EXHIBIT 2

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November 7, 2008

Niroop K. Srivatsa
Planning and Building Services Manager
City of Lafayette
3675 Mt. Diablo Blvd., Suite 210
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Re: Palos Colorados November 10, 2008 Staff Report

Dear Niroop,

Thank you for meeting with Debi Chung of Richfield Investment Corporation several weeks ago to discuss the photosimulations for the Palos Colorados Project.

As you know, Richfield has attempted since last year to address the City of Lafayette's ("City") comments regarding photosimulations and visibility of the approved residences on Lot 106 and the 2007 Lots 22, 23, F, 25, 25, 27, 29, and E. In fact, Richfield installed the storey poles twice and incurred extra costs in an effort to work with Lafayette, and we appreciate the time you have spent in reviewing the Palos Colorados Project.

Based on our review of the November 3, 2008 Staff Report for the November 10th City Council meeting regarding the Palos Colorados Precise Development Plan: *Compliance with the Conditions in the Settlement Agreement relating to visual impacts*, it appears, however, despite Richfield's efforts, Lafayette Staff continue to have several concerns regarding the photosimulations and the terms of the February 14, 2007 Palos Colorados Settlement Agreement ("2007 Settlement Agreement"). It may be that the City's comments arise due to some misunderstandings about the language of the 2007 Settlement Agreement and Condition 6 in the 1999 Palos Colorados Settlement Agreement. In this regard, we respectfully disagree with Staff's interpretation of the 2007 Settlement Agreement and the associated General Development Plan (GDP) and Vesting Tentative Map (VTM), and the City's efforts to rewrite the terms of the 2007 Settlement Agreement for the following reasons set forth below.

Lot 106

It is true that Lot 106 is the most visible lot. All of the parties to the 2007 Settlement Agreement were aware that was the case when they agreed to the GDP and VTM conditions and terms of the 2007 Settlement Agreement. Condition GDP.2 of the 2007 Settlement Agreement states that:

> *"The condition in the settlement agreement states that if the proposed residence is visible from the Lafayette BART station, modifications to the design shall be required to fully mitigate the visual impact or screening landscaping shall be installed to eliminate the impact."*

This condition was intended to further clarify Condition 6 of the 1999 Settlement Agreement. Richfield understands that if the proposed residence is visible from the Lafayette BART Station either the building design will need to change or screening landscaping will be installed. Richfield provided a landscape mitigation plan that shows landscape screening, and the photosimulations submitted on October 22, 2008 demonstrate that screening will be effective in mitigating the visual impact of a home on that lot. In this regard, the storey pole installation would appear to be misleading because the home will not be painted neon orange. Based on the photosimulations, if the building is painted in muted tones that blend in with the proposed landscaping, the house will not be visible from the Lafayette BART platform that is located more than two miles away, particularly given the intervening structures in the foreground.

We note that none of the conditions that the City now requests were required in the 2007 or 1999 Settlement Agreements. We believe that the conditions are not warranted, and to add these conditions to the Precise Development Plan would rewrite the terms of the 2007 Settlement Agreement and Condition 6 of the 1999 Settlement Agreement as discussed below.

- ***Lafayette Condition 1:*** Lafayette recommends that, "The landscape mitigation plan (attached to the staff report) and its exhibits shall be incorporated into the Precise Development Plan."
    - Richfield provided the landscape mitigation plan in its Precise Development Plan submittal. This condition is not necessary because it has already been included in the project in accordance with the 1999 Settlement Agreement, and it is not required by the 2007 Settlement Agreement.

- ***Lafayette Condition 2:*** Lafayette recommends that, "All trees shown on the landscape mitigation plan shall be planted in conjunction with the subdivision improvements and before the issuance of the first building permit for the project."

    - It is unreasonable and not required by the Agreement to require that *all* of the trees on the landscape mitigation plan be planted prior to issuance of the first building permit for some home that may not even be on Lot 106. There is no nexus to the screening for Lot 106 and there is a timing problem. This condition is not required by the 1999 or 2007 Settlement Agreements.

- ***Lafayette Condition 3:*** Lafayette recommends that, "Landscape maintenance agreements shall be recorded for the lots and common areas that contain the trees shown in the landscape mitigation plan."

    - Richfield is not in a position to agree to landscape maintenance agreements that are undefined, particularly for the common areas and for lots that have nothing to do with Lot 106. We are concerned that such undefined agreements may be in conflict with unknown requirements from the U.S. Fish & Wildlife Service. This requirement is not included in the 1999 or 2007 Settlement Agreements.

- ***Lafayette Condition 4:*** Lafayette recommends that, "The settlement agreement conditions relating to visibility, pad elevations and heights shall be recorded against the lots cited in the settlement agreement. No improvements that would be visible from the BART platform shall be allowed on these lots."

    - The 2007 Settlement Agreement does not require the recordation of a deed restriction. We understand that Condition 6.b. the 1999 Settlement Agreement called for a deed restriction limiting the house to one story and no more than 25 feet. That has been addressed in the Precise Development Plan and Moraga's prior conditions of approval. Moreover, Lafayette's recommended condition goes beyond Condition GDP.2. Condition GDP.2 is limited to the "proposed residence." It says nothing about "improvements." Lafayette's condition could create confusion because it reinterprets the scope of the actual requirements of the 1999 and 2007 Settlement Agreements.

GDP Conditions

Just as was the case with September 2008 Lafayette Staff Report, the November 10th Lafayette Staff Report ignores the text of Condition GDP.2 with respect to the nine lots referenced in the Staff Report. In summary, Condition GDP.2 states:

> *"The maximum building height for General Development Plan Lots 13, 14, 15 and 16 shall be 19 feet provided that the elevation of the lots is between 706 and 712 feet. If the elevation of the lots is lowered, then the building height can increase equal to the lowering of the lots...."*

As you can see, that condition does not say "the rooflines of homes [must] not protrude above the elevations of the existing skyline behind them as viewed from the platform of the Lafayette BART Station." The Condition says that the maximum building height for the specified lots is limited to 19 feet (one story) unless it can be demonstrated that a higher building height is not visible from the Lafayette BART Station.

