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October 28, 2019

Ms. Melinda Lundquist, P.E.
CVL Consultants of Colorado
10333 E. Dry Creek Avenue, Suite 240
Englewood, CO 80112

Re: ConocoPhillips Well Sites
Eastern Hills South #4-65 17-18
Eastern Hills North #4-65 17-18
Grande North #4-65 20-19
Grande South #4-65 20-19
Traffic Memorandum
Aurora, Colorado
LSC #190756, 190752, 190751 & 190753

Dear Ms. Lundquist:

In response to your request, LSC Transportation Consultants, Inc. has prepared this traffic memorandum for the proposed ConocoPhillips Eastern Hills South #4-65 17-18; Eastern Hills North #4-65 17-18; Grande North #4-65 20-19; and Grande South #4-65 20-19 well sites (28 well heads) in Aurora, Colorado.

REPORT CONTENTS

The report includes a review of the need for auxiliary turn lanes along the proposed haul routes based on the NR-B/NR-C CDOT classifications in the *State Highway Access Code* (SHAC). The impacts of the Eastern Hills South, Eastern Hills North, Grande North, and Grande South sites were all included in this report to demonstrate the combined impact on the existing street network. The impacts from the nearby Rush North and Rush South sites were also included; however, the access intersection for these two sites was not reviewed as it was evaluated in a separate report. This is appropriate because the four sites plus the two Rush sites share a similar haul route. The Eastern Hills South and Eastern Hills North sites share the same access intersection on Powhaton Road and the Grande North and Grande South sites have separate access intersections on Powhaton Road.

LAND USE AND ACCESS

The four sites are proposed as oil and gas operations with a total of 28 well heads. The private access roads connect directly to S. Powhaton Road. The proposed haul route is south on Watkins Road and then west on E. Jewell Avenue, then north on Powhaton Road to the various access points.

ROADWAY AND TRAFFIC CONDITIONS

Area Roadways

The major roadways in the vicinity of the site are shown on Figure 1 and are briefly described below.

- **S. Powhatan Road** is a north-south, two-lane paved road near the proposed sites. It connects E. Jewell Avenue north to the I-70 Frontage Road and E. 26th Avenue. The intersection with E. Jewell Avenue is stop-sign controlled. The posted speed limit near the site is 45 mph.
- **E. Jewell Avenue** is an east-west, two-lane paved road south of the proposed sites. It transitions to gravel east of the site closer to Watkins Road. The posted speed limit is 40 mph in the vicinity of S. Powhatan Road. The intersections with Watkins Road (CR 97) and Powhatan Road are stop-sign controlled.
- **Existing or Proposed Private Access Roads** are gravel roadways that will provide access to the site. They will be maintained to accommodate construction traffic with a minimum width of 23 feet. The first 100 feet from the public roadway network will be improved as a hard surface.

EXISTING CONDITIONS

Figure 1 shows the existing traffic volumes, lane geometry, traffic control, and posted speed limits along the proposed haul route. Figure 2 shows the estimated 2022 background traffic based on a three percent annual growth rate.

SIGHT DISTANCE

The intersection entering sight distance is very good at the intersections of Watkins Road/E. Jewell Avenue and E. Jewell Avenue/S. Powhatan Road due to relatively flat grades in the area.

OPERATOR AGREEMENT BMP 27

The applicant has responded elsewhere to the various requirements of the Operator Agreement BMP 27.

TRIP GENERATION

Table 1 shows the typical daily PCE trips for the various phases of any one site. Table 1 also shows the estimated daily traffic volumes in passenger car equivalent (PCE) vehicles each day beginning on January 1, 2020 and ending on August 24, 2022 for the combined sites. This construction schedule of 32 months is subject to change based on field conditions, but is a good estimate of the combined impact over time from the various sites. The various vehicle types are summarized in the attached Truck Footprint table by CVL Consultants.

Table 2 shows the ten scenarios with the highest combined PCE trip generation potential. Table 2 also estimates peak-hour trips by conservatively assuming the daily trips are distributed over a ten-hour day with a peaking factor of 2.0.

AUXILIARY TURN LANE REQUIREMENTS AT OFF-SITE INTERSECTIONS

Watkins Road/E. Jewell Avenue:

The *State Highway Access Code* (SHAC) threshold for a southbound right-turn deceleration lane on Watkins Road for a 55 mph posted speed limit is greater than 25 PCE vehicles per hour. If required by the City, the length required in the SHAC for 55 mph is 378 feet plus a 222-foot transition taper (18.5:1 taper rate).

E. Jewell Avenue/S. Powhatan Road:

The SHAC threshold for a westbound right-turn lane on E. Jewell Avenue for a 40 mph posted speed limit is greater than 50 PCE vehicles per hour. If required by the City, the length in the SHAC for 40 mph is vehicle storage plus tapers so 150 feet for the lane (storage for two trucks) plus a 144-foot transition taper (12:1 taper rate).

Trip Assignment

Figure 3 shows the combined PCE trip assignment for Scenario 10 from Table 2. All other combinations of phases will have an equal or lower trip assignment.

Total Turning Traffic

Figure 4 shows the estimated 2022 total traffic volumes at the off-site intersections along the proposed haul route.

Figure 4 shows the threshold for a southbound right-turn lane from Watkins Road to E. Jewell Avenue is exceeded during both peak-hours. The appropriate length for this lane is 378 feet plus a 222-foot transition taper.

Figure 4 shows the threshold for a westbound right-turn lane from E. Jewell to S. Powhatan Road is not expected to be exceeded so this lane is not warranted. If required by the City, an appropriate length is 150 feet plus a 144-foot transition taper.

AUXILIARY TURN LANE REQUIREMENTS AT SITE ACCESS INTERSECTIONS

Figure 5 shows the estimated maximum turning traffic at each of the three access intersections on S. Powhatan Road based on the one well site trip generation potential in Table 1 for the Grande North and Grande South access intersections and on the combined impact of the Eastern Hills North and South sites which share an access intersection.

S. Powhatan Road/Grande North Access & S. Powhatan Road/Grande South Access

These two intersections serve only one site so will have a maximum daily trip generation potential of 159 PCE trips. This converts to a peak-hour volume of 16 entering PCE vehicles and 16 exiting PCE vehicles in any one hour. The threshold for requiring a northbound right-turn lane on S. Powhatan Road

approaching either of the access intersections is greater than 25 PCE trips in the peak-hour. This threshold is not expected to be met. If this lane is required by the City, an appropriate length would be 273 feet plus a 162-foot transition taper.

S. Powhatan Road/Eastern Hills North and South Site Access

This access intersection serves both the Eastern Hills North and Eastern Hills South site. A review of Table 1 shows the combined daily impact is expected to peak at 171 PCE trips. This converts to a peak-hour volume of 17 entering PCE vehicles and 17 exiting PCE vehicles in any one hour. The threshold for requiring a northbound left-turn lane on S. Powhatan Road is greater than 10 PCE trips in the peak-hour. This threshold is expected to be met. An appropriate length would be 348 feet (273 feet for deceleration and 75 feet to store one long vehicle) plus a 162-foot transition taper (13.5:1) and 45:1 redirect taper.

SUMMARY

The threshold for a southbound right-turn deceleration lane on Watkins Road approaching E. Jewell Avenue will be met during several phases/scenarios due to the combination of existing and site traffic. An appropriate length for this lane is 378 feet plus a 222-foot transition taper.

The threshold for a westbound right-turn lane on E. Jewell Avenue at S. Powhatan Road is not expected to be met.

The threshold for a northbound right-turn lane on S. Powhatan Road approaching both the Grande North access and the Grande South access is not expected to be met.

The threshold for a northbound left-turn deceleration lane on S. Powhatan Road approaching the shared Eastern Hills North and Eastern Hills South access is expected to be met. An appropriate length for this lane is 348 feet (273 feet for deceleration and 75 feet for vehicle storage) plus a 162-foot transition taper and 45:1 redirect taper.

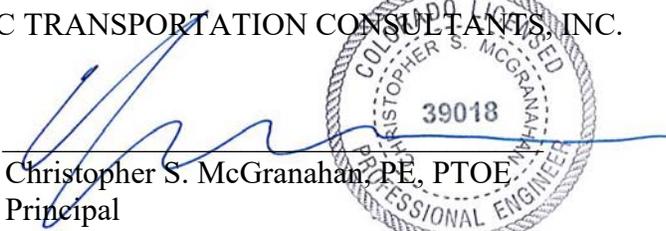
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We trust this traffic memorandum will assist you in gaining approval of the proposed ConocoPhillips well sites referred to as Eastern Hills South #4-65 17-18; Eastern Hills North #4-65 17-18; Grande North #4-65 20-19; and Grande South #4-65 20-19. Please contact me if you have any questions or need further assistance.

