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Memo

To:	Dave Torbert, Schenkel Schultz Rick Alberts, ESA Matt Taylor, RERC Rob Brancheau, GOAA Brad Friel, GOAA		
From:	Jamie Krzeminski, PE, PTOE	Project:	East Airfield EA
CC:	Jason McGlashan, HDR		
Date:	October 7, 2008	Job No:	85817

RE: East Airfield EA – Revised Development Program Trip Generation

Based on our meeting last week, HDR has made revisions to the trip generation calculations and roadway segment analysis for the East Airfield. Based on the traffic counts that were conducted and the exclusion of the Air Tran and Signature FBO uses, the computed trip generation rates for the two land use categories are as follows:

- Category A: Daily = 7.23 trips/KSF PM Peak Hour = 0.42 trips/KSF (60% enter, 40% exit)
- Category B: Daily = 9.50 trips/KSF PM Peak Hour = 0.50 trips/KSF (26% enter, 74% exit)

As discussed at the meeting, the actual measured **daily** rates are **higher** than the ITE blended rates we used previously, but the measured **PM peak** hour rates are **lower**. Using the measured rate has the effect of exceeding the daily trip transfer allowance for programs greater than 4 million square feet, but also decreases the number of significant and adverse roadway segments as compared to using the ITE rates (following the standard DRI transportation analysis).

Table 1 provides a summary of three development scenarios using the monitored trip generation rates as well as the ITE trip generation rates, as follows:

1. The maximum development, based on the program provided by RERC on October 3 totaling 6.1 million square feet.
2. A reduced development program to match the trip entitlements available for transfer (30,692 daily trips, including 12,984 trips from Tradeport and 17,708 trips from SE Development Area). This scenario assumes the 4,484 trips from the Mud Lake area are available for transfer.
3. A reduced development program to match the trip entitlements available for transfer without the Mud Lake trips (26,208 daily trips).

The primary findings are as follows:

- Using the **monitored rates**, the current proposed development program leaves a deficit of approximately 16,000 daily trips above the maximum potential entitlement transfer' However, only 4 roadway segments are significantly and adversely impacted.
- Using **ITE rates**, the same maximum development program would only have a deficit of approximately 3,100 daily trips above the potential trip entitlement transfer, but would have significant and adverste impacts to 21 roadway segments.
- Using the **monitored rates**, the development program could be reduced to approximately 4 million square feet to match the potential trip entitlement transfer; this level of development would have a significant and adverse impact on 3 roadway segments.

- Using the **monitored rates**, the development program could be further reduced to approximately 3.42 million square feet to match the potential trip entitlement transfer if Mud Lake area trips are not transferred; this level of development would have a significant and adverse impact on only 2 roadway segments.
- If using the **ITE rates**, the development would have to be reduced to 5.5 million square feet to match the potential trip entitlements with Mud Lake trips included; however, this would have a significant and adverse impact on 19 roadway segments.
- With **ITE rates**, the development could be reduced to 4.64 million square feet to match the potential trip entitlements without the Mud Lake trips included; this would impact 15 roadway segments.

Based on our analysis, the use of the monitored rates versus the ITE rates has impacts on the amount of development that could be achieved to match the potential trip entitlements, as well as the number of off-site roadway segments that would be impacted and need mitigation. Using the monitored rates would allow for less development potential, but would have fewer off-site impacts, while the ITE rates would allow for more potential development, but would cause a much higher number of off-site impacts.

Please see the attached exhibits for more details on the trip generation and resulting roadway impacts, and contact Jason or me if you have questions.

