

Traffic Memorandum

To: Brandon Cohen
Abrika Properties, LLC
8250 SW 27th Avenue
Ocala, FL 34476

From: Kari J. McDowell Schroeder, PE, PTOE

Date: October 16, 2020

Re: **Haymeadow School Site Swap – Traffic Memo**
Eagle, Colorado

Abrika Properties, the developer of Haymeadow, is proposing to swap two land uses internal to the Haymeadow site. The development's current school site is located adjacent to the Town of Eagle's Pool and Ice Rink facility, on the northwest corner of the Haymeadow site. The applicant is proposing to swap the location of the school site with 112 multifamily units located on the northeast of Brush Creek Road and Ouzel Lane. The Town Park use will remain adjacent to the Pool and Ice Rink facility. **Figure 1** shows the site location of the proposed land use swap.

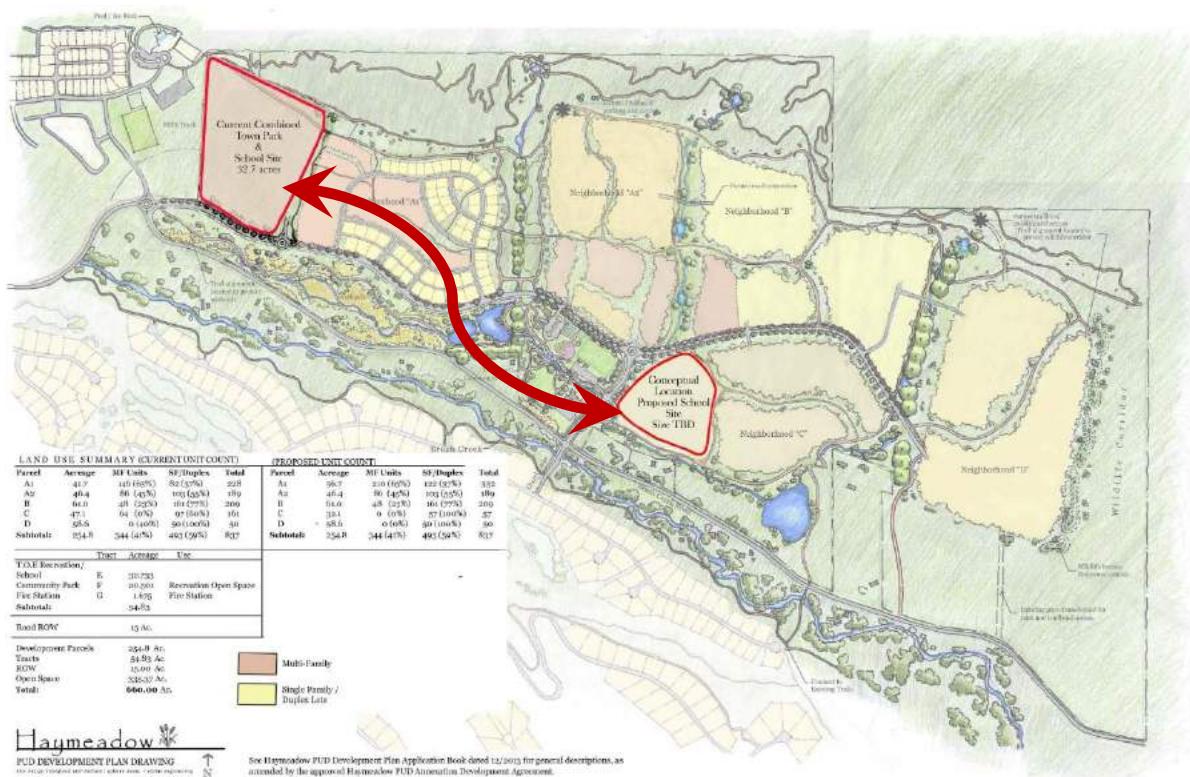


Figure 1: Proposed Land Use Swap

Project Background

The Town of Eagle previously approved a Transportation Impact Study¹ (TIS) for the Haymeadow development. Data and recommendations from this TIS are referenced in this analysis of traffic impacts from the proposed school site swap.

Trip Generation Impacts

The anticipated trip generation for each site was taken from the TIS¹. Refer to **Table 1**.

