
MEMORANDUM

DATE: February 13, 2014
TO: John Roberto, Contract Planner, Marin County
David Zaltsman, County Counsel's Office
REGARDING: 2008 Easton Point Residential Development Final EIR
FROM: Bob Berman

MESSAGE:

On October 22, 2013 the Marin County Board of Supervisors requested clarification on a number of environmental issues discussed in the Final EIR for the 2008 Easton Point Residential Development project. The specific issues are identified below and a response for each issue has been prepared.

The comments and responses presented below present amplifications, clarifications and / or additional information which in some cases may result in minor and insignificant modifications to the EIR. They do not; however, raise new or substantially more severe significant impacts or new mitigation measures or alternatives not considered in the EIR, and do not require recirculation for further review and comment in accordance with *State CEQA Guidelines Section 15088.5*.

Tiburon Boulevard Traffic Conditions and Impacts during School Morning drop-off and Afternoon Pick-Up Peak

A number of commentors stated that additional analysis of traffic impacts on Tiburon Boulevard during non-traditional peak hours (i.e. school delivery and pick up times) was necessary. There is a perception expressed by some commentors that vehicle trips “before-school” drop offs, and “after-school” pick-ups of students, have increased noticeably over the past six to eight years, although growth in the Town of Tiburon and City of Belvedere has been minimal. It was noted that the Town of Tiburon and Belvedere have undertaken studies and analysis of traffic flow on Tiburon Boulevard in 2011, since publication of the *Easton Point Draft EIR* and this information should be taken into consideration.

RESPONSE

An analysis was not conducted in the *2008 Easton Point Residential Development EIR* for the after-school (Mid-day) period. This is because the “design” period in Tiburon and in most communities, coincides with the morning and evening peak commute periods. The “design” period is the time known to produce peak traffic on a regular basis, i.e., *every weekday morning and late afternoon-evening*, peak traffic can be predictably observed during these time periods. Streets should be designed to meet the demands of these predictable peak periods.

A check of enrollment at Reed Union School District confirmed an increase in school enrollment in recent years: in 2005, the district total enrollment was 1,031 students; in school year 2013, the district

total enrollment was 1,606 students. This is an increase of 575 students, almost 56 percent over an eight-year period, averaging about seven percent per year district-wide.

To respond to this issue, the Town of Tiburon conducted AM peak, Mid-day peak (after school) and PM peak traffic counts along Tiburon Boulevard¹ in February 2013, focusing primarily on intersections serving schools. In addition, the Town completed a community outreach study, the Community Action to Reduce Traffic (CART),² which was presented to the Town Council September 9, 2013. The following provides a comparison of the 2009 traffic count data used in the *2008 Easton Point Residential Development EIR* analysis³ and the February 2013 data, then summarizes the CART report.

Traffic Count Data

The February 2013 data, gathered by Tiburon Public Works, shows that at specific intersections, traffic peaks due to school-related traffic. These peaks generally last 30 minutes or less, with peaks varying in duration per school location. **Exhibit 1** provides a comparison of data for peak periods at major intersections in Tiburon. Three shaded columns (a through c) provide direct comparisons between:

- a) The 2009 Draft EIR PM peak hour counts and the 2013 midday (after school) peak hour counts,
- b) The 2009 Draft EIR PM peak hour counts, and the 2013 PM peak hour counts, and
- c) The 2009 Draft EIR AM peak hour counts and the 2013 AM peak hour counts.

Observations of the 2013 data versus the 2009 data

Comparison of a) 2009 Draft EIR PM peak hour counts versus the 2013 mid-day (after school) peak hour counts shows that 2013 volumes are higher at two intersections along Tiburon Boulevard: Trestle Glen, where total volumes increased by 44 vehicles (a two percent increase), and at San Rafael Avenue, where total volumes increased by 36 vehicles (also a two percent increase). The increase at both intersections is within the range of daily fluctuations. Thus, these increases are not considered to display meaningful increases.

Conclusion -- As a system, the EIR 2009 PM peak hour vehicle counts provide a “worst case” analysis.

Comparison of b) 2013 PM peak hour counts versus the 2009 Draft EIR PM peak hour counts, 2013 volumes are lower than 2009 Draft EIR volumes at all intersections where a comparison can be made.

Conclusion - The EIR 2009 PM peak hour vehicle counts provide a “worst case” analysis.

¹ Tiburon Boulevard (State Route 131) is under the jurisdiction of the State of California (Caltrans).

² CART is a task force of Tiburon and Belvedere representatives formed in September 2011 to study traffic and congestion issues along Tiburon Boulevard.

³ The EIR traffic analyst conducted weekday AM and PM commute peak traffic hour intersection traffic counts at 15 intersections in late May 2009 while schools were still in session.

Comparison c) 2009 Draft EIR AM peak hour counts and the 2013 AM peak hour counts, with comparisons at four intersections, reveals increases in 2013 volumes at Trestle Glen Boulevard (a 10.3 percent increase), Rock Hill Drive (a 6.2 percent increase) and San Rafael Avenue (an 11.6 percent increase). In a less recessionary time, this is more in line with growth that would be expected over a five or six-year period. Intersection LOS during this time period (see Draft EIR **Exhibit 5.1-9**) shows existing operation at the three intersections to be acceptable both with and without project volumes: all operate acceptably at LOS B. Under cumulative conditions, as shown in Draft EIR **Exhibit 5.1-36**, with the General Plan planned improvement at the Trestle Glen intersection, operation would remain acceptable (within the LOS D range) for the Trestle Glen Boulevard and Rock Hill Drive intersections with and without the project, and operation would remain acceptable (within the LOS B range) at the San Rafael Avenue / Tiburon Boulevard intersection with and without the project.

Conclusion - If analyzed with a 2013 count base, rather than the 2009 count base, ambient (without project) AM peak hour traffic volumes would be higher by as many as 240 vehicles (Trestle Glenn / Tiburon Boulevard), but the project contribution, as a percentage of the total, would be lower, and *would not be expected to result in a significant impact.*

Exhibit 1
Traffic Count Comparison ^a

Intersection	2009 Draft EIR PM Peak (5:00-6:00)	2013 Mid-day Peak	a) 2013 Midday Peak compared to 2009 Draft EIR PM Peak	2013 PM Peak	b) 2013 PM Peak compared to 2009 Draft EIR PM Peak	2009 Draft EIR AM Peak (7:45 8:45)	2013 AM Peak	c) 2013 AM Peak compared to 2009 Draft EIR AM Peak
Blackfield Dr. / Greenwood Cove Dr. / Tiburon Blvd.	3040	2958	-82	2853	-187	3190	NA	NA
Trestle Glen Blvd. / Tiburon Blvd.	2285	2329	+44	2140	-145	2330	2570	+240
Avenida Miraflores / Tiburon Blvd.	2039	2050	-11	1870	-169	2146	NA	NA
Rock Hill Dr. / Tiburon Blvd.	1900	1878	-22	1765	-135	2010	2133	+123
San Rafael Ave. / Tiburon Blvd.	1700	1736	+36	1550	-150	1755	1957	+202
Lyford Dr. / Tiburon Blvd.	1400	1331	-69	1395	-5	1325	NA	NA
Beach Rd. / Tiburon Blvd.	1140	964	-176	1043	-97	890	811	-79
Strawberry Dr. / Bay Vista. / Tiburon Blvd.	NA	3025	NA	2914	NA	NA	3172	NA

- a The 2009 Draft EIR vehicle traffic counts were conducted weekdays in May while schools were still in session. The 2013 vehicle traffic counts were conducted weekdays in February 2013 with schools in session. The 2013 midday peak hours generally begin at 2:30 PM. The San Rafael Avenue / Tiburon Blvd peak hour begins at 2:00 PM. The 2013 PM peak hour begins at 4:00 PM, except at the Blackfield Drive / Tiburon Blvd intersection, where the peak hour begins at 5:00 PM. The Draft EIR analysis of existing plus project intersection LOS, *Impact 5.1-1 Existing-Plus-Project Impacts on Study Intersections*, indicates project implementation would not affect intersection LOS (see Draft EIR **Exhibits 5.1-36** and **5.1-37**).