Table 1 - Comparison of East Airfield Development Programs and Trip Generation using Monitored or ITE Rates

Land Use Category	Using Monitored Trip Rates							Using ITE Trip Rates						
			Trip Generation				Sig & Adv Road Segments			Trip Generation				Sig & Adv Road Segments
				PM Peak Hour							PM Peak Hour			
	Size	Units	Daily	Total	Enter	Exit		Size	Units	Daily	Total	Enter	Exit	
Scenario 1: Max Development Program														
Category A: Airport Support District	4,955,246	SF	35,826	2,081	1,249	832		4,955,246	SF	25,054	4,072	872	3,200	
Catgeory B: Airport Support Area	1,145,550	SF	10,883	573	149	424		1,145,550	SF	8,722	1,362	232	1,130	
Total	6,100,796	SF	46,709	2,654	1,398	1,256	4	6,100,796	SF	33,776	5,434	1,104	4,330	21
Scenario 2: Match Trip Entitlements for Transfer (with Mud Lake Trips) = 30,692 Trips														
Category A: Airport Support District	3,255,597	SF	23,538	1,367	820	547		4,469,632	SF	22,620	3,667	788	2,879	
Catgeory B: Airport Support Area	752,626	SF	7,150	376	98	278		1,033,286	SF	8,056	1,236	210	1,026	
Total	4,008,223	SF	30,688	1,743	918	825	3	5,502,918	SF	30,676	4,903	998	3,905	19
Scenario 3: Match Trip Entitlements for Transfer (without Mud Lake Trips) = 26,208 Trips														
Category A: Airport Support District	2,779,893	SF	20,099	1,168	701	467		3,770,942	SF	19,120	3,084	665	2,419	
Catgeory B: Airport Support Area	642,654	SF	6,105	321	83	238		871,764	SF	7,068	1,055	179	876	
Total	3,422,547	SF	26,204	1,489	784	705	2	4,642,706	SF	26,188	4,139	844	3,295	15

Exhibit A - Proposed Max Development Program

Monitored Trip Rates

East Airfield Environmental Assessment
Project Trip Generation

Land Use	ITE Code	Trip Generation Rates/Equations [1] Daily	PM Peak Hour	PM Pk Hr In	PM Pk Hr Out	Size	Units	Daily Trips	PM Peak Hour Trips Total	Enter	Exit
Airport Support District (Category A) [2]	---	T = 7.23 * (X / 1000)	T = 0.42 * (X / 1000)	60.0%	40.0%	4,955,246	sf	35,826	2,081	1,249	832
Airport Support Areas (Category B) [3]	---	T = 9.50 * (X / 1000)	T = 0.50 * (X / 1000)	26.0%	74.0%	1,145,550	sf	10,883	573	149	424
Total Project Trip Generation						6,100,796	sf	**46,709**	**2,654**	**1,398**	**1,256**

[1] Trip generation rates based on OIA Aviation Support Traffic Counts, HDR, October 2008.

[2] Comprised of aircraft maintenance, manufacturing hangar, and cargo facilities (light industrial, warehouse, manufacturing).

[3] Comprised of office, flight training centers, and ATC facilities.

30,692	Trip Entitlements Avail.
16,017	Difference

Significant & Adverse Roadway Segments (2025)
Proportionate Share Summary

#	Roadway	Segment	# Lanes	Req Impr	Length	Prop Share	w/o E. Airfield Imprvmt Req
1	Narcoossee Road	Lee Vista Blvd to Beachline Expressway	4LD	6LD	1.4	17.4%	YES
2	Narcoossee Road	Beachline Expressway to Dowden Rd	4LD	6LD	1.2	39.6%	YES
3	Narcoossee Road	Dowden Rd to Lake Nona Blvd	4LD	6LD	2.2	19.0%	YES
4	Semoran Boulevard	Hoffner Ave to Beachline Expressway	6LD	8LD	2.0	20.9%	YES
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Exhibit B - Match Trip Entitlements Available for Transfer (Assume Mud Lake Trips Available)