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

By


Christopher S. McGranahan, PE, PTOE
Principal



CSM/wc

10-28-19

- Enclosures:
- Tables 1 and 2
 - Figures 1 - 5
 - Haul Route Map
 - Truck Footprint Table by CVL Consultants
 - Traffic Counts

Average Daily PCE Trips for One Site		
PHASE	DURATION (days)	TRIPS/DAY
Construction #1	21	60
Construction #2	14	150
Drilling (Rig Up)	3	159
Drilling (Operations)	64	21
Drilling (Rig Down)	3	159

Average Daily PCE Trips for One Site		
PHASE	DURATION (days)	TRIPS/DAY
Completion (Toe Prep)	30	15
Completion (Frac Ops)	50	156
Completion (Plug Drill Out)	60	15
Initial Production	180	21
Production / Operations		6

Table 1 (Page 2 of 12)
Cumulative Trips by Phase
COP - Grande North, Eastern Hills North, Grande South, & Eastern Hills South
Aurora, CO
LSC #190751, #190752, #190753 & #190756; October, 2019

PAD LOCATION	WELL #	3/22	3/23	3/24	3/25	3/26	3/27	3/28	3/29	3/30	3/31	4/1	4/2	4/3	4/4	4/5	4/6	4/7	4/8	4/9	4/10	4/11	4/12	4/13	4/14	4/15	4/16	4/17	
		Mar-20										Apr-20																	
Rush South	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
Rush North	^1 - 8	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	159	159	159	159		15	15	15	15	15	15	15	
Grande South	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
Grande North	^1 - 8																					159	159	159	159	21	21	21	
Eastern Hills South	^1 - 8																												
Eastern Hills North	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
		60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	150	150	150	150	150	150	150	150	150	150	150	
		99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	237	327	327	327	327	168	342	342	342	342	204	204	204
		Apr-20										May-20																	
Rush South	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
Rush North	^1 - 8	15	15	15	15	15	15	15	15	15	15	15	15	15	15							156	156	156	156	156	156	156	
Grande South	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
Grande North	^1 - 8	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	
Eastern Hills South	^1 - 8																												
Eastern Hills North	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
		150	150																										
		204	204	54	54	54	54	54	54	54	54	54	54	54	54	39	39	39	39	39	195	195	195	195	195	195	195	195	
		May-20										Jun-20																	
Rush South	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
Rush North	^1 - 8	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	
Grande South	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
Grande North	^1 - 8	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	159	159	159	159	
Eastern Hills South	^1 - 8																												
Eastern Hills North	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
		195	195	195	195	195	195	195	195	195	195	195	195	195	195	195	195	195	195	195	195	195	195	333	333	333	333	174	

Average Daily PCE Trips for One Site		
PHASE	DURATION (days)	TRIPS/DAY
Construction #1	21	60
Construction #2	14	150
Drilling (Rig Up)	3	159
Drilling (Operations)	64	21
Drilling (Rig Down)	3	159

Average Daily PCE Trips for One Site		
PHASE	DURATION (days)	TRIPS/DAY
Completion (Toe Prep)	30	15
Completion (Frac Ops)	50	156
Completion (Plug Drill Out)	60	15
Initial Production	180	21
Production / Operations		6

Table 1 (Page 3 of 12)
Cumulative Trips by Phase
COP - Grande North, Eastern Hills North, Grande South, & Eastern Hills South
Aurora, CO
LSC #190751, #190752, #190753 & #190756; October, 2019

PAD LOCATION	WELL #	6/11	6/12	6/13	6/14	6/15	6/16	6/17	6/18	6/19	6/20	6/21	6/22	6/23	6/24	6/25	6/26	6/27	6/28	6/29	6/30	7/1	7/2	7/3	7/4	7/5	7/6	7/7		
		Jun-20											Jul-20																	
Rush South	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		
Rush North	^1 - 8	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156			15	15	15	15	15	15		
Grande South	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		
Grande North	^1 - 8	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15					156		
Eastern Hills South	^1 - 8																													
Eastern Hills North	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		
		189	189	348	348	348	348	210	210	210	210	210	210	210	210	210	210	210	210	210	54	54	54	54	54	54	54	210		
		7/8	7/9	7/10	7/11	7/12	7/13	7/14	7/15	7/16	7/17	7/18	7/19	7/20	7/21	7/22	7/23	7/24	7/25	7/26	7/27	7/28	7/29	7/30	7/31	8/1	8/2	8/3		
		10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6		
Rush South	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		
Rush North	^1 - 8	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15		
Grande South	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		
Grande North	^1 - 8	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156		
Eastern Hills South	^1 - 8																													
Eastern Hills North	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		
		210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210		
		8/4	8/5	8/6	8/7	8/8	8/9	8/10	8/11	8/12	8/13	8/14	8/15	8/16	8/17	8/18	8/19	8/20	8/21	8/22	8/23	8/24	8/25	8/26	8/27	8/28	8/29	8/30		
		7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3		
Rush South	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		
Rush North	^1 - 8	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15		
Grande South	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		
Grande North	^1 - 8	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156		
Eastern Hills South	^1 - 8																													
Eastern Hills North	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		
		189	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	189	189	189	33	189

Average Daily PCE Trips for One Site		
PHASE	DURATION (days)	TRIPS/DAY
Construction #1	21	60
Construction #2	14	150
Drilling (Rig Up)	3	159
Drilling (Operations)	64	21
Drilling (Rig Down)	3	159

Average Daily PCE Trips for One Site		
PHASE	DURATION (days)	TRIPS/DAY
Completion (Toe Prep)	30	15
Completion (Frac Ops)	50	156
Completion (Plug Drill Out)	60	15
Initial Production	180	21
Production / Operations		6

Table 1 (Page 4 of 12)
Cumulative Trips by Phase
COP - Grande North, Eastern Hills North, Grande South, & Eastern Hills South
Aurora, CO
LSC #190751, #190752, #190753 & #190756; October, 2019

		8/31	9/1	9/2	9/3	9/4	9/5	9/6	9/7	9/8	9/9	9/10	9/11	9/12	9/13	9/14	9/15	9/16	9/17	9/18	9/19	9/20	9/21	9/22	9/23	9/24	9/25	9/26	
PAD LOCATION	WELL #	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Rush South	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
Rush North	^1 - 8	15	15	15	15	15	15	15	15	15	15	15	15																
Grande South	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
Grande North	^1 - 8		15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	
Eastern Hills South	^1 - 8																												
Eastern Hills North	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
		189	204	204	204	204	204	204	204	204	204	204	204	189	189	189	189	189	189	189	189	189	189	189	189	189	189	189	
		9/27	9/28	9/29	9/30	10/1	10/2	10/3	10/4	10/5	10/6	10/7	10/8	10/9	10/10	10/11	10/12	10/13	10/14	10/15	10/16	10/17	10/18	10/19	10/20	10/21	10/22	10/23	
PAD LOCATION	WELL #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
Rush South	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
Rush North	^1 - 8		21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	
Grande South	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
Grande North	^1 - 8	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	
Eastern Hills South	^1 - 8																												
Eastern Hills North	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
		189	189	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	54	54	54	54	69	69	69
		10/24	10/25	10/26	10/27	10/28	10/29	10/30	10/31	11/1	11/2	11/3	11/4	11/5	11/6	11/7	11/8	11/9	11/10	11/11	11/12	11/13	11/14	11/15	11/16	11/17	11/18	11/19	
PAD LOCATION	WELL #	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Rush South	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
Rush North	^1 - 8	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	
Grande South	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
Grande North	^1 - 8	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	
Eastern Hills South	^1 - 8																												
Eastern Hills North	1 ^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
		69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	54	54	54	54	54	54	54

Average Daily PCE Trips for One Site		
PHASE	DURATION (days)	TRIPS/DAY
Construction #1	21	60
Construction #2	14	150
Drilling (Rig Up)	3	159
Drilling (Operations)	64	21
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Average Daily PCE Trips for One Site		
PHASE	DURATION (days)	TRIPS/DAY
Completion (Toe Prep)	30	15
Completion (Frac Ops)	50	156
Completion (Plug Drill Out)	60	15
Initial Production	180	21
Production / Operations		6

Table 1 (Page 7 of 12)
Cumulative Trips by Phase
COP - Grande North, Eastern Hills North, Grande South, & Eastern Hills South
Aurora, CO
LSC #190751, #190752, #190753 & #190756; October, 2019

PAD LOCATION	WELL #	5/1	5/2	5/3	5/4	5/5	5/6	5/7	5/8	5/9	5/10	5/11	5/12	5/13	5/14	5/15	5/16	5/17	5/18	5/19	5/20	5/21	5/22	5/23	5/24	5/25	5/26	5/27	
		Jun-21																											
Rush South	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
	^2 - 8	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	150	150	150	150	150	150	150	
Rush North	^1 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
Grande South	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
	^2 - 8																												
Grande North	^1 - 8	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	
Eastern Hills South	^1 - 8																												
Eastern Hills North	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
	^2 - 8	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	
		126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	216	216	216	216	216	216	216	
		Jun-21																											
		5/28	5/29	5/30	5/31	6/1	6/2	6/3	6/4	6/5	6/6	6/7	6/8	6/9	6/10	6/11	6/12	6/13	6/14	6/15	6/16	6/17	6/18	6/19	6/20	6/21	6/22	6/23	
Rush South	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
	^2 - 8	150	150	150	150	150	150																						
Rush North	^1 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
Grande South	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
	^2 - 8																												
Grande North	^1 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
Eastern Hills South	^1 - 8																												
Eastern Hills North	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
	^2 - 8	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	
		201	201	201	201	201	201	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	
		Jul-21																											
		6/24	6/25	6/26	6/27	6/28	6/29	6/30	7/1	7/2	7/3	7/4	7/5	7/6	7/7	7/8	7/9	7/10	7/11	7/12	7/13	7/14	7/15	7/16	7/17	7/18	7/19	7/20	
Rush South	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
	^2 - 8																												
Rush North	^1 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
Grande South	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
	^2 - 8	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	150	150	150	150	150	150
Grande North	^1 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
Eastern Hills South	^1 - 8																												
Eastern Hills North	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
	^2 - 8	21	21	21	21	21	21	21	21	21	21	21	21	21	21	6	6	6	6	6	6	6	6	6	6	6	6	6	6
		111	111	111	111	111	111	111	111	111	111	111	111	111	96	96	96	96	96	96	96	96	186	186	186	186	186	186	

Average Daily PCE Trips for One Site		
PHASE	DURATION (days)	TRIPS/DAY
Construction #1	21	60
Construction #2	14	150
Drilling (Rig Up)	3	159
Drilling (Operations)	64	21
Drilling (Rig Down)	3	159

Average Daily PCE Trips for One Site		
PHASE	DURATION (days)	TRIPS/DAY
Completion (Toe Prep)	30	15
Completion (Frac Ops)	50	156
Completion (Plug Drill Out)	60	15
Initial Production	180	21
Production / Operations		6

Table 1 (Page 8 of 12)
Cumulative Trips by Phase
COP - Grande North, Eastern Hills North, Grande South, & Eastern Hills South
Aurora, CO
LSC #190751, #190752, #190753 & #190756; October, 2019

