

**PUBLIC REVIEW DRAFT MITIGATED NEGATIVE DECLARATION
AND INITIAL STUDY
TRACT-8218 AND PLN-2014-00173
CASTRO VALLEY RESIDENTIAL SUBDIVISION PROJECT**

**Prepared for: County
of Alameda Planning
Department
224 West Winton Avenue
Hayward, CA 94544**

**Prepared by: Rasmussen
Planning, Inc.**

July 24, 2015

MITIGATED NEGATIVE DECLARATION FOR A PROPOSED SEVEN-LOT SINGLE-FAMILY RESIDENTIAL SUBDIVISION LOCATED ON VILLAREAL DRIVE NEAR CLEMENT DRIVE, CASTRO VALLEY, ALAMEDA COUNTY, CALIFORNIA

1.	Project Title: Rutishauser/DRG Builders, Inc. – TR-8218, PLN-2014-00173		
2.	Lead Agency Name and Address: Alameda County Planning Department, 224 West Winton Avenue, Roon 111, Hayward, CA 94544		
3.	Contact Person and Phone Number: Ms. Christine Greene, Planner, (510) 670-5400		
4.	Project Location: Southwest corner of the intersection of Villareal Drive and Clement Drive in the Palomares Hills Development of the unincorporated Castro Valley area of Alameda County (Assessor’s Parcel Number: 085A-6405-166)		
5.	Project Sponsor’s Name and Address: Doyle Heaton, DRG Builders, Inc., 3480 Buskirk Avenue, Suite 260, Pleasant Hill, CA 94523-4396		
6.	General Plan Designation: The site is within the Castro Valley General Plan Area, adopted by the Alameda County Board of Supervisors on March 27, 2012. The Plan designates the site as Open Space-Parks (OS-P)	7.	Zoning: PD (Planned Development, under Zoning Unit 1529) District allowing Neighborhood Commercial uses
8.	<p>Description of Proposed Project: (The whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation.)</p> <p>The applicant is proposing to develop a 7-unit single-family residential subdivision on the 1.28-acre vacant site. Vehicular access to all lots is to be provided by a private road system connecting to the south end of Clement Drive. Proposed lot sizes range from approximately 5,565 to 6,370 square feet of gross area. Proposed housing is two-stories ranging up to approximately 28 feet in height, with housing floor areas ranging from 2,355 to 2,938 square feet.</p> <p>The Project is proposed to be constructed in a single phase. No off-site improvements are planned in conjunction with the Project.</p> <p>In order to facilitate the Project, the applicant is requesting County approval to: 1) amend the Castro Valley General Plan Map designation for the site from Open Space-Parks to Hillside Residential (4-8 units per acre; 2) rezone the site from Planned Development District under Zoning Unit 1529 allowing Neighborhood-Commercial uses to a Planned Development District allowing seven Single-Family Residential lots; and 3) approve a vesting tentative subdivision map for the development.</p>		

	<p>Surrounding Land Uses and Setting: (Briefly describe the project’s surroundings.)</p> <p>Current surrounding land uses consist of the following:</p> <ul style="list-style-type: none"> ● North – Villareal Drive and single-family homes ● South – Large open space area that slopes downward approximately 200-300 feet into a canyon ● East – Clement Drive and Alameda County Fire Station #7 ● West – Palomares Hills Community Center which includes tennis courts, basketball courts, swimming pool, picnic area, community center building and parking.
10.	<p>Other Public Agencies whose Approval is Required (e.g., permits, financing approval, or participation agreement):</p> <p>It is not anticipated that approvals from public agencies beyond the Alameda County community development related departments will be required. Alameda County Public Works Department approvals will be required for the Final Subdivision Map, Roadway Encroachment Permit, grading permits, Stormwater C.3/C.6 Permit, and building permits. Connections to utilities will require approval from each of the utility providers involved. Construction usually does not require a permit for fugitive dust emissions; however, dust control measures are to be followed.</p>

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a “Potentially Significant Impact,” as indicated by the checklist on the following pages.

	Aesthetics		Agricultural Resources	X	Air Quality
	Biological Resources		Cultural Resources	X	Geology/Soils
	Greenhouse Gas Emissions	X	Hazards and Hazardous Materials	X	Hydrology / Water Quality
	Land Use / Planning		Mineral Resources	X	Noise
	Population / Planning		Public Services		Recreation
	Transportation / Traffic		Utilities / Service Systems		Mandatory Findings of Significance

On the basis of this evaluation:

	<p>I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.</p>
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X	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION (MND) will be prepared.
	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT (EIR) is required.
	I find that the proposed project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT (EIR) is required, but it must analyze only the effects that remain to be addressed.
	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.
	<p>_____</p> <p>Albert Lopez Planning Director</p> <p style="text-align: right;">Date</p>

**INITIAL STUDY
TRACT-8218 and PLN-2014-173
CASTRO VALLEY RESIDENTIAL SUBDIVISION PROJECT**

LIST OF RECOMMENDED MITIGATION MEASURES

Following is the list of recommended Mitigation Measures for reducing potentially significant Project related adverse environmental impacts to less than less-than-significant levels. Please refer to the Initial Study Checklist that follows for more detailed discussion.

MITIGATION MEASURES

(Mitigation Measure Aes-1) Landscape plans shall be revised to ensure that future development on Lot 5 is visually screened from the outlying residential and canyon areas by the clustered planting of six, 24-inch box coast live oak trees (evergreen) near the eastern property line.

(Mitigation Measure Air-1) The Project shall demonstrate compliance with all applicable regulations and operating procedures prior to issuance of building or grading permits, including implementation of the following Basic Construction Mitigation Measures recommended by BAAQMD:

- 1) All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. A rocked construction entrance using a minimum 8-inch thick and 12-foot wide by 100-foot long barrier shall be provided during construction as required per County and Reference 1 and 2 standards at the end of pavement.
- 2) All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- 3) All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- 4) All vehicle speeds on unpaved roads shall be limited to 15 mph.
- 5) All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- 6) Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
- 7) All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- 8) Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

(Mitigation Measure Air-2) In addition the following measure will apply as appropriate.

- 1) All "Basic" control measures listed above.
- 2) Hydro seed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more).

- 3) Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.)
- 4) Limit traffic speeds on unpaved roads to 15 mph.
- 5) Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
- 6) Replant vegetation in disturbed areas as quickly as possible. Optional Control Measures: The following optional measures shall be employed as required and/or appropriate.
- 7) Install wheel washers for all exiting trucks, or wash off the tires or tracks of all trucks and equipment leaving the site.
- 8) Install wind breaks, or plant trees/vegetative wind breaks at windward side(s) of construction areas.
- 9) Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.
- 10) Limit the area subject to excavation, grading and other construction activity at any one time.

(Mitigation Measure Cult-1) Groundwork contractors shall be advised that any unusual subsurface item is to be examined to determine if it may be a cultural artifact. If the item found cannot be identified, the work shall be stopped and a qualified archaeologist will be consulted to determine if it is a cultural artifact, and if so, to prescribe appropriate mitigation measures per state law.

(Mitigation Measure Cult-2) Groundwork contractors shall be advised that any unusual subsurface items are to be examined to determine if it may be a paleontological resource or unique geologic feature. If the item discovered cannot be identified, the work shall be stopped and a qualified paleontologist/geologist will be consulted to determine if it is a unique resource or site feature, and if so, to prescribe appropriate mitigation measures per state law.

(Mitigation Measure Cult-3) Should human remains be unexpectedly encountered, they shall be reported to the coroner, as required by California Health and Safety Code, Section 7050.5-7055. If the remains are determined to be Native American by the coroner, the requirements of California Public Resources Code 5097.98 shall be followed.

(Mitigation Measure Geo-1) Future Project improvements shall be designed in accordance with current earthquake resistant standards, including the 2013 CBC guidelines and design parameters.

(Mitigation Measure Geo-2) Project improvements shall be designed and constructed in accordance with the recommendations included in the Project geotechnical report. The Project's final geotechnical report and grading plans shall be subject to review and approval by the County Public Works Department prior to the issuance of grading permits.

(Mitigation Measure Ghg-1) The Project shall incorporate these measures from the Energy Performance in New Construction and Renewable Energy, where feasible, such as exceeding the California Title-24 standards for energy efficiency by 30 percent, use of building materials containing recycled content, and incorporating a renewable energy program for each residential unit.

(Mitigation Measure Haz-1) Should any unanticipated pipe that might lead to an underground fuel or septic tank be sighted during site grading operations, it shall be reported to an environmental engineer and carefully evaluated and remedied.

(Mitigation Measure Haz-2) If any unanticipated PVC, concrete or metal pipes are exposed during grading or excavation operations, these shall be referred to an environmental engineer for evaluation and removed from the site.

(Mitigation Measure Haz-3) During grading and excavation activities, soil technicians and operators shall be made aware to look for unusual conditions suggesting buried debris or other potential adverse materials which may be discovered. If any are encountered, an environmental engineer shall be notified and the specific condition appropriately remedied in accordance with the County, state and Regional Water Quality Board requirements.

(Mitigation Measure Haz-4) An approximately 3-foot high, 7-inch diameter PVC pipe of unknown origin presently extends out of the center of the Project site. Prior to grading operations, the source and purpose of the pipe shall be determined, and the pipe shall be removed in accordance with all applicable regulatory practices.

(Mitigation Measure Haz-5) Project construction plans and support documentation shall be submitted to the Alameda County Fire Department for review and approval prior to the issuance of Project building permits. Plans shall comply with the requirements of Title 14 and Chapter 7A of the 2013 California Building Code. In addition, the size of each lot shall be identified on plans, all buildings shall be provided with fire sprinklers, and the locations of all fire hydrants within 500 feet of the Project site shall be identified.

(Mitigation Measure Hyd-1) All Project related work shall be completed in compliance with all applicable Alameda County ordinances, guidelines, and permit requirements. All roadway and storm drainage facilities shall conform to the County's Subdivision Design Guidelines and Hydrology and Hydraulics Criteria Summary. The developer shall file a Notice of Intent and obtain approval of and implement a Storm Water Pollution Prevention Plan (SWPPP). The developer shall further obtain approval of a Stormwater C.3/C.6 Permit and implement the applicable construction related BMP stormwater controls.

(Mitigation Measure Hyd-2) The Project shall conform to all requirements and provisions of the Alameda County Grading Ordinance.

(Mitigation Measure Hyd-3) The developer shall obtain a water quality certification or waiver from the Regional Water Quality Control Board. This process ensures conformance to BMPs during construction to control wind and water erosion that could affect surface and ground water quality.

(Mitigation Measure Hyd-4) The Project shall comply with the C.3 Provisions of the Alameda County Municipal Regional Storm Water Management and National Pollutant Discharge Elimination System (NPDES) Permit (MRP)–NPDES Permit No. CAS612008. The Project sponsor shall demonstrate compliance with the County's NPDES permit C.3 requirements by preparing a detailed Storm water Management Plan (SMP), incorporating the most appropriate post-construction source control measures into the Project design. All accessible on-site inlets shall be marked with the words "No Dumping! Flows to Bay!" Final landscape plans shall be

designed to minimize irrigation and runoff and minimize use of fertilizers and pesticides that could contribute to storm water pollution. The runoff from all of the created impervious surfaces shall be collected and treated in accordance with the requirements of the MRP. The site's soil percolation rate shall be determined to identify the C3 feasibility of the proposed treatment types. This information shall be submitted for review and approval prior to any C3 approvals. The SMP shall be prepared during County's review of project engineering design and shall incorporate the required post-construction (permanent) storm water quality controls. The SMP should include, but is not limited to the following:

1. The proposed finished grade
2. The storm drainage system including all inlets, pipes, catch basins, overland flows, outlets and water flow directions
3. The permanent storm water treatment system (soil and landscape based treatment facilities, filters and separators), including all design details
4. Design details of all source control measures (preventing contact between storm water and potential sources of pollution) and site design measures (reductions in flow from impervious surfaces) to be implemented
5. Calculations demonstrating that storm water treatment measures are hydraulically sized as specified by the County's storm water permit
6. An Operations and Management Plan to ensure continued effectiveness of structural BMPs and implementation of non-structural BMPs.

(Mitigation Measure Noi-1) All homes shall be constructed with noise attenuation design techniques and insulation materials adequate to meet all applicable Alameda County noise standards for housing.

(Mitigation Measure Noi-2) A decorative six-foot high, solid board noise attenuation wall shall be constructed along the western boundaries of Lot 1 and Lot A (located between Lots 1 and 7).

(Mitigation Measure Noi-3) The title reports for all seven residential lots shall be recorded with a statement indicating that the Project site is bordered by the Fire Station to the east and the Palomares Hills Community Center to the west, and that these uses are the source of routine noise nuisances.

(Mitigation Measure Noi-4) Short-term ground borne vibrations and ground borne noise created when Project construction occurs shall be confined to regular work hours, and subject to all applicable Alameda County noise standards.

(Mitigation Measure Noi-5) Project construction noise shall be confined to regular work hours, and subject to all applicable Alameda County noise standards.

(Mitigation Measure Tra-1) The existing roadway width within the public right of way of Clement Drive at Villareal Drive shall not be reduced. The existing curb return radius and curb-line alignment along the southwest corner of the intersection of Clement Drive and Villareal Drive shall not be reduced. The width of Clement Drive shall be subject to review and approval by the Alameda County Fire Department prior to approval of Project improvement plans. The limits of public right of way and easements shall be clearly delineated and labeled on Project improvement plans.

(Mitigation Measure Tra-2) The proposed curb ramp and the landing area behind the ramp shall be designed to meet current Caltrans Standards. (Please refer to the revised Caltrans Standard Plans A88A for details and information). The sidewalk located in the vicinity of the curb ramp may need to be widened to provide adequate pedestrian access and landing area at the curb ramp.

(Mitigation Measure Tra-3) The one proposed parallel parking space shall be deleted from plans and replaced with landscaping. All guest parking spaces shall have a minimum backup of 25 feet paved surface.

INITIAL STUDY CHECKLIST

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
I. AESTHETICS – Would the project:				
a) Have a substantial adverse effect on a scenic vista?			X	
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c) Substantially degrade the existing visual character or quality of the site and its surroundings?			X	
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?			X	

Notes:

(1) Aesthetics.

- (a) The project site is located along the upper rim of a scenic canyon, and as such is part of a scenic vista. An approximately 178-foot long portion of the site is visible to residents located on the opposite side of the canyon, as well as to hikers walking within the canyon. Only one house (Lot 5) will be visible from these outlying areas. In order to protect the scenic canyon vista of which the site is a part, the following mitigation is recommended: **Mitigation Measure Aes-1** Landscape plans shall be revised to ensure that future development on Lot 5 is visually screened from the outlying residential and canyon areas by the clustered planting of six, 24-inch box coast live oak trees (evergreen) near the eastern property line. With this mitigation, the Project will not have a substantial adverse effect on a scenic vista. (Source: Site Reconnaissance)
- (b) The Project will not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway. This previously graded site does not include any trees, rock outcroppings or historic buildings. The site is not visible from a scenic highway. (Source: Site Reconnaissance)

- (c) The Project will not substantially degrade the existing visual character or quality of the site and its surroundings. The site was previously flat-graded and contains no trees, shrubs or significant natural features. The seven proposed two-story, single-family homes are compatible with those presently existing in the outlying neighborhood. The manner in which housing models are planned to be disbursed throughout the Project area will greatly reduce the potential for visual monotony. The planting of redwood trees along the western border of the Project site facing the adjacent Palomares Hills Clubhouse pool is intended to reduce visibility from Project housing into the pool area. (Source: Site Reconnaissance)

- (d) The Project will not create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area. Outdoor lighting will be similar to and compatible with the single-family residential development on the opposite side of Villareal Drive. (Source: Site Reconnaissance)

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
<p>II. AGRICULTURAL AND FORESTRY RESOURCES - In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:</p>				
<p>a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?</p>				X
<p>b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?</p>				X

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				X
d) Result in the loss of forest land or conversion of forest land to non-forest use?				X
e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use.				X

Notes:

(2) **Agricultural Resources.** The 1.28-acre Project site was originally graded around 1980 as a part of the mass-grading plan for the Palomares Hills Development in which it is located.

(a) The Project will not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use. The site is not designated as Prime Farmland on the 2004 Important Farmland in California Map prepared by the California Department of Conservation. (Source: California Department of Conservation, www.conserv.ca.gov)

(b) The Project will not conflict with existing zoning for agricultural use, or a Williamson Act contract. The site is not presently zoned by the County for agricultural use. In addition, the site is not an enrolled land under a Williamson Act Contract. (Source: California Department of Conservation, www.conserv.ca.gov)

(c) The Project site is not zoned for, nor is it located near land zoned for forest use. The site is located within an urban area, and contains no trees. (Source: Site Reconnaissance)

- (d) The Project will not result in the loss of forest land or conversion of forest land to non-forest use. The site is located within an urban area, and contains no trees. (Source: Site Reconnaissance)

- (e) The Project will not involve other changes to the existing environment, which, due to their location or nature, could result in the conversion of Farmland to non-agricultural use. The site is surrounded by existing urban development on three sides, and by physically undevelopable open space to the south. (Source: Site Reconnaissance)

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
III. AIR QUALITY – Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?			X	
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?		X		
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?			X	
d) Expose sensitive receptors to substantial pollutant concentrations?			X	
e) Create objectionable odors affecting a substantial number of people?			X	

Notes:

(3) Air Quality.

- (a) The Project will not conflict with or obstruct implementation of the applicable air quality plan. The site is situated within the San Francisco Bay Area Air Basin, and as such falls under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The BAAQMD enforces regulations regarding air pollution sources, and is the primary regulatory agency for implementing air quality plans mandated under state and federal law. The Project site is subject to the Bay Area Clean Air Plan (CAP), adopted by BAAQMD to meet state requirements and those of the Federal Clean Air Act. This plan is intended to demonstrate progress toward meeting the

ozone standards, but also includes other elements. A plan would be judged to conflict with the regional air quality plan if it would be inconsistent with the growth assumptions of the CAP of population, employment or regional growth in vehicle miles traveled. The proposed Project is a “project,” not a “plan.” However, the Project is in an area designated by the Palomares Hills Master plan for low-intensity urban development and is consistent with the growth assumptions of that plan. The Project would increase residents and trips and therefore contribute to regional air emissions, but this growth is consistent with the CAP assumptions and is therefore considered a less than significant impact with respect to conflict with an air quality plan.