Monitored Trip Rates

East Airfield Environmental Assessment
Project Trip Generation

Land Use	ITE Code	Trip Generation Rates/Equations [1]		PM Pk Hr		Size	Units	Daily Trips	PM Peak Hour Trips		
		Daily	PM Peak Hour	In	Out				Total	Enter	Exit
Airport Support District (Category A) [2]	---	T = 7.23 * (X / 1000)	T = 0.42 * (X / 1000)	60.0%	40.0%	3,255,597	sf	23,538	1,367	820	547
Airport Support Areas (Category B) [3]	---	T = 9.50 * (X / 1000)	T = 0.50 * (X / 1000)	26.0%	74.0%	752,626	sf	7,150	376	98	278
Total Project Trip Generation						4,008,223	sf	**30,688**	**1,743**	**918**	**825**

30,692	Trip Entitlements Avail.
-4	Difference

[1] Trip generation rates based on OIA Aviation Support Traffic Counts, HDR, October 2008.
[2] Comprised of aircraft maintenance, manufacturing hangar, and cargo facilities (light industrial, warehouse, manufacturing).
[3] Comprised of office, flight training centers, and ATC facilities.

Significant & Adverse Roadway Segments (2025)
Proportionate Share Summary

#	Roadway	Segment	# Lanes	Req Impr	Length	Prop Share	w/o E. Airfield Imprvmt Req
1	Narcoossee Road	Lee Vista Blvd to Beachline Expressway	4LD	6LD	1.4	11.5%	YES
2	Narcoossee Road	Beachline Expressway to Dowden Rd	4LD	6LD	1.2	26.0%	YES
3	Narcoossee Road	Dowden Rd to Lake Nona Blvd	4LD	6LD	2.2	12.5%	YES
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Exhibit C - Match Trip Entitlements Available for Transfer (Assume No Mud Lake Trips)

Monitored Trip Rates

East Airfield Environmental Assessment
Project Trip Generation

Land Use	ITE Code	Trip Generation Rates/Equations [1]		PM Pk Hr		Size	Units	Daily Trips	PM Peak Hour Trips		
		Daily	PM Peak Hour	In	Out				Total	Enter	Exit
Airport Support District (Category A) [2]	---	T = 7.23 * (X / 1000)	T = 0.42 * (X / 1000)	60.0%	40.0%	2,779,893	sf	20,099	1,168	701	467
Airport Support Areas (Category B) [3]	---	T = 9.50 * (X / 1000)	T = 0.50 * (X / 1000)	26.0%	74.0%	642,654	sf	6,105	321	83	238
Total Project Trip Generation						3,422,547	sf	**26,204**	**1,489**	**784**	**705**

[1] Trip generation rates based on OIA Aviation Support Traffic Counts, HDR, October 2008.

[2] Comprised of aircraft maintenance, manufacturing hangar, and cargo facilities (light industrial, warehouse, manufacturing).

[3] Comprised of office, flight training centers, and ATC facilities.

26,208	Trip Entitlements Avail.
-4	Difference

Significant & Adverse Roadway Segments (2025)
Proportionate Share Summary

#	Roadway	Segment	# Lanes	Req Impr	Length	Prop Share	w/o E. Airfield Imprvmt Req
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1	Narcoossee Road	Beachline Expressway to Dowden Rd	4LD	6LD	1.2	22.3%	YES
2	Narcoossee Road	Dowden Rd to Lake Nona Blvd	4LD	6LD	2.2	10.6%	YES
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Exhibit D - Proposed Max Development Program
ITE Trip Generation Rates