		7/21	7/22	7/23	7/24	7/25	7/26	7/27	7/28	7/29	7/30	7/31	8/1	8/2	8/3	8/4	8/5	8/6	8/7	8/8	8/9	8/10	8/11	8/12	8/13	8/14	8/15	8/16
PAD LOCATION	WELL #	28	29	30	31	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Rush South	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	^2 - 8															159	159	159	159	21	21	21	21	21	21	21	21	21
Rush North	^1 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Grande South	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	^2 - 8	150	150	150	150	150	150	150																				
Grande North	^1 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Eastern Hills South	^1 - 8																											
Eastern Hills North	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
		186	186	186	186	186	186	186	36	36	36	36	36	36	36	195	195	195	195	57	57	57	57	57	57	57	57	57
		8/17	8/18	8/19	8/20	8/21	8/22	8/23	8/24	8/25	8/26	8/27	8/28	8/29	8/30	8/31	9/1	9/2	9/3	9/4	9/5	9/6	9/7	9/8	9/9	9/10	9/11	9/12
PAD LOCATION	WELL #	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12
Rush South	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	^2 - 8	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
Rush North	^1 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Grande South	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	^2 - 8																											
Grande North	^1 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Eastern Hills South	^1 - 8														60	60	60	60	60	60	60	60	60	60	60	60	60	60
Eastern Hills North	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
		57	57	57	57	57	57	57	57	57	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117
		9/13	9/14	9/15	9/16	9/17	9/18	9/19	9/20	9/21	9/22	9/23	9/24	9/25	9/26	9/27	9/28	9/29	9/30	10/1	10/2	10/3	10/4	10/5	10/6	10/7	10/8	10/9
PAD LOCATION	WELL #	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9
Rush South	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	^2 - 8	21	21	21	21	21	21	21	21	159	159	159	159		15	15	15	15	15	15	15	15	15	15	15	15	15	15
Rush North	^1 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Grande South	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	^2 - 8																			159	159	159	159	21	21	21	21	21
Grande North	^1 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Eastern Hills South	^1 - 8	60	60	60	150	150	150	150	150	150	150	150	150	150	150	150	150	150										
Eastern Hills North	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	^2 - 8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
		117	117	117	207	207	207	207	207	345	345	345	345	186	201	201	201	360	210	210	210	72	72	72	72	72	72	72

Table 2
ESTIMATED TRAFFIC GENERATION ⁽¹⁾
COP - Grande North and South & Eastern Hills North and South
Aurora, CO
LSC #190751 / #190752 / #190753 / #190756; October, 2019

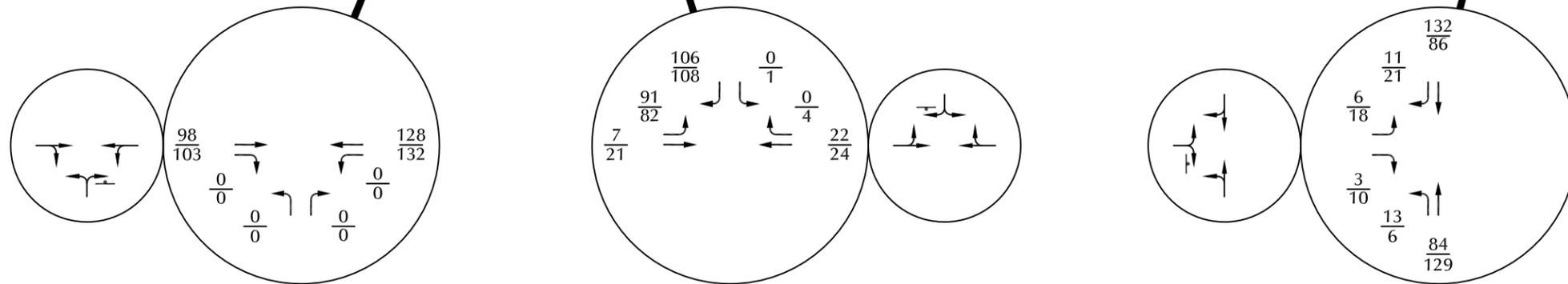
Trip Generating Scenario	Estimated Begin Date ⁽⁴⁾	Estimated Duration ⁽⁴⁾	Trip Generation Rates ⁽²⁾				Vehicle - Trips Generated by Scenario						
			Average Weekday	AM Peak Hour In	PM Peak Hour Out	PM Peak Hour In	Average Weekday	AM Peak Hour ⁽³⁾ In	PM Peak Hour ⁽³⁾ Out	PM Peak Hour ⁽³⁾ In	PM Peak Hour ⁽³⁾ Out		
<i>Scenario</i>													
1	10-Feb-2020	4 days	-	-	-	-	-	327	33	33	33	33	33
2	11-Apr-2020	4 days	-	-	-	-	-	342	34	34	34	34	34
3	06-Jun-2020	4 days	-	-	-	-	-	333	33	33	33	33	33
4	13-Jun-2020	4 days	-	-	-	-	-	348	35	35	35	35	35
5	31-Jul-2020	4 days	-	-	-	-	-	348	35	35	35	35	35
6	21-Sep-2021	4 days	-	-	-	-	-	345	35	35	35	35	35
7	29-Sep-2021	1 day	-	-	-	-	-	360	36	36	36	36	36
8	16-Nov-2021	4 days	-	-	-	-	-	351	35	35	35	35	35
9	23-Nov-2021	4 days	-	-	-	-	-	366	37	37	37	37	37
10	18-Jan-2022	4 days	-	-	-	-	-	366	37	37	37	37	37

Notes:

- (1) This table summarizes the ten scenarios with the highest daily trip generation potential.
- (2) Source: Duration and average weekday volume data provided by applicant.
- (3) Conservatively assumes daily trips are evenly distributed over a 10 hour day with a 2.0 peaking factor.
- (4) The proposed timeline is subject to change based on field conditions.



Approximate Scale
Scale: 1" = 3,000'



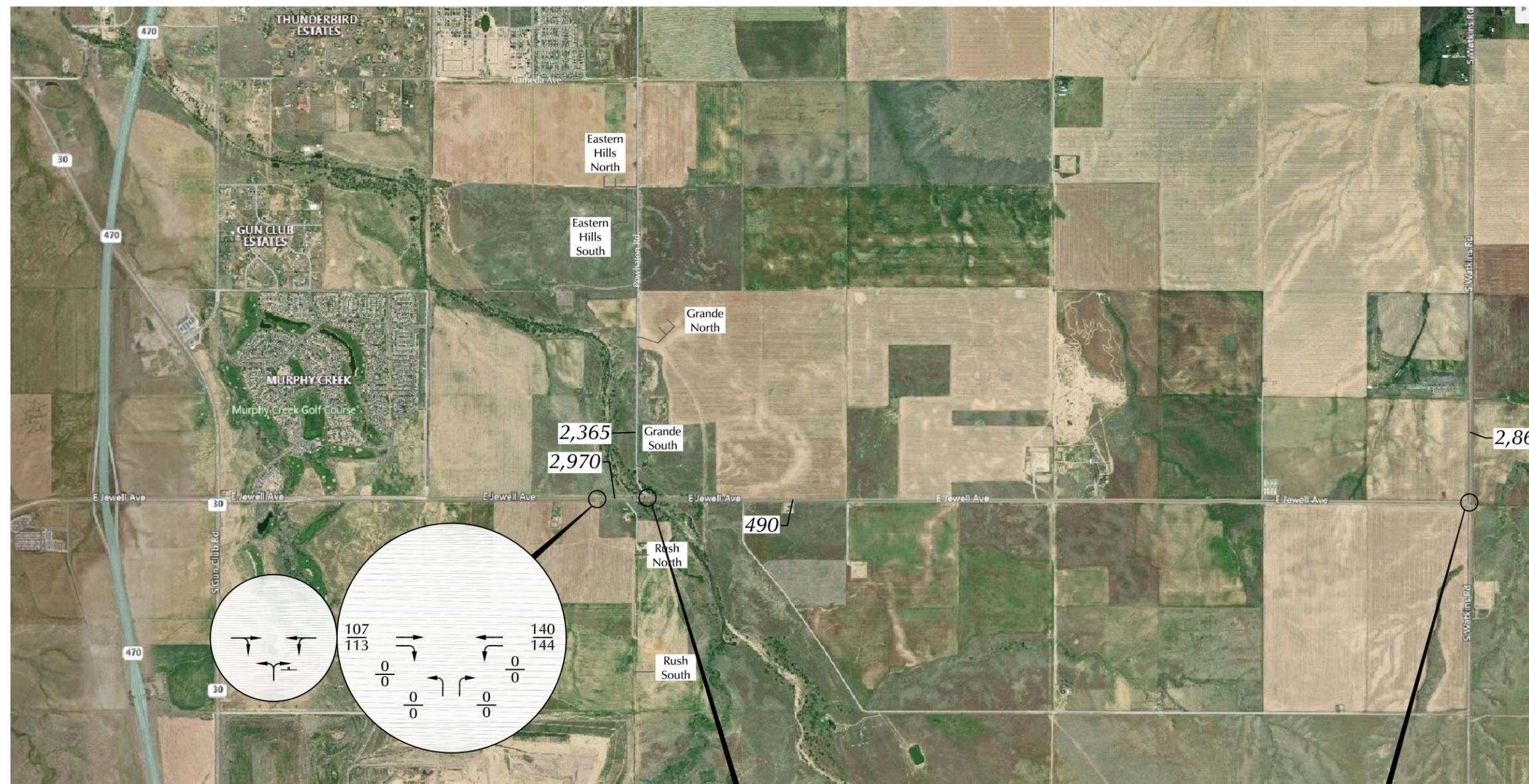
LEGEND:

- ⊥ = Stop Sign
- (40) = Posted Speed Limit
- $\frac{26}{35}$ = AM Peak Hour Traffic / PM Peak Hour Traffic
- 1,000 = Average Daily Traffic