Since it appears that Lafayette may be unclear about the Settlement Agreement terms, it might be helpful to schedule a meeting with the Moraga Town Attorney and the Lafayette City Attorney to discuss the 2007 and 1999 Settlement Agreements. In the meantime and in the interest of trying to resolve these concerns, Richfield respectfully requests that the Lafayette City Council reject staff's recommendations, based on an incorrect interpretation of the 1999 and 2007 Settlement Agreements and the associated General Development Plan (GDP) and Vesting Tentative Map (VTM).

Please feel free to contact myself or Debi Chung if you would like to discuss this further. We appreciate your consideration of this request.

Sincerely yours,

BRISCOE IVESTER & BAZEL LLP

Alicia Guerra

cc: Mayor Anderson and Members of the Lafayette City Council
City Clerk
Malathy Subramanian
Michelle Kenyon
Lori Salamack
Rick Sabella
Debi Chung

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September 10, 2008

File No. 54836

Ms. Lori Salamack
Planning Director
Town of Moraga Planning Department
329 Rheem Boulevard
Moraga, CA 94556

Re: Palos Colorados Precise Development Plan

Dear Ms. Salamack:

We understand that the Moraga Planning Commission will be considering the proposed Palos Colorados Precise Development Plan ("Project") at its upcoming meeting of September 22, 2008. In anticipation of the September 22nd Planning Commission meeting, the purpose of this letter is to address prior comments from the Planning Commission and Design Review Board (DRB) regarding the Palos Colorados Precise Development Plan.

1. Traffic Signal at Moraga Road/Project Access

At the joint meeting of May 5, 2008, several Planning Commissioners and members of the DRB requested information regarding the status of the above-referenced traffic signal and whether or not the traffic signal would be required. VTM / COA L.III.3 required installation of the traffic signal unless a traffic analysis demonstrated that the signal is no longer required due to the Palos Colorados Project's reduction in trips with the elimination of the golf course. *Exhibit 1* depicts the location and configuration of the proposed signalized intersection.

Exhibit 1 also includes a traffic analysis prepared by Omni-Means to assess the need for the traffic signal. The traffic analysis demonstrates that the signal is no longer required due to the elimination of the golf course. Instead, this location could be stop-sign controlled as depicted in *Exhibit 1*. Consequently, in accordance with condition VTM / COA L.III.3, the Planning Commission may decide to approve the Precise Development Plan without the traffic signal.

2. Secondary Units

At the Commission's May 5th meeting, several Commissioners and members of the DRB requested further clarification regarding the number of secondary units proposed as part of the Project. Specifically, Commissioners and DRB members requested information regarding the number and location of the secondary units and whether or not the Town would limit the number of residents residing in a secondary unit.

The GDP and VTM allow for the inclusion of secondary units as part of the Project. This provision is consistent with State density bonus laws that require that municipalities allow density bonuses for projects that include an affordable housing component. Secondary units are considered a form of affordable housing. In Moraga, these units are subject to a ministerial level of review by the Planning Department prior to building permit issuance. The 1999 Palos Colorados Settlement Agreement included a requirement that the proposed residences generally range in size from 2,800 square feet to 4,500 square feet. The proposed residences shown in the GDP and VTM include residences that exceed the square footage and would allow for secondary units up to a maximum of 750 square feet.

At the May 5th Planning Commission meeting, there was some confusion regarding the number of secondary units proposed as part of the Project. Richfield is proposing that at least 30 of the 123 proposed lots can accommodate secondary unit space in accordance with the GDP and VTM conditions of approval. In this regard, Richfield identified four plan types that can accommodate secondary units within the proposed square footage of the primary residence (see *Exhibit 2.*) These units are "guest suites" included in the primary residence square footage. For each of the four plan types, the residences that can accommodate a "guest suite" have been identified.

Table 4.8-2 in the Town's adopted Addendum to the Palos Colorados EIR (February 1, 2007), summarizes the traffic impacts associated with the residential project plus a golf course compared to the reduced project with secondary units and without the golf course. In summary, the original project was calculated to generate 210 AM peak hour vehicle trips and 238 PM peak hour trips. By comparison, the approved GDP/VTM for the revised project would generate as many as 174 AM peak hour trips and 196 PM peak hour trips. As this analysis demonstrates, the revised project with 30 secondary units would result in less traffic than the original project.

3. Public Facilities at Pocket Park and Hiking Trails

At its meeting of June 23, 2008, members of the DRB requested that the Project be designed to include restrooms and drinking fountains at the private pocket park.

We are unaware of any requirements in the GDP, VTM or the Moraga Municipal Code requiring that restroom facilities or other public facilities be provided at private parks. Richfield is concerned that installing such facilities could impose an additional maintenance obligation on the residents due to public use above and beyond the private use of the residents. Generally, as a private park maintained by the homeowner's association (HOA), these types of developer-provided mini-parks do not usually require or have restroom facilities. Such facilities are costly and require a substantial daily maintenance effort for which HOA's are not equipped to handle. Moreover, it is unusual for private developers and HOA's to provide full restrooms in a development because the HOA's are not equipped to deal with the constant daily maintenance of such a facility. Restroom facilities tend to require daily maintenance, service access, and restricted access after hours. This could require a nearly full-time maintenance person which would be an unreasonable burden on a 123-lot development.

The park is designed to be used only by the homeowners and is designed as a short-term use facility, vista point and children's play area for residents. While accessible by the public, it is not designed as a public park with full facilities and is not intended to provide day-long service for the general public. There is the potential for vandalism which would be an additional burden on the HOA. This could discourage the residents themselves, from using the private park, particularly, if the restrooms are vandalized or left in disrepair.

In this case, the potential nuisance outweighs the benefit in terms of maintenance because of the higher burden on the residents to maintain and fund maintenance of these facilities even when they are not using them, and we are uncertain that it would be possible to obtain DRE approval of any CC&Rs or HOA dues used for the maintenance of public facilities. Further, there is precedent within the Town for parks which do not include restrooms. Moreover, the park site is governed by view restrictions which limit heights of structures visible from Lafayette. Thus, it would be difficult to locate a restroom under these restrictions. For all of these reasons, we respectfully request that the Town not impose a condition on the Precise Development Plan requiring installation of restrooms at the pocket park.