East Airfield Environmental Assessment
Project Trip Generation

Land Use	ITE Code	Trip Generation Rates/Equations [1] Daily	PM Peak Hour	PM Pk Hr In	PM Pk Hr Out	Size	Units	Daily Trips	PM Peak Hour Trips Total	Enter	Exit
Light Industrial [2]	110	T = 7.47*(X/1000) - 101.92	T = 1.43*(X/1000) - 163.42	12.0%	88.0%	1,651,749	sf	12,237	2,199	264	1,935
Manufacturing [2]	140	T = 3.88*(X/1000) - 20.7	T = 0.78*(X/1000) - 12.89	36.0%	64.0%	1,651,749	sf	6,388	1,275	459	816
Warehousing [2]	150	T = 3.68*(X/1000) + 350.27	LN(T) = 0.79*LN(X/1000) + 0.54	25.0%	75.0%	1,651,749	sf	6,429	598	150	449
Office [3]	710	LN(T) = 0.77*LN(X) + 3.65	T = 1.12*(X) + 78.81	17.0%	83.0%	1,145,550	sf	8,722	1,362	232	1,130
Total Project Trip Generation						**6,100,796**	sf	**33,776**	**5,434**	**1,104**	**4,330**

[1] Trip generation rates based on ITE Trip Generation, 7th Edition.

[2] Airport Support District trip generation assumed to be comprised of equal proportions of light industrial, warehouse, manufacturing.

[3] Airport Support Area trip generation based on office.

30,692	Trip Entitlements Avail.
3,084	Difference

Significant & Adverse Roadway Segments (2025)
Proportionate Share Summary

#	Roadway	Segment	# Lanes	Req Impr	Length	Prop Share	w/o E. Airfield Imprvmt Req
1	Beachline Expressway	Orange Blossom Trl to Sand Lake Rd	6LD	8LD	3.6	3.8%	YES
2	Beachline Expressway	Narcoossee Rd to Central FL Greeneway	8LD	10LD	2.1	31.0%	No
3	Beachline Expressway	Central FL Greeneway to Innovation Way	6LD	8LD	4.3	18.0%	YES
4	Central Florida Greeneway	Beachline Expressway to Lee Vista Blvd	6LD	8LD	1.9	20.6%	YES
5	Central Florida Greeneway	Lee Vista Blvd to Curry Ford Rd	6LD	8LD	2.3	19.7%	YES
6	Conway Rd	Hoffner Rd to Gatlin Ave	4LD	6LD	1.0	18.1%	YES
7	Conway Rd	Gatlin Ave to Michigan St	4LD	6LD	1.3	11.9%	YES
8	Curry Ford Road	Econlockhatchee Trail to Dean Rd	4LD	6LD	1.1	30.4%	YES
9	Goldenrod Road	Curry Ford Rd to Pershing Ave	4LD	6LD	1.2	18.4%	No
10	Goldenrod Road	Pershing Ave to Narcoossee Rd	4LD	6LD	1.4	16.1%	YES
11	Innovation Way	Dowden Rd to Beachline Expressway	4LD	6LD	5.9	19.6%	YES
12	Lee Vista Blvd	Conway Rd to Semoran Blvd	4LD	6LD	1.3	3.7%	YES
13	Lee Vista Blvd	Semoran Blvd to Goldenrod Rd	4LD	6LD	1.3	4.6%	YES
14	Michigan St	Crystal Lake Dr to Conway Rd	2L	4LD	0.3	1.9%	YES
15	Narcoossee Road	Lee Vista Blvd to Beachline Expressway	4LD	6LD	1.4	13.8%	YES
16	Narcoossee Road	Beachline Expressway to Dowden Rd	4LD	6LD	1.2	31.3%	YES
17	Narcoossee Road	Dowden Rd to Lake Nona Blvd	4LD	6LD	2.2	65.5%	YES
18	Narcoossee Road	Lake Nona Blvd to Central FL Greeneway	4LD	6LD	0.3	24.1%	YES
19	Narcoossee Road	Central FL Greeneway to Tyson Rd	4LD	6LD	1.6	24.1%	YES
20	Semoran Boulevard	Pershing Ave to Hoffner Ave	6LD	8LD	1.3	42.8%	YES
21	Semoran Boulevard	Hoffner Ave to Beachline Expressway	6LD	8LD	2.0	72.0%	YES
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Exhibit E - Match Trip Entitlements Available for Transfer (Assume Mud Lake Trips Available)