Table 1: Original Trip Generation Analysis from TIS¹

FH09026

Hay Meadow Project

8/13/2013

Haymeadow Traffic Study

FOX TUTTLE
TRANSPORTATION GROUP

Table 2. Trip Generation Estimate for the Haymeadow Development and the Recreation Facility

Parcel	ITE Code	Land Use	Size	Unit	Multi-Modal	Trip Reduction Factors		Average Daily Trips			External A.M. Peak Hour Trips			External P.M. Peak Hour Trips				
						Internal Trips and Multi-Purpose Trips	Pass-By	Rate	Total Trips with No Trip Reductions	Total External Trips with Trip Reductions	Rate	Total	In	Out	Rate	Total	In	Out
School	620/522	K-8 School (4)	600	Students	0.10	0.375	0.00	1.36	816	459	0.47	159	87	72	0.15	51	26	26
A1	210	Single Family Detached	67	Dwelling Units	0.05	0.05	0.00	9.57	641	579	0.75	45	11	34	1.01	61	36	23
A1	230	Townhome / Condo / Apt	140	Dwelling Units	0.05	0.05	0.00	5.88	820	740	0.44	56	9	47	0.52	60	44	22
A1	(2)	Accessory Dwelling Units	10	Dwelling Units	0.05	0.05	0.00	5.88	59	53	0.44	4	1	3	0.52	5	3	2
A1		Subtotal Parcel A1:	217						1,520	1,372		105	21	84		132	85	47
A2	210	Single Family Detached	90	Dwelling Units	0.05	0.05	0.00	9.57	861	777	0.76	61	15	46	1.01	82	52	30
A2	230	Townhome / Condo / Apt	93	Dwelling Units	0.05	0.05	0.00	5.88	546	462	0.44	37	6	31	0.52	44	29	15
A2	(2)	Accessory Dwelling Units	13	Dwelling Units	0.05	0.05	0.00	5.88	76	69	0.44	5	1	4	0.52	6	4	2
A2		Subtotal Parcel A2:	196						1,482	1,338		103	22	81		132	85	47
B	210	Single Family Detached	147	Dwelling Units	0.05	0.05	0.00	9.57	1,407	1,270	0.75	100	25	75	1.01	134	84	50
B	230	Townhome / Condo / Apt	48	Dwelling Units	0.05	0.05	0.00	5.88	281	254	0.44	19	3	16	0.52	23	15	8
B	(2)	Accessory Dwelling Units	22	Dwelling Units	0.05	0.05	0.00	5.88	129	116	0.44	9	1	8	0.52	10	7	3
B		Subtotal Parcel B:	217						1,817	1,640		128	29	99		167	106	61
C	210	Single Family Detached	98	Dwelling Units	0.05	0.05	0.00	9.57	942	760	0.76	60	15	45	1.01	80	50	30
C	230	Townhome / Condo / Apt	64	Dwelling Units	0.05	0.05	0.00	5.88	375	338	0.44	25	4	21	0.52	30	20	10
C	(2)	Accessory Dwelling Units	13	Dwelling Units	0.05	0.05	0.00	5.88	76	69	0.44	5	1	4	0.52	6	4	2
C		Subtotal Parcel C:	165						1,293	1,167		90	20	70		116	74	42
D	210	Single Family Detached	50	Dwelling Units	0.05	0.05	0.00	9.57	479	432	0.75	34	8	25	1.01	46	29	17
D	230	Townhome / Condo / Apt	0	Dwelling Units	0.05	0.05	0.00	5.88	0	0	0.44	0	0	0	0.52	0	0	0
D	(2)	Accessory Dwelling Units	8	Dwelling Units	0.05	0.05	0.00	5.88	47	42	0.44	3	0	3	0.52	4	3	1
D		Subtotal Parcel D:	58						526	474		37	9	28		50	32	18
Civic	412	Community Park (3)	13	Acres	0.15	0.50	0.00	2.28	30	13	0.01	0	0	0	0.06	0	0	0
Civic	(1)	Fire Station	2	Acres	0.00	0.00	0.00	10.00	20	20	2.00	4	3	1	2.00	4	1	3
Total External Haymeadow Trip Ends:									7,504	6,483		626	191	435		652	406	244
T.O.E. Rec.	495	Recreation Community Center	88	1,000 sq. ft.	0.10	0.10	0.00	14.00	952	771	1.62	89	54	35	1.45	80	30	50
T.O.E. Rec.	498	Soccer Complex	3	Fields	0.10	0.10	0.00	71.33	214	173	1.40	3	2	1	20.67	50	35	15
Total External Recreation Facility Trip Ends:									1,168	944		92	66	36		130	65	66
Total External Trips From Both Sites:									8,670	7,427		718	247	471		782	473	309
Total Single Family DU's:						442												
Total Multi-Family DU's:						345												
Total Accessory DU's:						66												
Total DU's:						853												

Notes:

1. No ITE information available. Trip rate for Fire Station estimated for normal daily activity (not a fire event) assuming some resident fire fighters on-site.
2. To be conservative, Accessory Dwelling Units are assumed to be similar to apartment units from a trip generation perspective.
3. Community Park will not likely host a significant event during weekday peak hours.
4. ITE school rates have been prorated as follows: 78% Elementary and 22% Middle School / Junior High School

Table 1 trip generation Haymeadow June 2013

¹ Haymeadow Transportation Impact Study. Fox Tuttle Transportation Group, LLC. August 15, 2013.

