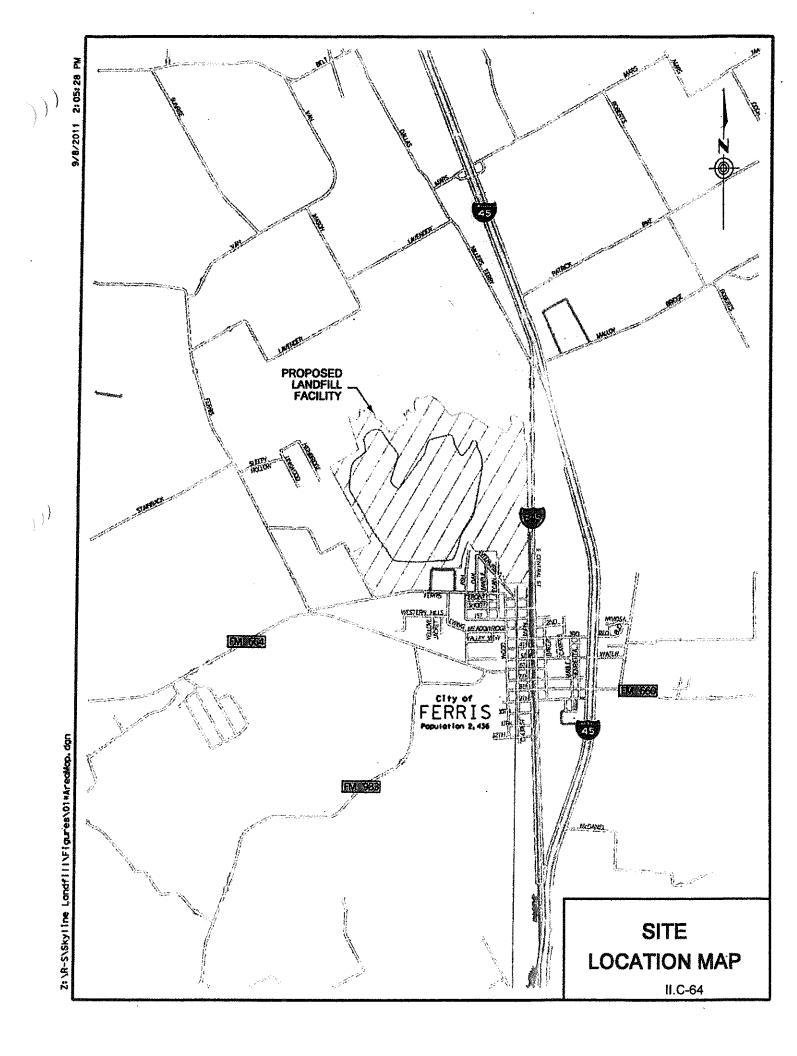
Timothy Grimes, P.E., PTOE

**Project Engineer** 

**Enclosure** 

cc: Mike McInturff, P.E., PTOE, HDR

Kenneth Welch, P.E., Biggs & Matthews Environmental





October 10, 2011

Ms. Crystol Birdwell City Secretary City of Wilmer, Texas 128 N Dallas Avenue Wilmer, Texas 75172

Subject: Skyline Landfill, Ferris, Texas

#### Dear Ms. Birdwell:

Waste Management of Texas, Inc. is preparing a permit application for the proposed expansion of the Skyline Landfill located in Ferris, Texas. The purpose of this letter is to document coordination with the City of Wilmer consistent with the requirements of the municipal solid waste regulations, 30 Texas Administrative Code Chapter 330 (30 TAC §330.61(i)(4)). Additionally we are requesting information regarding any traffic or location restrictions or proposed roadway improvements in the vicinity of the site.

The site entrance is located on N Central Street (BR 45), approximately 3,100 feet south of Malloy Bridge Road. The primary access route to the Skyline Landfill facility is N Central Street. Enclosed Figure 1 shows the location of the site prepared from Texas Department of Transportation maps.

Listed below are specific issues that we would like the City to confirm or address in written form:

- Traffic volume projections: Please provide an annual traffic volume growth rate for S Dallas Avenue in the vicinity of the site.
- Please provide the capacity determined by the City for S Dallas Avenue, if available, in the vicinity of the site.
- Please provide any information regarding planned maintenance or construction improvements in the vicinity of the site. Also please include any existing information regarding traffic volume counts and studies performed in the vicinity of the site.
- Please provide information on any load-zoned roadways in the vicinity of the site that have gross vehicle weight limits less than 80,000 pounds.

504 Lavaca Street, #1175 Austin, Texas 76701 512-904-3700 Please provide any special design criteria that may be required for the operation of the landfill.

We appreciate your review of this information and your written response. Please feel free to contact Mike McInturff or me if you have any questions.

Sincerely.

Timothy Grimes, P.E., PTOE

**Project Engineer** 

**Enclosure** 

cc: Mike McInturff, P.E., PTOE, HDR

Kenneth Welch, P.E., Biggs & Matthews Environmental



October 10, 2011

Ms. Alberta L. Blair, P.E. Public Works Director Dallas County, Texas 411 Elm Street, 4th Floor Dallas, Texas 75202

Subject: Skyline Landfill, Ferris, Texas

Dear Ms. Blair:

Waste Management of Texas, Inc. is preparing a permit application for the proposed expansion of the Skyline Landfill located in Ferris, Texas. The purpose of this letter is to document coordination with Dallas County consistent with the requirements of the municipal solid waste regulations, 30 Texas Administrative Code Chapter 330 (30 TAC §330.61(i)(4)). Additionally we are requesting information regarding any traffic or location restrictions or proposed roadway improvements in the vicinity of the site.

The site entrance is located on BR 45 (N Central Street), approximately 3,100 feet south of Malloy Bridge Road. The primary access route to the Skyline Landfill facility is BR 45. Enclosed Figure 1 shows the location of the site prepared from Texas Department of Transportation maps.

Listed below are specific issues that we would like the County to confirm or address in written form:

- Traffic volume projections: Please provide an annual traffic volume growth rate for the following roadways in the vicinity of the site. This information will be used to compare the traffic anticipated to be generated by the Skyline Landfill with the County's traffic projections:
  - Malloy Bridge Road
  - 2. S Dallas Avenue
- Please provide the capacity determined by the County for the roadways listed above, if available.
- Please provide any information regarding planned maintenance or construction improvements in the vicinity of the site, specifically along the roadways listed above. Also please include any existing information regarding traffic volume counts and studies performed in the vicinity of the site.

- Please provide information on any load-zoned roadways in the vicinity of the site that have gross vehicle weight limits less than 80,000 pounds.
- Please provide any special design criteria that may be required for the operation of the landfill.

We appreciate your review of this information and your written response. Please feel free to contact Mike McInturff or me if you have any questions.

Sincerely.

Timothy Grimes, P.E., PTOE

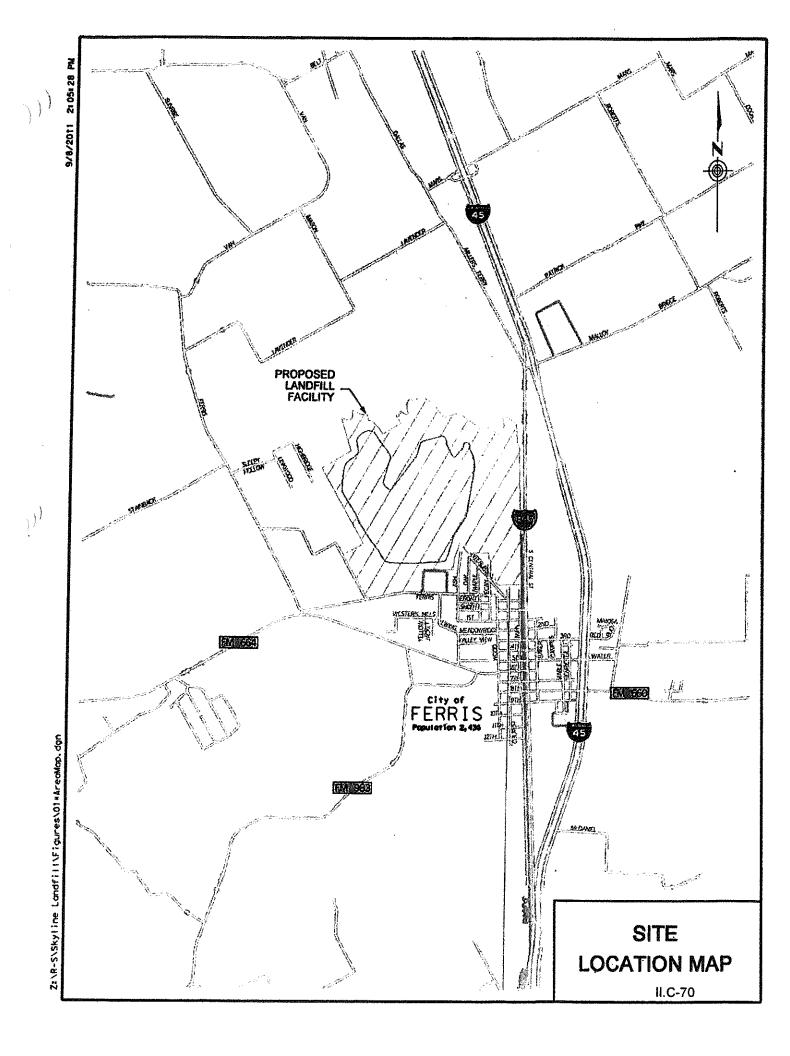
**Project Engineer** 

**Enclosure** 

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cc: Mike McInturff, P.E., PTOE, HDR

Kenneth Welch, P.E., Biggs & Matthews Environmental





October 10, 2011

Mr. Joe White, P.E.
County Engineer
Ellis County, Texas
109 S Jackson Street
Waxahachie, Texas 75165

Subject: Skyline Landfill, Ferris, Texas

Dear Mr. White:

Waste Management of Texas, Inc. is preparing a permit application for the proposed expansion of the Skyline Landfill located in Ferris, Texas. The purpose of this letter is to document coordination with Ellis County consistent with the requirements of the municipal solid waste regulations, 30 Texas Administrative Code Chapter 330 (30 TAC §330.61(i)(4)). Additionally we are requesting information regarding any traffic or location restrictions or proposed roadway improvements in the vicinity of the site.

The site entrance is located on BR 45 (N Central Street), approximately 3,100 feet south of Malloy Bridge Road. The primary access route to the Skyline Landfill facility is BR 45. Enclosed Figure 1 shows the location of the site prepared from Texas Department of Transportation maps.

Listed below are specific issues that we would like the County to confirm or address in written form:

- Traffic volume projections: Please provide an annual traffic volume growth rate for the following roadways in the vicinity of the site. This information will be used to compare the traffic anticipated to be generated by the Skyline Landfill with the County's traffic projections:
  - 1. FM 660
  - 2. FM 983
  - 3. FM 664
- Please provide the capacity determined by the County for the roadways listed above, if available.

Page 2 / Mr. Joe White, P.E. / October 10, 2011

Please provide any information regarding planned maintenance or construction improvements in the vicinity of the site, specifically along the roadways listed above. Also please include any existing information regarding traffic volume counts and studies performed in the vicinity of the site.

- Please provide information on any load-zoned roadways in the vicinity of the site that have gross vehicle weight limits less than 80,000 pounds.
- Please provide any special design criteria that may be required for the operation of the landfill.

We appreciate your review of this information and your written response. Please feel free to contact Mike McInturff or me if you have any questions.

Sincerely,

Timothy Grimes, P.E., PTOE

**Project Engineer** 

**Enclosure** 

cc: Mike McInturff, P.E., PTOE, HDR

Kenneth Welch, P.E., Biggs & Matthews Environmental



October 10, 2011

Ms. Dondi Markgraf
Director of Maintenance and Transportation
Ferris ISD
P.O. Box 459
Ferris, Texas 75125-0459

Subject: Ferris ISD School Bus Routes

#### Dear Ms. Markgraf:

**)** 

HDR Engineering, Inc. is in the process of completing a transportation study for a development project within the. Ferris Independent School District. It is required, as part of the study, to evaluate the impacts of site traffic on school bus routes in the area. Please provide any information you may have regarding bus routes on the following roadway segments within the district:

- Central Street, from IH 45 N to IH 45 S
- Malloy Bridge Road, from N Central Street to Roberts Road
- S Dallas Avenue, from Lavender Road to Malloy Bridge Road
- IH 45, from Mars Road to S Central Street
- 5th Street, from N Wood St to Birch Road
- E 6th Street, from S Central Street to S Baker Street
- FM 983, from S Central Street to Bluff Springs Road
- FM 664, from FM 983 to Tanner Farm Road
- W 8th Street, from S Wood Street to S Central Street
- = FM 660, from S Central Street to Bear Creek Drive

We appreciate your review of this information and your written response. Please feel free to contact Mike McInturff or me if you have any questions.

Sincerely,

Timothy Grimes, P.E., PTOE

Project Engineer

cc: Mike Mcinturff, P.E., PTOE, HDR

Kenneth Weich, P.E., Biggs & Matthews Environmental



October 10, 2011

Mr. Doug Becker
Director of Student Transportation
Dallas ISD
3700 Ross Avenue
Dallas, Texas 75204

Subject: Dallas ISD School Bus Routes

Dear Mr. Becker:

HDR Engineering, Inc. is in the process of completing a transportation study for a development project adjacent to the boundary of Dallas independent School District, in Ferris, Texas. It is required, as part of the study, to evaluate the impacts of site traffic on school bus routes in the area. Please provide any information you may have regarding bus routes on the following roadway segments within the district:

- S Dallas Avenue, from Lavender Road to Malloy Bridge Road
- IH 45, from Mars Road to Malloy Bridge Road

We appreciate your review of this information and your written response. Please feel free to contact Mike McInturff or me if you have any questions.

Sincerely,

Timothy Grimes, P.E., PTOE

Project Engineer -

cc: Mike McIntuiff, P.E., PTOE, HDR

Kenneth Welch, P.E., Biggs & Matthews Environmental



October 10, 2011

Mr. James Thomas
Transportation Supervisor
Lancaster ISD
1003 N Dallas Avenue
Lancaster, Texas 75146

Subject: Lancaster ISD School Bus Routes

Dear Mr. Thomas:

HDR Engineering, Inc. is in the process of completing a transportation study for a development project adjacent to the boundary of Lancaster Independent School District, in Ferris, Texas. It is required, as part of the study, to evaluate the impacts of site traffic on school bus routes in the area. Please provide any information you may have regarding bus routes on S Dallas Avenue, between Lavender Road and Patrick Pike Road (near Ferris) within the district.

We appreciate your review of this information and your written response. Please feel free to contact Mike McInturff or me if you have any questions.

Sincerely.

Timothy Grimes, P.E., PTOE

**Project Engineer** 

CC:

Mike McInturff, P.E., PTOE, HDR

Kenneth Welch, P.E., Biggs & Matthews Environmental



124 FM 876 Waxahachie, Texas 75167 (972) 938-1570 October 26, 2011

Timothy Grimes, P.E., PTOE Project Engineer HDR 504 Lavaca Street, #1175 Austin, Texas 78701

Re: Skyline Landfill, Ferris, Texas

Dear Mr. Grimes,

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Please make reference to your letter dated October 10, 2011 requesting information pertinent to the expansion of the subject facility. I offer the following comments to your specific issues:

- Traffic volume projections I direct HDR to the TxDOT website (http://www.txdot.gov/travel/) and the North Central Texas Council of Governments website (http://www.nctcog.org/trans/data/tcins/) where you may access available traffic data.
- Roadway Capacity I direct HDR to the latest edition of TRB Highway Capacity Manual for determining this value.
- Load Zoned Roadways I direct HDR to the TxDOT website (http://www.txdot.gov/travel/) where you may access available load zoning information.
- Typical Sections I direct HDR to the Dallas District Library where the as-built constructions plans are kept on file. The physical address is:

Dallas District Office TxDOT 4777 E Highway 80 Mesquite, TX 75150-6643

Sincerely,

William J. Pierce, P.E.

Area Engineer

**WJP** 

November 21, 2011

Mr. Timothy Grimes, P.E., PTOE HDR 504 Lavaca Street, #1175 Austin, Texas 78701

Subject: Ellis County Response Concerning Skyline Landfill Proposed Expansion

Dear Mr. Grimes:

Thank you for your October 10<sup>th</sup> letter concerning Waste Management of Texas wish to expand the Skyline Landfill. The bulk of the expansion appears to be within Dallas County with only minor adjustments within the City of Ferris municipal boundaries. Ellis County and the City of Ferris officials are of the opinion that the proposed expansion will have minimal impact within our jurisdiction.

We are providing a copy of our Solid Waste Facility Siting Ordinance adopted by the Ellis County Commissioners Court in August, 2007 (Minute Order #298.07).

Please be aware of the proposed Loop 9 corridor crossing the proposed expansion area. Additional information on this project can be found at loop9.org website.

FM 664 is currently part of a corridor study being conducted by TxDOT. The section of road in your area is anticipated to be realigned to the south in order to reduce pedestrian/vehicle conflicts in the downtown area.

Your request for traffic volume projections, maintenance, planned improvements, counts, load-zones and special design criteria for FM's and B45 is under the jurisdiction of TxDOT. You may contact Mr. Blll Pierce, Ellis County Area Office for the above information.

Our Thoroughfare Plan designates FM 664 & FM 660 as Principal Arterials (6-lane) roadways. FM 983 is designated as a Minor Arterial (4-lane). Capacity estimates will be based on the NCTCOG model estimates.

If I can be of additional help, please contact me at 214 793-5489.

Sincerely.

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Barbra L. Leftwich

**County Planner** 

cc Commissioner Dennis Robinson, Pct. 1
Joe White, County Engineer
Bill Pierce, TxDOT Area Engineer
Eric Strong, City of Ferris

F18 From 5-001-0614-0802 Equipment, 5-001-0614-0808 Auto Gas/Oil, 5-001-0614-0809 Auto Repair, 5-001-0614-0812 Radio to 5-001-0614-0803 Furniture/Fixtures, 5-001-0614-0801 Supplies, 5-001-0614-0703 Telephone – Steve McKinney, Constable Pct. 4

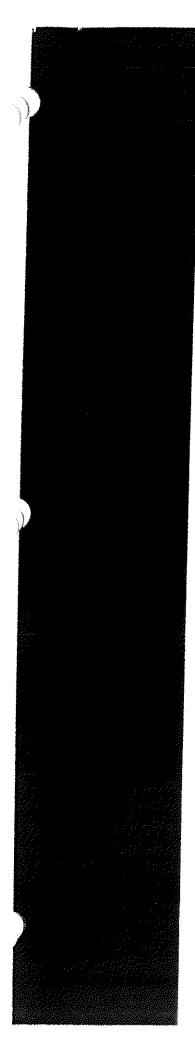
#### SIMPLIFIED PLAT:

- 2.1 SIMPLIFIED PLAT GARCIA'S PECAN GROVE ADDITION, 1 LOT, CLEMENTE AND RAQUEL GARCIA, PCT. 1.
- 2.2 SIMPLIFIED PLAT TELICO NORTH ESTATES, 2 LOTS, ROBERT HERSCHMANN, JR., PCT. 2.
- 2.3 SIMPLIFIED PLAT MARION PROPERTY, 1 LOT, MEDFORD MARION, PCT. 3.
- 2.4 SIMPLIFIED PLAT MADDIE'S PLACE, 2 LOTS, CHRISTOPHER WATSON, PCT. 3
- 2.5 SIMPLIFIED PLAT WILBER ESTATES, 2 LOTS, BARRY AND EVELYN WILBER, PCT. 3 MOTION TO APPROVE CONSENT AGENDA BY COMMISSIONER DODSON, SECOND BY COMMISSIONER SIMS CARRIES UNANIMOUSLY

#### ADMINISTRATIVE:

- 3.1 <u>Presentation</u> of certificate to Commissioner Dennis Robinson for attendance at the 48<sup>th</sup> Annual County Judges & Commissioners' Continuing Education Conference by the V. G. Young Institute of County Government.
  - MARK ARNOLD, ELLIS COUNTY CO-OP EXTENSION SERVICE
- 3.2 <u>Presentation</u> and information update on NASCO (North America's Super Corridor Coalition, Inc).
  - RACHEL CONNELL AND TIFFANY MELVIN, NASCO
- NO ACTION 3.3 Consideration and action to approve an Interlocal Agreement between the City of Mansfield, Texas and Ellis County, Texas, and Reinvestment Zone Number One, City of Mansfield, Texas for participation in the Tax Increment Zone for a period from January 1, 2006 through December 31, 2030.
  - BARBRA LEFTWICH, ELLIS COUNTY PLANNER
- FACILITY SITING ORDINANCE SPECIFYING AREAS IN UNINCORPORATED ELLIS COUNTY WHERE SOLID WASTE DISPOSAL IS NOT PROHIBITED, AS PREPARED BY R. W. BECK, INC., CHANGING REQUIREMENT OF 1 MILE TO ¼ MILE FROM TRIBUTARIES (Ross Davis, Engineering Technician)

  MOTION TO APPROVE BY COMMISSIONER ROBINSON, SECOND BY COMMISSIONER DODSON CARRIES 3/1, WITH COMMISSIONER SIMS OPPOSING—WOULD LIKE TO SEE BUFFER LARGER



**Ellis County, Texas** 

**County Solid Waste Facility Siting Ordinance** 

**FINAL REPORT** 

July 18, 2007

Submitted By: R. W. Beck, Inc. 5806 Mesa Drive, Suite 310 Austin, Texas 78731 (512) 450-0991



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Ms. Barbra Leftwich Ellis County Planner 101 West Main Street Waxahachie, TX 75165

Subject: Ellis County Solid Waste Facility Siting Ordinance - Final Report

Dear Ms. Leftwich:

R. W. Beck, Inc. (R. W. Beck) is pleased to provide Ellis County (County) with a final copy of the "Ellis County Solid Waste Facility Siting Ordinance." R. W. Beck would like to thank County staff and officials who have provided input, data and coordination efforts for this project.

If there are any questions or comments concerning this report, please contact either Mr. Scott Pasternak or Ms. Katie Brown. Both can be reached at (512) 450-0991.

Very truly yours,

P. N. Bechlac.

R. W. Beck, Inc.

Enclosure

## ELLIS COUNTY, TEXAS COUNTY SOLID WASTE FACILITY SITING ORDINANCE

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This report has been prepared for the use of the client for the specific purposes identified in the report. The conclusions, observations and recommendations contained herein attributed to R. W. Beck, Inc. (R. W. Beck) constitute the opinions of R. W. Beck. To the extent that statements, information and opinions provided by the client or others have been used in the preparation of this report, R. W. Beck has relied upon the same to be accurate, and for which no assurances are intended and no representations or warranties are made. R. W. Beck makes no certification and gives no assurances except as explicitly set forth in this report.

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# SECTION 1 ELLIS COUNTY, TEXAS COUNTY SOLID WASTE FACILITY SITING ORDINANCE

## 1.1 General Description

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North Central Texas Council of Governments (NCTCOG), under the direction of the Texas Commission on Environmental Quality (TCEQ), has developed a regional conformance evaluation process to address land use issues and local community concerns related to the siting of solid waste facilities within the region. As part of the regional conformance evaluation process, NCTCOG has determined that the adoption of county solid waste facility siting ordinances (consistent with §364.012 of the Texas Health and Safety Code) is currently the most viable option for integrating specific county land use into the regional solid waste planning and decision making process. Where counties within the region have adopted a local siting ordinance, NCTCOG will defer to the county ordinance concerning land use when making facility conformance recommendations to the TCEQ.

Ellis County, as part of the North Central Texas region, has taken initiative to develop and adopt such an ordinance with technical and financial assistance from NCTCOG<sup>1</sup>. The ordinance will give the county greater control over potential solid waste siting issues within its jurisdiction by allowing the county to prohibit the disposal of municipal or industrial solid waste within the county where disposal would represent a threat to public health, safety or welfare.

The county solid waste facility siting ordinance will designate particular areas of the county in which the disposal of municipal or industrial solid waste is not prohibited. To accomplish this, there is a need to identify areas that are either suitable or not suitable for the disposal of solid waste based on a variety of public health, safety and land use criteria. The ordinance cannot be used to prohibit the siting of solid waste facilities throughout the entire county and, therefore, will specifically designate one or more areas within the jurisdiction where municipal or industrial waste disposal is permissible.

To complete this analysis, Ellis County retained R. W. Beck, which has assisted the NCTCOG and other Texas counties in addressing their municipal solid waste facility issues.

<sup>&</sup>lt;sup>1</sup> This study was funded through a solid waste management grant provided by the Texas Commission on Environmental Quality through the North Central Texas Council of Governments. The funding does not necessarily indicate endorsement or support of the study's findings and recommendations.



## 1.2 Implementation Process

R. W. Beck, in coordination with staff from NCTCOG and Ellis County, used the following process in the development and implementation of the Ellis County siting ordinance:

- Conducted preliminary research to identify potentially relevant siting issues for Ellis County including legal, public health and safety and land use concerns.
- Held a meeting with County staff and officials to review potential siting issues and discuss additional criteria for siting of solid waste facilities.
- Performed GIS land use analysis based on criteria of exclusionary areas, public health, safety, welfare, county land use patterns and expected future development.
- Produced maps based on the GIS analysis identifying areas of the county as either suitable or unsuitable for the development of solid waste facilities.

Following review and comment on the draft report, County staff and officials met with R. W. Beck to review findings and further develop recommendations for areas considered suitable for siting of solid waste facilities.

Ellis County will need to take the following steps to complete this project:

Commissioners' Court will go through the process to adopt the ordinance (outlined in Section 1.5).

R. W. Beck has advised the Commissioners' Court as to the next steps that must be taken in order to adopt the ordinance and will be available to the County to answer any questions regarding that process.

## 1.2.1 Preliminary Research

In our preliminary research, R. W. Beck identified all Texas counties that currently have a solid waste facility siting ordinance. Each of these existing ordinances were reviewed to determine the particular criteria and standards utilized in their development. Based on the review of existing ordinances, our research into applicable federal and state laws and our knowledge of common land use planning practices, R. W. Beck identified the following categories of potential siting criteria to be addressed in the development of Ellis County's siting ordinance.

## 1.2.1.1 Exclusionary Criteria

The Texas Administrative Code (30 TAC §330, Subchapter M) outlines a number of conditions under which a site will be considered unsuitable for the disposal of municipal or industrial solid waste. These conditions are referred to as exclusionary siting criteria for the purposes of this analysis, and include the following considerations:

- Airport safety;
- Floodplains;

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- Groundwater;
- Endangered or threatened species;
- **■** Wetlands:
- Fault areas;
- Seismic impact zones; and
- Unstable areas.

The criteria outlined in 30 TAC §330, Subchapter M are closely linked to public health, safety and welfare and serve as a logical starting point for this analysis.

#### 1.2.1.2 Land Use Criteria

It is also necessary to identify general areas of the county that are unsuitable for the disposal of solid waste based on local development and land use characteristics. Both current and future land use criteria should be utilized in this process to ensure that potential solid waste facilities are sited in locations compatible not only with current local development, but also with projected future development.

#### **Current Land Use**

Current land use criteria may include local characteristics such as: population density, residential development, the locations of existing solid waste facilities and industries, areas with a significant concentration of schools or churches, the locations of recreational sites, historical sites, major roads, pipelines and environmentally sensitive natural features. It should also include the delineation of areas in which the county does not have jurisdiction (e.g. within the boundaries of a city or its extraterritorial jurisdiction). These areas must be excluded from the siting analysis.

#### **Future Land Use**

Future land use criteria may include factors such as: compatibility with proposed or existing local development or open space plans, projected population growth rates and the general directions of current and future development within the county.

## 1.3 Meeting with County Staff and Officials

Prior to beginning the analysis, R. W. Beck met with Ellis County staff and officials to discuss the various federal exclusionary siting criteria and possible local land use issues to be considered. The meeting provided valuable information on specific local solid waste facility siting concerns that needed to be addressed in the development of the county's ordinance. It also allowed R. W. Beck to assess the availability of local data sources and obtain those sources that would be helpful in the siting analysis.

Based on this meeting, R. W. Beck identified the following local land use criteria to be key issues in the development of Ellis County's siting ordinance:

- Environmental protection of Bardwell Reservoir and surrounding areas;
- Protection of the Trinity River and major creeks; and

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Consideration of areas of projected future residential growth and development.

## 1.4 Facility Siting Analysis

R. W. Beck conducted the solid waste facility siting analysis for Ellis County utilizing primarily GIS data and software. Identification of suitable areas was achieved through a process of elimination in which certain areas of the county were systematically identified as being unsuitable based on exclusionary criteria, public health, safety, welfare, county land use patterns and expected future development. Each area found to be unsuitable based on a particular criteria was shown as a layer on a GIS map of the county. When all layers are simultaneously laid over the county basemap, the areas remaining represent areas of the county that are potentially suitable for the siting of a solid waste facility.

Some data for Ellis County was difficult to obtain, particularly in a GIS compatible format.<sup>2</sup> The scarcity of data presented certain challenges and limitations in our siting analysis. However, R. W. Beck was able to gather and use data from a wide variety of sources to conduct a planning-level GIS analysis that satisfactorily achieves the county's needs for the purposes of this siting ordinance.

#### 1.4.1.1 Exclusionary Criteria

As mentioned previously, 30 TAC §330, Subchapter M outlines several conditions under which a site should be considered unsuitable for the disposal of municipal solid waste. These exclusionary conditions include:

- Airport safety;
- Floodplains;
- Groundwater:
- Endangered or threatened species;
- Wetlands;
- Fault areas:
- Seismic impact zones; and
- Unstable areas.

R. W. Beck researched each of these issues as they apply to Ellis County. Our research and conclusions are discussed in detail in the following sections.

#### **Airports**

Under the location restrictions outlined in 30 TAC §330.545, solid waste facilities should generally not be located within 10,000 feet of any airport that is utilized by jet aircraft or within 5,000 feet of any airport runway end used only by piston-type

<sup>&</sup>lt;sup>2</sup> GIS data sets published by a variety of governmental entities are currently not as readily available for Ellis County as compared to many larger and more populous counties.

aircraft. This requirement was designed to improve airport safety by reducing the likelihood of bird hazards that may damage aircraft and cause injury to occupants.

Ellis County currently has two airports, Ennis Municipal Airport and Mid-Way Regional Airport, both of which receive jet aircraft. Ennis Municipal Airport is located within the southeastern portion of the County within the incorporated area of the City of Ennis. R. W. Beck has identified the Ennis Municipal Airport runway and a 10,000 foot buffer around the runway as unsuitable for the siting of a solid waste facility based on the standards outlined in 30 TAC §330.545.

Mid-Way Regional Airport is located within the northwestern portion of the County between the cities of Waxahachie and Midlothian. R. W. Beck has identified the Mid-Way Regional Airport runway and a 10,000 foot buffer around the runway as unsuitable for the siting of a solid waste facility based on the standards outlined in 30 TAC §330.545.

Figure A.2 identifies the locations of Ennis Municipal Airport and Mid-Way Regional Airport and their respective 10,000 foot buffers.

#### Floodplains

In order to protect human health and the environment, solid waste facilities should generally not be located within the 100-year floodplain. 30 TAC §330.547 outlines municipal solid waste location restrictions as they relate to floodplains.

Ellis County, being home to Bardwell Reservoir, Lake Waxahachie, a portion of Lake Joe Pool, and being bound on the east by the Trinity River, has a substantial amount of land lying within the 100-year floodplain.

The Federal Emergency Management Agency (FEMA) does not currently have floodplains information for Ellis County available in a GIS format. Due to this limitation, R. W. Beck consulted a printed FEMA map of floodplains. Based on a review of the floodplains map, R. W. Beck generated a reasonable approximation of Ellis County floodplains in GIS by placing appropriately sized buffers around major creeks, lakes and rivers within the county. This approximation was used in the siting analysis to simulate county floodplains. Figure A.3 identifies the location of floodplains within the county.

#### Groundwater

Restrictions on the location of municipal solid waste facilities as it relates to their potential impacts on groundwater (30 TAC §330.549), currently relate only to areas located over the recharge zone of the Edwards Aquifer. This particular location restriction is not applicable to Ellis County as no portion of the County is located within the Edwards Aquifer recharge zone.

#### Endangered or Threatened Species

Under the location restrictions outlined in 30 TAC §330.551, solid waste facilities should generally not be located where they would result in the destruction or adverse modification of the critical habitat of endangered or threatened species, or cause or contribute to the taking of any such species.

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While Ellis County is thought to be home to 26 types of endangered or threatened species, habitat location data for these species are currently unavailable in a digital format from the Texas Parks and Wildlife Department. While a lack of available data has necessitated that endangered or threatened species not be examined in detail as part of the present analysis, the County may wish to revise this analysis to incorporate any digital data related to this topic should it become available in the future.

