White Hawk Development

Traffic Impact Analysis

July 20, 2014

Prepared By:

Transportation Engineering, LLC

Southern Oregon Transportation Engineering, LLC

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I. EXECUTIVE SUMMARY

Summary

Southern Oregon Transportation Engineering, LLC prepared a traffic impact analysis for the proposed White Hawk development in Central Point, Oregon. The development includes 288 apartments, 58 duplex/rowhouses, and an approximate 5.5 acre city park located on the northeast corner of Beebe Road and Gebhard Road on Township 37S Range 2W Section 02, tax lots 2700 and 2701.

Access to the site is provided from both Beebe Road and Gebhard Road. The development is estimated to generate 2,274 average daily trips (ADT) with 218 occurring during the p.m. peak hour. Three study area intersections were evaluated under existing year 2014, design year 2017, and future year 2038 conditions to determine what impacts the proposed development may have on the transportation system.

Conclusions

The findings of the traffic impact analysis conclude that the proposed White Hawk development can be accommodated on the existing transportation system without creating adverse impacts with proposed mitigations. Results of the analysis show the following:

1. All study area intersections operate acceptably under existing year 2014 and design year 2017 no-build conditions during the p.m. peak hour. The intersection of Beebe Road / Hamrick Road degrades to a LOS F under design year 2017 build conditions as a result of development traffic. Proposed mitigation includes:

    a) Installation of a traffic signal. The proportional share of impact is approximately 11% of mitigation costs (based upon a volume-based impact analysis) without a Beebe Road east-west connection and 5% with a Beebe Road connection. The difference in impact results from less project traffic using the Beebe Road/Hamrick Road connection when the Beebe Road extension is in place.

2. Left and right turn lanes are not shown to be necessary at any development access point under design year 2017 build conditions. Turn lanes are met in the future at the following locations:

    a) A left turn lane at both Gebhard Road development access points and Beebe Road access point under future year 2038 build conditions.

    b) A right turn lane at the Gebhard Road south development access point under projected year 2038 build conditions if the speed continues to stay 55 mph. If the speed is reduced to 40 mph as would be expected then a right turn lane will not be met in the future scenario.

3. The estimated average daily traffic (ADT) for the proposed White Hawk development is 2,274 ADT, which is within the Eastside Transit Oriented Development District (ETOD) trip cap of 6,100 ADT. To date this is the first development application within the TOD.

The proposed development application is in compliance with the Central Point Comprehensive Plan and Land Development Code. Streets that serve the subject property will accommodate projected p.m. peak hour traffic volumes within acceptable levels of service with identified improvements.

II. INTRODUCTION

Background

Southern Oregon Transportation Engineering, LLC prepared a traffic impact analysis for the proposed White Hawk development in Central Point, Oregon. The purpose of this analysis is to identify any traffic related impacts the proposed development may have on the transportation system.

A traffic impact analysis is required by the City of Central Point and Jackson County to address development impacts within the study area. Study area intersections included:

1. East Pine Street / Hamrick Road
2. Beebe Road / Hamrick Road
3. Gebhard Road / Wilson Road

Access to the site is provided from Beebe Road and Gebhard Road. Proposed development is estimated to generate 2,274 average daily trips (ADT) with 218 occurring during the p.m. peak hour. Study area intersections were evaluated under existing year 2014, design year 2017, and future year 2038 conditions to determine development impacts on the transportation system.

Project Location

The subject property is located on the northeast corner of Beebe Road and Gebhard Road on Township 37S Range 2W Section 2, tax lots 2700 and 2701 in Central Point, Oregon. Refer to Figures 1 and 2 for a vicinity map and site plan.

Project Description

The subject property is zoned for medium density residential development and is currently vacant. Proposed development includes 288 apartments, 58 duplex/rowhouses, and an approximate 5.5 acre city park. Access to the site is provided from a single access on Beebe Road and two access points on Gebhard Road.

Figure 1 : Vicinity Map

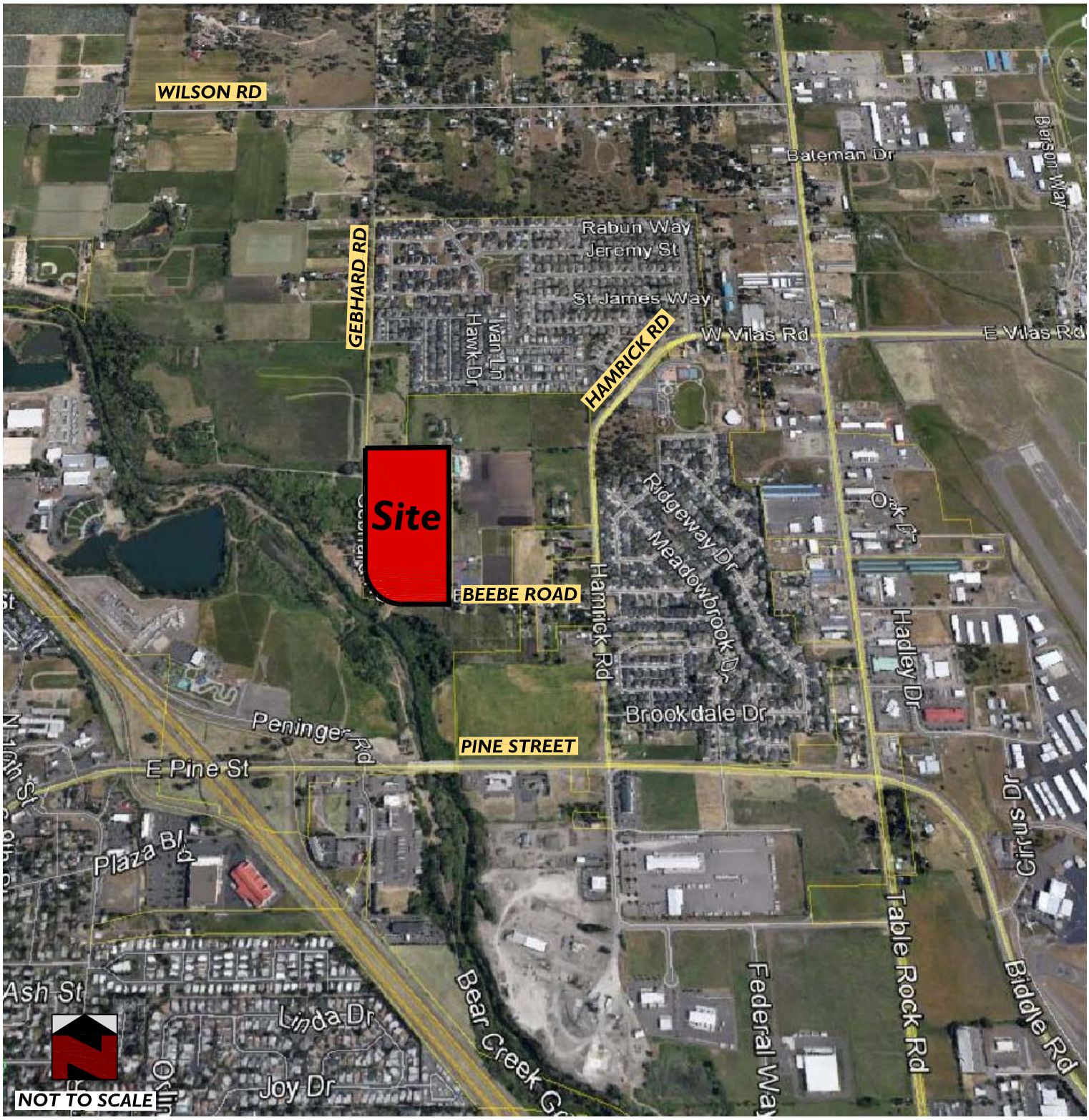

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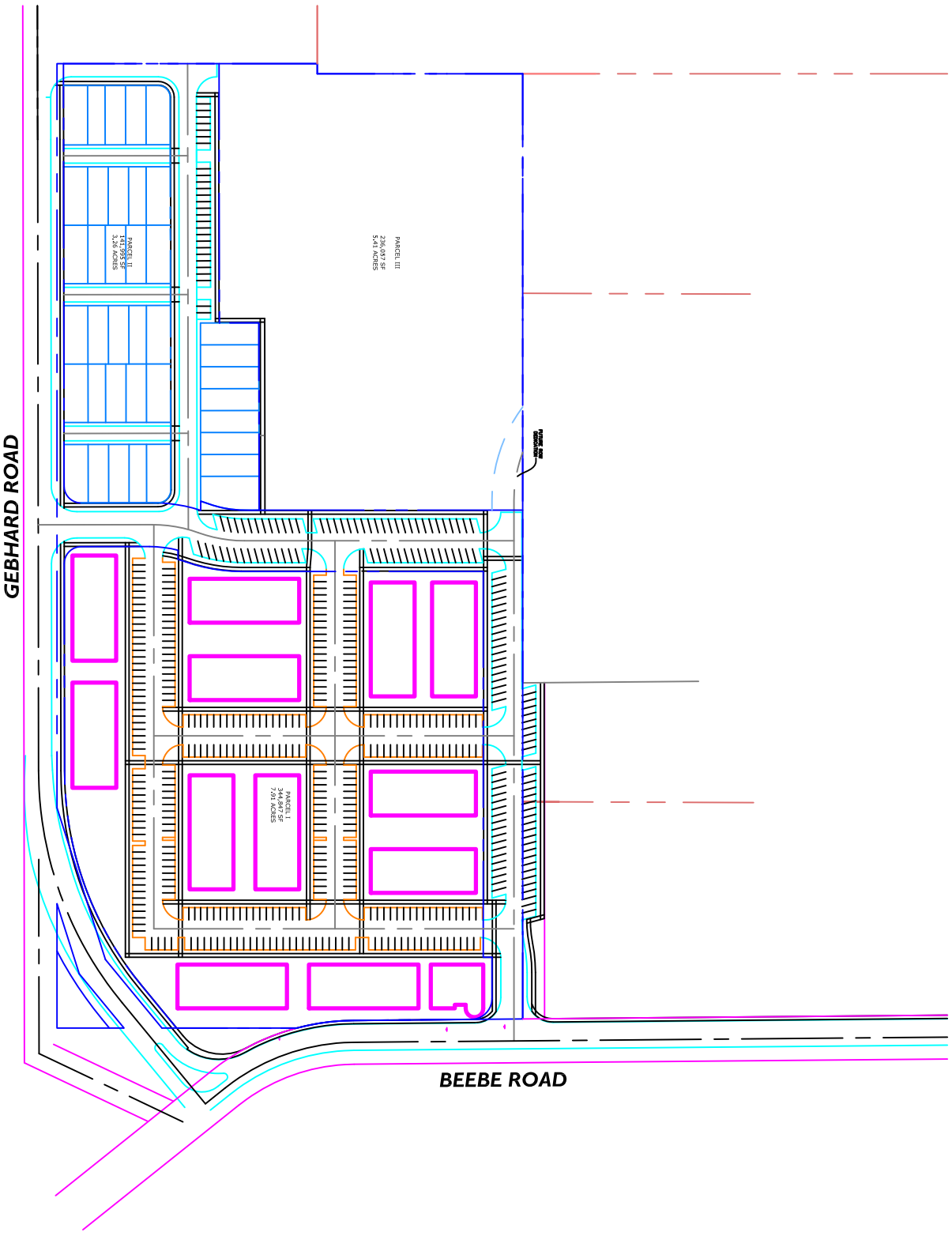
Figure 2 : Site Plan



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III. EXISTING YEAR 2014 NO-BUILD CONDITIONS

Site Conditions

The subject property is located on the northeast corner of Beebe Road and Gebhard Road on Township 37S Range 2W Section 02, tax lots 2700 and 2701 in Central Point, Oregon. The site is currently vacant.