4. Bridge Element

Questions arose at the prior Planning Commission meeting regarding the design of the entry bridge. The entry bridge at Moraga Road is a direct response to the fact the stream paralleling Moraga Road is a jurisdictional waters of the U.S. Richfield is required to minimize grading and disturbance of the streambed. A vertical-walled crossing with culvert is the least damaging to the streambed of the design alternatives that were considered. Also, because the drain culvert is a wildlife corridor, the culvert length needs to be minimized to facilitate wildlife movement. Further, the bridge element is considered to be more aesthetically pleasing and more sensitive to the wetlands requirements than the alternative of a sloped-side road crossing, which would damage or eliminate up to three times the area impacted by the current solution.

5. Mailbox Clusters

The DRB subsequently requested that Project include at least six (6) mailbox clusters if the Moraga Postmaster has the authority to require cluster mailbox units. Additionally, DRB member Glover expressed concern regarding potential vandalism and identity theft due to a centralized mailbox location.

The current mailbox layouts have been sited in the most accessible and least disruptive areas, and are sized to accommodate the housing most logically related to these locations. As you know, Richfield met with the Moraga Postmaster to confirm the location of mailbox units in the proposed subdivision. At the direction of the Postmaster, Richfield clustered the proposed mailbox units at convenient locations. Whether or not the Project includes 3 clusters, four clusters or six clusters is somewhat arbitrary because the Postmaster requested that all of the mailbox units be clustered in order to facilitate the Post Office's ability to deliver mail with limited resources.

Nonetheless, Richfield will consider providing mailbox clusters in six (6) locations subject to the Postmaster's approval. The proposed locations are shown on *Exhibit 3*. While we appreciate DRB member Glover's concern regarding vandalism and identity theft, each unit in the mailbox clusters will be locked boxes so that only the resident and postal service representative possessing the security code or key for the mailbox would be able to access the mailbox. We believe that a secondary benefit of the clustered mailbox is that it also will serve as a neighborhood meeting place and promote community interaction.

6. Lot 106 Story Pole and Visual Simulations

As you know, Condition VTM / COA C.GDP.2-R-VTM requires that Richfield install a story pole on Lot 106 story-pole and prepare a visual simulation of the project from the Lafayette BART Station.

On July 30, 2008, Richfield prepared and submitted a technical memorandum regarding the Lot 106 story pole installation and visual simulation from the Lafayette BART Station. Lafayette conducted a peer review of our analysis and presented the staff recommendation to the City Council at its Council Meeting of September 8th. We understand that the Council supported staff's recommendation to modify the plan to address impacts to views. However, the peer review report and staff recommendation failed to consider several significant points.

As the visual simulation demonstrates, the impacts to views from the Lafayette BART Station under the Precise Development Plan are the same impacts to views associated with the Palos Colorados General Development Plan approved by the Moraga Town Council in 2007. The visual simulation indicates that the rooftop of the house on Lot 106 may be partially visible above the existing grade. VTM / COA C.GDP.2-R-VTM provides that the Project may include extensive landscaping to further screen views of the residence. Accordingly, the Project includes Oak tree and shrub landscaping on north-facing slopes to minimize impacts to views in accordance with the requirements of this condition. Consequently, the Project is consistent with the GDP.

The City of Lafayette's peer review consultant also appears to have overlooked several key aspects of the analysis. First, the consultant indicated that the background vegetation was not considered in the analysis of whether or not the proposed residences would break the skyline. In our view, the definition of the skyline needs to be precisely defined as the existing vegetation should in fact be considered and not excluded from the simulation of whether the units will break the skyline.

Secondly, the peer review consultant suggests that for all the other lots, except lot 106, "The unit is obstructed by background vegetation" under the column "Staehle Verification". These lots include, under the 2007 PDP, lots 22, 23, F, 24, 25, 26, 27, 29, E). The consultant recommends that "these lots be graded to lower elevation to prevent the rooflines from breaking the horizon." However, these lots will always be visible when existing vegetation is not considered. This recommendation fails to take into consideration the existing vegetation or proposed landscaping which is allowed under C.VTM.37.

Further, as we have indicated, lot 106 is visible from the BART platform, but this unit can be mitigated by new proposed vegetation. Again, Lafayette disregards this provision of the adopted condition of approval.

Finally, there may also be a discrepancy with the foreground tree interpretation. In the photos that Richfield's visual simulation consultant used (and also sent to the peer reviewer), the middle foreground trees are much larger and actually break the horizon in the middle than the peer reviewer's photographs. Thus, it almost appears as if the existing photo from last year was used, but we are unable to confirm this is the case, because the City did not provide any backup information as part of the peer review analysis.

For all of these reasons, we believe that Lafayette has once again disregarded the language of the adopted Palos Colorados conditions of approval regarding impacts to views. We respectfully request that the Planning Commission find that the impacts to views associated with the proposed lots, as mitigated by proposed landscaping, and as demonstrated by the photosimulations, fully satisfy the requirements of the Palos Colorados GDP and VTM conditions and Settlement Agreement.

We appreciate your consideration of the above responses to the questions raised at the prior Commission and DRB meetings, and we are prepared to respond to any questions concerning the matters set forth above. We look forward to the Planning Commission's approval of the proposed Palos Colorados Precise Development Plan at its upcoming meeting of September 22, 2008. Please feel free to contact either Debi Chung or myself if you have any questions or need further assistance.

Sincerely,

Alicia Guerra

ACG/tm
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cc: Ms. Michelle Kenyon
Mr. Rick Sabella
Ms. Debi Chung

omni · means
ENGINEERS · PLANNERS

September 9, 2008

Ms. Jill Mercurio
Town Engineer
Town of Moraga
2100 Donald Drive
Moraga, CA 94556

Subject: Analysis of Proposed Palos Colorados Intersection at Moraga Road with Stop-Sign (Unsignalized) Control.