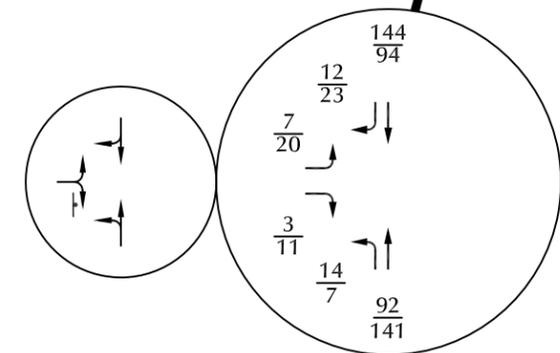
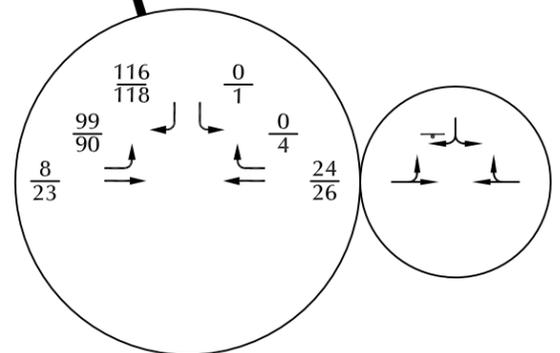
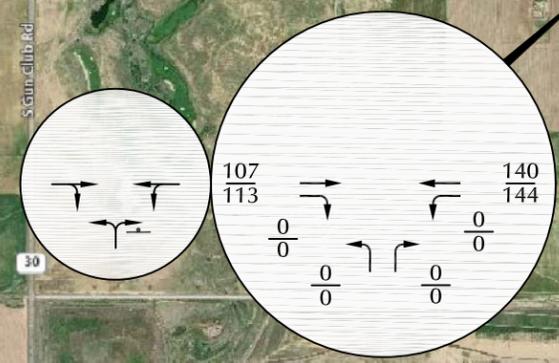


Figure 1
Existing Traffic, Lane Geometry and Traffic Control

COP Eastern Hills South (LSC #190756)
COP Eastern Hills North (LSC #190752)
COP Grande North (LSC #190751)
COP Grande South (LSC #190753)



Approximate Scale
Scale: 1" = 3,000'



Note: Assumes an annual growth rate of about three percent.

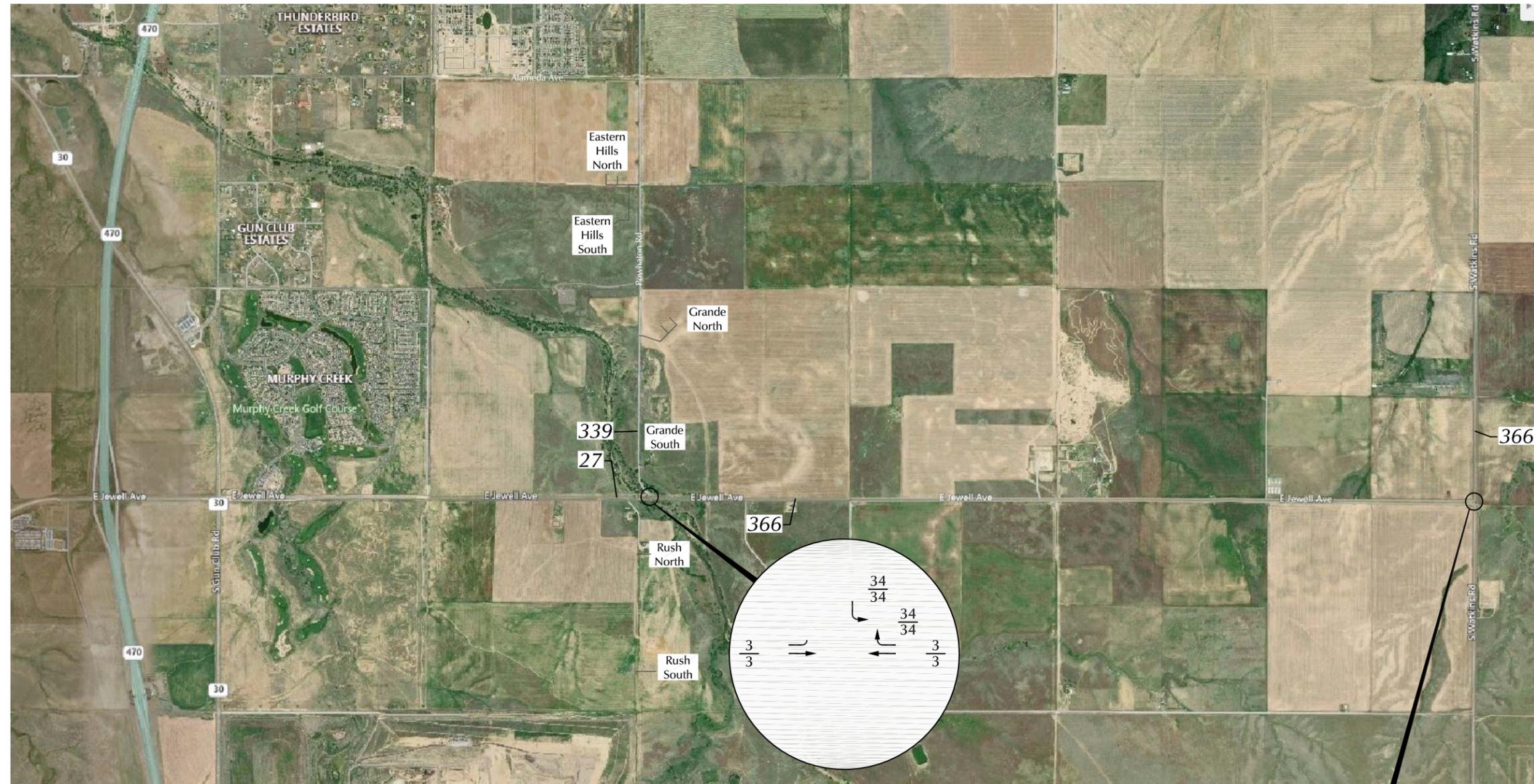
LEGEND:

- ⊥ = Stop Sign
- $\frac{26}{35}$ = AM Peak Hour Traffic / PM Peak Hour Traffic
- 1,000 = Average Daily Traffic



Figure 2
**Year 2022 Background Traffic,
Lane Geometry and Traffic Control**

COP Eastern Hills South (LSC #190756)
COP Eastern Hills North (LSC #190752)
COP Grande North (LSC #190751)
COP Grande South (LSC #190753)



Approximate Scale
Scale: 1" = 3,000'

- Notes:
1. The trip assignment shown is for Scenario 10 from Table 2 - all other combinations of phases will have an equal or lower trip assignment.
 2. All values are passenger car equivalent (PEC) trips.

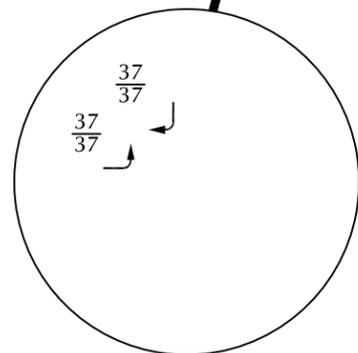


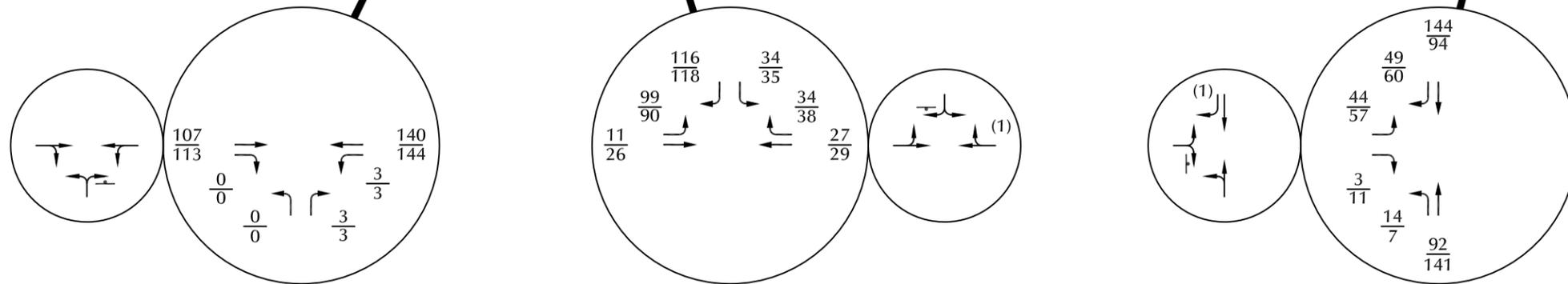
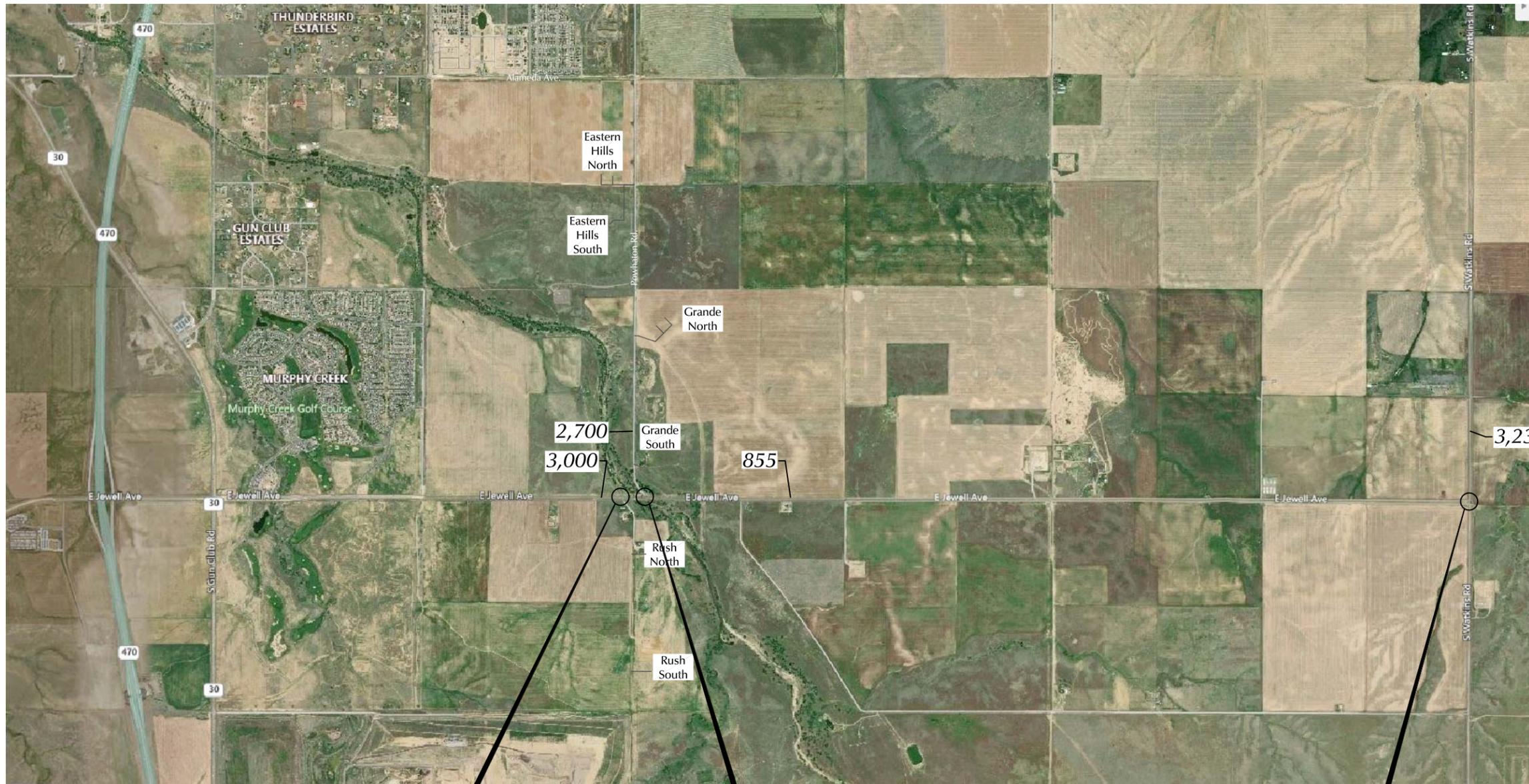
Figure 3