Roadway Characteristics

The project study area was determined by the City of Central Point and Jackson County and includes the intersections of Beebe Road/Hamrick Road, Gebhard Road/Wilson Road, and East Pine Street/Hamrick Road. All access points to the site were also included in the study area, and included one on Beebe Road and two on Gebhard Road. Study area intersections were analyzed in accordance with City of Central Point and Jackson County standards.

Table 1 provides a summary of existing roadway classifications and descriptions in the study area.

Table 1 - Roadway Classifications and Descriptions

Roadway	Jurisdiction	Functional Classification	Lanes	Operational Standard	Posted Speed (MPH)
Beebe Road	City of Central Point	Collector	2	LOS D V/C 0.95	40
East Pine Street	Jackson County	Arterial	5	LOS D V/C 0.85	35/45
Gebhard Road	Jackson County	Collector	2	LOS D V/C 0.95	40/55
Hamrick Road	Jackson County	Arterial	3	LOS D V/C 0.95	40
Wilson Road	Jackson County	Collector	2	LOS D V/C 0.95	45

Traffic Counts

Year 2014 manual traffic counts (4-6pm) were supplied by Southern Oregon Transportation Engineering, LLC for all study area intersections. Counts were taken in late April and early May, and seasonally adjusted using ODOT's 2013 Seasonal Trend Table. An average of commuter/summer traffic trends were used to adjust raw count data to reflect 30th Highest Hourly Volumes. Refer to Appendix A for data.

Figure 3 : Year 2014 Raw Count Data - P.M. Peak Hour

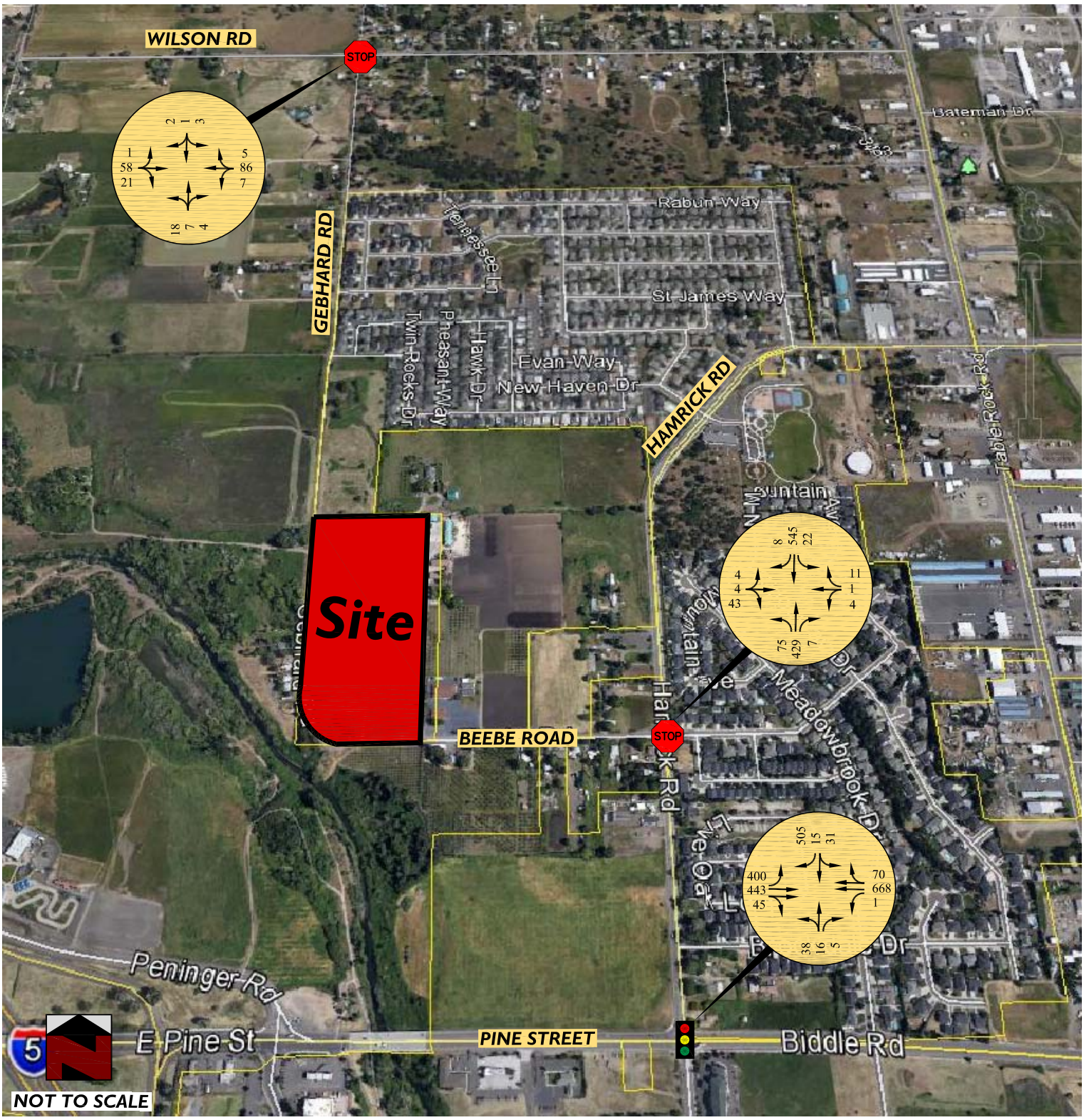

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Figure 4 : Seasonal Adjustment, PM Peak Hour