- (b) With appropriate mitigation as presented below, the Project will not violate any air quality standard or contribute substantially to an existing or projected air quality violation. Project-related air quality impacts fall into two categories: short-term impacts that would occur during construction of the Project and long-term impacts due to Project operation. Both are discussed separately below. Project construction would generate emissions of ROG, NO_x, and particulate matter (PM) from construction worker commute trips, construction equipment, and soil disturbance. Construction emissions are described as “short term” or temporary in duration, but have the potential to cause a significant air quality impact, especially in the case of PM₁₀. Fugitive dust emissions are associated primarily with site preparation and vary as a function of such parameters as soil silt content, soil moisture, wind speed, and acreage of disturbance. Project construction is expected to last for less than one year, with the potential for the most construction emissions towards the beginning of construction at the time of initial site preparation (e.g., grading and grubbing). Construction of the Project would result in temporary emissions of dust and exhaust emissions. Construction-related emissions are generally short-term in duration, but may still cause adverse air quality impacts. Fine particulate matter (PM₁₀) is the pollutant of greatest concern with respect to construction activities. However, BAAQMD recommends implementation of construction mitigation measures to reduce construction-related emissions for all projects, regardless of the significance level of construction-period impacts. The District has identified a set of feasible PM₁₀ control measures for construction activities.

These basic measures are included in Mitigation Measures Air-1 and 2 below and would reduce construction period criteria pollutant impacts.

(Mitigation Measure Air-1) The Project shall demonstrate compliance with all applicable regulations and operating procedures prior to issuance of building or grading permits, including implementation of the following Basic Construction Mitigation Measures recommended by BAAQMD:

- 1) All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. A rocked construction entrance using a minimum 8-inch thick and 12-foot wide by 100-foot long barrier shall be provided during construction as required per County and Reference 1 and 2 standards at the end of pavement.
- 2) All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

- 3) All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- 4) All vehicle speeds on unpaved roads shall be limited to 15 mph.
- 5) All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- 6) Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
- 7) All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- 8) Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

(Mitigation Measure Air-2) In addition the following measure will apply as appropriate.

- 1) All "Basic" control measures listed above.
- 2) Hydro seed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more).
- 3) Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.)
- 4) Limit traffic speeds on unpaved roads to 15 mph.
- 5) Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
- 6) Replant vegetation in disturbed areas as quickly as possible. Optional Control Measures: The following optional measures shall be employed as required and/or appropriate.
- 7) Install wheel washers for all exiting trucks, or wash off the tires or tracks of all trucks and equipment leaving the site.
- 8) Install wind breaks, or plant trees/vegetative wind breaks at windward side(s) of construction areas.
- 9) Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.
- 10) Limit the area subject to excavation, grading and other construction activity at any one time.

Implementation of the above mitigation measure would reduce this impact to a level of less-than significant. Note that even with unmitigated conditions, the Project construction emissions would be very low and are less than significant. Because emissions associated with the long-term operation of the proposed residential project would not exceed BAAQMD significance thresholds, long-term operational air quality impacts would be considered less than significant.

- (c) The Project will not result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors). Castro Valley is in a non-attainment area for ozone (Source: California Air Resources Board, 2013) and the proposed Project would lead to nitrogen oxides emissions that are a precursor for ozone formation. Nitrogen oxide emissions from construction equipment and vehicle trips anticipated to be generated by project construction would contribute to ozone formation in the region. Due to the limited proposed residential land use and the potential for limited additional nitrogen oxide generation indicates that the incremental nitrogen oxide emissions from the Project would not be significant. Castro Valley is also in non-attainment areas for Particulate Matter (PM10)2 and Fine Particulate Matter (PM2.5) (Source: California Air Resources Board, 2013). The limited proposed residential land use and the potential for limited additional (PM10)2 and (PM25) generation indicates that the incremental emissions of these pollutants from the Project would not be significant. These impacts would be minimal and would be less than the neighborhood commercial use presently zoned for the site would otherwise generate.
- (d) The Project will not expose sensitive receptors to substantial pollutant concentrations. BAAQMD recommends assessment of community risks and hazards within a 1,000 foot radius of a project boundary. Residences, which are considered a sensitive use, are located within this distance from the Project site. However, the health risk models and methods are not considered accurate for such short construction period durations as anticipated for the Project. Given that the exposure duration would be shorter than that able to be accurately modeled, it can reasonably be assumed that the potential health risk from construction-period emissions would be less than significant. Residential uses, such as those proposed under the Project would not be considered to have substantial emissions of toxic air contaminants (TACs) during operation. However, the proposed new residential units would be considered new sensitive receptors. BAAQMD provides map-based Highway Screening and Stationary Source Screening Analysis Tools, which show that the Project site is not within 1,000 feet of potential sources of significant health risks. Therefore, the health risk at this location both on nearby existing residences and the proposed residences would be less than significant.
- (e) Because the Project consists solely of single-family residential homes, it is unlikely that it will create objectionable odors affecting a substantial amount of people. During construction, exhaust and odors from equipment will be created; however, these odors will be temporary and will not likely affect a substantial number of people due to the current surrounding uses. Once construction of the Project is completed, it is unlikely that objectionable odors affecting the surrounding area will occur. Therefore, the potential for objectionable odor impacts is considered less than significant.

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES – Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?			X	
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?				X
c) Have substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.), through direct removal filing, hydrological interruption, or other means?				X
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?			X	
e) Conflict with any local policies or ordinances				X

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
protecting biological resources, such as a tree preservation policy or ordinance?				
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X

Notes:

(4) Biological Resources.

- (a) The proposed Project will not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. Based on site observations, no habitat for endangered and/or special species is likely because the Project site is located within an existing developed area, and was previously flat-graded in conjunction with the original Palomares Hills mass grading project in approximately 1980. The original landform, natural contours, soils and habitat of the site were modified as a result of this. No trees or shrubs exist on the site, only mowed non-native grasses and starthistle. The site is presently surrounded by a combination of fencing and a concrete wall which create a partial physical barrier for use of the land as a wildlife corridor. (Sources: Site Reconnaissance, U.S. Fish and Wildlife Service, www.fws.gov, Phase I Environmental Assessment, p. 6)
- (b) The Project will not have a substantial adverse effect on riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service. The Project site is presently transected by a 1-1/2 to three-foot deep manmade drainage swale. The swale drains to the eastern site boundary but appears to be cut off from any other drainage features. Therefore the swale is no longer a significant drainage feature. As a result, runoff presently sheet flows over the site and eventually drains into the Villareal Drive main. This swale does not contain and evidence of riparian grasses or other riparian vegetation, only non-native grasses. It is proposed to be replaced with bio-swale treatment facilities, and a secondary detention vault that holds on-site storm water and then conveys it directly into the Villareal Drive main. The previously modified Project site (see Subsection 4a above) does not contain any sensitive natural communities. (Source: Site Reconnaissance, Phase I Environmental Assessment, p. 6)

- (c) The Project will not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. No marshland, vernal pools, coastal lands or wetlands exist on the Project site. (Site Reconnaissance)
- (d) The Project site location and the proposed Project development will not substantially interfere with the movement of any native resident or wildlife species nor with established native resident or migratory wildlife corridors, nor impede the use of native wildlife nursery sites. The site is presently surrounded by urban development to the north, east and west. The previously graded, walled and fenced site does not provide suitable habitat or access for the movement of wildlife. The site does not contain year-round water to support fish life. (Source: Site Reconnaissance)
- (e) The Project will not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. The Project site does not contain any trees. (Source: Site Reconnaissance)
- (f) The Project will not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. The site is not included within a Habitat Conservation Plan. (Source: U.S. Fish and Wildlife Service, www.fws.gov.)

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES – Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in 15064.5?				X
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to 15064.5?			X	
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			X	
d) Disturb any human remains, including those interred outside of formal cemeteries?			X	

Notes:

(5) Cultural Resources.

- (a) The Project will not cause a substantial adverse change in the significance of a historical resource as defined in 15064.5. No buildings or other structures are located on the previously graded Project site, and no historic sites exist within the area surrounding the site. (Source: Site Reconnaissance)
- (b) The Project will not cause a substantial adverse change in the significance of an archaeological resource pursuant to 15064.5. Because the surface and subsurface areas of the site were substantially altered by grading conducted in conjunction with the greater Palomares Hills Development project, cultural resources are unlikely to be found. **(Mitigation Measure Cult-1)** Groundwork contractors shall be advised that any unusual subsurface item is to be examined to determine if it may be a cultural artifact. If the item found cannot be identified, the work shall be stopped and a qualified archaeologist will be consulted to determine if it is a cultural artifact, and if so, to prescribe appropriate mitigation measures per state law. With this mitigation, the Project will not have a substantial adverse effect on archeological resources. (Source: Site Reconnaissance)

- (c) For the reasons cited in Subsection 5b above, the Project will not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. **(Mitigation Measure Cult-2)** Groundwork contractors shall be advised that any unusual subsurface items are to be examined to determine if it may be a paleontological resource or unique geologic feature. If the item discovered cannot be identified, the work shall be stopped and a qualified paleontologist/geologist will be consulted to determine if it is a unique resource or site feature, and if so, to prescribe appropriate mitigation measures per state law. With this mitigation, the Project will not have a substantial adverse effect on paleontological resources. (Source: Site Reconnaissance)
- (d) For the reasons cited in Subsection 5b above, the Project will not disturb any human remains, including those interred outside of formal cemeteries. **(Mitigation Measure Cult-3)** Should human remains be unexpectedly encountered, they shall be reported to the coroner, as required by California Health and Safety Code, Section 7050.5-7055. If the remains are determined to be Native American by the coroner, the requirements of California Public Resources Code 5097.98 shall be followed. With this mitigation, the Project will not have a substantial adverse effect regarding human remains.

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
VI. GEOLOGY AND SOILS – Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.			X	
ii) Strong seismic ground shaking?		X		
iii) Seismic-related ground failure, including liquefaction?			X	
iv) Landslides?			X	
b) Result in substantial soil erosion or the loss of topsoil?			X	
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?			X	
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?			X	
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				X

Notes:

(6) Geology and Soils.

- (a) It is not likely the Project will expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
- (i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault - The San Andreas and Hayward Faults are located approximately 22 and 4.1 miles southwest of the Project site, respectively. The Calaveras Fault is located approximately 4.2 miles northeast of the site. In addition, a series of northwest trending unnamed bedrock faults are mapped in the site area, the two closest being located approximately 150 feet northeast and 500 feet southwest of the site, respectively. Based upon a recent geotechnical investigation prepared for the Project site by Murray Engineers, Inc., it is their opinion that no active or potentially active faults cross the Project site. Therefore, the potential for future rupture to occur at the site is low. (Source: Murray Engineers Geotechnical Investigation, pages 2 and 6)
 - (ii) Strong seismic ground shaking - As noted above in Subsection 6a(i), moderate to large earthquakes are probable along several active faults in the greater Bay Area. Therefore, strong to violent ground shaking would be expected in the area during the design-life of the proposed Project improvements. **(Mitigation Measure Geo-1)** Future Project improvements shall be designed in accordance with current earthquake resistant standards, including the 2013 CBC guidelines and design parameters. With this mitigation, the Project is not likely to expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking. (Source: Murray Engineers Geotechnical Investigation, page 6) **(Mitigation Measure Geo-2)** Project improvements shall be designed and constructed in accordance with the recommendations included in the Project geotechnical report. (Source: Murray Engineers Geotechnical Investigation, pages 5 and 6) The Project's final geotechnical report and grading plans shall be subject to review and approval by the County Public Works Department prior to the issuance of grading permits.
 - (iii) Seismic-related ground failure, including liquefaction - According to the State of California Official Seismic Hazards Zone Map for the Hayward Quadrangle (California Geological Survey, 2003), the Project site is not located in an area considered susceptible to earthquake-induced liquefaction. Therefore, the Project is not likely to expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving liquefaction. (Source: Murray Engineers Geotechnical Investigation, page 2)
 - (iv) Landslides - According to the State of California Official Seismic Hazards Zone Map for the Hayward Quadrangle (California Geological Survey, 2003), the Project site is not located in an area considered susceptible to earthquake-induced landslides. In

- addition, given that the Project site is relatively flat, the risk of landslides is further reduced. Therefore, the Project is not likely to expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides. (Source: Murray Engineers Geotechnical Investigation, pages 2 and 7)
- (b) It is not likely the completed Project will result in substantial soil erosion or loss of topsoil. The Project site was previously flat-graded in conjunction with the mass grading work for the Palomares Hills Development in which it is located. As a result, only gentle ground surface slopes exist which will prevent rapid on-site surface level water flows. The site is further surrounded by developed land to the north, east and west with proper drainage systems; and by the downward sloping open space area to the south. Because of this, no runoff water generated off-site is expected to flow onto the Project site. The proposed Project drainage plan calls for heavy rain water to be conveyed to an on-site underground storm water detention vault. Here it will be temporarily stored until the rains subside and then released into the public storm drainage system located in Villareal Drive. Finally, the remainder of the site is to be improved with impervious and impervious surfaces that will protect against soil erosion and loss of top soil, including homes, roadways, parking, driveways, landscaping and bio-swales. The potential for temporary significant soil erosion and top soil loss during Project construction does exist. Therefore, construction project Mitigation Measures Hyd-1, 2, 3 and 4 shall be implemented to ensure the Project is not likely to result in substantial soil erosion or loss of topsoil during construction.
 - (c) It is not likely the Project site is located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in an on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse. According to the geotechnical investigation that was prepared for the Project site, the potential for liquefaction and liquefaction-related distress to future development is low. The State of California Seismic Hazards Zones indicates that the site is not located in a liquefaction hazard zone. Also, according to the State of California Official Seismic Hazard Zones Map for the Hayward Quadrangle (California Geological Survey, 2003), the site is not located in an area considered susceptible to earthquake-induced liquefaction or land sliding. (Source: Murray Engineers Geotechnical Investigation, pages 2 and 6)
 - (d) Based upon laboratory testing conducted in conjunction with the preparation of the geotechnical investigation prepared for the Project site, it appears that portions of the near surface material are moderately expansive. However, shrink and swell of the surficial soil should not have a significant impact on the structural integrity of the Project improvements, provided: **Mitigation Measure Geo-2** Project improvements shall be designed and constructed in accordance with the recommendations included in the Project geotechnical report. (Source: Murray Engineers Geotechnical Investigation, pages 5 and 6) The Project's final geotechnical report and grading plans shall be subject to review and approval by the County Public Works Department prior to the issuance of grading permits.
 - (e) The public sewer system that now serves the Project site precludes the need for septic or other alternative disposal systems.

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
VII. GREENHOUSE GAS EMISSIONS – Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			X	
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?				X

Notes:

(7) Greenhouse Gas Emissions.

- (a) The proposed seven-unit housing project will not generate gas emissions, either directly or indirectly, that may have a significant impact on the environment. The Project site is within the San Francisco Bay Area Air Basin, and as such falls under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The Project would have a significant environment impact if it were to exceed the BAAQMD’s greenhouse gas emissions rate threshold of metric tons C)2e per year. However, given the small size of the Project and the fact that it would be well below the operational GHG level, it is concluded that GHG emissions would be well below significant levels. Therefore, the Project impact related to greenhouse emissions would be less than significant.
- (b) The Project will not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gasses. The Project is consistent with the Castro Valley General Plan in this regard. In addition, Alameda County’s Community Climate Action Plan (CCAP) provides guidance intended to help reduce greenhouse emissions in the County by 15 percent by the year 2020 through a variety of measures and policies. The Project does not directly relate to the measures in the CCAP, which focus mainly on regional improvements to public transit, bicycle and pedestrian connectivity and use, development in denser transit-oriented and mixed-use areas, and integration of incentives for community-wide energy and water efficiency, renewable energy, water conservation and waste reduction. However, the CCAP also contains a chapter on Building Energy Strategies and Measures, in which it promotes green building practices. Consistent with the CCAP regulations: **(Mitigation Measure Ghg-1)** The Project shall incorporate these measures from the Energy Performance in New Construction and Renewable Energy, where feasible,

such as exceeding the California Title-24 standards for energy efficiency by 30 percent, use of building materials containing recycled content, and incorporating a renewable energy program for each residential unit. With this mitigation, the Project is not likely to conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
VIII. HAZARDS AND HAZARDOUS MATERIALS – Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			X	
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?			X	
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?			X	
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				X

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residence are intermixed with wildlands?			X	

Notes:

(8) Hazards and Hazardous Materials.

- (a) Because the Project is planned to consist solely of single-family housing, it is not anticipated that hazardous substances will be stored, used, or disposed of on site. Therefore, it is unlikely that a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials will be created.
- (b) Because the Project is planned to consist solely of single-family housing, it is not anticipated that this use will create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Alameda County Fire Station #7 is located on the adjacent property to the east, in the event of potential emergency.
- (c) Because the Project is planned to consist solely of single-family housing, it is not anticipated that this use will result in hazardous emissions or require the handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school site.
- (d) The Project is not proposed on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 that might

otherwise create a significant hazard to the public or the environment. The Phase I Environmental Assessment for the Project indicates that the site is not identified in any of the data base searches reviewed. There are no records of a release, or of any hazardous waste storage at the site. Other potential on-site issues were also investigated in the Phase I Assessment. The Office of the County Agricultural Commission was contacted for records of agricultural pesticides at the site. No agricultural pesticide use is on record at that office. General regional information indicated that historically, agricultural use at the Project site was limited to cattle grazing land. There is no record or indication of cultivated crops, and thus no related pesticide use in the area of the site. In addition, there is no evidence of hazardous releases at or in the vicinity of the site. No potential sources of the following were noted at the site: polychlorinated biphenyls (PCB), asbestos-containing materials (ACM), and lead based paint (LBP). No record of a septic system or water well exist for the Project site. However: **Mitigation Measure Haz-1** Should any unanticipated pipe that might lead to an underground fuel or septic tank be sighted during site grading operations, it shall be reported to an environmental engineer and carefully evaluated and remedied. **Mitigation Measure Haz-2** If any unanticipated PVC, concrete or metal pipes are exposed during grading or excavation operations, these shall be referred to an environmental engineer for evaluation and removed from the site. **Mitigation Measure Haz-3** During grading and excavation activities, soil technicians and operators shall be made aware to look for unusual conditions suggesting buried debris or other potential adverse materials which may be discovered. If any are encountered, an environmental engineer shall be notified and the specific condition appropriately remedied in accordance with the County, state and Regional Water Quality Board requirements. **Mitigation Measure Haz-4** An approximately 3-foot high, 7-inch diameter PVC pipe of unknown origin presently extends out of the center of the Project site. Prior to grading operations, the source and purpose of the pipe shall be determined, and the pipe shall be removed in accordance with all applicable regulatory practices. As a result of the above investigation findings and mitigation measures, the Project will not be developed on a site that would create a significant hazard to the public or the environment. (Source: Phase I Environmental Assessment, pages 12, 13 and 16)

- (e) The Project site is not located within two miles of a planned or existing public airport or public use airport, which might otherwise result in a potential safety hazard for future residents of the Project site. The closest public airport to the Project site is the Hayward Executive Airport located farther than two miles to the southwest. (Source: GlobalAir.com)
- (f) There are no private landing strips located within two miles of the Project site. The Sutter Medical Center Castro Valley Heliport is located nearly three miles to the west of the site. Site proximity to a private airstrip, is therefore not expected to result in a safety hazard for the future residents of the Project. (Source: GlobalAir.com)
- (g) The Project site is an integral part of the original Palomares Hills master plan, as previously adopted by the County in accordance with County planning emergency plans. The County Planning Department does not feel that the proposed Project will impair implementation of or physically interfere with the County's adopted emergency response plan or emergency evacuation plans.