Combined Assignment of Site-Generated Traffic at Off-Site Intersections

- COP Eastern Hills South (LSC #190756)
- COP Eastern Hills North (LSC #190752)
- COP Grande North (LSC #190751)
- COP Grande South (LSC #190753)



LEGEND:
 $\frac{26}{35}$ = AM Peak Hour Traffic
 $\frac{26}{35}$ = PM Peak Hour Traffic
 1,000 = Average Daily Traffic



(1) The peak hour volume exceeds 25 PCE vehicles per hour in both peak hours which is the threshold for a SB RT deceleration lane. Appropriate length for this lane is 378 feet plus a 222-foot transition taper based on the 55mph posted speed limit.
 (2) Both peak hour volumes fall short of the threshold of greater than 50 PCE vehicles per hour that would require a WB RT turn lane if required the recommended length is 150 feet for vehicle storage plus a 144-foot transition taper.

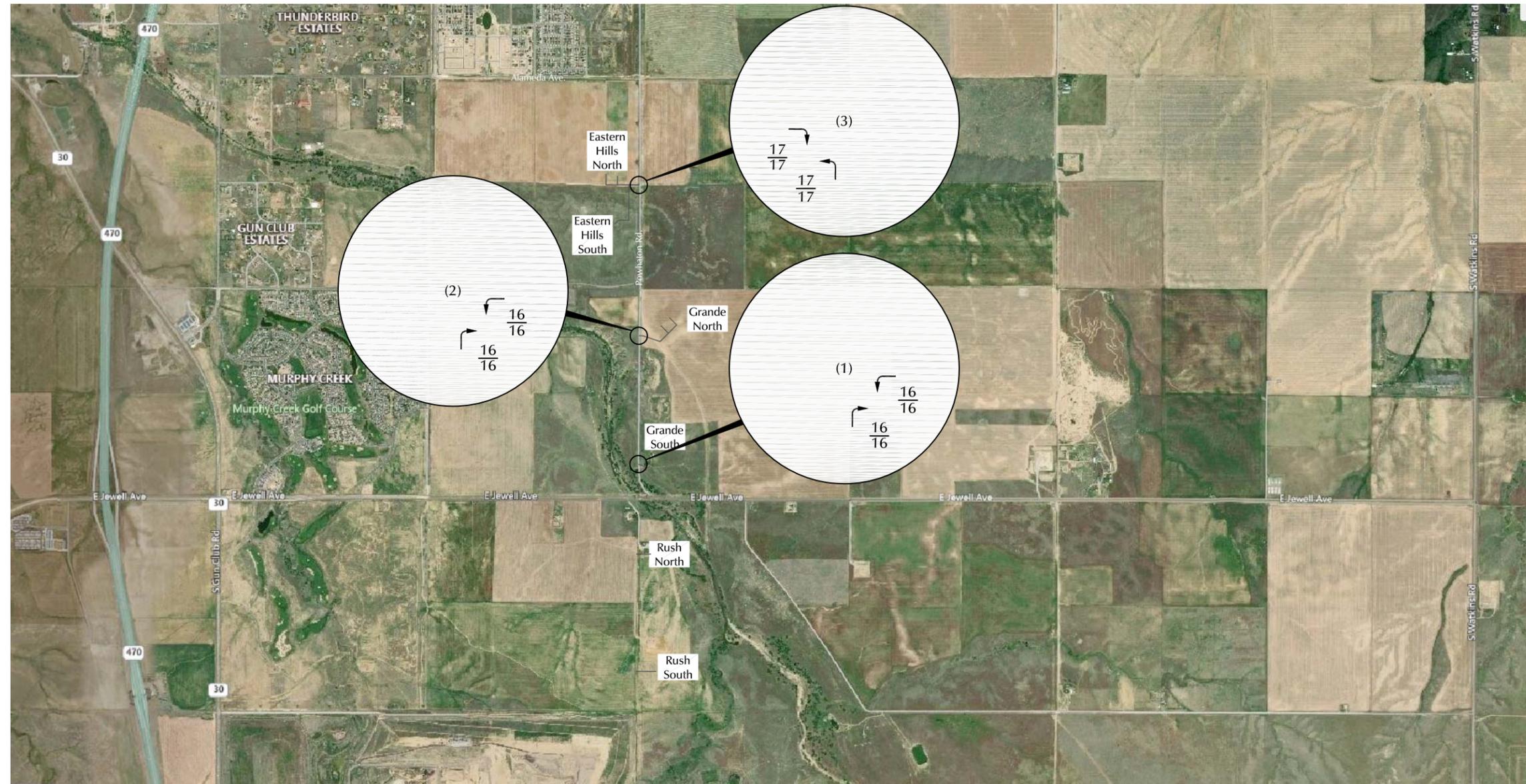
LEGEND:

- ⊥ = Stop Sign
- $\frac{26}{35}$ = AM Peak Hour Traffic / PM Peak Hour Traffic
- 1,000 = Average Daily Traffic



Figure 4
**Year 2022 Total Traffic,
 Lane Geometry and Traffic Control**

- COP Eastern Hills South (LSC #190756)
- COP Eastern Hills North (LSC #190752)
- COP Grande North (LSC #190751)
- COP Grande South (LSC #190753)



Approximate Scale
Scale: 1" = 3,000'

Note: All values are Passenger Car Equivalent (PCE) vehicles.

- (1) This site access is only for Grande South - the peak ADT for one well site is 159 PCE trips which converts to 16 peak hour trips. This falls short of the threshold of greater than 25 PCE vehicles per hour that would require a NB RT deceleration lane. If required, the recommended length for this lane is 273 feet plus a 162-foot transition taper based on the 45mph posted speed limit.
- (2) This site access is only for Grande North - the peak ADT for one well site is 159 PCE trips which converts to 16 peak hour trips. This falls short of the threshold of greater than 25 PCE vehicles per hour that would require a NB RT deceleration lane. If required, the recommended length for this lane is 273 feet plus a 162-foot transition taper based on the 45mph posted speed limit.
- (3) This access will be shared by Eastern Hills North and South - the peak ADT for these combinations of sites is 171 PCE trips which converts to 17 peak hour trips. This exceeds the threshold of greater than 10 PCE vehicles per hour for a NB LT deceleration lane. The recommended length for this lane is 348 feet (273 feet for deceleration and 75 feet to store one large vehicle) plus a 162-foot transition taper and 45:1 redirect taper.