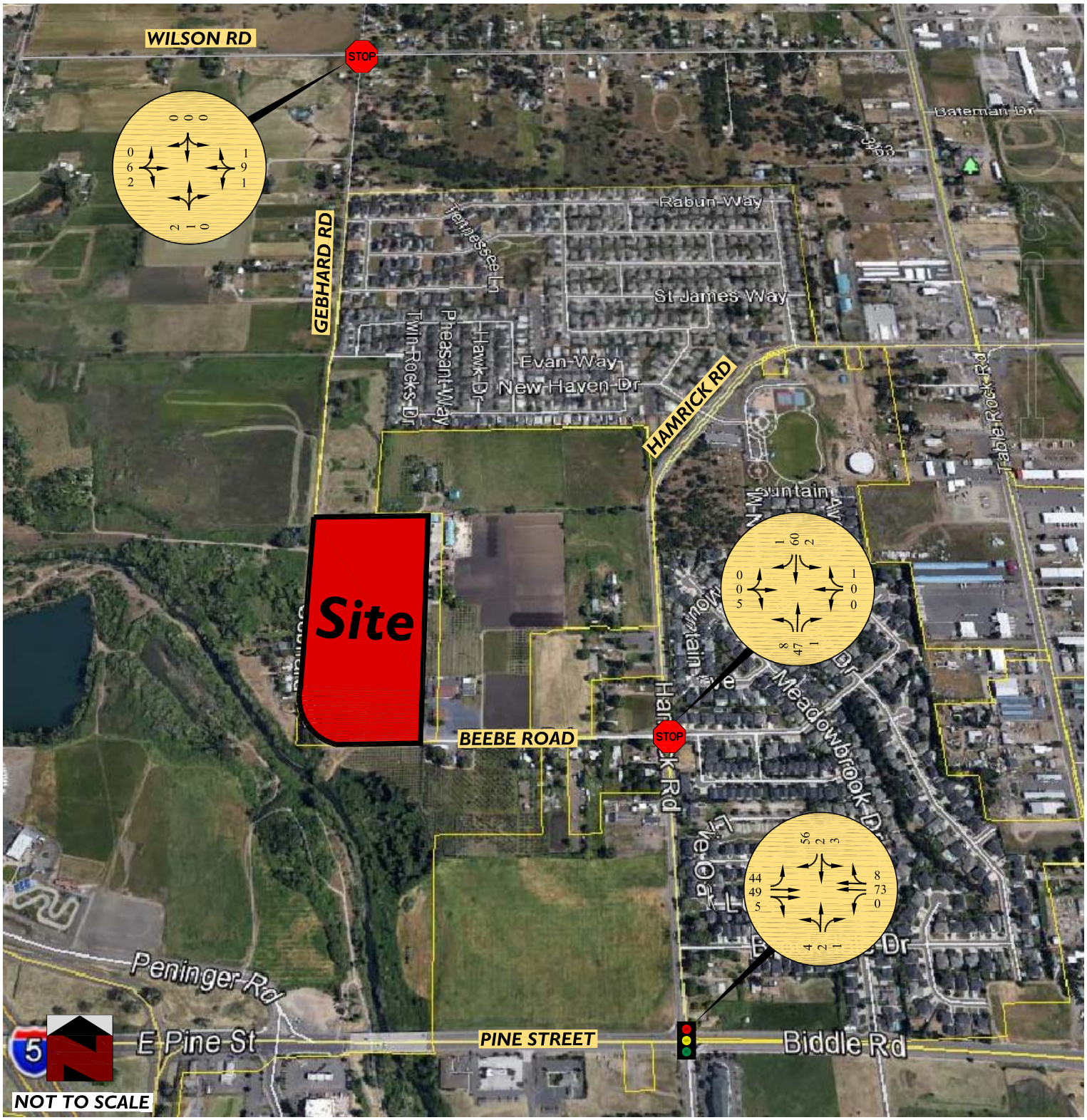

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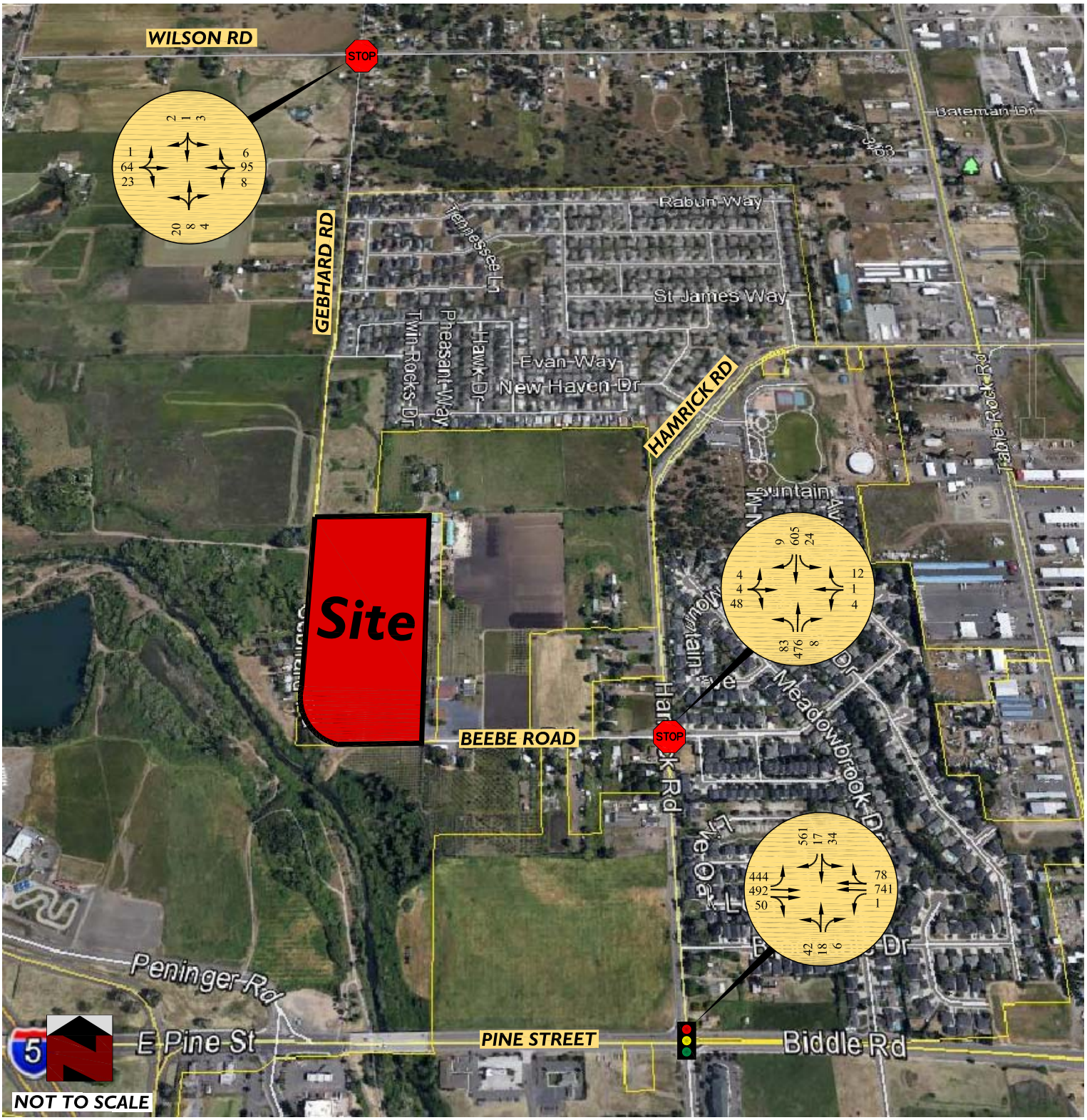
Figure 5 : Year 2014 No-Build Traffic Volumes, PM Peak Hour



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Intersection Capacity and Level of Service

Intersection capacity calculations were conducted utilizing the methodologies presented in the Year 2000 *Highway Capacity Manual*. Capacity and level of service calculations for signalized and unsignalized intersections were prepared using "SYNCHRO" timing software.

Level of service quantifies the degree of comfort afforded to drivers as they travel through an intersection or along a roadway section. The level of service methodology was developed to quantify the quality of service of transportation facilities. Level of service is based on total delay, defined as the total elapsed time from when a vehicle stops at the end of a queue until the vehicle departs from the stop line. Level of service ranges from "A" to "F", with "A" indicating the most desirable condition and "F" indicating an unsatisfactory condition. The HCM LOS designations for stop-controlled intersections are provided in Table 2. The HCM LOS designations for signalized intersections are provided in Table 3.

Table 2 – HCM Level of Service Designations for Stop-Controlled Intersections

Level of Service	Delay Range
A	< 10
B	>10 – 15
C	>15 – 25
D	>25 – 35
E	>35 – 50
F	> 50

Table 3 – HCM Level of Service Designations for Signalized Intersections

Level of Service	Delay Range
A	< 10
B	>10 – 20
C	>20 – 35
D	>35 – 55
E	>55 – 80
F	> 80

Streets within the study area are under City of Central Point and Jackson County jurisdiction. The City of Central Point requires all study area intersections to operate at acceptable levels of service (LOS). The minimum acceptable level of service for signalized intersections and unsignalized intersection movements is LOS "D". Jackson County's operational standard considers both a LOS and volume-to-capacity (V/C) ratio standard. Mitigation is required at intersections operating below LOS "D" and/or the applicable v/c ratio under existing and design year conditions. For future planning year conditions, mitigation is required when build conditions are shown to be worse than no-build conditions, which is in accordance with criteria provided in the Transportation Planning Rule (TPR) 660-012-0060 (1)(C).

Year 2014 No-Build Intersection Operations

Study area intersections were evaluated under existing year 2014 no-build conditions during the p.m. peak hour. Results are summarized in Table 4.

Table 4 - Year 2014 No-Build Intersection Operations

Intersection	Performance Standard	Traffic Control	Year 2014 No-Build P.M. Peak
East Pine Street / Hamrick Road	LOS D V/C 0.95	Signal	C 0.80
Beebe Road / Hamrick Road	LOS D	TWSC	C
Gebhard Road / Wilson Road	LOS D V/C 0.95	TWSC	B 0.06

LOS = Level of Service, V/C = Volume-to-Capacity, TWSC = Two-way stop controlled
Note: Exceeded performance standards are shown in bold, italic

Results of the analysis show all study area intersections operating acceptably (within performance standards) under year 2014 no-build conditions. Refer to Appendix C for synchro output sheets.

Year 2014 No-Build 95th Percentile Queuing

Queuing is the stacking up of vehicles for a given lane movement, and it can have a significant effect on roadway safety and the overall operation of a transportation system. Long queue lengths in through lanes can block access to turn lanes, driveways, and minor street approaches, as well as spill back into upstream intersections. As a result of this, the estimation of queue lengths is an important aspect of the analysis process for determining how a transportation corridor operates.

Queue lengths are reported as the average, maximum, or 95th percentile queue length. The 95th percentile queue length is used for design purposes and is the queue length reported in this analysis. Five simulations were run and averaged in SimTraffic to determine 95th percentile queue lengths. Queues were evaluated at study area intersections under existing year 2014 no-build conditions. Queue lengths were rounded up to the nearest 25 feet (single vehicle length) and reported in Table 5 for the p.m. peak hour if shown to exceed their available link distance or block a downstream intersection.

Table 5 – Year 2014 No-Build 95th Percentile Queue Lengths			
Intersection / Movement	**Available Link Distance (Ft)**	**95th Percentile Queue Lengths P.M. Peak Hour**	**Exceeded or Blocked Roadway**
East Pine Street / Hamrick Road			
Southbound Right	200'	***275'***	Right Turn Storage

Note: Exceeded performance standards are shown in bold, italic

Results of the queuing analysis show that the southbound right turn pocket is exceeded under existing year 2014 no-build conditions during the p.m. peak hour. The queue length from the right turn movement is estimated to exceed the turn pocket and spill into the adjacent through lane 3% of the time during the pm peak hour and increase the queue length for the through lane. The adjacent through lane was not shown to block any downstream driveways or intersections as a result of the exceeded right turn lane, which would be the primary concern, so no mitigation is shown to be necessary. Refer to Appendix C for a full queuing and blocking report.

Crash History

Crash data for the most recent 3-year period was provided from Jackson County as well as ODOT's crash analysis unit. Results were provided for the period of October 1, 2010 through September 30th, 2013.

Intersection safety is generally evaluated by determining the crash rate in terms of crashes per Million Entering Vehicles (MEV) at intersections. The details of crash data are examined to identify any patterns that could be attributable to geometric or operational deficiencies. A crash rate higher than 1.0 crash/MEV or trends of a specific type of crash may indicate the need for further investigation at an intersection. Tables 6 and 7 provide intersection crash rates and types of collisions at study area intersections. Crash data is provided in Appendix A.

Table 6 - Study Area Intersection Crash Rates, 2010-2013						
Intersection	**2010-2011**	**2011-2012**	**2012-2013**	**Total Crashes**	**ADT**	**Crash Rate**
East Pine / Hamrick	2	1	3	6	37,700	0.15
Beebe / Hamrick	1	3	0	4	16,000	0.23
Gebhard / Wilson	0	2	1	3	2,900	0.94
Gebhard / Beebe	0	1	0	1	1,600	0.57

Table 7 - Crash History by Type, 2010-2013							
Intersection	**Collision Type**				**Severity**		
	Rear-End	**Turning**	**Head-On**	**Pedestrian/ Bicyclist**	**Non-Injury**	**Injury**	**Fatal**
East Pine / Hamrick	0	6	0	0	4	2	0
Beebe / Hamrick	1	2	0	1	2	2	0
Gebhard / Wilson	0	2	1	0	1	2	0
Gebhard / Beebe	0	1	0	0	0	0	1

None of the study area intersections are shown to have crash rates greater than 1.0 crashes/MEV. The intersection with the highest occurrence was the signalized intersection of East Pine Street / Hamrick Road with 6 reported crashes in a three year period. All six were turning collisions with drivers failing to yield to on-coming vehicles. These types of collisions are common with permissive turning movements. The most critical crash occurred where Beebe Road turns 90 degrees and becomes Gebhard Road. At this location, a fatal collision occurred in 2012 when a motorcycle overshot the turn and was hit by an on-coming vehicle. It was determined that the driver of the motorcycle was speeding too fast for the curve and was at fault. No other locations were shown to have fatalities or any significant pattern of crashes involving injury.

The only safety concern determined from the crash analysis is the severity of the crash at Beebe Road and Gebhard Road. Possible measures to reduce this type of collision in the future include ensuring adequate signage is in place to let a driver know that a 90 degree turn is up ahead, changing the severity of the curve, and/or possibly examining a speed reduction on Gebhard Road where it changes from 40 mph to 55 mph. From a field visit, it looked like the curve may have been widened and fencing installed on the southern end of the intersection, as well as a large shoulder constructed. All or some of these improvements may have already mitigated the curve. As land along Gebhard Road and Beebe develops, it is recommended that the speed on Gebhard Road be re-evaluated to ensure that what currently exists is still appropriate.

85th Percentile Speed

Speeds were measured on Gebhard Road near the northern boundary of the proposed site and on Beebe Road near the eastern boundary to determine 85th percentile speeds. The 85th percentile speed represents the speed at which 85% of vehicles drive at or below, and is used to determine adequate sight distances from development access points, which is discussed further in chapter IV of this report.

Results of the speed study for existing conditions showed the 85th percentile speed on Gebhard Road to be 46 mph northbound and 49 mph southbound, which are less than the 55 mph speed permitted. On Beebe Road the 85th percentile speed was measured to be 44 mph westbound and 45 mph eastbound, both of which exceed the posted speed of 40 mph. Speed data sheets are provided in Appendix I.