(h) The Project will not expose people or structures to a significant risk of loss, injury or death involving wildland fires. An approximately 90-foot long portion of the southern border of the site abuts an open space canyon that contains many acres of grasslands, with intermittently spaced clusters of coast live oak trees (evergreen) and limited native shrubs. Annual vegetation cutting (grass) of the portion of this open space adjacent to the Project site is required by the County in order to minimize the risk of wildfire. The north, east and west sides of the site are improved with urban development and landscaping. County Fire Station #7 abuts the Project site along its eastern border, and is available to provide immediate service to the Project site and surrounding area in the event of an off-site wildfire. (Source: Site Reconnaissance) **(Mitigation Measure Haz-5)** Project construction plans and support documentation shall be submitted to the Alameda County Fire Department for review and approval prior to the issuance of Project building permits. Plans shall comply with the requirements of Title 14 and Chapter 7A of the 2013 California Building Code. In addition, the size of each lot shall be identified on plans, all buildings shall be provided with fire sprinklers, and the locations of all fire hydrants within 500 feet of the Project site shall be identified.

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
IX. HYDROLOGY AND WATER QUALITY – Would the project:				
a) Violate any water quality standards or waste discharge requirements?			X	
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted?)				X
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?			X	
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?			X	
e) Create or contribute runoff water which would exceed the capacity of existing or planned storm			X	

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
water drainage systems or provide substantial additional sources of polluted runoff?				
f) Otherwise substantially degrade water quality?			X	
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary of Flood Insurance Rate Map or other flood hazard delineation map?				X
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				X
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				X
j) Inundation by seiche, tsunami, or mudflow?				X

Notes:

(9) Hydrology and Water Quality.

- (a) Project construction in accordance with standard County practices, and eventual occupation of the proposed housing are not anticipated to involve any activities or use of water that would violate any water quality standards or waste discharge requirements. Construction of the proposed Project will involve site grading for the access roadway, construction of the proposed on-site storm drain system components and detention vault, trenching for underground utilities, and grading for the seven home sites and open areas. The 1.28-acre site development will generate less than one-acre of impervious surface. The primary mechanism for assuring water quality control for the Project will be the County storm water permit. The grading permit will require water quality measures during construction grading operations, but the storm water permit will require overall quality control during the entire construction and post-construction periods. To mitigate potential impacts resulting from this work: **(Mitigation Measure Hyd-1)** All Project related work shall be completed in compliance with all applicable Alameda County ordinances, guidelines, and

permit requirements. All roadway and storm drainage facilities shall conform to the County's Subdivision Design Guidelines and Hydrology and Hydraulics Criteria Summary. The developer shall file a Notice of Intent and obtain approval of and implement a Storm Water Pollution Prevention Plan (SWPPP). The developer shall further obtain approval of a storm water C.3/C.6 Permit and implement the applicable construction related BMP storm water controls. **(Mitigation Measure Hvd-2)** The Project shall conform to all requirements and provisions of the Alameda County Grading Ordinance. **(Mitigation Measure Hvd-3)** The developer shall obtain a water quality certification or waiver from the Regional Water Quality Control Board. This process ensures conformance to BMPs during construction to control wind and water erosion that could affect surface and ground water quality. **(Mitigation Measure Hvd-4)** The Project shall comply with the C.3 Provisions of the Alameda County Municipal Regional Storm Water Management and National Pollutant Discharge Elimination System (NPDES) Permit (MRP)–NPDES Permit No. CAS612008. The Project sponsor shall demonstrate compliance with the County's NPDES permit C.3 requirements by preparing a detailed Storm water Management Plan (SMP), incorporating the most appropriate post-construction source control measures into the Project design. All accessible on-site inlets shall be marked with the words "No Dumping! Flows to Bay!" Final landscape plans shall be designed to minimize irrigation and runoff and minimize use of fertilizers and pesticides that could contribute to storm water pollution. The runoff from all of the created impervious surfaces shall be collected and treated in accordance with the requirements of the MRP. The site's soil percolation rate shall be determined to identify the C3 feasibility of the proposed treatment types. This information shall be submitted for review and approval prior to any C3 approvals. The SMP shall be prepared during County's review of project engineering design and shall incorporate the required post-construction (permanent) storm water quality controls. The SMP should include, but is not limited to the following:

1. The proposed finished grade
2. The storm drainage system including all inlets, pipes, catch basins, overland flows, outlets and water flow directions
3. The permanent storm water treatment system (soil and landscape based treatment facilities, filters and separators), including all design details
4. Design details of all source control measures (preventing contact between storm water and potential sources of pollution) and site design measures (reductions in flow from impervious surfaces) to be implemented
5. Calculations demonstrating that storm water treatment measures are hydraulically sized as specified by the County's storm water permit
6. An Operations and Management Plan to ensure continued effectiveness of structural BMPs and implementation of non-structural BMPs.

Implementation of Mitigation Measures Hyd-1 through Hyd-4 would reduce the potential impacts on water quality resulting from construction and post-construction activities to a level of less than significant.

- (b) The Project is therefore not expected to deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted). Potable water is presently provided to the Project site by way of the public water distribution system

located in Villareal Drive. There are no existing or proposed constructions of on-site water wells.

- (c) The Project will not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site. The Project site does not contain a stream or river. The site is presently transected by a 1-1/2 to three-foot deep east/west drainage swale. The swale drains to the east boundary but appears to be cut off from any other drainage features. Therefore, the swale is no longer a significant drainage feature. As a result, runoff generally sheet flows over the site, with much of it going to either Clement Drive or into the Palomares Hills Community Center drainage system. This water eventually ends up in Villareal Drive storm drainage main. (Source: Site Reconnaissance; Phase I Assessment, page 4)
- (d) The Project will not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. The site does not contain a stream or river. During periods of major storms, storm water will drain to an on-site underground water detention vault which will detain the water till after the peak storm period and then release it into the public storm drainage main in Villareal Drive. Each of the proposed on-site bio-retention areas are designed to include high-flow bypasses.
- (e) The Project will not create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff. The proposed bio-retention treatment system discussed above in Subsection 9d will limit the amount of runoff water to the pre-Project (existing) level. Polluted runoff water from rooftops, on-site roadways, etc. will filtrate through the bio-filtration treatment areas, thus not creating an additional source of polluted water in the public drainage system. The existing concrete drainage swale in Clement Drive is to be replaced to meet County standards.
- (f) The Project will not otherwise substantially degrade water quality. As noted above in Subsections 9d and 9e, polluted runoff water from rooftops, on-site roadways, etc. will filtrate through the bio-filtration treatment areas, thus not substantially degrading water quality.
- (g) The Project will not place housing within a 100-year flood hazard area as mapped on the FEMA Flood Hazard Boundary of Flood Insurance Rate Map or other flood hazard delineation map. According to the FEMA Flood Insurance Flood Map, the site is not located within a zone designated as “100-year flood hazard area.” (Source: www.fema.gov; FEMA, National Flood Insurance Rate Map)
- (h) The Project is not proposed to be located within a 100-year flood hazard area that might otherwise impede or redirect flood flows. See Subsection (g) above.
- (i) The Project will not expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam. The site is not located within a dam or levy failure zone.

- (j) Inundation by seiche, tsunami, or mudflow is highly unlikely. The site is located at elevation 740 feet above mean-sea level. This high elevation along with the considerable site distance from the Pacific Ocean preclude the possibility of inundation from a seiche or tsunami. The site is further situated near the top of the ridge of the hill on which it is located, thus precluding the potential of inundation by mudflow.

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
X. LAND USE AND PLANNING – Would the project:				
a) Physically divide an established community?				X
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?			X	
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?				X

Notes:

(10) Land Use and Planning.

- (a) Project will not physically divide an established community. Future development of the Project site was planned as part of the original Palomares Hills Development. The Project site is situated along the southern edge of the existing urban portion of the Development and has been graded and provided with public infrastructure service in anticipation of future development. (Source: Site Reconnaissance)
- (b) It is not likely the Project will conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the Alameda County General Plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect. The site is not located within a specific plan or local coastal program area. The site has been designated for many years on both the County General Plan Land Use Map and Zoning Map for future neighborhood commercial use. However, since this use has not proven to be economically viable over the years, the site is now proposed for single-family residential development similar to that existing on the opposite side of Villareal Drive. (Source: Alameda County General Plan Land Use Map; Alameda County Zoning Map)

- (c) The Project will not conflict with any applicable habitat conservation plan or natural community conservation plan. The site is not located within a habitat conservation plan or natural community conservation plan area. (Source: www.fws.gov)

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
XI. MINERAL RESOURCES – Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X

Notes:

(11) Mineral Resources.

- (a) The Project will not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. The site does not have any known mineral deposits. No aggregate materials were observed on the site or surrounding area. The site is not built upon land which contains abandoned/inactive mines, mine waste and/or unusual conditions resulting from past mining, milling, and/or smelting operations. (Source: Site Reconnaissance, California Division of Mines and Geology - www.consrv.ca.gov)
- (b) The Project will not result in the loss of availability of a locally important mineral resource recovery site delineated on the Alameda County General Plan, specific plan or other land use plan. (Source: Alameda General Plan, Palomares Hills Master Development Plan)

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
XII. NOISE – Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			X	
b) Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?				X
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X
f) For a project within the vicinity of a private airship, would the project expose people residing or working in the project area to excessive noise levels?				X

Notes:

(12) Noise.

- (a) The Project will not result in exposure of persons to or generation of noise levels in excess of standards established in the Alameda County General Plan or noise ordinance, or applicable standards of other agencies. The Project site is located next to two existing facilities that periodically generate higher volumes of noise: County Fire Station # 7 to the east, and the Palomares Hills Community Center to the west. Primary Fire Station noise sources include sirens, truck engines, employee and visitor traffic, and maintenance and repair work. The primary location of the noise will be emanating from the northwest corner of the Fire Station site at the intersection of Villareal Drive and Clement Street. Lot 4 of the Project area will be the greatest receptor of Fire Station noise, since it is located directly across Clement Street from the Station. The Clement Street width will help to reduce the level of noise, as will the Fire Station garage door setback of approximately 35 feet from Clement Street. The home on Lot 4 is proposed to be setback approximately 50 feet from Villareal Drive. This setback will help to further reduce noise impacts on Lot 4 since it situates the house such that it does not align with the Fire Station driveway. Although the Project site plan has been prepared to minimize noise impacts from the Station, additional mitigation will be needed to protect future Project area residents from significant noise impacts, as provided later in this subsection. The Palomares Hills Community Center Building is located along the west side of the Project site, adjacent to Lots 1, A (located between Lots 1 and 7), 5, 6 and 7. Lot 1 is situated next to the Community Center parking lot, and Lots 5-7 are next to the Community Center pool area. Both the Community Center parking lot and pool area are sources of occasional noise. The proposed Project plans for the construction of a wood fence along the western property line of Lot 4 will help to reduce noise and provide for privacy. A six-foot high concrete wall was constructed along the southern (rear) property lines of Lots 5-7 in conjunction with the development of the Community Center complex. This wall will provide adequate sound mitigation for the pool related noise impacts on the Project site. The following mitigations are required to adequately mitigate the remaining above referenced Fire Station and Community Center noise impacts on the Project. **(Mitigation Measure Noi-1)** All homes shall be constructed with noise attenuation design techniques and insulation materials adequate to meet all applicable Alameda County noise standards for housing. **(Mitigation Measure Noi-2)** A decorative six-foot high, solid board noise attenuation wall shall be constructed along the western boundaries of Lot 1 and Lot A. **(Mitigation Measure Noi-3)** The title reports for all seven residential lots shall be recorded with a statement indicating that the Project site is bordered by the Fire Station to the east and the Palomares Hills Community Center to the west, and that these uses are the source of routine noise nuisances. It is likely that with the above mitigations, the Project will not result in exposure of persons to or generation of noise levels in excess of standards established in the Alameda County General Plan or noise ordinance, or applicable standards of other agencies.
- (b) The Project will not result in exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels. Future residents of the Project and the existing housing to the north, as well as occupants of the Community Center

- building to the west and Fire Station #7 to the east are not expected to generate excessive ground borne vibrations or ground borne noise. **(Mitigation Measure Noi-4)** Short-term ground borne vibrations and ground borne noise created when Project construction occurs shall be confined to regular work hours, and subject to all applicable Alameda County noise standards. With this mitigation, it is not likely the Project will result in exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels.
- (c) The proposed development will not result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project. Limited-sized single-family housing developments are not considered to be substantial noise generating uses. Limited vehicular traffic of approximately 77 trips per day will add slightly to the existing ambient noise level along Villareal Drive.
 - (d) The proposed development will not result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project. Temporary noise will be created during Project construction by construction activities, equipment, vehicles, etc. **(Mitigation Measure Noi-5)** Project construction noise shall be confined to regular work hours, and subject to all applicable Alameda County noise standards. With this mitigation, it is not likely the Project will result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project.
 - (e) The Project is not located within an airport land use plan, or within two miles of a public airport or public use airport, and as such will not expose people residing in the Project area to excessive noise levels. (Source: GlobalAir.com)
 - (f) The Project is not located within the vicinity of a private airship that would expose people residing in the Project area to excessive noise levels. (Source: GlobalAir.com)

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
XIII. POPULATION AND HOUSING – Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X

Notes:

(13) Population and Housing.

- (a) The proposed seven-unit housing development will not induce substantial population growth in the area, either directly or indirectly. The Project site has been planned since approximately 1978 for urban development as part of the Palomares Hills Development. The site is further surrounded by existing urban development to the north, east and west, and by steep undevelopable open space lands to the south. (Source: Site Reconnaissance)
- (b) The Project will not displace existing housing, necessitating the construction of replacement housing elsewhere. The Project site is presently vacant. (Source: Site Reconnaissance)
- (c) The Project will not displace people, necessitating the construction of replacement housing elsewhere. The Project site is presently vacant. (Source: Site Reconnaissance)

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
XIV. PUBLIC SERVICES				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which would cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?			X	
Police protection?			X	
Schools?			X	
Parks?			X	
Other public facilities?			X	

Notes:

(14) Public Services.

(a) The Project will not result in substantial adverse impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:

- Fire Protection
- Police Protection
- Schools
- Parks

- Other Public Facilities.

Upon completion, the proposed seven-unit housing development will utilize existing public services and facilities. Fire protection and related emergency services will be provided by the Alameda County Fire Department from Fire Station #7 that abuts the eastern side of the Project site. New or altered fire protection facilities will not be necessary to serve the incremental needs of the Project.

Police protection will be provided by the Alameda County Sherriff's Department (general police services) and the California Highway Patrol (traffic only). New or altered police facilities will not be necessary to serve the incremental needs of the Project.

Public school facilities for the Project site are provided by the Castro Valley Unified School District. The nearest public schools include Jensen Ranch Elementary School, Canyon Middle School, and Castro Valley High School. It is estimated that the proposed seven-unit housing development will result in approximately 21 new residents. Of this total, the limited number of school-aged children will not adversely affect the service ratios of the School District, nor will it result in the need for new or altered school facilities to be built. The impact from seven additional homes will be adequately mitigated by the payment of the statutory required impact mitigation fee or "developer" fee at rates implemented and applicable to the Project at the time of building permit issuance.

The Project site is located within the Palomares Hills Development which provides private park and recreational facilities to its residents. Substantial private facilities are available immediately next to the Project site and throughout the Palmares Hills area, including play areas for children, picnic areas, tennis courts, basketball courts, playfields, trails and large-acreage open space. These facilities are considered to be adequate to serve the park, recreation and open space needs of future Project residents.

Other public facilities presently provided to the Project site include: water supply (East Bay Municipal Utilities District), sanitary sewer (Castro Valley Sanitary District), storm drainage (Alameda County Flood Control and Water Conservation District), gas and electric service (PG&E), telephone service (AT&T), and cable television service (Comcast).

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
XV. RECREATION				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?			X	
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?				X

Notes:

(15) Recreation.

- (a) Since the proposed Project is supported by substantial private park, recreation and open space amenities as discussed above in Section 14, it is not expected to increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated. (Source: Site Reconnaissance)
- (b) The Project does not include any recreational facilities, nor will it require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment.

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
XVI. TRANSPORTATION / TRAFFIC – Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways, and freeways, pedestrian and bicycle paths, and mass transit?			X	
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?				X
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				X
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?			X	
e) Result in inadequate emergency access?				X

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?			X	
g) Result in inadequate parking capacity?				X

Notes:

(16) Transportation / Traffic.