Source: Crane Transportation Group, 2014

Overall Observations of Traffic Count Data

- The Easton Point project contribution to traffic at intersections along Tiburon Boulevard would not result in a significant impact. If analyzed during the after-school (midday) time period, Easton Point project-generated volumes would be lower than during the AM or PM peak hours, thus the “project impact” would be less than has been analyzed for the AM and PM peak hour time periods in the Draft EIR.
- The 2013 after school (midday) peak hour volumes are, as a system (and at most intersections); lower along Tiburon Boulevard than the 2009 PM peak hour analyzed in the Draft EIR.

Conclusion - The EIR analysis provides a reasonable “worst case” basis for analyzing project impacts.

Community Action to Reduce Traffic (CART) Report – Summary of Participants, Research and Findings

The CART report was presented by Town of Tiburon Police Chief Cronin, as a Power Point presentation before the Tiburon Town Council in September 2013. It states that there is a traffic congestion issue on Tiburon Boulevard that has grown dramatically over the years and appears to be worsening. It affects quality of life, emergency response time, access to downtown businesses, Tiburon Ferry and mass transit, access to public and private schools, and perceptions about ease of access to the Tiburon Peninsula. CART participants included the Tiburon and Belvedere mayors, town managers, police chiefs, a Tiburon Councilmember, the Reed Union School District superintendent and business manager, and school board and PTA representatives, representatives of St. Hilary School and the Marin Transit Authority. Research and data gathering included traffic data and analyses of capacity for Tiburon Boulevard, school enrollment, school bus utilization, public transit schedules, school parents survey, and Caltrans issues (such as signal operation).

The report demonstrated that at Lyford Drive (serving Reed Elementary School with Kindergarten, 1st and 2nd grades), Avenida Miraflores (serving Del Mar Intermediate School, 6th through 8th grades), and Blackfield Drive (providing access to BelAire School with 3rd through 5th grades), morning peak traffic was 50 to 65 percent higher in September, with schools in session, than in August with no schools in session. At the same locations, the after-school traffic was 16 to 22 percent higher in September, with schools in session, than in August with no schools in session. A 2012 survey revealed that of all modes of school access, including family car, walking, biking, school bus and carpool, the family car was the predominant mode of access at all three schools. This was especially true for Reed Elementary, where 70 percent of students are conveyed to and from school by the family car.

Potential solutions discussed were more buses, improved carpooling, more crossing guards, alternative modes of transportation, including bike pool centers and tram service were discussed, as well as management of traffic signals and traffic management support from police. Based on surveys of parents, analysis was provided for reasons for lower use of alternative modes:

- School bus - very expensive per student and difficult due to after-school schedules,
- Public transit - schedule not convenient, child too young, or no bus available,
- Walking and biking - too far, unsafe or lack of sidewalks, dangerous intersections,
- Carpools - does not work with after-school activity, requires too much coordination, concerns about running late.

Field Observations and Discussions - 2014

Although the 2008 *Easton Point Residential Development EIR* analysis addresses “worst case” conditions, appropriate for EIR analysis, Crane Transportation Group (the EIR traffic analysts) were requested to provide observations of three intersections along Tiburon Boulevard known to be affected by school-related traffic during school-peak traffic activity. Observations were conducted at:

- Ned’s Way-Kleinert Way and Lyford Drive (serving Reed Elementary School - grades K, 1-2)
- Avenida Miraflores (serving Del Mar Middle School - grades 6-8)
- Blackfield Drive (serving BelAire Elementary - grades 3-5)

The following provides a brief description of current observed conditions at each of these intersections as they are affected by school-related traffic.

Tiburon Boulevard / Ned’s Way – Kleinert Way and Tiburon Boulevard / Lyford Drive Intersections serving Reed Elementary School

The Tiburon Boulevard / Lyford Drive and Tiburon Boulevard / Ned’s Way intersections are signalized, with timing priority for green time given to through traffic on Tiburon Boulevard at both intersections. Both intersections have an eastbound through lane and separate left turn lane, and a westbound through lane and separate right turn lane. There is a crosswalk on the eastbound approach lane at the Tiburon Boulevard / Ned’s Way – Kleinert Way intersection, and there are crosswalks on all three legs of the Tiburon Boulevard / Lyford Drive intersection. Crossing guards are stationed each weekday at both intersections before and after school. At both intersections slow-downs and delays occur due to increased pedestrian and bicycle crossings. However, the most extensive observed back-ups occurred for eastbound Tiburon Boulevard left turns, and westbound Tiburon Boulevard right turns to Ned’s Way-Kleinert Way. This was due to school drop-off and pick-up vehicles (family cars) exceeding the one-way queuing capacity of Kleinert Way. Observations indicate that eastbound left-turning vehicles may wait for several signal cycles (as many as four cycles) during the morning and after-school traffic peak periods (approximately 20 minutes duration), due to queuing back-ups on Kleinert Way. These backups can result in intermittent slowing of through traffic on Tiburon Boulevard.

Interviews with Reed Union School District Assistant Superintendent Ellen Mayer and Reed Elementary School Principal Nora Ho, provided insight into the student population and current practices for drop-off and pick-up at the school.⁴ Reed Elementary currently accommodates 539 students. It is over-crowded and there is little room to expand. At the present enrollment level, all

⁴ Crane Transportation Group telephone conversation with Ellen Mayer, Reed Union School District Assistant Superintendent and Nora Ho, Reed Elementary School Principal, January, 2014.

classrooms are operating at or over capacity. This school has the largest enrollment and least land area of the schools in the Reed Union School District.⁵ Morning drop-offs and after-school pick-ups result in traffic queues that affect Tiburon Boulevard. Back-ups occur for westbound Tiburon Boulevard right turns and eastbound Tiburon Boulevard left turns to Ned's Way-Kleinert Way and Lyford Drive. Back-ups occur before school and after school within an approximate 20-minute period in the morning starting at 7:50 AM, and in two after-school surges starting at 1:50 PM and 2:20 PM.

At Ned's Way, back-ups and slow-downs are due primarily to lack of room to queue along Kleinert Way, a narrow two-lane, one-way access road branching off Ned's Way and wrapping around the Tiburon Police Station. Kleinert Way provides direct vehicle access to Reed Elementary School. At Lyford Drive, back-ups and slow-downs on Tiburon Boulevard are due to westbound vehicles seeking access at Ned's Way – Kleinert Drive, and the volume of vehicles exiting the school to turn from Lyford Drive left or right to Tiburon Boulevard; the flow of traffic is also obstructed due to frequent crossings by pedestrians and bicycles (assisted by crossing guard with stop sign).

As observed, parents follow a procedure for drop-offs and pick-ups to insure safety for school children and efficiency for transfers to and from family cars. No drop-offs may occur before 8:00 AM due to the need for staff on duty who supervise all arrivals and departures, as well as all other play-yard activities. All school children are delivered to, and leave from, the school's fenced play-yard. Each family car must queue to allow the student direct, curbside access. Each family car must display a large sign on the dashboard naming the child and his or her teacher. As each car in the queue arrives, a supervisor calls the student's name using a megaphone (or similar device) and directs the student to a color-coded spot on the sidewalk bordering the play-yard gate. Each child is assisted, as needed, to safely exit or enter the family car. This procedure appears to operate smoothly, with the exception of an occasional parent who parks the car in the queue and exits the car to walk into the school or play-yard, obstructing the flow of the queue. This practice is discouraged by signs posted on the schoolyard fence, and is reinforced in training sessions for parents that are provided by the school. Signs prominently display: "Your student must be ready to exit when car door is opened." "Have you said your goodbyes?" "Are backpacks ready and easy to grab?" "Is your child ready to exit promptly?" Another sign states, "NO PARKING – Student Loading and Unloading Zone."

Reed School Principal Nora Ho states that training sessions are required to inform parents of the necessity of efficient arrivals and departures.⁶ These procedures are reinforced within each classroom by each teacher in discussions with parents. Principal Ho states that the "car line" is the most challenging issue for the school, as there is too little space to accommodate the number of family cars arriving and departing Reed Elementary.