Dear Ms. Mercurio,

This letter report presents the findings of our analysis of the proposed Palos Colorados residential project's access road intersection with Moraga Road in the Town of Moraga. The study focused on operating conditions at the intersection with potential stop-sign control in light of the revised project which would generate a lower number of trips.

Background

The original Palos Colorados project consisted of 146 residential lots and a golf course. In the Town certified EIR (and subsequent addendums), the intersection of the access road with Moraga Road was determined to require traffic signal controls. The current project proposal has changed to 123 single family dwelling units without the golf course and with the potential to include 77 secondary units.[1] Given the revised project, Omni-Means has analyzed the intersection operations assuming stop-sign control for the Palos Colorados road approach.

Intersection Conditions

The project access road would create a new T-shaped intersection on Moraga Road. The original project was calculated to generate 210 (106 in, 104 out) AM peak hour vehicle trips and 238 (144 in, 94 out) PM peak hour trips. The revised plan would generate 174 (75 in, 99 out) AM peak hour trips and 196 (126 in, 70 out) PM peak hour trips. Vehicle trips were also calculated for the Mid-day and Afternoon peak hours.

The project trips were distributed (based on the original EIR) and added to recent peak hour volumes counted by Omni-Means in order to reflect current conditions.[2] The intersection geometries assumed a separate southbound left-turn lane (140 feet) and a separate northbound right-turn lane (100 feet) on Moraga Road. The project access road approach assumed a separate left-turn lane (100 feet). (The vehicle trip calculations and geometries were provided in the signal design analysis previously conducted by Omni-Means, which is attached for reference.)

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Based on the vehicle trips and geometries, the intersection operating conditions were calculated for four peak hours of the day (calculation worksheets are attached). The project access road's left-turn movement would operate at LOS 'E' (with approximately 40 seconds of delay) during the PM peak hour and at LOS 'D' during the AM, Mid-day, and Afternoon peak hours (with delays of approximately 26-32 seconds). The project access road's right-turn movement would operate at LOS 'B' and the Moraga Road southbound left-turn movement would operate at LOS 'A' during all of the peak hours.

Conditions could be further improved, however, by designing the south side of the intersection to include a median storage lane (or "refuge" lane) in Moraga Road to accommodate vehicles turning left from the project access road. With a refuge lane able to accommodate one vehicle, the project access road's left-turn movement would operate at LOS 'C' during all four peak hours (with calculated delays of 17-21 seconds). The project access road's right-turn movement and Moraga Road's southbound left-turn movement would continue to operate at LOS 'B' and 'A', respectively.

Sight Distances

The sight distances were measured and compared to recommended guidelines as defined in the California Department of Transportation (Caltrans) Highway Design Manual.[3] One guideline is referred to as "corner" sight distance, which is defined as the line of sight desired in order to provide the waiting vehicle enough time to cross the lanes of through traffic without requiring through traffic to radically alter their speed. However, the corner sight distance recommendations represent optimal conditions which Caltrans recognizes do not exist in many locations. In locations where the optimum does not exist, Caltrans recommends maintaining "stopping" sight distance, which is defined as the distance required by the driver of a vehicle traveling at a given speed to bring the vehicle to a stop after an object on the road becomes visible.

The sight distance guidelines are based on the travel speeds of approaching vehicles on the major street (higher speeds require longer stopping distance). Radar speed surveys were conducted on Moraga Road near the proposed access road location.[4] The posted speed limit is 35 mph. The measured "85th-percentile speed" (also referred to as the "critical speed") is defined as the speed at which 85 percent of the motorists are traveling at or below. The measured 85th-percentile approach speeds on Moraga Road were 38-39 mph. Although the speeds are higher than the posted limit, they are in the range typically found on this kind of road.

Using the Caltrans equations, the recommended corner sight distances and stopping sight distances were calculated based on the measured 85th-percentile approach speeds. The recommended corner sight distance is 448 feet and the recommended stopping sight distance is 301 feet. Field surveys measured sight distances of approximately 400-450 feet toward the north and approximately 500-550 feet toward the south on Moraga Road from the proposed access road location. It appears the sight distances in both directions would meet the corner sight distance recommendation and they would exceed the recommended stopping sight distance.

Signal Warrants

The intersection volumes were compared to Caltrans traffic signal warrants as established in the California Manual on Uniform Traffic Control Devices (CaMUTCD).[5] The manual provides warrants for installing signalized control based on a variety of criteria, including peak hour vehicular volumes (Warrant #3).

The peak hour volumes are below the minimum thresholds required in the peak hour warrant. (Signal warrant worksheets are attached.) The peak hour signal warrants have a minimum volume threshold for the minor street of 100 vehicles with one approach lane and 150 vehicles with two approach lanes. The highest approach volumes on the minor street occur during the AM peak hour, with 99 vehicles (24 left-turns and 75 right-turns). As the warrant graph illustrates, the volumes are below the plotted curve. Therefore, the intersection does not qualify for signalization under the peak hour criteria.

The CaMUTCD warrants also suggest the effects of right-turn vehicles from the minor-street be considered, as it is relatively easy for right-turning vehicles to enter the traffic stream. For locations with a separate right-turn lane, the warrants state "right-turn volume should not be included in the minor-street volume if the movement enters the major street with minimal conflict". For this analysis, the right-turn volumes were included in order to remain conservative. However, it is noted that the highest peak hour left-turn volume is 24 vehicles compared to 75 right-turns. Therefore, traffic signals would benefit a relatively small proportion of the minor street volumes.

Summary of Findings

The current Palos Colorados project proposal results in fewer vehicle trips than the original project due to a different number of residential units and no golf course. For this reason the intersection was analyzed to determine operating conditions with stop-sign control for the Palos Colorados road approach. Based on the calculated vehicle trips and assumed geometries, the intersection could be designed as a stop-sign controlled intersection for the project access road approach and operate acceptably without the need for a traffic signal. Further, fewer secondary units would generate even less vehicle trips.

The stop-sign controlled project access road's left-turn movement would operate at LOS 'E' (with 40" of delay) during the PM peak hour and LOS 'D' during the other peak hours of the day. All other turning movements would operate at LOS 'B' or better.