#### Wetlands

Under the location restrictions outlined in 30 TAC §330.553, solid waste facilities should generally not be located within wetlands. Official wetlands data for Ellis County are currently unavailable in a digital format from the U.S. Fish and Wildlife Service. However, Ellis County staff were able to provide R. W. Beck with GIS files of the U.S. Department of Agriculture (USDA) wetlands within the County for use in this analysis. Figure A.4 identifies the locations of all USDA wetlands within the County.

R. W. Beck would recommend that the County consider updating the ordinance to also reflect all U.S. Fish and Wildlife Service wetlands data, should it become available in a digital format in the future.

#### Fault Lines

30 TAC §330.555 stipulates that solid waste facilities should not be located within 200 feet of a fault that has experienced displacement within the last 10,000 years. Based on information from the Texas Bureau of Economic Geology, there are two fault lines, the Ouachita Tectonic Front and the Gulf Basin Margin, located within Ellis County. These fault lines were last active approximately 144-65 million years ago and 543-248 million years ago respectively. Therefore, these fault locations would not directly restrict the location of a solid waste facility within the county.

#### Seismic Impact Zones and Unstable Areas

R. W. Beck has determined based on maps and information from the U.S. Geological Survey (USGS) that Ellis County does not contain any seismic impact zones or unstable areas as defined under 30 TAC §330.557-559.

#### 1.4.1.2 Land Use Criteria

R. W. Beck worked closely with Ellis County staff and officials to identify specific land use issues to be addressed in the solid waste facility siting analysis. Seven current land use criteria were identified as critical to the Ellis County suitability analysis. The following sections describe each of the selected suitability criteria and outline R. W. Beck's research and analysis of each issue. These criteria represent the siting issues that were most important for Ellis County based on specific local characteristics and concerns.

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#### **Current Land Use Criteria**

#### Areas Not Under County Jurisdiction

The first step in the land use portion of the siting suitability analysis was to exclude from the suitable area those locations that do not fall under Ellis County's jurisdiction with respect to §364.012 of the Texas Health and Safety Code. The law states that a siting ordinance cannot apply to areas of the county located within a municipality or the extraterritorial jurisdiction (ETJ) of a municipality. Therefore, all municipalities and their current ETJs were eliminated from the suitability analysis due to the fact that the county ordinance is not legally applicable to facility siting decisions in those locations. Figure A.5 identifies the extent of all city limits and ETJs within the county.

#### Lake Joe Pool

Lake Joe Pool is located in the southern part of the Dallas/Fort Worth Metroplex and encompasses a portion of the northwest corner of Ellis County. The lake is operated by the Trinity River Authority for conservation, flood control, recreation, and municipal water supply. The lake is fed by Mountain Creek and Walnut Creek and drains north into Mountain Creek leading into Mountain Creek Lake. Lake Joe Pool and the surrounding areas are important features of Ellis County that warrant special public health and safety protections. The lake serves as a primary raw water source for the City of Midlothian, as well as several other local entities that have water interests in the lake. In addition, it also serves as a popular local recreational amenity.

In recognition of the importance of protecting Lake Joe Pool and the surrounding areas, R. W. Beck utilized GIS to generate a one mile buffer around the lake and eliminated this region from the suitable area. Figure A.6 identifies the unsuitable areas surrounding Lake Joe Pool.

#### Lake Waxahachie

Lake Waxahachie is another environmentally sensitive feature located within central Ellis County just south of Waxahachie. The lake is owned and operated by Ellis County Water Control and Improvement District Number One. The lake is used for municipal and industrial uses, including as a drinking water source, making its protection of particular importance to public health and safety. In addition, it is also a popular local recreational amenity.

In recognition of the importance of protecting Lake Waxahachie and the surrounding areas, the project team utilized GIS to generate a one mile buffer around the lake and removed the selected region from the suitable area. Figure A.6 identifies the unsuitable areas surrounding Lake Waxahachie.

#### Bardwell Reservoir

Bardwell Reservoir is another environmentally sensitive feature located in the Trinity River basin between Bardwell and Ennis in south central Ellis County. The reservoir is owned by the United States government and operated by the Trinity River Authority. Water from the reservoir serves as a source of drinking water for Waxahachie, Ennis,

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and other surrounding communities, making its protection of particular importance to public health and safety. In addition, it is also a popular local recreational amenity.

In recognition of the importance of protecting Bardwell Reservoir and the surrounding areas, the project team utilized GIS to generate a one mile buffer around the lake and removed the selected region from the suitable area. Figure A.6 identifies the unsuitable areas surrounding Bardwell Reservoir.

#### Trinity River

The Trinity River, which runs along the eastern border of Ellis County, is also a significant environmental feature that warrants public health and safety protections due to the fact that it serves as a drinking water source for certain downstream customers. In recognition of the importance of protecting the quality of the Trinity River and those lands directly adjacent to it, the project team utilized GIS to generate a one mile buffer along the river and removed the selected region from the suitable area. Figure A.6 identifies the unsuitable areas surrounding the Trinity River.

#### Major Creeks

R. W. Beck generated a ¼ mile buffer around the following major creeks within the County:

- Big Onion Creek
- Chambers Creek
- Cottonwood Creek
- Grove Creek
- Little Onion Creek
- Mill Creek

- Mountain Creek
- Old Ten Mile Creek
- Red Oak Creek
- Richland Creek
- Waxahachie Creek

These areas were then eliminated from the suitable area. Each of the above creeks serve as a recreational and scenic resource for the citizens of Ellis County, and flow downstream to a variety of key water bodies within the region that serve as drinking water sources for the regional population. The buffer is designed to further protect the watershed of area lakes and rivers by managing the areas that drain into them. Figure A.7 identifies the unsuitable areas surrounding the county's major creeks.

#### **Dedicated Parks and Open Space**

R. W. Beck used GIS data provided by NCTCOG to identify dedicated parks and open space within Ellis County. These areas were then removed from the suitable area. In order to prevent potentially undesirable noise and odor issues that may be associated with municipal solid waste facilities, R. W. Beck also included a 500 foot buffer around all identified park and open space areas. Based on R. W. Beck's industry experience, 500 feet is generally a sufficient attenuation distance for noise and odor that may be associated with such facilities. Figure A.8 identifies these unsuitable areas.

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#### Residential Land Use

R. W. Beck used 2005 GIS land use data, obtained from NCTCOG, to identify all areas currently defined as residential in nature. All areas identified as having residential land use within the County were eliminated from the suitable area. In addition, in order to provide existing residences with protection from possible noise and odor issues that may be associated with municipal solid waste facilities, R. W. Beck included a 500 foot buffer around all residential areas identified in this analysis. Based on R. W. Beck's industry experience, 500 feet is generally a sufficient attenuation distance for noise and odor that may be associated with such facilities. Figure A.9 identifies these unsuitable areas.

#### **Population Density**

R. W. Beck used GIS data to analyze population densities within Ellis County. Areas found to have higher population densities were considered to be unsuitable for the location of solid waste facilities.

To conduct the analysis, R. W. Beck used 2000 U.S. Census data to identify County Census tracts with population densities greater than 100 people per square mile. This particular figure was selected based on two primary factors: 1) the figure represents a natural break in the population density data for the county; and 2) areas of the county where population densities are currently greater than 100 people per square mile correspond closely with areas in which county officials project significant future growth and development will occur.

While R. W. Beck recognizes that 100 people per square mile is a relatively low population density, more than half of Ellis County has a density of less than that figure. These lower density areas are more suitable for solid waste facilities than those where growth has occurred and is expected to continue into the future.

Fifteen out of a total of 22 Census tracts located within Ellis County were eliminated from the suitable area based on this criterion. Most of the tracts that were eliminated are located the more developed northwestern portion of the County. A number of other tracts that encompass portions of the City of Ennis were also determined to be unsuitable based on this criterion. Figure A.10 identifies those tracts with population densities greater than 100 people per square mile.

#### **Future Land Use Criteria**

#### County Growth and Development Patterns

During the course of this project, County staff and officials elected not to provide R. W. Beck with any information related to the specific locations of projected future residential growth and development within the County. R. W. Beck would recommend that the County consider updating the ordinance with such information where appropriate in the future.

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## 1.4.1.3 Maps Identifying Suitable and Unsuitable Areas

The final result of this process of elimination is a map detailing the suitable and unsuitable areas for the location of a solid waste facility in Ellis County. Figure A.11 identifies these suitable and unsuitable areas.

It is important to remember that this is a planning level analysis designed to assist the County in identifying areas that are expected to be most suitable as the location for a solid waste facility based on selected criteria for exclusionary areas, public health, safety, welfare, county land use patterns and expected future development. This map is not intended to imply that all locations within the suitable area will necessarily be appropriate as the site for a solid waste facility.

The map in Figure A.11 is designed to serve as the basis for Ellis County's solid waste facility siting ordinance. R. W. Beck believes that the methods employed in this analysis produce a comprehensive, objective and defensible basis for the development of county solid waste facility siting ordinance.

## 1.5 Next Steps

The next step for Ellis County is to develop and adopt an ordinance in accordance with §364.012 of the Texas Health and Safety Code based on the analysis included in this document. Additional information concerning how to develop and adopt an ordinance is also available in Section 3 of NCTCOG's Regional and Local Review of Municipal Solid Waste Facility Permits and Registrations. As outlined in §364.012 of the Texas Health and Safety Code, the County will need to take the following steps prior to adoption of an ordinance:

- An ordinance may be passed on first reading, but the proposed ordinance must be published in a newspaper of general circulation in the county for two consecutive weeks before the Commissioner's Court considers the proposed ordinance. The publication must contain:
  - A statement of the time, place, and date that the Commissioner's Court will consider the proposed ordinance; and
  - Notice that an interested citizen of the county may testify at the hearing.
- A public hearing must be held on a proposed ordinance before it is considered by the Commissioner's Court, and any interested citizen of the county shall be allowed to testify.

R. W. Beck has provided assistance to the County in the adoption process as outlined in the scope of work for this project. Specifically, R. W. Beck:

- Made a presentation to the Commissioners' Court regarding areas of the County that are suitable and unsuitable for siting of a municipal solid waste facility;
- Assisted in drafting the ordinance (see enclosed draft ordinance Appendix B);
- Advised the Court concerning steps required to adopt the ordinance; and
- Will be available to answer any questions the County may have regarding the process for adoption of the ordinance.

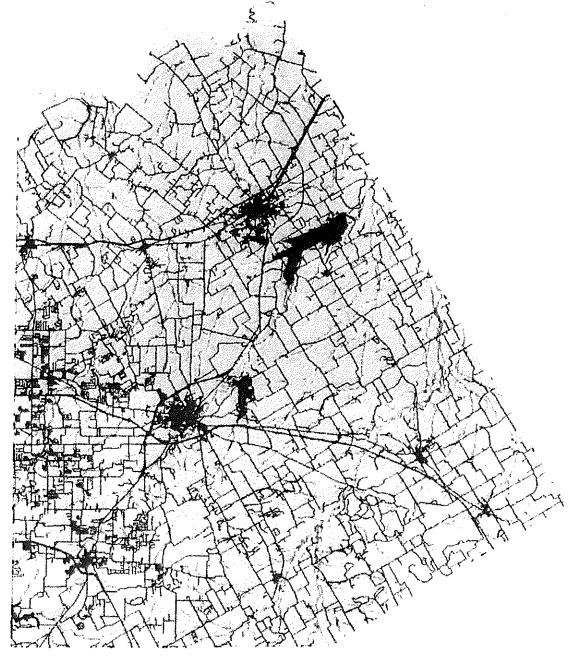
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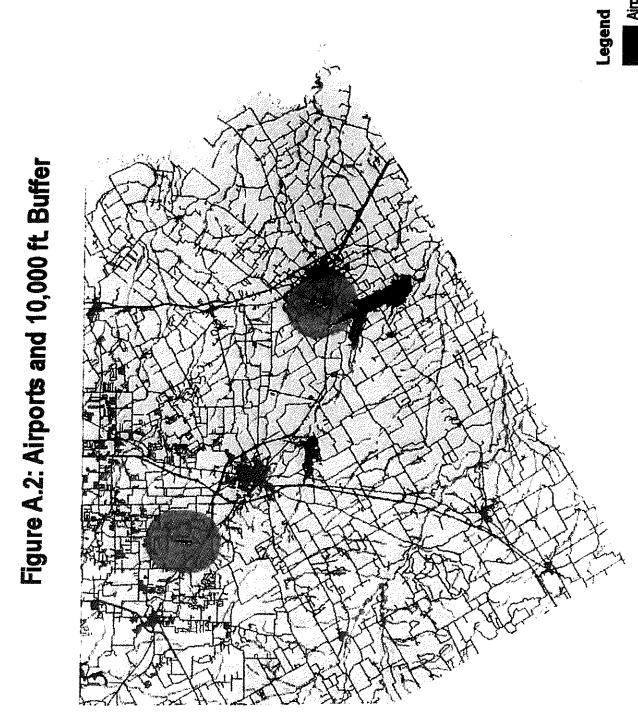
Appendix A Maps

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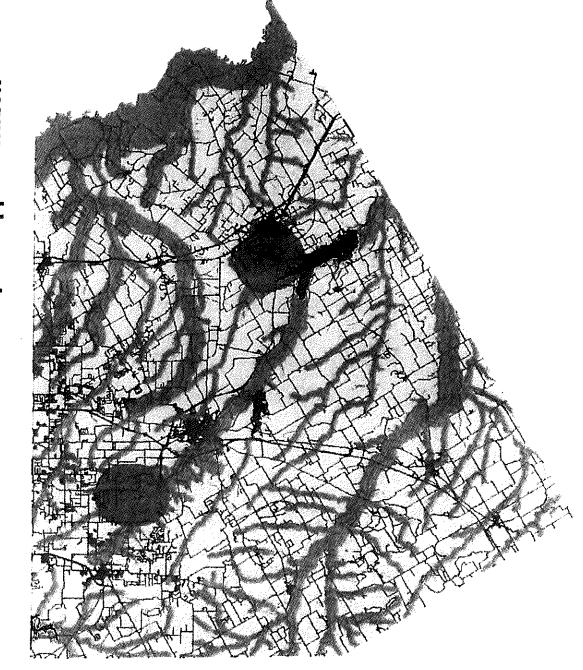


Figure A.3: 100-Year Floodplain Approximation

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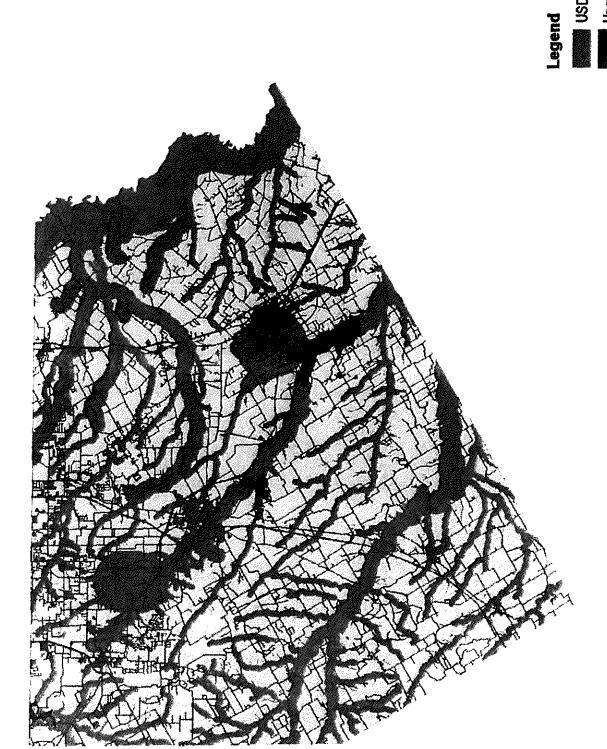


Figure A.4: USDA Wetlands

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Figure A.5: Areas Outside of County Jurisdiction

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Unsuitable Area

Lake Joe Pool, Lake Waxahachie, Bardwell Reservoir and Trinity River Buffers Figure A.6:

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Unsuitable Area

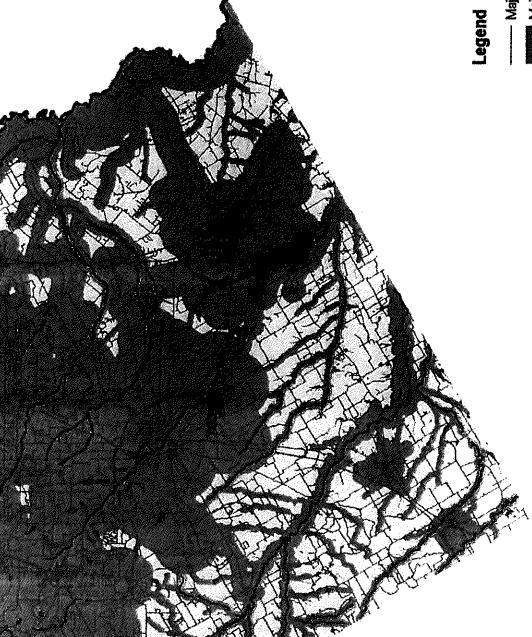


Figure A.7: Major Creeks Buffer

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Figure A.8: Dedicated Parks and Open Space

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Figure A.9: 2005 Residential Land Use and 500 ft Buffer

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Unsuitable Area

101-500 501-1000 1001-2000 Population Density ×2000

Figure A.10: Population Density Greater than 100 People per Sqaure Mile

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Population Density > 100 per Square Mile

Legend

Unsuitable Area



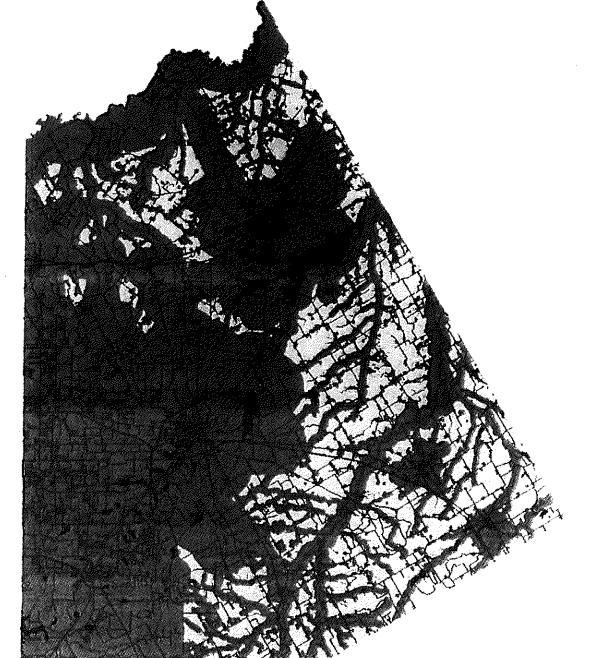


Figure A.11: Composite of All Unsuitable Areas

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Appendix B Ordinance

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# ORDER PROHIBITING SOLID WASTE DISPOSAL IN ELLIS COUNTY

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#### SECTION 1

# GENERAL PROVISIONS AND FINDINGS

WHEREAS, the Commissioners Court of Ellis County, Texas has both the responsibility and authority to protect the public health, safety and general welfare by prohibiting solid waste disposal in the unincorporated areas of Ellis County, except for those areas designated as solid waste disposal sites, pursuant to the authority of the Texas Health and Safety Code, 364.112; and,

WHEREAS, solid waste disposal, especially the disposal of solid waste in landfills, is an activity that has high potential to negatively impact the health, safety and welfare of any community; and,

WHEREAS, this court believes and hereby finds that further development or establishment of landfills in certain areas of the county would constitute an unacceptable risk and threat to public health, safety and welfare for the reasons stated below, among others, to wit;

The Court finds that the presence of solid waste disposal facilities in general may negatively influence property values; and

The Court further finds that solid waste disposal activities in the county could hamper economic development; and

The Court finally finds that substances contained within a landfill, especially in a hazardous or industrial landfill, could escape into the air or waterways, including subsurface waterways, significant threats to the public health, safety and welfare exist.

#### SECTION II

#### DEFINITIONS

The following words and terms, when used in this Court Order, shall have the following meanings, unless the contest clearly indicates otherwise.

INDUSTRIAL SOLID WASTE: Solid waste resulting from or incidental to a process of industry or manufacturing, mining, or agricultural operations.

MUNICIPAL SOLID WASTE: Solid waste resulting from or incidental to municipal, community, institutional, or recreational activities, and includes garbage, rubbish, ashes, street cleanings, dead animals, abandoned automobiles and other solid waste other than industrial solid waste.

SOLID WASTE: Subject to the limitations of 42 U.S.C., 6903 (27) and 40 C.F.R. 261.4 (a), garbage, rubbish, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility, and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, municipal, commercial, mining, and agriculture operations and from community and institutional activities. The term:

## (A) Does not include:

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- Solid or dissolved material in domestic sewage, or solid or dissolved material in irrigation return flows, or industrial discharges subject to regulation by permit issued under Chapter 26, Water Code;
- (ii) Soil, dirt, rock, sand, and other natural or man-made inert solid materials used to fill land if the object of the fill is to make the land suitable for the construction of surface improvements; or
- (iii) Waste materials that result from activities associated with the exploration, development, or production of oil or gas or geothermal resources and other substance or material regulated by the Railroad Commission of Texas, unless the waste, substance, or material results from activities associated with gasoline plants, natural gas liquids, processing plants, pressure maintenance plants, or re-pressurizing plants and is hazardous waste as defined by the EPA under the federal Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act; and,

#### (B) Does include hazardous substances.

SOLID WASTE FACILITY: All contiguous land, including structures, appurtenances, and other improvements on the land, used for processing, storing, or disposing of solid waste. The term includes a publicly or privately owned solid waste facility consisting of processing, storage, transfer or disposal operational units such as one or more landfills, surface impoundment's or a combination of units.

### SECTION III

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# APPROVED AREAS FOR DISPOSAL OF SOLID WASTE IN THE UNINCORPORATED AREAS OF ELLIS COUNTY

For the above reasons, and pursuant to the provisions of 364.112 of the Texas Health and Safety Code, the Commissioners Court of Ellis County hereby ORDAINS, RESOLVES, ORDERS AND ESTABLISHES the following COURT ORDER:

IT IS ORDAINED AND ORDERED that the disposal of solid waste within Ellis County, Texas is not prohibited in the following area:

See attached Map as described in the "County Solid Waste Facility Siting Ordinance" final report and recorded in Vol. Page of the minutes of the Ellis County Commissioners Court.

#### SECTION IV

#### CIVIL REMEDIES AND PENALTIES

The Commissioners Court of Ellis County, Texas may bring a legal action to enjoin violations of this court order and seek judgment for any civil penalties.

#### **SECTION V**

#### **SEVERABILITY**

If any portion of this order is deemed to be in violation of the statues or the constitution of this state or the United States by a court of competent jurisdiction, said portion shall be severed, and the remaining portions of this order shall remain in full force and effect.

of Ellis County, Texas executed this Or Waste Disposal in Ellis County.	, 2007, the Commiss der approving the Court Order Proh
Judge	Chad Adams
Commissioner Dennis Robinson	Commissioner Bill Dodso
Commissioner Heath Sims	Commissioner Ron Brown
ATTEST:	
Cindy Polley, County Clerk	

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Prepared by: SAB Date: 1/31/2012

TRAFFIC PROJECTIONS Skyline Landfill

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Checked by: KJW Date: 1/31/2012

Janear.

Assumptions:

Required: Estimate the total traffic projection for the proposed configuration.

The waste acceptance rate and incoming vehicles will increase at an annual rate of 1.4%.

Beginning Waste Accepted - Feb. 2010 to Feb. 2011 = 1,040,000 tons
 The facility accepts waste 312 days per year (6 days a week).
 Year 1 incoming landfill trucks based on average of 9.6 tons/vehicle from January 2010 to July 2011.

Solution:

Days Operating 2010 Waste:

1,040,000 tons

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	Langtill I rucks	Incoming Veh/Day	347	352	357	362	367	372	377	383	388	394	399	405	410	416	422	428	434	440	446	452	459	465	471	478
ptance		Daily Waste (tons/day)	3,333	3,380	3,427	3,475	3,524	3,573	3,623	3,674	3,725	3,778	3,831	3,884	3,939	3,994	4,050	4,106	4,164	4,222	4,281	4,341	4,402	4,464	4,526	4,589
Landfill Waste Acceptance		Annual Waste (tons)	1,040,000	1,054,560	1,069,324	1,084,294	1,099,474	1,114,867	1,130,475	1,146,302	1,162,350	1,178,623	1,195,124	1,211,856	1,228,821	1,246,025	1,263,469	1,281,158	1,299,094	1,317,281	1,335,723	1,354,424	1,373,385	1,392,613	1,412,109	1,431,879
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Skyline Landfill TRAFFIC PROJECTIONS

Prepared by: SAB Date: 1/31/2012

Checked by: KJW Date: 1/31/2012

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ptance		Daily Waste (tons/day)	4,654	4,719	4,785	4,852	4,920	4,989	5,058	5,129	5 201
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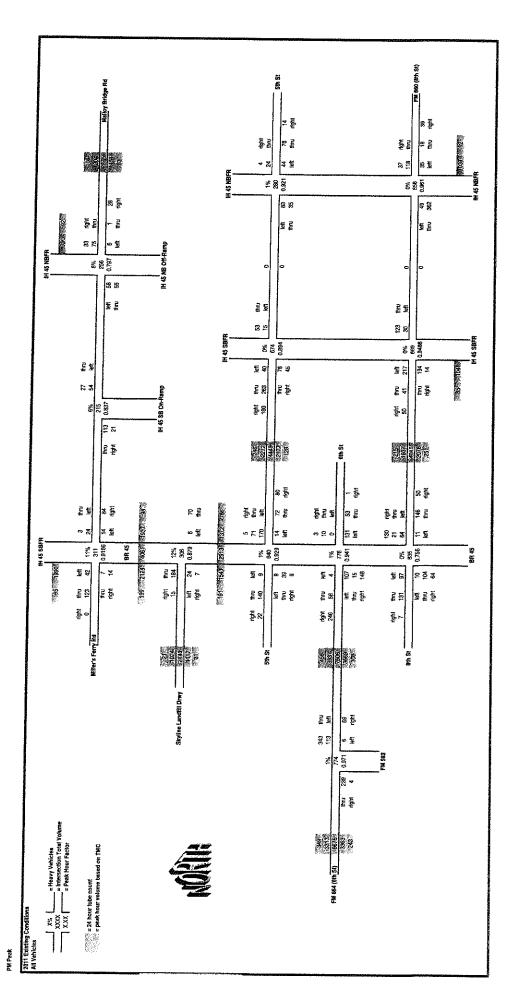
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	<b>98</b>	88.45				
	right thru 23 256 11		74 45 SB On-Remp	H 45 MB	H 45 NB Off-Ramp	
Syline Langua D'Ay		0.879 9 97 left thrus				
	3947	<b>22</b>		H 45 SBFR	EH 45 NBFR	
3 <del>1</del>	right thru left 31 195 12	7 night 99 ffnu % 236 left	right finu left 250 365 56			
7.10	left f2 thru 54 right f2	0.529 19 100 111	%(1)8% bru 108 nght 62	936 0,894	left 115 0.921 61 Firu 49 Beft	\$45 St
16   17   17   17   17   17   17   17	right thru left 342 81 6	4 night 14 fhru 6 0 left			·····	
23889 thru 332 ight 6	left 149 finu 21 right 205	10.841 1882 74 1	و <del>ا</del> وا			
	right thru left 10 182 135	181 right 29 thru 89 teft	right thru Left (2008) 69 57 301			
	leff 14 5nv 144 righl 89	0,756 16 203 69	्रे.२4g) bru 269 right 19	0.9488	1914   19	FM 660 (8th St)
	<u>.</u>	8R 45			SEC OF STATE	
					IT 45 NOT K	

		Cita Indan.	ORKSHEET
General Information Analyst	TAG	Site Information	P. C.
Agency or Company	HDR	Highway From/To	5th Street All
Date Performed Analysis Time Period	11/10/2011	Jurisdiction	City of Ferris
Input Data	AM Peak Hour	Analysis Year	2011
			p=
<b></b>			Class I highway
	‡ Shoulder widthtt		Terrain Level Rolling
	T Lane widthtt		Two-way hourly volume 525 veh/h Directional split 63 / 37
	Lane width tt		Peak-hour factor, PHF 0.89
<b> </b>		$+ \setminus + \nearrow$	No-passing zone 100
Campa and	t	Show North Arrow	% Trucks and Buses , P <sub>T</sub> 1 %
2-Gittel#	length, L <sub>1</sub> mi		% Recreational vehicles, P <sub>B</sub> 0%
		1	Access points/ mi 35
lverage Travel Speed			
Grade adjustment factor, f <sub>G</sub> (Exhi	bit 20-7)		1.00
assenger-car equivalents for tru	cks, E <sub>T</sub> (Exhibit 20-9)		1.7
assenger-car equivalents for RV			1.0
	$f_{HV} = f_{HV} = 1/(1 + P_{T}(E_{T}-1) + P_{R}(E_{R}-1))$		0.993
wo-way flow rate 1, v <sub>p</sub> (pc/h) v			594
highest directional split propo			374
Free-Flow Spe	eed from Field Measurement		Estimated Free-Flow Speed
		Base free-flow speed	d, BFFS <sub>FM</sub>
eld Measured speed, S <sub>FM</sub>	mi/h	1	nd shoulder width <sup>3</sup> , f <sub>t.S.</sub> (Exhibit 20-5)
bserved volume, V <sub>f</sub>	veh/h		1111
ree-flow speed, FFS FFS=S <sub>FM</sub> +		Adj. for access points	s, f <sub>A</sub> (Exhibit 20-6)
co now appeal, and an orange	0.00776(V/ f <sub>HV</sub> ) 32.0 ml/h	Free-flow speed, FFS	S (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> )
fj. for no-passing zones, f <sub>np</sub> ( mi/	h) (Exhibit 20-11)		3.9
verage travel speed, ATS ( mi/h)	ATS=FFS-0.00776v <sub>p</sub> -1 <sub>pp</sub>		23.5
ercent Time-Spent-Following	р пр		
ade Adjustment factor, f <sub>G</sub> (Exhib	oit 20-8)	T T	1.00
ssenger-car equivalents for truct			1,1
ssenger-car equivalents for RVs			1.0
	$f_{HV} = 1/(1 + P_T(E_{T}-1) + P_R(E_{R}-1))$		0.999
ro-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v			590
* highest directional spilt proport			372
se percent time-spent-following,			40.5
	no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)		20.8
rcent time-spent-following, PTSF			61.3
vel of Service and Other Perfo	rmance Measures		
rel of service, LOS (Exhibit 20-3 ume to capacity ratio v/c v/c=V			0.19
	<sub>p</sub> / 5,200 IT <sub>15</sub> (veh- mi) VMT <sub>15</sub> = 0.25L <sub>i</sub> (V/PHF)		106
ak-hour vehicle-miles of travel, V			
ak 15-min total travel time, TT <sub>15</sub> (			378
	VOICEO ITACE VIVITACIATO	ł	4.5
tes	, 15 15	l	

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General Information	TWO-WAY TWO-LANE H		710073441
Analyst Agency or Company	TAG HDR	Site Information Highway From/To	BR 45 Malloy Bridge to Landfill Drwy
Date Performed Analysis Time Period	11/10/2011 AM Peak Hour	Jurisdiction Analysis Year	TXDOT 2011
input Data			
1			Class I highway
	\$\frac{1}{2} Shoulder width #	11	Terrain V Level Rolling
*	Lane width ti		Two-way hourly volume 339 veh/h Directional split 57 / 43
	Lane width tt	] <del>[                                   </del>	Peak-hour factor, PHF 0.90
			No-passing zone 100
Segment I	ength, L <sub>1</sub> mi	Show Horth Arrow	% Trucks and Buses , P <sub>T</sub> 19 %
· ·		1	% Recreational vehicles, P <sub>R</sub> 0%
Average Travel Speed			Access points/ mi 3
Grade adjustment factor, f <sub>G</sub> (Exhib	it 20-7)		1.00
assenger-car equivalents for truc	ks, E <sub>T</sub> (Exhibit 20-9)		1.7
assenger-car equivalents for RVs			1.0
	$_{HV}$ $_{HV}^{f}=1/(1+P_{T}(E_{T}^{-1})+P_{R}(E_{R}^{-1}))$		0.883
wo-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub>			427
* highest directional split proport			243
	ed from Field Measurement		Estimated Free-Flow Speed
		Base free-flow speed	
eld Measured speed, S <sub>FM</sub>	mi/h	1	d shoulder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5)
bserved volume, V,	veh/h	1	== 1
ree-flow speed, FFS FFS=S <sub>FM</sub> +0		Adj. for access points	, f <sub>A</sub> (Exhibit 20-6)
I FM; / "	5555 man	Free-flow speed, FFS	(FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> )
dj. for no-passing zones, f <sub>np</sub> ( mi/h	) (Exhibit 20-11)		4.4
/erage travel speed, ATS ( mi/h) A	TS=FFS-0.00776v <sub>n</sub> -t <sub>nn</sub>		43.1
ercent Time-Spent-Following	P 0P		
ade Adjustment factor, f <sub>G</sub> (Exhibit	20-8)		1.00
ssenger-car equivalents for trucks	s, E <sub>T</sub> (Exhibit 20-10)		1.1
ssenger-car equivalents for RVs,	E <sub>R</sub> (Exhibit 20-10)		1.0
avy-vehicle adjustment factor, f <sub>H\</sub>	, f <sub>HV</sub> =1/(1+P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1))		0.981
ro-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub>	≥V/ (PHF * f <sub>G</sub> * f <sub>HV</sub> )		384
* highest directional split proportio			219
se percent time-spent-following, E	PTSF(%) BPTSF=100(1-e <sup>-0.000879v</sup> p)		28.6
, for directional distribution and no	o-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)		23.0
rcent time-spent-following, PTSF(			51.6
vel of Service and Other Perfort vel of service, LOS (Exhibit 20-3 fo			
ume to capacity ratio v/c v/c=V			B 0.13
	15 (veh- mi) VMT <sub>15</sub> = 0.25L <sub>t</sub> (V/PHF)		57
ak-hour vehicle-miles of travel, VM			203
ak 15-min total travel time, TT <sub>15</sub> (v			
ik 15-min total travel time, 11 <sub>15</sub> (vi les	1115= VIVIT15/A 15		1.3