IV. DESIGN YEAR 2017 NO-BUILD CONDITIONS

Year 2017 No-Build Description

Design year 2017 no-build conditions represent development build year conditions for a study area without consideration of proposed development trips. This condition is evaluated to determine how a study area will be impacted by area background growth. Background growth in this report was kept consistent with growth used in the I-5 Exit 33 Interchange Area Management Plan (IAMP) prepared by David Evans & Associates. Growth from the IAMP was developed using model runs provided by ODOT's Transportation Planning Analysis Unit (TPAU). Refer to Figure 5 for estimated growth between the existing year 2014 and design year 2017. Refer to Figure 6 for design year 2017 no-build traffic volumes.

Year 2017 No-Build Intersection Operations

Study area intersections were evaluated under design year 2017 no-build conditions during the p.m. peak hour. Results are summarized in Table 8.

Table 8 – Design Year 2017 No-Build Intersection Operations

Intersection	Performance Standard	Traffic Control	Year 2017 No-Build P.M. Peak
East Pine Street / Hamrick Road	LOS D V/C 0.95	Signal	D 0.87
Beebe Road / Hamrick Road	LOS D	TWSC	D
Gebhard Road / Wilson Road	LOS D V/C 0.95	TWSC	B 0.06

LOS = Level of Service, V/C = Volume-to-Capacity, TWSC = Two-way stop controlled
Note: Exceeded performance standards are shown in bold, italic

Results of the analysis show all study area intersections operating acceptably (within performance standards) under year 2017 no-build conditions. Refer to Appendix D for synchro output sheets.

Year 2017 No-Build 95th Percentile Queuing

Five simulations were run and averaged in SimTraffic to determine 95th percentile queue lengths at study area intersections under design year 2017 no-build conditions. Queue lengths were rounded up to the nearest 25 feet (single vehicle length) and reported in Table 9 for the p.m. peak hour if shown to exceed their available link distance or block a downstream intersection.

Table 9 – Design Year 2017 No-Build 95th Percentile Queue Lengths

Intersection / Movement	Available Link Distance (Ft)	95th Percentile Queue Lengths P.M. Peak Hour	Exceeded or Blocked Roadway
East Pine Street / Hamrick Road			
Southbound Right	200'	***325'***	Right Turn Storage

Note: Exceeded performance standards are shown in bold, italic

Results of the queuing analysis show that the southbound right turn pocket continues to be exceeded under design year 2017 no-build conditions during the p.m. peak hour. The queue length from the right turn movement is estimated to exceed the turn pocket and spill into the adjacent through lane 7% of the time during the pm peak hour and increase the queue length for the through lane. No other lengths are shown to be exceeded at study area intersections. Refer to Appendix E for a full queuing and blocking report.

Figure 6 : Background Growth Year 2014-2017, PM Peak Hour

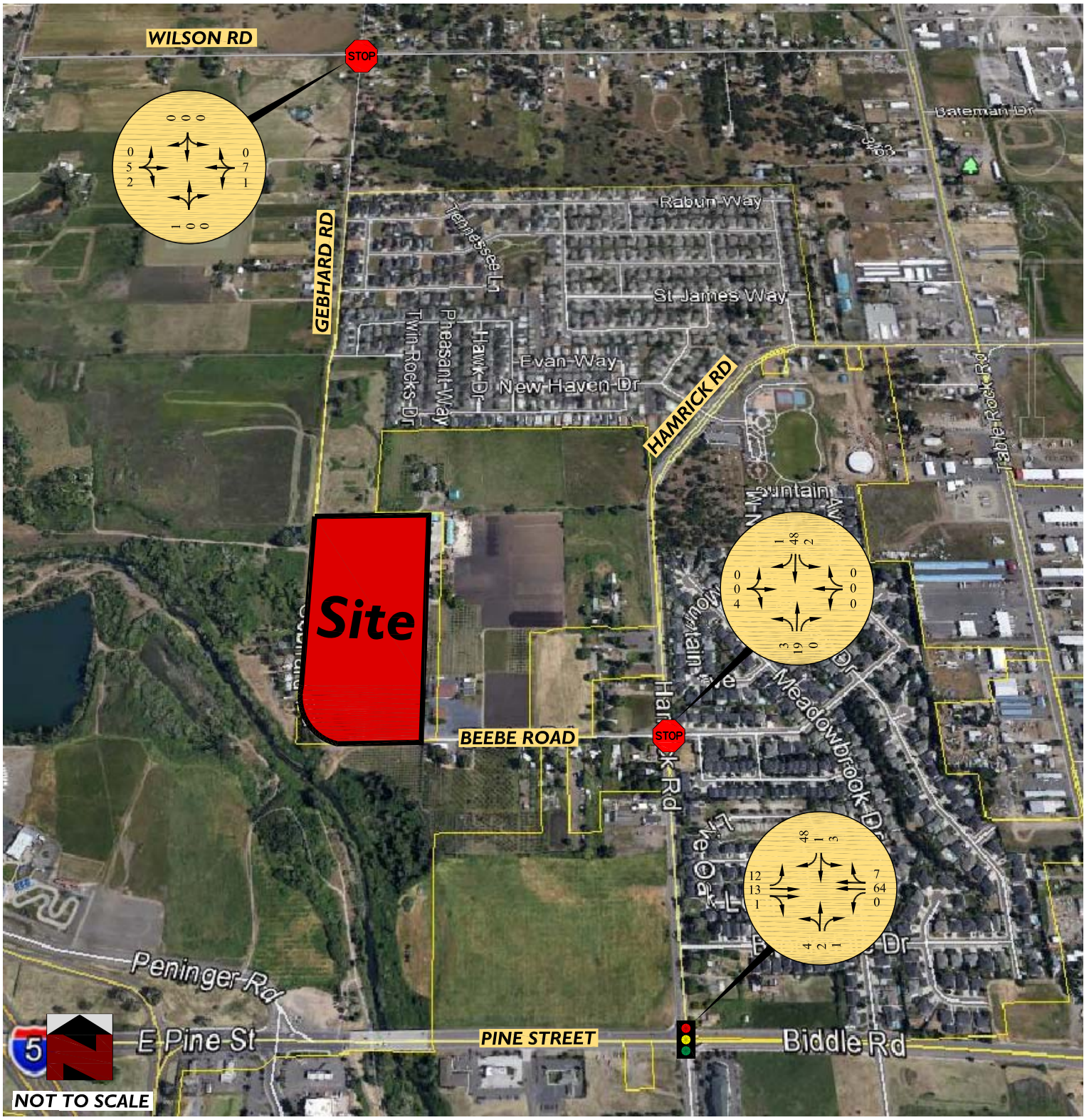

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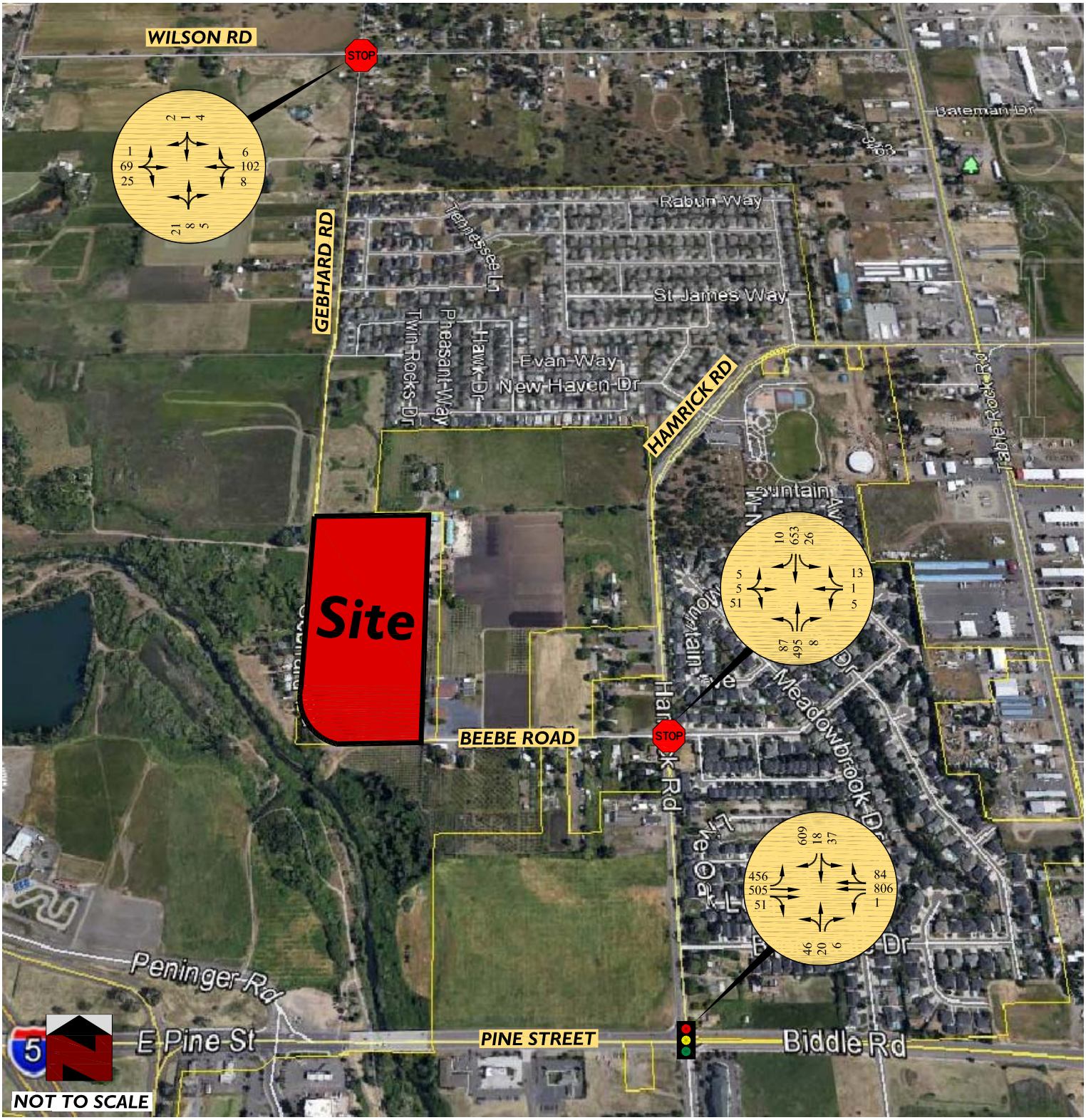
Figure 7 : Design Year 2017 No-Build Traffic Volumes, PM Peak Hour



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V. SITE TRAFFIC

Trip Generation

Trip generation calculations for the proposed White Hawk development were prepared utilizing the Institute of Transportation Engineers (ITE) *Trip Generation*, 9th Edition. Rates were used for land use code 220 – Apartment, 230 – Townhouse/Condominium, and 411 – City Park. All trips to the transportation system were considered new trips with no deductions taken for pass-by or internalization. Table 10 provides a summary of trip generations. ITE graphs are provided in Appendix I.