Vehicle reductions can be achieved by use of school buses, although busing is not popular with parents of very young students. Reductions can be achieved by other alternative modes of travel, such as walking and biking. However, these alternatives are not practical for small children over long distances.

Another solution to queuing back-ups is to provide additional queuing space. Although it appears that current available space is maximized, additional space might be achieved by conversion of the staff parking lot, which parallels Kleinert Way (i.e., is slightly uphill of Kleinert Way). The lot could be converted into queuing lanes with student crossings assisted by crosswalks and crossing guards. This

⁵ Crane Transportation Group telephone conversation with Nora Ho, Reed Elementary School Principal January, 2014.

⁶ Crane Transportation Group telephone conversation with Nora Ho, Reed Elementary School Principal, January, 2014.

could accommodate an additional nine or ten vehicles, assuming it is configured as two-lane, one-way (similar to the Kleinert Way design); the queuing lanes would require design of pedestrian crossing (student access) safety measures. However, due to current lack of space, if the trend in student increase continues, it is possible that a satellite elementary school will be required to accommodate the public school demand at the Kindergarten, 1st and 2nd grade levels in the Reed Union School District.

Tiburon Boulevard / Avenida Miraflores Intersection serving Del Mar Intermediate School

The Tiburon Boulevard / Avenida Miraflores intersection is signalized, with timing priority for green time given to through traffic on Tiburon Boulevard. Tiburon Boulevard has an eastbound through lane and separate left turn lane, and a westbound through lane and separate right turn lane. There are crosswalks on the eastbound, northbound and southbound approach lanes. A crossing guard is stationed at this intersection each weekday before and after school. Slow-downs and delays occur due to increased pedestrian and bicycle crossings during school peak arrivals and departures, and due to back-ups from turn lanes. The most extensive observed back-up occurred for eastbound Tiburon Boulevard left turns to Avenida Miraflores. This was due to school pick-up vehicles (family cars) exceeding the queuing capacity of the eastbound Tiburon Boulevard left turn lane. The existing left turn lane has a storage capacity of approximately 12 or 13 vehicles, however, after-school peak hour eastbound backups extended as far as Stewart Drive, and slightly beyond, during the after-school traffic peak period (approximately 20 to 30 minutes duration). These backups are primarily due to vehicles exceeding the turn lane capacity and traffic slow-downs due to school-related crosswalk activity. This results in intermittent slowing and lengthy delays for through traffic on Tiburon Boulevard.

Suggested measures to reduce school-related back-ups and slow-downs on Tiburon Boulevard at Avenida Miraflores:

- Adjust signal timing to allow more green time dedicated to turning movements from Tiburon Boulevard
- Increase use of school bus and public transportation to reduce school-related traffic
- Increased walking / biking to school
- Stagger class start / end times to reduce peaking characteristics of traffic

In November 2013, Caltrans made signal adjustments during the afternoon time period at the Tiburon Boulevard / Avenida Miraflores intersection in an effort to address some of the issues at this intersection. Caltrans is continuing to evaluate the Tiburon Boulevard corridor to determine ways to address congestion and improve traffic flow plus pedestrian and bicycle safety.⁷

Tiburon Boulevard / Blackfield Drive Intersection serving BelAire Elementary School on Karen Way

The Tiburon Boulevard / Blackfield Drive intersection is signalized, with timing priority for green time given to through traffic on Tiburon Boulevard. Tiburon Boulevard has an eastbound through lane and separate left and right turn lanes, and a westbound through lane and separate left and right turn lanes. There are crosswalks on the eastbound and westbound approaches to this intersection. A crossing guard is stationed at this intersection each weekday before and after school. This intersection has lengthy turn lanes, and even at peak before and after-school times, all vehicles queued to turn from

⁷ Crane Transportation Group telephone conversation with Phillip Jang, Caltrans District 4, January 30, 2014.

Tiburon Boulevard were observed to clear the intersection in one signal cycle. Although traffic was heavy, slow-downs and delays were minimal at this intersection due to increased pedestrian and bicycle crossings during school peak arrivals and departures. The existing eastbound left turn lane has a storage capacity in excess of 16 vehicles, and was observed to fill but not overflow during school peak arrivals and departures.

In November 2013, Caltrans made signal adjustments during the afternoon time period at the Tiburon Boulevard / Blackfield Drive intersection in an effort to address some of the issues at this intersection. Caltrans is continuing to evaluate the Tiburon Boulevard corridor to determine ways to address congestion and improve traffic flow and pedestrian and bicycle safety.⁸

Projected Easton Point Development Contribution to Mid-day School-Related Traffic

The Draft EIR (see page 488) cites a trip generation rate of 0.5 students per household. Thus, the 43-unit Easton Point project would generate, at most, 22 inbound and 22 outbound vehicle trips to / from schools during the after-school traffic peak period. *Alternative 2*, (32 houses) would generate, at most, 16 inbound and 16 outbound vehicle trips to / from schools during the after-school traffic peak period. Using the mid-day volumes conducted by the Town of Tiburon in February 2013 (see **Exhibit 1**), the school-related trips generated by the 43-unit Easton Point project would represent less than one percent of approach volumes at the Blackfield Drive / Tiburon Boulevard intersection, about one percent at the Avenida Miraflores / Tiburon Boulevard intersection, and about 1.6 percent at the Lyford Drive / Tiburon Boulevard intersection. This would be a less-than-significant impact at study intersections, well within the hourly volume fluctuation at intersections along Tiburon Boulevard.

If evaluated with a more qualitative approach, one might ask “at what point would an increase in traffic volumes be noticeable to users of the roadway”? This requires discussion of a specific time period. For example, if as many as seven additional family cars were added to the after-school pick-up queues at Reed Elementary due to the Easton Point project, these would be added to the backed-up right-turn and left turn queues currently occurring on Tiburon Boulevard in the mid-day peak arrival period at Reed Elementary School. These trips would add to an existing, intermittent, over-capacity situation on the approaches to Kleinert Way. The family car single-lane queue length can test the patience of any driver seeking inbound access to the Reed School pick-up locations. Individual family car drivers would not be expected to be aware of an increase of seven additional cars in the queue, but assuming approximately 30 seconds per pick-up or drop-off, supervisors assisting pick-ups would be aware of an increase of 3.5 minutes time to serve the additional cars at curb-side. In contrast, with seven or more vehicles added to school-related traffic at Avenida Miraflores or Blackfield Drive, these trips would not be expected to be noticed by parents accessing the schools during the mid-day peak period, by other users of the road, or by supervisors on the Del Mar or BelAire school grounds.

Changes in Number of Construction and Personnel Truck Trips Associated with Use of Smaller Trucks and Increases in Number of Construction Trucks during Home Construction Phase of Project

Trucks with a hauling capacity of 20 cubic yards were assumed in the EIR in order to estimate the number of truck trips needed to remove the “surplus” material (soil and rock) from the site. Several commentors requested clarification of truck types and sizes and resulting truck trips. Commentors

⁸ Crane Transportation Group telephone conversation with Phillip Jang, Caltrans District 4, January 30, 2014.

also questioned the applicant's estimate that six to eight construction workers would be on-site for each of the various phases of construction. The following is the result of discussions with the applicant's engineers in an effort to clarify these issues.

RESPONSE

According to the W-Trans report prepared to address construction traffic and details of the proposed construction road, the largest truck that might use the construction road would be a six-wheel, three-axle truck.⁹ No estimate as to the capacity of the truck was made by W-Trans. Ghilotti Construction has concluded that a three-axle truck with a ten cubic yard capacity could safely navigate the construction road (as it is currently configured with the modifications specified by W-Trans.)¹⁰ Based on this information the second paragraph on page 271 of the Draft EIR is revised as follows:

It is estimated that site development (access, utility installation, and landslide stabilization) would generate a "surplus" of 6,499 cubic yards of cut.¹¹ Assuming ~~20~~10 cubic yard trucks, this would equate to ~~325650~~ truck trips. However, it is proposed that some of the cut material be stored on site (2,863 cubic yards) to be used for the fill necessary for house construction, resulting in 3,636 cubic yards to be hauled off-site. Approximately ~~182364~~ trucks would be required to remove this material assuming that each truck would remove ~~20~~10 cubic yards of material at a time. Each truck would generate an inbound and an outbound trip, thus truck trips would total ~~364728~~(182364 inbound and 182364 outbound) for the site development construction phase. ~~The grading portion of Phase 1 is expected to last three months and the grading in Phase 2 is anticipated to last four months. It is assumed that all of the removal of the "surplus" soil would occur in the first construction year. The truck activity would occur over six months. Assuming 20 workdays per month, the removal of the "surplus" cut material would require one to two three trucks per day (two to four six truck trips per day) for the six month period.~~ These infrequent truck trips would not substantially increase ambient traffic noise levels along Paradise Drive.