- (a) The Project is not expected to conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways, and freeways, pedestrian and bicycle paths, and mass transit. The proposed 7-unit single-family residential project is projected to generate approximately 77 vehicular trips per day. This projection is based on an average daily trip ratio of approximately 11 trips per unit. This minimal level of traffic is far less than the existing commercial zoning would otherwise generate at the site. Since the surrounding Palomares Hills Development street system (including Villareal Drive and Clement Street) were planned and constructed to accommodate development of the Project site with a higher level of traffic than is now proposed, it is anticipated the local streets will adequately accommodate the proposed Project. Similarly, the existing outlying pedestrian system (sidewalks, trails and bicycle paths) were planned and constructed assuming future development of the Project site with a higher intensity of use anticipated. The Castro Valley BART Station is located approximately two miles to the south west of the site along Interstate-580.
- (b) The Project will not likely exceed, either individually or cumulatively, a level of service standard or traffic demand measure established by the County Congestion Management Agency (CCMA) for designated roads and highways. The proposed single-family residential project will generate fewer vehicle trips on the outlying CCMA designated roads and highways than was projected for the commercial uses that are zoned for the Project site.
- (c) The Project will not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks. The Proposed Project is projected to generate an increase in resident population of approximately 21 persons. This minimal population increase along with the Project site's distance from the closest airport facilities (Hayward Executive Airport located

over two miles to the southwest) is not expected to result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

- (d) The Project will not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). A 250-foot long sight distance protection strip is planned along a portion of the curvilinear site frontage at Villareal Drive. This landscape strip is necessary to prevent potential line-of-sight obstructions from occurring in this area, including walls, fences and signs or foliage higher than 42 inches from street grade. In the case of trees, branches are to be trimmed up to 8-feet-6-inches above the street grade. No incompatible uses (e.g., farm equipment) are anticipated in conjunction with the proposed housing Project. **(Mitigation Measure Tra-1)** The existing roadway width within the public right of way of Clement Drive at Villareal Drive shall not be reduced. The existing curb return radius and curb-line alignment along the southwest corner of the intersection of Clement Drive and Villareal Drive shall not be reduced. The width of Clement Drive shall be subject to review and approval by the Alameda County Fire Department prior to approval of Project improvement plans. The limits of public right of way and easements shall be clearly delineated and labeled on Project improvement plans. **(Mitigation Measure Tra-2)** The proposed curb ramp and the landing area behind the ramp shall be designed to meet current Caltrans Standards. (Please refer to the revised Caltrans Standard Plans A88A for details and information). The sidewalk located in the vicinity of the curb ramp may need to be widened to provide adequate pedestrian access and landing area at the curb ramp.
- (e) The Project will not result in inadequate emergency access. The 1.28-acre site is located adjacent to County Fire Station #7 on the opposite side of Clement Street to the immediate east. Project homes are to be accessible by way of a 25- and 30-foot wide interior private roadway, with a hammerhead turnaround at the end. These facilities are designed to conform to Fire Department standards.
- (f) The minimal additional residents generated by the proposed Project (21 persons) will not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.
- (g) The Project will not result in inadequate parking capacity. A minimum of four on-site parking spaces are proposed for each of the seven lots, including two indoor garage spaces per lot. Eight guest parking spaces are also proposed within the Project area. This exceeds the current County minimum requirement for guest parking. However, one of the guest spaces is a parallel parking space that does not meet current County standards for accessibility. **(Mitigation Measure Tra-3)** The one proposed parallel parking space shall be deleted from plans and replaced with landscaping. All guest parking spaces shall have a minimum backup of 25 feet paved surface.

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
XII. UTILITIES AND SERVICE SYSTEMS – Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				X
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?				X
e) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				X
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?				X
g) Comply with federal, state, and local statutes				X

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
and regulations related to solid waste?				

Notes:

(17) Utilities and Service Systems.

- (a) It is not likely that the proposed seven-unit housing project will exceed wastewater treatment requirements of the California Regional Water Quality Control Board (RWQCB). Wastewater needs for the Project site were originally projected based upon the commercial uses for which the site is zoned. The proposed residential project will likely generate less wastewater than would a commercial project at the site, thus not exceeding the planned treatment requirements of the RWQCB.
- (b) The Project will not require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which might otherwise cause significant environmental effects. Existing water and wastewater treatment facilities were planned and sized in conjunction with the original Palomares Hills Development with adequate capacity to accommodate development of the Project site.
- (c) The Project will not require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. During periods of major storms, storm water will drain to an on-site underground water detention vault which will detain the water till after the peak storm period and then release it into the public storm drainage main in Villareal Drive. As a result, the Project will not require or result in the construction of new storm water drainage facilities or expansion of existing facilities.
- (d) The Project site has sufficient water supplies available to serve it from existing entitlements and resources secured in conjunction with the Palomares Hills Development in which it is located.
- (e) The Project will likely result in a determination by the Castro Valley Sanitary District (CVSD), which provides wastewater treatment service for the Project site, that it has adequate capacity to serve the Project’s projected demand in addition to the Districts existing commitments. Wastewater service commitments were originally granted for the Project site in conjunction with the original master plan for the Palomares Hills Development.
- (f) The Project will be served by the North Vasco Landfill located in north Livermore that has sufficient permitted capacity to accommodate the Project’s solid waste disposal needs.
- (g) The Project will comply with federal, state, and local statutes and regulations related to solid waste.

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?			X	
b) Does the project have the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals?				X
c) Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the			X	

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
effects of probable future projects)				
d) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?				X

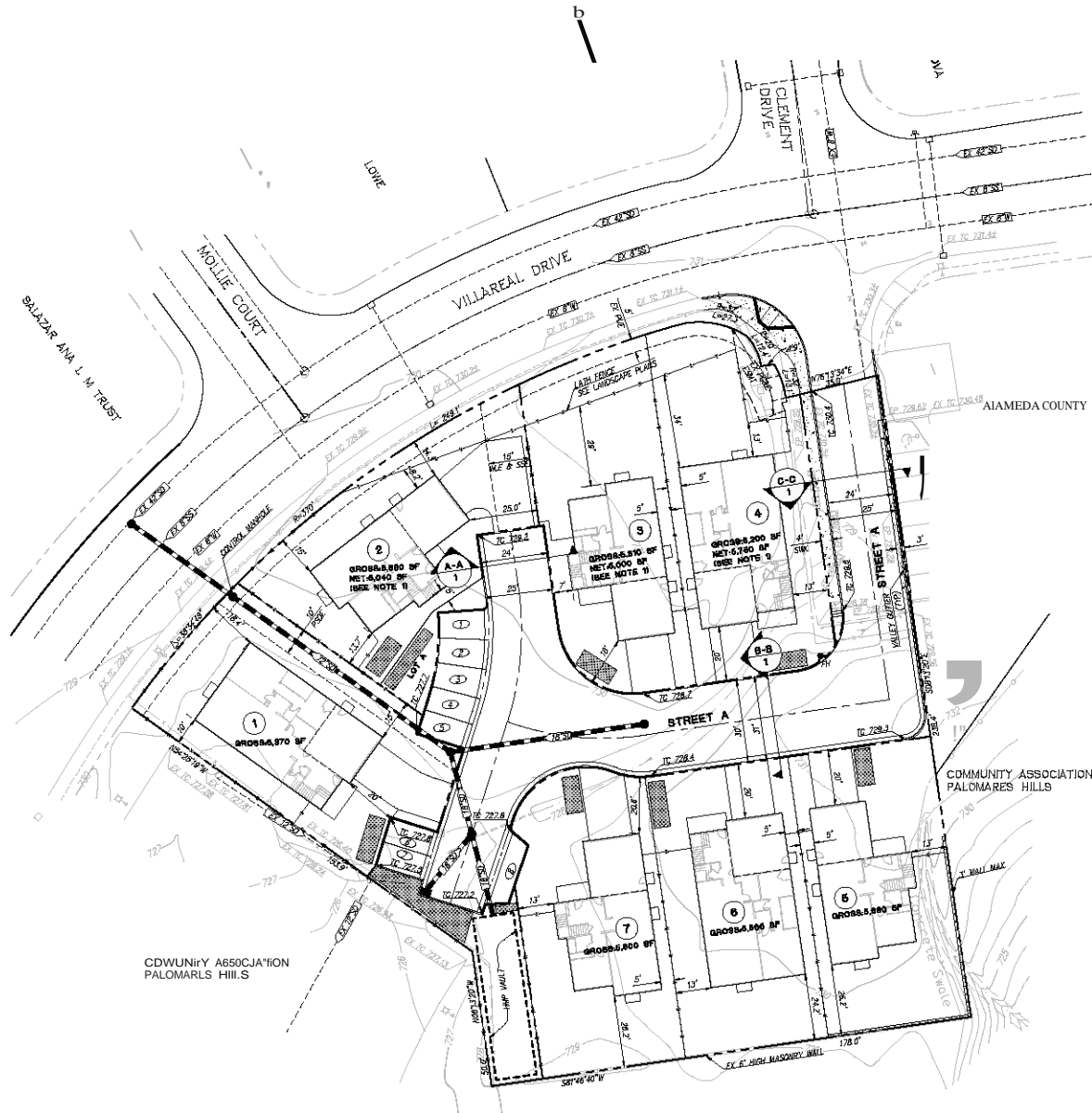
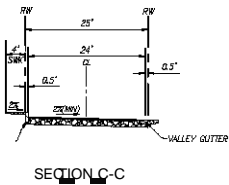
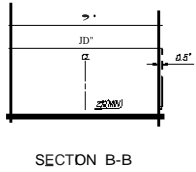
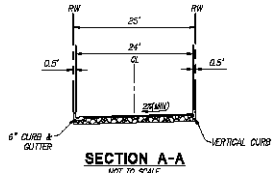
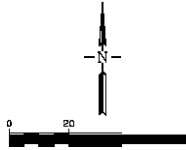
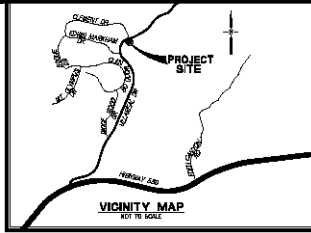
(18) Notes:

- (a) The Project does not pose the potential to degrade the quality of the environment. The Project will not substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory. The vacant Project site was previously flat-graded in conjunction with the original Palomares Hills Development mass site grading work and does not presently contain any trees, shrubs or wetlands. The site is fenced on all sides and surrounded by urban development on 3-1/2 sides. The Project is therefore not anticipated to have any future significant impacts on plants, animals, habitat or California history or prehistory.
- (b) The Project does not have the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals. The Project site was originally planned for urban development in conjunction with the long-term build-out of the Palomares Hills Development, and the current Project is intended to help achieve this long-term plan.
- (c) The Project does not have impacts that are individually limited, but cumulatively considerable. (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.) The impacts posed by the proposed seven housing unit project, when combined with those of the greater Palomares Hills neighborhood are not considerable, and have been adequately mitigated through the original Development project environmental review process and the current Project’s Mitigated Negative Declaration.
- (d) The Project does not have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly. As identified throughout this Initial Study, all potentially substantial adverse effects on human beings, either directly or indirectly, have been reduced to less than significant through various mitigation measures.

ATTACHMENTS

ATTACHMENT A SITE LOCATION MAP/DEVELOPMENT PLAN
ATTACHMENT B PHASE I ENVIRONMENTAL SITE ASSESSMENT
ATTACHMENT C GEOTECHNICAL INVESTIGATION

ATTACHMENT A - SITE LOCATION MAP/DEVELOPMENT PLAN



LEGEND

- BIO-RETENTION TREATMENT AREA
- PUBLIC UTILITY EASEMENT
- WATER LINE EASEMENT
- SANITARY SEWER SYSTEM

NOTES

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SITE DEVELOPMENT PLAN
TRACT 8218 RUTISHAUSER PROPERTY

CASTRO VALLEY, ALAMEDA COUNTY, CALIFORNIA
FOR: DRQBUILDERS. C

'RJA-
RUGGERI-JENSEN-AZAR
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ATTACHMENT B - PHASE I ENVIRONMENTAL SITE ASSESSMENT

**PHASE ■ ENVIRONMENTAL
SITE ASSESSMENT
VILLAREAL AND CLEMENT DRIVE
CASTRO VALLEY, CALIFORNIA**

Prepared for:
DRG Builders, Inc.
3480 Buskirk Avenue, Suite 260
Pleasant Hill, California 94523

Project No. REE-62-1E-14
August 15, 2014

ROSEWOOD ENVIRONMENTAL ENGINEERING
1079-B Sunrise Boulevard, Suite 168
Roseville, California 95661

Project No. REE: 62-IE-14
August 29, 2014

Mr. Doyle Heaton
DRG Builders, Inc.
3480 Buskirk Avenue, Suite 260
Pleasant Hill, California 94523

Subject: Phase I Environmental Site Assessment
Villareal Drive & Clement Drive
Castro Valley, California

Dear Mr. Heaton:

At your request, Rosewood Environmental Engineering has conducted a Phase I Environmental Site Assessment (ESA) for the above referenced site. The following is a copy of the report, which presents the results of our assessment according to ASTM E1527-2013 standard.

Should you have any questions relating to the contents of this report or require any additional information, please contact our office at your convenience.

Very truly yours,
Rosewood Environmental Engineering

Reviewed by:



Cheryl Ely-Chester, NREP
Managing Principle Engineer

Copies:

LETTER OF TRANSMITTAL

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PHASE I ENVIRONMENTAL SITE ASSESSMENT

1.0 INTRODUCTION

1.1 Purpose

The purpose of conducting this Phase I Environmental Site Assessment is to provide an independent, professional opinion regarding recognized environmental conditions (RECs), if any, associated with the Site as due diligence documentation in a property transaction. The subject property comprises approximately 1.2 acres in an irregular hexagonal shape and is located at the junction of Villareal Drive and Clement Drive in the City of Castro Valley, County of Alameda, California. The Phase I Environmental Site Assessment complies with the US EPA 40 CFR 312 "Standards and Practices for All Appropriate Inquiries" referred to as the "AAI Rule" and conforms to the ASTM E1527-2013 standard for conducting Phase I Environmental Site Assessments. The subject property was evaluated for the presence of potentially adverse environmental conditions and the adjacent properties were evaluated for secondary potential contaminated sites with a review of potential contamination sources within a 1/4-mile radius of the Site.

The Phase I Environmental Assessment was prepared for the use of our client, DRG Builders, Inc., and their lender, who can rely on this report for evaluating the environmental conditions of the property. Per EPA AAI Rule the findings and opinions of this report expire 180 days from the date of issuance.

1.2 Scope

Rosewood Environmental Engineering performed the following services in accordance with the terms of agreement as set forth in the proposal and services agreement:

- a) Perform a field reconnaissance of the subject property for significant surficial signs of hazardous waste release, storage of hazardous materials, and surficial indications for the presence of underground storage tanks (USTs), water wells, and other indicators of past land use related to recognized environmental concerns;
- b) Off-site research into past land use of the target property involving, as applicable, telephone and personal interviews with government personnel and the review of historical documents, including a chain-of-ownership of the subject property;
- c) A review of available aerial photographs and historical maps and photos for obvious surface features indicative of past land use with attention to indicators of hazardous materials or waste use, disposal, or storage;
- d) An interview or filled questionnaire with the current property owner and people knowledgeable about the site and surrounding area history;

- e) A review of fuel leak and chemical release database lists and files for soil and groundwater contamination cases within a 1-mile radius from the subject site as made available through the appropriate Federal and State and local regulatory agencies, if available;
- f) Documentation of the site with photographs;
- g) Preparation of this report.

1.3 Environmental Professional Statement

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in § 312.10 part of 40 CFR 312. I have the specific qualifications based on education, training and experience to assess a property of the nature, history and setting of the subject property. All services for the Phase I Environmental Assessment were performed under my direct supervision and I performed the Site Visit. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.



Cheryl Bly-Chester, Managing Principal Engineer
Registered Environmental Property Assessor (REPA)



2.0 SITE LOCATION AND DESCRIPTION

2.1 Location

The Site is located at the southeast corner of the Villareal Drive and Clement Drive in Castro Valley, Alameda County, California, California (Figure 1). The irregular hexagonal Site, approximately 1.2 acres, is identified by APN 085A-6405-166 (Figure 2).

Figure 1 – Site Location Map

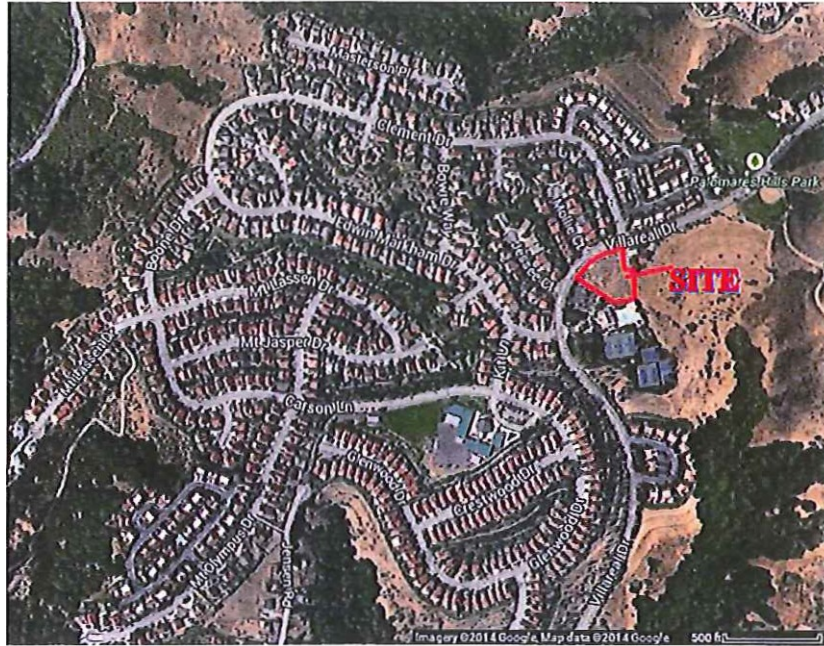
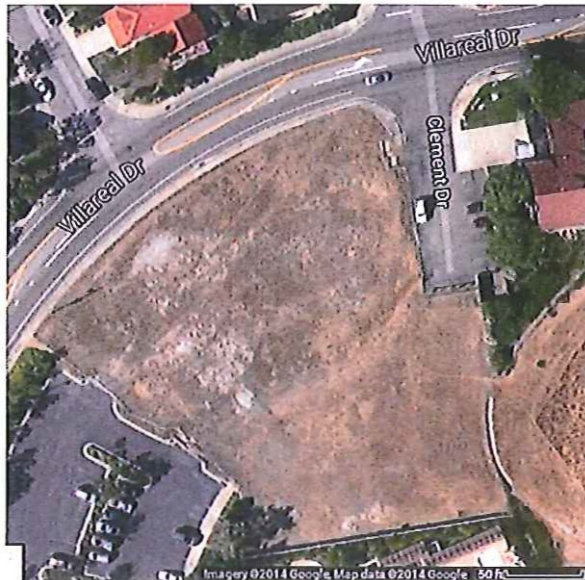


Figure 2 – Site Map



2.2 Topography and Drainage

Based on the most recent USGS historical topographic map of Hayward *T/h* minute quadrangle (1993), the subject site is flat and the surface slopes very slightly to the east-northeast at an elevation of approximately 740 feet above mean sea level (msl). Historical topographic maps are included in Appendix A.