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General Information		Site Information	
Analyst	TAG	Highway	BR 45
Agency or Company Date Performed	HDR 11/10/2011	From/To	8th Street/Landfill Driveway
Analysis Time Period	AM Peak Period	Jurisdiction Analysis Year	TXDOT 2011
input Data			
			Class I highway
<b> </b>	\$ Shoulder widthtt		Terrain V Level Rolling
-	I Shoulder widthtt		Two-way hourly volume 287 veh/h
	Lane width tt		Directional split 59 / 41
	Shoulder width		Peak-hour factor, PHF 0.89 No-passing zone 100
		Show Horth Arrow	% Trucks and Buses , P <sub>T</sub> 19 %
Segment lei	gth, L <sub>i</sub> mi		% Recreational vehicles, P <sub>B</sub> 0%
,	•		Access points/ ml 9
Average Travel Speed			Access points/ (til
Grade adjustment factor, f <sub>G</sub> (Exhibit	20-7)		1.00
Passenger-car equivalents for trucks			
Passenger-car equivalents for RVs,	······································		1.7
leavy-vehicle adjustment factor, f <sub>H1</sub> wo-way flow rate 1, v <sub>p</sub> (pc/h) v <sub>p</sub> =			0.883
			365
* highest directional split proportio	n= {pc/n} from Field Measurement		215
riee-ribw speed	nom Field Weasurement		Estimated Free-Flow Speed 5
		Base free-flow speed, B	FFS <sub>FM</sub> π
ield Measured speed, S <sub>FM</sub>	mi/h	Adj. for lane width and s	shoulder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5) 0
bserved volume, V <sub>f</sub>	veh/h	Adj. for access points, f	(Evhibit 20-6) 2
ree-flow speed, FFS FFS=S <sub>FM</sub> +0.0	0776(V <sub>r</sub> / f <sub>HV</sub> ) 49.3 mi/h	i	A6
		Free-flow speed, FFS (	FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> )
dj. for no-passing zones, f <sub>np</sub> ( mi/h)	(Exhibit 20-11)		4.3
verage travel speed, ATS ( mi/h) AT			42.2
ercent Time-Spent-Following	0 1, 0 0,000,10°p 'np	1	That ip
rade Adjustment factor, f <sub>G</sub> (Exhibit 2	(0-8)		1.00
assenger-car equivalents for trucks,			1.1
assenger-car equivalents for RVs, E			1.0
eavy-vehicle adjustment factor, f <sub>HV</sub>			0.981
vo-way flow rate 1, v <sub>p</sub> (pc/h) v <sub>p</sub> =1			329
* highest directional split proportion	·		194
ise percent time-spent-following, BF			25.1
ij, for directional distribution and no-			22.8
ercent time-spent-following, PTSF(%			47.9
evel of Service and Other Perform vel of service, LOS (Exhibit 20-3 for	ance Measures Class I or 20-4 for Class II)		В
lume to capacity ratio v/c v/c=V <sub>p</sub> /			0.11
	5 (veh- mi) VMT <sub>15</sub> = 0.25L <sub>t</sub> (V/PHF)		81
ak-hour vehicle-miles of travel, VM1			287
ak 15-min total travel time, TT <sub>15</sub> (vel			1.9
	· · · · · · · · · · · · · · · · · · ·		1.0
tes			

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General Information	TWO-WAT TWO-LANE HIL	HWAY SEGMENT WOR	KSHEET
Analyst	TAG	Site Information	CM CCO
Agency or Company	HDR	Highway From/To	FM 660 BR 45/Legendary Ln
Date Performed Analysis Time Period	11/10/2011 AM Peak Period	Jurisdiction	TxDOT
Input Data	AM Feak Feriod	Analysis Year	2011
			F
<b></b>			Class I highway
	\$\frac{1}{2} Shoulder widthtt		Terrain V Level Rolling
	t		Two-way hourly volume 534 veh/h Directional split 51 / 49
-	Lane width tt		Peak-hour factor, PHF 0.74
F	I Shoulder width		No-passing zone 100
Segment lengt	h, Lլ mi	Show North Arrow	% Trucks and Buses , P <sub>T</sub> 1 %
1			% Recreational vehicles, P <sub>R</sub> 0%
			Access points/ mi 23
iverage Travel Speed			
arade adjustment factor, f <sub>G</sub> (Exhibit 20	<del></del>		1.00
assenger-car equivalents for trucks, E			1.2
assenger-car equivalents for RVs, E <sub>P</sub>			1.0
eavy-vehicle adjustment factor, f <sub>HV</sub>	$f_{HV} = 1/(1 + P_T(E_{T}-1) + P_R(E_{R}-1))$		0.998
wo-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> =V/			723
highest directional split proportion <sup>2</sup>			369
Free-Flow Speed fr	om Field Measurement		Estimated Free-Flow Speed
		Base free-flow speed, E	BFFS <sub>FM</sub>
eld Measured speed, S <sub>FM</sub>	mi/h	Adj. for lane width and	shoulder width <sup>3</sup> f (Exhibit 20-5)
bserved volume, V <sub>f</sub>	veh/h	1	111
ee-flow speed, FFS FFS=S <sub>FM</sub> +0.007	776(V <sub>2</sub> /f <sub>EO2</sub> ) 34.0 mi/h	Adj. for access points, f	A (EXHIDIT 20-6) m
, , , , , , , , , , , , , , , , , , , ,	, ny,	Free-flow speed, FFS (	(FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> )
lj. for no-passing zones, f <sub>np</sub> ( mi/h) (E	xhibit 20-11)		3.3
rerage travel speed, ATS ( mi/h) ATS:	=FFS-0.00776v <sub>o</sub> -t <sub>no</sub>		25.0
ercent Time-Spent-Following	p 1p	<u> </u>	
ade Adjustment factor, f <sub>G</sub> (Exhibit 20-	8)		1.00
ssenger-car equivalents for trucks, E-			1.1
ssenger-car equivalents for RVs, E <sub>R</sub>			1.0
	·		0.999
avy-venicle adjustment factor, full t	<sub>M</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>B</sub> (E <sub>D</sub> -1) )	Ę.	
avy-vehicle adjustment factor, f <sub>HV</sub> f <sub>F</sub> ro-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> =V/			
ro-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> =V/	(PHF*f <sub>G</sub> *f <sub>HV</sub> )		722
o-way flow rate <sup>1</sup> , $v_p$ (pc/h) $v_p$ =V/ $v_p$ V/ $v_p$ =V/ $v_p$ =V/ $v_p$ V/ $v_p$ =V/ $v_p$ V/ $v_p$ =V/ $v_p$ V/ $v_p$ V	(PHF * 1 <sub>G</sub> * 1 <sub>HV</sub> ) (pc/h)		
ro-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> =V/l * highest directional split proportion <sup>2</sup> (se percent time-spent-following, BPTs	(PHF * f <sub>G</sub> * f <sub>HV</sub> ) (pc/h) SF(%) BPTSF=100(1-e <sup>-0.000879v</sup> p)		722 368
ro-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> =V/l * highest directional split proportion <sup>2</sup> (se percent time-spent-following, BPTs . for directional distribution and no-pa	(PHF * f <sub>G</sub> * f <sub>HV</sub> ) pc/h) SF(%) BPTSF≈100(1-e <sup>-0.000879V</sup> p) ssing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)		722 368 47.0
ro-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> =V// * highest directional split proportion <sup>2</sup> (see percent time-spent-following, BPTs . for directional distribution and no-pa recent time-spent-following, PTSF(%) F vel of Service and Other Performan	(PHF * f <sub>G</sub> * f <sub>HV</sub> )  pc/h)  SF(%) BPTSF=100(1-e <sup>-0.000879V</sup> p)  ssing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)  PTSF=BPTSF+f <sub>d/hp</sub> ce Measures		722 368 47.0 17.3
ro-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> =V/l highest directional split proportion <sup>2</sup> (see percent time-spent-following, BPTs). for directional distribution and no-parcent time-spent-following, PTSF(%) Fixel of Service and Other Performance of service, LOS (Exhibit 20-3 for C	(PHF * f <sub>G</sub> * f <sub>HV</sub> ) (pc/h)  SF(%) BPTSF=100(1-e <sup>-0.000879V</sup> p) ssing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)  PTSF=BPTSF+f <sub>d/np</sub> ce Measures lass I or 20-4 for Class II)		722 368 47.0 17.3 64.3
ro-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> =V// highest directional split proportion <sup>2</sup> (see percent time-spent-following, BPTs). for directional distribution and no-parcent time-spent-following, PTSF(%) Fixel of Service and Other Performance of service, LOS (Exhibit 20-3 for Course to capacity ratio v/c v/c=V <sub>p</sub> /3,	(PHF * f <sub>G</sub> * f <sub>HV</sub> ) (pc/h) SF(%) BPTSF=100(1-e <sup>-0.000879v</sup> p) ssing zone, f <sub>d/hp</sub> (%)(Exh. 20-12) PTSF=8PTSF+f <sub>d/np</sub> ce Measures lass I or 20-4 for Class II)		722 368 47.0 17.3 64.3
ro-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> =V// * highest directional split proportion <sup>2</sup> (see percent time-spent-following, BPTs  . for directional distribution and no-pa reent time-spent-following, PTSF(%) F  vel of Service and Other Performan rel of service, LOS (Exhibit 20-3 for C)  ume to capacity ratio v/c v/c=V <sub>p</sub> /3,  ak 15-min veh-miles of travel, VMT <sub>15</sub> (	(PHF * f <sub>G</sub> * f <sub>HV</sub> ) (pc/h) (SF(%) BPTSF=100(1-e <sup>-0.000879V</sup> p) (ssing zone, f <sub>d/hp</sub> (%)(Exh. 20-12) (PTSF=BPTSF+f <sub>d/np</sub> (ce Measures (lass I or 20-4 for Class II) (200 (veh- mi) VMT <sub>15</sub> = 0.25L <sub>t</sub> (V/PHF)		722 368 47.0 17.3 64.3
ro-way flow rate 1, v <sub>p</sub> (pc/h) v <sub>p</sub> =V/l highest directional split proportion 2 see percent time-spent-following, BPTS for directional distribution and no-pa recent time-spent-following, PTSF(%) F wel of Service and Other Performan rel of service, LOS (Exhibit 20-3 for C ume to capacity ratio v/c v/c=V <sub>p</sub> / 3,2 ak 15-min veh-miles of travel, VMT <sub>15</sub> clask-hour vehicle-miles of travel, VMT <sub>60</sub>	(PHF * f <sub>G</sub> * f <sub>HV</sub> ) (pc/h)  SF(%) BPTSF=100(1-e <sup>-0.000879v</sup> p) ssing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)  PTSF=BPTSF+f <sub>d/hp</sub> ce Measures lass I or 20-4 for Class II) 200  veh- mi) VMT <sub>15</sub> = 0.25L <sub>t</sub> (V/PHF) (veh- mi) VMT <sub>60</sub> =V*L <sub>t</sub>		722 368 47.0 17.3 64.3 C
ro-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> =V// * highest directional split proportion <sup>2</sup> (see percent time-spent-following, BPTs  . for directional distribution and no-pa reent time-spent-following, PTSF(%) F  vel of Service and Other Performan rel of service, LOS (Exhibit 20-3 for C)  ume to capacity ratio v/c v/c=V <sub>p</sub> /3,  ak 15-min veh-miles of travel, VMT <sub>15</sub> (	(PHF * f <sub>G</sub> * f <sub>HV</sub> ) (pc/h)  SF(%) BPTSF=100(1-e <sup>-0.000879v</sup> p) ssing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)  PTSF=BPTSF+f <sub>d/hp</sub> ce Measures lass I or 20-4 for Class II) 200  veh- mi) VMT <sub>15</sub> = 0.25L <sub>t</sub> (V/PHF) (veh- mi) VMT <sub>60</sub> =V*L <sub>t</sub>		722 368 47.0 17.3 64.3 C 0.23 180

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General information	110 21712 1110	HWAY SEGMENT WO	UNKONELI		
Analyst Agency or Company Date Performed	FM 664 HDR 1/10/2011	Highway From/To Jurisdiction	FM 664 Tanner Farm Rd/FM 983 TxDOT		
Analysis Time Period Input Data	AM Peak Period	Analysis Year	2011		
	Shoulder width ft		Class I highway Class II highway Terrain Level Rolling		
	Lane width t		Two-way hourly volume 797 veh/h Directional split 59 / 41		
	Lane width to the state of the		Peak-hour factor, PHF 0.83 No-passing zone 87		
\$ Shoulder width 11		Show North Arrow	% Trucks and Buses , P <sub>T</sub> 1 %		
Segment length, L <sub>i</sub> mi			% Recreational vehicles, P <sub>R</sub> 0%		
	•		Access points/ mi 8		
verage Travel Speed					
irade adjustment factor, f <sub>G</sub> (Exh	ibit 20-7)	1.00			
assenger-car equivalents for tru	ıcks, E <sub>T</sub> (Exhibit 20-9)		1.2		
assenger-car equivalents for R\			1.0		
	f <sub>HV</sub> f <sub>HV</sub> *1/(1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1))		0.998		
wo-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)			962		
* highest directional split propo			568		
	eed from Field Measurement	Estimated Free-Flow Speed			
		Base free-flow speed	1 BEES 5		
Field Measured speed, S <sub>FM</sub> mi/h		Adj. for lane width and shoulder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5)			
bserved volume, V <sub>f</sub>	veh/h	100			
ee-flow speed, FFS FFS=S <sub>FM</sub> +	-0.00776(V <sub>2</sub> / f <sub>HV</sub> ) 50.0 ml/h	mi/h			
1 145	) + nv/	Free-flow speed, FFS	S (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> )		
		2.4			
lj. for no-passing zones, f <sub>np</sub> ( mi	/h) (Exhibit 20-11)		2.4		
			2.4 40.1		
lj. for no-passing zones, f <sub>np</sub> ( mi rerage travel speed, ATS ( mi/h) ercent Time-Spent-Following					
erage travel speed, ATS ( mi/h)	ATS=FFS-0.00776v <sub>p</sub> -f <sub>пp</sub>				
erage travel speed, ATS ( mi/h) ercent Time-Spent-Following	ATS=FFS-0.00776v <sub>p</sub> -f <sub>np</sub>		40.1		
erage travel speed, ATS ( mi/h) ercent Time-Spent-Following ade Adjustment factor, f <sub>G</sub> (Exhit	ATS=FFS-0.00776v <sub>p</sub> -f <sub>np</sub> bit 20-8)  ks, E <sub>T</sub> (Exhibit 20-10)		1.00		
erage travel speed, ATS ( mi/h)  rcent Time-Spent-Following  ade Adjustment factor, f <sub>G</sub> (Exhit  ssenger-car equivalents for truc  ssenger-car equivalents for RVs	ATS=FFS-0.00776v <sub>p</sub> -f <sub>np</sub> bit 20-8)  ks, E <sub>T</sub> (Exhibit 20-10)		1.00		
erage travel speed, ATS ( mi/h)  rcent Time-Spent-Following  ade Adjustment factor, f <sub>G</sub> (Exhit  ssenger-car equivalents for truc  ssenger-car equivalents for RVs  avy-vehicle adjustment factor, f	ATS=FFS-0.00776 $v_p$ - $f_{np}$ Dit 20-8)  John State (Exhibit 20-10)  Some Eq. (Exhibit 20-10)  How $f_{HV}$ =1/ (1+ $P_T$ (E $_T$ -1)+ $P_R$ (E $_R$ -1) )		1.00 1.1 1.0		
erage travel speed, ATS ( mi/h)  rcent Time-Spent-Following  ade Adjustment factor, f <sub>G</sub> (Exhit  ssenger-car equivalents for truc  ssenger-car equivalents for RVs	$\begin{aligned} &\text{ATS=FFS-0.00776v}_{p}\text{-}f_{np} \\ &\text{bit 20-8}) \\ &\text{ks, E}_{T} \text{(Exhibit 20-10)} \\ &\text{s, E}_{R} \text{ (Exhibit 20-10)} \\ &\text{hv}  f_{HV}\text{=}1/\text{ (1+ P}_{T}(\text{E}_{T}\text{-}1)\text{+P}_{R}(\text{E}_{R}\text{-}1)\text{ )} \\ &f_{p}\text{=}V/\text{ (PHF} * f_{G} * f_{HV})} \end{aligned}$		1.00 1.1 1.0 0.999		
erage travel speed, ATS ( mi/h)  rcent Time-Spent-Following  ade Adjustment factor, f <sub>Q</sub> (Exhit ssenger-car equivalents for truc ssenger-car equivalents for RVs avy-vehicle adjustment factor, f <sub>Q</sub> o-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)	ATS=FFS-0.00776 $v_p$ - $f_{np}$ bit 20-8)  ks, $E_T$ (Exhibit 20-10)  s, $E_R$ (Exhibit 20-10)  HV $f_{HV}$ =1/ (1+ $P_T$ ( $E_T$ -1)+ $P_R$ ( $E_R$ -1) ) $f_p$ =V/ (PHF * $f_G$ * $f_{HV}$ )  tion <sup>2</sup> (pc/h)		1.00 1.1 1.0 0.999 961		
erage travel speed, ATS ( mi/h)  recent Time-Spent-Following ade Adjustment factor, f <sub>G</sub> (Exhit ssenger-car equivalents for true ssenger-car equivalents for RVs avy-vehicle adjustment factor, f <sub>i</sub> o-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v  thighest directional split propor se percent time-spent-following,	$ATS=FFS-0.00776v_p-f_{np}$ bit 20-8) $ks, E_T (Exhibit 20-10)$ $s, E_R (Exhibit 20-10)$ $HV = \frac{f_HV=1}{(1+P_T(E_T^{-1})+P_R(E_R^{-1}))}$ $f_p=V/(PHF^*f_G^*f_{HV})$ $tion^2 (pc/h)$ $BPTSF(%) = BPTSF=100(1-e^{-0.000879v_p})$		1.00 1.1 1.0 0.999 961 567		
erage travel speed, ATS ( mi/h)  recent Time-Spent-Following ade Adjustment factor, f <sub>Q</sub> (Exhit ssenger-car equivalents for RVs avy-vehicle adjustment factor, f <sub>I</sub> o-way flow rate <sup>†</sup> , v <sub>p</sub> (pc/h) v  highest directional split propor se percent time-spent-following, for directional distribution and	$\begin{aligned} & \text{ATS=FFS-0.00776v}_{p}\text{-}f_{\text{TIP}} \\ & \text{bit 20-8}) \\ & \text{s. } \text{E}_{\text{T}} \text{ (Exhibit 20-10)} \\ & \text{s. } \text{E}_{\text{R}} \text{ (Exhibit 20-10)} \\ & \text{HV}  f_{\text{HV}} = 1/ \left(1 + P_{\text{T}} (\text{E}_{\text{T}} - 1) + P_{\text{R}} (\text{E}_{\text{R}} - 1) \right) \\ & \text{fp} = \text{V/} \text{ (PHF * f}_{\text{G}} \text{ * f}_{\text{HV}}) \\ & \text{tion}^2 \text{ (pc/h)} \\ & \text{BPTSF(\%)} \qquad \text{BPTSF=100} (1 - e^{-0.000879 \text{v}_{\text{P}}}) \\ & \text{no-passing zone, f}_{\text{d/hp}} \text{(\%)} \text{ (Exh. 20-12)} \end{aligned}$		40.1  1.00  1.1  1.0  0.999  961  567  57.0		
erage travel speed, ATS ( mi/h)  recent Time-Spent-Following ade Adjustment factor, f <sub>Q</sub> (Exhit ssenger-car equivalents for true ssenger-car equivalents for RVs avy-vehicle adjustment factor, f <sub>Q</sub> o-way flow rate <sup>†</sup> , v <sub>p</sub> (pc/h) v † highest directional split propor se percent time-spent-following, for directional distribution and cent time-spent-following, PTSI vel of Service and Other Perfo	the ATS=FFS-0.00776 $v_p$ - $f_{np}$ bit 20-8)  cks, $E_T$ (Exhibit 20-10)  s, $E_R$ (Exhibit 20-10)  hv $f_{HV}$ =1/ (1+ $P_T$ ( $E_T$ -1)+ $P_R$ ( $E_R$ -1) ) $f_p$ =V/ (PHF * $f_g$ * $f_{HV}$ )  tion <sup>2</sup> (pc/h)  BPTSF(%)  BPTSF=100(1- $e^{-0.000879v_p}$ )  no-passing zone, $f_{d/hp}$ (%)(Exh. 20-12)  F(%) PTSF=BPTSF+ $f_{d/np}$ trance Measures		40.1  1.00  1.1  1.0  0.999  961  567  57.0  12.3		
erage travel speed, ATS ( mi/h)  recent Time-Spent-Following ade Adjustment factor, f <sub>G</sub> (Exhit ssenger-car equivalents for true ssenger-car equivalents for RVs avy-vehicle adjustment factor, f <sub>O</sub> o-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v  highest directional split propor se percent time-spent-following, for directional distribution and cent time-spent-following, PTSI vel of Service and Other Perfor lei of service, LOS (Exhibit 20-3)	hat S=FFS-0.00776 $v_p$ - $f_{np}$ bit 20-8)  his, E <sub>T</sub> (Exhibit 20-10)  s, E <sub>R</sub> (Exhibit 20-10)  hv $f_{HV}$ =1/ (1+ $P_T$ (E $_T$ -1)+ $P_R$ (E $_R$ -1) ) $f_p$ =V/ (PHF * $f_G$ * $f_{HV}$ )  tion <sup>2</sup> (pc/h)  BPTSF(%)  BPTSF=100(1-e <sup>-0.000879</sup> $v_p$ )  no-passing zone, $f_{d/hp}$ (%)(Exh. 20-12)  F(%) PTSF=BPTSF+f $f_{d/np}$ trance Measures  for Class I or 20-4 for Class II)		40.1  1.00  1.1  1.0  0.999  961  567  57.0  12.3  69.4		
erage travel speed, ATS ( mi/h) preent Time-Spent-Following and Adjustment factor, f <sub>Q</sub> (Exhit ssenger-car equivalents for true ssenger-car equivalents for RVs avy-vehicle adjustment factor, f <sub>Q</sub> o-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v highest directional split propor se percent time-spent-following, for directional distribution and cent time-spent-following, PTSI vel of Service and Other Perfore of service, LOS (Exhibit 20-3 ume to capacity ratio v/c w/c=	oit 20-8)  cks, $E_T$ (Exhibit 20-10)  s, $E_R$ (Exhibit 20-10) $E_{HV} = \frac{1}{1} \frac{1}{1} \frac{1}{1} + P_T(E_{T^{-1}}) + P_R(E_{R^{-1}})$ $E_P$ (PHF * $E_T$		40.1  1.00  1.1  1.0  0.999  961  567  57.0  12.3  69.4		
erage travel speed, ATS ( mi/h)  recent Time-Spent-Following ade Adjustment factor, f <sub>G</sub> (Exhit ssenger-car equivalents for true ssenger-car equivalents for RVs avy-vehicle adjustment factor, f <sub>O</sub> o-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v highest directional split propor se percent time-spent-following, for directional distribution and cent time-spent-following, PTSI rel of Service and Other Perfor rel of service, LOS (Exhibit 20-3) ume to capacity ratio v/c v/c= kk 15-min veh-miles of travel, VM	bit 20-8)  bit 20-8)  cks, $E_T$ (Exhibit 20-10)  s, $E_R$ (Exhibit 20-10)  hv $f_{HV} = 1/(1 + P_T(E_{T^{-1}}) + P_R(E_{R^{-1}}))$ fp=V/ (PHF * $f_G$ * $f_{HV}$ )  tion <sup>2</sup> (pc/h)  BPTSF(%)  BPTSF=100(1-e <sup>-0.000879v</sup> <sub>p</sub> )  no-passing zone, $f_{d/hp}$ (%)(Exh. 20-12)  F(%) PTSF=BPTSF+f $d/np$ framce Measures  for Class I or 20-4 for Class II) $V_p/3$ ,200 $dT_{15}$ (veh- mi) VMT <sub>15</sub> = 0.25L <sub>I</sub> (V/PHF)		40.1  1.00  1.1  1.0  0.999  961  567  57.0  12.3  69.4		
erage travel speed, ATS ( mi/h)  recent Time-Spent-Following ade Adjustment factor, f <sub>G</sub> (Exhit ssenger-car equivalents for true ssenger-car equivalents for RVs avy-vehicle adjustment factor, f <sub>O</sub> o-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v highest directional split propor se percent time-spent-following, for directional distribution and cent time-spent-following, PTSI rel of Service and Other Perfor rel of service, LOS (Exhibit 20-3) ume to capacity ratio v/c v/c= kk 15-min veh-miles of travel, VM	oit 20-8)  cks, $E_T$ (Exhibit 20-10)  s, $E_R$ (Exhibit 20-10) $E_{HV} = \frac{1}{1} \frac{1}{1} \frac{1}{1} + P_T(E_{T^{-1}}) + P_R(E_{R^{-1}})$ $E_P$ (PHF * $E_T$		40.1  1.00  1.1  1.0  0.999  961  567  57.0  12.3  69.4  D  0.30		
erage travel speed, ATS ( mi/h)  recent Time-Spent-Following ade Adjustment factor, f <sub>G</sub> (Exhit ssenger-car equivalents for true ssenger-car equivalents for RVs avy-vehicle adjustment factor, f <sub>O</sub> o-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v highest directional split propor se percent time-spent-following, for directional distribution and cent time-spent-following, PTSI rel of Service and Other Perfor rel of service, LOS (Exhibit 20-3) ume to capacity ratio v/c v/c= kk 15-min veh-miles of travel, VM	$\begin{array}{lll} \text{ATS=FFS-}0.00776v_{p}\text{-}f_{np} \\ \text{bit 20-8}) \\ \text{cks, } E_{T} \text{ (Exhibit 20-10)} \\ \text{s, } E_{R} \text{ (Exhibit 20-10)} \\ \text{s, } E_{R} \text{ (Exhibit 20-10)} \\ \text{hv} & f_{HV}\text{=}1/\text{ (}1\text{+}P_{T}(E_{T}\text{-}1)\text{+}P_{R}(E_{R}\text{-}1)\text{ )} \\ f_{p}\text{=}V/\text{ (PHF }^{+}f_{G}^{-+}f_{HV}) \\ \text{tion}^{2} \text{ (pc/h)} \\ \text{BPTSF(%)} & \text{BPTSF=}100(1\text{-}e^{-0.000879v_{p}}) \\ \text{no-passing zone, } f_{d/hp}(\%)\text{(Exh. 20-12)} \\ \text{F(%) PTSF=}BPTSF\text{+}f_{d/np} \\ \text{trimance Measures} \\ \text{for Class I or 20-4 for Class II)} \\ \text{Vp}/ 3,200 \\ \text{AT}_{15} \text{ (veh-mi)} & \text{VMT}_{15}\text{=}0.25\text{L}_{1}\text{(V/PHF)} \\ \text{VMT}_{60} & \text{(veh-mi)} & \text{VMT}_{60}\text{=}\text{V}^{+}\text{L}_{1} \\ \end{array}$		40.1  1.00  1.1  1.0  0.999  961  567  57.0  12.3  69.4  D  0.30  423		

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James James

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Consel Information	GHWAY SEGMENT WORKSHEET			
General Information Analyst TAG	Site Information			
Agency or Company HDR	Highway FM 983 From/To Bluff Springs Rd/BR 45			
Date Performed 11/10/2011	Jurisdiction TxDOT			
Analysis Time Period AM Peak Hour Input Data	Analysis Year 2011			
	grade grade	_		
L	Class I highway V Class II highway			
Shoulder width tt	Terrain Level Rolling			
Lane width tt	Two-way hourly volume 1170 veh/h Directional split 59 / 41			
Lane width tt	Peak-hour factor, PHF 0.83			
\$\frac{1}{2} Shoulder width \frac{1}{2} tt	No-passing zone 100			
Segment length, L,mi	Show North Arrow % Trucks and Buses , P <sub>T</sub> 1 %			
Segment tengen, Lim	% Recreational vehicles, P <sub>R</sub> 0%			
	Access points/ mi 26			
lverage Travel Speed		*****		
erade adjustment factor, f <sub>G</sub> (Exhibit 20-7)	1.00	1.00		
assenger-car equivalents for trucks, E <sub>7</sub> (Exhibit 20-9)	1.1			
assenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 20-9)	1.0			
eavy-vehicle adjustment factor, f <sub>HV</sub> f <sub>HV</sub> =1/(1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1))	0.999			
wo-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> =V/ (PHF * f <sub>G</sub> * f <sub>HV</sub> )	1411			
, * highest directional split proportion <sup>2</sup> (pc/h)	832			
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed			
	Base free-flow speed, BFFS <sub>FM</sub>	4		
eld Measured speed, S <sub>FM</sub> mi/h	Adj. for lane width and shoulder width <sup>3</sup> , f <sub>IS</sub> (Exhibit 20-5)			
bserved volume, V <sub>f</sub> veh/h	, , , , , , , , , , , , , , , , , , , ,			
ee-flow speed, FFS FFS=S <sub>FM</sub> +0.00776(V <sub>t</sub> /f <sub>HV</sub> ) 36.8 mi/h	Adj. for access points, f <sub>A</sub> (Exhibit 20-6) 6 mi.			
· Obsorbable in Section (of HO)	Free-flow speed, FFS (FSS≕BFFS-f <sub>LS</sub> -f <sub>A</sub> )	3		
dj. for no-passing zones, f <sub>np</sub> ( mi/h) (Exhibit 20-11)	1.7			
rerage travel speed, ATS ( mi/h) ATS=FFS-0.00776vp-fnp	24.2			
rcent Time-Spent-Following				
ade Adjustment factor, f <sub>G</sub> (Exhibit 20-8)	1.00			
ssenger-car equivalents for trucks, E <sub>+</sub> (Exhibit 20-10)	1.0			
ssenger-car equivalents for RVs, E <sub>B</sub> (Exhibit 20-10)	1.0			
avy-vehicle adjustment factor, $f_{HV} = \frac{1}{1 + P_T(E_T - 1) + P_R(E_{R} - 1)}$	1.000			
ro-way flow rate $^1$ , $v_p$ (pc/h) $v_p$ =V/ (PHF $^*$ f <sub>G</sub> $^*$ f <sub>HV</sub> )	1410			
highest directional split proportion <sup>2</sup> (pc/h)	832			
se percent time-spent-following, BPTSF(%) BPTSF=100(1-e <sup>-0.000879v</sup> p)	71.0			
. for directional distribution and no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)	8.0			
rcent time-spent-following, PTSF(%) PTSF=BPTSF+f <sub>d/np</sub>	79.1			
vel of Service and Other Performance Measures				
vel of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II) ume to capacity ratio v/c v/c=V <sub>p</sub> / 3,200	D 0.44			
ak 15-min vsh-miles of travel,VMT <sub>15</sub> (vsh-mi) VMT <sub>15</sub> = 0.25L <sub>1</sub> (V/PHF)				
ak-hour vehicle-miles of travel, VMT <sub>60</sub> (veh-mi) VMT <sub>60</sub> =V*L <sub>1</sub>	352 1170			
tk 15-min total travel time, TT <sub>15</sub> (veh-h) TT <sub>15</sub> = VMT <sub>15</sub> /ATS				
tes	14.6			

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General Information	TWO-WAY TWO-LANE HIG		UHKSHEET		
Anaivst	TAG	Site Information Highway	Malloy Bridge Road		
Agency or Company	HDR	From/To	BR 45/Roberts Rd		
Date Performed Analysis Time Period	11/10/2011 PM Peak Hour	Jurisdiction Analysis Year	Dallas County 2011		
Input Data		Dinalysis (ear	2011		
			Class I highway		
<b> </b>	1 Shoulder width tt	I	Terrain V Level Rolling		
€	Lane widthti		Two-way hourly volume 191 veh/h		
	Lane width tt		Directional split 57 / 43 Peak-hour factor, PHF 0.80		
	Shoulder width tt	$1 \setminus 1 \setminus 1$	No-passing zone 21		
		Strew North Arrow	% Trucks and Buses , P <sub>T</sub> 6 %		
Segment I	ength, L <sub>i</sub> mi		% Recreational vehicles, P <sub>B</sub> 0%		
	·		Access points/ mi 8		
Average Travel Speed					
Grade adjustment factor, f <sub>G</sub> (Exhib	it 20-7)	1.00			
assenger-car equivalents for truc	ks, E <sub>T</sub> (Exhibit 20-9)	1.7			
Passenger-car equivalents for RVs	s, E <sub>R</sub> (Exhibit 20-9)		1.0		
leavy-vehicle adjustment factor, 1	HV fHV=1/(1+ PT(ET-1)+PR(ER-1))		0.960		
wo-way flow rate1, v <sub>p</sub> (pc/h) v <sub>p</sub>	=V/ (PHF * f <sub>G</sub> * f <sub>HV</sub> )		249		
p * highest directional split proport	ion <sup>2</sup> (pc/h)	142			
Free-Flow Spe	ed from Field Measurement	Estimated Free-Flow Speed			
		Base free-flow speed	d, BFFS <sub>FM</sub> 6		
ield Measured speed, S <sub>FM</sub>	mi/h	Adil for lane width and shoulder width <sup>3</sup> f. (Eyhibit 20-5)			
bserved volume, V <sub>f</sub>	veh/h				
ree-flow speed, FFS FFS=S <sub>FM</sub> +0	0.00776(V <sub>e</sub> / f <sub>use</sub> ) 56.7 mi/h	Adj. for access points, f <sub>A</sub> (Exhibit 20-6)  mi/h  56.			
	HV/	Free-flow speed, FFS	S (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> )		
dj. for no-passing zones, f <sub>np</sub> ( mi/r	) (Exhibit 20-11)	0.9			
verage travel speed, ATS ( mi/h) /	ATS=FFS-0.00776v <sub>o</sub> -f <sub>pp</sub>	53.9			
ercent Time-Spent-Following					
rade Adjustment factor, f <sub>G</sub> (Exhibi	t 20-8)	1.00			
assenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 20-10)		1.1			
assenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 20-10)		1.0			
leavy-vehicle adjustment factor, f <sub>HV</sub> =1/(1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1))		0.994			
wo-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> =V/ (PHF * f <sub>G</sub> * f <sub>HV</sub> )		240			
* highest directional split proportion		137			
ase percent time-spent-following, I		19.0			
lj, for directional distribution and n	o-passing zone, f <sub>d/np</sub> (%)(Exh. 20-12)	11.7			
rcent time-spent-following, PTSF		30.7			
vel of Service and Other Perfor vel of service, LOS (Exhibit 20-3 f	mance Measures	· · · · · · · · · · · · · · · · · · ·			
lume to capacity ratio v/c v/c=V		A 0.08			
	T <sub>15</sub> (veh- mi) VMT <sub>15</sub> = 0.25L <sub>t</sub> (V/PHF)		60		
ak-hour vehicle-miles of travel, VI		191			
ak 15-min total travel time, TT <sub>15</sub> (v			1.1		
ites	15 15 15 15				
	ysis-the LOS is F. 2. If highest direction		oc/h, terminated anlysis-the LOS is F.		