The above estimate on truck trips is probably a "worst case". As noted by the applicant, no construction drawings have been prepared and no contractor bids obtained. Final grading design with an effort to balance grading on-site may result in significant reductions in excess excavated materials being exported off-site.

Conclusion – Final EIR *Impact 5.1-13 Construction Traffic Impacts* states that the proposed project could add significant amounts of construction traffic to Paradise Drive raising safety concerns about construction truck use of Paradise Drive. During site development it was estimated that one to two trucks per day would be required during removal of the surplus soil. This was identified as a significant impact but reduced to less-than-significant with mitigation. An increase from one to two trucks per day to three trucks per day would not change the findings presented in the *2008 Easton Point Residential Development EIR (Impact 5.1-13 Construction Traffic Impacts)*.

⁹ Letter to Mr. John Reed c/o Mr. Michael Tarnoff from Mary Jo Yung, PE, PTOE, Associate, W-Trans, November 17, 2011.

¹⁰ Letter to Scott Hochstrasser, International Planning Associates from Michael L. Tarnoff, President, Tarnoff Engineering Corporation, January 3, 2014.

¹¹ *Easton Point – Project Narrative*, project applicant, 2008, Revision 2 in Response to Comments, received by Marin County CDA 3-30-2009, page 27.

NUMBER OF WORKERS AT THE PROJECT SITE

The EIR analysts requested from the project applicant's engineer an estimate of the maximum number of workers at the project site for two scenarios:

- Scenario 1 – During site grading and subdivision improvements
- Scenario 2 – Subsequent home construction.

The following information was submitted by Michael Tarnoff based on conversations with Ghilotti Construction and Redhorse Constructors.¹²

Scenario 1 – During site grading and subdivision improvements

The project site is very limited topographically, as are the disturbance areas that are allowed, and access to the site would be limited during the site grading stage. So, rather than a large flat site that would accommodate many crews of workers at one time, Ghilotti Construction anticipates that a couple of small crews could actually work onsite at one time. Site set-up and mobilization of equipment would occur first, and then grading, retaining walls, placement of utility infrastructure, and final pavement laying would follow.

Number of Workers, Vehicles, and Equipment (Typical and Very busy workday) Site Improvements

Typical workday - A crew of six to eight workers onsite is estimated, with roughly five construction vehicles.

Very busy workday - A crew of 12 to 16 workers is estimated, with roughly nine construction vehicles. In the case of site improvements, "busy" would probably mean two operations were occurring at one time - like grading and utility trenching, or grading and concrete forming. The absolute maximum number of workers are estimated to occur when concrete is being poured, which would mean as many as 16 to 20 workers onsite, with roughly 12 construction vehicles (includes three concrete trucks onsite at any one time).

Resulting number of inbound trips in the morning and outbound trips in the afternoon:

A typical workday for site improvements, assuming 1.3 workers per vehicle,¹³ would result in five to six construction worker vehicles and up to five construction vehicles accessing the project site traveling inbound in the morning and outbound in the afternoon.

A very busy workday for site improvements, assuming 1.3 workers per vehicle, would result in nine to 12 construction worker vehicles and up to nine construction vehicles accessing the site traveling inbound in the morning and outbound in the afternoon.

Conclusion – Final EIR *Impact 5.1-13 Construction Traffic Impacts* discussed the impact of six to eight workers on the project site simultaneously during each construction phase. This was identified as a significant impact but reduced to less-than-significant with mitigation. The volumes of

¹² Letter to Scott Hochstrasser, International Planning Associates from Michael L. Tarnoff, President Tarnoff Engineering Corporation. January 3, 2014 and Nichols • Berman telephone conversation with Michael Tarnoff, January 2014.

¹³ The EIR assumes limited carpooling would take place, see page 269 of the Draft EIR).

construction vehicles discussed above are similar to what was discussed in the EIR and would not change the findings of *Impact 5.1-13 Construction Traffic Impacts*.

Scenario 2 – Subsequent home construction.

Number of Workers, Vehicles, and Equipment (Typical and Very busy workday) Home Construction:

For home construction, assuming the applicant's construction management plan is incorporated into the tentative map conditions of approval, Redhorse Constructors provided worker estimates.

Typical workday – A crew of 20 workers onsite for each home is estimated. Some would carpool, and others would be in the construction vehicles that they are bringing with them to the site. Roughly five to eight passenger vehicles onsite and roughly two to five construction vehicles onsite at any one time is estimated.

Very busy workday - A crew of roughly 35 workers onsite (ten to 15 passenger vehicles), and roughly three to six construction vehicles onsite at any one time is estimated. As with the site grading and subdivision improvements, home construction would be limited by the existing topography, and thus a limited number of workers and vehicles would fit on the site at any one time.

Construction activity for two and four homes - For custom home construction, it is difficult to quantify any savings in the number of workers onsite at any one time, due to the fact that one home is not necessarily built in the same sequence as another. Also, since not every home is constructed at the same time, it is challenging to say how many total workers would be on the project site at any one time. In contrast, when building tract homes, several homes are constructed at one time, and there is a genuine savings in the numbers of workers onsite. The following provides estimates for the two scenarios:

- Two homes being built at one time – As many as 40 to 70 workers onsite at any one time.
- Four homes being built at one time - As many as 80 to 140 workers onsite at any one time.

Resulting number of inbound trips in the morning and outbound trips in the afternoon

For purposes of this analysis, with four homes under construction at any one time, it is assumed that two homes would be under construction on the upper elevations of the project site (such as along Ridge Road or Mt. Tiburon Court) and two would be under construction on the lower elevations (the driveway off of Paradise Drive or Forest Glen Court). All would access the project site via Paradise Drive. This level of house construction could result in 32 to 60 passenger vehicles and 20 to 24 construction vehicles accessing the site, traveling inbound in the morning and outbound in the afternoon.

During construction of Lots 1 through 3 it is assumed that a maximum two homes (for examples Lots 1 and 2 or Lots 2 and 3) could be under construction. Lots 1, 2, and 3, would be accessed via the construction access road and then via Ridge Road and Mountain View Drive. This would result in a typical day with a maximum of 16 passenger vehicles and 10 construction vehicles accessing the project site, traveling inbound in the morning and outbound in the afternoon. At a maximum, on a very busy day, 30 passenger vehicles and 12 construction vehicles would access the site, traveling inbound in the morning and outbound in the afternoon.

After construction of Lots 1 and 2, or Lots 2 and 3, there would be no additional opportunity for *two homes* to be built concurrently with access via Ridge Road and Mountain View Drive. The remaining

single lot, would result in up to eight passenger vehicles and five construction vehicles (maximum for one home for a typical day), or 15 passenger vehicles and six construction vehicles (maximum for one home for a very busy day).

Conclusion – Final EIR *Impact 5.1-13 Construction Traffic Impacts* did not specifically discuss construction activity associated with subsequent home construction. Traffic impacts associated with subsequent home construction would be similar to traffic impacts associated site grading and subdivision improvements discussed in *Impact 5.1-13*. This was identified as a significant impact but reduced to less-than-significant with mitigation. The volumes of inbound and outbound trips associated with subsequent home construction would not change the findings presented in the *2008 Easton Point Residential Development EIR (Impact 5.1-13 Construction Traffic Impacts)*.