The regional surface drainage appears to flow into a series of canyons, draining first to the floor of the canyons, then into Don Castro Reservoir or Cull Canyon Lake to the southwest and west of the Site respectively.

The Site is transected by a 1 Y2-3 foot deep swale from east to west. The swale drains to the east boundary but appears to be cut off from any other drainage features. Therefore, the swale is no longer a significant drainage feature, and it is not clear what it was a drainage for in the past. There has been some heavy vehicle access across the swale, with a 7-inch white PVC pipe inserted into the gravel fill for that access culvert allowed drainage through the access. The east end of the culvert is blocked but not entirely closed and does not appear to be effective.

The Site is on the edge of a large mass grading for hillside slope stabilization. While there is no immediate evidence that the Site is affected by the grading, it is difficult to distinguish from surface features if the site itself was effected by fill or cut. The geotechnical borings will provide more information.

The north and west quadrants of the Site drain to the west, where the adjacent parking lot is underlain by a storm drain system. The south and east quadrants drain to the southeast and down to the canyon and San Lorenzo Creek. As part of a mass grading operation between 1979 and 1980, concrete drainage ditches are staged up the canyon slopes. One of these drainage ditches follows the east-southeast border of the Site for approximately 50 feet.

2.3 Geology/Hydrogeology

The subject property is located in the Coastal Range province. The Coastal Ranges are northwest-trending mountain ranges (2,000 to 4,000, occasionally 6,000 feet elevation above sea level) and valley. The ranges and valleys trend northwest, subparallel to the San Andreas Fault. Strata dip beneath alluvium towards the east and the Central Valley. To the west is the Pacific Ocean. The Coastal Ranges are composed of thick Mesozoic and Cenozoic sedimentary strata. The northern and southern ranges are separated by a depression containing the San Francisco Bay.

The northern Coast Ranges are dominated by irregular, knobby, landslide-topography of the Franciscan Complex. The eastern border is characterized by strike-ridges and valleys in Upper Mesozoic strata. The Coastal Ranges are subparallel to the active San Andreas Fault. The San Andreas is more than 600 miles long, extending from Pt. Arena to the Gulf of California. West of the San Andreas is the Salinian Block, a granitic core extending from the southern extremity of the Coast Ranges to the north of the Farallon Islands (California Geographical Survey, 2002).

Seismicity

Castro Valley's nearest extension of the San Andreas Fault is the Hayward Fault, which has historically shown seismic activity. On October 21, 1868, Hayward experienced "The Great One," an earthquake approximating a 6.8-7.0 on the Richter scale as historians can estimate. Ground rupture was traced for 20 miles from San Leandro to Fremont. This event significantly damaged most of the buildings then standing in Hayward and Castro Valley. This was the last significant activity focused on the Hayward Fault Zone. According to the California Department of Conservation Liquefaction Susceptibility Map of the Bay Area, the Site is in a zone of moderate to low liquefaction.

Flood Potential

According to the FEMA Flood Insurance Site, at 740-ft elevation, is outside the 100-year flood plain, at low risk of flooding.

Soil Deposits

According to the USGS map of Quaternary Deposits, the region around the Site is underlain by alluvium soil with poorly consolidated deposits of gravel, sand, and silty clay, dating to the Holocene era (Qhf).

Oil and Gas Wells

There are no oil and gas wells in the vicinity of the Site. The nearest well is approximately 5 miles away, owned by Tri-Union Development Corp. This and the next five closest wells are plugged and abandoned safely.

3.0 SITE RECONNAISSANCE

A Rosewood Environmental Engineer, a qualified environmental professional, performed a site reconnaissance visit on August 12, 2014. All areas of the Site were observed and there are no data gaps. The weather was partly cloudy with a slight breeze. The temperature was 82 degrees F, and the most recent rain was six days prior to the Site visit. Photographs taken during the Site Reconnaissance are available in Appendix B.

Rosewood Environmental Engineering observed that shape of the property is an irregular hexagonal shape and is located at the junction, fronting on the southeastern side of Villareal Drive between Jessee Court and Clement Drive. There are utility vaults on the north corner of the Site from Pacific Gas & Electric and Pacific Bell Telephone.

The Site is transected from east to west by a 1 -3 foot deep swale. The swale drains to the east boundary but appears to be cut off from any other inflow drainage features. Therefore, the swale is no longer a significant drainage feature, and it is not clear what it was a drainage for in the past. There has been some heavy vehicle access across the swale. Access was created by filling a short stretch of the fill to form a road and inserting a 7-inch white PVC pipe into the gravel fill as a makeshift culvert. The east end of the culvert is blocked but not entirely closed and does not appear to be effective.

The Site is on the edge of a large mass-grading for hillside slope stabilization. While there is no immediate evidence that the Site is affected by the grading, it is difficult to distinguish it from visual inspection if the site itself was effected by fill or cut. Geotechnical borings will provide more information.

The north and west quadrants of the Site drain to the west, where the adjacent parking lot is underlain by a storm drain system. The south and east quadrants drain to the southeast and down to the canyon and San Lorenzo Creek. As part of a mass-grading operation between 1979 and 1980, concrete drainage ditches are staged up the canyon slopes. One of these drainage ditches follows the east-southeast border of the Site for approximately 50 feet.

Vegetation was abundant at the Site but cut close to the ground. Most appeared to be dried grass and starthistle. Some areas of sparse vegetation were noted at the north corner, northwest, and south areas of the Site. There appeared to be displaced soil and gravel, such as washout from cement mixers.

Near the center of the Site approximately four feet of 7-inch PVC pipe protruded vertically. Soil and other refuse had collected in the open end of the pipe. There did not appear to be a purpose for the pipe, nor an underground connection.

A black 5-inch ribbed pipe appeared to enter the soil from the southwest edge of the Site. It was not clear whether it extended into the Site, or serviced the irrigation system of the adjacent recreational center.

Adjacent Properties

Alameda County Fire Station #7 is located on the adjacent property to the east. An above-ground tank holding approximately 500 gallons was observed, with secondary containment measures and no apparent deterioration or release.

A recreational center borders the southwest and south of the Site. There are multiple tennis courts, a swimming pool, and a parking lot on the property.

To the north and northwest are residential single-family dwellings.

To the southeast is a substantial slope downwards (approximately 200-300 feet) with stepped concrete drainage ditches.

4.0 REGIONAL AND SITE HISTORY REVIEW

The history of the site was summarized based on examination of documents pertaining to the historical significance of the land-use at the property within local agencies, online sources such as City and County websites, chain-of-ownership documents, a Property Tax map, a City Directory search, a Sanborn Fire Insurance Map search, historical aerial photographs, historical topographic maps, and Sanborn Fire Insurance Maps, and interviews and questionnaires from persons knowledgeable about the Site. Historical documents are in Appendix C.

Aerial photographs and topographic maps were researched online or on file with Rosewood Environmental Engineering. Data for the aerial photographs and chain of title are available in Appendices D and E, respectively. A summary is tabulated below:

Aerial Photographs Examined

<u>Flight Date</u>	<u>Approximate Scale</u>	Source
1939	1:690	EDR
1946	1:666	EDR
1950	1:604	EDR
1958	1:604	EDR
1966	1:508	EDR
1968	1:690	EDR
1979	1:666	EDR
1980	1:500	EDR
1993	1:500	EDR
1998	1:500	EDR
2005	1:500	EDR
2006	1:500	EDR
2009	1:500	EDR
2010	1:500	EDR
2012	1:500	EDR

Historical Topographic Maps

Date	Scale	USGS Topographic Map
1899	1:62500	15-Minute Haywards Quadrangle
1915	1:62500	15-Minute Hayward Quadrangle
1947	1:24000	7.5-Minute Hayward Quadrangle
1948	1:50000	15-Minute Hayward Quadrangle
1950	1:24000	7.5-Minute Hayward Quadrangle
1959	1:24000	7.5-Minute Hayward Quadrangle
1959	1:62500	15-Minute Hayward Quadrangle
1968	1:24000	7.5-Minute Hayward Quadrangle
1973	1:24000	7.5-Minute Hayward Quadrangle
1980	1:24000	7.5-Minute Hayward Quadrangle
1993	1:24000	7.5-Minute Hayward Quadrangle

Chain of Title

Year	Owner	<u>Transferred To</u>
1937	City of Oakland	Southern Pacific Transportation Co.
1970	Southern Pacific Transportation Co.	Foremost McKesson, Inc.
1974	Foremost McKesson, Inc.	Crocker Land Company
1978	Crocker Land Company	Shapell Industries of Northern California
2001	Shapell Industries, Inc.	Robert A. Baptiste
2002	Robert A. Baptiste	Christian Rutishauser
2002	Christine Rutishauser	Christian Rutishauser
2002	Christian Rutishauser	Christian Rutishauser & The Hoffman and Frank Vaughn 1995 Family Trust

4.1 Regional History

The Native American Ohlone and Coastanoan tribes hunted and fished in the areas of the East Bay for thousands of years in small, static villages. The marshland was abundant in plant and wildlife, with Oak, Bay, and Redwood forests covering many of the surrounding hills.

Spanish missionaries entered California in 1769, and Mission San Jose was founded in the area of the Site in 1797. Native Americans were taken in as laborers, converted to Christianity, and taught the traditions of Spanish customs to the detriment of their own cultural practices. Native American populations in the area were reduced as their traditional lands and lifestyle were disrupted by settlers.

In 1838, Don Guillermo Castro applied for and received a land grant of 28,000 acres, including the areas of Cull, Crow, and Palomares Canyons, which became known as Rancho San Lorenzo. Then 28 years old, Don Castro was married to Luisa Peralta of Rancho San Antonio and had fathered seven children. Rancho San Lorenzo became grazing land for Castro's 300 steer, 4,000 sheep, and 500 horses (Louge, 2005).

For 25 years, Don Castro sold smaller parcels of the rancho to cover rising gambling debts. While the Gold Rush of 1848 did not bring a fortune of gold from the land, it did bring squatters and trespassing hopeful miners to Castro Valley. During this period Don Castro met one such trespasser named William Hayward, who had come from Massachusetts to seek gold and proved to be a skilled cattle rancher. Don Castro hired Hayward and later sold 40 acres of land in what is now the town of Hayward (Louge, 2005).

Over time Don Castro's gambling debts overcame his land's mortgaged value. Faxon Dean Atherton purchased a large portion of the rancho in 1860 for \$400,000, and his family name persists today in the San Mateo community of Atherton. The remainder of the Rancho San Lorenzo was seized and sold in a sheriff's sale in 1864. Don Castro and his family left California for Chile (Louge, 2005).

Atherton parceled his land out to sell in sizes of 80-1200 acres for the next 15 years. Misters Cull and Luce purchased 2,400 acres covering Cull, Crow, and Redwood Canyons and erected a steam operated saw mill, among as many as nine other mills operating in the area (Louge, 2005).

The brothers E.R. and J.C. Jensen purchased 445 acres from Atherton in 1867 in the area that is now the Site. Their home has been maintained through the years and it is probably one of the oldest homes in Alameda County to be continually occupied by descendants of the original family. J.H. Strobridge came to Castro Valley to construct a railroad connecting Niles to Oakland. He arranged for his employer, the Southern Pacific Railroad, to purchase land including the site. In 1869, he personally purchased the 500-acre Laurel Farms and settled down around what is now Grove Way (Louge, 2005).

Anthony Chabot directed the construction of an earthen dam at the north end of Castro Valley in 1879, which created the 315 acre Lake Chabot (Louge, 2005).

An 1869 earthquake, then called "The Great One," opened a fissure and contaminated Coyote Creek and many area wells with salt water (Louge, 2005). The earthquake also leveled many of the buildings in the town then called "Haywards". The town rebuilt and thrived, with businesses, schools, and boulevards encouraging traffic and growth. The first organized fire protection of Castro Valley began in 1924 when Jerry Unser converted a 1917 Winston Touring Car to the first fire truck. The entirely volunteer force consisted of local business and officials.

Castro Valley became known for chicken ranching in the early 1900s, when there were only 373 families living in 57 homes in the area (Louge, 2005). Some operating ranches had as many as 3,000 chickens. C.B. Carrington became renowned for her business of breeding and hatching White Leghorn chicks, shipping newly-hatched chicks around the world. In the 1930s, advancements in automatic incubators enabled businesses to hatch up to 30,000 chicks per week. Meat rationing for World War II in the 1940s meant that no chick went unsold.

Interstate 580 connected Castro Valley to I-80 toward San Francisco and I-5 to Tracy in 1947 (though it was then known as I-5W, and was renamed in 1967). The Bay Area Rapid Transit rail, built in 1971, follows I-580 through the town (Faigin, 2012).

Today, Castro Valley is surrounded by housing for a population of 60,000 instead of agriculture, and is the second largest unincorporated area in California.

4.2 Site Specific History

To the best of Rosewood Environmental Engineering's ability, the following historical review was extrapolated based on accounts by the owners and neighbors of the property, historical aerial photographs and maps, chain of ownership information, records of the site, and other historical documents. Chain of ownership documents can be found in Appendix E.

The hills around Palomares and Eden Canyons was used as grazing land for cattle, sheep, and horses in the mid-1800s. With very little gold in the area, excitement over the Gold Rush brought alternately hopeful and disappointed prospectors, most of whom moved on.

The land changed hands but remained unsettled, eventually resting in the ownership of the Southern Pacific Transportation Company. In 1970, Foremost McKesson, Inc., acquired the property, and began breeding and grazing dairy cattle (McKesson, 2012).

The land would not be developed until Shapell Industries of Northern California took the deed in 1978 and performed a mass grading operation over the next few years, leveling the elevation of the hill beside Palomares and Eden Canyons to accommodate development of residential housing. The fire station and recreational center, adjacent to the east and southwest of the Site respectively, were also constructed during their ownership of the Site.

The Site remains graded but unimproved today, in the shared ownership of Christian Rutishauser & The Hoffman and Frank Vaughn 1995 Family Trust.

4.3 Interviews

The following persons knowledgeable of the Site were interviewed regarding environmental liens on the property, consideration of environmental condition in establishing sale price, historical ownership, and Janel use of the property and local area. Questionnaires and interview notes are contained in Appendix F.

Representing Sellers

Frank Vaughn

Representing Buyer

Doyle Heaton
Gregg Heaton

Representing Knowledgeable About, but not parties to the sale

Captain Dan Burke, Alameda County Fire Station #7

Captain Burke noted that snakes have occasionally been seen on the Site. To his knowledge, no effort has been made to control their population. He knew of no other environmental concerns.

None of those interviewed were aware of any environmental liens on the properties related to environmental regulatory action or decrease in value due to environmental impairment. No land use restrictions are recorded at the Site. All of those interviewed were able to provide some history on the Site and the development and land use of the area.

5.0 REVIEW OF PUBLIC RECORDS OF REGULATORY AGENCIES

Rosewood Environmental Engineering conducted a database review of known releases and past land uses often associated with environmental impairment. The search radius selected for each database followed ASTM standards. The executive summary of the database searches and the reports on the active regulatory investigations and remediation sites within 1/4 miles are in Appendix G.

5.1 On-Site Environmental Issues

The target property was not identified in any of the database searches reviewed. There are no records of a release at the Site, or of any hazardous waste storage at the Site. Other potential on-site issues at the site are discussed below.

Agricultural Pesticides

The Office of the County Agricultural Commission was contacted for records of agricultural pesticides at the Site. No agricultural pesticide use is on record in that office.

General regional information indicated that agricultural use at the Site was limited to cattle grazing land. There is no record or indication of cultivated crops, and therefore no pesticide use, in the area of the Site.

Radon Gas

According to the EPA's Map of Radon Zones for California, dated September 1993, Alameda County is in radon zone (2). Areas within radon zone 2 have an average predicted indoor radon screening potential between 2 picocuries per liters (pCi/L) and 4 pCi/L. Levels greater than 4 pCi/L may be considered hazardous.

Facility Storage Tanks (above or below ground)

The databases search identified one permitted above-ground storage tank in the Site vicinity as:

Name	Address	Direction/Distance
Alameda County Fire Department	6901 Villareal Dr	0.057 mi NE

This property, adjacent to the Site, also has one permitted underground storage tank. There is no evidence that either the above- or underground storage tank is leaking or has had a release.

Another nearby address, 6656 Bowie Way, was identified as at risk for a history of automotive use. These uses potentially include above- or underground storage tanks and the use of petroleum hydrocarbons within 1/4 mi. of the Site. This address was associated with the business name 'Regenberger Arco', a gasoline station.

Aerial photographs show that the area surrounding the Site was unoccupied and unimproved before 1968. Between 1979 and 1980, mass grading operations began and residential buildings appear. There is no indication that the land at 6656 Bowie Way was used as a gas station. Furthermore, the business name Hegenberger Arco applies to an Arco gas station located at 566 Hegenberger Road, Oakland, well outside the ATSM search radius.

With no other source identifying 6656 Bowie Way as a potential location for an underground storage tank, it is concluded that this is an identification and/or mapping error and poses no risk to the Site.

Hazardous Waste Releases

There is no evidence of hazardous waste releases at or in the vicinity of the Site.

The database search identified Brann Street Mercury as a potentially contaminated site, however could not map it in relation to the Site. The property is located at 6408 Brann Street, Oakland, well outside the ASTM radius, and therefore poses no risk to the Site.

Polychlorinated Biphenyls (PCB) Potential at the Site

No potential sources of PCBs were noted at the site.

Asbestos-Containing Materials (ACM) at the Site

No potential sources of ACMs were noted at the Site.

Lead-Based Paint (LBP)

No potential sources of LBP were noted at the Site.

Septic Systems

No record or evidence of a septic system exists at the Site.

Water Wells

No record or evidence of a water well exists at the Site.

Vapor Intrusion

The database search indicated the incorrectly identified 6656 Bowie Way site as a potential risk for vapor intrusion. As this property has been correctly mapped outside the ASTM radius, there is no potential for vapor intrusion at the Site due to this mismatched gas station.

6.0 DATA GAPS

No data gaps remain that are likely to alter the opinions of recognized environmental concerns. The following data gaps were recognized and addressed satisfactorily to set aside concerns of missed information:

- Two properties were misidentified and incorrectly mapped in the database search. These properties were correctly identified as being outside the ASTM E1527-2013 radius for potential contaminants.