ITE Trip Generation Rates

East Airfield Environmental Assessment
Project Trip Generation

Land Use	ITE Code	Trip Generation Rates/Equations [1]		PM Pk Hr		Size	Units	Daily Trips	PM Peak Hour Trips		
		Daily	PM Peak Hour	In	Out				Total	Enter	Exit
Light Industrial [2]	110	T = 7.47*(X/1000) - 101.92	T = 1.43*(X/1000) - 163.42	12.0%	88.0%	1,489,877	sf	11,027	1,967	236	1,731
Manufacturing [2]	140	T = 3.88*(X/1000) - 20.7	T = 0.78*(X/1000) - 12.89	36.0%	64.0%	1,489,877	sf	5,760	1,149	414	735
Warehousing [2]	150	T = 3.68*(X/1000) + 350.27	LN(T) = 0.79*LN(X/1000) + 0.54	25.0%	75.0%	1,489,877	sf	5,833	551	138	413
Office [3]	710	LN(T) = 0.77*LN(X) + 3.65	T = 1.12*(X) + 78.81	17.0%	83.0%	1,033,286	sf	8,056	1,236	210	1,026
Total Project Trip Generation						**5,502,918**	sf	**30,676**	**4,903**	**998**	**3,905**

[1] Trip generation rates based on ITE Trip Generation, 7th Edition.

[2] Airport Support District trip generation assumed to be comprised of equal proportions of light industrial, warehouse, manufacturing.

[3] Airport Support Area trip generation based on office.

30,692	Trip Entitlements Avail.
-16	Difference

Significant & Adverse Roadway Segments (2025)
Proportionate Share Summary

#	Roadway	Segment	# Lanes	Req Impr	Length	Prop Share	w/o E. Airfield Imprvmt Req
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1	Beachline Expressway	Narcoossee Rd to Central FL Greeneway	8LD	10LD	2.1	28.0%	No
2	Beachline Expressway	Central FL Greeneway to Innovation Way	6LD	8LD	4.3	16.2%	YES
3	Central Florida Greeneway	Beachline Expressway to Lee Vista Blvd	6LD	8LD	1.9	18.6%	YES
4	Central Florida Greeneway	Lee Vista Blvd to Curry Ford Rd	6LD	8LD	2.3	17.7%	YES
5	Conway Rd	Hoffner Rd to Gatlin Ave	4LD	6LD	1.0	16.4%	YES
6	Conway Rd	Gatlin Ave to Michigan St	4LD	6LD	1.3	10.8%	YES
7	Curry Ford Road	Econlockhatchee Trail to Dean Rd	4LD	6LD	1.1	27.3%	YES
8	Goldenrod Road	Pershing Ave to Narcoossee Rd	4LD	6LD	1.4	14.5%	YES
9	Innovation Way	Dowden Rd to Beachline Expressway	4LD	6LD	5.9	17.7%	YES
10	Lee Vista Blvd	Conway Rd to Semoran Blvd	4LD	6LD	1.3	3.3%	YES
11	Lee Vista Blvd	Semoran Blvd to Goldenrod Rd	4LD	6LD	1.3	4.1%	YES
12	Michigan St	Crystal Lake Dr to Conway Rd	2L	4LD	0.3	1.7%	YES
13	Narcoossee Road	Lee Vista Blvd to Beachline Expressway	4LD	6LD	1.4	12.5%	YES
14	Narcoossee Road	Beachline Expressway to Dowden Rd	4LD	6LD	1.2	28.3%	YES
15	Narcoossee Road	Dowden Rd to Lake Nona Blvd	4LD	6LD	2.2	59.0%	YES
16	Narcoossee Road	Lake Nona Blvd to Central FL Greeneway	4LD	6LD	0.3	21.7%	YES
17	Narcoossee Road	Central FL Greeneway to Tyson Rd	4LD	6LD	1.6	21.7%	YES
18	Semoran Boulevard	Pershing Ave to Hoffner Ave	6LD	8LD	1.3	38.6%	YES
19	Semoran Boulevard	Hoffner Ave to Beachline Expressway	6LD	8LD	2.0	64.9%	YES
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Exhibit F - Match Trip Entitlements Available for Transfer (Assume No Mud Lake Trips)