Construction Traffic Impacts in Lyford's Cove / Old Tiburon and Hill Haven Neighborhoods if Construction Access Road is not Required Should Lots 1-8 or 9-17 be Dedicated to a Non-Residential Open Space Use

The EIR references the Easton Point Draft Development Agreement, stating that if Lots 1 through 8 or 9 through 17 are dedicated to non-residential open space use, then the construction access road would not be required.¹⁴ With no construction access road, traffic for all site preparation and home construction for Lots 9 through 17, or Lots 1 through 8 would occur via the Lyford's Cove / Old Tiburon and Hill Haven neighborhood streets. In contrast to the 43-unit project that would include the construction access road and concentrate the majority of site preparation and development traffic on Paradise Drive at Forest Glen Court, the fewer unit alternative would increase traffic in existing neighborhoods. Several commentors requested expansion of the discussion of construction traffic on Hill Haven and Lyford's Cove / Old Tiburon residential streets if the construction access road is not required.

RESPONSE

As described above for Scenario 1 – site grading and subdivision improvements, a typical workday for site improvements could result in five to six passenger vehicles (six to eight workers) and up to five construction vehicles traveling inbound in the morning and outbound in the afternoon. A very busy workday could result in nine to 12 passenger vehicles (12 to 16 workers) and up to nine construction vehicles traveling inbound in the morning and outbound in the afternoon. Without the construction road this would result in a portion of these construction vehicles using the Lyford's Cove / Old Tiburon and Hill haven neighborhood streets.

Following completion of the site grading and subdivision improvements construction traffic for eight or nine homes would use the Lyford's Cove / Old Tiburon and Hill Haven neighborhood streets. In this situation (described above as Scenario 2 – home construction), a typical workday crew of 20 workers onsite for each home is estimated. Some would carpool, and others would be in the construction vehicles that they are bringing with them to the site. For this scenario, the applicant's engineer estimates a typical workday having five to eight passenger vehicles onsite and roughly two to five construction vehicles onsite at any one time. A very busy workday could result in 35 workers

¹⁴ 2008 Easton Point Residential Development Draft EIR, fourth bullet item, third paragraph, page 564.

onsite (the applicant's engineer estimates ten to 15 passenger vehicles), and roughly three to six construction vehicles onsite at any one time.

As discussed in the EIR, construction activity would be annoying to existing residents, as occurs today with teardown and reconstruction of homes in existing neighborhoods. When routed through these neighborhoods, truck trips would be very noticeable to residents at home during construction hours and would result in a significant intrusion. Uphill and downhill movement of construction trucks is currently noticed by residents (noise, obstruction of sight distance for cars following behind large trucks, temporary obstruction of progress through intersections too constrained to accommodate large truck turning movements, etc.), and any increase in truck activity would be considered a serious traffic hazard (as is the case today). This would be considered a significant temporary impact to traffic flow and road safety in the neighborhood, especially through the narrowest and steepest roads, Diviso Street (as narrow as 16.5 feet wide) and Centro West and Centro East streets (as narrow as 17 feet wide). These road widths are not sufficient to allow two trucks or a truck and a car traveling in opposite directions to pass one another safely. For this reason, the EIR provides Mitigation Measure 6.1-13(c). In addition to all applicable mitigation measures contained in 6.1-13 (a) and (b), implement the following:

- Accelerate as much as possible the grading and site preparation phase(s) for those portions of the site where construction traffic would take access through the Hill Haven neighborhood. If possible, condense grading and hauling within a three-week period (that is with minimum 12-hour weekday and weekend work days) to conclude as rapidly as possible. The Town of Tiburon would need to approve the posting of signs on access routes through the Hill Haven neighborhood to prohibit on-street parking during construction hours.
- Implement all project traffic control elements including consolidating delivery of construction materials to the maximum extent possible, using routes approved by the Town of Tiburon, informing residents of construction activities and duration, and providing a comprehensive network of flag persons along construction routes. Specifically, care shall be taken to insure safe passage of trucks along designated routes (such as specific Hill Haven streets) by use of flag trucks traveling in front of and behind wide trucks (trucks which may intrude into the opposite direction travel lane). Flag persons shall be stationed at all Hill Haven intersections and along all roadway segments which may require stopping through traffic for safe truck passage or guiding trucks through the narrow Hill Haven neighborhood streets.
- Repair any deteriorated pavement along Hill Haven streets identified in cooperation with the Town of Tiburon and Marin County by a before and after pavement evaluation program which shall determine if project-generated truck traffic caused any additional pavement deterioration.

Conclusion – Final EIR *Impact 6.1-13 Construction Traffic Impacts* did discuss traffic impacts if the construction access road was not built. This was identified as a significant impact but reduced to less-than-significant with mitigation. The discussion of construction related trips above would not change the findings presented in the 2008 *Easton Point Residential Development EIR (Impact 6.1-13 Construction Traffic Impacts)*.

Potential Impacts of a Water Tank Constructed at Elevation 570, 580, and 590.

Several commentors requested that there be a comparison of impacts (both in terms of water pressure and fire flow) of a water tank constructed with a base elevation of 570, 580, and 590 feet.

RESPONSE

Domestic Water Service

In terms of water pressure for domestic water service, four levels of water service are provided throughout the Marin Municipal Water District (MMWD). They include high pressure (80 pounds per square inch (psi) or greater, standard pressure (40-79 psi), low pressure 30-39 psi, and low pressure pump required (29 psi or less). In order to provide standard water pressure the mid-point of the water supply tank must be a minimum of 94 feet above the elevation of the highest water using fixture in a home.¹⁵ The MMWD will allow water service with sub-standard water pressure upon the condition that the owners enter into a low pressure agreement with the District, which serves as written release from liability for any damage or inconvenience related to the low water pressure.¹⁶

As a condition of receiving water service homes with water pressures below 40 psi would be required to sign a low pressure agreement with MMWD. In addition, homes with water pressures of 29 psi or less would be required to install a low pressure pump.

Fire Flows

The Tiburon Fire Protection District (TFPD) requires the installation of water mains capable of supplying the necessary fire flow at 20 pounds per square inch (psi) for two hours to approved fire hydrants, spaced at 350-foot intervals throughout new subdivisions. The fire flow requirement is 1,000 gallons per minute (gpm) for residences up to 3,600 square feet in size. For residences greater than 3,600 square feet the fire flow requirement is 1,500 gpm. Based on proposed home sizes for the Easton Point project, all larger than 3,600 square feet, the TFPD would require a water supply capable of providing a minimum of 1,500 gpm to fire hydrants for two hours, thus a minimum of 180,000 gallons.

The California Fire Code allows reductions in fire flow requirements if buildings are limited in size and / or contain features such as automatic sprinkler systems.¹⁷ For houses that are over 8,200 square feet, the 1,500 gallons per minute fire flow would be acceptable, but certain construction limitations are triggered. For houses over 8,200 square feet steel and concrete, but no wood, construction is required.¹⁸

Water Service Impacts

The Easton Point project proposes construction of a new 180,000 gallon water tank on a 0.25 acre parcel (Parcel C) adjacent to the Old St. Hilary's Open Space Preserve. The new tank would have a pad elevation of 580 feet be 20 feet tall and 40 feet in diameter. *Impact 5.7-7 Water Service Impacts*

¹⁵ There is an increase of one pound per square feet of water pressure for every 2.3 feet of vertical elevation. Therefore, approximately 94 feet of vertical separation is required for 40 pounds per square inch of water pressure. Nichols • Berman communication with John LaHaye, Marin Municipal Water District, November 2009.

¹⁶ Marin Municipal Water District Code, Title 11 Water Service Rules and Regulations, May 2009.

¹⁷ For example the 2007 California Fire Code (Appendix B, Section B105) states that "the minimum fire-flow requirements for one- and two-family dwellings having a fire-flow calculation area which does not exceed 3,600 square feet shall be 1,000 gallons per minute". Furthermore, it is stated that "a reduction in required fire flow of 50 percent, as approved, is allowed when the building is provided with an approved automatic sprinkle system".