7.0 SUMMARY OF FINDINGS

The following summary of findings is based on the scope of services and ensuing study as described within the limitations of this report:

The subject property comprises approximately 1.2 acres in an irregular hexagonal shape and is located at the junction of Villareal Drive and Clement Drive in the City of Castro Valley, County of Alameda, California. There are no improvements at the Site.

The Site is transected from east to west by a 1Y1-3 foot deep swale. The swale drains to the east boundary but appears to be cut off from any other inflow drainage features. Therefore, the swale is no longer a significant drainage feature, and it is not clear what it was a drainage for in the past. There has been some heavy vehicle access across the swale. Access was created by filling a short stretch of the fill to form a road and inserting a 7-inch white PVC pipe into the gravel fill as a makeshift culvert. The east end of the culvert is blocked but not entirely closed and does not appear to be effective.

The site is in a fault zone which has historically show activity. The Site is at low risk of flooding.

The Site has historically been in agricultural use for livestock grazing, but not for row crops. It has apparently not been used for any agricultural purposes since about 1978.

No environmental liens or environmental impairment affecting the property value was reported for the site during the course of this environmental assessment.

8.0 RECOMMENDATIONS

Based on the findings of the Phase I Environmental Assessment, Rosewood Environmental Engineering makes the following recommendations for site-specific issues.

The specific actions that will be necessary at the site include:

- Prior to grading operations, the source and purpose of the vertical 7-inch PVC pipe should be determined, and the pipe removed according to any regulatory practices that may apply.

8.1 General Recommendations

In addition, the following recommendations should be considered during grading operations for development of the property:

- Should any pipe that might lead to an underground fuel or septic tank be located during mass grading operations, it should be reported to the environmental engineer and carefully evaluated. If any PVC, concrete or metal pipes are exposed during grading or excavation operations, these should be notified to the environmental engineer and removed from the grading site.
- During any grading or excavation activities of the property, soil technicians and operators must be made aware to look for unusual conditions suggesting buried debris or other potential adverse environmental conditions which may be discovered on the property. If any of these conditions is encountered, then the environmental engineer must be notified and the specific condition appropriately remedied in accordance with the local, county, and state and Regional Water Quality Control Board (RWQCB) requirements.

9.0 LIMITATION

9.1 Limitations and Exceptions

Rosewood Environmental Engineering prepared the Phase I ESA report using reasonable efforts to identify recognized environmental conditions associated with hazardous substances or petroleum products at the Target Site. Findings contained within this report are based on information collected from observations made on March 12, 2013 (the day of the site reconnaissance visit) and from reasonably ascertainable information obtained from certain public agencies and other referenced sources. The ASTM Standard Practice E 1527-13 recognizes inherent limitations for Phase I ESAs, including, but not limited to:

- Uncertainty Not Eliminated – A Phase I ESA cannot completely eliminate uncertainty regarding the potential for recognized environmental conditions in connection with any property.
- Not Exhaustive-A Phase I ESA is not an exhaustive investigation of the property and environmental conditions on such property.
- Past Uses of the Property – Phase I requirements only require review of standard historical sources at five year intervals. Therefore, past uses of property at less than five year intervals may not be discovered.

Users of this report may refer to ASTM Standard Practice E 1527-13 for further information regarding these and other limitations delineated in the referenced proposal and agreement. This report is not definitive and should not be assumed to be a complete and/or specific definition of all conditions above or below grade. Current subsurface conditions may differ from the conditions determined by surface observations, interviews and reviews of historical sources. The most reliable method of evaluating subsurface conditions is through intrusive techniques, which are beyond the scope of this report. Information in this report is not intended to be used as a construction document and should not be used for demolition, renovation, or other property construction purposes. Any use of this report by any party, beyond the scope and intent of the original parties, shall be at the sole risk and expense of such user.

Rosewood Environmental Engineering makes no representation or warranty that the past or current operations at the Site are, or have been, in compliance with all applicable federal, state and local laws, regulations and codes. This report does not warrant against future operations or conditions, nor does it warrant against operations or conditions present of a type or at a location not investigated. Regardless of the findings stated in this report, Rosewood Environmental Engineering is not responsible for consequences or conditions arising from facts not fully disclosed to Rosewood Environmental Engineering the assessment.

Information on surrounding area properties was searched online for approximate minimum search distances and is assumed to be correct and complete unless obviously contradicted by Rosewood Environmental Engineering's observations or other credible referenced sources reviewed during the assessment. Rosewood Environmental Engineering shall not be liable for any such database's

failure to make relevant files or documents properly available, to properly index files, or otherwise to fail to maintain or produce accurate or complete records.

Rosewood Environmental Engineering used reasonable efforts to identify evidence of aboveground and underground storage tanks and ancillary equipment on the property during the assessment. These reasonable efforts may not identify subsurface equipment or evidence hidden from view.

Rosewood Environmental Engineering is not a professional title insurance or land surveyor firm and makes no guarantee, express or implied, that any land title or ownership records acquired or reviewed in this report, or any physical descriptions or depictions of the property in this report, represent a comprehensive definition or precise delineation of property ownership or boundaries.

The Environmental Professional Statement in Section 1.3 of this report does not "certify" the findings contained in this report and is not a legal opinion of such Environmental Professional. The Environmental Professional Statement is intended to document Rosewood Environmental Engineering's opinion that an individual meeting the qualifications of an Environmental Professional took responsible care in the performance of the assessment and that the activities performed by, or under the supervision of, the Environmental Professional were performed in conformance with the standards and practices set forth in 40 CFR Part 312 per the methodology in ASTM Standard Practice E 1527-13 and the scope of work for this assessment.

Per ASTM Standard Practice E 1527-13, Section 6, User Responsibilities, the User of this assessment has specific obligations for performing tasks during this assessment that helped identify the possibility of recognized environmental conditions in connection with the property. Failure by the User to fully comply with the requirements may impact their ability to use this report to help qualify for Landowner Liability Protections (LLPs) under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Rosewood Environmental Engineering makes no representations or warranties regarding a User's qualification for protection under any federal, state or local laws, rules or regulations.

In accordance with the ASTM Standard Practice E 1527-13, this report is presumed to be valid for a six-month period. If the report is older than six months, the following information must be updated in order for the report to be valid: (1) regulatory review, (2) site visit, (3) interviews, (4) specialized knowledge and (5) environmental liens search. Reports older than one year may not meet the ASTM Standard Practice 1527-13 and therefore, the entire report must be updated to reflect current conditions and property-specific information.

Other limitations and exceptions that are specific to the scope of this report may be found in corresponding sections.

9.2 Special Terms and Conditions (User Reliance)

This report is addressed to DRG Builders, Inc., and its prospective lenders, including persons and/or entities as may be designated by DRG Builders, Inc., and their respective successors and assigns (collectively, "DRG Builders, Inc.") solely for the purpose of due diligence documentation

in the dual actions of lending for, and acquisition of, the target properties. Rosewood Environmental Engineering acknowledges and agrees that this Phase I Environmental Assessment Report may be relied upon by DRG Builders, Inc., and its lenders in determining whether to make a loan evidenced by a note secured by the Site.

The report and all materials collected for the report are the intellectual property of Rosewood Environmental Engineering as instruments of consulting services. Any reproduction or use of the report, in part or in whole, must attach the limitations statements in this Section 1.0. All other potential users of this report must contact Rosewood Environmental Engineering for express permission to reproduce or use any part of the report for purposes other than stated.

10.0 INFORMATION SOURCES

These sources were consulted in addition to the EDR reports, aerial photographs, historic maps and other documents specifically listed in the report.

California Department of Conservation, Division of Oil and Gas, District 3 Map.
<ftp://ftp.consrv.ca.gov/pub/oilmaps/dist3/w3-10/Mapw3-10.pdf>

Faigin, D.P. (2012). Interstate 580. Retrieved 8/19/14 from <http://www.cahighways.org/466-740.html#580>

Louge, M. (2005). MyCastroValley History. Retrieved 8/24/2014 from <http://www.mycastrovalley.com/history/index.html>

McKesson Corporation. (2014). Our History. Retrieved 8/20/2014 from <http://www.mckesson.com/about-mckesson/our-history/>

Metsker Maps. Santa Clara County 1975c. Historic Mapworks Website, 2009.
<http://www.historicmapworks.com/Atlas/US/7490/Alameda+County+1975>

Soil Survey of Alameda County (U.S. Department of Agriculture, 1974).

Watts, William Lord, (1900) Oil and gas yielding formations of California By William Lord Watts, California State Mining Bureau, San Francisco, Bulletin 19.

11.0 ENVIRONMENTAL PROFESSIONAL QUALIFICATION

This Phase I Environmental Site Assessment was performed by Dr. Cheryl Ely-Chester, a qualified Environmental Professional as defined in 40 CFR Part 312.10.

Dr. Ely-Chester holds a Bachelor's degree in Civil Engineering from University of California at Davis and an MBA and Doctorate in management. Dr. Ely-Chester holds valid registration with the National Association of Environmental Professionals as a Registered Environmental Property Assessor.

Dr. Ely-Chester has over 30 years of civil engineering and environmental experience, more specifically in environmental assessments including Phase I and Phase II ESAs, which exceeds the regulatory requirement of three years of relevant experience.

Dr. Ely-Chester remains current in her field and has received 1.6 Continuing Education Units (CEUs) and 12 Professional Development Hours (PDHs) in the previous 12 month period. She is also compliant with OSHA HAZWOPER 8-hour refresher requirements, including medical surveillance.

As required in 40 CFR 312.27, Dr. Ely-Chester directly conducted the Field Visit including the visual inspection of the Site, adjacent properties and surrounding areas. She also designed the water well sampling plan and directed the soil sampling performed previously at the site.

"All Appropriate Inquiry" was also conducted by Dr. Ely-Chester as were all interviews. The record Search, historical photo and topographic map search were conducted online and from Rosewood internal files.

The findings, opinions and recommendations of this Phase I Environmental Site Assessment are those of Rosewood Environmental Engineering, as formulated by Dr. Ely-Chester.

ATTACHMENT C - GEOTECHNICAL INVESTIGATION

GEOTECHNICAL INVESTIGATION
NEW RESIDENTIAL DEVELOPMENT
VILLAREAL DRIVE & CLEMENT DRIVE
CASTRO VALLEY, CALIFORNIA

THIS REPORT HAS BEEN PREPARED FOR:
ROSEWOOD ENVIRONMENTAL ENGINEERING
ATTN: DR. CHERYL BLY-CHESTER, P.E.
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OCTOBER 2014





October 7, 2014
Project No. 2072-1R1

Rosewood Environmental Engineering
Attn: Dr. Cheryl Ely-Chester, P.E.
1079 Sunrise Boulevard, Suite B-168
Roseville, California 95661

RE: GEOTECHNICAL INVESTIGATION,
NEW RESIDENTIAL DEVELOPMENT,
VILLAREAL DR & CLEMENT DR,
CASTRO VALLEY, CALIFORNIA


Dear Dr. Bly-Chester:


We are pleased to present the results of our geotechnical investigation relating to design and construction of the new residential development on the vacant property located at the southwest corner of Villareal Drive and Clement Drive in Castro Valley, California. This report summarizes the results of our field, laboratory and engineering work, and presents geotechnical recommendations for the design and construction of the proposed improvements.

The conclusions and recommendations presented in this report are contingent upon our review and approval of the project plans and our observation and testing of the geotechnical aspects of the construction.

If you have any questions concerning our investigation, please call.

Very truly yours,
MURRAY ENGINEERS, INC.


Ryan D. Merrell, P.E.
Project Engineer




John A. Stillman, C.E.G., G.E.
Principal Geotechnical Engineer



RDJ:I:JAS

Copies: Addressee (6)

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GEOTECHNICAL INVESTIGATION
NEW RESIDENTIAL DEVELOPMENT
VILLAREAL DRIVE & CLEMENT DRIVE
CASTRO VALLEY, CALIFORNIA

INTRODUCTION

This report presents the results of our geotechnical investigation relating to design and construction of the new residential development on the property located at the southwest corner of Villareal Drive and Clement Drive in Castro Valley, California. The project location is indicated on Figure A-1, Vicinity Map. The purpose of our investigation was to explore the subsurface soil and geologic conditions on the site in the areas of the proposed improvements and to provide geotechnical conclusions and recommendations relating to the foundation and earthwork components of the project.

Project Description

The project will consist of the construction of eight two-story, single-family homes on the currently vacant property. The residences will range from approximately 4,400 square feet to 6,300 square feet. No basements are planned. We understand that the new homes will be constructed on post-tensioned slab foundations. Site improvements will include new driveways, parking areas, and exterior patios and walkways. We anticipate that structural loads will be relatively light and typical of residential construction. The layout of the planned improvements is shown on the Site Plan, Figure A-2.

Scope of Services

We performed the following services in accordance with our agreement with you dated August 11, 2014:

- Reviewed geologic and seismic conditions in the site vicinity and evaluated the geologic hazards that could potentially impact the site and the proposed improvements

- Performed a reconnaissance of the site in the area of the planned improvements

- Explored the subsurface conditions by advancing, sampling, and logging five exploratory borings in the vicinity of the proposed improvements

- Performed laboratory testing and analyses on selected soil samples for soil classification and to evaluate engineering properties of the subsurface materials

- Performed geotechnical engineering analyses to develop geotechnical engineering design criteria for the proposed improvements



- G Prepared this report containing a summary of our investigation and our geotechnical conclusions, recommendations, and design criteria

GEOLOGIC & SEISMIC CONDITIONS

Geologic Overview

The subject property is located near the crest of a drainage swale along the southeastern flank of a northeast trending ridgeline in the Castro Valley area of the East Bay Hills. The site is situated at an approximate elevation of 735 feet above mean sea level. According to the Preliminary Geologic Map Emphasizing Bedrock Formations in Alameda County, California (Graymer, Jones, & Brabb, 1996), the site is underlain by Miocene age Rodeo Shale, Hambre Sandstone, Tice Shale, and Oursan Sandstone, undivided. A copy of the relevant portion of this map is presented as the Vicinity Geologic Map, Figure 4.

According to the State of California Official Seismic Hazard Zones map for the Hayward Quadrangle (California Geological Survey, 2003), the site is not located in an area considered susceptible to earthquake-induced liquefaction or landsliding.

Seismicity

The San Francisco Bay Area, which is affected by the San Andreas Fault system, is recognized by geologists and seismologists as one of the most active seismic regions in the United States. In the Bay Area there are three major faults trending in a northwest direction within the San Andreas Fault system, which have generated about 12 earthquakes per century large enough to cause significant structural damage. These faults include the San Andreas, Hayward, and Calaveras faults. The San Andreas and Hayward Faults are located approximately 22 and 4.1 miles southwest of the site, respectively. The Calaveras fault is located approximately 4.2 miles northeast of the site. In addition, a series of northwest trending unnamed bedrock faults are mapped in the site area, the two closest being located approximately 150 feet northeast and 500 feet southwest of the subject site, respectively (see Figure A-3).

Seismologic and geologic experts convened by the U. S. Geological Survey, California Geological Survey, and the Southern California Earthquake Center conclude that there is a 63 percent probability for at least one "large" earthquake of magnitude 6.7 or larger in the Bay Area before the year 2038. The northern portion of the San Andreas fault is estimated to have a 21 percent probability of producing a magnitude 6.7 or larger earthquake by the year 2038 (2007 Working Group on California Earthquake Probabilities, 2008).

SITE EXPLORATION & RECONNAISSANCE

Exploration Program

An initial site visit was performed by our project engineer on July 31, 2014. Our field investigation was performed on September 2, 2014 and included a site reconnaissance and the excavation, sampling, and logging of five exploratory borings to depths between 14 and 30 feet at the approximate locations shown on the Site Plan, Figure A-2. The boring locations were approximately determined by measuring distance from assumed property lines using a tape measure and should be considered accurate only to the degree implied by the mapping technique used.

Our exploratory borings were advanced using a truck-mounted drill rig equipped with hollow-stem augers. Soil samples were collected with split-spoon samplers driven with a 140-pound hammer repeatedly dropped from a height of 30 inches with a wire line sampling system. The samplers included 3-inch outside diameter (OD), 2.5-inch OD, and 2-inch OD Standard Penetration Test samplers. The sampler types used are indicated on the boring logs at the appropriate depths. The number of hammer blows required to drive the samplers was recorded for each 6-inch increment and the sum of the second and third 6-inch increment is recorded on the logs. The associated blow count data, which is the sum of the second and third 6-inch increments, is presented on the boring logs as sampling resistance in blows per foot. The field blow counts for the 2.5-inch and 3-inch OD samples have been standardized to Standard Penetration Test blow counts for the sampler size; however, the blow count data has not been adjusted for other factors such as hammer efficiency. The logs of our borings are presented in Appendix B as Figures B-1 through B-5. Also included in Appendix B is Figure B-6, Key to Boring Logs; Figure B-7, Unified Soil Classification System; and Figure B-8, Key to Bedrock Descriptions.

Our project engineer logged the borings in general accordance with the Unified Soil Classification System. The boring logs show our interpretation of the subsurface conditions at the location and on the date indicated and *it* is not warranted that these conditions are representative of the subsurface conditions at other locations and times. In addition, the stratification lines shown on the logs represent approximate boundaries between various soil materials and the transitions may be gradual.

Site Description

The approximately 1.2-acre, vacant property is located on the southwest corner of Villareal Drive and Clement Drive in a partially developed residential area of Castro Valley. The site is bounded by Villareal Drive to the north and northwest, a community center to the south and southwest, and by a fire station along the northeast side. The site borders the crest of a slope, along the southeast side, that descends to a natural drainage swale below. The crest of

the slope located nearest any proposed buildings (approximately 12 feet) descends at a gentle gradient of approximately 7:1 (*H:V*) and then at a gradient of approximately 4:1 (*H:V*) further downslope. The crest of the slope at the southwestern corner of the property is located approximately 20 feet from the nearest proposed building and descends at an approximate gradient of 4:1 (*H:V*). A minor drainage swale crosses the site from the northeast side down the southwest, and appears to be associated with prior grading of the surrounding developments.

Based on our comparison of available historical aerials and topographic surveys and present day site elevations, it appears that the site has undergone significant site grading likely associated with construction of the surrounding developments. Based on our comparison, it appears that initial grading may have included cuts in the western portion of the property and fills in the eastern portion of the property near the crest of the drainage swale to the east. The very approximate assumed location of the transition from natural soils to fill is shown on Figure A-2.