ITE Trip Generation Rates

East Airfield Environmental Assessment
Project Trip Generation

Land Use	ITE Code	Trip Generation Rates/Equations [1] Daily	PM Peak Hour	PM Pk Hr In	PM Pk Hr Out	Size	Units	Daily Trips	PM Peak Hour Trips Total	Enter	Exit
Light Industrial [2]	110	T = 7.47*(X/1000) - 101.92	T = 1.43*(X/1000) - 163.42	12.0%	88.0%	1,256,981	sf	9,288	1,634	196	1,438
Manufacturing [2]	140	T = 3.88*(X/1000) - 20.7	T = 0.78*(X/1000) - 12.89	36.0%	64.0%	1,256,981	sf	4,856	968	348	620
Warehousing [2]	150	T = 3.68*(X/1000) + 350.27	LN(T) = 0.79*LN(X/1000) + 0.54	25.0%	75.0%	1,256,981	sf	4,976	482	121	362
Office [3]	710	LN(T) = 0.77*LN(X) + 3.65	T = 1.12*(X) + 78.81	17.0%	83.0%	871,764	sf	7,068	1,055	179	876
Total Project Trip Generation						**4,642,706**	sf	**26,188**	**4,139**	**844**	**3,295**

[1] Trip generation rates based on ITE Trip Generation, 7th Edition.

[2] Airport Support District trip generation assumed to be comprised of equal proportions of light industrial, warehouse, manufacturing.

[3] Airport Support Area trip generation based on office.

26,208	Trip Entitlements Avail.
-20	Difference

Significant & Adverse Roadway Segments (2025)
Proportionate Share Summary

#	Roadway	Segment	# Lanes	Req Impr	Length	Prop Share	w/o E. Airfield Imprvmt Req
9999							
1	Beachline Expressway	Narcoossee Rd to Central FL Greeneway	8LD	10LD	2.1	23.6%	No
2	Central Florida Greeneway	Beachline Expressway to Lee Vista Blvd	6LD	8LD	1.9	15.6%	YES
3	Central Florida Greeneway	Lee Vista Blvd to Curry Ford Rd	6LD	8LD	2.3	15.0%	YES
4	Goldenrod Road	Pershing Ave to Narcoossee Rd	4LD	6LD	1.4	12.3%	YES
5	Innovation Way	Dowden Rd to Beachline Expressway	4LD	6LD	5.9	14.9%	YES
6	Lee Vista Blvd	Conway Rd to Semoran Blvd	4LD	6LD	1.3	2.8%	YES
7	Lee Vista Blvd	Semoran Blvd to Goldenrod Rd	4LD	6LD	1.3	3.5%	YES
8	Michigan St	Crystal Lake Dr to Conway Rd	2L	4LD	0.3	1.5%	YES
9	Narcoossee Road	Lee Vista Blvd to Beachline Expressway	4LD	6LD	1.4	10.5%	YES
10	Narcoossee Road	Beachline Expressway to Dowden Rd	4LD	6LD	1.2	23.9%	YES
11	Narcoossee Road	Dowden Rd to Lake Nona Blvd	4LD	6LD	2.2	49.8%	YES
12	Narcoossee Road	Lake Nona Blvd to Central FL Greeneway	4LD	6LD	0.3	18.3%	YES
13	Narcoossee Road	Central FL Greeneway to Tyson Rd	4LD	6LD	1.6	18.3%	YES
14	Semoran Boulevard	Pershing Ave to Hoffner Ave	6LD	8LD	1.3	32.5%	YES
15	Semoran Boulevard	Hoffner Ave to Beachline Expressway	6LD	8LD	2.0	54.8%	YES
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