LEGEND:

$\frac{26}{35}$ = AM Peak Hour Traffic
 $\frac{35}{26}$ = PM Peak Hour Traffic
 1,000 = Average Daily Traffic



Figure 5
**Combined Assignment
 of Site-Generated Turning Traffic
 at Site Access Intersections**

COP Eastern Hills South (LSC #190756)
 COP Eastern Hills North (LSC #190752)
 COP Grande North (LSC #190751)
 COP Grande South (LSC #190753)

<u>Truck Type</u>	<u>Description</u>	<u>Weight in lbs</u>	<u>Length in Feet</u>	<u>Axel Gap</u>	<u>Wheels</u>	<u>Number on Pad</u>
Q-10 Pump Truck	Pumping unit	93,320	54'	26'	22	14 active 2 spare
HT-2000	Pumping unit	83,500	53'	26'	18	2 active
FB4K Blender	Mixing Unit	86,780	54'	29'3"	18	1 active 1 spare
ADP	Mixing Unit	80,000	55'	29'3"	18	1 active 1 spare
TCC	Data Recording Unit	68,000	53'	26'	18	1 active
Iron Floats	Iron Storage and Transport	80,000	53'	29'3"	18	3 active
Iron Truck	Crane / Iron Storage	36,120	28'	20'	10	1 active 1 spare
Missile	High and Low Pressure Manifold	60,000	50'	45'	14	1 active
Chemical Floats	Chemical Storage and Transport	65,000	53'	26'	18	3 active
Chemical Iso	Chemical Storage and Transport	75,000	53'	27'6"	18	2 active 1 spare
Acid Tankers	Chemical Storage and Transport	74,000	53'	24'	18	1 active 1 spare
Con Ex Trailer	Parts and Maintenance Storage	62,000	53'	29'	18	1 active
PM Trailer	Oil and Fluid Storage Trailer	52,000	53'	21'	18	1 active
Mechanic Trailer	Tool and Parts Storage Trailer	41,000	48'	12'	8	1 active
Hose Trailer	Hose and Fitting Storage	28,000	42'	26'	14	1 active
Power Pack	Generator for TCC	24,000	38'	14'	14	1 active
Chem-Ad	Chemical Supply Truck	26,000	24'	18'	10	1 active
Sand Structure	Sand Storage and Delivery	30,000	40'	40'	14	1 active
Sand Forklift	Sand Loading	87,500	12'	12'	4	1 active 1 spare
FDP Tanker	Chemical Storage and Transport	66,000	48'	12'	18	1 active
Fuel Tanker	Fuel Storage and Transport	48,000	60'	27'	18	1 active

Traffic:

Frac Fleet: Mobilizes once monthly

FDP: 1 delivery per day

Acid: 2 Deliveries per day

Sand: 40-50 deliveries per day

Fuel: 1 Delivery

All other Chemicals: 3 Deliveries per week as needed

COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: POWHATON RD
E/W STREET: JEWELL AVE
CITY: AURORA
COUNTY: ARAPAHOE

File Name : POWHJEWE
Site Code : 00000015
Start Date : 8/20/2019
Page No : 1

Groups Printed- VEHICLES

Start Time	POWHATON RD Southbound				JEWELL AVE Westbound				Northbound				JEWELL AVE Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	0	23	0	0	4	0	0	0	0	0	0	26	2	0	0	55
06:45 AM	0	0	25	0	0	5	0	0	0	0	0	1	27	1	0	1	60
Total	0	0	48	0	0	9	0	0	0	0	0	1	53	3	0	1	115
07:00 AM	0	0	31	0	0	6	0	0	0	0	0	0	21	2	0	0	60
07:15 AM	0	0	27	0	0	7	0	0	0	0	0	0	17	2	0	0	53
07:30 AM	0	0	20	0	0	2	0	0	0	0	0	0	16	1	0	0	39
07:45 AM	0	0	19	0	0	3	1	0	0	0	0	0	15	5	0	0	43
Total	0	0	97	0	0	18	1	0	0	0	0	0	69	10	0	0	195
08:00 AM	0	0	18	0	0	3	0	0	0	0	0	0	14	1	0	0	36
08:15 AM	1	0	19	0	0	1	1	0	0	0	0	0	10	2	0	0	34
Total	1	0	37	0	0	4	1	0	0	0	0	0	24	3	0	0	70
04:00 PM	0	0	18	0	0	6	0	0	0	0	0	0	19	2	0	0	45
04:15 PM	2	0	25	0	0	1	0	0	0	0	0	0	22	3	0	0	53
04:30 PM	0	0	27	0	0	2	1	0	0	0	0	0	13	5	0	0	48
04:45 PM	1	0	27	0	0	8	2	0	0	0	0	0	20	7	0	0	65
Total	3	0	97	0	0	17	3	0	0	0	0	0	74	17	0	0	211
05:00 PM	0	0	30	0	0	7	0	0	0	0	0	0	23	2	0	0	62
05:15 PM	0	0	24	0	0	7	1	0	0	0	0	0	26	7	0	0	65
05:30 PM	0	0	26	0	0	5	1	0	0	0	0	0	13	8	0	0	53
05:45 PM	1	0	24	0	0	1	1	0	0	0	0	0	16	3	0	0	46
Total	1	0	104	0	0	20	3	0	0	0	0	0	78	20	0	0	226
Grand Total	5	0	383	0	0	68	8	0	0	0	0	1	298	53	0	1	817
Apprch %	1.3	0.0	98.7	0.0	0.0	89.5	10.5	0.0	0.0	0.0	0.0	100.0	84.7	15.1	0.0	0.3	
Total %	0.6	0.0	46.9	0.0	0.0	8.3	1.0	0.0	0.0	0.0	0.0	0.1	36.5	6.5	0.0	0.1	

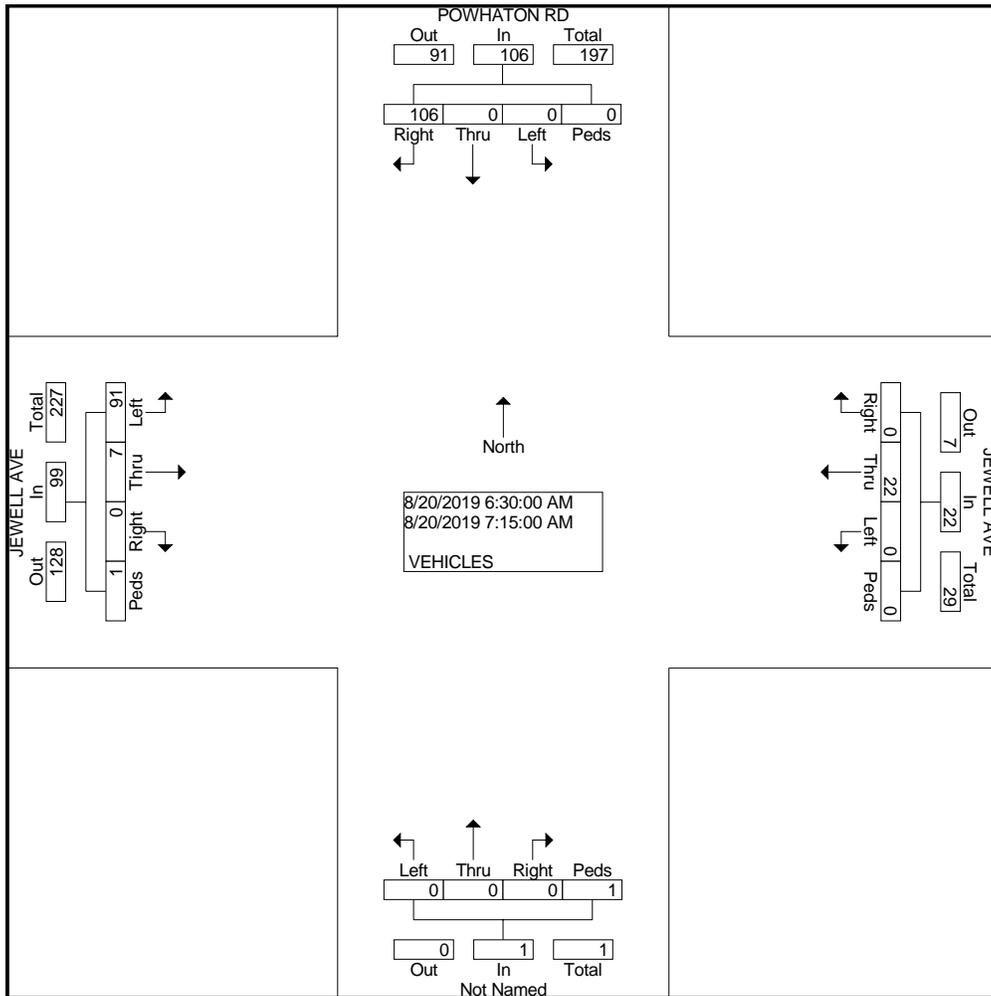
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: POWHATON RD
E/W STREET: JEWELL AVE
CITY: AURORA
COUNTY: ARAPAHOE

File Name : POWHJEWE
Site Code : 00000015
Start Date : 8/20/2019
Page No : 2

Start Time	POWHATON RD Southbound					JEWELL AVE Westbound					Northbound					JEWELL AVE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Intersecti on	06:30 AM																				
Volume	0	0	106	0	106	0	22	0	0	22	0	0	0	1	1	91	7	0	1	99	228
Percent	0.0	0.0	100.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	100.0		91.9	7.1	0.0	1.0		
07:00 Volume	0	0	31	0	31	0	6	0	0	6	0	0	0	0	0	21	2	0	0	23	60
Peak Factor	0.950																				
High Int. Volume	07:00 AM																				
Peak Factor	0.85					0.78					0.25					0.85					3



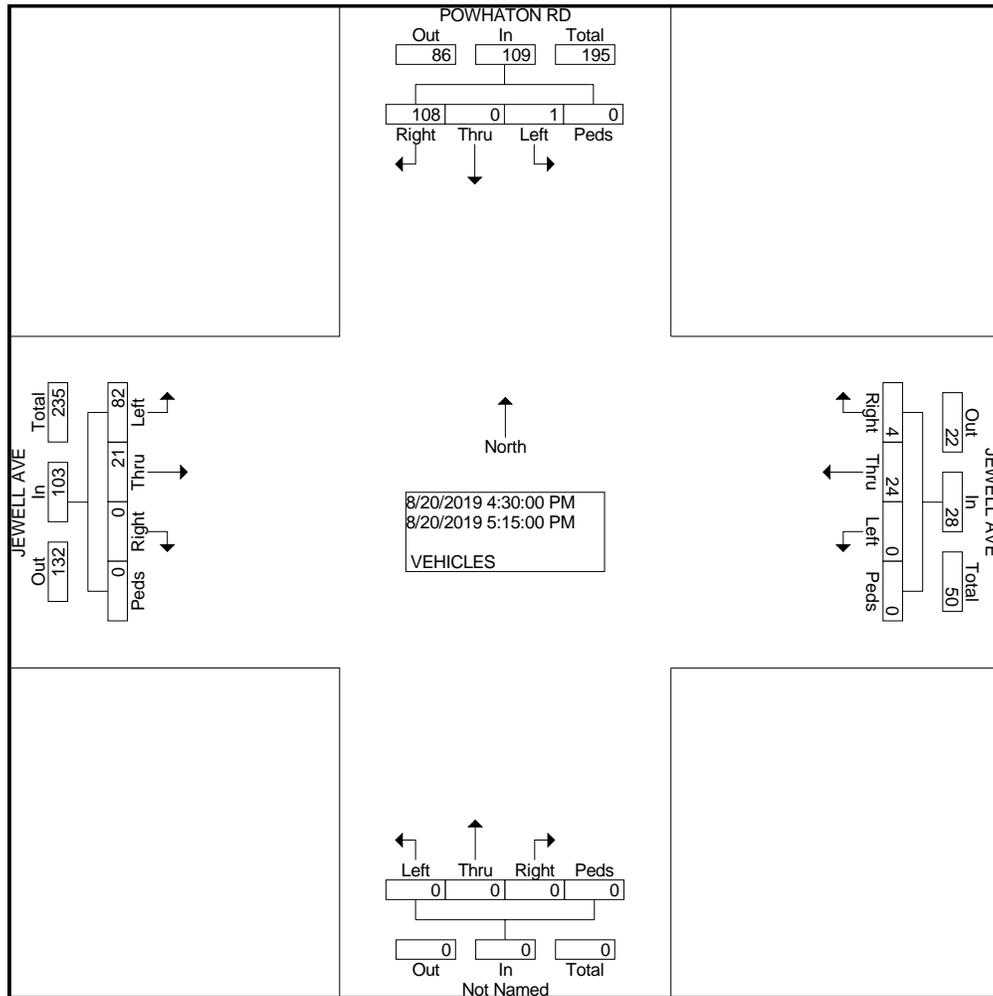
COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: POWHATON RD
E/W STREET: JEWELL AVE
CITY: AURORA
COUNTY: ARAPAHOE