Table 10 – Development Trip Generations

Land Use	Unit	Size	Weekday Rate	PM Peak Rate	Weekday Trips	PM Peak Hour				
					Total	Total	% In	In	% Out	Out
Apartments	DU	288	6.65	0.62	1915	179	0.65	116	0.35	62
Duplex/Rowhouse	DU	38	5.81	0.52	221	20	0.67	13	0.33	7
City Park	Acre	5.5	25.09*	3.50	138	19	0.57	11	0.43	8
Total					**2,274**	**218**		**140**		**77**

* Interpolated from ITE graph
DU – dwelling unit

Trip Distribution and Assignment

Development trips were distributed in accordance with existing traffic patterns within the study area. Roadway volumes were compared in the local project vicinity to estimate the percentage of trips going to and coming from Beebe Road and Gebhard Road. This resulted in 36% of project traffic going to the north on Gebhard Road and 64% going to the east on Beebe Road. Similarly, 26% were shown to come from the north on Gebhard Road and 74% from the east on Beebe Road. At study area intersections, development trips were distributed using existing traffic splits. Refer to Figures 8 and 9 for development trip distributions and assignments during the p.m. peak hour.

Figure 8 : White Hawk Development Trip Distributions, PM Peak Hour

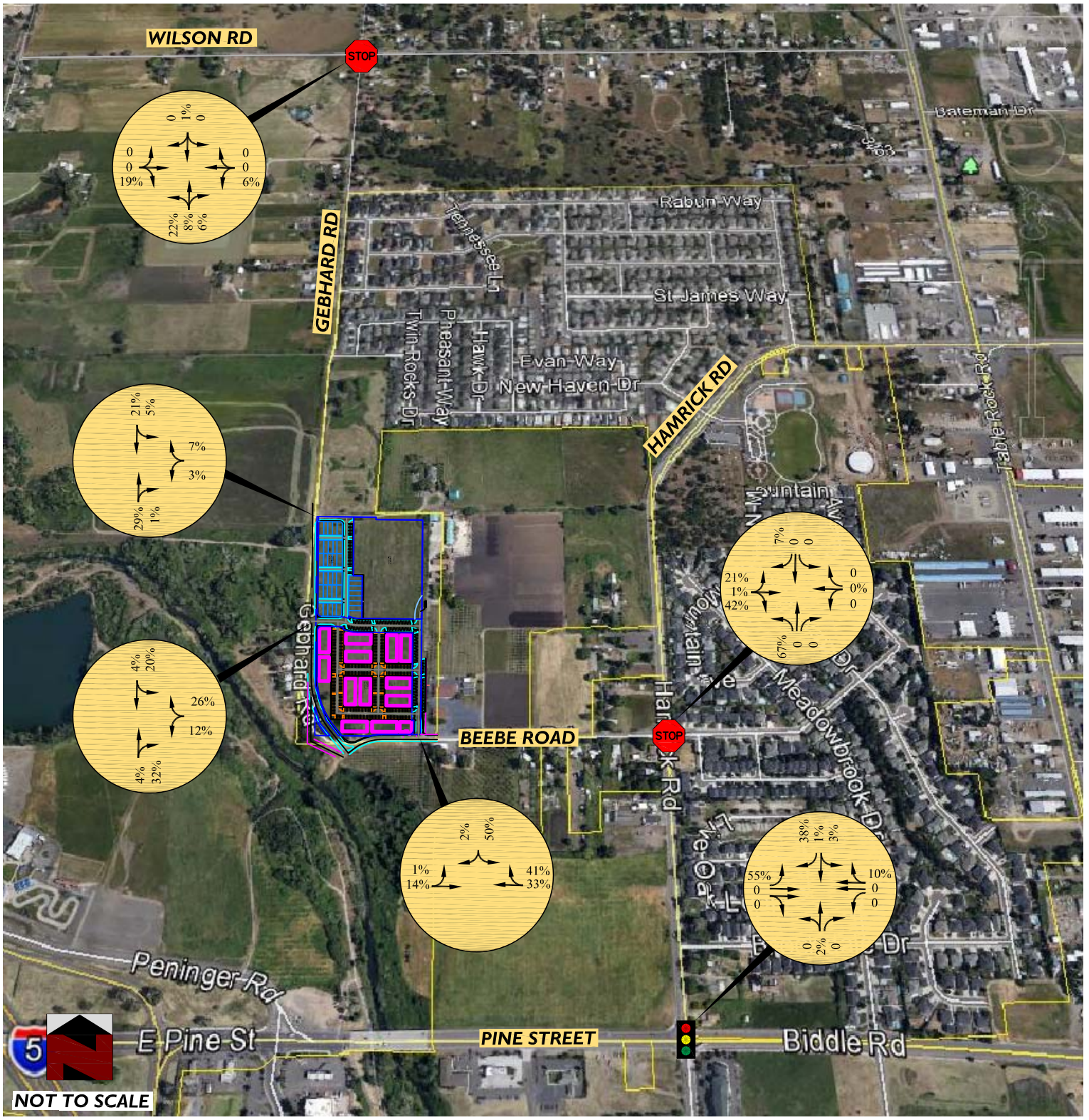

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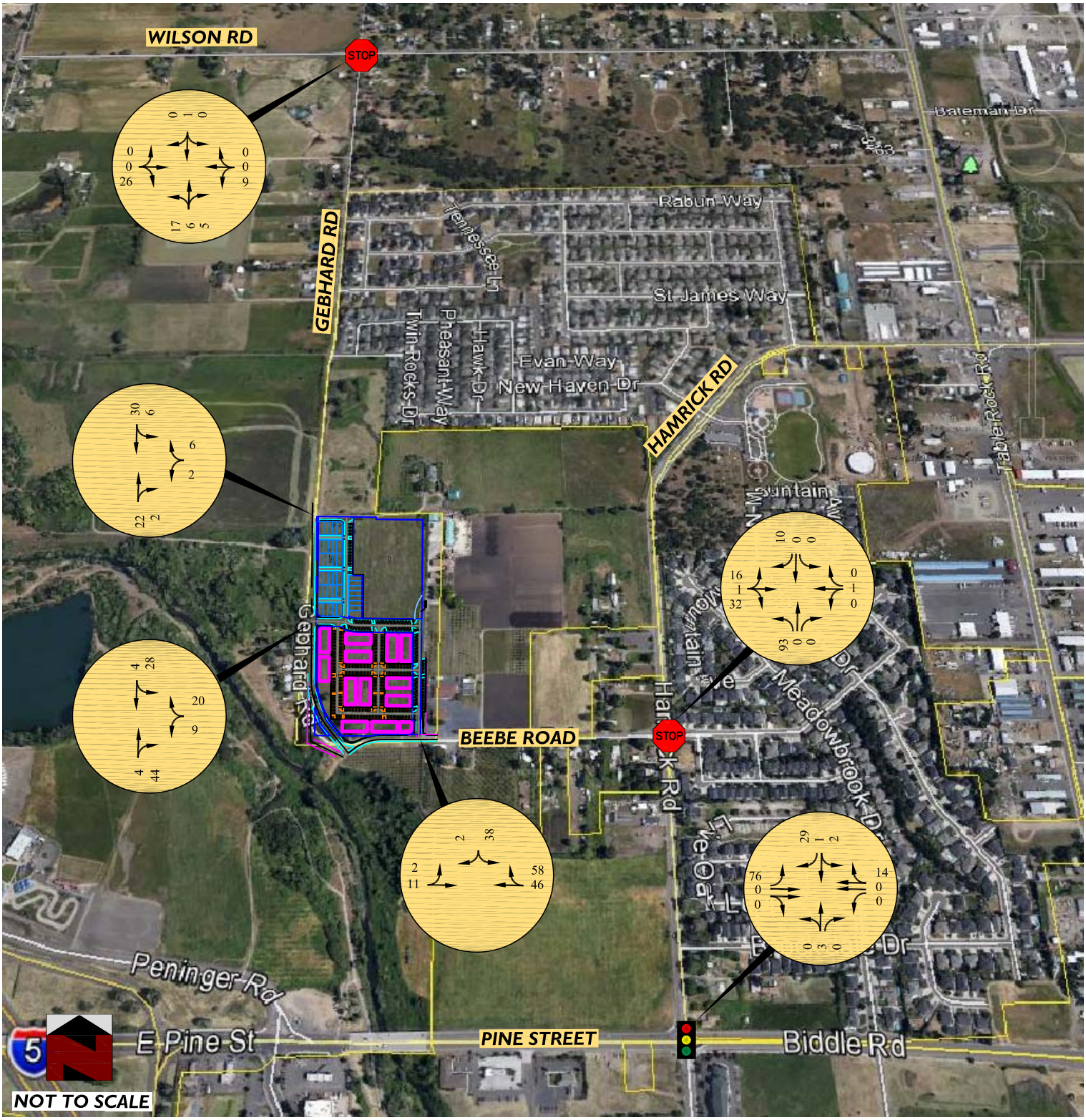
Figure 9 : White Hawk Development Trips, PM Peak Hour



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VI. DESIGN YEAR 2017 BUILD CONDITIONS

Year 2017 Build Description

Build conditions represent no build conditions for a study area with the addition of proposed development trips considered. Build conditions are compared to no-build conditions to determine what impacts and/or mitigation measures will result from proposed development.

Year 2017 Build Intersection Operations

Design year 2017 build traffic volumes were evaluated at study area intersections during the p.m. peak hour. Results are summarized in Table 11. Synchro output sheets are provided in Appendix D.

Table 11 – Design Year 2017 Build Intersection Operations

Intersection	Performance Standard	Traffic Control	Year 2017 No-Build P.M. Peak
East Pine Street / Hamrick Road	LOS D V/C 0.95	Signal	D 0.92
Beebe Road / Hamrick Road	LOS D	TWSC	***F***
Gebhard Road / Wilson Road	LOS D V/C 0.95	TWSC	B 0.06
Beebe Road / Project Access	NA	Stop-Controlled	B
Gebhard Road / South Access	NA	Stop-Controlled	A
Gebhard Road / North Access	NA	Stop-Controlled	A

LOS = Level of Service, V/C = Volume-to-Capacity, TWSC = Two-way stop controlled
Note: Exceeded performance standards are shown in bold, italic

The intersection of Beebe Road/Hamrick Road is the only study area intersection shown to exceed its operational performance standard in the design year 2017 with full build out of the proposed White Hawk development. Preliminary signal warrants are also shown to be met. Possible mitigations include construction of a traffic signal or roundabout. Results of these mitigations are provided in Table 12. Preliminary signal warrants are provided in Appendix I.

Table 12 – Design Year 2017 Build Intersection Operations with Mitigation

Intersection	Performance Standard	Year 2017 Build w/ Traffic Signal	Year 2017 Build w/ Roundabout
Beebe Road / Hamrick Road	LOS D	A	B

LOS = Level of Service, V/C = Volume-to-Capacity
Note: Exceeded performance standards are shown in bold, italic

The proportional share of impact is approximately 11% of mitigation costs based on a volume-based impact analysis. This reduces to 5% once Beebe Road is extended to the west. The trigger for when a traffic signal is necessary (in the estimated design year) is 107 p.m. development trips, which is shown to contribute 75 p.m. trips to the intersection of Beebe Road/Hamrick Road. A

possible development option within this threshold includes 38 duplex/rowhouse units and up to 140 apartments before mitigation is required.