Conditions could be improved further if a refuge lane were provided on Moraga Road to accommodate left-turning vehicles from the project access road. A refuge lane on Moraga Road would result in LOS 'C' conditions for the project access road's left-turn movement during all of the peak hours.

The sight distances appear to be adequate based on Caltrans standards. As part of the access design, sight distances should be confirmed.

The intersection volumes do not meet the CaMUTCD's minimum threshold levels for signalization under the peak hour signal warrant criteria.

We trust that this letter responds to the Town's needs. Please contact us if you have any additional questions or comments.

Sincerely,

George Nickelson

George W. Nickelson, P.E.
Branch Manager
Walnut Creek Office

cc
Ms. Lori Salamack, Town of Moraga Planning Director
Ms. Debi Chung, Richfield Investment
Ms. Grace Chen, Richfield Investment
Mr. Rick Sabella, Richfield Investment
Ms. Alicia Guerra, Cox Castle Nicholson

References:

1. The Sample Overall Site Plotting, dated 4/22/08, prepared by Robert Hidey Architects proposes 73 secondary units, however a more conservative number of 77 units was used for trip generation based on discussion with Town staff.

2. Omni-Means Engineers & Planners, Peak period vehicle counts (7:00-9:00 am, 11:30 am-1:30 pm, 2:00-4:00 pm, and 4:00-6:00 pm), conducted May 21-22, 2008.

3. California Department of Transportation, Highway Design Manual, Fifth Edition, Chapter 200: Topic 201 - Sight Distance (pp. 200-1 to 200-2), and Chapter 400: Topic 405 – Intersection Design Standards (p.p. 400-7 to 400-9), 2004.

4. Omni-Means Engineers & Planners, Radar Speed Surveys Conducted on Moraga Road, conducted May 21-22, 2008.

5. State of California Department of Transportation, California Manual on Uniform Traffic Control Devices for Streets and Highways, Part 4, Chapter 4C: Traffic Control Signal Needs Studies, September 26, 2006.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	24	75	524	18	57	537
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	82	570	20	62	584
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1277	570			589	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1277	570			589	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	85	84			94	
cM capacity (veh/h)	172	521			986	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	26	82	570	20	62	584
Volume Left	26	0	0	0	62	0
Volume Right	0	82	0	20	0	0
cSH	172	521	1700	1700	986	1700
Volume to Capacity	0.15	0.16	0.34	0.01	0.06	0.34
Queue Length 95th (ft)	13	14	0	0	5	0
Control Delay (s)	29.6	13.2	0.0	0.0	8.9	0.0
Lane LOS	D	B			A	
Approach Delay (s)	17.2		0.0		0.9	
Approach LOS	C					

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	20	64	507	20	64	466
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	70	551	22	70	507
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1197	551			573	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1197	551			573	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	87			93	
cM capacity (veh/h)	191	534			1000	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	22	70	551	22	70	507
Volume Left	22	0	0	0	70	0
Volume Right	0	70	0	22	0	0
cSH	191	534	1700	1700	1000	1700
Volume to Capacity	0.11	0.13	0.32	0.01	0.07	0.30
Queue Length 95th (ft)	9	11	0	0	6	0
Control Delay (s)	26.2	12.7	0.0	0.0	8.9	0.0
Lane LOS	D	B			A	
Approach Delay (s)	16.0		0.0		1.1	
Approach LOS	C					

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	14	46	583	19	60	558
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	50	634	21	65	607
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1371	634			654	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1371	634			654	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	90			93	
cM capacity (veh/h)	150	479			933	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	15	50	634	21	65	607
Volume Left	15	0	0	0	65	0
Volume Right	0	50	0	21	0	0
cSH	150	479	1700	1700	933	1700
Volume to Capacity	0.10	0.10	0.37	0.01	0.07	0.36
Queue Length 95th (ft)	8	9	0	0	6	0
Control Delay (s)	31.7	13.4	0.0	0.0	9.1	0.0
Lane LOS	D	B			A	
Approach Delay (s)	17.7		0.0		0.9	
Approach LOS	C					

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	17	53	520	30	96	662
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	58	565	33	104	720
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1493	565			598	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1493	565			598	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	85	89			89	
cM capacity (veh/h)	121	524			979	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	18	58	565	33	104	720
Volume Left	18	0	0	0	104	0
Volume Right	0	58	0	33	0	0
cSH	121	524	1700	1700	979	1700
Volume to Capacity	0.15	0.11	0.33	0.02	0.11	0.42
Queue Length 95th (ft)	13	9	0	0	9	0
Control Delay (s)	40.0	12.7	0.0	0.0	9.1	0.0
Lane LOS	E	B			A	
Approach Delay (s)	19.3		0.0		1.2	
Approach LOS	C					

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	24	75	524	18	57	537
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	82	570	20	62	584
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1277	570			589	
vC1, stage 1 conf vol	570					
vC2, stage 2 conf vol	708					
vCu, unblocked vol	1277	570			589	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	84			94	
cM capacity (veh/h)	308	521			986	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	26	82	570	20	62	584
Volume Left	26	0	0	0	62	0
Volume Right	0	82	0	20	0	0
cSH	308	521	1700	1700	986	1700
Volume to Capacity	0.08	0.16	0.34	0.01	0.06	0.34
Queue Length 95th (ft)	7	14	0	0	5	0
Control Delay (s)	17.8	13.2	0.0	0.0	8.9	0.0
Lane LOS	C	B			A	
Approach Delay (s)	14.3		0.0		0.9	
Approach LOS	B					

Intersection Summary			
Average Delay	1 6		
Intersection Capacity Utilization	44 2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	20	64	507	20	64	466
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	70	551	22	70	507
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1197	551			573	
vC1, stage 1 conf vol	551					
vC2, stage 2 conf vol	646					
vCu, unblocked vol	1197	551			573	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	87			93	
cM capacity (veh/h)	327	534			1000	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	22	70	551	22	70	507
Volume Left	22	0	0	0	70	0
Volume Right	0	70	0	22	0	0
cSH	327	534	1700	1700	1000	1700
Volume to Capacity	0.07	0.13	0.32	0.01	0.07	0.30
Queue Length 95th (ft)	5	11	0	0	6	0
Control Delay (s)	16.8	12.7	0.0	0.0	8.9	0.0
Lane LOS	C	B			A	
Approach Delay (s)	13.7		0.0		1.1	
Approach LOS	B					