¹⁸ Nichols • Berman communication with Michael Tarnoff, LDS, Inc., April 2010.

analyses the project's proposed water supply and distribution system. Draft EIR **Exhibit 5.7-1** shows the results of a preliminary water feasibility analysis prepared by the Marin Municipal Water District (MMWD).¹⁹ Based on the MMWD analysis 26 homes would have standard water pressure (40 pounds per square inch (psi) and above). Seventeen (17) of the proposed homes would have low pressure (30 to 39 psi) or less. As a condition of receiving water service homes with water pressures below 40 psi would be required to sign a low pressure agreement with MMWD.²⁰

In order to mitigate the identified water service impacts Mitigation Measure 5.7-7 requires the applicant to work with the MMWD to develop a water supply plan. One aspect of the water supply plan would be to increase the base elevation of the proposed water tank to 590 feet.

Analysis

Commentors raised questions regarding secondary impacts of increasing the base elevation of the proposed water tank to 590 feet. In response to these questions MMWD completed an additional water feasibility analysis based on water tank elevations of 570, 580, and 590 feet. MMWD estimated water pressure and water flow information for the water hydrant locations for the proposed project.²¹ Based on the information provided by MMWD an additional water feasibility analysis was prepared (see **Exhibits 2 and 3**).

As stated in the EIR (*Impact 5.7-7 Water Service Impacts*) some homes would not have the standard water pressures required for domestic water service. As shown on **Exhibit 2** not all of the proposed homes would be served by the proposed construction of the 180,000 water supply tank. The three lots along Paradise Drive (Lots 21 through 23) and some Forest Glen Court lots (Lots 27 through 33) would receive water from the existing one million gallon Paradise Water Tank. Mitigation Measure 5.7-7 requires the applicant to replace the existing six-inch water main in Paradise Drive with an eight-inch water main from the proposed driveway for Lots 21 through 23 to Forest Glen Court; the length of the pipe replacement would be approximately 3,750 feet. It is estimated that this improvement would increase fire flows to Lots 21 to 23 to 1,350 gpm.

As shown in **Exhibit 2** with a water tank base elevation of 570 feet 17 of the proposed homes, Lots 4 through 9, Lots 20 and 24, and Lots 35 through 43 would have low pressure (30 to 39 psi) or less. With an increase in the water tank base elevation to 580 feet three additional homes (Lots 7, 8, and 9) would have adequate domestic water pressure. With an increase in the water tank base elevation to 590 feet the number of homes with low pressure (30 to 39 psi) or less would be reduced to nine of the proposed homes. These nine homes (Lots 35 through 43) would be located along Mt. Tiburon Court.

The EIR also noted that for the proposed project the water pressure would not be adequate to provide minimum fire flow requirements for several homes. Excluding the ten lots served by the Paradise Water Tank, as shown in **Exhibit 2**, with a water tank base elevation of 570 feet, 20 of the homes (Lots 4 through 11, Lots 19 through 24 and Lots 35 through 43) would not have adequate water pressure to provide minimum fire flow requirements for the size of the houses proposed (greater than 3,600 square feet). Some of the lots would have adequate fire flow (1,000 gpm) for houses less than 3,600 square feet. It also is noted that due to low residual pressure at some of the hydrants (less than

¹⁹ The MMWD analysis assumed a bottom water tank elevation of 575 feet.

²⁰ The MMWD Code requires homeowners with water pressure below 40 psi sign a low pressure agreement and homes with water pressures of 29 psi or less to install a low pressure pump.

²¹ Easton Point Fire Flow Analysis prepared by MMWD, 11/21/2013.

20 psi) fire flow can not be provided at some of the lots. These lots are identified as N/A in **Exhibit 2**. With an increase of the elevation of the bottom of the proposed water tank to 580 feet this would improve fire flow but the same 20 lots would not have adequate fire flow for houses larger than 3,600 square feet.

With an increase of the elevation of the bottom of the proposed water tank to 590 feet this would improve fire flow to parts of the project site. Based on the preliminary fire flow analysis prepared for a water tank with an elevation of 590 feet (see **Exhibit 2**) the minimum fire flow requirements would still not be achieved for 12 of the homes. These include Lots 7 through 9, and 35 through 43.

Increasing the elevation of the bottom of the proposed water tank to 590 feet would improve both domestic water pressures and fire flow to parts of the project site from what was analyzed and discussed in the EIR. Some of the lots, however, would still experience low domestic pressure (30-39 psi) or less and low fire flow. Nine lots along Mt. Tiburon Court (Lots 35 through 43) would experience both low domestic water pressure and inadequate fire flow. Mitigation Measures 5.7-7 and 5.7-8 would still be required with the higher base elevation of the water tank.

A similar water feasibility analysis was prepared for *Alternative 2* (see **Exhibit 3**).²²

Similar to the proposed project, in *Alternative 2* the four lots along Paradise Drive (Lots 18 through 21) and some Forest Glen Court lots (Lots 24 through 30) would receive water from the existing one million gallon Paradise Water Tank. It would be necessary for the applicant to replace the existing six-inch water main in Paradise Drive with an eight-inch water main from the proposed driveway for Lots 18 through 21 to Forest Glen Court the length of the pipe replacement would be approximately 3,750 feet. It is estimated that this improvement would increase fire flows to Lots 18 to 21 to 1,350 gpm.

As shown in **Exhibit 3**, with a water tank base elevation of 570 feet seven of the proposed lots in *Alternative 2*, Lots 2 through 8, would have low pressure (30 to 39 psi) or less. With an increase in the water tank base elevation to 580 feet the number of lots with low pressure would be reduced to four (Lots 2 through 5). With an increase in the water tank base elevation to 590 feet each of the proposed lots would have adequate water pressure.

Similar to the proposed project, in *Alternative 2* several of the lots would have inadequate fire flow (below 1,500 gpm).

Excluding the 11 lots served by the Paradise Water Tank, as shown in **Exhibit 3**, with a water tank base elevation of 570 feet, nine of the lots (Lots 2 through 9 and Lot 17), would not have adequate water pressure to provide minimum fire flow requirements for the size of the houses proposed (greater than 3,600 square feet). With an increase of the elevation of the bottom of the proposed water tank to 580 feet this would improve fire flow but the same nine lots would not have adequate fire flow. With an increase in the water tank elevation to 590 feet the number of lots that would not have adequate fire flow would be reduced to three (Lots 6, 7, and 8).

The proposed project includes an access road to the water tank from the Mt. Tiburon Court cul-de-sac (see Draft EIR **Exhibit 3.0-4**). The construction road would intersect with the water tank access road. As proposed, the water tank access road would begin at a one percent grade increasing to 17 percent at the water tank pad. With an increase to a water tank base elevation to 590 feet the access road would

²² A specific proposal to provide water service to the Remainder Lot has not been prepared. Thus **Exhibit 3** only shows estimated flows for 31 lots.

be a 16 percent grade from the cul-de-sac to the water tank pad. In addition this would raise the intersection with the construction road, and thus increase the construction road grade from six percent to 13 percent for approximately 200 feet.

It should be noted, as stated in Response to Comment 4-2, that MMWD has not made a final determination as to the proposed water tank's pad elevation, geometry, or material. Detailed engineering design work would occur at a later design phase, after certification of the EIR.