Subsurface

Five exploratory borings were excavated in the area of the proposed improvements. Boring B-2, located near the crest of the drainage swale to the southeast, encountered approximately 27 feet of fill consisting of medium dense to dense, coarse-grained and very stiff to hard, fine-grained material. The fill was underlain by colluvium consisting of hard silty clay to the bottom of the boring at a depth of 30 feet. Boring B-5, located near the northeast corner of the property, encountered approximately 9 feet of fill consisting of dense clayey to silty sand underlain by approximately 2 feet of buried native soil consisting of medium stiff sandy clay. The buried native soil was underlain by colluvium consisting of very stiff sandy clay, which was underlain by sandy siltstone to the bottom of the boring at a depth of 15 feet. Based on the data from our borings, the majority of the fill appears to be relatively well compacted where sampled. The remaining borings encountered approximately 1 to 3 feet of colluvium consisting of dense to very dense, coarse-grained and stiff, fine-grained material, underlain by sandstone and siltstone bedrock to the bottom of the borings at depths between 14 and 15 feet. The locations of each boring are presented on Figure A-2, Site Plan and detailed logs of the borings are presented in Appendix B.

Atterberg Limits testing was performed on a sample of surficial soil from Boring B-2 between 0.5 to 2 feet. The testing yielded a plasticity index of 19 percent and a liquid limit of 37 percent, indicating a moderate potential for expansion.

Groundwater

Free groundwater was not encountered in any of the exploratory borings at the time of drilling. We note that fluctuations in the level of groundwater can occur due to variations in rainfall, temperature, landscaping, and other factors that may not have been evident at the time our observations were made.

CONCLUSIONS

In our opinion, the proposed site development is feasible from a geotechnical perspective provided that the recommendations contained in this report are implemented in the design and construction of the project. In our opinion, the primary geotechnical constraints to the proposed improvements include the potential for differential settlement of the subsurface fill and/or colluvial materials encountered at the site and the potential for strong ground shaking at the site as a result of a moderate to large earthquake on the San Andreas Fault or other nearby active faults.

Based on our investigation, the western portion of the site appears to be blanketed by 1 to 3 feet of colluvium underlain by sandstone and siltstone bedrock. The eastern margin of the site appears to be blanketed by up to 27 feet of fill underlain by native soil/colluvium and bedrock. In our opinion, the soils underlying the planned building areas should generally provide adequate support for the foundations of the proposed structures, provided they are constructed in accordance with the recommendations provided below. However, there remains a risk of differential foundation movement where building foundations transect across fill/native soil transition zones. We have provided recommendations hereunder that will help reduce but not eliminate this risk.

Geologic Hazards

As part of our investigation, we evaluated the potential for geologic hazards to impact the site and the proposed improvements. The results of our review are presented below:

- & Expansive Soils – Based on our laboratory testing, it appears that portions of the near-surface material are potentially moderately expansive. In general, expansive soil can undergo volume changes with changes in moisture content. Specifically, when wetted as during the rainy season, expansive soil tends to swell and when dried as during the summer months, this material shrinks. Structures and flatwork supported on expansive soil tend to experience cyclic, seasonal heave and settlement. In our opinion, shrink and swell of the surficial soil should not have a significant impact on the structural integrity of the proposed improvements, provided that they are designed and constructed in accordance with the recommendations presented in this

report. In our opinion, these recommendations should mitigate the potential for significant heave, but will not eliminate this potential.

Fault Rupture - Based on our site reconnaissance and our review of published maps, it is our opinion that no active or potentially active faults cross the subject property. Therefore, in our opinion the potential for fault rupture to occur at the site is low.

Ground Shaking - As noted in the Seismicity section above, moderate to large earthquakes are probable along several active faults in the greater Bay Area. Therefore, strong to violent ground shaking should be expected in the area during the design-life of the proposed improvements. In our opinion, the improvements should be designed in accordance with the current earthquake resistant standards, including the 2013 CBC guidelines and design parameters. It should be clearly understood that these guidelines and parameters will not prevent damage to structures; rather they are intended to prevent catastrophic collapse of structures.

- (f) **Differential Compaction** - During moderate and large earthquakes, soft or loose, natural or fill soils can densify and settle, often unevenly across a site. As noted above, the eastern margin of the site appears to be blanketed by up to approximately 27 feet of fill. The varying thickness of the underlying fill and colluvium presents a potential for differential compaction of the subsurface materials beneath the proposed building foundations. In our opinion, differential compaction of these materials should not constitute a significant hazard to the proposed improvements provided that they are supported on foundations designed in accordance with the recommendations presented in this report.

Liquefaction - Liquefaction is a soil softening response, by which an increase in the excess pore water pressure results in partial to full loss of soil shear strength. In order for liquefaction to occur, the following four factors are required: 1) saturated soil or soil situated below the groundwater table; 2) undrained loading (strong ground shaking), such as by earthquake; 3) contractive soil response during shear loading, which is often the case for a soil which is initially in a loose or uncompacted state; and 4) susceptible soil type; such as clean, uniformly graded sands, non-plastic silts, or gravels. Structures situated above temporarily liquefied soils may sink or tilt, potentially resulting in significant structural damage. Since we did not encounter shallow groundwater during our subsurface exploration and due to the generally cohesive nature of the colluvium and relatively shallow depth to bedrock, it is our opinion that the potential for liquefaction and liquefaction-related distress to the proposed improvements is low. In addition, the State of California Seismic Hazards Zones Map indicates that the subject property is not located in a liquefaction hazard zone.

- & Landsliding –Given that the majority of the site is relatively flat, it is our opinion that the risk of landsliding in the areas of the proposed improvements is low. However, due to the adjacent slope to the southwest and the fact that the eastern margin of the property previously consisted of sloping terrain prior to initial site grading, the occurrence of a new shallow landslide that could impact the proposed improvements at the site cannot be excluded. A new shallow landslide could be triggered by excessive precipitation and/or strong ground shaking associated with an earthquake. In our opinion, a new shallow landslide should not pose a direct significant hazard to the proposed building improvements, provided that the improvements are designed and constructed in accordance with the recommendations of this report.

It should be noted that although our knowledge of the causes and mechanisms of landslides has greatly increased in recent years, it is not yet possible to predict with certainty exactly when and where all landslides will occur. At some time over the span of thousands of years, most hillsides will experience landslide movement as mountains are reduced to plains. Therefore, an unknown level of risk is always present to structures located in hilly terrain. Owners of property located in these areas must be aware of and be willing to accept this risk.

RECOMMENDATIONS

We understand it is desired to use post-tensioned (PT) slab foundations for the new residences. Based on our experience, the standard-of-practice in foundation design for new residences situated in undocumented fill areas, bedrock/soil transition areas, or on hillside terrain in general is typically to support the structures on a pier and grade beam foundation to reduce the potential for differential foundation performance. For this site however, considering that a) the existing fill appears to be relatively well compacted where sampled and was likely placed under controlled conditions during mass grading of the surrounding developments, b) the existing fill appears to have been placed over 30 years ago and may have consolidated further since placement, and c) it is proposed to construct the residences with relatively rigid PT slab foundations, we acknowledge that it may not be cost effective from a potential risk/benefit perspective to support the new residences on deep drilled piers. Although, in our opinion, the use of drilled piers would offer better long-term performance against future differential foundation movements, particularly for the residences that will span fill/native soil/bedrock transitions, we anticipate such differential foundation movement, if it occurs, would likely produce a level of distress that is generally cosmetic in nature such as cracking of interior drywall or exterior stucco surfaces, localized differential slab movement, possible sticking of doors/window framing elements, and not a significant impact on the structural integrity of the proposed improvements. Therefore, if this risk is acceptable to the client, new building improvements may be supported on PT slab

foundations, provided the PT slabs are designed and constructed with the following recommendations.

To mitigate the potential for differential movement of the building foundations, we recommend that the PT slabs be supported in a minimum 2-foot thick pad of re-worked fill that extends approximately 3 feet beyond the building footprint. In general exterior slabs-on-grade and pavements should be underlain by sections of select granular fill. Our detailed foundation, grading, and site drainage recommendations and design criteria are presented in the following sections of this report. We should review the proposed layout and design, prior to completion of the final plans, to verify that the following recommendations are appropriate and have been properly interpreted and incorporated into the plans.

2013 CBC EARTHQUAKE DESIGN PARAMETERS

We have developed site-specific earthquake design parameters based on the procedures described in Chapter 16, Section 1613 of the 2013 California Building Code (California Building Standards Commission, 2013). These procedures utilize State standardized spectral acceleration values for maximum considered earthquake ground motion taking into account historical seismicity, available paleoseismic data, and activity rates along known fault traces, as well as site-specified soil and bedrock response characteristics. Contour maps of Class B bedrock horizontal spectral acceleration values for the State of California are included as figures in Chapter 16 of the 2013 CBC, representing both short (0.2 seconds) and long (1.0 second) periods of spectral response and taking into account 5 percent of critical damping. The U.S. Geological Survey (2013) has prepared an online seismic design value application tool, based on the 2010 ASCE with a July 2013 CBC errata, for public use, that allows for site-specific adjustments of these acceleration values for different subsurface conditions, which are defined by site classes. Given representative latitude of 37.7147 and longitude of -122.0283 in accordance with guidelines presented in the 2013 CBC, the following seismic design parameters will apply for this site:

- () Site Class C – Soil Profile Name: Very Dense Soil and Soft Rock (Table 1613.5.2)
- () 1\-Iapped Spectral Accelerations for 0.2 second Period: $S_0 = 1.624$ (Site Class B)
- () Mapped Spectral Accelerations for a 1-second Period: $S_1 = 0.636$ (Site Class B)
- () Design Spectral Accelerations for 0.2 second Period: $SDS = 1.082$ (Site Class C)
- & Design Spectral Accelerations for a 1-second Period: $S_m = 0.551$ (Site Class C)

POST-TENSIONED (PT) SLAB FOUNDATIONS

We recommend that the proposed post-tensioned (PT) slab foundations for the residences be designed in accordance with the Post-Tensioning Institute (PTI) method for design as presented in the Design of Post-Tensioned Slabs-on-Ground manual (PTI, 3'd Edition, 2008). As noted above, we recommend that the post-tensioned slabs bear in a minimum 2-foot thick pad of re-worked fill that extends approximately 3 feet beyond the building footprint. In addition, we anticipate that the building pad excavations in the eastern portion of the property will encounter both natural soil/bedrock material and fill material within the exposed subgrade soils. Any non-supportive fill and/or colluvium exposed in building pad excavation should be removed down to an appropriate depth into supportive material as determined by our field representative during initial grading. The resulting excavations should be replaced with compacted engineered fill placed and compacted in accordance with the recommendations presented below. Prior to placement and compaction of the re-worked fill, the subgrade soils within the excavation should be scarified to a depth of approximately 6 to 12 inches, moisture conditioned to above optimum moisture content, and compacted to 95 percent relative compaction. In addition, the re-worked pad of fill should consist of material that meets the site grading recommendations section below and is compacted to a minimum of 95 percent relative compaction.

Post-tensioned slabs may be designed for an average allowable bearing pressure of 2,000 pounds per square foot (psf) for dead plus live loads, with maximum localized bearing pressures of 2,500 psf at column or wall loads. Allowable bearing pressures can be increased by one-third for all loads including wind or seismic. All post-tensioned slabs should be designed with a thickened edge at least 12 inches wide and 18 inches thick, as measured from interior bottom of slab. Post-tensioned slabs should be designed using the criteria presented in Table 1, below. In addition, due to the potential for differential movement of slabs in natural/fill transitional areas (see discussion above), we also recommend that the engineer design the slabs to accommodate localized differential movement where building foundations will span this transition. We anticipate that PT slabs for the five proposed residences along the east side of the property will overlay this transition (see Figure A-2).

Table 1. Post-Tension Design Criteria

Condition	Center Lift	Edge Lift
Edge Moisture Variation Distance (em)	5.0 ft	2.8 ft
Differential Soil Movement (ym)	0.18-inch	0.06-inch

The above design criteria are based on estimated Thornthwaite moisture Index = -10, a Plasticity Index (PI) of 19 percent, a Plastic Limit (PL) of 18 percent, approximately 30



percent of material finer than a No. 200 sieve as clay, an assumed predominant clay mineral type of montmorillonite, depth to constant soil suction as 3 feet, and constant suction (pF) as 3.5.

Lateral loads may be resisted by friction between the thickened edges and the supporting subgrade. A maximum allowable coefficient of friction of 0.3 may be used for design. In addition, lateral resistance will be provided by passive pressure acting against the foundations poured neat against competent soil. We recommend that an allowable passive pressure based on an equivalent fluid pressure no greater than 300 pounds per cubic foot be used for design.

At a minimum, we recommend that the slabs be underlain by a vapor retarder consisting of a highly durable membrane not less than 15 mils thick (such as Stego Vapor Barrier by Stego Industries, LLC or equivalent), underlain by a capillary break consisting of 4 inches of 1/2- to 3/4-inch crushed rock. The capillary break may be considered the equivalent thickness as the upper 4 inches of select granular fill recommended above. Please also refer to the Vapor Retarder Considerations section of our original report for additional information. Please note that these recommendations do not comprise a specification for "waterproofing." For greater protection against concrete dampness, we recommend that a waterproofing consultant be retained.

SLABS-ON-GRADE

We anticipate that concrete slabs-on-grade may be used for garages, driveways, and exterior patios and walkways. Slabs-on-grade for garages and driveways should be underlain by at least 18 inches of select granular fill, such as Class 2 aggregate baserock, compacted in accordance with the recommendations provided in the Compaction section of this report. We recommend that other exterior slabs-on-grade for patios and walkways be underlain by at least 12 inches of select granular fill, such as Class 2 aggregate baserock. We note that placement of the above thickness of baserock beneath proposed slabs will in our opinion substantially mitigate but not completely eliminate the potential for differential movement of these slabs.

Prior to placement of the select granular fill, the subgrade soils should be scarified and moisture conditioned, as necessary, to a depth of approximately 6 inches and recompact in accordance with the Compaction section of this report. In addition, if highly expansive subgrade soils are encountered, the subgrade soils should be scarified to a depth of approximately 6 to 12 inches, moisture conditioned to at least 3 percent over optimum moisture content, and compacted to between 88 percent to 90 percent relative compaction. Because of the highly expansive nature of the surficial soil, over-compaction of this material

should be avoided. In our opinion, these recommendations should largely mitigate the potential for significant heave, but will not eliminate this potential.

In general, exterior slabs-on-grade should be designed as "free-floating" slabs, structurally isolated from adjacent foundations. Slabs should be provided with control joints at spacing of not more than about 10 feet. The project structural engineer should determine slab reinforcing based on anticipated use and loading.

Select granular fill should be compacted in accordance with the Compaction section of this report. (there slab surface moisture would be a significant concern we recommend that the slabs be underlain by a vapor retarder consisting of a highly durable membrane not less than 10 mils thick (such as Stego Vapor Barrier by Stege Industries, LLC or equivalent), underlain by a capillary break consisting of 4 inches of 1/2- to 3/4-inch crushed rock. The capillary break may be considered the equivalent thickness as the upper 4 inches of select granular fill recommended above. Please also refer to the Vapor Retarder Considerations section below for additional information. Please note that these recommendations do not comprise a specification for "waterproofing." For greater protection against concrete dampness, we recommend that a waterproofing consultant be retained.

Vapor Retarder Considerations

Based on our understanding, two opposing schools of thought currently prevail concerning protection of the vapor retarder during construction. Some believe that 2 inches of sand should be placed above the vapor retarder to protect it from damage during construction and also to provide a small reservoir of moisture (when slightly wetted just prior to concrete placement) to benefit the concrete curing process. Still others believe that protection of the vapor barrier and/or curing of concrete are not as critical design considerations when compared to the possibility of entrapment of moisture in the sand above the vapor barrier and below the slab. The presence of moisture in the sand could lead to post-construction absorption of the trapped moisture through the slab and result in mold or mildew forming at the upper surface of the slab.

We understand that recent trends are to use a highly durable membrane (at least 10 mils thick) without the protective sand covering for interior slabs surfaced with floor coverings including, but not limited to, carpet, wood, or glued tiles and linoleum. However, it is also noted that several special considerations are required to reduce the potential for concrete edge curling if sand will not be used, including slightly higher placement of reinforcement steel and a water-cement ratio not exceeding 0.5 (Holland and Walker, 1998). We recommend that you consult with other members of your design team, such as your structural engineer, architect, and waterproofing consultant for further guidance on this matter.



FLEXIBLE PAVEMENTS

Asphaltic Concrete

For our asphalt pavement design purposes, we have assumed an R-value of 10 for compacted neat-surface colluvium of low plasticity. Based on our evaluation and laboratory testing, in our opinion, parking areas and driveways may utilize a pavement section that includes 8 inches of Class 2 aggregate baserock overlain by 2.5 inches of asphaltic concrete. In our opinion, this section should be capable of servicing conventional automobile traffic and parking areas generally associated with a traffic index of approximately 4 to 4.5. We note that with this section there is a potential for minor cracking of the asphalt pavement, particularly if at least occasional large truck loads are expected. In our opinion, minor cracking of the pavement should not have a significant impact on the structural integrity or serviceability of the parking areas.

If necessary, the driveway section may be designed based on higher traffic indices using Table 1, below. The analysis used to develop the table utilized an R-value of 10 for the subgrade soil and an assumed R-value of 78 for the baserock. These values were developed in accordance with Procedure 608 of the Caltrans Highway Design Manual. Asphaltic concrete and aggregate base should conform to and be placed in accordance with the requirements of the California Department of Transportation, Standard Specifications, latest edition, except that the compaction standard should be ASTM D 1557 (latest edition).

Table 1. Asphaltic Concrete Pavement Sections

Design Traffic* Index	Asphaltic Concrete (Inches)	Aggregate Baserock (Inches)	Total Section Thickness (Inches)
5.5	3.0	11.0	14.0
	4.0	9.0	13.0
6.0	3.0	12.5	15.5
	4.0	10.5	15.5
6.5	3.0	14.5	17.5
	4.0	13.0	17.0

* The design traffic index should be determined by the pavement designer based on anticipated use and vehicular loading.

We note that pavement design involves an understanding of the total vehicular loading that a pavement will experience over a 20-year life, and these loads are typically estimated based on the traffic volume anticipated and the weight of an anticipated vehicle – the heavier the load,

the more damage incurred on a pavement. Therefore, it is common to use truck traffic as the controlling factor in design. In particular, the use of a 5.5 Traffic Index (or higher) is typical for occasional heavy truck loads, such as garbage or fire trucks.