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	14	46	583	19	60	558
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	50	634	21	65	607
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1371	634			654	
vC1, stage 1 conf vol	634					
vC2, stage 2 conf vol	737					
vCu, unblocked vol	1371	634			654	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	90			93	
cM capacity (veh/h)	287	479			933	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	15	50	634	21	65	607
Volume Left	15	0	0	0	65	0
Volume Right	0	50	0	21	0	0
cSH	287	479	1700	1700	933	1700
Volume to Capacity	0 05	0 10	0.37	0.01	0.07	0.36
Queue Length 95th (ft)	4	9	0	0	6	0
Control Delay (s)	18.3	13 4	0.0	0.0	9.1	0 0
Lane LOS	C	B			A	
Approach Delay (s)	14.5		0.0		0.9	
Approach LOS	B					

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	47 4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	17	53	520	30	96	662
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	58	565	33	104	720
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1493	565			598	
vC1, stage 1 conf vol	565					
vC2, stage 2 conf vol	928					
vCu, unblocked vol	1493	565			598	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	89			89	
cM capacity (veh/h)	246	524			979	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	18	58	565	33	104	720
Volume Left	18	0	0	0	104	0
Volume Right	0	58	0	33	0	0
cSH	246	524	1700	1700	979	1700
Volume to Capacity	0.08	0.11	0.33	0.02	0.11	0.42
Queue Length 95th (ft)	6	9	0	0	9	0
Control Delay (s)	20.8	12.7	0.0	0.0	9.1	0.0
Lane LOS	C	B			A	
Approach Delay (s)	14.7		0.0		1.2	
Approach LOS	B					

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		

WARRANT 3 - Peak Hour
(Part A or Part B must be satisfied)

SATISFIED YES ☐ NO ☒

PART A

SATISFIED YES ☐ NO ☒

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced for traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	Yes ☐ No ☒
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes ☐ No ☒
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes ☒ No ☐

PART B

SATISFIED YES ☐ NO ☒

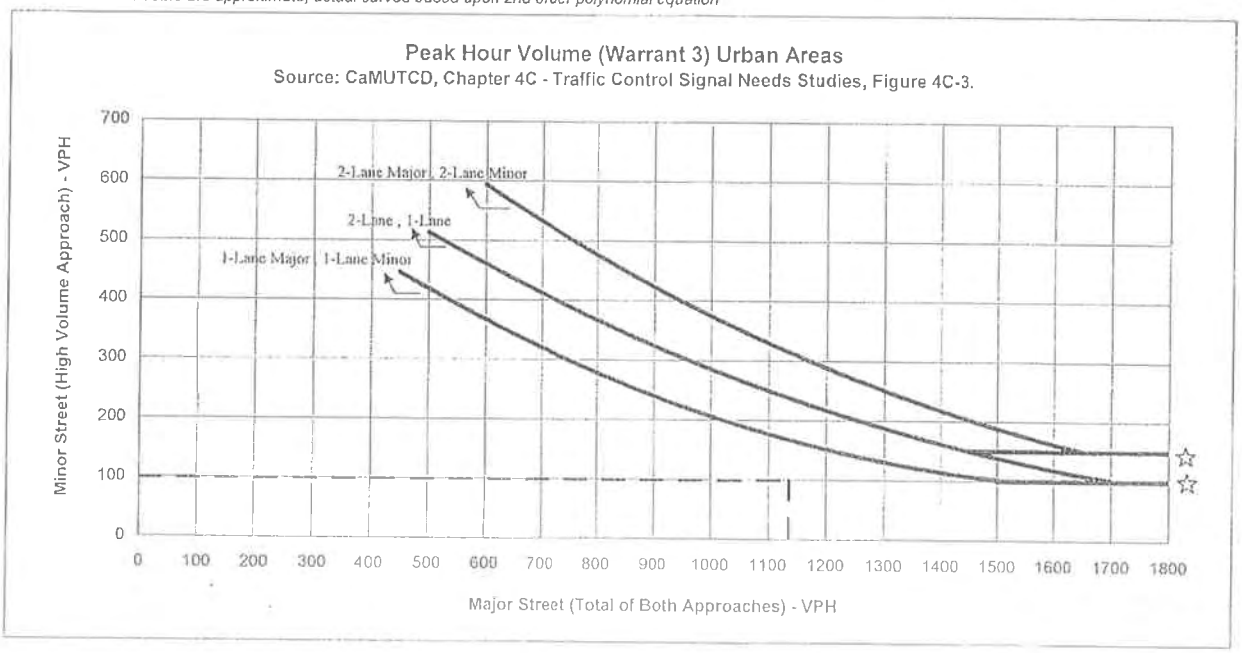
APPROACH LANES	One	2 or More	Highest Minor-Street Vols. 7-8 am Hour
Both Approaches - Major Street	X		1,136
Higher Approach - Minor Street	X		99

The plotted point falls above the curve in Figure 4C-3.	Yes ☐ No ☒
OR, The plotted point falls above the curve in Figure 4C-4.	Yes ☐ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
500	420	500	505	500	N/A
600	360	600	460	600	590
700	325	700	420	700	540
800	285	800	360	800	475
900	245	900	325	900	425
1000	200	1000	285	1000	370
1100	175	1100	250	1100	340
1200	150	1200	220	1200	285
1300	130	1300	190	1300	250
1400	120	1400	155	1400	220
1500	100	1500	145	1500	180
1600	100	1600	120	1600	170
1700	100	1700	100	1650	150
1800	100	1800	100	1800	150

**Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation*



☆ NOTE:
150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE

Intersection:	Moraga Road / Palos Colorados Access Road	
Scenario:	Existing+Project Conditions AM Peak Hour	
Minor St Volume	99	(Access Road)
Major St Volume	1136	(Moraga Road)
Warrant Met?:	No	

omni · means
ENGINEERS · PLANNERS

MEMORANDUM

To:	**Town of Moraga**	Date:	July 30, 2008
Attn:	**Ms. Jill Mercurio, Town Engineer**	Project:	Palos Colorados Access Intersection
CC:	Dawn Penman, Paul Miller (Omni-Means); Debi Chung, Grace Chen (Richfield Investment); David Francke (DK Consulting); Lori Salamack (Moraga Town Planning Director)	Job No.:	25-5619-01
		File No.:	C1283MEM003.doc

Dear Ms. Mercurio,

In conjunction with the Roseville office's signal design work for the planned Palos Colorados access intersection in the Town of Moraga, the Walnut Creek office has collected traffic data and conducted level-of-service (LOS) and queuing analyses for existing-plus-project conditions at the future intersection.