File Name : POWHJEWE
Site Code : 00000015
Start Date : 8/20/2019
Page No : 2

Start Time	POWHATON RD Southbound					JEWELL AVE Westbound					Northbound					JEWELL AVE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Intersection	04:30 PM																				
Volume	1	0	108	0	109	0	24	4	0	28	0	0	0	0	0	82	21	0	0	103	240
Percent	0.9	0.0	99.1	0.0		0.0	85.7	14.3	0.0		0.0	0.0	0.0	0.0		79.6	20.4	0.0	0.0		
05:15 Peak Factor																					
High Int. Volume	0	0	24	0	24	0	7	1	0	8	0	0	0	0	0	26	7	0	0	33	65
Peak Factor																					
High Int. Volume	05:00 PM					04:45 PM					05:15 PM										
Peak Factor	0.908					0.700					0.780					0					



COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: WATKINS RD
E/W STREET: JEWELL AVE
CITY: AURORA
COUNTY: ARAPAHOE

File Name : WATKJEWE
Site Code : 0000026
Start Date : 8/20/2019
Page No : 1

Groups Printed- VEHICLES

Start Time	WATKINS RD Southbound				Westbound				WATKINS RD Northbound				JEWELL AVE Eastbound				Int. Total	
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	36	7	0	0	0	0	0	2	16	0	0	2	0	0	0	1	64
06:45 AM	0	41	1	0	0	0	0	0	1	35	0	0	1	0	1	0	0	80
Total	0	77	8	0	0	0	0	0	3	51	0	0	3	0	1	1		144
07:00 AM	0	23	3	0	0	0	0	0	5	20	0	0	2	0	0	0	0	53
07:15 AM	0	32	0	0	0	0	0	0	5	13	0	0	1	0	2	0	0	53
07:30 AM	0	27	4	0	0	0	0	0	3	18	0	0	1	0	0	0	0	53
07:45 AM	0	22	1	0	0	0	0	0	1	17	0	0	2	0	1	0	0	44
Total	0	104	8	0	0	0	0	0	14	68	0	0	6	0	3	0		203
08:00 AM	0	19	6	0	0	0	0	0	0	17	0	0	2	0	1	0	0	45
08:15 AM	0	24	3	0	0	0	0	0	0	11	0	0	0	0	1	0	0	39
Total	0	43	9	0	0	0	0	0	0	28	0	0	2	0	2	0		84
04:00 PM	0	16	2	0	0	0	0	0	0	26	0	1	5	0	1	0	0	51
04:15 PM	0	23	1	0	0	0	0	0	0	29	0	0	3	0	1	0	0	57
04:30 PM	0	21	3	0	0	0	0	0	2	25	0	0	4	0	2	0	0	57
04:45 PM	0	21	7	0	0	0	0	0	3	32	0	0	3	0	3	0	0	69
Total	0	81	13	0	0	0	0	0	5	112	0	1	15	0	7	0		234
05:00 PM	0	17	4	0	0	0	0	0	0	32	0	0	8	0	1	0	0	62
05:15 PM	0	27	7	0	0	0	0	0	1	40	0	0	3	0	4	0	0	82
05:30 PM	0	10	2	0	0	0	0	0	2	30	0	0	6	0	2	0	0	52
05:45 PM	0	19	1	0	0	0	0	0	0	26	0	0	3	0	0	0	0	49
Total	0	73	14	0	0	0	0	0	3	128	0	0	20	0	7	0		245
Grand Total	0	378	52	0	0	0	0	0	25	387	0	1	46	0	20	1		910
Apprch %	0.0	87.9	12.1	0.0	0.0	0.0	0.0	0.0	6.1	93.7	0.0	0.2	68.7	0.0	29.9	1.5		
Total %	0.0	41.5	5.7	0.0	0.0	0.0	0.0	0.0	2.7	42.5	0.0	0.1	5.1	0.0	2.2	0.1		

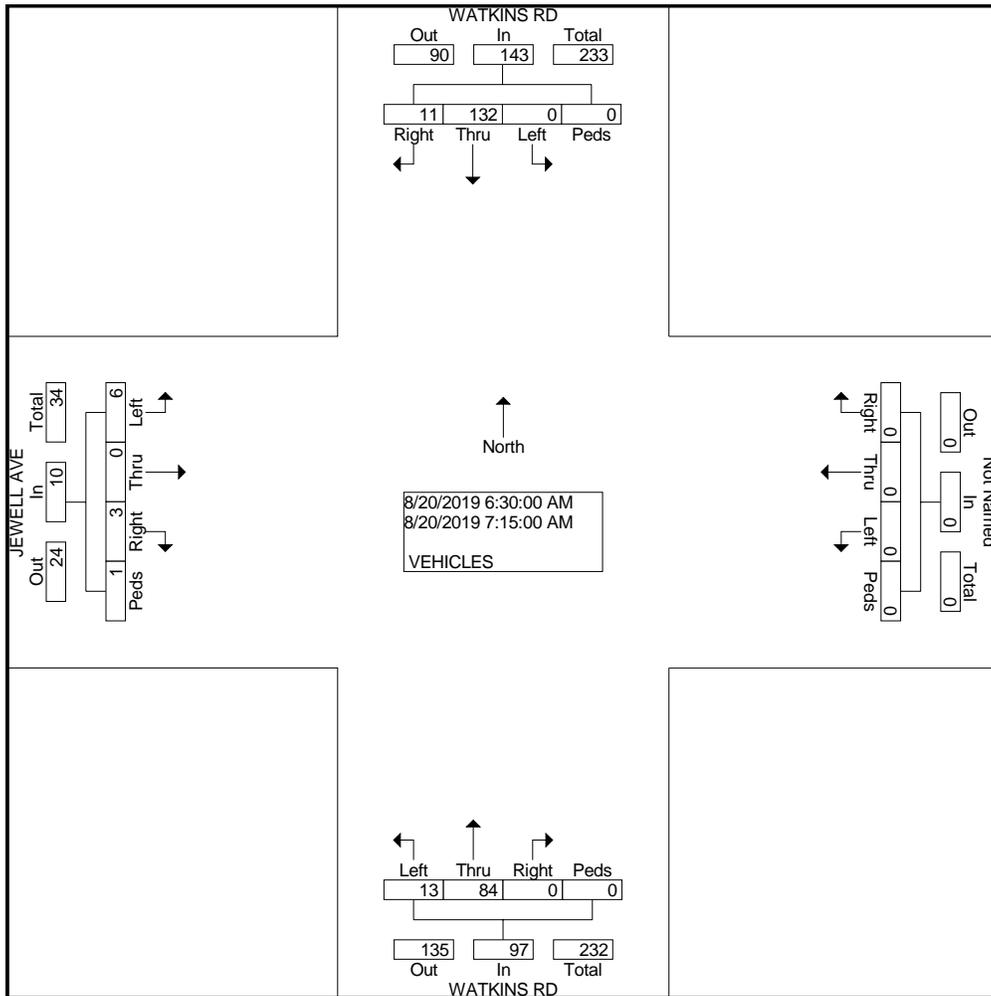
COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: WATKINS RD
E/W STREET: JEWELL AVE
CITY: AURORA
COUNTY: ARAPAHOE

File Name : WATKJEWE
Site Code : 0000026
Start Date : 8/20/2019
Page No : 2

Start Time	WATKINS RD Southbound					Westbound					WATKINS RD Northbound					JEWELL AVE Eastbound					Int. Total
	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	
Intersection	06:30 AM																				
Volume	0	132	11	0	143	0	0	0	0	0	13	84	0	0	97	6	0	3	1	10	250
Percent	0.0	92.3	7.7	0.0		0.0	0.0	0.0	0.0		13.4	86.6	0.0	0.0		60.0	0.0	30.0	10.0		
06:45 Peak Factor																					
High Int. Volume	06:30 AM					6:15:00 AM					06:45 AM					06:30 AM					
Peak Factor	0	36	7	0	43	0	0	0	0	0	1	35	0	0	36	2	0	0	1	3	0.83
											0.67					0.83					3