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MULTILANE HIGHWAYS WORKSHEET(Direction 1) Speed (milt) Input <u>Öutdut</u> Los, S, D Application FFS, II, V<sub>p</sub> FFS, LOS, V<sub>p</sub> Operational (LOS) 55 mih Design (N) N. S. D Average Passenger-Car 50 mid Design (v<sub>n</sub>) FFS, LOS, N v<sub>p</sub>, S, D 45 midr Planning (LOS) LOS. S. D FFS, N. AADT LOS A Planning (N) FFS, LOS, AADT N, S, D Planning (4) FFS, LOS, N v<sub>p</sub>, S, D 30 100 2400 Flow Rate (pointin) **General Information** Site Information Analyst TAG Highway/Direction to Travel IH 45 NBFR Agency or Company **HDR** From/To Malloy Bridge Rd/Mars Rd Date Performed Jurisdiction 11/10/2011 **TxDOT** Analysis Year 2011 Analysis Time Period AM Peak Hour Project Description Skyline Landfill Ferris Oper.(LOS) T Des. (N) Flan. (vp) Flow Inputs Volume, V (veh/h) 153 Peak-Hour Factor, PHF 0.95 AADT(veh/h) %Trucks and Buses, P. 10 Peak-Hour Prop of AADT (veh/d) %RVs, PR 0 Peak-Hour Direction Prop, D General Terrain: Level DDHV (veh/h) Grade Length (mi) 0.00 Driver Type Adjustment 1.00 Up/Down % 0.00 Number of Lanes 2 Calculate Flow Adjustments fp 1.00 ER 1.2 E 1.5 f<sub>HV</sub> 0.952 Speed Inputs Calc Speed Adj and FFS Lane Width, LW (ft) 11.0 f<sub>LW</sub> (mi/h) 1.9 Total Lateral Clearence, LC (ft) 2.0 f<sub>LC</sub> (mi/h) 3.6 Access Points, A (A/mi) 7 f<sub>A</sub> (mi/h) 1.8 Median Type, M Divided f<sub>M</sub> (mi/h) 0.0 FFS (measured) FFS (mi/h) 52.8 Base Free-Flow Speed, BFFS 60.0 Operations Design Design (N) Operational (LOS) Required Number of Lanes, N Flow Rate, v<sub>n</sub> (pc/h/ln) 84 Flow Rate, v<sub>p</sub> (pc/h) Speed, S (mi/h) 52.8 Max Service Flow Rate (pc/h/ln) D (pc/mi/in) 1.6 Design LOS LOS Α

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	MIII TII ANE HIGHWA	YS WORKSHEET(Direct	Van 41
	MOLITEARE INGITYA	13 WORKSHEET (DIRECT	ion 1)
10 Free-Hox Speed 2 60 min. Signification of the state of	C D TSD0 TSD0 TSD0 TSD0 TSD0 TSD0 TSD0 TS	Application Operational (LC Oesign (V <sub>p</sub> ) Design (V <sub>p</sub> ) Planning (LOS) Planning (N) Planning (V <sub>p</sub> )	FFS, LOS, V <sub>p</sub> N, S, D FFS, LOS, N V <sub>p</sub> , S, D
General Information		Site Information	
Analyst Agency or Company Date Performed Analysis Time Period Project Description Skyline Land	TAG HDR 11/10/2011 AM Peak Hour Ifill Ferris	Highway/Direction to Travel From/To Jurisdiction Analysis Year	IH 45 NBFR BR 45/FM 660 TxDOT 2011
F Oper.(LOS)		Des. (N)	Plan. (vp)
Flow Inputs			- carr (sp)
Volume, V (veh/h) AADT(veh/h) Peak-Hour Prop of AADT (veh/d) Peak-Hour Direction Prop, D DDHV (veh/h) Driver Type Adjustment	1.00	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade Length (mi) Up/Down % Number of Lanes	0.78 1 0 Level 0.00 0.00
Calculate Flow Adjust	ments		
f <sub>p</sub> E <sub>T</sub>	1.00 1.5	E <sub>R</sub>	1.2 0.995
Speed inputs		Calc Speed Adj and	FFS
Lane Width, LW (ft) Total Lateral Clearence, LC (ft) Access Points, A (A/mi) Median Type, M FFS (measured) Base Free-Flow Speed, BFFS	12.0 0.0 6 Divided	f <sub>LW</sub> (mi/h)  f <sub>LC</sub> (mi/h)  f <sub>A</sub> (mi/h)  f <sub>M</sub> (mi/h)  FFS (mi/h)	0.0 5.4 1.5 0.0 45.1
Operations	V4.V	Design	
Operational (LOS) Flow Rate, v <sub>p</sub> (pc/h/ln) Speed, S (mi/h) D (pc/mi/ln) LOS	86 45.1 1.9 A	Design (N)  Required Number of Lanes, N  Flow Rate, v <sub>p</sub> (pc/h)  Max Service Flow Rate (pc/h/ln)  Design LOS	

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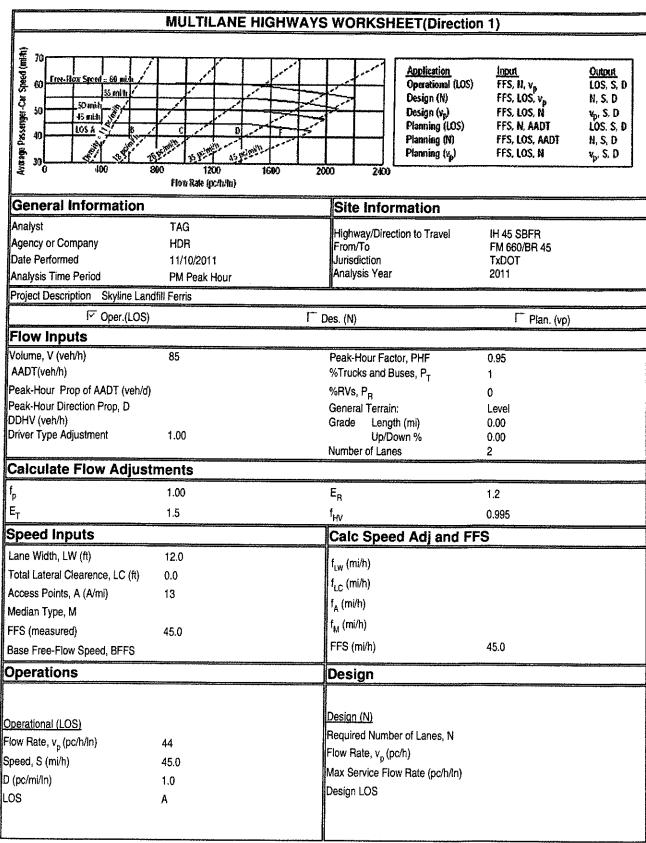
**MULTILANE HIGHWAYS WORKSHEET(Direction 1)** Application Input Output FFS, H, v<sub>p</sub> FFS, LOS, v<sub>p</sub> Operational (LOS) LOS, S, D 55 mith Design (N) N, S, D Aygrage Passenger-Car 50 mid Design (v<sub>p</sub>) FFS, LOS, N v<sub>p</sub>, S, D LOS, S, D 45 midi Planning (LOS) FFS, N. AADT LOS A Planning (N) FFS, LOS, AADT N, S, D FFS, LOS, N Planning (v<sub>e</sub>) v<sub>d</sub>, Ş. D 30 1200 1600 2000 2400 Flow Rate (portuin) **General Information** Site Information TAG Analyst IH 45 SBFR Highway/Direction to Travel Agency or Company HDR From/To Mars Rd/Malloy Bridge Rd Date Performed 11/10/2011 Jurisdiction **TxDOT** Analysis Year 2011 Analysis Time Period PM Peak Hour Project Description Skyline Landfill Ferris Oper.(LOS) Plan. (vp) T Des. (N) Flow Inputs Volume, V (veh/h) 165 Peak-Hour Factor, PHF 0.92 AADT(veh/h) %Trucks and Buses, PT 11 Peak-Hour Prop of AADT (veh/d) %RVs, PR 0 Peak-Hour Direction Prop, D General Terrain: Level DDHV (veh/h) Length (mi) 0.00 Driver Type Adjustment 1.00 Up/Down % 0.00 Number of Lanes 2 Calculate Flow Adjustments 1.00  $E_{R}$ 1.2 ET 1.5 f<sub>HV</sub> 0.948 Speed Inputs Calc Speed Adj and FFS Lane Width, LW (ft) 11.0 f<sub>LW</sub> (mi/h) 1.9 Total Lateral Clearence, LC (ft) 4.0 f<sub>LC</sub> (mi/h) 1.8 Access Points, A (A/mi) 7  $f_A$  (mi/h) 1.8 Median Type, M Divided f<sub>M</sub> (mi/h) 0.0 FFS (measured) FFS (mi/h) 54.5 Base Free-Flow Speed, BFFS 60.0 Operations Design Design (N) Operational (LOS) Required Number of Lanes, N Flow Rate, v<sub>p</sub> (pc/h/ln) 94 Flow Rate, v, (pc/h) Speed, S (mi/h) 54.5 Max Service Flow Rate (pc/h/ln) D (pc/mi/ln) 1.7 Design LOS LOS Α

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General Information	TWO-WAY TWO-LANE HIG	Site Information						
Analyst	TAG	Highway	5th Street					
Agency or Company Date Performed	HDR 2/1/2012	From/To Jurisdiction	All City of Ferris					
Analysis Time Period	AM Peak Hour	Analysis Year	2044					
Input Data								
<b>t</b>	•		Class I highway Class II highway					
	\$ Shoulder widthtt		Terrain V Level Rolling					
•	Lane widthtt		Two-way hourly volume 730 veh/h Directional split 63 / 37					
	Lane widthti		Peak-hour factor, PHF 0.89					
			No-passing zone 100					
Segment	length, L <sub>i</sub> mi	Show North Asrow	% Trucks and Buses , P <sub>T</sub> 1 %					
1	3 1 1		% Recreational vehicles, P <sub>R</sub> 0%					
Average Travel Speed			Access points/ mi 35					
Grade adjustment factor, f <sub>G</sub> (Exhi	bit 20-7)		1.00					
assenger-car equivalents for true	oks, E <sub>T</sub> (Exhibit 20-9)		1.2	•••				
assenger-car equivalents for RV			1.0					
	f <sub>HV</sub> f <sub>HV</sub> =1/(1+P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1))		0.998					
wo-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v			822	<del></del>				
• highest directional split propo			518					
	ed from Field Measurement		Estimated Free-Flow Speed					
		Base free-flow speed	d. BFFS	45				
ield Measured speed, S <sub>FM</sub>	ml/h	1	t 188	mi 4.3				
bserved volume, V <sub>f</sub>	veh/h	i	nd shoulder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5)	mi/h 8.8				
ree-flow speed, FFS FFS=S <sub>FM</sub> +		Adj. for access points, f <sub>A</sub> (Exhibit 20-6)						
rec-now speed, and an orman	0.00776(4/1HA) 25.0 mm	Free-flow speed, FFS	S (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> )	32 mi.				
dj. for no-passing zones, f <sub>np</sub> ( mi/	h) (Exhibit 20-11)		3.0					
verage travel speed, ATS ( mi/h)	ATS⊭FFS-0.00776v <sub>p</sub> -f <sub>pp</sub>		22.7					
ercent Time-Spent-Following								
rade Adjustment factor, f <sub>G</sub> (Exhib	it 20-8)		1.00					
assenger-car equivalents for truct	ks, E <sub>T</sub> (Exhibit 20-10)		1.1					
assenger-car equivalents for RVs	, E <sub>8</sub> (Exhibit 20-10)		1.0					
eavy-vehicle adjustment factor, f	<sub>IV</sub> f <sub>HV</sub> =1/(1+P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1))		0.999					
vo-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v			821					
* highest directional split proport			517	•				
se percent time-spent-following,	BPTSF(%) BPTSF=100(1-e <sup>-0.000879v</sup> p)		51.4					
j. for directional distribution and r	no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)		14.2					
rcent time-spent-following, PTSF	(%) PTSF=BPTSF+f <sub>d/np</sub>		65.6					
vel of Service and Other Performance of Services LOS (Euclidean Services LOS (Euclidean Services Servi			_					
vel of service, LOS (Exhibit 20-3 fume to capacity ratio v/c v/c=V	**************************************		C 0.26					
	<u> </u>		0.26					
	T <sub>15</sub> (veh- mi) VMT <sub>15</sub> = 0.25L <sub>[</sub> (V/PHF)		148					
ak-hour vehicle-miles of travel, V		<u> </u>	526					
ak 15-min total travel time, TT <sub>15</sub> ( <i>tes</i>	ven-n) II <sub>15</sub> = vMI <sub>15</sub> /ATS		6.5					

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General Information	TWO-WAY TWO-LANE HIG	Site Information	VIIIOITEI					
Analyst Agency or Company Date Performed	TAG HDR 2/1/2012	Highway From/To Jurisdiction	BR 45 Malloy Bridge to Landfill Drwy TxDOT					
Analysis Time Period	AM Peak Hour	Analysis Year	2044					
input Data								
	,		Class I highway					
	\$ Shoulder widthtt		Terrain F Level F Rolling					
-	Lane width t		Two-way hourly volume 483 veh/h Directional split 57 / 43					
	I Lane width tt Shoulder width tt		Peak-hour factor, PHF 0.90					
	t Shoulder widthtt _	Show North Arrow	No-passing zone 100 % Trucks and Buses,P <sub>T</sub> 19 %					
Segment	ength, L <sub>i</sub> mi	TION MODIFICION	% Recreational vehicles, P <sub>R</sub> 0%					
•	,		Access points/ mi 3					
Average Travel Speed			7 COSCO PULITO, ITA					
Grade adjustment factor, f <sub>G</sub> (Exhit	pit 20-7)	J	1.00					
assenger-car equivalents for truc			1.2					
assenger-car equivalents for RV			1.0					
<del></del>			0.963					
	$f_{HV} = 1/(1 + P_T(E_T - 1) + P_R(E_R - 1))$							
wo-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v			557					
p * highest directional split propor	tion= (pc/n) ed from Field Measurement	ļ	317					
Tree now ope	ed from Field Measurement		Estimated Free-Flow Speed 52					
ield Measured speed, S <sub>EM</sub>	mi/h	Base free-flow speed	0					
bserved volume, V <sub>f</sub>	veh/h	Adj. for lane width an	nd shoulder width", T <sub>LS</sub> (Exhibit 20-5) mi/t					
· ·		Adj. for access points	7.00					
ree-flow speed, FFS FFS=S <sub>FM</sub> +6	0.00776(V <sub>f</sub> f <sub>HV</sub> ) 50.8 mi/h	Free-flow speed, FFS	S (FSS=BFFS-f <sub>ES</sub> -f <sub>A</sub> ) 50 mi					
dj. for no-passing zones, f <sub>np</sub> ( mi/	h) (Exhibit 20-11)		4.0					
verage travel speed, ATS ( mi/h)	ATS=FFS-0.00776v <sub>o</sub> -f <sub>no</sub>	42.5						
ercent Time-Spent-Following								
rade Adjustment factor, f <sub>G</sub> (Exhib	it 20-8)		1.00					
assenger-car equivalents for truck	s, E <sub>T</sub> (Exhibit 20-10)		1.1					
assenger-car equivalents for RVs	, E <sub>R</sub> (Exhibit 20-10)		1.0					
eavy-vehicle adjustment factor, f	<sub>V</sub> f <sub>HV</sub> =1/(1+P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1))		0.981					
vo-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub>			547					
* highest directional split proporti			312					
se percent time-spent-following,			38.2					
j. for directional distribution and r	no-passing zone, f <sub>d/np</sub> (%)(Exh. 20-12)		21.3					
rcent time-spent-following, PTSF			59.4					
vel of Service and Other Perfor	mance Measures							
vel of service, LOS (Exhibit 20-3			C 0.17					
lume to capacity ratio v/c v/c=V	Y		0.17					
	T <sub>15</sub> (veh- mi) VMT <sub>15</sub> = 0.25L <sub>t</sub> (V/PHF)		81					
ak-hour vehicle-miles of travel, V			290					
ak 15-min total travel time, TT <sub>15</sub> ( tes	ven-n) TT <sub>15</sub> ≈ VMT <sub>15</sub> /ATS	<u> </u>	1.9					

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General Information		HWAY SEGMENT WORI Site Information	
Analyst	TAG	Highway	BR 45
Agency or Company	HDR	From/To	8th Street/Landfill Driveway
Date Performed Analysis Time Period	2/1/2012 AM Peak Period	Jurisdiction Analysis Year	TxDOT 2044
Input Data			
			Class I highway
<b> </b>	\$ Shoulder widthtt		Terrain V Level Rolling
-	Lane width th		Two-way hourly volume 401 veh/h
	Lane width It		Directional split 59 / 41
	Shoulder widthti		Peak-hour factor, PHF 0.89 No-passing zone 100
		Show North Arrow	% Trucks and Buses , P <sub>T</sub> 19 %
Segment l	length, L <sub>i</sub> mi	21041 3050174161	% Recreational vehicles, P <sub>R</sub> 0%
1	ı		Access points/ mi 9
verage Travel Speed			Access points/ III 9
arade adjustment factor, f <sub>G</sub> (Exhib	oit 20-7)		1.00
assenger-car equivalents for truc			1.7
assenger-car equivalents for RV	<del>"" ' </del>		1.0
	f <sub>HV</sub> f <sub>HV</sub> =1/(1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>B</sub> (E <sub>B</sub> -1))		0.883
wo-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v			510
b * highest directional split propor			
	ed from Field Measurement		301
1 Tee Flow ope	ed flore i leid Measurement		Estimated Free-Flow Speed
latel \$4 announced on soul . O	/ #	Base free-flow speed, B	FFS <sub>EM</sub> n
leld Measured speed, S <sub>FM</sub>	mi/h	Adj. for lane width and s	houlder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5) 0 mi
bserved volume, V <sub>f</sub>	veh/h	Adj. for access points, f	(Evhibit 20-6) 2
ree-flow speed, FFS FFS=S <sub>FM</sub> +0	0.00776(V <sub>f</sub> / f <sub>HV</sub> ) 49.3 mi/h	Free-flow speed, FFS (	
		rice-now speed, 110 (	n do=b(+) d-(LS+A)
dj. for no-passing zones, f <sub>np</sub> ( mi/l	h) (Exhibit 20-11)		4.2
verage travel speed, ATS ( mi/h) .	ATS=FFS-0.00776vf		41.2
ercent Time-Spent-Following		<u></u>	
rade Adjustment factor, f <sub>G</sub> (Exhib	it 20-8)		1.00
rade Adjustment factor, f <sub>G</sub> (Exhib			
assenger-car equivalents for truck	ss, E <sub>T</sub> (Exhibit 20-10)		1.1
assenger-car equivalents for truck assenger-car equivalents for RVs	ss, E <sub>T</sub> (Exhibit 20-10) , E <sub>R</sub> (Exhibit 20-10)		1.1
assenger-car equivalents for truck assenger-car equivalents for RVs, navy-vehicle adjustment factor, f <sub>H</sub>	is, $E_{T}$ (Exhibit 20-10) , $E_{R}$ (Exhibit 20-10) $_{V}$ $_{HV}^{-1/}$ (1+ $P_{T}$ ( $E_{T}^{-1}$ )+ $P_{R}$ ( $E_{R}^{-1}$ ) )		1.1 1.0 0.981
assenger-car equivalents for truck assenger-car equivalents for RVs, savy-vehicle adjustment factor, $f_H$ vo-way flow rate $^1$ , $v_p$ (pc/h) $v_p$	is, $E_T$ (Exhibit 20-10) $E_R$ (Exhibit 20-10) $V_T f_{HV} = \frac{1}{1 + P_T} (E_T - 1) + P_R (E_R - 1)$		1.1 1.0 0.981 459
assenger-car equivalents for truck assenger-car equivalents for RVs, eavy-vehicle adjustment factor, $f_H$ vo-way flow rate $f_H$ , $v_p$ (pc/h) $v_p$ highest directional split proporti	is, $E_T$ (Exhibit 20-10) , $E_R$ (Exhibit 20-10) $V_{IW} = \frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)}$ $= \frac{V}{1 + P_T(E_T - 1) + P_R(E_R - 1)}$ on <sup>2</sup> (pc/h)		1.1 1.0 0.981 459 271
assenger-car equivalents for truck assenger-car equivalents for RVs, eavy-vehicle adjustment factor, f <sub>H</sub> vo-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> highest directional split proportions, se percent time-spent-following,	s, $E_T$ (Exhibit 20-10) $E_R$ (Exhibit 20-10) $V_{IW} = 1/(1 + P_T(E_T - 1) + P_R(E_R - 1))$		1.1 1.0 0.981 459 271 33.2
assenger-car equivalents for truck assenger-car equivalents for RVs, eavy-vehicle adjustment factor, f <sub>H</sub> vo-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> * highest directional split proporti ase percent time-spent-following, ij, for directional distribution and re	is, $E_T$ (Exhibit 20-10) $E_R$ (Exhibit 20-10) $V_V = V_V = V_$		1.1 1.0 0.981 459 271 33.2 21.9
assenger-car equivalents for truck assenger-car equivalents for RVs, eavy-vehicle adjustment factor, f <sub>H</sub> vo-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> highest directional split proportions percent time-spent-following, j, for directional distribution and recent time-spent-following, PTSF	(s, E <sub>T</sub> (Exhibit 20-10)  (E <sub>R</sub> (Exhibit 20-10)  (V f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )  (=V/ (PHF * f <sub>G</sub> * f <sub>HV</sub> )  (pc/h)  BPTSF(%) BPTSF=100(1-e <sup>-0.000879v</sup> p)  (po-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)  (%) PTSF=BPTSF+f <sub>d/hp</sub>		1.1 1.0 0.981 459 271 33.2
assenger-car equivalents for truck assenger-car equivalents for RVs, asvy-vehicle adjustment factor, f <sub>H</sub> vo-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> highest directional split proportionse percent time-spent-following, ij, for directional distribution and recent time-spent-following, PTSF vel of Service and Other Perfor	(s, E <sub>T</sub> (Exhibit 20-10)  (E <sub>R</sub> (Exhibit 20-10)  (V f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )  (p=V/ (PHF * f <sub>G</sub> * f <sub>HV</sub> )  (on <sup>2</sup> (pc/h)  BPTSF(%) BPTSF=100(1-e <sup>-0.000879v</sup> p)  (no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)  (%) PTSF=BPTSF+f <sub>d/np</sub>		1.1 1.0 0.981 459 271 33.2 21.9
assenger-car equivalents for truck assenger-car equivalents for RVs, eavy-vehicle adjustment factor, f <sub>H</sub> vo-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> highest directional split proporties percent time-spent-following, ij. for directional distribution and recent time-spent-following, PTSF vel of Service and Other Perforvel of service, LOS (Exhibit 20-3)	(s, E <sub>T</sub> (Exhibit 20-10)  (E <sub>R</sub> (Exhibit 20-10)  (V f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )  (=V/ (PHF * f <sub>G</sub> * f <sub>HV</sub> )  (on <sup>2</sup> (pc/h)  BPTSF(%)  BPTSF=100(1-e <sup>-0.000879v</sup> p)  (o-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)  (%) PTSF=BPTSF+f <sub>d/np</sub> mance Measures  for Class I or 20-4 for Class II)		1.1 1.0 0.981 459 271 33.2 21.9
assenger-car equivalents for truck assenger-car equivalents for RVs, asvy-vehicle adjustment factor, f <sub>H</sub> vo-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> highest directional split proporties percent time-spent-following, ji, for directional distribution and recent time-spent-following, PTSF vel of Service and Other Perforvel of service, LOS (Exhibit 20-34) lume to capacity ratio v/c v/c=V	(s, E <sub>T</sub> (Exhibit 20-10)  (E <sub>R</sub> (Exhibit 20-10)  (V f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1))  (p=V/ (PHF * f <sub>G</sub> * f <sub>HV</sub> )  (on <sup>2</sup> (pc/h)		1.1 1.0 0.981 459 271 33.2 21.9
assenger-car equivalents for truck assenger-car equivalents for RVs asvy-vehicle adjustment factor, for eavy-vehicle adjustment factor, for eavy-vehicle adjustment factor, for expensive for extending the proportion of the expensive forms of the expensi	ss, E <sub>T</sub> (Exhibit 20-10)  E <sub>R</sub> (Exhibit 20-10)  V f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1))  p=V/ (PHF * f <sub>G</sub> * f <sub>HV</sub> )  on <sup>2</sup> (pc/h)  BPTSF(%)  BPTSF=100(1-e <sup>-0.000879v</sup> p)  no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)  (%) PTSF=BPTSF+f <sub>d/np</sub> mance Measures  for Class I or 20-4 for Class II)  p/ 3,200  T <sub>15</sub> (veh- mi) VMT <sub>15</sub> = 0.25L <sub>t</sub> (V/PHF)		1.1 1.0 0.981 459 271 33.2 21.9 55.1  C 0.16
assenger-car equivalents for truck assenger-car equivalents for RVs, asvy-vehicle adjustment factor, f <sub>H</sub> vo-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> highest directional split proporties percent time-spent-following, ji, for directional distribution and recent time-spent-following, PTSF vel of Service and Other Perforvel of service, LOS (Exhibit 20-34) lume to capacity ratio v/c v/c=V	(s, E <sub>T</sub> (Exhibit 20-10)  (e, E <sub>R</sub> (Exhibit 20-10)  (v) f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1))  (s)=V/ (PHF * f <sub>G</sub> * f <sub>HV</sub> )  (on <sup>2</sup> (pc/h)  (b) BPTSF=100(1-e <sup>-0.000879v</sup> p)  (c) passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)  (c) PTSF=BPTSF+f <sub>d/hp</sub> (c) PT		1.1 1.0 0.981 459 271 33.2 21.9 55.1 C