Radar speed surveys were conducted for each approach direction near the planned intersection. (Summary worksheets are attached). The 85th-percentile speed in the northbound direction is 38.1 miles per hour and the southbound direction is 38.6 miles per hour. The combined northbound and southbound 85th-percentile speed is 38.3 miles per hour.

Volume counts of existing traffic on Moraga Road at the planned intersection location were conducted during four peak periods of a weekday: AM (7:00-9:00 am), Mid-day (11:30 am-1:30 pm), Afternoon (2:00-4:00 pm), and PM (4:00-6:00 pm).[1] From each two-hour count the peak one-hour volumes were derived for use in the calculations.

The vehicle trip rates used for the project's trip generation were obtained from two sources. The single family residential rates were taken directly from the Palos Colorados EIR.[2] Apartment trip rates were used for the secondary units proposed for the project and reflect the Institute of Transportation Engineers published rates.[3] A total of 77 secondary units was assumed.[4] The peak hour project trips were calculated as follows:

AM peak hour:	123 single family d.u.	@ 1.10 trips/d.u. =	135 (67 in, 68 out)
(7:00-8:00 am)	77 apartment d.u.	@ 0.51 trips/d.u. =	39 (8 in, 31 out)
			174 (75 in, 99 out) AM peak hour trips

PM peak hour:	123 single family d.u.	@ 1.20 trips/d.u. =	148 (95 in, 53 out)
(5:00-6:00 pm)	77 apartment d.u.	@ 0.62 trips/d.u. =	48 (31 in, 17 out)
			196 (126 in, 70 out) PM peak hour trips

The mid-day and afternoon peak hour project trips were derived from the project's AM, PM, and Daily trips using California Department of Transportation (Caltrans) research of hourly residential trips as a percentage of daily volumes.[5] Applying the Caltrans data to the project results in the following number of trips:

Mid-day peak hour (12:30-1:30 pm):	168 (84 in, 84 out) trips.
Afternoon peak hour (3:00-4:00 pm):	139 (79 in, 60 out) trips.

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The project trips were distributed at the planned access intersection based on the EIR and added to the existing volumes on Moraga Road to derive the volumes used for the operational analyses.

The project access road would extend east from Moraga Road creating a new T-shaped intersection. The calculations were run for a signalized intersection assuming the Moraga Road approaches would have a separate southbound left-turn lane and a separate northbound right-turn lane. The southbound left-turn movement is designed with protected phasing. The southbound turn lane should provide as much storage length as possible to allow for vehicle deceleration. Due to the existing left-turn pocket to the north, the maximum storage length available is 140 feet plus bay taper of 60 feet (which matches the existing taper lengths elsewhere on Moraga Road). For the northbound right-turn lane, we recommend 100 feet of storage plus taper (also similar to other Moraga Road locations).

LOS/Queuing calculations were run for two scenarios regarding the number of lanes for the access road's westbound approach. One scenario assumed separate right-turn and left-turn lanes. The other scenario assumed a shared right-turn/left-turn lane. The LOS conditions were calculated based on HCM 2000 methodology using Trafficware Corporation's Synchro Analysis software.[6] (Calculation worksheets are attached.)

With separate westbound turning lanes, the intersection operates at LOS 'A' overall (with v/c ratios of 0.47 or better) during each of the peak hours. The southbound left-turn movement is LOS 'C', with delays between 28-34 seconds, for all of the peak hours. The westbound turning movements operate at LOS 'C', with delays of approximately 27-30 seconds.

With a shared westbound turning lane, the intersection also operates at LOS 'A' overall (with v/c ratios of 0.48 or better). The Moraga Road southbound left-turn delays increase slightly (by approximately one second) and continue to reflect LOS 'C' conditions. (The AM peak hour delay of 35.1 seconds just exceeds the 35 second threshold defining LOS 'D' conditions.) The shared westbound turn lane remains at LOS 'C' with similar delays of 27-30 seconds.

It is noted that the calculated levels-of-service reflect our data-input assumptions (such as phase lengths, etc.). These input parameters could be adjusted to prioritize specific operational aspects of the intersection. For example, additional green time could be allotted for the southbound left-turn movement which would reduce delays at this approach, but increase delays at other approaches.

A queuing analysis was also conducted in order to determine the potential vehicle storage length needs for the turning lane approaches. (Calculation worksheets are attached.) With two turning lanes assumed for the access road approach, the Moraga Road southbound left-turn lane's highest 95th-percentile queue is approximately 73 feet (three cars) during the PM peak hour. The northbound right-turn lane queue is approximately 38 feet (two cars). For the westbound access road approaches, the 95th-percentile left-turn lane queue is approximately 40 feet and the right-turn lane queue is approximately 50 feet (two-three cars) during each of the peak hours. The findings indicate the westbound storage lane lengths should be designed with at least 100 feet of storage in order to accommodate the calculated vehicle queues.

Assuming a shared turning lane for the access road approach, the Moraga Road southbound left-turn lane 95th-percentile queues remain unchanged (approximately 71 feet or three cars) during the PM peak hour. The northbound right-turn lane queue is approximately 47 feet (two cars) during the PM peak hour. The westbound shared left-turn/right-turn lane queue equals approximately 55 feet (three cars). There may be a few occasions within the peak hour, however, when the queue could reach approximately 82 feet (four-five vehicles).