Year 2017 Build 95th Percentile Queuing

Five simulations were run and averaged in SimTraffic to determine 95th percentile queue lengths at study area intersections under design year 2017 build conditions. Queue lengths were rounded up to the nearest 25 feet (single vehicle length) and reported in Table 13 for the p.m. peak hour if shown to exceed their available link distance or block a downstream intersection.

Table 13 – Design Year 2017 Build 95th Percentile Queue Lengths

Intersection / Movement	Available Link Distance (Ft)	95th Percentile Queue Lengths P.M. Peak Hour	Exceeded or Blocked Roadway
East Pine Street / Hamrick Road			
Southbound Right	200'	***325'***	Right Turn Storage
Eastbound Left	400'	***450'***	Left Turn Storage

Note: Exceeded performance standards are shown in bold, italic

Results of the queuing analysis show that the southbound right turn pocket and the eastbound left turn pocket exceed their available storage lengths under design year 2017 build conditions during the p.m. peak hour. The queue length from the right turn movement is estimated to exceed the turn pocket and spill into the adjacent through lane 9% of the time while the eastbound left turn is estimated to exceed 4% of the time during the pm peak hour. Neither causes the adjacent through lane to block any downstream driveways or intersections as a result. The eastbound left turn queue length has a center two-way-left-turn-lane (TWLTL) that it can spill into. No other lengths are shown to be exceeded at study area intersections. Refer to Appendix E for a full queuing and blocking report.

Sight Distance

Access to the site is provided from a single access on Beebe Road and two proposed access points on Gebhard Road. All access points were evaluated in the field for adequate sight distance.

Sight distance is provided at intersections to allow drivers adequate time to perceive other vehicles approaching the intersection and react in time to avoid collisions. The driver of a vehicle approaching an intersection should have an unobstructed view of the entire intersection. Likewise, stopped vehicles at intersections should have a sufficient view of the intersecting roadway to decide when to enter or cross without colliding with on-coming vehicles. Minimum sight distances are provided by the American Association of State Highways and Transportation Officials (AASHTO) in what is referred to as the AASHTO handbook.

Departure sight triangles for were considered for two situations:

1. Case B1 – Left turns from the minor road or driveway
2. Case B2 – Right turns from the minor road or driveway

The length of the leg of the departure sight triangle along the major road for all stop-controlled movements is dependent upon the speed of the major roadway and perception-reaction times of drivers. The minimum stopping sight distance (SSD) represents the minimum sight distance required by ODOT and AASHTO. The intersection sight distance (ISD) is considered to be the

desirable sight distance by ODOT and AASHTO. The roadway speed used in analyses is either the design speed or the 85th percentile speed. The 85th percentile speed was measured to be 46 mph northbound and 49 mph southbound on Gebhard Road and 44 mph westbound and 45 mph eastbound on Beebe Road. The speed used for each sight distance analysis was 55 mph on Gebhard Road and 45 mph on Beebe Road to provide a conservative analysis.

From the access point on Beebe Road:

- The minimum SSD for a left, through or right turn movement is 360 feet.
- The desirable ISD for a left turn movement is 500 feet
- The desirable ISD for a right turn is 430 feet

Sight distance at the Beebe Road access point is unrestricted both to the east and west. There is a clear line of sight to the Hamrick Road intersection approximately 1200 feet to the east and to the Beebe/Gebhard curve which is approximately 600 feet to the west. The minimum SSD and desirable ISD are both met at this location.

From the access points on Gebhard Road:

- The minimum SSD for a left, through or right turn movement is 495 feet.
- The desirable ISD for a left turn movement is 610 feet
- The desirable ISD for a right turn or crossing maneuver is 530 feet

Sight distance from the proposed Gebhard Road access points is also unrestricted in both directions. The southern access point has clear line of sight to the Beebe/Gebhard curve approximately 700 feet to the south. The northern access point has clear line of sight to the Beebe/Gebhard curve approximately 1300 feet to the south. Both accesses have more than the required clear line of sight to the north. The minimum SSD and desirable ISD are both met at these locations. Refer to Appendix I for sight distance tables.

Year 2017 Turn Lane Criterion

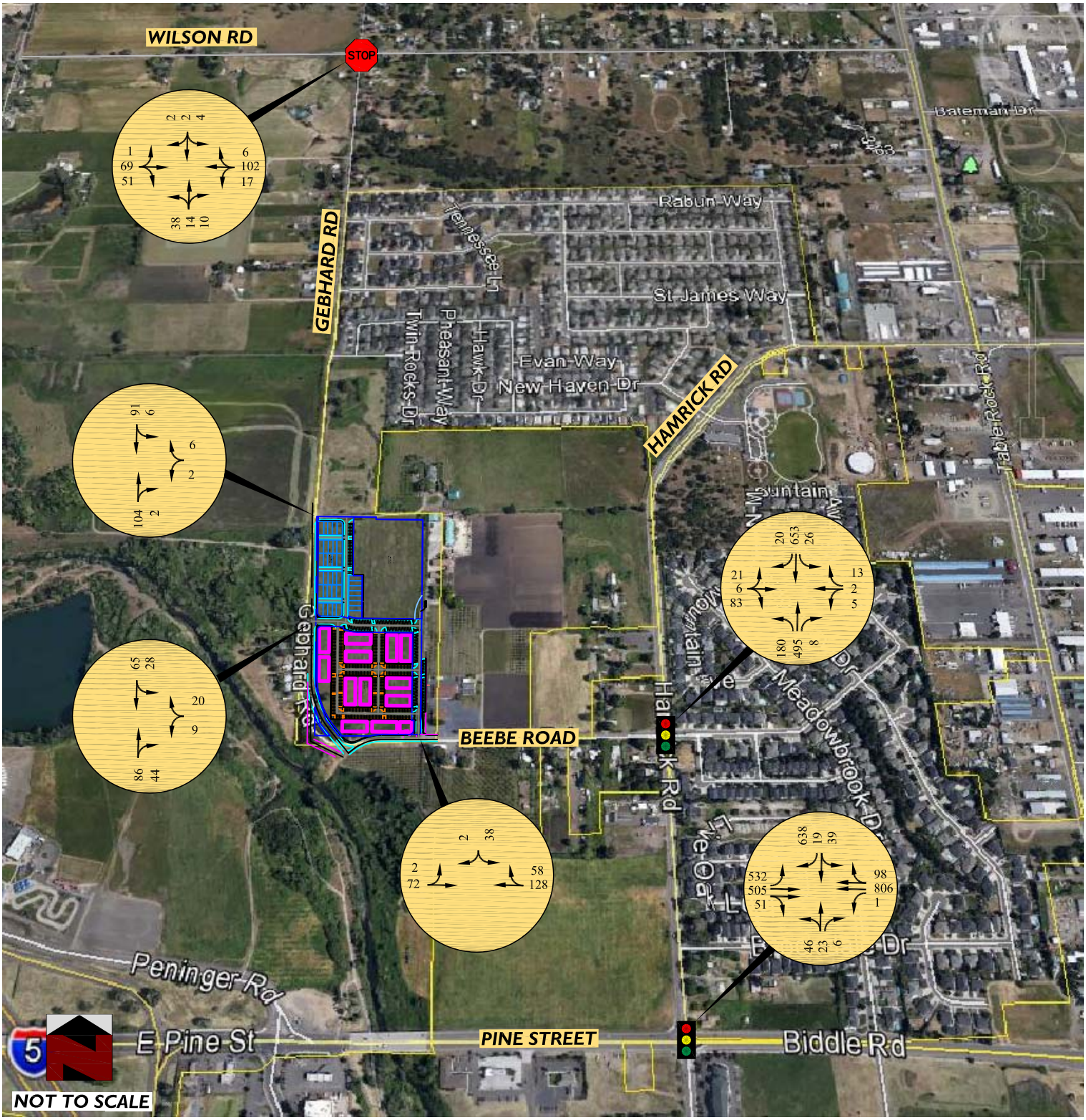
Left Turn Lane

Left turn lane criterion was evaluated on Beebe Road and Gebhard Road at the development access points during the PM peak hour to determine whether left turn lane criterion is met under design year 2017 build conditions. Results of the analysis show that criterion is not met for a southbound left turn lane at either Gebhard Road access or for an eastbound left turn lane at the Beebe Road access in the design year 2017. Refer to Appendix H for left turn lane graphs.

Right Turn Lane

Right turn lane criterion was evaluated on Beebe Road and Gebhard Road at the development access points during the PM peak hour to determine whether right turn lane criterion is met under design year 2017 build conditions. Results of the analysis show that criterion is not met for a northbound right turn lane on Gebhard Road at either access or for a westbound right turn lane on Beebe Road. Refer to Appendix H for right turn lane graphs.

Figure 10 : Design Year 2017 Build, PM Peak Hour



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VII. FUTURE YEAR 2038 NO-BUILD AND BUILD CONDITIONS

Future Year 2038 No-Build Description

Future year 2038 no-build conditions represent future planning year conditions for a study area without consideration of proposed development trips. This condition is evaluated to determine how a study area will be impacted by future background growth. Background growth in this report was assumed to be consistent with Exit 33 IAMP assumptions, which are currently in draft form but will eventually will be finalized and adopted by the City of Central Point. Estimated growth on Hamrick Road was used to develop growth for Beebe Road and Gebhard Road. Refer to Figure 11 for estimated growth between the design year 2017 and future year 2038.

Future Year 2038 Build Description

Future year 2038 build conditions represent future conditions for a study area with background growth and proposed development trips considered. Build conditions are compared to no-build conditions to determine what kind of impacts and/or mitigation measures will result from proposed development under future conditions. Future conditions are evaluated in this analysis for the Transportation System Plan (TSP) horizon year of 2038, which also meets Transportation Planning Rule (TPR) criteria for the planning period of twenty years from adoption of a TSP. Refer to Figures 12 and 14 for future year 2038 no-build and build traffic volumes during the p.m. peak hours. Figure 13 shows re-routed development trips with an east-west Beebe Road extension to Peninger Road in place.

Future Year 2038 No-Build and Build Intersection Operations

Future year 2038 no-build and build traffic volumes were evaluated at study area intersections under p.m. peak hour conditions. No-build and build intersection operations were derived using the I-5 Exit 33 IAMP and East Pine Street Study. Projected future 2038 traffic volumes for the preferred concept alternative were used at the signalized intersections of Peninger Road/East Pine Street and Hamrick Road/East Pine Street, and traffic volumes for the intersection of Beebe Road/Hamrick Road were derived based on traffic projections and distributions from the East Pine Street Study. Remaining study area intersections were balanced with these intersections. Results for all intersections are summarized in Table 14.