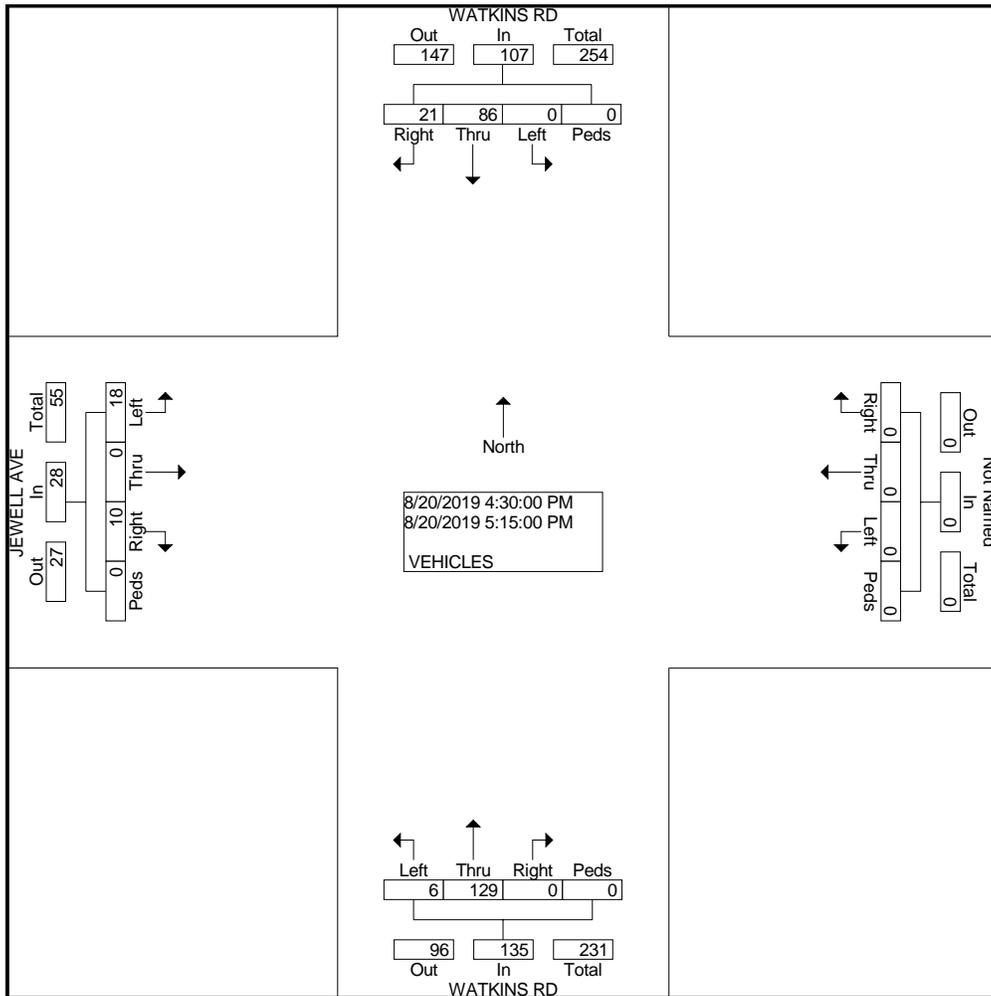
COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: WATKINS RD
E/W STREET: JEWELL AVE
CITY: AURORA
COUNTY: ARAPAHOE

File Name : WATKJEWE
Site Code : 0000026
Start Date : 8/20/2019
Page No : 2

Start Time	WATKINS RD Southbound					Westbound					WATKINS RD Northbound					JEWELL AVE Eastbound					Int. Total
	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	
Intersection	04:30 PM																				
Volume	0	86	21	0	107	0	0	0	0	0	6	129	0	0	135	18	0	10	0	28	270
Percent	0.0	80.4	19.6	0.0		0.0	0.0	0.0	0.0		4.4	95.6	0.0	0.0		64.3	0.0	35.7	0.0		
05:15 Peak Factor																					
High Int. Volume	05:15 PM																				
Peak Factor	0	27	7	0	34	0	0	0	0	0	1	40	0	0	41	3	0	4	0	7	82
	0.78										0.82					0.77					0.823
	7										3					8					



COUNTER MEASURES INC.
1889 YORK STREET
DENVER, COLORADO 80206
303-333-7409

Location: JEWELL AVE W/O POWHATON RD
 City: AURORA
 County: ARAPAHOE
 Direction: EASTBOUND-WESTBOUND

Site Code: 192107
 Station ID: 192107

Start Time	19-Aug-19		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	*	*	*	*	*	*	9	25	*	*	*	*	*	*	9	25
01:00	*	*	*	*	*	*	7	14	*	*	*	*	*	*	7	14
02:00	*	*	*	*	*	*	5	4	*	*	*	*	*	*	5	4
03:00	*	*	*	*	*	*	12	6	*	*	*	*	*	*	12	6
04:00	*	*	*	*	*	*	22	6	*	*	*	*	*	*	22	6
05:00	*	*	*	*	*	*	66	20	*	*	*	*	*	*	66	20
06:00	*	*	*	*	*	*	85	74	*	*	*	*	*	*	85	74
07:00	*	*	*	*	*	*	92	118	*	*	*	*	*	*	92	118
08:00	*	*	*	*	*	*	58	83	*	*	*	*	*	*	58	83
09:00	*	*	*	*	*	*	58	69	*	*	*	*	*	*	58	69
10:00	*	*	*	*	*	*	59	59	*	*	*	*	*	*	59	59
11:00	*	*	*	*	*	*	78	67	*	*	*	*	*	*	78	67
12:00 PM	*	*	*	*	*	*	78	94	*	*	*	*	*	*	78	94
01:00	*	*	*	*	*	*	103	73	*	*	*	*	*	*	103	73
02:00	*	*	*	*	*	*	73	82	*	*	*	*	*	*	73	82
03:00	*	*	*	*	*	*	85	139	*	*	*	*	*	*	85	139
04:00	*	*	*	*	*	*	92	112	*	*	*	*	*	*	92	112
05:00	*	*	*	*	*	*	107	110	*	*	*	*	*	*	107	110
06:00	*	*	*	*	*	*	92	64	*	*	*	*	*	*	92	64
07:00	*	*	*	*	*	*	56	48	*	*	*	*	*	*	56	48
08:00	*	*	*	*	*	*	38	28	*	*	*	*	*	*	38	28
09:00	*	*	*	*	*	*	29	35	*	*	*	*	*	*	29	35
10:00	*	*	*	*	*	*	18	26	*	*	*	*	*	*	18	26
11:00	*	*	*	*	*	*	11	31	*	*	*	*	*	*	11	31
Lane	0	0	0	0	0	0	1333	1387	0	0	0	0	0	0	1333	1387
Day	0	0	0	0	0	0	2720	2720	0	0	0	0	0	0	2720	2720
AM Peak	-	-	-	-	-	-	07:00	07:00	-	-	-	-	-	-	07:00	07:00
Vol.	-	-	-	-	-	-	92	118	-	-	-	-	-	-	92	118
PM Peak	-	-	-	-	-	-	17:00	15:00	-	-	-	-	-	-	17:00	15:00
Vol.	-	-	-	-	-	-	107	139	-	-	-	-	-	-	107	139

Comb. Total	0	0	0	2720	0	0	0	2720
ADT	ADT 2,720	AADT 2,720						

COUNTER MEASURES INC.
1889 YORK STREET
DENVER, COLORADO 80206
303-333-7409

Location: POWHATON RD N/O JEWELL AVE
 City: AURORA
 County: ARAPAHOE
 Direction: NORTHBOUND-SOUTHBOUND

Site Code: 191910
 Station ID: 191910

Start Time	19-Aug-19		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
12:00 AM	*	*	1	7	*	*	*	*	*	*	*	*	*	*	1	7
01:00	*	*	2	6	*	*	*	*	*	*	*	*	*	*	2	6
02:00	*	*	3	3	*	*	*	*	*	*	*	*	*	*	3	3
03:00	*	*	7	7	*	*	*	*	*	*	*	*	*	*	7	7
04:00	*	*	26	3	*	*	*	*	*	*	*	*	*	*	26	3
05:00	*	*	75	19	*	*	*	*	*	*	*	*	*	*	75	19
06:00	*	*	80	62	*	*	*	*	*	*	*	*	*	*	80	62
07:00	*	*	67	96	*	*	*	*	*	*	*	*	*	*	67	96
08:00	*	*	63	65	*	*	*	*	*	*	*	*	*	*	63	65
09:00	*	*	39	46	*	*	*	*	*	*	*	*	*	*	39	46
10:00	*	*	57	35	*	*	*	*	*	*	*	*	*	*	57	35
11:00	*	*	50	46	*	*	*	*	*	*	*	*	*	*	50	46
12:00 PM	*	*	48	54	*	*	*	*	*	*	*	*	*	*	48	54
01:00	*	*	59	41	*	*	*	*	*	*	*	*	*	*	59	41
02:00	*	*	46	72	*	*	*	*	*	*	*	*	*	*	46	72
03:00	*	*	75	142	*	*	*	*	*	*	*	*	*	*	75	142
04:00	*	*	74	102	*	*	*	*	*	*	*	*	*	*	74	102
05:00	*	*	89	95	*	*	*	*	*	*	*	*	*	*	89	95
06:00	*	*	72	57	*	*	*	*	*	*	*	*	*	*	72	57
07:00	*	*	48	47	*	*	*	*	*	*	*	*	*	*	48	47
08:00	*	*	36	35	*	*	*	*	*	*	*	*	*	*	36	35
09:00	*	*	26	23	*	*	*	*	*	*	*	*	*	*	26	23
10:00	*	*	9	18	*	*	*	*	*	*	*	*	*	*	9	18
11:00	*	*	8	25	*	*	*	*	*	*	*	*	*	*	8	25
Lane	0	0	1060	1106	0	0	0	0	0	0	0	0	0	0	1060	1106
Day	0	0	2166		0	0	0	0	0	0	0	0	0	0	2166	
AM Peak	-	-	06:00	07:00	-	-	-	-	-	-	-	-	-	-	06:00	07:00
Vol.	-	-	80	96	-	-	-	-	-	-	-	-	-	-	80	96
PM Peak	-	-	17:00	15:00	-	-	-	-	-	-	-	-	-	-	17:00	15:00
Vol.	-	-	89	142	-	-	-	-	-	-	-	-	-	-	89	142

Comb. Total	0	2166	0	0	0	0	0	0	0	2166
ADT	ADT 2,166	AADT 2,166								