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General Information		HWAY SEGMENT WO	MONEEL
Analyst	TAG	Highway	FM 660
Agency or Company Date Performed	HDR	From/To	BR 45/Legendary Ln
Analysis Time Period	2/1/2012 AM Peak Period	Jurisdiction Analysis Year	TxDOT 2044
Input Data			
			Class I highway F Class II highway
	Shoulder width tt		Terrain V Level Rolling
*******	Lane widtht		Two-way hourly volume 742 veh/h
	Lane width tt		Directional split 51 / 49 Peak-hour factor, PHF 0.74
	Shoulder width tt	$1 \setminus 1 / 1$	No-passing zone 100
		Show Morth Arrow	% Trucks and Buses , P <sub>T</sub> 1 %
Segment I	ength, L <sub>t</sub> mi		% Recreational vehicles, P <sub>R</sub> 0%
			Access points/ mi 23
Average Travel Speed		· · · · · · · · · · · · · · · · · · ·	
Grade adjustment factor, f <sub>G</sub> (Exhib	it 20-7)		1.00
assenger-car equivalents for truct	ks, E <sub>T</sub> (Exhibit 20-9)		1.2
assenger-car equivalents for RVs	, E <sub>R</sub> (Exhibit 20-9)		1.0
	$_{HV}$ $f_{HV}$ =1/(1+ $P_T(E_T$ -1)+ $P_R(E_R$ -1))		0.998
wo-way flow rate 1, v <sub>p</sub> (pc/h) v <sub>p</sub>	=V/ (PHF * f <sub>G</sub> * f <sub>HV</sub> )		1005
* highest directional split proport			513
Free-Flow Spee	ed from Field Measurement		Estimated Free-Flow Speed
		Base free-flow speed,	BFFS <sub>FM</sub> 45
ield Measured speed, S <sub>FM</sub>	mi/h	Adi. for lane width and	shoulder width <sup>3</sup> f (Exhibit 20-5)
bserved volume, V <sub>f</sub>	veh/h	1	1100 E
ree-flow speed, FFS FFS=S <sub>FM</sub> +0	.00776(V <sub>e</sub> /f <sub>HV</sub> ) 34.0 mi/h	Adj. for access points,	A (Exhibit 20-6) mi/
· · · FIVI		Free-flow speed, FFS	(FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> ) 34
dj. for no-passing zones, f <sub>np</sub> ( mi/h	) (Exhibit 20-11)		2.6
/erage travel speed, ATS ( mi/h) A			
	TS=FFS-0.00776vf		
ercent Time-Spent-Following	TS=FFS-0.00776v <sub>p</sub> -f <sub>rip</sub>		23.6
ercent Time-Spent-Following			
ercent Time-Spent-Following rade Adjustment factor, f <sub>G</sub> (Exhibit	(20-8)		1.00
ercent Time-Spent-Following rade Adjustment factor, f <sub>G</sub> (Exhibit assenger-car equivalents for trucks	t 20-8) s, E <sub>T</sub> (Exhibit 20-10)		23.6
ercent Time-Spent-Following rade Adjustment factor, f <sub>G</sub> (Exhibit assenger-car equivalents for trucks assenger-car equivalents for RVs,	i 20-8) s, E <sub>T</sub> (Exhibit 20-10) E <sub>R</sub> (Exhibit 20-10)		1.00
ercent Time-Spent-Following rade Adjustment factor, $f_G$ (Exhibit assenger-car equivalents for trucks assenger-car equivalents for RVs, pavy-vehicle adjustment factor, $f_{HV}$	1 20-8)  S, $E_T$ (Exhibit 20-10) $E_R$ (Exhibit 20-10) $f_{HV} = \frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)}$		1.00 1.1 1.0
recent Time-Spent-Following rade Adjustment factor, $f_G$ (Exhibit assenger-car equivalents for trucks assenger-car equivalents for RVs, pavy-vehicle adjustment factor, $f_{HV}$ vo-way flow rate $^1$ , $v_p$ (pc/h) $v_p$	$f_{1}(20-8)$ $f_{2}(10-8)$ $f_{3}(10-8)$ $f_{4$		1.00 1.1 1.0 0.999
ercent Time-Spent-Following rade Adjustment factor, $f_G$ (Exhibit assenger-car equivalents for trucks assenger-car equivalents for RVs, pavy-vehicle adjustment factor, $f_{HV}$	1 20-8)  5, $E_T$ (Exhibit 20-10) $E_R$ (Exhibit 20-10) $f_{HV}^{-1/}(1+P_T(E_T^{-1})+P_R(E_{R}^{-1}))$ $=V/(PHF*f_G*f_{HV})$ $=V/(pc/h)$		1.00 1.1 1.0 0.999
recent Time-Spent-Following rade Adjustment factor, $f_{\rm G}$ (Exhibit assenger-car equivalents for trucks assenger-car equivalents for RVs, eavy-vehicle adjustment factor, $f_{\rm HV}$ ro-way flow rate $^1$ , $v_{\rm p}$ (pc/h) $v_{\rm p}$ highest directional split proportions percent time-spent-following, E	1: 20-8)  5. $E_T$ (Exhibit 20-10) $E_R$ (Exhibit 20-10) $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_{R}-1))$ $=V/(PHF*f_G*f_{HV})$ $pn^2$ (pc/h)		23.6  1.00  1.1  1.0  0.999  1004  512
recent Time-Spent-Following rade Adjustment factor, f <sub>G</sub> (Exhibit assenger-car equivalents for trucks assenger-car equivalents for RVs, eavy-vehicle adjustment factor, f <sub>H</sub> , vo-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> -thighest directional splft proportions percent time-spent-following, E	Ending the state of the state o		23.6  1.00  1.1  1.0  0.999  1004  512  58.6
recent Time-Spent-Following rade Adjustment factor, f <sub>G</sub> (Exhibit assenger-car equivalents for trucks assenger-car equivalents for RVs, eavy-vehicle adjustment factor, f <sub>H</sub> , vo-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> -  * highest directional split proportions be percent time-spent-following, E  j. for directional distribution and not recent time-spent-following, PTSF(  vel of Service and Other Perform	E <sub>R</sub> (Exhibit 20-10)  E <sub>R</sub> (Exhibit 20-10)  E <sub>R</sub> (Exhibit 20-10)  / f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )  =V/ (PHF * f <sub>G</sub> * f <sub>HV</sub> )  por <sup>2</sup> (pc/h)  BPTSF(%)  BPTSF=100(1-e <sup>-0.000879v</sup> p)  po-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)  %) PTSF=BPTSF+f <sub>d/np</sub> mance Measures		23.6  1.00  1.1  1.0  0.999  1004  512  58.6  12.8  71.4
recent Time-Spent-Following rade Adjustment factor, f <sub>G</sub> (Exhibit assenger-car equivalents for trucks assenger-car equivalents for RVs, avy-vehicle adjustment factor, f <sub>H</sub> , ro-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> <sup>2</sup> * highest directional split proportion se percent time-spent-following, E j. for directional distribution and no rocent time-spent-following, PTSF( vel of Service and Other Performation of Service and Other Performation of Service, LOS (Exhibit 20-3 for	E <sub>R</sub> (Exhibit 20-10)  E <sub>R</sub> (Exhibit 20-10)  E <sub>R</sub> (Exhibit 20-10)  / f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )  =V/ (PHF * f <sub>G</sub> * f <sub>HV</sub> )  po <sup>2</sup> (pc/h)  BPTSF(%)  BPTSF=100(1-e <sup>-0.000879</sup> v <sub>p</sub> )  po-passing zone, f <sub>d/np</sub> (%)(Exh. 20-12)  %) PTSF=BPTSF+f <sub>d/np</sub> mance Measures  or Class I or 20-4 for Class II)		23.6  1.00  1.1  1.0  0.999  1004  512  58.6  12.8  71.4
recent Time-Spent-Following rade Adjustment factor, f <sub>G</sub> (Exhibit assenger-car equivalents for trucks assenger-car equivalents for RVs, navy-vehicle adjustment factor, f <sub>HV</sub> vo-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> * highest directional split proportions percent time-spent-following, E j. for directional distribution and not recent time-spent-following, PTSF("vel of Service and Other Perform vel of service, LOS (Exhibit 20-3 follower to capacity ratio v/c v/c=V <sub>p</sub>	E <sub>R</sub> (Exhibit 20-10)  E <sub>R</sub> (Exhibit 20-10)  / f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )  =V/ (PHF*f <sub>G</sub> *f <sub>HV</sub> )  on <sup>2</sup> (pc/h)  SPTSF(%) BPTSF=100(1-e <sup>-0.000879v</sup> <sub>p</sub> )  o-passing zone, f <sub>d/np</sub> (%)(Exh. 20-12)  %) PTSF=BPTSF+f <sub>d/np</sub> mance Measures  or Class I or 20-4 for Class II)  / 3,200		23.6  1.00  1.1  1.0  0.999  1004  512  58.6  12.8  71.4
recent Time-Spent-Following rade Adjustment factor, f <sub>G</sub> (Exhibit assenger-car equivalents for trucks assenger-car equivalents for RVs, avy-vehicle adjustment factor, f <sub>H</sub> , ro-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> * highest directional split proportion se percent time-spent-following, E j. for directional distribution and no recent time-spent-following, PTSF( vel of Service and Other Perform vel of service, LOS (Exhibit 20-3 following to capacity ratio v/c v/c=V <sub>p</sub> ak 15-min veh-miles of travel, VMT	E <sub>R</sub> (Exhibit 20-10)  E <sub>R</sub> (Exhibit 20-10)  E <sub>R</sub> (Exhibit 20-10)  / f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )  =V/ (PHF * f <sub>G</sub> * f <sub>HV</sub> )  por <sup>2</sup> (pc/h)  BPTSF(%)  BPTSF=100(1-e <sup>-0.000879v</sup> p)  po-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)  %) PTSF=BPTSF+f <sub>d/hp</sub> mance Measures  or Class J or 20-4 for Class Ji)  / 3,200  1 <sub>15</sub> (veh- mi) VMT <sub>15</sub> = 0.25L <sub>t</sub> (V/PHF)		23.6  1.00  1.1  1.0  0.999  1004  512  58.6  12.8  71.4
recent Time-Spent-Following rade Adjustment factor, f <sub>G</sub> (Exhibit assenger-car equivalents for trucks assenger-car equivalents for RVs, navy-vehicle adjustment factor, f <sub>HV</sub> vo-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> * highest directional split proportions percent time-spent-following, E j. for directional distribution and not recent time-spent-following, PTSF("vel of Service and Other Perform vel of service, LOS (Exhibit 20-3 follower to capacity ratio v/c v/c=V <sub>p</sub>	E <sub>R</sub> (Exhibit 20-10)  E <sub>R</sub> (Exhibit 20-10)  y f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )  =V/ (PHF * f <sub>G</sub> * f <sub>HV</sub> )  DO <sup>2</sup> (pc/h)  SPTSF(%) BPTSF=100(1-e <sup>-0.000879v</sup> p)  Do-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)  %) PTSF=BPTSF+f <sub>d/np</sub> mance Measures  or Class I or 20-4 for Class II)  y 3,200  T <sub>15</sub> (veh- mi) VMT <sub>15</sub> = 0.25L <sub>1</sub> (V/PHF)  AT <sub>60</sub> (veh- mi) VMT <sub>60</sub> =V*L <sub>t</sub>		23.6  1.00  1.1  1.0  0.999  1004  512  58.6  12.8  71.4  D  0.31

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TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET General Information Site Information FM 664 FM 664 Highway Agency or Company Date Performed HDR rom/To Tanner Farm Rd/FM 983 2/1/2012 TXDOT Jurisdiction Analysis Time Period AM Peak Period Analysis Year input Data Class I highway Class II highway Level Shoulder width Rolling Ħ Two-way hourly volume 1108 veh/h Lane width Ħ Directional split 59 / 41 Lane width ŧŧ Peak-hour factor, PHF 0.83 Shoulder width Ħ No-passing zone 87 % Trucks and Buses , PT 1 % Strong North Agron Segment length, L % Recreational vehicles, Pp 0% Access points/ mi 8 Average Travel Speed Grade adjustment factor, f<sub>G</sub> (Exhibit 20-7) 1.00 Passenger-car equivalents for trucks, E+ (Exhibit 20-9) 1.1 Passenger-car equivalents for RVs, E<sub>R</sub> (Exhibit 20-9) 1.0 Heavy-vehicle adjustment factor,  $f_{HV} = f_{HV} = 1/(1 + P_T(E_T-1) + P_R(E_R-1))$ 0.999 Two-way flow rate 1, v<sub>p</sub> (pc/h) v<sub>p</sub>=V/ (PHF \* f<sub>G</sub> \* f<sub>HV</sub>) 1336 \* highest directional split proportion2 (pc/h) 788 Free-Flow Speed from Field Measurement Estimated Free-Flow Speed 52.0 Base free-flow speed, BFFS<sub>FM</sub> ml/h Field Measured speed, S<sub>FM</sub> mi/h 0.0 Adj. for lane width and shoulder width<sup>3</sup>, f<sub>LS</sub> (Exhibit 20-5) mi/h Observed volume, V<sub>f</sub> veh/h 2.0 Adj. for access points, f (Exhibit 20-6) mi/h Free-flow speed, FFS FFS=S<sub>FM</sub>+0.00776(V/ f<sub>HV</sub>) 50.0 mi/h 50.0 Free-flow speed, FFS (FSS=BFFS-f<sub>LS</sub>-f<sub>A</sub>) Adj. for no-passing zones, f<sub>nn</sub> ( mi/h) (Exhibit 20-11) 1.7 Average travel speed, ATS ( ml/h) ATS=FFS-0.00776v<sub>p</sub>-f<sub>np</sub> 38.0 Percent Time-Spent-Following Grade Adjustment factor, f<sub>G</sub> (Exhibit 20-8) 1.00 Passenger-car equivalents for trucks, E<sub>T</sub> (Exhibit 20-10) 1.0 Passenger-car equivalents for RVs, ER (Exhibit 20-10) 1.0 Heavy-vehicle adjustment factor,  $f_{HV} = f_{HV} = 1/(1 + P_T(E_{T}-1) + P_R(E_{R}-1))$ 1.000 Two-way flow rate1, v<sub>p</sub> (pc/h) vp=V/(PHF \* fG \* fHV) 1335 , \* highest directional split proportion2 (pc/h) 788 Base percent time-spent-following, BPTSF(%) BPTSF=100(1-e-0.000879vp) 69.1 Adj. for directional distribution and no-passing zone, f<sub>d/hp</sub>(%)(Exh. 20-12) Percent time-spent-following, PTSF(%) PTSF=BPTSF+f d/np 77.5 Level of Service and Other Performance Measures Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II) Volume to capacity ratio v/c v/c=V<sub>p</sub>/ 3,200 0.42 Peak 15-min veh-miles of travel, VMT<sub>15</sub> (veh- mi) VMT<sub>15</sub>= 0.25L<sub>t</sub>(V/PHF) 587 Peak-hour vehicle-miles of travel, VMT $_{60}$  (veh-mi) VMT $_{60}$ =V\*L $_{1}$ 1950 eak 15-min total travel time, TT<sub>15</sub>(veh-h) TT<sub>15</sub>= VMT<sub>15</sub>/ATS 15.5 Notes If v<sub>0</sub> >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v<sub>p</sub>>= 1,700 pc/h, terminated anlysis-the LOS is F.

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Version 4.1f

II.C-142 2/7/2012

General Information		CHWAY SEGMENT WORKSHEET Site Information						
Analyst	TAG	Highway FM 983						
Agency or Company	HDR	From/To Bluff Springs Rd/Bl	R 45					
Date Performed	2/1/2012	Jurisdiction TxDOT	·					
Analysis Time Period Input Data	AM Peak Hour	Analysis Year 2044						
			· · · · · · · · · · · · · · · · · · ·					
1		Class I highway 🔽 Class II	highway					
	1 Shoulder width	Terrain Level Ro	illing					
-	Lane width tt		veh/h					
	Lane width tt	Directional split 59 / 4 Peak-hour factor, PHF 0.83						
	Shoulder width th	Peak-hour factor, PHF 0.83 No-passing zone 100						
		9/ Turning and Breast B. 4 St						
Segment le	ngth, L <sub>i</sub> mi							
1		% Recreational vehicles, P <sub>R</sub> 0%						
		Access points/ mi 26						
Average Travel Speed								
Grade adjustment factor, f <sub>G</sub> (Exhibit	t 20-7)	1.00						
Passenger-car equivalents for truck	s, E <sub>T</sub> (Exhibit 20-9)	1.1						
assenger-car equivalents for RVs,	E <sub>R</sub> (Exhibit 20-9)	1.0						
	$t_{HV} = 1/(1 + P_T(E_{T}-1) + P_R(E_{R}-1))$	0.999						
wo-way flow rate 1, v <sub>p</sub> (pc/h) v <sub>p</sub> =		1961						
p * highest directional split proportion		1157						
Free-Flow Speer	d from Field Measurement	Estimated Free-Flow Speed						
		Base free-flow speed, BFFS <sub>FM</sub>	45					
ield Measured speed, S <sub>FM</sub>	mi/h	<u>_</u>	mi 1.1					
		Adj. for lane width and shoulder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5)	mi/t					
bserved volume, V <sub>f</sub>	veh/h	Adj. for access points, f <sub>A</sub> (Exhibit 20-6)	6.9 mi/r					
ree-flow speed, FFS FFS=S <sub>FM</sub> +0.0	00776(V <sub>f</sub> / f <sub>HV</sub> ) 36.8 πi/h	Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> )	36 ml					
dj. for no-passing zones, f <sub>np</sub> ( mi/h)	) (Exhibit 20-11)	1.1						
verage travel speed, ATS ( mi/h) A	TS=FFS-0 00776v -f	20,4						
ercent Time-Spent-Following	TO COST TO P IND	£0.4						
rade Adjustment factor, f <sub>G</sub> (Exhibit	20-8)	1.00						
assenger-car equivalents for trucks		1,0						
assenger-car equivalents for RVs, E		1.0						
eavy-vehicle adjustment factor, f <sub>HV</sub>		1.000						
vo-way flow rate <sup>1</sup> , $v_n$ (pc/h) $v_n =$		1959						
vo-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h) v <sub>p</sub> = * highest directional split proportion	-V/ (PHF * f <sub>G</sub> * f <sub>HV</sub> )	1156	<u> </u>					
	·V/ (PHF * f <sub>G</sub> * f <sub>HV</sub> ) n <sup>2</sup> (pc/h)							
* highest directional split proportion see percent time-spent-following, Bl	V/ (PHF * † <sub>G</sub> * f <sub>HV</sub> )  n <sup>2</sup> (pc/h)  PTSF(%) BPTSF=100(1-e <sup>-0.000879v</sup> p)	1156						
* highest directional split proportion see percent time-spent-following, Bl	PTSF(%) BPTSF=100(1-e <sup>-0.000879v</sup> p) -passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)	1156 82.1						
* highest directional split proportion ase percent time-spent-following, Bit ij. for directional distribution and no preent time-spent-following, PTSF(% avel of Service and Other Perform	eV/ (PHF * f <sub>G</sub> * f <sub>HV</sub> )  n <sup>2</sup> (pc/h)  PTSF(%) BPTSF=100(1-e <sup>-0.000879v</sup> p)  p-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)  %) PTSF=BPTSF+f <sub>d/np</sub> pance Measures	1156 82.1 4.6 86.7						
* highest directional split proportion ase percent time-spent-following, Bit ij. for directional distribution and no present time-spent-following, PTSF(9 avel of Service and Other Performance of Service, LOS (Exhibit 20-3 to	eV/ (PHF * f <sub>G</sub> * f <sub>HV</sub> )  n <sup>2</sup> (pc/h)  PTSF(%) BPTSF=100(1-e <sup>-0.000879v</sup> p)  p-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)  %) PTSF=BPTSF+f <sub>d/np</sub> nance Measures  or Class I or 20-4 for Class II)	1156 82.1 4.6 86.7						
* highest directional split proportion ase percent time-spent-following, Bit for directional distribution and no orcent time-spent-following, PTSF(? evel of Service and Other Perform vei of service, LOS (Exhibit 20-3 fo	PV/ (PHF * f <sub>G</sub> * f <sub>HV</sub> )  n <sup>2</sup> (pc/h)  PTSF(%) BPTSF=100(1-e <sup>-0.000879v</sup> p)  p-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)  %) PTSF=BPTSF+f <sub>d/np</sub> mance Measures  or Class 1 or 20-4 for Class II)  // 3,200	1156 82.1 4.6 86.7 E 0.61						
* highest directional split proportion ase percent time-spent-following, Bit for directional distribution and no present time-spent-following, PTSF(% avel of Service and Other Performing of Service, LOS (Exhibit 20-3 followed to capacity ratio v/c v/c=V <sub>p</sub> /ak 15-min veh-miles of travel, VMT,	eV/ (PHF * f <sub>G</sub> * f <sub>HV</sub> )  n <sup>2</sup> (pc/h)  PTSF(%) BPTSF=100(1-e <sup>-0.000879v</sup> p)  p-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)  %) PTSF=BPTSF+f <sub>d/np</sub> nance Measures or Class I or 20-4 for Class II)  / 3,200  15 (veh- mi) VMT <sub>15</sub> = 0.25L <sub>t</sub> (V/PHF)	1156 82.1 4.6 86.7 E 0.61 490						
* highest directional split proportion use percent time-spent-following, Bit for directional distribution and no ercent time-spent-following, PTSF(? evel of Service and Other Perform vel of service, LOS (Exhibit 20-3 to lume to capacity ratio v/c v/c=V <sub>p</sub> /ak 15-min veh-miles of travel, VMT, ak-hour vehicle-miles of travel, VM	PV (PHF * f <sub>G</sub> * f <sub>HV</sub> )  n <sup>2</sup> (pc/h)  PTSF(%) BPTSF=100(1-e <sup>-0.000879v</sup> p)  p-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)  %) PTSF=BPTSF+f <sub>d/np</sub> mance Measures  or Class I or 20-4 for Class II)  / 3,200  15 (veh- mi) VMT <sub>15</sub> = 0.25L <sub>t</sub> (V/PHF)  IT <sub>60</sub> (veh- mi) VMT <sub>60</sub> =V*L <sub>t</sub>	1156 82.1 4.6 86.7 E 0.61 490						
* highest directional split proportion ase percent time-spent-following, Bit for directional distribution and no orcent time-spent-following, PTSF(? evel of Service and Other Perform vei of service, LOS (Exhibit 20-3 fo	PV (PHF * f <sub>G</sub> * f <sub>HV</sub> )  n <sup>2</sup> (pc/h)  PTSF(%) BPTSF=100(1-e <sup>-0.000879v</sup> p)  p-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)  %) PTSF=BPTSF+f <sub>d/np</sub> mance Measures  or Class I or 20-4 for Class II)  / 3,200  15 (veh- mi) VMT <sub>15</sub> = 0.25L <sub>t</sub> (V/PHF)  IT <sub>60</sub> (veh- mi) VMT <sub>60</sub> =V*L <sub>t</sub>	1156 82.1 4.6 86.7 E 0.61 490						

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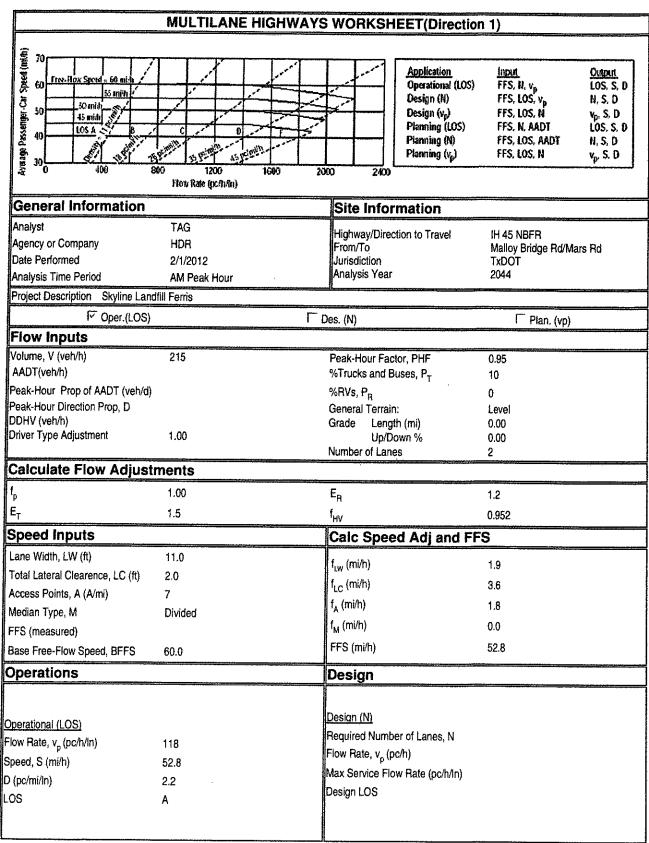
Version 4.1f

II.C-143 2/7/2012

General Informatio	n									
Analyst	21	TAG	<del></del>		Malloy Pridge Dead					
Agency or Company	<i>(</i>	HDR								
Date Performed	.t	2/1/2012		Jurisdiction	Dalias County					
Analysis Time Perio Input Data	TAG   HDR   2/1/2012   Maily Bridge Post Reform/To   Bright Spead Ref		2044							
mout soils				1	year. Year.					
L				ł	·					
		Shoulder width	n							
-		Lane width	tı							
-		Lane width	ti							
		Shoulder width	tı	トレナノ						
				Show North Arrow	% Trucks and Buses , P <sub>T</sub> 6 %					
-	Segment length,	4 mi		1	% Recreational vehicles, P <sub>R</sub> 0%					
			,		Access points/ mi 8					
verage Travel Spe	ed									
arade adjustment fac	ctor, f <sub>G</sub> (Exhibit 20-7	")			1.00					
assenger-car equiv	alents for trucks, E <sub>T</sub>	(Exhibit 20-9)	-		1.7					
·····	·									
			<sub></sub> -1) )							
			( 11)							
			***************************************	Race froe flow speed	6					
iold teansurad amag	4.6		† 11	l .	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					
ield Measured speed	J, SFM		ELINATE.	Adj. for lane width ar	nd shoulder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5) 1.					
Observed volume, V <sub>f</sub> veh/h				Adi. for access point	ts. f. (Exhibit 20-6)					
ree-flow speed, FFS	FFS=S <sub>FM</sub> +0.0077	6(V/ f <sub>HV</sub> )	56.7 mi/h	1	Se S					
dj. for no-passing zo	nes, f <sub>np</sub> ( mi/h) (Exh	ibit 20-11)			1.5					
verage travel speed,	ATS ( mi/h) ATS=F	FS-0.00776vf	·············	52.6						
ercent Time-Spent-		р пр								
					1.00					
			1) )							
			.,,							
······			0.000879v <sub>n</sub> )							
		sing zone, f <sub>d/hp</sub> (%)(Exh. 2			12.0					
rcent time-spent-foll		· · · · · · · · · · · · · · · · · · ·	- · <b>-</b> /		37.4					
vel of Service and					37.7					
vel of service, LOS (	Exhibit 20-3 for Cla	ss I or 20-4 for Class II)			A					
lume to capacity rati	o v/c = V <sub>p</sub> / 3,20	0			0.11					
ak 15-min veh-miles	of travel,VMT <sub>15</sub> (ve	eh- mi) VMT <sub>15</sub> = 0.25L <sub>t</sub> (V	/PHF)		83					
					266					
eak-hour vehicle-miles of travel, VMT <sub>60</sub> (veh- mi) VMT <sub>60</sub> =V*L <sub>t</sub> eak 15-min total travel time, TT <sub>15</sub> (veh-h) TT <sub>15</sub> = VMT <sub>15</sub> /ATS										
ak 15-min total trave	1115(Veii-n)	II <sub>15</sub> = VMI <sub>15</sub> /AIS			1.6					
ies ies	11 <sub>15</sub> (Ven-n)	II <sub>15</sub> = VMI <sub>15</sub> /AIS			1.6					

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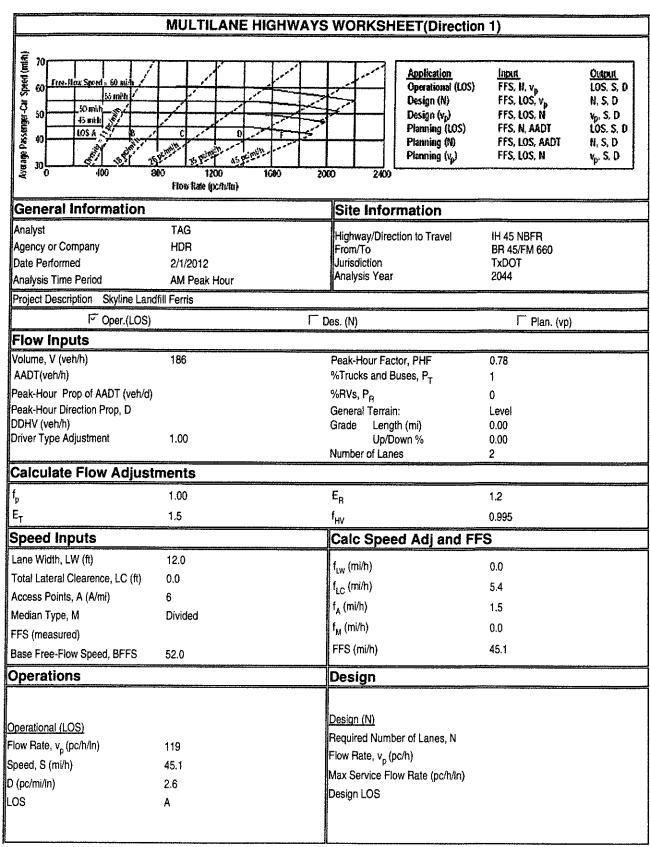


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MULTILANE HIGHWAYS WORKSHEET(Direction 1) Speed (midt Application Input Output FFS, II, v<sub>p</sub> FFS, LOS, v<sub>p</sub> Operational (LOS) LOS, S, D 55 mille Design (N) N, S, D dystage Passenger-Car ,50 mid v<sub>p</sub>, S, D Design (v<sub>o</sub>) FFS, LOS, N 45 wirk Planning (LOS) LOS, S. D FFS, N, AADT LOS A FFS, LOS, AADT Planning (N) N, S, D Planning (v<sub>a</sub>) FFS, LOS, N v<sub>D</sub>. S. D 1200 Flow Rate (pc/h/m) **General Information** Site Information Analyst TAG Highway/Direction to Travel IH 45 SBFR Agency or Company HDR From/To Mars Rd/Malloy Bridge Rd Jurisdiction Date Performed 2/1/2012 **TxDOT** Analysis Year 2044 Analysis Time Period PM Peak Hour Project Description Skyline Landfill Ferris Oper.(LOS) T Des. (N) Plan. (vp) Flow Inputs Volume, V (veh/h) 233 Peak-Hour Factor, PHF 0.92 AADT(veh/h) %Trucks and Buses, P<sub>7</sub> 11 Peak-Hour Prop of AADT (veh/d) %RVs, PR 0 Peak-Hour Direction Prop, D General Terrain: Level DDHV (veh/h) Grade Length (mi) 0.00 Driver Type Adjustment Up/Down % 1.00 0.00 Number of Lanes 2 Calculate Flow Adjustments  $\mathbf{E}_{\mathrm{R}}$ f<sub>p</sub> 1.00 1.2 ET 1.5 0.948 f<sub>HV</sub> Speed Inputs Calc Speed Adj and FFS Lane Width, LW (ft) 11.0 1.9 f<sub>LW</sub> (mi/h) Total Lateral Clearence, LC (ft) 4.0 f<sub>LC</sub> (mi/h) 1.8 Access Points, A (A/mi) 7 f<sub>A</sub> (mi/h) 1.8 Median Type, M Divided f<sub>M</sub> (mi/h) 0.0 FFS (measured) FFS (mi/h) 54.5 Base Free-Flow Speed, BFFS 60.0 Operations Design Design (N) Operational (LOS) Required Number of Lanes, N Flow Rate, v<sub>p</sub> (pc/h/ln) 133 Flow Rate, v<sub>p</sub> (pc/h) Speed, S (mi/h) 54.5 Max Service Flow Rate (pc/h/ln) D (pc/mi/ln) 2.4 Design LOS LOŞ Α

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**MULTILANE HIGHWAYS WORKSHEET(Direction 1)** Speed (mith Application Output Input FFS, H, V<sub>p</sub> FFS, LOS, V<sub>p</sub> Operational (LOS) LOS, S, D 55 mill Design (N) N, S, D Avurage Passeriger-Car 50 mid FFS, LOS, N Design (v<sub>p</sub>) v<sub>D</sub>, S, D 50 45 mids Planning (LOS) FFS, N, AADT LOS. S. D LOS A Planning (N) FFS, LOS, AADT N, S, D To be Lings Planning (v<sub>s</sub>) FFS, LOS, N ν<sub>p</sub>, Ş. D 1200 2000 2400 Flow Rate (pc/fulfu) **General Information** Site Information TAG Analyst Highway/Direction to Travel IH 45 SBFR HDR Agency or Company From/To FM 660/BR 45 Jurisdiction **TxDOT** Date Performed 2/1/2012 2044 Analysis Year Analysis Time Period PM Peak Hour Project Description Skyline Landfill Ferris T Des. (N) Plan. (vp) Flow Inputs Volume, V (veh/h) 118 Peak-Hour Factor, PHF 0.95 AADT(veh/h) %Trucks and Buses, PT 1 Peak-Hour Prop of AADT (veh/d) %RVs, PR Peak-Hour Direction Prop, D General Terrain: Level DDHV (veh/h) Grade Length (mi) 0.00 Driver Type Adjustment Up/Down % 0.00 1.00 Number of Lanes 2 Calculate Flow Adjustments fp 1.00  $E_R$ 1.2  $E_{T}$ 0.995 1.5 f<sub>HV</sub> Calc Speed Adj and FFS Speed Inputs Lane Width, LW (ft) 12.0 f<sub>LW</sub> (mi/h) Total Lateral Clearence, LC (ft) 0.0 f<sub>LC</sub> (mi/h) Access Points, A (A/mi) 13 f<sub>A</sub> (mi/h) Median Type, M f<sub>M</sub> (mi/h) FFS (measured) 45.0 FFS (mi/h) 45.0 Base Free-Flow Speed, BFFS Operations Design Design (N) Operational (LOS) Required Number of Lanes, N Flow Rate, v<sub>p</sub> (pc/h/ln) 62 Flow Rate, v<sub>p</sub> (pc/h) Speed, S (mi/h) 45.0 Max Service Flow Rate (pc/h/ln) D (pc/mi/in) 1,4 Design LOS LOS Α

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(67) (18)									%\U;;\%			
Lane Configurations Sign Control		<b>₽</b> Stop	V4.453.6		4 <b>1</b>			<b>↔</b> Slop	5 Sac 56	7	Ą.	
Volume (vph)	0	900p 7	15	36	Stop 5	0	26	ි ප්රක්ත වැත්ති	161	35	Stop 94	1
Peak Hour Factor	0.90	0,90	0.90	0.90	0.90	0.90	0.90	0:90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	8	17	40	6	0	29	0	179	39	104	1
S. Chorre Desc			, , , ,									
Volume Total (vph)	24	46	208	39	106	Languar (o. 10 mark 1980), bring	sin-46mina angang amin'n	deservativa Nada PM NASARI	ecidiesticades seletronos	MCSTREVENERORS	ran marianta calanten	SMEWNAMEN STOLL
Volume Left (vph) Volume Right (vph)	0 17	40 0	29 179	39 0	Ò							
Hadi (s)	÷0.17	0.41	-0.25	0.74	0.23							
Departure Headway (s)	4.6	5.1	4.1	5.6	5.1			erren Geste Halle				
Degree Utilization, x	0.03	0.07	0,24	0:06	0.15						*	
Capacity (veh/h)	717	648	855	627	692						8827.5246854	
Control Delay (s) Approach Delay (s)	7.7 7.7	8.5 8.5	8.4 8.4	7.7 7.7	7.7					u v		
Approach LOS	A	A	V.4	Α.			N see					688
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Delay	and specific and s		8.1		The second							
HCM Level of Service	7. 1 to 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	na kuna dikebagai ak	A	ter en e			ilia napas nassanina	ning in sign	zeen week ze st. bene	or ethical actions	100 march	W. 1988   T. 1977   T. 1977
Intersection Capacity Utilizat	ion		33.6%	ICL	J Level of	Service			Á			
Analysis Period (min)	en i un est et l'aftar	na stati natavihe	15	Sila Si Shari Selita	erovaco ela erast.	e Ordinaski Reskis	sose Meisk 2000	Neo dinilitas	strikani sekara	znasz filmásta	Kinangan Wangan	Market i
			CENTER OF THE			SECRETAL SEC			<b>多</b> 公司。1540年		SPARSAGE SE	