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A summary of the 95th-percentile queues for the highest peak hours is provided as follows:

- Moraga Road / Project Access Road assuming two approach lanes:

Moraga Road southbound left-turn lane:	73 feet (three cars)
Moraga Road northbound right-turn lane:	38 feet (two cars)
Access Road westbound left-turn lane:	38 feet (two cars)
Access Road westbound right-turn lane:	47 feet (two cars)

- Moraga Road / Project Access Road assuming one approach lane:

Moraga Road southbound left-turn lane:	71 feet (three cars)
Moraga Road northbound right-turn lane:	47 feet (two cars)
Access Road westbound shared turn lane:	55-82 feet (three-five cars)

Based on the calculated vehicle queues, the recommended storage lengths are listed as follows:

• Moraga Road southbound left-turn lane:	140 feet
Moraga Road northbound right-turn lane:	100 feet
• Access Road with separate turning lanes:	100 feet for turn lane.
(Access Road with shared turning lane:	No turn lane present; vehicles queue in the travel lane.)

We trust this information serves your needs. Please feel free to contact us if you have any additional questions or comments.

George W. Nickelson, P.E.
Branch Manager
Walnut Creek Office

References

1. Omni-Means Engineers & Planners, Peak period vehicle counts (7:00-9:00 am, 11:30 am-1:30 pm, 2:00-4:00 pm, and 4:00-6:00 pm), conducted May 21-22, 2008.

2. Michael Brandman Associates, Town of Moraga Palos Colorados DEIR, Chapter 4.8, Table 4.8-4 "Proposed Project Trip Generation", p. 4.8-16.

3. Institute of Transportation Engineers, Trip Generation, 7th Edition, average peak hour trip rates for Apartments (Land Use #220), Washington D.C., 2003.

4. The number of secondary units is based on the Sample Overall Site Plotting, dated 4/22/08 prepared by Robert Hidey Architects, which proposes 73 units. A more conservative number of 77 units was used for trip generation for the signal analysis based on discussion with Town staff.

5. State of California Department of Transportation, Progress Reports on Trip Ends Generation Research Counts (1973-1986), District 4 - Transportation Studies Branch, San Francisco, CA.

6. Trafficware, Ltd., Synchro Traffic Signal Coordination Software, Sugarland, Texas.

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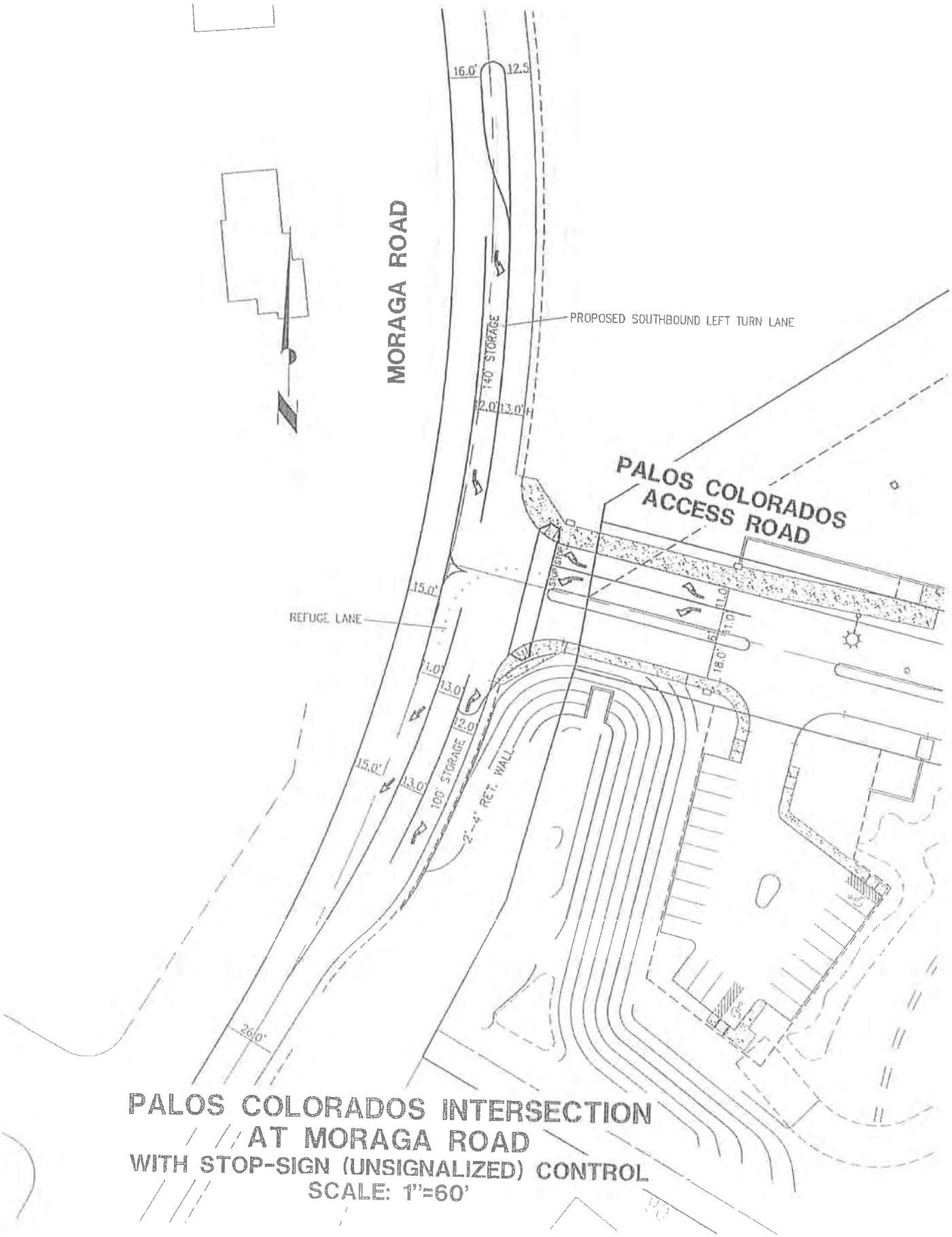

PALOS COLORADOS INTERSECTION
AT MORAGA ROAD
WITH STOP-SIGN (UNSIGNALIZED) CONTROL
SCALE: 1"=60'