Table 14 – Future Year 2038 No-Build and Build Intersection Operations

Intersection	Performance Standard	Traffic Control	Future Year 2038 No-Build P.M. Peak	Future Year 2038 Build P.M. Peak
East Pine Street / Hamrick Road	LOS D V/C 0.95	Signal	C 0.84**	D 0.85**
Beebe Road / Hamrick Road	LOS D	Signal	B*	
Gebhard Road / Wilson Road	LOS D V/C 0.95	TWSC	B 0.30	C 0.38

LOS = Level of Service, V/C = Volume-to-Capacity, TWSC = Two-way stop controlled
Note: Exceeded performance standards are shown in bold
* Includes traffic signal mitigation
** Includes IAMP Improvements within preferred concept scenario
***Includes minimum single lane approaches with shared movements

Table 14 Continued – Future Year 2038 No-Build and Build Intersection Operations				
Intersection	**Performance Standard**	**Traffic Control**	**Future Year 2038 No-Build P.M. Peak**	**Future year 2038 Build P.M. Peak**
Beebe Road / Project Access	NA	Stop-Controlled	--	B
Gebhard Road / South Access	NA	Stop-Controlled	--	B
Gebhard Road / North Access	NA	Stop-Controlled	--	B
Beebe Road / Gebhard Road	LOS D V/C 0.95	Stop-Controlled	C***	C***

LOS = Level of Service, V/C = Volume-to-Capacity, TWSC = Two-way stop controlled
Note: Exceeded performance standards are shown in bold
* Includes traffic signal mitigation
** Includes IAMP Improvements within preferred concept scenario
***Includes minimum single lane approaches with shared movements

With preferred concept improvements in the future year 2038 scenario, all study area intersections are shown to operate acceptably. Minimum lane configurations were used at the future Gebhard Road/Beebe Road intersection as well as at the Beebe Road/Hamrick Road intersection to evaluate worst case conditions, but the intersections would likely operate more efficiently with some additional lanes. Further evaluation should be considered once some unknowns for the area regarding development growth and more precise traffic splits are known. Synchro output sheets are provided in Appendix F.

Future Year 2038 No-Build and Build 95th Percentile Queuing

Study area queuing was evaluated under future year 2038 no-build and build conditions. Five simulations were run and averaged in SimTraffic to determine 95th percentile queue lengths. Queue lengths were then rounded up to the nearest 25 feet (single vehicle length) and reported in Table 15 for the p.m. peak hour if exceeded or shown to block downstream intersections. A full queuing and blocking report is provided in Appendix G.

Table 15 – Future Year 2038 No-Build and Build 95th Percentile Queue Lengths				
Intersection Movement	**Available Link Distance (Feet)**	**95th Percentile Queue Lengths No-Build P.M. Peak Hour**	**95th Percentile Queue Lengths Build P.M. Peak Hour**	**Exceeded or Blocked Roadway**
East Pine / Hamrick Road				
Southbound Right	200’	***325’***	***350’***	Right Turn Storage
Eastbound Left	400’	***475’***	***575’***	Left Turn Storage
Beebe Road / Hamrick Road				
Southbound Right Flair	50’	***125’***	***125’***	Right Turn Storage

Note: Exceeded performance standards are shown in bold, italic

Results of the queuing analysis show that the southbound right turn pocket and the eastbound left turn pocket at the signalized intersection of East Pine / Hamrick Road continue to exceed their available storage lengths under future year 2038 build conditions even with preferred concept improvements during the p.m. peak hour. The queue length from the right turn movement is estimated to exceed the turn pocket and spill into the adjacent through lane 15% of the time while the eastbound left turns are estimated to exceed 20% of the time under build conditions during the pm peak hour. Depending upon development along East Pine Street, consideration should be

given in the future to re-striping and extending the turn pocket, but this would likely be determined when the commercial parcel on the northwest corner of the intersection develops.

The southbound right turn flair that currently exists on Hamrick Road at Beebe Road is shown to exceed its 50' storage length under future year 2038 conditions. Consideration should be given to extending this turn pocket if growth occurs as expected. No other lengths are shown to be exceeded at study area intersections. Refer to Appendix G for a full queuing and blocking report.

Future Year 2038 Build Turn Lane Criterion

Left Turn Lane

Left turn lane criterion was evaluated on Beebe Road and Gebhard Road at the development access points during the PM peak hour to determine whether left turn lane criterion is met under projected future year 2038 build conditions. Results of the analysis show that criterion is met for a southbound left turn lane at both Gebhard Road access points as well as an eastbound left turn lane at the Beebe Road access. This, however, is based on projections of growth for the area that have many unknowns and may not be reliable. Refer to Appendix H for left turn lane graphs.

Right Turn Lane

Right turn lane criterion was evaluated on Beebe Road and Gebhard Road at the development access points during the PM peak hour to determine whether right turn lane criterion is met under projected future year 2038 build conditions. Results of the analysis show that criterion is not met for a northbound right turn lane on Gebhard Road at the north access or for a westbound right turn lane on Beebe Road, but criterion is met on Gebhard Road at the south development access because of this being the main access to the site on Gebhard Road and also because of the un-posted speed limit of 55 mph. If the speed limit is reduced in the future to 40 mph, which is more likely once development occurs, then criterion will not be met for a right turn lane. Refer to Appendix H for right turn lane graphs.

Figure 11 : Background Growth Year 2017-2038, PM Peak Hour

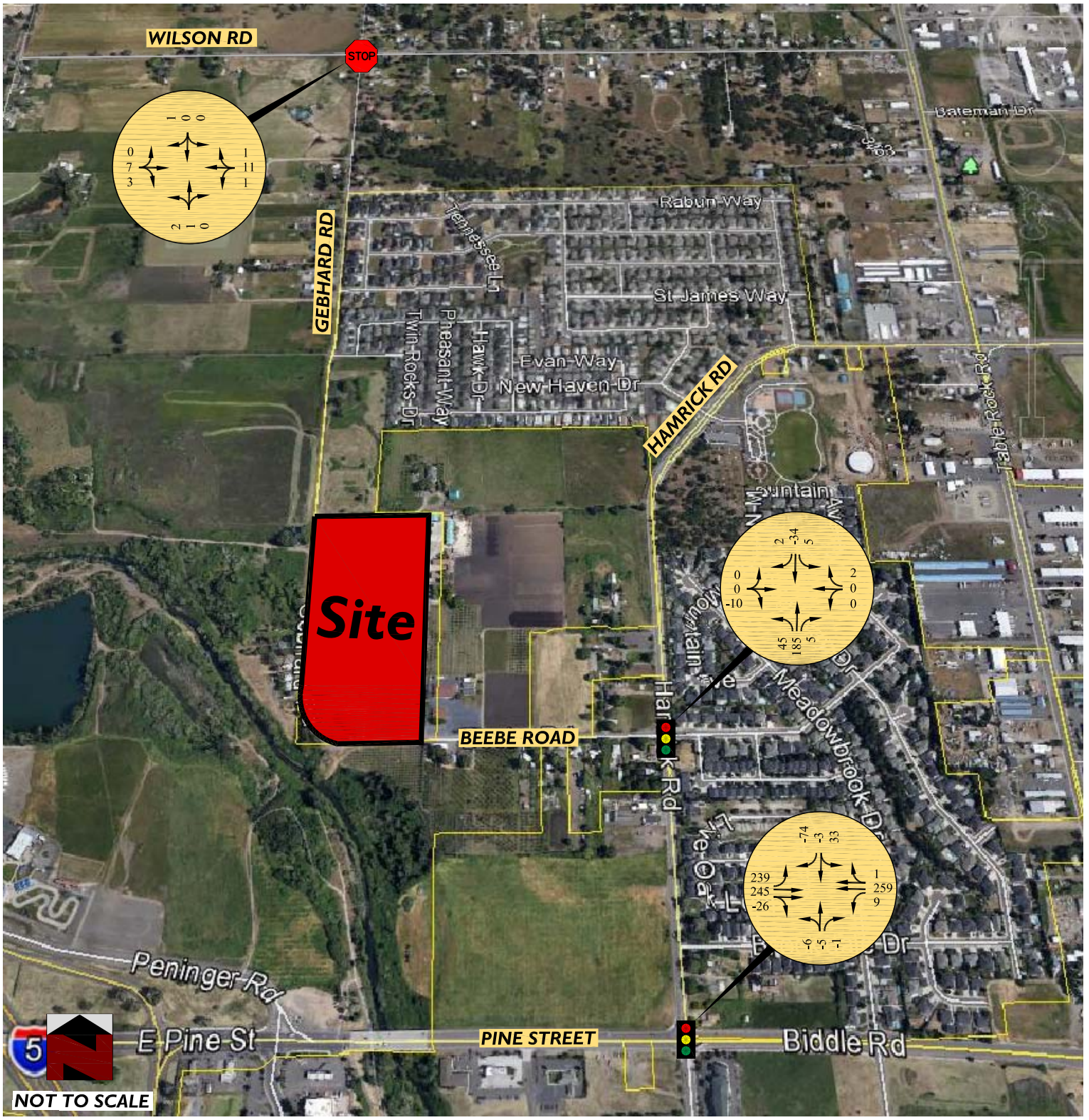

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Figure 12 : Future Year 2038 No-Build Traffic Volumes, PM Peak Hour

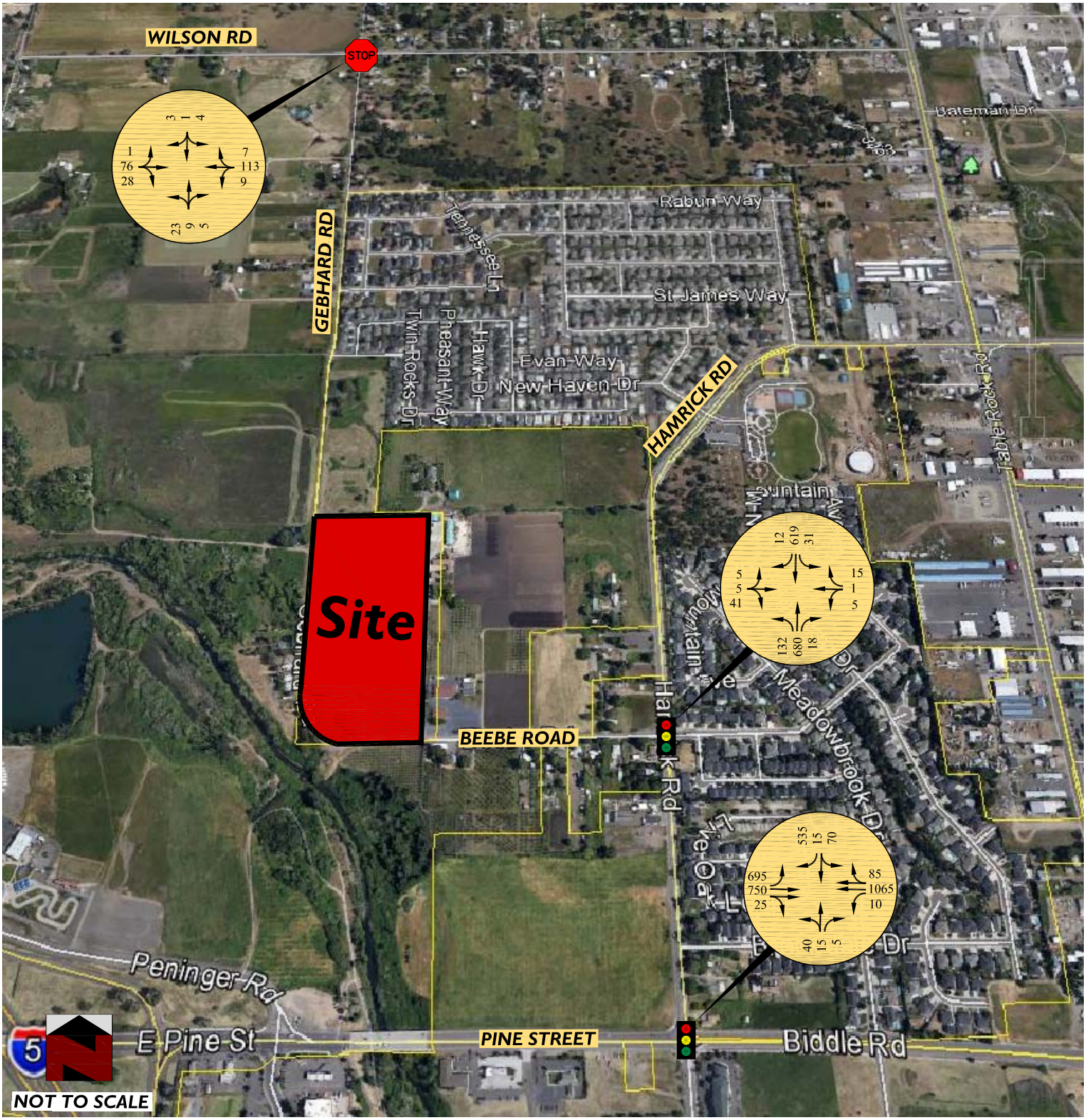

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Figure 13 : Re-routed White Hawk Development Trips, PM Peak Hour