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$\hat{J}_{i}(X^{j},\gamma_{i},t;\mathbb{R})$	(a) (a) (b)				,,,, <b>,,</b> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				£4):360			
Lane Configurations Sign Control		<b>ी</b> Stop			A Stop			<b>↔</b> Stop		www.che.wolse	CIAA	<b>M</b> odel (1986)
Volume (vph)	128	54	0	0	68	22	11	3	38	0	Stop 0	0
Peak Hour Factor Hourly flow rate (vph)	0.95 135	0,95 57	0.95 0	0.95 0	0.95 72	0,95 23	0.95 12	.0:95 3	0.95 40	0:86 0	D.86 0	0.86 0
900(m) - 6(m)												
Volume Total (vph)	192	95	55									
Volume Left (vpf)	135	0 23	1 <u>2</u> 40									
Volume Right (vph) Hadj (s)	0 .0.31	23 0.02	-0.23									
Departure Headway (s)	4.4	4.3	4.3		SHARE SHOWN STRAINS	and American		esimplia-minist				entant service
Degree Utilization, x	0.24	0.11	0.07			usto nies 100 d.						
Capacity (veh/h) Control Delay (s)	797 8.8	827 7.8	776 76	4		Garage San				No. 45		
Approach Delay (s)	8.8	7.8	7.6						C. Very War St.			
Approach LOS	A	A	À						1	(B)		
Moscolo Barries												
Delay	4 0 0		8.3			***************************************						We were
HCM Level of Service Intersection Capacity Utilization	<b>44</b> 70600000	86972674-139	A 26.6%	୍ର ବାଦା	Level of	Canina	SASSANDO ES	sespegiásák	1000 <b>(                                 </b>		450000046	araya s
Analysis Period (min)	en a Trasfilia		15	, ie	FCACLO!	SELVICE						રુકીએ ઉત્ત
	opieda jeda		8 8 1 5	S 9.6		38×68					9.550	\$10000

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$\delta(\nu_{CO}(\mathbf{r}_{i}))$				segoir is arguno		. n 2000					
Lane Configurations	Υ		400000000000000000000000000000000000000	4	1>		ole charles de la constitución de			o esta contractorio	
Volumex(veh/h)	29	-4	3	165	110	.34					
Sign Control Grade	Stop 0%			Free I	Free 0%						
Peak Hour Factor	0.96	0.96	0.96			0.96			s i	and the second	
Hourly flow rate (vph)	30	4	- 3		115-	35					
Pedestrians		Prince Control		Y. L. S. C. S.	#**Pacific San No.		in de la company		7. Y. W. W. S.	Amenia and in	Marie Paris de la Company
Lane Width (ft) Walking Speed (ft/s)									*		
Percent Blockage											
Right turn flare (veh)	Drivin kar kalanga Jahasa s	NEE STEWNS IN COMPANION IN A	June v resident vertei	kais sa 1940 miliaki manano eta samut kitabi	Notice in the second of the second	el factories de como companyon	a 2002) in Weldman Jiman X. 1 - 1 -	ne la colonia de colonia de la colonia d	res i (Alexino Montalo di Antonio	March & Dan Mark Sep	Calman menalikul 970 (* v.)
Median type Median storage veh)				None N	lone						
Upstream signal (ft)			PAR ACTOR		3.19.72.69				was seen a		
pX, platoon unblocked	atten who make a record	e a consequentle	and the materials		and and the second agreement				e e e e e	ampropries	A STATE OF THE STA
vC. conflicting volume	310	132	150		15   Kill   45   16				n de la Port	3.24	
vC1, stage 1 conf vol vC2, stage 2 conf vol	sker der elle s	ar Zámera	ange (C.)		18 (18 TO 19	l e de la			NASA	desconder.	0.834.3455
vCu, unblocked vol	310	132	150		vara Dyssoler ji erek nejv	\$245 (655-1566) (6		a distributi Salasaria di			State Bear (Section 1) or 1
tC, single (s)	6,6	6.4	4,3	egyrigani ere viji.	i viswieve	racia, N.					
tC, 2 stage (s) tF (s)	3.7	3.5	2.4	Verlag desperato					3085508	taganas Taganas	Baracara.
p0 queue free %	95	100	100	an johren de site gvan e.	aludres un schle	g turnarang merepangang	t and college-person opin		All the government	ingge et et 19 et 19	nyal esperal mestus. E
cM capacity (veh/h)	647	874	1334	2.70 % 30%	50 90 94 94	12142-1314	nggaran sana	in they list.		经商品证	
diffulfina a sebesi)	<b></b>	1974					7.12.6				
Volume Total Volume Left	34 30	175	150								
Volume Right	30 - 4	3 0	0 35	No. of the contract of the contract		e de la companya de	San San San San San	A CANTON SAN	i ka indi		Kawa et
cSH	668	1334	1700	KU MANANAN BESTAMBAN SANSAN	igen gewenne der reserve es	own was and a	i y bodina ji dalah nija basa yidi.	er in the Art. Artistics	ene parentante.	AND CONTRACTOR	g en eig er bezene i.
Volume to Capacity	0.05	0.00	0.09		u nu H		grune di				AFFX -
Queue Length 95th (ft) Control Delay (s)	4 10.7	0 0.2	0.0	and the state of t	mroetus.	na sebah	Javanje do di	gi Mayi tari	Grev obek	garting and some	alan sarah
Lane LOS	В	Α	0.9	n i se a ni meni i a antag		Lag (1911)		Trusted of	The second of	' er et a' a	
Approach Delay (s)	10.7	0.2	0.0			#DESE		aka ya		Ki Para	rigin"
Approach LOS	В							things are all the second			
Interception standingly			4.4								
Average Delay Intersection Capacity Utilization		2	1.1 1.1%	icht.	evel of Se	rvice		A			
Analysis Period (min)			15	, CO 126		4100			•		

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3025010s				r.4.5	17	17 7			\$ 48 27 \$			
Lane Configurations		43-			4			4			4	
Sign Control		Stop			Stop		100	Stop			Stop	
Volume (vph)	38	136	15	87	72	13	19	111	155	8	93	18
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	43	153	17	98	81	15	21	125	174	9	104	20
$m{j} \in \{0,1\}_{0}^{n}$				10								
Volume Total (vph)	212	193	320	134								
Volume Left (voh)	43	98	21	9				1				e de la companya de La companya de la co
Volume Right (vph)	17	15	174	20								
Hadj.(s)	0:01	0.07	-0,30	-0,06		Section 1	a sandro	2018680				Part of the second
Departure Headway (s)	5.4	5.5	5.0	5.5	depleto de la companio	aux uno additional decidion (s	MALK AND SHIP AND SHIP AND	· • coars about Mindle	aughten hannan sauce a	LAS ARRAGES OR VICTOR	or Sees Commission in Australia	olina overlene hittissa
Degree Utilization, x	0.32	0.30	0,44	0.20								
Capacity (veh/h)	604	593	671	585	KARA KARA KARA	avies, vėstorinas,	Assaultion of the	ranning and	taka ma	and the second	an in the second second	
Control Delay (s)	11.0	10.9	11.9	9.9	a service		2	ALCOHOLD SAN				4.752.45
Approach Delay (s) Approach LOS	11.0 B	10.9 B	11.9 B	9.9			La	iv i 60 m Lavige v				22 (1 de la composición dela composición de la composición dela composición de la composición de la composición dela composición de la composición dela composición de la composición de la composición dela composición de la composición dela composición de
Whitegereres	- D	Đ	(P)	. A		36.36				Net value		ANG C
acuson aliney												
Delay	60 p. ft. 130 000		11,1									
HCM Level of Service	an one of the terms.		B	Leading to the section of	ti Contra de de calenda de la calenda de	e character and the	or own in or		. es essert a restrict en	and the same of		
Intersection Capacity Utilizat	ion		48.1%	ICI	J Level of	Service			Α			
Analysis Period (min)	an a mar Makada ka b	ostione in the c	15	une e fa weifa Viso	wichward brender.	one ne balantine co	Neddolasenia vari s	wurus of puestich (F	in attantikanon :	amentasiai et	ann marthaireann	Subasini.
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2000 (CH 18)		1.7	1:		n e							
Lane Configurations		4			4			4			4	
Sign Control		Stop	200	i in the st	Stop		5 B	Stop		1000000	Stop	
Volume (vph)	199	23	151	2	39	5	212	64	1	1	54	112
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	226	26	172	2	44	6	241	73	t	1	61	127
36 37 T.D. 33 T. "		il, i	5 ; [									
Volume Total (vph)	424	52	315	190								
Volume Left (vph)	226	2	241	1			THE 1889 IN		10 10 15 15 10 10 10 10 10 10 10 10 10 10 10 10 10 1	Apr 100 160		
Volume Right (vph)	172	6	1	127								
Hadj (s)	-0.12	-0.04	0.17	-0:38	F (3.5)	and my Name	(5) (3) us 2 (4)	1000	e page de la	A CARLO	\$41.50 ct.	30 (dt - 15
Departure Headway (s)	5.3	6.1	5.7	5.4								
Degree Utilization, x	0.63	0.09	0.50	0.29							Hade of the second	
Capacity (veh/h)	645	490	585	595								
Control Delay (s)	16.8	9.7	14,4	10.6	1.94 51 75 5					10 g 76 G	12 (2) (5) (5) (6)	
Approach Delay (s)	16.8	9.7	14.4	10.6					and the contract of	. New York		
Approach LOS	<b></b>	- A	В	<b>B</b> :			<b>纳尔特</b> 第		5 16 W	1000	(60), 35-46.	
i (Granigo Campra),												
Delay	Program Trade		14,4	San Care Co	1.1						18 on 181	March (Springer)
HCM Level of Service	g und her die riefen gir feblig.	res grant, est tarre	В	rain est ament about	etrin oliksennis sondi	etan e e forese	estad in respective press	en kaligna um de desenții	e francisco de destres		a sistem part and	2480300
Intersection Capacity Utiliza	ation		63.1%	ICI	U Level of	Service			В	in the	ay tak	e de
Analysis Period (min)			15			- A.S					•	
		Pirit e dis				vejeje		##E#			JAKIN 1981	

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Lane Configurations	Â	**************************************	7	A Charles Company of Company	<b>Y</b>		uniter kalan mereka kenalari	and the second states of	talità l'Alexano a relava a relava a	NESSA PROPERTY AND	
Volume (veh/h) Sign Control	440 Free	30	169	311 Free	16 Stop	250		Toky stra			
Grade	- 0%			0%	0%						
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83		mark of the state		enera arregane puntante. Sistematria principa arre	manda sida a kuma na 1975 ili 19
Hourly flow rate (vph) Pedestrians	530	36	204	375	19	.301					
Lane Width (ft)											
Walking Speed (fl/s)	Savienius Vene		X-section and an					Barrelle Laberta			egan mener, e ya ros
Percent Blockage Right turn flare (veh)		5045									
Median type	None		(2) (M) (2)	None				ar english			
Median storage veh)			udeoo o		Carlos de Carlos				ili diska konstrukt	eside descendina	ew Cae Versiva bu
Upstream signal (ft) pX, platoon unblocked											
vC, conflicting volume			- 566		1330	548				Sep.	
vC1, stage 1 conf vol vC2, stage 2 conf vol	8000 ve away	1287 #13 852 FARIS		le cale villa Mees	SCHOLASSANE		554538W4448865		S NO VALLECAN (III	Same Salah Salah	en Karanana e
vCu, unblocked vol			566		1330	548					
tG; single (s)	y A Cus		4.1	3 8 8 6	6.4	6.2	M. Confidence	6 B 12 W			\$ 3.12 C
tC, 2 stage (s) <b>IF</b> (s)	Sauseriero (46	vest foar 161	2.2	e sabo esa kidab	3.5	3.3	Magna spisanica n	garegi silik gartarrik	an kapan an an a	artes Vintelas	ediover co.
p0 queue free %			2.2 80	94 (PS) (969 (PS)	- 5.5 86	5.9 44		(21) E WHEN 41 /			
cM capacity (veh/h)	Vision Andr	\$10,000 (CL 19)	1011	a in possible	137	538	\$5450, rg = 12.				
orcaron Labey/			VVI ; /								
Volume Total	566	204	375	320	triangle and the second			Angelog and the	ar out respective	and a parent	the desired
Volume Left Volume Right	0 36	204 0	0 0	19 301 =	val vereziónsk	er sekera disebak				i ek deltekk	Sastation
cSH	1700	1011	1700	457				eralik basara ke		#1586#844.8 BA	
Volume to Capacity	0.33	0.20	0.22	0.70					対決を検	APP ()	4096
Queue Length 95th (ft) Control Delay (s)	0.0	19 9.5	0 0.0	134 29.3	u urijar	Grand og Kravana	igithightyg skall	Artiglijk	product (I.,	euro (el	ga jad at sa
Lane LOS		Α	•,•	D	** * * * *				i e e di		er e
Approach Delay (s) Approach LOS	0.0	3.3		29.3		ilenelye jir.	Act and			Gradien.	
				D							
nteracetton contracy Average Delay			7.7								
Intersection Capacity Utilization	1	6	0.7%	ICU	Level of	Service		E			
Analysis Period (min)			15								•

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SECONO.						9.37	800 G		\$ 10 m			
Lane Configurations Sign Control		45 Stop	200		4) Stop	A.		<b>.⇔</b> Stop			<b>⊕</b> Stop	
Volume (vph)	3	38	22	42	26	84	15	94	39	102	111	6
Peak Hour Factor	0,91	0.91 42	0.91 24	0.91 46	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	3		24 <b>*******</b> *****************************		29	92	16	103	43	112	122	<i>(</i>
Volume Total (vph)	69	167	163	241								
Volume Left (vph)	3	46	16	112						100		
Volume Right (vph) Hadj (s)	24 -0.18	92 -0.26	43 -0.12	7 0.09								
Departure Headway (s)	4.9	4.7	4.7	4.8								
Degree Utilization, x	0.09	0.22	0.21	0,32	erines (Spare)							
Capacity (veh/h) Control Delay (s)	653 8.5	698 9.0	722 8\9	711 10.0				15. 15. 17	ar Alberto			
Approach Delay (s)	8.5	9.0	8.9	10.0			na of the contains a second					
Approach LOS	A	Α	Α	В	as to the			98.03	d. P. S.	3.3	es sy de h	
njer e geneuenbary Delay	grand to the grand		9:3	where the same	g waster	nace measures and		-	er torner	100 M		graduu seela kiid seel
HCM Level of Service		A (20)   (40)	A							1000		
Intersection Capacity Utilization			45.5%	IÇL	J Level of	Service			A			
Analysis Period (min)	Period A		15	violes de la company	en e		7. 8 BUS <sup>2</sup> 0		19 18 19 19.			

Skyline Landfill Traffic Study 11/8/2011 2011 AM Existing BG

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0	Assetto - 106-this dodnet and of the con-	43	4		0	n O	PACONIA PARAMETER	n	50	Contraction of Contract Contract of Contract of	52
0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91 .	0.91	0.91	0.91
0	319	47	4	154	0	0	0	0	55	119	57
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366	158	114	116	e semile de la completa del completa del completa de la completa del la completa de la completa del la completa de la completa	a della cassina della cassi	ref-alteriorisms contribution	orahooni.com/dDishet/i	Mileto Marca de descaración	sia (Centiculos cultivirenceses	votensky-enledet Scottensoner	Policy Cup (1979)
	erce-margin stades Bander	na raturiza na sakun <b>ikas A</b> utinita kan	V. L.C. 1982, N. 1209, M.S.C.								
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4.7	5.0	6.0	5.4			e. 20. de la companie			er-inisia no company		esometrico.
<ul> <li>State State State State State State State</li> </ul>	200 C 201 C 20 C 20 C 20 C 20 C 20 C 20	THE PROPERTY OF THE PARTY OF TH		ago ella secol		10 No. 10 No			A. Caller		
11.9	9.4	8.8	4.0				Halis All Halis		1 100 100		
В	Ä	Ą	35.3								
		10,4							and the same of		energy steri
Bassar stadistica	1964 - Alexandr 1968	В	ose de cere <b>ntali</b>	en Sanosensale (Sanovena	e was not strange	okin et Jan Kore.	versi detektore w	Deleteration and	er och der bel die i	tautust lauta luur	an and
n vone jak		Carlo Charles Company	ICI	J Level of	Service			A			\$165-11.
		10	a) algebra	State 100 C	i jedani		(VGASA.18)	4.8130		gi jedys	gingaria
	0 0.91 0 366 0 47 -0.06 4.7 0.48 738 11.9	\$\frac{\mathbf{p}}{\mathbf{Stop}}\$ 0 290 0.91 0.91 0 319  \$\frac{\mathbf{stop}}{\mathbf{stop}}\$ 366 158 0 44 47 0 -0.06 0.02 4.7 5.0 0.48 0.22 738 677 11.9 9.4 11.9 9.4 B A	Stop 0 290 43 0 91 0 91 0 91 0 319 47  366 158 114 0 4 55 47 0 0 0 0,06 0,02 0,26 4.7 5.0 6.0 0,48 0,22 0,19 738 677 560 11.9 9.4 9.2 11.9 9.4 8.8 B A A	\$\frac{\frac	Stop Stop Stop 0 290 43 4 140 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.9	Stop Stop Stop Stop 0 290 43 4 140 0 0 0.91 0.91 0.91 0.91 0.91 0.91 0.91	Stop   Stop   Stop	Stop   Stop   Stop   Stop	Step   Step   Step   Step   Step	Step   Step   Step   Step	Stop   Stop   Stop   Stop   Stop

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\$60,000 page 100 pag			, s	( ) ( ) ( )	1.0							
Lane Configurations		4			Þ			44				
Sign Control	. No section	Stop		-	Stop			Step			Stop	
Volume (vph)	289	51	0	0	52	37	92	194	3	0	0	(
Peak Hour Factor	0.88	0,88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	328	58	0	0	59	42	105	220	3	0	0	(
if (777) ji												
Volume Total (vph)	386	101	215	114								
Volume Left (vpn)	328	0	105	0								
Volume Right (vph)	0	42	0	3								
Hadi (s)	0.19	-0,23	0.26	0.00	de Zoda	Bare a	es a company		Aug Terr		17-28-4	100
Departure Headway (s)	5.1	5.1	6.0	5.8								
Degree Utilization, x	0.55	0.14	0.36	0.18			A STANCE	er en			ANC CONTRACTOR	
Capacity (veh/h)	676	650	568	590								
Control Delay (s)	14.2	9.0	11/2	8.8		6 (8) Bu 8	Marie Control		wasan eta	g and a	560 (Apr. 17	eng Tolens
Approach Delay (s)	14.2	9.0	10.4		and the second was a find				Contact to make			
Approach LOS	В	Α	- B		100					g (gayanda)		

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Delay HCM Level of Service

Analysis Period (min)

Intersection Capacity Utilization

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											737-33	
Lane Configurations		þ	10 to 10	SMINORES SE	4	**************************************	konetan establishe		in in the same and	s is to the above the late	44	steet data on Parish
Sign Control Volume (vph)	0	Stop 241	23	27	Stop 234	n	0	Stop O	0	107	Stop 27	36
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	0	326	31	· 36	316	0	0	0	0	145	36	49
encontrol (archi												
Volume Total (vph)	357	353	163	67		Than success of this co	tas vilk va erety dollánoks Ala		William Control of the Control of th	miser-Successure and stable	ST-Santian Valences (or in villa Avia	midzkania Okolačko
Volume Left (vph) Volume Right (vph)	0 31	36 0	145 0	0 49								
Hadi (s)	÷0:04	0.04	0.46	-0.49	¥.							
Departure Headway (s)	5.1	5.2	6.7	5.8		a concession for the feet of	Phon Maril Asternational	and the state of t	chico observada in Mag	Petrophological College	1.00.00 (0.00	Metrodologicals (
Degree Utilization, x	0.51 678	0.51 672	0.31	0.11								
Capacity (veh/h) Control Delay (s)	13.2	13.3	488 11.5	572 8.3								
Approach Delay (s)	13.2	13.3	10.6				er con deservices	Art and Shares	Activities and an experience			<b>Red Marie</b> Contract.
Approach LOS	В	₽	В									
Morathia Strengy										H9/64		
Delay			12.6									
HCM Level of Service Intersection Capacity Utilization	ne de la composición	Digita je svija	В 43.8%	ici	J Level of	Service			A		0000000000	<b>通過30%</b>
Analysis Period (min)	· Page at a service	er i gerir	15		, ector of	OU NOG	Between tween		e de <b>rr</b> ejo	10.24 (10.14 th	ar welfitte i	Anna Kiikaa
	30512101		<b>的数据</b> (8)	0.00 W		\$15. <b>90</b> /40	A GUERN					\$4.00 <sup>4</sup> (7.1)

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SECURIA				, et s	600000	9.5.9	W	Ø9:38				
Lane Configurations Sign Control		<b>₄</b> Stop⊸			<b>₽</b> Stop		ሻ	Stop			Stop	1
Volume (vph)	39	309	0	0	211	197	50	37	47	0	9iob 0	0
Peak Hour Factor	0.78	0.78	0:78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	50	396	0	0	271	253	64	47	60	0	0	0
Volume Total (vph)	446	523	64	108								
Volume Left (Vph)	50	.0	64	100								
Volume Right (vph)	0	253	0	60	Section and a conference					andre en		
Hadj (s) Departure Headway (s)	0.04 5.2	-0.27 4.8	0.52 7.3	-0.37 6.4	D. P. E. B							
Degree Utilization, x	0.64	0.70	0.18	0.19			e A	n Barrier (1980)		all with the	kelo hili o kalenda.	gradi ita
Capacity (veh/h) Control Delay (s)	673 17.0	733 18.2	437 10:2	503 9.7				og te te	\$			
Approach Delay (s)	17.0	ાળ:≃ 18.2	9.9	9,1		14 S C C C C C C C C C C C C C C C C C C		illi ke ili		\$4 B. Ma		
Approach LOS	C	Ċ	A								ya sa sa ya	ar sta
proposition Corollary												
Delay HCM Level of Service			16.5									An establish
Intersection Capacity Utilizatio	n de la comp		56.4%	ICL	J Level of	Service			B			
Analysis Period (min)			15		in gang an ing s ing sample and sample				· · · · · · · · · · · · · · · · · · ·			
	grun farris		GARANTA									79 P. H

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Lane Configurations	vija com voja na mora ve ve v	<b>\$</b>	awaya Marke ala	- North and an American American	ব			4		75	4	
Sign Control		Stop		9	Stop			Stop			Stop	
Volume (vph) Peak Hour Factor	0 0.92	7 0.92	14 0.92	24 0.92	3 0.92	0 0.92	14	0	84	42	123	1
Hourly flow rate (vph)	0.92	v 92 8	U.92 15	0.92 26	0,92 3	0.9≱ 0	0.92 15	0.92 0	0.92 91	0.92 46	0.92 134	0.92
					J	·	10	v	. ગા	40	134	
Volume Total (vph)	23	29	407	4.0	405							
Volume Left (vph)	23	29 26	107 15	46 46	135 0	***		·	· ·	Marian State		
Volume Right (vph)	15	0	91		1	*						
Hadi (s)	-0.21	0.36	-0.30	0.69	0.18							
Departure Headway (s)	4.4	4.9	4.0	5.4	4.9	ou. 1. čenestr. svijektopu čovov	o de singuistrate de se i répois l'es-	A4.00000H: Discussion const.	enterprises titles and and analy	To of City, Line Will Market States	State of Patrick and in Con-	\$10 And Bully 1, 2013
Degree Utilization, x	0.03	0.04	0.12	0.07	0.18				1	100		
Capacity (veh/h)	760	679	869	650	721	en er en eren er	entanasion on is	energy springshore	0.000.000000000000000000000000000000000	Empleo Adria de Rica		ese silestinonia
Control Delay (s) Approach Delay (s)	7.5 7.5	8, <u>2</u> 8.2	7.6 7.6	7.6 7.7	7,8							
Approach LOS	γ.5	0.Z	7.0 Δ	ι.ι Δ								
The state of the s	ALVENIEN SE											
Intercepton Sumpary		Company of the	e e e	Science appropries			nan na sina a	The morning agents				201022-01012
Delay HCM Level of Service			7.7									
Intersection Capacity Utilization	office Car		30.6%	ំពាំ	J Level of	Senice	270 STARTER		A	Valendarinin	250×28×35913	92865
Analysis Period (min)	Tombur (12) billion und e	4.4 414.43	15		4. <b>FAININ</b>	20,3100		Alan I Alingth		Crawnell (c)	reja ajjiphe	Para project
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Allowed				\$2.00 g);	83.5	3.3%	(8.15.27.6)	E. 13.769	%3.40%			
Lane Configurations Sign Control		<b>्र</b> Stop			<b>1&gt;</b> Stop			4 Stop			ČÍÁA.	Constitution and
Volume (vph)	58	55	0	0	75	33	6	1	28	0	Stop 0	0
Peak Hour Factor	0.80	0.80	0,80	0.80	0.80	0,80	0.80	0.80	0.80	0.80	0.80	0,80
Hourly flow rate (vph)	72	69	0	0	94	41	8	1	35	0	0	0
Volume Total (vph) Volume Left (vph)	141 73	135 0	44 6*				100 to			An at the	`	\$V. 500.55
Volume Right (vph)	0	41	35		V						18	
Hadji(s)	0.20	-0.08	-0.34			100						
Departure Headway (s) Degree Utilization, x	4.3 0.17	4.1 0.15	4.2 0.05					in a Veni	nii voi voi voi	nasione nasa		SANSTANIA (
Capacity (veh/h)	815	ола 869	806									
Control Delay (s)	8.2	7.8	7.4	S Grigo		100		S. F. S.			5.100 S46	
Approach Delay (s)	8.2	7.8	7.4	Desire de Combres de la	ASSESSED ASSESSED		ka naga sa	Marie contra Property	ista filozofik distributa di sa	Nicologie cologydd Ale	o tentar nerodi sisatti	reduced was
Approach LOS	A	A	А									
incorrespondency	NOT THE RESERVE		or Charles	and the second		e su mager agus			MAY COLUMN TO SERVER	MARKET STANSON		
Delay HCM Level of Service			7,9 A					, and the second			6 53 5	
Intersection Capacity Utilizati	on	2000	22.8%	ict	Level of	Service			A		21451	MANT.
Analysis Period (min)	andro escuela de la consta	en jaransan tah	15	ra fa e state e je kua.		August State Francis		and section and		1 2 4 4 5 7 5 7 5 7		
表 <b>的</b> 解例以下,不是	<b>经等的的</b>	11.513.49		48.00%		No Silver		egalaggari.	EL SEA SEA		37/10/X-31/49	W/\$\\ 6.

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(Acceptance	9,000	(100 to 100 to				
Lane Configurations Volume (veh/h)	<b>\\'</b> 24 7	6	4 <b>1</b> > 70 184	15	and the second	
Sign Control	Stop	F	ree Free	- IA		
Grade Peak Hour Factor	0% 0.88 0.88		0% 0% ).88 0.88	0.88		
Hourly flow rate (vph)	27 8	7	80 209	v.oo 17		
Pedestrians Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage Right turn flare (veh)						
Median type	10 (40 m) 10	No.	one None			
Median storage veh) Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume vC1, stage 1 conf vol	311 218	226				
vC2, stage 2 conf vol- vCu, unblocked vol	311 218	226				
tCa, undiocked voi tCasingle (s)	511 218 6,5 6,3	4.2	Ve. (1) (2)			
tC, 2 stage (s) tF (s)	3.6 3.4	2.3	e desensa de serále a exc	Marija e di diperinta dan pegis		odražnajem majkor priršilo i zakražnim, o roj
p0 queue free %	96 99	99				
cM capacity (veh/h)	658 798	1285			an shirth diang. I have	
Volume Total	35 86	31. j 226 .		. The second of the special second	A THE WAY TO SHE WAY THE WAY THE WAY	all and somework the some determines.
Volume Left	27 7	0				
Völüme Right cSH	8 0 685 1285	17 1700	Andrew States			
Volume to Capacity	0.05 0.01	0,13	je dakto			grighted appropriate.
Queue Length 95th (ft) Control Delay (s)	4 0 10.5 0.7	0.0				
Lane LOS	В А			on de la companya de	o trigino de la composition de la comp La composition de la	
Approach Delay (s) Approach LOS	10.5 0.7 B	0.0	in a gray garaktaria anggar Liberaria			
nterkooloon Sonin 20						
Average Delay Intersection Capacity Utilization	in .	1.2 20.6%	ICU Level of	Canilaa	Α	
Analysis Period (min)	л	15	ICO Lever O	-OEI VICE	M····	

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9939000	7 - 1			(1) <b>.</b> (1)	编制/设置							
Lane Configurations	Balanas a anataman da is	4	Servicio d'Anglia de la compansión de la c	Vasovello och esse om	4	or the control of the control of	· are a construction from	4	and of months we.	nik Carolinata a asasan dibe	4	e distribilità de cont.
Sign Control	(4) (6) (5) (6) (6) (6) (6) (6) (6) (6) (6) (6) (6	Stop		470	Stop			Stop	00		Stop	00
Volume (vph) Peak Hour Factor	9 0.93	39 - 0.93	9 0.93	170 0,93	71 0.93	5 0.93	14 0.93	72 0.93	80 0:93	9 -0:93	140 0.93	22 0.93
Hourly flow rate (vph)	10	42	10	183	76	5	15	7 <b>7</b>	86	10	151	24
areas a succession of the succ												
Volume Total (vph)	61	265	178	184	- ADADAS AND TOWN SHOW THE AND THE	E de en Novambrio Standard de la Mille de Sir V	. Tania Kawasan da sa Santanan	n alaman sessessi (in alaman se	andrian To Start Communication	on an analysis of the state of	Origina e e e e e e e e e e e e e e e e e e e	Polisi den voltidas
Volume Left (voh)	10	183	15	10						e e Maria		
Volume Right (vph)	10	5	86	24		Santa de la Maria			(Sidving objects		150400000000000000000000000000000000000	BOSTVL:
Hadj (s)	-0.05 5.2	0.14 5.0	-0.26 4.8	-0.05 4.9		A Carry		3070 (Ng. )	4			
Departure Headway (s) Degree Utilization, x	0.09	0.37	4.6 0.24	4.9 0.25	Way shall the Co		757 L20 FC Cod			nan ka	24.9.45	\$ 18 (12 C)
Capacity (veh/h)	624	671	700	673								
Control Delay (s)	8.6	11.0	9.2	9.6		at a los A	<b>1</b> .3 (5) (6) (6	a territor als	Selfator S	4 (§5 (A)***	(Section 4)	a vivina
Approach Delay (s)	8.6	11.0	9.2	9.6	aucelus residenti de		a te de autorité de servicion	e Magina Sanaka sana si ba	uraum Trade Sério Ami	ekan berkabahan merena	a an in Address and Address and	, or 7.5-1, 1
Approach LOS	A	B	Α	À		14,397	\$ 15 S		9. 15 m			
D'G\$4409,22006635												
Delay		10 m 20 m	9.9	a Milaka	Mar Provide							
HCM Level of Service	reservation to the first		<b>A</b>	us in the residence	n programme de la composición de la co	at water dental not on.	and a second part of the	e conservations	erse es al <b>a</b> ctione	and the same	A reserve to a second	esta si
Intersection Capacity Utilizati	on		40.5%	IC	U Level of	Service			A			
Analysis Period (min)	gari, Agas		15	94.9846.SE		renigias.	vii (Melikelik		GWGGW.		345 <b>3</b> 35	kylasti.