A comparison of the sites to be swapped results in a net increase of daily trips for Neighborhood A. However, peak morning hourly trips are anticipated to be higher at the new school site. A comparison of the trip generation is included in **Table 2**. These trip generation calculations are based upon ITE's national trip generation methods². Reductions were already taken in the TIS for the school site's multimodal (pedestrian and bicycle), internal Haymeadow trips, and multi-purpose trips.

Table 2: Summary of Original and Proposed Trips

Time	Weekday Trips (vpd)	Peak AM Trips Inbound (vph)	Peak AM Trips Outbound (vph)	Peak PM Trips Inbound (vph)	Peak PM Trips Outbound (vph)
Neighborhood A					
Original – School Site	-459	-87	-72	-25	-26
Proposed – 112 Multifamily	+592	+7	+37	+35	+18
Difference	+133	-80	-35	+10	-8
Neighborhood B & C					
Original – 112 Multifamily	-592	-7	-37	-35	-18
Proposed – School Site	+459	+87	+72	+25	+26
Difference	-133	+80	+35	-10	+8

vpd = vehicles per day; vph = vehicles per hour

The proposed land use swap results in the following changed in traffic patterns.

- Neighborhood A
 - Net increase in daily trips of 133vpd. This increase is caused because residential units are more likely to travel throughout the day than school traffic. This daily traffic increase will not be as noticeable as hourly traffic increases.
 - Decrease of 115vph in morning traffic. This is because residential traffic is less intensive in the morning than school traffic.
 - Comparable (+2vph) evening peak hour traffic.
- Neighborhood B & C
 - Net decrease in daily trips of 133vpd.
 - Increase in morning traffic due to the school drop-off peak traffic. This is typically an intensive travel time for 20 – 30 minutes before school starts.
 - Extra 80vph inbound to the school.
 - Extra 35 vph leaving after school drop off.
 - Comparable (-2vph) evening peak hour traffic.

² *Trip Generation, 8th Edition*, Institute of Transportation Engineers, 2008.

The increase in daily traffic at Neighborhood A will not be noticeable on the roadway network. The daily traffic increase is anticipated because residential units are more likely to travel throughout the day than school traffic. Neighborhood A is not anticipated to see a significant impact in hourly travel.

The largest impact of the proposed land use swap is the additional 115vph caused by the morning school drop-off traffic on Neighborhood B. This traffic increase is typically caused by an intensive travel time for 20 – 30 minutes before school starts. This impact is discussed in detail below.

Morning School Traffic Impacts on Neighborhood B

The original TIS made a general assumption in applying the directional distribution of the site-generated traffic to the entire Haymeadow site. Each land use will have its own unique pattern of where cars are coming from and going to. For example, the elementary school portion of the school site will likely draw largely from the future Haymeadow residents. Therefore, the original TIS anticipated that 280 morning and 91 evening peak hour trips would be a combination of pedestrian, bicycle, internal Haymeadow trips, and multi-purpose trips such as a parent dropping off a student on their way to work. Haymeadow has incorporated numerous sidewalk and trail improvements into the development, increasing the likelihood of students walking and biking to school.

Transportation Infrastructure Impacts and Conclusion

The additional 115 vph (80vph in / 35vph out) during the school's morning drop-off caused by the school site swap would likely all be external trips, accessed by Sylvan Lake Road or Ouzel Lane.

It is likely that approximately 2/3 of the additional traffic (53vph in / 23vph out) to new school location will access the school site via Sylvan Lake Road, as it provides the fastest travel time from Eagle Ranch and the surrounding neighborhoods. This will only increase traffic on Sylvan Lake Road from the original school site to the new school site, as the traffic was previously accounted for at the original school site. The Sylvan Lake Road extension into the Haymeadow property was adequately designed with two 11' wide travel lanes and a 5-foot-wide paved shoulder on each side to serve as on-street bike lanes. The Sylvan Lake Road corridor will also include a separated 10-foot-wide bicycle/pedestrian path. This path will connect to the existing trails and sidewalks to the new Haymeadow development.

The remaining 1/3 of the additional morning traffic (27vph in / 12vph out) caused by the school site swap will likely access the school via Ouzel Lane. This may add to the southbound left turn movement from Brush Creek Road to Ouzel Lane towards the Haymeadow project. The configuration of the Brush Creek Road and Ouzel Lane intersection should be studied prior to the time of Final Plat.

The future school site should be designed to accommodate the anticipated queues within the school property. The configuration of the school site circulation will directly impact operations and travel on the adjacent street network. The school's proposed circulation and operations should be reviewed by the Town's Traffic Engineer.

Please call if you would like any additional information or have any questions regarding this matter.

Sincerely,
McDowell Engineering, LLC



Kari J. McDowell, PE, PTOE
Senior Traffic & Transportation Engineer