Exhibit 2
Proposed Project Fire Flow Analysis (43 Residential Lots)
Estimated Flows Based on Three Scenarios for Tank Base Elevation

Lot No.	Base Elevation 570 feet		Base Elevation 580 feet		Base Elevation 590 feet	
	Static Pressure (psi)	Flow (GPM)	Static Pressure (psi)	Flow (GPM)	Static Pressure (psi)	Flow (GPM)
1	69	1700	74	1750	78	1800
2	69	1700	74	1750	78	1800
3	69	1700	74	1750	78	1800
4	35	1200	39	1400	43	1600
5	35	1200	39	1400	43	1600
6	35	1200	39	1400	43	1600
7	39	1100	43	1200	48	1350
8	39	1100	43	1200	48	1350
9	39	1100	43	1200	48	1350
10	41	1300	45	1450	50	1600
11	41	1300	45	1450	50	1600
12	58	1600	63	1700	67	1750
13	58	1600	63	1700	67	1750
14	80	1800	84	1900	89	1950
15	80	1800	84	1900	89	1950
16	80	1800	84	1900	89	1950
17	58	1600	63	1700	67	1750
18	58	1600	63	1700	67	1750
19	41	1300	45	1450	50	1600
20	35	1200	39	1400	43	1600
24	35	1200	39	1400	43	1600
25	156	2400	160	2450	165	2450
26	156	2400	160	2450	165	2450
34	156	2400	160	2450	165	2450
35	25	N/A	29	850	34	1200
36	25	N/A	29	850	34	1200
37	22	N/A	26	N/A	30	900
38	21	N/A	25	N/A	29	950
39	21	N/A	25	N/A	29	950
40	22	N/A	26	N/A	30	900
41	22	N/A	26	N/A	30	900
42	25	N/A	29	850	34	1200
43	25	N/A	29	850	34	1200

Paradise Drive One Million Gallon Water Tank, base elevation 235 feet ^a

Lot No.	Static Pressure (psi)	Flow (GPM)
21	70	900
22	70	900
23	70	900
27	55	2400
28	70	2500
29	70	2500
30	70	2500
31	70	2500
32	70	2500
33	55	2400

a Paradise Drive Lots and some Forest Glen Court lots would receive water from the existing one million gallon Paradise Drive tank.

Notes:

1. Static psi is based on tank overflow elevation/Average Summer Day (ASD) HGL.
2. GPM estimated flows are based on 20 psi residual pressure and a half-full tank.
3. "N/A" indicates 20 psi residual pressure is not available at the hydrant nearest the lot.
4. For Lots 21 through 23, upgrading 3,750 feet of existing six-inch pipe to eight-inch would yield flows closer to 1350 gpm.
5. These numbers are an estimate only, and do not represent real flows.
6. Pressure and Flow information is per MMWD study dated 11/21/2013 by JML.

Source: CSW/Stuber-Stroeh Engineering Group, January 13, 2014.

Exhibit 3
Alternative 2 Fire Flow Analysis (31 Residential Lots) Estimated Flows Based on Three Scenarios for Tank Base Elevation

Lot No.	Base Elevation 570 feet		Base Elevation 580 feet		Base Elevation 590 feet	
	Static Pressure (psi)	Flow (GPM)	Static Pressure (psi)	Flow (GPM)	Static Pressure (psi)	Flow (GPM)
1	69	1700	74	1750	78	1800
2	35	1200	39	1400	43	1600
3	35	1200	39	1400	43	1600
4	35	1200	39	1400	43	1600
5	35	1200	39	1400	43	1600
6	39	1100	43	1200	48	1350
7	39	1100	43	1200	48	1350
8	39	1100	43	1200	48	1350
9	41	1300	45	1450	50	1600
10	58	1600	63	1700	67	1750
11	58	1600	63	1700	67	1750
12	80	1800	84	1900	89	1950
13	80	1800	84	1900	89	1950
14	80	1800	84	1900	89	1950
15	58	1600	63	1700	67	1750
16	58	1600	63	1700	67	1750
17	41	1300	45	1450	50	1600
22	156	2400	160	2450	165	2450
23	156	2400	160	2450	165	2450
31	156	2400	160	2450	165	2450

Paradise Drive One Million Gallon Water Tank, base elevation 235 feet ^a

Lot No.	Static Pressure (psi)	Flow (GPM)
18	70	900
19	70	900
20	70	900
21	70	900
24	55	2400
25	70	2500
26	70	2500
27	70	2500
28	70	2500
29	70	2500
30	55	2400

a Paradise Drive Lots and some Forest Glen Ct. lots would receive water from the existing 1 MG Paradise Drive tank.

Notes:

1. Static psi is based on tank overflow elevation/Average Summer Day (ASD) HGL.
2. GPM estimated flows are based on 20 psi residual pressure and a half-full tank.
3. "N/A" indicates 20 psi residual pressure is not available at the hydrant nearest the lot.
4. For Lots 18-21, upgrading 3,750 feet of existing 6-inch pipe to 8-inch will yield flows closer to 1350 gpm.
5. These numbers are an estimate only, and do not represent real flows.
6. Pressure and Flow information is per MMWD study dated 11/21/2013 by JML.

Source: CSW/Stuber-Stroeh Engineering Group, January 13, 2014.

Emergency Evacuation Impacts in Response to a Disaster

Commentors expressed a concern that in an emergency, such as a wildfire, Easton Point residents would need to evacuate through the existing Lyford's Cove / Old Tiburon and Hill Haven neighborhoods. This could make evacuation of Easton Point residents difficult and could impact the existing neighborhoods.

RESPONSE

The Tiburon Fire Protection District (TFPD) would provide fire protection and emergency medical services to the project site. Fire Protection and emergency services impacts are discussed in **Section 5.7 Public Services and Utilities** of the Draft EIR. *Impact 5.7-1 Fire Service Impact* states that, with the exception of the construction access road, the project roads and driveways would comply with TFPD roadway grade requirements. However, in three locations driveways would be too narrow to meet TFPD standards and in four locations turnouts would be needed to meet TFPD standards (see *Impact 5.1-9 Project Impacts Related to Project Site Emergency Access*). Mitigation measures are provided to ensure that, except for the grade of the construction access road, on-site roads and driveways would meet TFPD requirements. It was also noted that the project site is located in an area where there is limited emergency radio coverage, resulting in inadequate communication capabilities for emergency personnel. Mitigation is provided to ensure that adequate emergency radio coverage would be provided for the project site.

As noted in *Impact 5.7-2 Wildland-Building Fire Exposure* the proposed Easton Point project would incorporate the requirements of both the 2003 International Urban-Wildland Interface Code²³ and the 2007 California Building Code Chapter 7A.²⁴ All developers of individual lots would be required to install automatic fire sprinkler systems and approved smoke detectors, consistent with Sections 10.306 and 10.305(e) of TFPD Ordinance 120. Furthermore, criteria required by these fire prevention codes includes preparation of Vegetation Management Plans, stronger structural standards to withstand flames and burning embers, and requires defensible space be maintained by property owners. Incorporation of these measures would substantially reduce the chance of a major wildfire starting on the project site or crossing the project site and destroying residences. Although the risk of wildfire would remain, the risk would be similar to that faced by many other homes in the Paradise Drive area and must be accepted if development is allowed in such wildland-urban interface areas.

Impact 5.1-10 Project Traffic Added to Lyford's Cove / Old Tiburon and Hill Haven Neighborhood Streets – Accident Records, Emergency Access and Traffic Flow discusses impacts related to emergency access through the existing neighborhood streets.

During preparation of the Draft EIR existing accident data from the Tiburon Police Department and an analysis from the TFPD regarding existing conditions and response times, as well as an assessment of problems anticipated due to increased demand for services resulting from the proposed project was requested (see page 252 of the Draft EIR). Ron Barney, TFPD Fire Marshal, responded in writing to

²³ International Code Council, Amended and adopted by the County of Marin on July 11, 2006 (Ordinance 3453) codified as Chapter 16.17 Marin County Code.

²⁴ California amendment to the 2006 International Building Code adopted by the Office of the State Fire Marshal, Approved by the California Building Standards Commission and codified in Title 24 California Code of Regulations, effective January 1, 2008.

the questions raised regarding emergency access to the project site.²⁵ The responses of the TFPD are reported in the Draft EIR (see pages 253 and 254). In preparation of this report, in response to the Board of Supervisors comments, the TFPD was again contacted. Jessica Power, Fire Inspector, TFPD stated that the current position regarding access issues in the Lyford's Cove / Old Tiburon and Hill Haven neighborhoods remains the same as stated in the earlier memo prepared by Ron Barney.²⁶

Residents responding to the Notice of Preparation for this EIR in February 2009 cited numerous ongoing problems with access through the existing Lyford's Cove / Old Tiburon and Hill Haven neighborhoods. Commentors expressed a concern in regard to potential issues related to the need for emergency evacuation plans in response to a disaster (such as a wildfire requiring evacuation of Easton Point residents). These existing conditions were confirmed by the EIR preparers and documented in the EIR.