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Lane Configurations	- C> 46/3-1008/2004/2006	4	s en en artes a	Sec. 15 (10 10 10 10 10 10 10 10 10 10 10 10 10 1	4			4		Saksar Sarra a Main	4	
Sign Control Volume (vph)	107	Stop 15	148	1	Stop 10	3	131	Stop 53	1	4	Stop 58	246
Peak Hour Factor	0.94	0,94	0.94	0.94	0.94	0,94	0.94	0,94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	114	16	157	1	11	3	139	56	1	4	62	262
		1/1										
Volume Total (vph)	287	15	197	328		rivica caravira		omesse en	Materia Maria de Materia	LAZSA DARSON APTO		MANAGA TA
Volume Left (vph) Volume Right (vph)	114 157	1 3	139	- 4 262	e de la companya de							
Hadi (s)	-0.23	-0.10	0.16	-0.46		44.00	Canada and American		NA VALUE AND			
Departure Headway (s)	5.0	5.6	5.3	4.5				o talen en		is with a state of the		
Degree Utilization, x	0.40	0.02	0.29	0,41	(10 A) (10 A)		100001	(4.5) N. 1.5. (1.5			And Mary Res. 16	MA AND A
Capacity (veh/h)	673	548	638	750								
Control Delay (s)	11.2	8.7	10.4	10,7	Angella,					Tanas (1997) Tanas (1997)	SO Photo	Artist Service
Approach Delay (s) Approach LOS	11.2 B	8.7 A	10.4 B	10.7 B	nigarijasini.		NGS ASSTRACTOR	sakaista lasi	nga kasasan asa 4	8168-83146		19/68/55
	, P. (P.)	6 5 <b>5</b> 6	. €D	P						5 42 (3.9)	16 35 35	
participation and pro-					1.7	and the second	alian kalin na kanadi		10000000	Catagoria at Su	. Consequence	Secretary and a
Delay HCM Level of Service		1. P. J.	10,8 B	g on reising	20 m 10	1,46 ((4,42)	1000000		5.75			Ch Or
Intersection Capacity Utilization	nn	se al face yet	61.0%	ୀ ାଧ	J Level of	Sanica	eg skrije (gred	-008745	В	nystranys.		da ve
Analysis Period (min)	017		15	10	J-ECVURION	,U,UI ¥IU,G	a a tittlyra ita		ب		er 111 zet uit.	7 T.
	មានសម្រេច	or Prince			<u>Banteri</u>				(Califolia)			일(\$JE)

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can a succession of the Configurations Volume (veh/h)	<b>1</b> 239	4 113	4 ¥ 343 6	
Sign Control Grade Peak Hour Factor Hourly flow rate (vph)	Free 0% 0.97 246	0.97 0.97 4 116	Free Stop 0% 0% 0.97 0.97 354 6	0.97
Pedestrians Lane Width (ff) Walking Speed (ft/s)	240	4 (110	334 6	71
Percent Blockage Right turn flare (veh) Median type	None		None	
Median storage veh) Upstream signal (ft) pX, platoon unblocked vC, conflicting volume		251	835	248
vC1, stage 1 conf vol vC2; stage 2 conf vol vCu, unblocked vol		251	835	248
tG, single (s) tC, 2 stage (s) tF (s) p0 queue free %		4,1 2,2 91	6.4 3.5 98	6/2 3/3 91
cM capacity (veh/h)	143.1 W	1321	309	793
Volume Total Volume Left Volume Right cSH	0 1 4 1700 13	16 354 16 0 0 0 21 1700	77 6 71 705	
Volume to Capacity Queue Length 95th (ft) Control Delay (s) Lane LOS	0	09 0.21 7 0 3.0 0.0 A	0.11 9 10.7 B	udi juri dangan <sub>sep</sub> arang mengantah ang diberah sebagai sebagai sebagai sebagai sebagai sebagai sebagai sebagai Sebagai sebagai sebaga
Approach Delay (s) Approach LOS	0.0	2.0	10.7 B	en elleretytyjnen en kommen en en en en en en et en et en en et en
Average Delay Intersection Capacity Utiliz Analysis Period (min)	ation	2.2 33.7% 15	ICU Level o	of Service A

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569 <b>1</b> 4 (2001)				841:3 B		1	849 · 60		93049			700 S VA
Lane Configurations	zajeczna od poda poda	4			4	ereka ereka		4		Marine San	4	
Sign Control Volume (vph)	10	Stop 104	64	64	Stop 21	130	11	Step 146	50	97	Stop 131	7
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	13	137	84	84	28	171	14	192	66	128	172	9
A GREET WAS	<b>3</b>											
Volume Total (vph)	234	283	272	309			vacari ef attimosi de		er dy although		March was a state of the con-	erse men ember :
Volume Left (vph)	13 84	84 171	14 66	128								
Volume Right (vph) Hadi (s)	-0.19	-0.29	-0.12	9 0.08	•				•			
Departure Headway (s)	6.1	5.9	6.1	6.2		Caraca Carac		and the same	4.0	Action of the second	USE THE PART OF	
Degree Utilization, x	0.40	0.47	0.46	0,53	1000	endige Metal Supe	ar de la Santa	10.00	13,000			
Capacity (veh/h)	514	548	538	532	National Consideration (Co.)	Parlant and reversion of		otoca Bardenakar Sila	se se nosa nosa cua	n dage to the country	eronomo en	oonggovers.
Control Delay (s) Approach Delay (s)	13.2 13.2	14.0 14.0	14.1 14.1	15.9 15.9		45 (55)			ve seves is			
Approach LOS	13.2 B	14.0 B	14.1 B	10.9	1 6						i est	
lace a constant and the constant	and the state of the state of		(F) ASS. (C)						engliken (Cirken) et i		Section (September 1999)	
Delay:	in a second		14.4	er er er er			W					
HCM Level of Service		A BORREST CONTRACT	В В		ng a garage	AND CONTRACTOR			rank rank and and	entropy (Section)		
Intersection Capacity Utilizati	on		59.9%	(Cl	J Level of	Service		yween.	В			Syrie.
Analysis Period (min)			15	es de l'égat des van tens	and the control of the control	gara arati kar		and a second free	and the second	Carrier and Carrier	an ar well before a	Total et ale
· 特別的語句。	15/14/4/4	STATE OF STA		Selection of the select	Torrest (18)	MONTENAN						

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er Konton				(a) (1)								
Lane Configurations	Parket See all See Commission	<b>5</b>	SSE CONTRACTOR	Marinda (2000)	4	EMBERTALIS N.A. E. MILIME	omodene o objektor o	narytt-laterateraetaea.	cross Let 60 to 20 decembers as an	J. William Sanda Care	44	nemo o el Podello I.a.
Sign Control Volume (vph)	0	Stop 78	45	46	Stop		Anna da Ata	Stop	۸	40	Stop	400
Peak Hour Factor	0.89	0.89	0.89	15 0.89	53 0.89	0 0.89	0 0.89	0 0,89	0.89	40 0.89	263 0.89	180 0.89
Hourly flow rate (vph)	0,00	88	51	17	60	0.63	U;03 0	0.03	v.o3 0	45	296	202
9000000		(4.0 <u>1</u> 7.77)	7,17,1									
Volume Total (vph)	138	76	193	350			and the second second second		270-21-3-14-22-4-3			
Zolüme Left (vph)	0	17	45	Ō		Ī						
/olume Right (vph)	51	0	0	202							printed appropriate of the seaf or	5211 881191-5
ładj (s)	-0.20	0.06	0.13	-0.39		Kara a	3.00 64.4		10 (4)			
Departure Headway (s)	5.0	5.3	5.2	4.7	no nii Matataan 1 an amat 1 an	na Prija na na na na panja na disebuah sara na	A magneti programit agra, agra-					
Degree Utilization, x	0.19	0.11	0.28	0.45								
Capacity (veh/h)	675	626	675	751	ALPEN STATEMENT	s = X 1965 - 1965 - 200 - 200	OPPOSITE OF BEEN A	in vegesseld omet h	nakijo po klamacijo ob		paritima consensa de évolve	strokkeinnie
Control Delay (s) Approach Delay (s)	9.1 9.1	9.0 9.0	90	10.3			\$1,754,900		20 PM			
opproach LOS	9.1 A	9.0 <b>A</b>	9.9		ation of the second	ang const	2002-004-009-00	a neleooranses	ije ka zvatega e	te generalista	V5601/1361/1393.)).	SPECIAL SECURIST.
as all a field different leadings of the control of	, n	- a	, Al							S No. & W.		
ifor ecological and maly												
)elay			9.6				entra tradition to the		100		*	
ICM Level of Service	≨Alkar olo e a troete	er et ragereau	Α	an anno anno acuses	at a store rate a court	70						
ntersection Capacity Utilizat	ion		34.7%	ICU	J Level of	Service			Α		<b>以代表的证</b>	
nalysis Period (min)	en de la companya de	n in elektriste	15	otevi saldiškae	attennesist maks	Fefallieussianu 190	C. Kå stående ut til da da	ere Châwar a Africa e	n ether Northea	odu kokoliša kaka	Numerous de la comp	es d'acres
A STATE OF THE STA	Maria Barbaran	FACOMOR		的時期的教	VANA (SOUTH SOUTH	annifetyi. 199	等的新史斯	李萨特的		and the	经的数据的	NOW MAIN

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Lane Configurations			(%) 1: 150 a					<b>.</b>	200 may 2			
Sign Control		Stop			Stop			41) Stop			Stop	
Volume (vph)	83	35	0	0	24	4	44	76	14	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)	90	38	0	0	26	4	48	83	15	0	0	0
Zo Zini siyay Si	•		20									
Volume Total (vph)	128	30	89	57								
Volume Left (vph)	90	0	48	0								
Volume Right (vph)	0 6.76	4	0	15	ter Salaran et al Constant		Selection of the select				San	nergatizionen
Hadr(s) Departure Headway (s)	0.16 4.5	-0,07 4.3	0:29 5.2	-0.17 4.7		AV.				100		
Degree Utilization X	0.16	0.04	0.13	0.07		wasanzak In						ONE ANY
Capacity (veh/h)	784	796	674	737								
Control Delay (s)	8,3	7.5	7.7	6.9		a destruction		200 E	5 6 6 6			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Approach Delay (s)	8.3	7.5	7.4									
Approach LOS	A	A	Α							100		
And Com Similary												
Delay			7.8				te e recentadores e como	Tolk Transition				
HCM Level of Service			Α									
Intersection Capacity Utilizat	lion		23.6%	ICI	J Level of	Service	E PRESE		Α			
Analysis Period (min)	a estruttea acadestista.	s i si l'Assi de la séca	15	Sol Austriania essi in	Powinier or Lie (1975)	2005080894V1.V	n sanderi halind	s National Conference Comme	Stewnskie verleit van	146.500 f 1850.6	uero es lA la Sur r	ate a structu
The state of the s	此中国的特殊			I MARKET AND	的特殊	areas and a	50 (10 m)	englije, sije			GB \$5.500 5/40	

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70Viigisa				, ,								
Lane Configurations		Þ			र्स						414	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	194	14	30	123	0	0	0	0	217	41	50
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	204	15	32	129	0	0	0	0	228	43	53
PROCESS AND AND AND ADDRESS OF THE PROCESS OF THE P	27.55			9840898								
Volume Total (vph)	219	161	250	74		<u>independija vines</u>						
Volume Left (vph)	Ö	32	228	0			1			10.24	- T	W.
Volume Right (vph)	15	0	0	53								
Hadj (s)	-0.02	0.06	0.47	-0.48	100							
Departure Headway (s)	5.0	5.2	6.0	5.0	PERSONAL PROPERTY AND PROPERTY OF THE	ante e sur reina comune e (Sallera)		Ein Peilifeiches fünd in eine	as to the first of the articles	: 41 + 72 H2 44 5 44 5 44 6 6 6 6 6 6 6 6 6 6 6 6 6	and the second	PARTIES SPACE
Degree Utilization, x	0.30	0.23	0.41	0.10	(\$1.6) (\$1.7)				sega yang san Pa		and the second	
Capacity (veh/h)	678	653	581	683	regular (Ang Palapa Sagram a rang)	the recognition of the residence of the recognition	r washing the control	a filmeritatika sa atau hila ita a	ud den sitte senses 1922	un Carantin gez-sah der-zalar	TO SECURE OF THE SECURE OF	erskaresture in
Control Delay (s)	10,2	9.7	119	7.4		- 10 M	August Ares	461 B. 198	3.50	100		- N. (\$ 10.00)
Approach Delay (s)	10.2	9.7	10.9			e con contrante e rege	C 400 300 00 00 00 00 00 00 00 00 00 00 00	ingement in property	seria signari agra anna	nasi arasa nasa awaraka	and the state of t	rugary#enov s ra
Approach LOS	В	A	В									
nieradia: Suistra ;											and the second	
Delay	an all the second of		10.4	10000	30 T C 1 (8 T)		enderstanding of	and the state of	Alle Salarie de			
HCM Level of Service			B		Controlleron de		Control of the second	e sue sa	and the second			Sincery
ntersection Capacity Utilizat	ion		41.2%	ાટા	J Level of	Service	ZONEZE STE		Δ	lung (producus)	30/907F14c	Militaria .
Analysis Period (min)	******		15		, <del>, , , , , , , , , , , , , , , , , , </del>		na njek gred	i Arvero in Jilanteo		and in the contract	Agrico Rossinos	State and
			acia disorra			A P. A.	Carteria.	Madvey (1886)	Tarreyo sor	- 1460 M. 146		\$456VO

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78205 <b>0</b> 0						$\langle \langle E(z) \rangle \rangle =$						
Lane Configurations		ર્વ	Na Godonia e na serie e na		þ		<b>*</b>	<b>}</b>	onto e constante de la constant	nii 1980 (Santonio Santonio S	0.0004Ma22.000045.0	sedeviseed-ver
Sign Control Volume (vph)	49	Stop 362	0	0	Stop 118	37	35	Stop 18	39	0	Stop	n o
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0:96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	51	377	0	0	123	39	36	19	41	0	0	0
2000 SALE	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	(C)	4 -									
Volume Total (vph)	428	161	36	59								
Volume/Left (vph)	51	. 0	36	Õ			100					9W
Volume Right (vph)	0	39	0	41	te un Secole de comune	novembersen eine e	s Color Marris	nan mada samusib Wali Bala	en det tra Monto e a	SANTAN INSTITUTE OF STREET	professor a way to be not not not	
Hadji (s)	0.04	-0.13	0.52	-0.46		(南) 写 <b>容</b>				Office (4) (4)	10 St. 199	
Departure Headway (s) Degree Utilization, x	4.4 0.52	4.5 0.20	6.3 0:06	5.4 0.09	i az tarz rayanako y ko	Caracio Zerama		Argentesi (Se	OROVENSKI STATE	50 66 FA 6 6 FA 6 7	KARINATE VARIET	M638/2005 P
Capacity (veh/h)	804	761	520	607								
Control Delay (s)	12:1	8.7	8,6	7.7	S. Maria	11.0	Parkers of	1985 (88) (68)	A 2000 A 40	Alaisatt Ko	a a a a a a a a a a a a a a a a a a a	80.70
Approach Delay (s)	12.1	8.7	8.0	en en tradit o se de la company	authiological application becomes decora-	toka tamberila u dalam	je st. a. s. av gavernje:	nd de valetanelek ak	an i territori de l'ancient	an de servicione	an market in the second	maritani e e i je
Approach LOS	В	À	A									
Correlate Conserve												
Delay		4 Control by	10.7	A CONTRACT			e veneral second			With the second		
HCM Level of Service			В									
Intersection Capacity Utilizat	ion		43.6%	ICI	J Level of	Service			Α			9450
Analysis Period (min)	en jaren erre	ua Protesta de la composición de la co	15	ue un Processió Ser	e est la celebration	nystlerest str	aut e ilii e e e taaya	o outsier statut	Selan Contract Con	d Adams	samilas a	
	ala Makaran da		的的問題的對於			<b>903時</b> 名第四天日	wat Fürenigt				Territoria.	

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$\mathcal{L}(\mathcal{M}_{\mathcal{G}}(\mathcal{G}))))))))))))))))))))))))))))))))))))$				9 (* 14 S	6.4 ·		ech in Sy					
Lane Configurations		7			र्स			4		ካ	4	
Sign Control		Stop			Stop			Stop		100	Stop	
Volume (vph)	0	10	21	51	7	0	36	0	227	49	135	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	11	23	57	8	0	40	0	252	54	150	1
	4,11	,01.5		<b>%</b> (1)	1.							
Volume Total (vph)	34	64	292	54	151	Magazian and and a language of the control of the c	no-coming the section of the section of	error pendrum (nata) Wi	Ellin College of the Alberta and	etherine castles control sales	havol, vicendoli, isliebula corid	to on stronger of Miles
Volume Left (vph)	0	57	40	54	0							
Volume Right (vph)	23 -0.17	0 0,41	252 -0.25	0 0.74	1 0.23						- Carlos VA	
Hadj (s) Departure Headway (s)	5.0	5.5	+∪-zo 4.3	5.7	0.23 5.2							
Degree Utilization, x	0.05	0.10	0.35	0.09	0.22							HARRICO.
Capacity (veh/h)	646	594	818	605	666							
Control Delay (s)	8.2	91	9:5	8,1	.8:5		7.27.34			and the state of		<b>1</b> 450 (3)
Approach Delay (s)	8.2	9.1	9.5	8.4	or no red management of the							
Approach LÓS	Α	A	À	Α								
स्वत (स्वाईसम्बद्धः)												
Delay		de comp	9.0	77.7				9 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		***		
HCM Level of Service			Α	edit mederation	erina Annohite ran septime	underlieben i Leitz beseich der ein	e pod danie proceso, kaje na	filosopharpop in a men	rander ducke, mr. m. a	3 : 2000, 4039, 2020, 20		W
Intersection Capacity Utilization	Σĥ		43.0%	ICI	J Level of	Service			A			
Analysis Period (min)	natariga (Julia di Siri di Kesa	e a lugue et et er	15	-1-5	earrain ann e Alberton	arie e qui a un termina	e canada de de	un numa antica (194	eached a conser	and the second		A. e. e
			15/16/1904	Per en de l'Allen	es activity of	物的特別的			Managara)	an Grand		MR/CF

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AMEA CONTRACTOR		8012:13:10	7	0.50 (j. oz.	3.97.99	we grow			\$ C.355			
Lane Configurations	ar Maria and an	en e ales ales ales ales ales ales ales al	riik tii Tukataa keerik maatiin waxa	Granes A. Bellehir (Co.	<b>*</b>	nicki stradovila polonovani.	esiiki - europea Austan Anne	4	Michigan Later Service	500/ddisclosure.com/200/dd/	t one work the way when the h	SASSALSKIS II. SAI
Sign Control	180	Stop 76	n		Stop 95	24	4.0	Stop	<b>.</b>	^	Stop	n
Volume (vph) Peak Hour Factor	0.95	0.95	0 0.95	0 0.95	95 0.95	31 0.95	16 0.95	0.95	53 0.95	0.95	0.95	0.95
Hourly flow rate (vph)	189	80	0	0	100	33	17	4	56	0	0	0
emerica especiale												
Volume Total (vph)	269	133	77									
Volume Left (vph)	189	0	17									
Volume Right (vph)	0	33	56	e considera de la seguina seguina.	and a street to the street of the	a complete de la comp	v Govern a na compression de la compression della compression dell	an application to the second	messacesperaturas o dos	ua Vinas e como prodente.	under städen stade in der	Sugary Volumentario
Hadj (s)	0.31	0.02	-0.22								5 (tel) -9	
Departure Headway (s) Degree Utilization, x	4.5 0.34	4.4 0:16	4.6 0.10	arendir kon	14.25	SA SKI POLITIKANI	o to a track and the				4 Sai 1965 A 1994	10.00
Capacity (veh/h)	776	783	719		10 m	200						
Control Delay (\$)	9.9	8.3	8.1			34444		All the second				98.453.04
Approach Delay (s)	9.9	8.3	8.1			GA CARLON STREET		STATE OF THE STATE	And the second second		Allega (Sign Ostro)	Salas Service
Approach LOS	. A	*	A					4				ž.
nkata sa sa sa gaga												
Delay	Mess Establish		9,1			(ME)		***			na ngunda	
HCM Level of Service	economic and a	en	<b>A</b>	anno de la rega <u>tat</u> a de	atham shekiraka harisan	el <u>st</u> andstandelsen van ee	or and a second to end	and a constant	actor toward Magnetic con-	. W. Chakerak		
Intersection Capacity Utilization			35.2%	ICL	l Level of	Service			Α			
Analysis Period (min)	) }***********		15			ME PERSON	不论事务	Tegnişli Ak	N. 13 (Se.) S		249488	BAS.

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4474302					- \$0.5000				00000000000	V450-V450-V45	
Lane Configurations	Ϋ́			4	<b>ĵ</b> >						
Volume (veh/h)	45	6	. 5	229	153	53		government.			100.75
Sign Control Grade	Stop 0%			Free 0%	Free 0%						6.2556 (Sc.)
Peak Hour Factor	0.96	0.96	0.96	0.96	- €% 0.96	0.96	*				
Houriy flow rate (vph)	47	6	5,	239	159	55					
Pedestrians	Antin Minimatorica e e	ESK-TSTRAND TEXAS ORDER	na minor of about these was	EAST OF THE FORM MODIFIED TO	LI LIZANDO BIONNO ANTONO	ddeu rou Utiliace bretilio ada crisco i n	Artis Athanas are also have a saw to co	through this translation risk ton	DISS MENTAL TO A SECURITY OF THE		Sangara da da
LanesWidth (ft) Walking Speed (ft/s)											
Percent Blockage									,		
Right turn flare (veh)				20.00		wert and a					
Median type	A KAN	ti di salah sa		None	None					(St. lin states)	
Median storage veh) Upstream signal (ft)		10.00 A 10.00 A 20.00	A SECTION AND								REPORT (SEC.
pX, platoon unblocked										***	
vC. conflicting volume	436	187	215	is visa v					18 W W		
vC1, stage 1 conf vol	nifordaris en resistante con	nt rackness wester		CONTROL BOX as a service as a service as	14 (19 (4)) (4 (4))	an fartakan kura an makan tatan sa te		Consideration of the State of t			
vC2 stage 2 conf vol vCu, unblocked vol	436	187	215								
tC, single (s)	6.6	6,4	4/3	inevia star			sa Gualdeala ar	ive contact	r Certification	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$248E
tC, 2 stage (s)				a presidente estado de	en same	ing Serves Apply 1993 (1993)			a religion de la Sala Sala de		(seep real
IF (S)	3.7	3.5	2,4		7/324 - 11/45 57/53/1947d						
p0 queue free % cM capacity (veh/h)	91 545	99 813	100 1261		202232	2.460 <b>4-14.46</b> 07.37.4		okas unastrijas	SOAN AS DAMAGE	. crewdag de West	86-941-91
	20100000000000000000000000000000000000	C 17400 Mes. 17500 M	removed and Selection of the		1						
⊎tration, earcett Volume l'otal	645.1 53		5154 215		9.400.000.000		t manifest in the said		Sales of Sales Ministry		1000 ONE)
Volume Left	93 47	24 <del>4</del> 5	* 215 0								
Volume Right	6	0	55	( 72 <b>1</b> ( 34 - 42 )	e araya			andria vicini		A Secretary	
cSH			1700							** *** * * **	
Volume to Capacity	A 178 A 1 A 1	0.00	0.13								
Queue Length 95th (ft) Control Delay (s)	8 12.0	0 0.2	0 0.0			(44)02 (44)	grady saky zara.	arynnytstyt er	graffygari	naya yaygani y	est t
Lane LOS	В	A	<b>V.V</b>		erre (Minis	erinaa ja 1946				atotik i tala (Kabi) kolik	
Approach Delay (s)	12.0	0.2	0.0						ja kong in		
Approach LOS	В										
marketien skurery											
				1011	i Maran ak i	Note Acres		_			
		26		100	Level of 3	Service		Α			
Approach Delay (s) Approach LOS		0.2	1.3 6.1% 15	ICU	Level of S	Service		A			

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UVA-15 legacine		1					8 D. G.		#:19 <i>7</i> //			
Lane Configurations Sign Control		<b>♣</b> Stop			45 Stop			<b>⊕</b> Stop	nes <del>.</del>		4) Stop	
Volume (vph)	53	189	21	121	100	18	26	154	215	11	129	25
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	60	212	24	136	112	20	29	173	242	12	145	28
	202	2011										
Volume Total (vph) Volume Left (vph)	296 60	269 136	444 29	185 12								
Volume Right (vph)	24	20	242	28								
Hadj (s)	0.01	0.07	-0:30	-0.06								
Departure Headway (s) Degree Utilization, x	6.6 0.54	6.7 0,50	6.0 0.73	6.8 0.35								E March Co.
Capacity (veh/h)	489	479	576	449								
Control Delay (s)	17.1	16.3	23.6	13.4	19 18	<b>.</b>						N. Oak
Approach Delay (s) Approach LOS	17.1 C	16.3 ©	23.6 C	13.4 B					19167147			Secretaria
A STATE OF THE STA	\$ \$ <b>Y</b> =			P	3.8					Washington and		
Delay	and the second	162 1873 (B. 16) 188	18.7		and out of the				erosti agai in biro	anstromer		
HCM Level of Service			C								disease at a	
Intersection Capacity Utilizati	on		64.1%	lC	J Level of	Service			C		10-10-14-1	
Analysis Period (min)	Andres superior consection		15	1991.584.6234.59		Sassana in the		skieskiesk	Children C	ralikirishi day cawa.	nussian samb	990000 00
Constant Section (Section Constant) Control (Section Constant)	essperience)	No West State	o menderal	ACCEPTAGE AND			Alle Mary many			被影響的影響	acamic of the	

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Lane Configurations		4			44			4			4	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	276	32	210	3	54	7	294	89	1	1	75	156
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0'88	98.0	0.88	0.88	-0.88
Hourly flow rate (vph)	314	36	239	3 -	61	8	334	101	1	1	85	177
			4									
Volume Total (vph)	589	73	436	264	3 7 400							
Volume Left (vph)	314	- 3	334	- 1					100			
Volume Right (vph)	239	8	1	177	NAMES AND ASSESSMENT AND ASSESSMENT AND ASSESSMENT ASSE	annually, the ones diffe to						
Hadj (s)	-0.12	+0.04	0.17	-0.39		Sec. Sec.	4 5 6			1000		age (
Departure Headway (s)	6.4	7.8	6.8	6.8		elinania ar siles Residi	e (Salata) de esta di como	orano malandario m	erani de constante (vene	CARTERIA NAMEDIA	Seriosia Vitaria Chia	MATAGORAGO COSTO
Degree Utilization, x	1.04	0.16	0.83	0:49	-47							
Capacity (veh/h) Control Delay (s)	557 73.2	403 12.3	519 34.8	514 16.2						* 34		
Approach Delay (s)	73.2	12.3	34.8	16.2				202	14 SPACE 1 13	West Control		NO POST
Approach LOS	, J.Z	12.3 B	54.0 D	10.2 G								Establica (
. The state of the		re control	All Artes									
teksi uksi Grannaya	versymbol Adams i sa						Minor more consequent		Entre la constante	Access to the second		
Delay	10 17 Page 1	To Hollery	46.6	n santing.		1300000000		of the let		2.5		
HCM Level of Service	<b>22</b> 880(84)(54)	ara Parancia de	E		460283362	r <b>Te</b> rritoria	is chart if extiles	unica Jestinosia	one en en <del>en e</del> n traces	o antine a colo	contribution for	g de como e o
Intersection Capacity Utilizati Analysis Period (min)	OH PERMIT (1997)		81.1% 15	, iei	J Level of	Service			U		Prince State	
Aliaiysis Fenou (Illiii)	eranalah sal	as de lavides	IQ.	čet verkovile VVIII v	constant vice	encolog wenver in	na semblose.	telete valorako i	SANGA ADWA	ar til kannan kan	ka arraga kemakan	Barto de se
residence and agent Of a reliable and an expedition of the property of the pro	as Valence	a Una prisipant	SA PARAMETER SAFE	SAME SAME	AMELICAN SERVICE		rijeri kiloneri (188	n help tribling some	· · · · · · · · · · · · · · · · · · ·		rae Seno-May	maga ran

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60.000.000			@11118@							
Lane Configurations	β.	***************************************	ሻ	Ą	Y				egitent all sell evaluely got floor	
Volume (yeh/h)	611	42	235	432	22	347		E & China		Sales Sales
Sign Control Grade	Free 0%	N. S.		Free 0%	Stop 0%					ea Neacais
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83				
Hourly flow-rate (vph)	736	51	283	520	27	418				
Pedestrians	CoNcession American control and	6311110000 nonemon nota	NAME OF ACCOUNT OF THE PARTY OF	and the second second second		21 Califord, Mary 2016, Society (1990) - Arrestein (1)	30 C C C C C C C C C C C C C C C C C C C	and the standard of the second	Samuel and School Alexander and the	Ampril del Las Silvers
Lane Width (ft)										
Walking Speed (ft/s) Percent Blockage				* *						
Right turn flare (veh)			s in the state of the	Valent						
Median type	None			None						
Median storage veh)	Similar divide series		enderstation des bet	teran talang kangal	OSC 15 de ÉVORT A VIOR	NAMES OF AND STREET OF A CORPOR STREET, AND		a Tankin ka sa	servosi a substitutado	des AN China con
Upstream signal (ft) pX, platoon unblocked	15.00 mm 45.00		San San San San							
vC. conflicting volume			787		1848	761	e e e e e e e e e e e e e e e e e e e			
vC1, stage 1 conf vol	an wasan menanghansa a s	minus in a sugarge.	and the state of t	Daugne na kon perilaki	responding to the con-	enementor proprie de la color esp	end rugan resentan da da aures	Andrea Services (1995)	Security and store substitution	arthera de a r
vC2, stage 2 conf vol				Los Cook Say		general de la companya de la company				
vCu, unblocked vol tC, single (s)		uri (Santa	787 - 4.1		1848 6.4	761				SAMONIDA:
tC, 2 stage (s)	21,531,534,50		Hilms	entra service entra		6.2				
tF*(s)		2 <del>11</del> 212	2.2		3.5	3.3				dage.
p0 queue free %	-min-si i i na menena i i	eri e e espesa.	66	narožinio et 4 en e	51	0				
cM capacity (veh/h)	fully fulfiols		837		55	407				
arcaton, Langil				JB41						
Volume Total	787	283	520	445						
Volume Left Volume Right	0 51	283 0	0	27 418	isterio como a		nar September (1879)	ing a participation of 20	Si sekta naktii	Consort :
cSH	1700	control field Appearance of the said of	1700	294						
Volume to Capacity		0.34		1.51	en e		H. Prancisco	n kan gera.	se jedlja i	
Queue Length 95th (ft)	0	38	0	636				*		
Control Delay (s) Lane LOS	0.0	11.5 B	0.0 2	80.3						
Approach Delay (s)	0.0	4.0		F 80.3			unitarija. Vistorija	Polijena povetaveja	ar usturijasi	Alba
Approach LOS		<del></del>	· · · · · · · · · · · · · · · · · · ·	F	e de la deservición. Transportantes	get extensive some en				•
inansentok skormaty										
Average Delay			62.8							
Intersection Capacity Utilization		80	).4%	ICU	Level of S	Service		Ð		
Analysis Period (min)			15							

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		(100)				80/1310			0. X + 2 8			27% 1 W
Lane Configurations		4			4			4			4	
Sign Control		Stop	and the second s		Stop	e series	rie e en con	Stop		40.00	Stop	
Volume (vph)	4	53	31	58	36	117	21	131	54	142	154	8
Peak Hour Factor	0.91	0.91	0.91	0,91	0,91	0.91	0.91	0.91	0.91	0.91	0,94	0.91
Hourly flow rate (vph)	4	58	34	64	40	129	23	144	59	156	169	9
$g(z_{i}, z_{i}) \in \mathcal{G}_{i}^{1}(\mathbb{R}^{d})$		7,1										
Volume Total (vph)	97	232	226	334								
Volume Left (vph)	4	64	23	156	a second							
Volume Right (vph)	34	129	59	9						4 600, 2 (4 60) 100000	and any over a contact to	
Hadj (s)	-0.19	-0.26	-0.12	0.09	est en san							Water .
Departure Headway (s)	5.6	5.3	5.2	5.3	terment and a second second							
Degree Utilization, x	0.15	0.34	0.33	0.49						100		
Capacity (veh/h)	552	617	630	647	a of Ares House Constitution	a signa si iliang kaning mengang kan		na marakan	SANGER OF SECTION OF THE SECTION OF	- there's or to be one of	NATIONAL AND THE PARTY OF THE P	anguage of the actions
Control Delay (s)	9.6	11.0	10.8	13,2			3000				1.0	Walley
Approach Delay (s)	9.6	11.0	10.8	13.2	000000 00000 4.63 V00	CO VENERO POR LA CARA	saanees and the	Barasan Marin Japan	uastetina säätetet t	Zvenská telepiská telepiská	rásse cela endiación	aleman area .
Approach LOS	A	₿	В	Þ								
Magadon Sunnay												
Delay		transferrebe, week	11.6	er administration						Terminal Section 1	Part Control	earthropely reflect
HCM Level of Service			В									
Intersection Capacity Utilization	nc		56.7%	1CI	J Level of	Service			В		法學學問	
Analysis Period (min)			15									

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sevente) a secondario	10				100 July							
Lane Configurations		₽			<b>₽</b>			in management			414	
Sign Control	71	Stop			Stop			Stop	100		Stop	
Volume (vph)	0	403	60	6	194	0	0	0	0	69	150	72
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0,91	0.91	0.91	0.91
Hourly flow rate (vph)	0	443	66	7	213	0	0	0	0	76	165	79
mediane also		7.1										
Volume Total (vph)	509	220	158	162								,
Volume Left (vph)	.0	7	76	0								
Volume Right (vph)	66	0	0	79	romani disebili	Maria de Septico de Maria de La Compaña de La Compaña La Compaña de La Compaña d	sanders de difference d'Alex	o e salas (Messell), escala e	grossitation vertical ent	g ja čust spectorstva kas kasas	Secondary and Assess	Enikoles sotiacias
Hadi (s)	-0,06 5.1	0.02	0.26	-0.33		18 S. 12			100			
Departure Headway (s) Degree Utilization x	0.72	5.6 0.34	6.7 0.29	6.1 0.27			rátov 67 si	Security St. Safe	is sauceway			
Capacity (veh/h)	686	609	498	554								
Control Delay (s)	20.3	11.5	11.2	10.1		av Sv (S) "A85"	7. 6. 7. 5			Colorado Maso		
Approach Delay (s)	20.3	11.5	10.6	rithad Mikilian sila	a in all the control in the control	en and in the problem of the second	glassia apilita nasisira m	erit ein kortein vierlaut	Same and Secures	Section of American Actions	egis ilinaas valenas ess	School Superior
Approach LOS	C	В	В					98 (19 g) 19 (19				
lidersection (aminary												
Delay	100 100 100	e in State of the s	15.5	de es		a a communication		Halle Augh com	n Norwiga kindapilin 2010		A STATE OF THE STA	
HCM Level of Service	residentificación de la contractión de	CONTRACTOR AND	Č		A. A	98,953479998689		(ME-512 F. 25 T. G. 22 T.)	and the State of the state of	26.22.7 to 2.5m to 3887 i	en onder i Medicina	Applied Control
Intersection Capacity Utilizat	on		40.0%	ICI	J Level of	Service			Α		YEST ST	
Analysis Period (min)			15									
		-74th/feig		Establish	经产业	96 (5.3°)	物系统价	ALL AREA WES		ros falcos	1975 No. 1976	No.