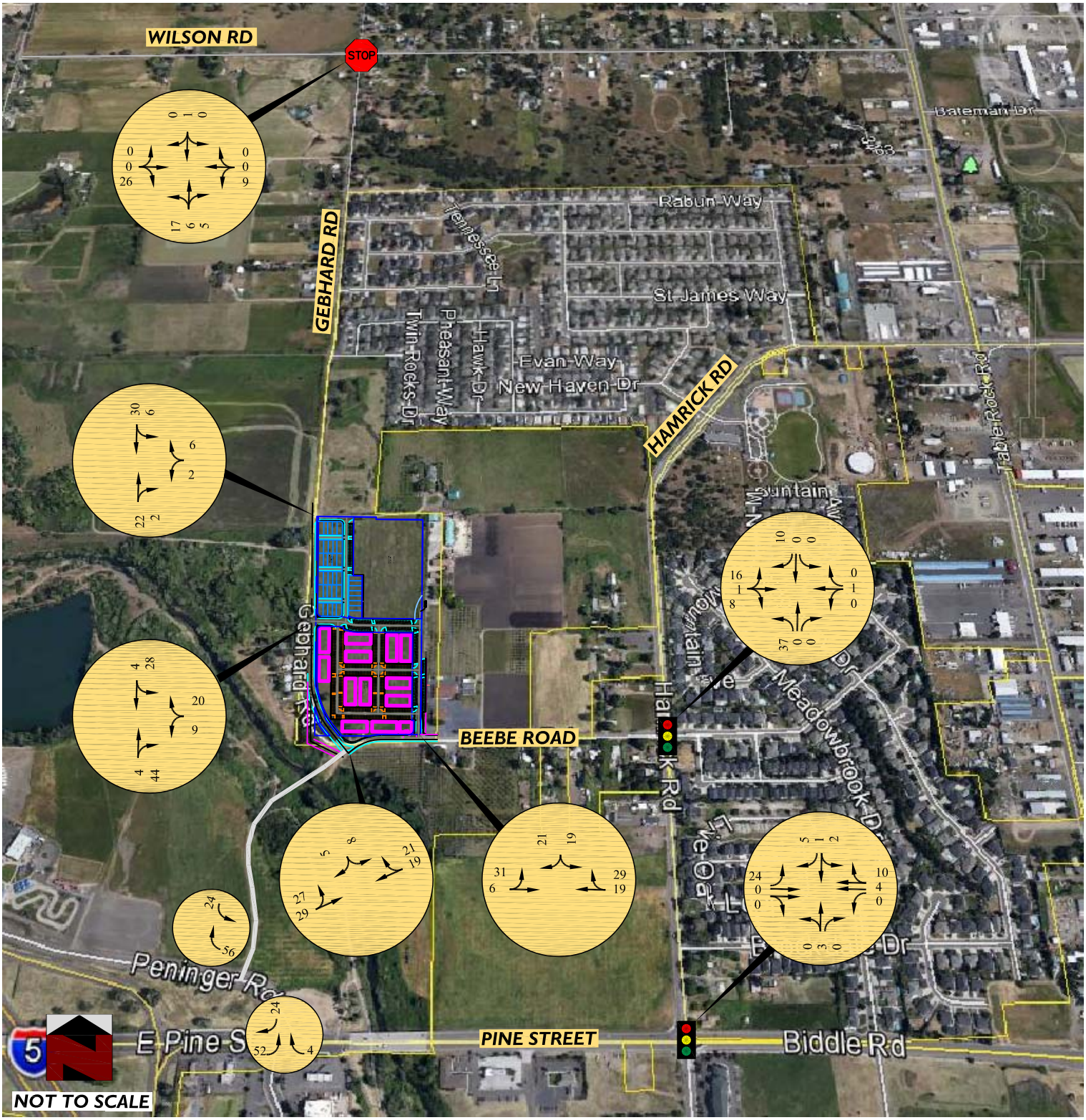

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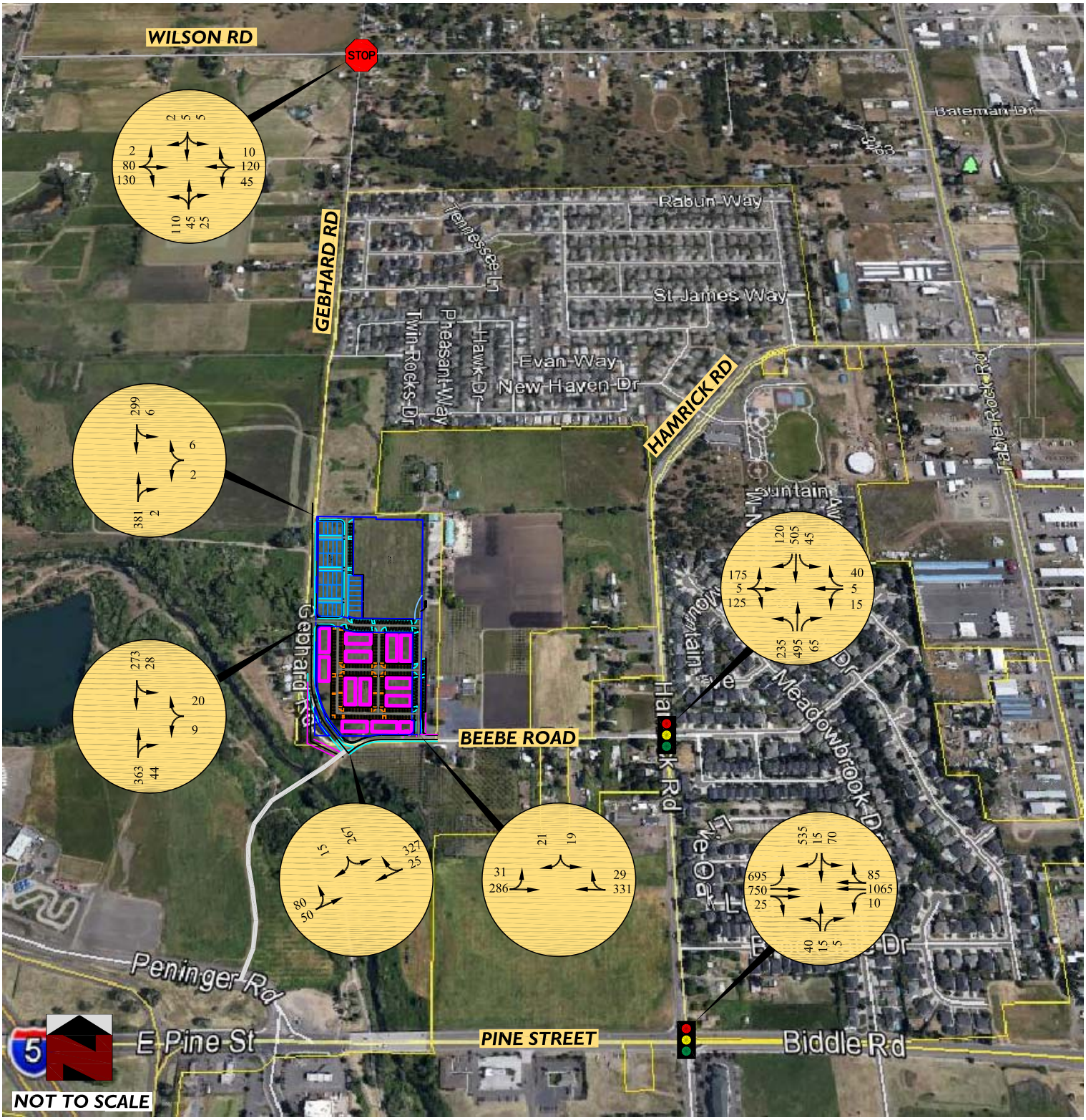
Figure 14 : Future Year 2038 Build, PM Peak Hour



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VIII. CONCLUSIONS

Conclusions

The findings of the traffic impact analysis conclude that the proposed White Hawk development can be accommodated on the existing transportation system without creating adverse impacts with proposed mitigations. Intersection operations and safety was evaluated to address development impacts to the surrounding area. Results of the analysis show the following:

1. All study area intersections operate acceptably under existing year 2014 and design year 2017 no-build conditions during the p.m. peak hour. The intersection of Beebe Road / Hamrick Road degrades to a LOS F under design year 2017 build conditions as a result of development traffic. Proposed mitigation includes:

a) Installation of a traffic signal. The proportional share of impact is approximately 11% of mitigation costs (based upon a volume-based impact analysis) without a Beebe Road east-west connection and 5% with a Beebe Road connection. The difference in impact results from less project traffic using the Beebe Road/Hamrick Road connection when the Beebe Road extension is in place.

2. Left and right turn lanes are not shown to be necessary at any development access point under design year 2017 build conditions. Turn lanes are met in the future at the following locations:

a) A left turn lane at both Gebhard Road development access points and Beebe Road access point under future year 2038 build conditions.

b) A right turn lane at the Gebhard Road south development access point under projected year 2038 build conditions if the speed continues to stay 55 mph. If the speed is reduced to 40 mph as would be expected then a right turn lane will not be met in the future scenario.

3. The estimated average daily traffic (ADT) for the proposed White Hawk development is 2,274 ADT, which is within the Eastside Transit Oriented Development District (ETOD) trip cap of 6,100 ADT. To date this is the first development application within the TOD.

The proposed development application is in compliance with the Central Point Comprehensive Plan and Land Development Code. Streets that serve the subject property will accommodate projected p.m. peak hour traffic volumes within acceptable levels of service with identified improvements.