It is, however, noted that these conditions are not limited to these neighborhoods in Marin County. The *Strategic Fire Plan for Marin County*²⁷ states that lengthy culs-de-sac generally service new developments. Culs-de sac and dead-end roads serve most of the smaller canyons and valleys, and hillsides, as well. Some new developments are served by private roads, which create access problems (i.e. narrow paved widths and limited on-street parking). Roadways with a width of less than 20 feet of unobstructed paved surface, with a dead-end longer than 150 feet, with a cul-de-sac longer than 800 feet, or with a cul-de-sac diameter less than 68 feet are considered hazardous in terms of fire access and protection. As stated in the *Strategic Fire Plan for Marin County* a large number of roadways within Marin County fall into one or more of the above four categories.²⁸

Several of the existing streets in the Lyford's Cove / Old Tiburon and Hill Haven neighborhoods fall into one or more of the four categories of streets that are considered hazardous in terms of fire access and protection. As noted in Response to Comment 6-7 Esperanza Street and Solano Street are 20 feet wide or greater. Streets with segments less than 20-feet wide include:

- Diviso Street from Centro West, approximately 820 feet, to approximately 80 feet south of Vistazo East Street, where the roadway widens.
- Centro West from Diviso Street East, approximately 1,800 feet, to the vicinity of 1864 Centro West, where the roadway widens.
- Centro East (all) from Solano to the Centro West / Diviso Street intersection (approximately 1,100 feet).

As noted in the EIR there are no clear solutions to the existing narrow, winding streets in the Lyford's Cove / Old Tiburon or Hill Haven neighborhoods. Road widening would require residents to dedicate lot frontages (lawns and landscaped areas) to the public road right-of-way. It is anticipated that most, if not all, residents would object to such a project.

²⁵ Letter to Carolyn Cole, AICP from Ron Barney, Fire Marshall, Tiburon Fire Protection District, September 14, 2009.

²⁶ Nichols • Berman telephone communication with Jessica Power, Fire Marshall, Tiburon Fire Protection District, January 2014.

²⁷ *Strategic Fire Plan for Marin County*, Marin County Fire Department, June 1, 2013.

²⁸ *Strategic Fire Plan for Marin County*, Marin County Fire Department, June, 1, 2013.

The issue of emergency evacuation was discussed with Laurie Nilsen, Emergency Services Coordinator, Town of Tiburon and Jessica Power, Fire Inspector, Tiburon Fire Protection District.²⁹ As discussed in the EIR, the TFPD would provide fire protection and emergency medical services to the project site. The Tiburon police station houses the Emergency Operations Center, which is equipped to manage disaster response for both Tiburon and Belvedere.

It was acknowledged by both Ms. Nilsen and Ms. Power that several of the streets in the Lyford's Cove / Old Tiburon or Hill Haven neighborhoods do not meet current TFPD standards. This situation, however, is not unique to these neighborhoods. Several existing streets in Tiburon and Belvedere do not meet current minimum accepted standards for road width, slope of grade, and turning radius. Many of these roads were not specifically designed to facilitate evacuation and concurrent emergency response; they are congested and narrow and / or contain few turnouts or places to take refuge during a fire.

For the proposed project 30 lots (Lots 1 through 20, Lot 24, and Lots 35 through 43) would have vehicular access through the Lyford's Cove / Old Tiburon and Hill Haven neighborhoods.

It is acknowledged that in neighborhoods where existing roads do not meet current minimum standards residents may need to evacuate by foot rather than by automobile.³⁰ Formal or informal paths may need to be used for such evacuation. In addition to evacuation by foot through the Lyford's Cove / Old Tiburon and Hill Haven neighborhoods Easton Point residents may have the option to evacuate through the adjacent Old St. Hillary's Open Space Preserve. The project does propose a public pedestrian access route along a portion of Ridge Road, up to Mt. Tiburon Court, and along Mt. Tiburon Court to provide access to Old St. Hillary's Open Space Preserve. This access also would be available to residents of the adjacent neighborhoods. Vistazo Street West, which connects to Lyford Drive, can be accessed through Old St. Hillary's Open Space Preserve. Easton Point residents also would have the option of evacuation by foot via the construction access road.

Both Ms. Nilsen and Ms. Power emphasized that residents need to prepare for a potential disaster before the disaster occurs. Several programs are available to assist residents with preplanning in case of a disaster. One such program, getready94920.org is a disaster survival program for residents of Tiburon and Belvedere. FIRESafe Marin (firesafemarin.org) is a non-profit organization dedicated to reducing wildland fire hazards and improving fire-safety awareness in Marin. The organization fosters community involvement by building partnerships and providing resources for mitigating fire danger.

Additional Impacts of Construction Road

As discussed in Master Response 2 – *Construction Road and Construction Phase Issues*, in response to questions raised during the Draft EIR public review period Whitlock & Weinberger Transportation

²⁹ Nichols • Berman telephone conversations with Laurie Nilsen, Emergency Services Coordinator, Town of Tiburon and Jessica Power, Fire Inspector, Tiburon Fire Protection District, January 2014.

³⁰ Nichols • Berman telephone conversations with Laurie Nilsen, Emergency Services Coordinator, Town of Tiburon and Jessica Power, Fire Inspector, Tiburon Fire Protection District, January 2014

(W-Trans) was requested by the project sponsor to identify potential traffic safety issues associated with implementation of the construction plans, in particular use of the construction access road.³¹

It was initially anticipated that the construction access road would be ten feet wide with turnouts and paved with grooved concrete. Based on the maximum grade of the construction road (25 percent) W-Trans reported that the largest truck that would be able to use the construction road would be a six-wheel, three-axle truck.³² It was noted that the road would need to be sufficiently wide to accommodate the turning movements associated with the trucks anticipated to use the road. A ten-foot wide road would be insufficient in all curvilinear segments and would need to be increased to between 14- and 20-feet. In addition, W-Trans noted that a ten-foot wide road would be too narrow to provide simultaneous two-way traffic. Turnouts would need to be constructed along the roadway in order to accommodate a vehicle breakdown. Four turnouts are anticipated to be constructed as a part of the construction road. These four turnouts would also be useful in providing staging points for construction traffic.

It was requested that there be additional discussion of the potential impacts of constructing the construction road at the widths as recommended by W-Trans.

RESPONSE

The proposed construction road, showing the road widths recommended by W-Trans and the turnouts is shown on **Exhibit 4**. The road width and road grade at specific locations are shown on **Exhibit 4**.

The increased width of the construction road in selected locations would not result in new environmental impacts beyond those already discussed in the EIR. The wider road would be located primarily along the ridge. The additional grading associated with the wider road would require cuts into firm Franciscan Bedrock. Accordingly there would be no additional geologic impacts. Compared to the construction road evaluated in the Draft EIR the retaining walls would not be significantly different. The earthwork generated would be roughly 5,000 cubic yards of cut and 2,000 cubic yards of fill, resulting in 3,000 cubic yards of off-haul. For the construction road evaluated in the Draft EIR there would be approximately 3,430 cubic yards of cut and 526 cubic yards of fill for a net 2,904 cubic yards of off-haul.³³ Although there would be more grading, it would generate roughly the same amount of off-haul. The increased construction road width would result in an increased impervious area. This would not result in a significant increase in the severity of on-site drainage patterns or impact to groundwater recharge discussed in the Draft EIR. The increased road width could result in a small amount of additional loss of oak woodland habitat, already considered a significant impact. Mitigations are already included in the EIR that would reduce this impact to a less-than-significant impact.

³¹ Letter to Mr. John Reed c/o Mr. Michael Tarnoff from Mary Jo Yung, PE, PTOE, Associate, W-Trans, November 17, 2011.

³² Letter to Mr. John Reed c/o Mr. Michael Tarnoff from Mary Jo Yung, PE, PTOE, Associate, W-Trans, November 17, 2011.

³³ Letter to Scott Hochstrasser, International Planning Associates, Inc. from Michael Tarnoff, P.E., FIRMA Design Group, December 15, 2011.