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Germania.					(9)	,						70 P. 15X
Lane Configurations		ર્ન	-		14			414				
Sign Control	4	Stop			Stop		Contraction of	Stop			Stop	
Volume (vph)	401	71	0	0	72	51	128	269	4	0	0	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0,88	88.0	0.88	0.88	0.88	88.0	0.88
Hourly flow rate (vph)	456	81	0	0	82	58	145	306	5	0	0	0
90.73 [15] \$175.00												
Volume Total (vph)	536	140	298	157								
Volume Left (vph)	456	0	145	0								
Volume Right (vph)	0	58	0	5			and the second section of the second	241-1-40-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-		e medicario como a Mariante an	-80-280-30-21 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	Colle-Colle-
Hadj·(s)	0.19	-0.23	0.26	0.00	ar in a	Production	30 m & 1		e yana s	10 To 12		er Notes
Departure Headway (s)	5.6	5.9	6.7	6.4	na a Sidente da La construir							
Degree Utilization, x	0.84	0.23	0,55	0.28		and the Ma	GAMMINARY C					
Capacity (veh/h)	629	564	513	537	Append the Maybar Careag	er dagtig a galaga ska ska	Mac magacina ka	David Servet vid State Medical S	o-contrata	ecoles téals consideration	v kanva Avendišie	escassion of the
Control Delay(s)	31.3	10.7	16.5	10.7	C2 (44) (75 (5	e ir a Williams	19) 20 ST	10.599 (3.142		1919		
Approach Delay (s)	31.3	10.7	14.5	kita caltina opera peno	AGNONIPES (ALA 140)	- 	40°-3034-4-1867-180	ooniaannaannen (	16906/254/46/5/6/251	872820300000008888800V	grandonia de la compansión	gilla de la companione
Approach LOS	Ų	₿	В			4 B. C. 15						
Mourrilens de tres												
Delay	The state of the s	discontinue de April	22.0	ner erstern	er Production (etc.)	Annual Angular was		TOWN SON				alet e reserve
HCM Level of Service			С									
Intersection Capacity Utilization	on		54.1%	ICU	J Level of	Service	gregere.		A			
Analysis Period (min)			15									
	light years old reflect	行為持續				0.55/4/002	600000	SALEKOV.	ayrishan, ri			

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I(x(t);(g)) = 0												
Lane Configurations		Þ			4						413	,
Sign Control		Stop	and the second		Stop			Stop			Stop	
Volume (vph)	0	335	32	37	325	0	0	0	0	149	37	50
Peak Hour Factor	0.74	0.74	0.74	- 0.74	0.74	0.74	0.74	0,74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	0	453	43	50	439	0	0	0	0	201	50	68
01/2/01/2/2015/5/5/5/5/5/5/5/5/5/5/5/5/5/5/5/5/5/5/				8110(2087)8			(c2) (c2) (c2) (c2)		-690 (company)	William Color	Tyrurliyate yesigi	
Volume Total (vph)	496	489	226	93					20 20 00			
Volume Leff (vph)	0	50	201	0	N. W. China		ATT OF THE REAL		* *		45 Y 46	San
Volume Right (vph)	43	0	691 0	68				<b>,</b>				West to
Hadi (s)	-0.04	0.04	0.46	-0:49	oregon the test of	, il	lozak idagora	1				1275
Departure Headway (s)	5.8	5.9	7.6	6.7					TO SAMPLE			
Degree Utilization, x	0.80	0.80	0:48	0.17		and charge	es and a	1300	*	r and the con-	ATTAC V. W	6400000
Capacity (veh/h)	605	595	439	501	A			***				
Control Delay (s)	28.0	28.2	16.3	9.8			in a constant	2 S 3 S 124				A 600 A
Approach Delay (s)	28.0	28.2	14.4	<b></b>	199424 E7455155		Alternative Columbia					
Approach LOS	D	Ď	B	gregoria.	64 S 65 4	Maria de la composição						24.859kU
and the second s		(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)										
Mercapalanasasy												
Delay			24.8		8 8 3				STATE OF THE PARTY	Transmitters		er kritistickere
HCM Level of Service			С									
Intersection Capacity Utiliza	tion	经理价值	57.0%	IÇI	J Level of	Service			В			Span
Analysis Period (min)			15									
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2014 (13)				: 11 <b>1</b>	N.Y.		300000					
Lane Configurations	n el Al-Breiten venna e caleira a Uniferio	4	Sali Carrie - Secologica Salista	alifeit u titlinukunikense	1	American como como con este	The second secon	<b>\$</b>	Sealth completely Charles Sealth	erian ar	to any Addition 15 to 2000 Ac	section of Males as a country
Sign Control Volume (vph)	54	Stop	^	A	Stop	074		Step	or.	^	Stop	Salar 1
Peak Hour Factor	0.78	429 0,78	0 0.78	0 0.78	293 0.78	274 0.78	69 0.78	51 0.78	65 0.78	0 0:78	0.78	30 A A
lourly flow rate (vph)	69	550	0.70	0.70	376	351	88	65	83	0.70 0	0.70	y.
90 G(G) (100 G) (100 G)		Clary		9498								
olume Total (vph)	619	727	88	149								
olume Left (vph)	69	0	88	Ô								
olume Right (vph)	0	351	0	83							, and the second	
ładj (s)	0.04	-0.27	0,52	-0.38		Aug. W. S					44	
Departure Headway (s)	5.7	5.5	8.1	7.2	and the second second second	na managatana amagamat na disant	Carre or manager as a construction		Constanting of the State	* **********		
Degree Utilization, x	0.98	1,11	0.20	0.30	A STATE OF THE STA							May the
Capacity (veh/h)	624	660	439	494	NYASTANIA SI SISSA TI	rekenskingelinge	unical tables de la com-	ergitheer Mits school Me	olean earlie talenda earli	la consultati yan.	Casta namento castas	economico esc
Control Delay (s)	55.8 55.0	89,6	11.9	12.0		u iş veçide	101.04-512		durante id	tyst vägteta		\$3000 C
pproach Delay (s)	55.8	89.6	12.0	iesame semesi	(angaagaa 200 A	To 12 12 14 14 14 14 14 14 14 14 14 14 14 14 14	V JOŽEVA SSAVŠSASTA SA	eresenteen arbert	ANNON VIEW NE	8383-1957a 942	ote, we will the	00389480300
pproach LOS	·F	₹	₿									
Karania Simpoly												
elay	The second second second	oriens republicano e de la	64.8			et i dan prette dan dan	garetareta enak	transmit our engin	and arterior cave so	Carrier Carrier Carrier		STATE OF THE
CM Level of Service			F									
ntersection Capacity Utiliza	tion		74.4%	ICI	J Level of	Service			D			Elega:
nalysis Period (min)			15									
			10.100		November (Sec	A 65 (345)		W-05/19/		Parity No.	akacy ope	李州市

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68.8200 (A. 1800)	1.,		7.43									
Lane Configurations	San Sun San Yang dan San	f.			4	Beroteler vide	\$10.58 <b>4.58\$898</b> 38	4		7	þ	ar a salah a
Sign Control Volume (vph)	0	Stop 10	19	34	Stop 4	U	19	Stop. 0	119	58	Stop 174	1
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	11	21	37	4	0	21	0	129	63	189	1
	, ,	9.4	(w. j.								an Leiferi	
Volume Total (vph)	32	41	150	63	190	ates reassages			and the state of the state of		<u>erregjarra</u>	*******
Volume Left (vph)	0	37	21	63	Ö							
Volume Right (vph)	21	0	129	0	1	. 2001 12:00 13:00 13:00	nd wadding and a share halfe	de Arthur Arman de La Consta		stratilizative of Berger (1990)	n meneri Stranderich ert in bei verstage die	S. alias de Caracterio Constituiro de Caracterio Caract
Hadj (s)	-0.21	0,37	-0.30	0.69	0.18	grafin a Neig		englise in 1965	30000	1		
Departure Headway (s)	4.7	5.2	4.2	5.5	5.0	csectano navorsa	ega salah san dagan san da kaca	are areasters res	och aut energiat Farestate.	GOMESTA ANGERS ANGES	SETTEMA ACTURATOR SANCE	NEW INCOME.
Degree Utilization, x Capacity (veh/h)	0.04 702	0.06 634	0.17 836	0,10 637	0.26 706							
Control Delay (s)	7.9	8.6	8.0	7.9	8.6	ac and actions		r van de santa		1 55 CHANGS	No. of the second	1000000
Approach Delay (s)	7.9	8.6	8.0	8.4	, and o	STATE OF STATE OF		2 (1994)	ASSESSED AND AND AND AND AND AND AND AND AND AN		li de la company	S AND AND A
Approach LOS	A	A	A	Α			e en					
pleases as a substage				classic construction (con-				- beneformerstation	The state of the state of			
Delay	1	Control of the Contro	8.3	g na saar		***	**********		has the Late of th	3,421.214.257.450		A42-4-2-
HCM Level of Service			0.0 A					and a second second			Andrew State of the State of th	
Intersection Capacity Utilizat	ion	Lineary 1889	36.4%	ICI	J Level of	Service			Ä			
Analysis Period (min)			15		an resident di all'he							
Secretary and the second						way ya fa	VAN SE				SAY(SA)	MARINE.

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Lane Configurations		Δî	9.942.76	100	<b>^</b>			€}		V205W		
Sign Control Volume (vph)	82	Stop 77	٨	- 5	Stop 104	46		Stop	39	^	Stop	۸
Peak Hour Factor	0.80	0.80	0,80	0 0.80	0.80	0.80	9 0.80	0.80	0.80	0.80	0.80	-0.80
Hourly flow rate (vph)	102	96	0	0	130	58	11	1	49	0	U	U
Volume Total (vph) Volume Left (vph)	199 103	188 0	61					Maria de la Carta de la Ca				
Volume Right (vph)	0	58	49									
Hadj.(s) Departure Headway (s)	0.21 4.4	4.2	₽0:34 4.4									
Degree Utilization, x. Capacity (veh/h)	0.25 793	0.22 843	0.08 749									
Control Delay (s) Approach Delay (s)	8 9 8.9	8.3 8.3	7,8 7.8	1000					era, a			
Appreach LOS	A	: .A	A			1			s a t	100	ar is the	
uscerci acce unantery. Delay			8.5			187		and the second				
HCM Level of Service Intersection Capacity Utilization	<b>1</b> 46034333		A 30.2%	lCi	J Level of	Service			Α	an and the second		
Analysis Period (min)			15					intervet ette Schoolskeiden	r in er i 18. Sedavasternas			satiene

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ONSECULAR DE LA COMPANION DE L	$I_{ij}$	(a)	800 G 600					
Lane Configurations Volume (veh/h)	<b>Y</b> 37	11 9	4 97	<b>1→</b> 256	23			71.514.12
Sign Control	Stop	2.	Free	Free	40			
Grade Peak Hour Factor	0% 0.88	0.88 0.88	47.6 cost 100 mm 2 x 2 20 2 X 1 2 5 4 1 1 1 1 1 1	0 <u>%</u> 0.88 0	.88		<b>.</b>	
flourly flow rate (vph) Pedestrians	42	12 10			26		*	
Lane Width (ft) Walking Speed (ft/s)				***				
Percent Blockage				5 10 15 6				
Right turn flare (veh) Median type	nie Langeralden gebengen. Jahren State (1986)		None 1	Vone				
Median storage veh) Upstream signal (ft)		Section 1						
pX, platoon unblocked		FA 1			and the state of t			
vC, conflicting volume vC1, stage 1 conf vol	435	304 317						
vC2, stage-2 conf vol vCu, unblocked vol	435	304 317	60					
tC <sub>r</sub> single(s)	435 6:5	6.3 4.2		18. 12. 12. 12. 12. 12. 12. 12. 12. 12. 12	es es voits vers	are a successive		
tC, 2 stage (s) tF (s)	3.6	3.4 2.3			Tes a veix savet sini keke			: <u>:::14</u> 46nv
p0 queue free %	92	98 99	AND REPORT OF THE STATE OF THE					
cM capacity (veh/h)		713 1189	Section Section (1986)	100 PA 1 VA				
Volume Total	55	120 317	1984 B. (1784 5-97 59)	Trickers of Articles	MAZZWE KONTANTO	k ilang ang mponjulo si se	i koristi ili ali karati ili anti	Bark and the Production
Volume Left Volume Right	42 12	10 0 0 26		escore o de Con	erane en mar d'Andre		Terragous (1978-1980)	Server Albertanen
cSH	585 1	189 1700						
Volume to Capacity Queue Length 95th (ft)	0.0 <del>9</del> (	0.19 1 0						
Control Delay (s)	11.8	0.0			plygas F			leght.
Lane LOS Approach Delay (s) Approach LOS	B 11.8 B	A 0.8 0.0	in personal			Open per geler		ing ber
accense (400), Studingly								
Average Delay Intersection Capacity Utilizatio	יחי	1.5 24.9%	(CU F	evel of Ser	vice	·A		
Analysis Period (min)		15						

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Lane Configurations	And Starte Personal	4			4			4			4	
Sign Control		Stop			Stop		4.6	Stop		100	Stop	
Volume (vph)	12	54	12	236	99	7	19	100	111	12	195	31
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	13	58	13	254	106	. 8	20	108	119	13	210	33
95 (A) (16 (A) (A)	4.0%		(1)									
Volume Total (vph)	84	368	247	256								
Volume Left (voh)	13	254	20	13							10	
Volume Right (vph)	13	8	119	33	er ett in eelin valen valen valen	watercountry substitution in	1900-1400-1500-4450-1604-1	1564/942/92/17/12/14/9/2/16/16/16/16/16/16/16/16/16/16/16/16/16/	Call De Cellin Geber (1802) 2 2 102.	vivito, tabbilita kise jas i	: No 12 report of level line and	resignation in cont.
Hadj (s)	-0.04	0.14	+0.26	-0.05	V.							
Departure Headway (s)	6.0	5.6	5.4	5.6	20 BOOK - 25M 240 B 244 -	end, one of 24900 for odd 20 dish.	d Thursday, Aurit M. Joh	a data assumente per a communica	109 Harris Donies States	Seculo du et Suita i co da Aire	Selective or of or selective in	2000
Degree Utilization, x	0.14	0.57	0.37	0:40				100	San Zaris			Mary 14
Capacity (veh/h)	501	606	603	590			eren Ann neesend		B. W. C. W. C.	eranizari y Maldari e a Sauri		
Control Delay (s)	10.0	15.9	11.6	12.3		1111		es de			150,000	
Approach Delay (s)	10.0	15.9	11.6	12.3								
Approach LØS	A.	C	В	₿								
Mega China Langua y												
Delay		and the second	13:3	physical section (1)	Programme Service 14	ANTEN TRACE	Karanda aras da sas	and the second	***************************************	****	f market	energia incom
HCM Level of Service			В									
Intersection Capacity Utilizat	ion	Brwei.	51.1%	ICI	J Level o	Service	an and the second		Α			ijiya.
Analysis Period (min)			15				*		,			

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47)(1):13.00 (2)					88 15 T 18 8	90 A B		( 1				
Lane Configurations		4			44			4			44	
Sign Control		Stop			Stop		l l	Stop			Stop	
Volume (vph)	149	21	206	1	14	4	182	74	1	6	81	342
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0:94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	159	22	219	1	15	4	194	79	1	6	86	364
Professional Control	May 1724 P. S.			2000 B.V.								
Volume Total (vph)	400	20	273	456	Arter Contraction		y gaza e ganara e sa	er esta esta esta esta esta esta esta esta				
Volume Left (vph)	159	1	194	6		*						
Volume Right (vph)	219	4	1	364	mar nagari salah re	200	Desir Section 1		ere alle and a	2. A. S.	16.24 A. 300) C. 38.74	8.622
Hadj.(s)	+0.23	-0.10	0.16	-0.46								Mara*
Departure Headway (s)	5.7	6.8	6.1	5.2	overetheren a Kra-dak Stroit	in the first of the second of	er eine koneren i broud in der	EAST-SANDAMA SAND	akili i sulli saadii suuri	en Arian (M.) Erinberg	s coductorial de la constanta d	Budhard China and a con-
Degree Utilization, x	0.63	0.04	0.46	0.66						Port Straight (1)		Mark Control
Capacity (veh/h)	591	414	547	659	e marine de la seu recht de litter ist oder	in Action 1994, 6th Elite	Mente i de la constitución	Sendings, representation	embasakarin, sakasahalit dit	riya kilika di sebahar sas	ma tan kasifi dalam	Sept. Stewart so:
Control Delay (s)	18.0	10.1	14.3	18.0			A400 S			terik cabasa		SAGA SE
Approach Delay (s)	18.0	10.1	14.3	18.0	Anna and an exercise of Marie Salva	984 harini arabasa (1890)	Alexandria (1995)	ilia de Lambido de Mario de ser suntico	despites un médit de la litte de 1839	es abilit misel dules	1.00.000.00.00000.00000.000.00.000	independent of the
Approach LOS	C	В	₿	6								
<b>Дексоное Сопаладу</b>												
Delay	vicestina vistor	el diverginari di ogn	17.0		Market Drawn and P	The second second	The Part of the Pa	ann hairealla, anns		O Agrandant was the first	and the second second	
HCM Level of Service	acontrapos no minimizado.	in to confinite a rate	C	en kalanca da da sa da	Docin satisficioniscoperatio	er de vereir i kanne Aude A	versettu ezh Ludoche et	Sam Silva Andra, Assessor	APPENDING ABUSEVIÈ	etario de la Seconda de	de succession	ogarycchini.
Intersection Capacity Utilizat	ion		78,4%	- ICI	J Level of	Service	ig/apicya		· D	igiferatura.		\$9/38.4×1
Analysis Period (min)			15	1	90 - MEC - \$20 AP - PE E - 1700	en andreader	the product of the section	1.5.200	7. 3 NT 3		and the second	
	<b>的现在分词</b>			9 A 188 W		- 1990 (EASA)	aran a	Examer de	340 84846	ing says	NEW HOUSE	Maria de

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50400 (CD)			<i>"</i> "				
Lane Configurations	<b>}</b>	7	A W				
Volume (ven/h)	332	6 157	476 8	96			
Sign Control Grade	Free 0%		Free Stop				N. S.
Peak Hour Factor	St. Control of the second second	0.97 0.97	0.97 0.97	0.97			
Hourly flow rate (vph)	342	6 162	491 8				
Pedestrians	Maria ta para kana manana	ren somewerken va		Nacionalistica de la companio de la		dalamik koronia a Zala Pada Washida ya ma	Actorité atorites (1700a/1940 to
Lane Width (ft) Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)	author hydrogened i dy'i the di thig	er och er genag i de eggen den gustude ette er fåg	e Mariero Vice anno 1885, Tallero VIII (1974) (1984) a 1984				war graaf was
Median type	None		None				
Median storage veh) Upstream signal (ft)	au The Care Care						
pX, platoon unblocked	Part of Control						
vG, conflicting volume		348	1160	345			(2/3)
vC1, stage 1 conf vol	editwe ad a selver konstancial	erioret within kläsikkäinkeis	e erek i vojenk e dome dela erekenoar eta verk	n kadaal sahkusamaas nagama ah asakhindak ah ah .	i vali en valletta de Europation também e com	t to Dukk Webbakan in Balonin standibuk	en en en eur eur en eur
vC2, stage 2 conf vol vCu, unblocked vol		348	1160	345			
tC, single (s)		4,1	6.4	6.2	and the same and the		28002
tC, 2 stage (s)		Control of the second s	er trees tree treesen van gever en statiste Kreek	en ten in a tradición de degrego de Carlo de Ca	er eddy gened fferffer i grew (f.e.g. 1998) i i i f	inn inn mae 19 fan 1 aft it rinnaast	St. preparation of the co.
tF(s)	學是自由學	2.2	3.5	3.3			
p0 queue free % cM capacity (veh/h)		87 1216	96 188	86 700			Mastra Sautechini.
			errolling to gray week, sammed also Marketine the	100			
orcelon, Lebe <i>ti</i> Volume Total	348	162 491	107				Attitude of the state of the st
Volume Left	CARLOR OF PARTY AND AND AND	162 491 162 0	8 8				
Volume Right	6	0 0	99				
cSH		216 1700	579	end ne name ya he na en gas sene ee, afan a	rase (anon in session resident resid	e i e un reserve unas eserves servic	And a Charles of the
Volume to Capacity		.13 0.29	0.19	esta Peril Pesti P			
Queue Length 95th (ft) Control Delay (s)	0 140.0 - 31	11 0 8.4 0.0	17 12.6	anktiva i kasanktistisaa.	ran a sarra di senara yang di asal san sar	and the same of	. Agrigation
Lane LOS	) <b>0,0</b> (1, 15)	0.4 A	B		and the second seco	grada i katika dalim Tanggaran	
Approach Delay (s)	0.0	<b>2.1</b>	12,6		apporter (II)	per Proposition	
Approach LOS			В				
scersellor suchesip							
Average Delay		2.5					
Intersection Capacity Utilization Analysis Period (min)		42.9% 15	ICU Level o	f Service	Α		
Analysis Fellou (min)		15					

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3001.000 pp. 200 pp. 2												
Lane Configurations		4			4			4			4	
Sign Control		Stop			Stop			Stop		e de la company	Step	
Volume (vph)	14	144	89	89	29	181	15	203	69	135	182	10
Reak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0,76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	18	189	117	117	38	238	20	267	91	178	239	13
MCA16-2007		111										
Volume Total (vph)	325	393	378	430								
Volume Left (vph)	18	117	20	178								
Volume Right (vph)	117	238	91	13	Mar comb National originals of	and the South Market Colorest	have a discussion of the bard.	ded a share document and the	11-01-01-01-05-05-05-05-05-05-05-05-05-05-05-05-05-	an minima an interpretation	Alle in the construction of the second section	Binas de Acres, e
Hadř (s)	-0.19	-0.29	-0.12	0.08								
Departure Headway (s)	9.0	8.6	8.8	9.0								
Degree Utilization, x	0.82	0,94	0.93	1.08	Arriva (a)	To Palenting		A STATE OF		100		ange si
Capacity (veh/h)	376	393	400	397								
Control Delay (s)	41.6	60.6	58,5	99.0			GK 21, 21, 4	100000000	ig Salah i	ar estable	See the se	
Approach Delay (s)	41.6	60.6	58.5	99.0	to enter on a war fig. 1995, more to	na na a ta tras estensibilita habianan	Maria Ma	nano ne etnale Moli Colo	, establica e con America e con con	esta de Calla de Calla Calla de Calla d	o Controvers and Gallery and	eta na ma
Approach LOS	ŧ	F	F	F								
inforcement as analy												
Delay	A THE STREET SHEET	al may refer to	66.9		water refer Leaves	**		AND CERTAINS		MC Resident		Mary restricts to the
HCM Level of Service			F								a ner anne ye amerika a tarihi ka a	
Intersection Capacity Utilizat	ion		78.1%	ICI	J Level o	Service	A MEGAN		D			
Analysis Period (min)			15									

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Lane Configurations	er en er	<b>þ</b>	nivalniavsku 7555	rends copilia decembroso	व	raformatic de discessional	ed Probary is consistent with the	turniumma additioni seturiti	Children des authorities (1905)	afer taking 1-2 to 12 to 1	43	medika anionista
Sign Control Volume (vph)	0	Stop 108	62	21	Stop 74	n	n	Stop 0	n	56	Stop 365	250
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	121	70	24	83	0	0	0	0	63	410	281
Volume Total (vph)	191	107	268	486		ne productive de la company		a.vo.inskomatiki/99	ikilis i Selveno Brata	rikula ing salah salah kemban	NO STONE CONTROL	100001578844 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Volume Left (vph) Volume Right (vph)	0 70	24 0	63 0	281							,	
Hadj (\$)	-0.20	0.06	0,13	-0/39								
Departure Headway (s)	5.4	5.8	5.5	5.0	4846 4 22 20 20 20							nakon eta nega artza.
Degree Utilization, x Capacity (veh/h)	0.29 625	0.17 574	0.41 644	0.67 704								
Control Delay (s)	10.6	10.0	11.0	16.2					-	146. Sales		
Approach Delay (s)	10.6	10.0	14.3	Paris in the Control of the Control	eth Cathan athanna (Actua Wes	To STAL AKATENYAN		cessore powerpille (virtue)	otočno provincio de la colorida.		A reconstitution of the contract of the	water control
Approach LOS	В	8	В									
iden ezen arribatya. Ber				ter e transcription								
Defay HCM Level of Service	Carrie Street	Contraction	13.2 B									
Intersection Capacity Utilizat	ion		44.2%	1CL	J Level of	Service	e en gant se e		A			PAGE 1
Analysis Period (min)			15	1 11 111 11	er menare e toe, et es ve	age constitution for the April				10 11 4 M IN	* ********	

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								(a) 12 (b)				(14) X (1)
Lane Configurations		ৰ			1>			414				
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	115	49	0	0	33	6	61	106	19	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)	125	53	0	0	36	7	66	115	21	0	0	0
											Vacanos	(1900 - 1900) (1900 - 1900)
Volume Total (vph)	178	42	124	78		and the state of the state.		and the second				
Volume Left (vph)	125	0	66	Ö						1		
Volume Right (vph)	0	7	0	21	SEED TO COMPANY OF	Secretary Secretary	Anna Anna Canada	e de la companya de				West Asset
Hadj (s).	0.16	-0.08	0.28	-0.17					1			
Departure Headway (s)	4.6	4.6	5.3	4.9	STATE OF THE PROPERTY COMP	er Africa de craelle l'Africa Calada	and the second s	ect-Weise (Prop. A. Will sink of	untrakti eti kirile ili altarile	Albana Nementahaninia	mindricus dische 2000	danistiikkinti sitti o
Degree Utilization, x	0.23	0.05	0.18	0:11	2.							
Capacity (veh/h)	743	743	651	708				w, was an area of power an	to facultar (Betaline)	e editorii e din America	se k 2 siz uMizowa u si	allulations version
Control Delay (s)	9.0	7.8	8,3	7.2								940021.15
Approach Delay (s)	9.0	7.8	7.9								arti inggetiis noo o t	
Approach LOS	A.	A	Α									
rjes (cjayer) silangge					anganisti.		Representation	ecologica aces	a aggregate			
Delay	A CONTRACTOR		8.3		ga ang ng ng pag	THE RESERVE	alger each some in the			A STATE OF STATE		
HCM Level of Service	19.5 6 5 5 6 4 4 5 6 1 4 5 1 1 1	57 - SA 1137 <b>(198</b> )	Α	Brandov Addin 1997								
Intersection Capacity Utilizati	on	A151/413	27.6%	iai	J Level of	Service			A	V250125V2749V		Mar order
Analysis Period (min)	read and the second second	erretigisee gi	15	- ::::::::::::::::::::::::::::::::::::		COLTING						epilarai -
	Orași de la c			a de de de		E Sandre (Silv.)	Salar Sara	and thought has		lotevio ika il	ABT KOMMANDA	5546
The state of the second	41 4 4 7 7 7 76 74 74 74 74 74 74 74 74 74 74 74 74 74	un en la raktyren.	and Services Managers	anne aboles (Min.)	A Cite A House A Liberta Nati	NUTTHE PROPERTY.	verne entre de la constantia	halo sakabilikabilik	atomics individue	ministra as all aires."	uktus i Assilia.	strativani i

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Lane Configurations	MAN and state of the state of t	þ			क						414	-
Sign Control		Stop	100		Stop			Stop			Stop	
Volume (vph)	0	269	19	42	171	0	0	0	0	301	57	69
Reak Hour Factor	0.95	0.95	0.95	0.95	0:95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	283	20	44	180	0	0	0	0	317	60	73
49.5447 S. S. F. F. S.		(4)										
Volume Total (vph)	303	224	347	103								
Volume Left (vph)	Ô	- 44	317	0		1						
Volume Right (vph)	20	0	0	73							20.000	
Hadi (s)	-0.02	0.06	0.47	-0.48				7				
Departure Headway (s)	5.6	5.8	6.5	5.5	effective and the contract of	n-eco-cue de la companient	Manager 1 - 3 - 3 - 4 - 5	and more than the complete of the con-	Manager and the process			
Degree Utilization, x	0.47	0.36	0.62	0.16								
Capacity (veh/h) Control Delay (s)	613	585	535	627	kalangsia isa	s/v@er/as/kreev	ne segmentales es		edwelde capac enec.	and the second second second	twin # # Art rectal town	200000 Ave 22
Approach Delay (s)	13.5 13.5	12.0 12.0	18.3	8,3	1000	Section 1	of the services			11 (F) (F)	WE AT	Marie (Pri
Approach LOS	10.0 B	12.0 B	16.1	***	ne Yanası er ili		CONTRACT NAME		National access	erski oskazaka		EXXIONA CO.
		. 9	Y							*		
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Delay			14.3			Maria Maria	Contract Contract Contract			A STATE OF THE STA		SCHOOL STATE
HCM Level of Service		Etian Market week	В	on a constitution and a second	u-manada para o-silvat	necessary at the storage of	. Sagar I	. And the second on the second				
Intersection Capacity Utilizal	ion	於中華	53.3%	IOL	Level of	Service	33 - 5 X o yan 15 y		A		多數學	
Analysis Period (min)			15									

Skyline Landfill Traffic Study 11/8/2011 2044 PM Forecasted BG

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	3.1	100			Ø5.58	Wysia Sa						
Lane Configurations Sign Control	10 S T T T T T T T T T T T T T T T T T T	र्दी ा	Carlo Carlo Carlo	Las Transport	₽	z produktniko oz stanko k	7	<b>P</b>	NEW TOTAL AND A STORY	STEET STANFOO AND STANFOO	LA JAN RELLINGS	and Appendix of the
Volume (vph)	68	Stop 503	0	0	Stop 164	51	49	Stop 25	54	0	Stop 0	٨
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	D:96	0.96	0.96
Hourly flow rate (vph)	71	524	0	0	171	53	51	26	56	0	0	0
96990000000000000000000000000000000000		9401:25										
Volume Total (vph)	595	224	51	82	A Print Water on Viet 11 11 11							A STATE OF THE PARTY OF THE PAR
Volume Left (vph) Volume Right (vph)	71 0	0 53	51	0 56								
Hadi (s)	0.04	-0.13	0 0/52	-0.46 			-74					
Departure Headway (s)	4.6	4.9	6.9	6.0	Karana ang Karana							<b>.</b>
Degree Utilization, x	0.77	0.31	0,10	0.14								distribution in the second
Capacity (veh/h) Control Delay (s)	759 21.2	700 10.1	481 9.5	553	Kanteones esta	Carron and A	55 J. J. S.	******	Special and property	economico con contra	SS Member Sorbhald on the	6-78-78-6 20 ECO: -
Approach Delay (s)	21.2	10.1	9.0	8.7								
Approach LOS	Ç	В	A			V.			7			
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Delay	ACCOMMON CONTRACTOR	Car (wild the settled)	16.9	100000	necessary and a		the second second			AND DESCRIPTION	New York Company	
HCM Level of Service	Word decide a consequence	to disease across se	С		terania i managaran k	rvinerabilian edile 12	ing recommendation			1999	10 m	0.4864 (Link).
Intersection Capacity Utilizat Analysis Period (min)	ion		56.6%	ICL	Level of	Service			В			
Analysis relivu (IIIII)	vortalije (PV)		15	Barana Kabupaten Ba		(1.00 E. 1.2.1.5)	e was the con-	u čeruža ieračinia		DAP LISSO (EVAN	Santavada es	Caseder Bil
en de la propiesa de	and organization	er Bedaude de	and a company		<b>文章等是可题表示是</b>	CONTRACTOR OF THE PROPERTY OF	<b>经体验加强</b> 经等	neses de la	Maria Maria Maria		學的學學	<b>的数据的</b>

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