\We also note that the Caltrans method of pavement design does not take into account the potential effects of heave from expansive soils. If broad areas of expansive or soft soils are encountered over the pavement subgrade, it may be necessary to increase the recommended baserock thickness. A representative from our office should observe and test the subgrade prior to placing baserock and should observe and test the compaction of the baserock during the course of construction. In general, in our opinion, the thinner sections of asphaltic concrete and aggregate baserock utilized in the pavement construction, the higher the potential for differential movement of the pavement surface imposed by variations in subsurface strength and expansion characteristics.

Sand-Set Pavers

\We anticipate that sand-set pavers or flagstones may be used for non-vehicular exterior hardscape. \We generally recommend that they be placed in accordance with the manufacturer's recommendations. At a minimum, we also generally recommend that pavers be underlain by at least 10 inches of compacted Class 2 aggregate baserock. A representative from our office should observe the subgrade conditions for all hardscape prior to placement of baserock. Prior to placement of the baserock, the subgrade soils should be scarified and moisture conditioned to a depth of at least 6 inches, as necessary, and compacted in accordance with the Compaction section of this report.

EARTHWORK

A minor to moderate amount of earthwork is anticipated as part of the proposed development, including foundation excavations, subgrade preparation of building pads and beneath hardscape, placement and compaction of engineered fill, and backfill of utility trenches. Earthwork should be performed in accordance with the following recommendations.

Clearing & Site Preparation

Initially, the areas of the proposed improvements should be cleared of structures, foundations, pavements, utilities, and vegetation not designated to remain, and large tree roots. A representative from our office should observe the site immediately following demolition to assess the extent of existing excavations and depressions that may not have been evident at the time of this investigation. Excavations and depressions that extend below finished grade resulting from the removal of underground obstructions beneath the footprint of the proposed building(s) and associated site improvements should be backfilled with engineered fill placed and compacted in accordance with the recommendations

presented below. After clearing, the proposed building areas and any areas to receive fill should be adequately stripped to remove organic-laden topsoil. The stripped material should not be used for any planned engineered fills, but may be stockpiled for later use as landscaping fill.

As noted above, we recommend that the proposed PT slab foundations for each residential building be supported in a minimum 2-foot thick pad of re-worked fill that extends approximately 3 feet beyond the building footprint. Any non-supportive fill and/or colluvium exposed in building pad excavation should be removed down to an appropriate depth into supportive material as determined by our field representative during initial grading. Prior to placement and compaction of the re-worked fill, the subgrade soils within the excavation should be scarified to a depth of approximately 6 to 12 inches, moisture conditioned to above optimum moisture content, and compacted to 95 percent relative compaction. In addition, the re-worked pad of fill should consist of material that meets the "Material for Fill" recommendations below and is compacted to a minimum of 95 percent relative compaction.

Material for Fill

All on-site soils below the stripped layer having an organic content of less than 3 percent organic material by volume (ASTM D 2974) should be suitable for use as engineered fill provided the material is of low plasticity and non-expansive and contingent on our firm reviewing and accepting this material prior to its placement. In general, fill material should not contain rocks or pieces larger than 6 inches in greatest dimension, and should contain no more than 15 percent larger than 2.5 inches. Any required imported fill should be predominantly granular material or low plasticity material with a plasticity index of less than approximately 15 percent. Any proposed fill for import should be approved by Murray Engineers, Inc. prior to importing to the site. Our approval process may require index testing to establish the expansive potential of the soil; therefore, *it* is important that we receive samples of any proposed import material at least 3 days prior to planned importing. Class 2 aggregate baserock should meet the Caltrans Standard Specifications, latest edition.

Temporary Slopes & Trench Excavations

The contractor should be responsible for the stability of all temporary cut slopes and trenches excavated at the site, and design and construction of any required shoring. Shoring and bracing should be provided in accordance with all applicable local and state safety regulations, including the current OSHA excavation and trench safety standards. Because of the potential for variable soil conditions, field modifications of temporary cut slopes may be required. Unstable materials encountered on the slopes during the excavation should be trimmed off, even if this requires cutting the slope back at flatter inclinations.

Compaction

Prior to placing engineered fill, the subgrade soil should be scarified, moisture conditioned, and compacted, as necessary. Material used for fill should be placed in uniform lifts, no more than 8-inches in uncompacted thickness. The fill material should be moisture conditioned, as necessary, and compacted in accordance with the specifications listed in Table 2 below. The relative compaction and moisture content specified in Table 2 are relative to (ASTM D 1557 Oatest edition). Compacted lifts should be firm and non-yielding under the weight of compaction equipment prior to the placement of successive lifts.

Table 2. Compaction Specifications

Fill Element	Relative Compaction*	Moisture Content*
Fill for minimum 2-foot thick, re-worked pad of fill for PT slabs (to extend at least 3 feet beyond building footprint)	95 percent	-2-3 percent over optimum
General fill for raising of site grades, driveway, patio areas, and retaining wall backfill (for fills up to 4 feet thick)	90 percent	-2-3 percent over optimum
Upper 6 inches of subgrade beneath hardscape, for non-expansive soils (PI<=20%)	90 percent	-2-3 percent over optimum
Upper 6 to 12 inches of subgrade beneath hardscape, for expansive soils (PI>20%)	88 to 90 percent	At least 3 percent over optimum
Aggregate baserock under hardscape, and upper 6 inches of subgrade beneath asphalt	95 percent	Near optimum
1/2- to 3/4-inch Crushed Rock - Compact with at least 3 passes of a vibratory plate with lift-thickness ≤ 12 inches.	note at left	Not critical
Backfill of utility trenches using on-site soil	90 percent	-2-3 percent over optimum
Backfill of utility trenches using imported sand	90 percent	Near optimum

*Relative to ASTM D 1557, latest edition.

SITE DRAINAGE

Roof run-off, rain, or irrigation water should not be allowed to pond near the planned structures, exterior hardscapes, or pavement areas. The proposed structures should be provided with roof gutters and downspouts. Water collected in the gutters should not be allowed to discharge freely onto the ground surface adjacent to the foundations and should be conveyed away from the structures via splash blocks or via buried closed conduits and routed to a suitable discharge outlet. The finished grades should be designed to drain surface water away from the proposed structures, slabs, pavement areas, and landscape areas to suitable discharge points. The ground surface should have positive gradient away from the structures. Where such surface gradients are difficult to achieve, we recommend that area drains or surface drainage swales be installed to collect surface water and convey it to a suitable discharge location away from the structures.



We recommend that annual maintenance of the surface drainage systems be performed. This maintenance should include inspection and testing to make sure that roof gutters and downspouts are in good working order and do not leak; inspection and flushing of area drains to make sure that they are free of debris and are in good working order; and inspection of surface drainage outfall locations to verify that introduced water flows freely through the discharge pipes and that no excessive erosion has occurred. If erosion is detected, this office should be contacted to evaluate its extent and to provide mitigation.

REQUIRED FUTURE SERVICES

Plan Review

To better assure conformance of the final design documents with the recommendations contained in this report, and to better comply with the building department's requirements, Murray Engineers, Inc. must review the completed project plans prior to construction. The plans should be made available for our review as soon as possible after completion so that we can better assist in keeping your project schedule on track. We recommend that the following note be added to the architectural, structural, and civil plans:

G The geotechnical aspects of the project, including site grading, foundation excavations, subgrade preparation of building pads and beneath hardscape, placement and compaction of engineered fill, and final surface drainage installation should be performed in accordance with the geotechnical report prepared by Murray Engineers, Inc., dated October 7, 2014. Murray Engineers, Inc. should be provided at least 48 hours advance notification of any earthwork operations and should be present to observe and test, as necessary, the earthwork, drainage, and foundation installation phases of the project.

Construction Observation Services

Murray Engineers, Inc. should observe and test (as necessary) the earthwork and foundation phases of construction in order to a) confirm that subsurface conditions exposed during construction are substantially the same as those interpolated from our limited subsurface exploration, on which the analysis and design were based; b) evaluate compliance with the geotechnical design concepts, specifications, and recommendations; and c) allow design changes in the event that subsurface conditions differ from those anticipated. The recommendations in this report are based on limited subsurface information. The nature and extent of variation across the site may not become evident until construction. If variations are exposed during construction, it may be necessary to re-evaluate our recommendations.



LIMITATIONS

This report has been prepared for the sole use of Rosewood Environmental Engineering specifically for developing geotechnical design criteria relating to design and construction of the new residential subdivision, as discussed above, on the property located at the southwest corner of Villareal Drive and Clement Drive in Castro Valley, California. In the event that any changes in the nature or locations of the proposed improvements are planned, the conclusions and recommendations of this report shall not be considered valid unless such changes are reviewed, and the conclusions and recommendations presented in this report are modified or verified in writing by this firm.

The opinions presented in this report are based upon information obtained from exploratory soil borings at widely separated locations, site reconnaissance, and upon local experience and engineering judgment, and have been formulated in accordance with generally accepted geotechnical engineering practices that exist in the San Francisco Bay Area at the time this report was prepared. Further, our recommendations are based on the assumption that soil and geologic conditions at or between borings do not deviate substantially from those encountered. In addition, geotechnical issues may arise during the course of construction that were not apparent at the time this report was prepared. No warranty, expressed or implied, is made or should be inferred. In addition, we are not responsible for data presented by others.

The recommendations provided in this report are based on the assumption that we will be retained to provide the Future Services described above in order to evaluate compliance with our recommendations. If we are not retained for these services, Murray Engineers, Inc. cannot assume any responsibility for any potential claims that may arise during or after construction, as a result of misuse or misinterpretation of Murray Engineers, Inc.'s report by others. Furthermore, if another geotechnical consultant is retained for follow-up service to this report, Murray Engineers, Inc. will at that time cease to be the Engineer-of-Record.

The opinions presented in this report are valid as of the present date for the property evaluated. Changes in the condition of a property can occur with the passage of time, whether due to natural processes or the works of man, on this or adjacent properties. In addition, changes in applicable standards of practice can occur, whether from legislation or the broadening of knowledge. Accordingly, the opinions presented in this report may be invalidated, wholly or partially, by changes outside of our control. Therefore, this report is subject to review and should not be relied upon after a period of three years. In addition, this report should not be used and is not applicable for any property other than that evaluated.

REFERENCES

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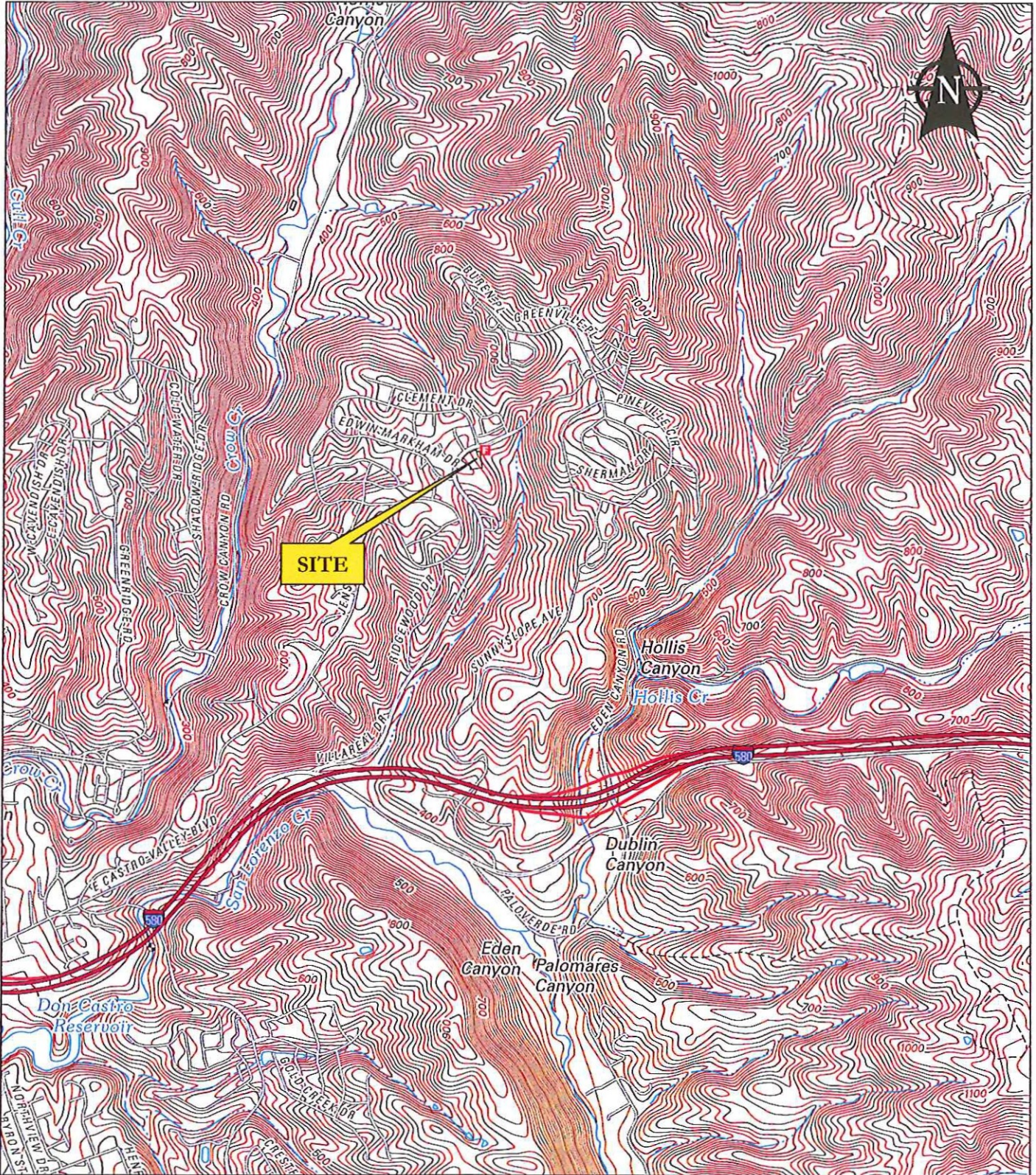
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Base is USGS Hayward Quadrangle, 7.5 ivlunite Series, (Topographic), 2012. Scale is 1 inch = 2,000 feet.

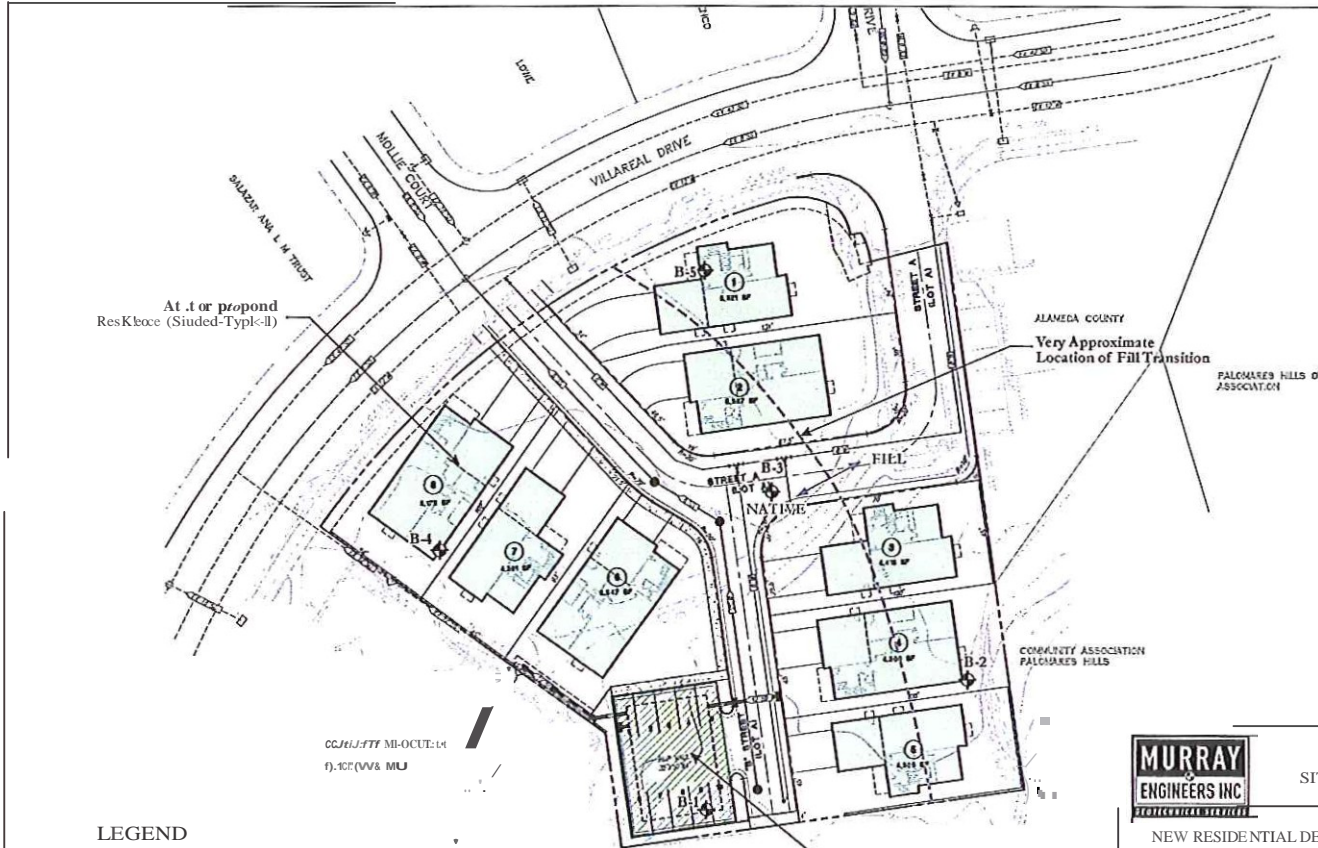


NEW RESIDENTIAL DEVELOPMENT
VILLAREAL DR & CLEMENT DR

PROJECT NO.2072-1R1 OCTOBER 2014

VICINITY MAP

FIGURE-1



At 1 or proposed
Residence (Studied-Typical)

ALAMEDA COUNTY
Very Approximate
Location of Fill Transition
PALOMARES HILLS ASSOCIATION

COMMUNITY MEETING
10/10/14 (VV & MJ)

LEGEND

D2 Approximate Location of 500 Doring (Urban Engineering... Sc. prunhr 2, 21114
 U.I. Site Plan Produced by DRG Build on 09/03/2014
 Approximate Scale: 1 inch = 40 feet

Area of Proposed
Paved Lot (Hatched)



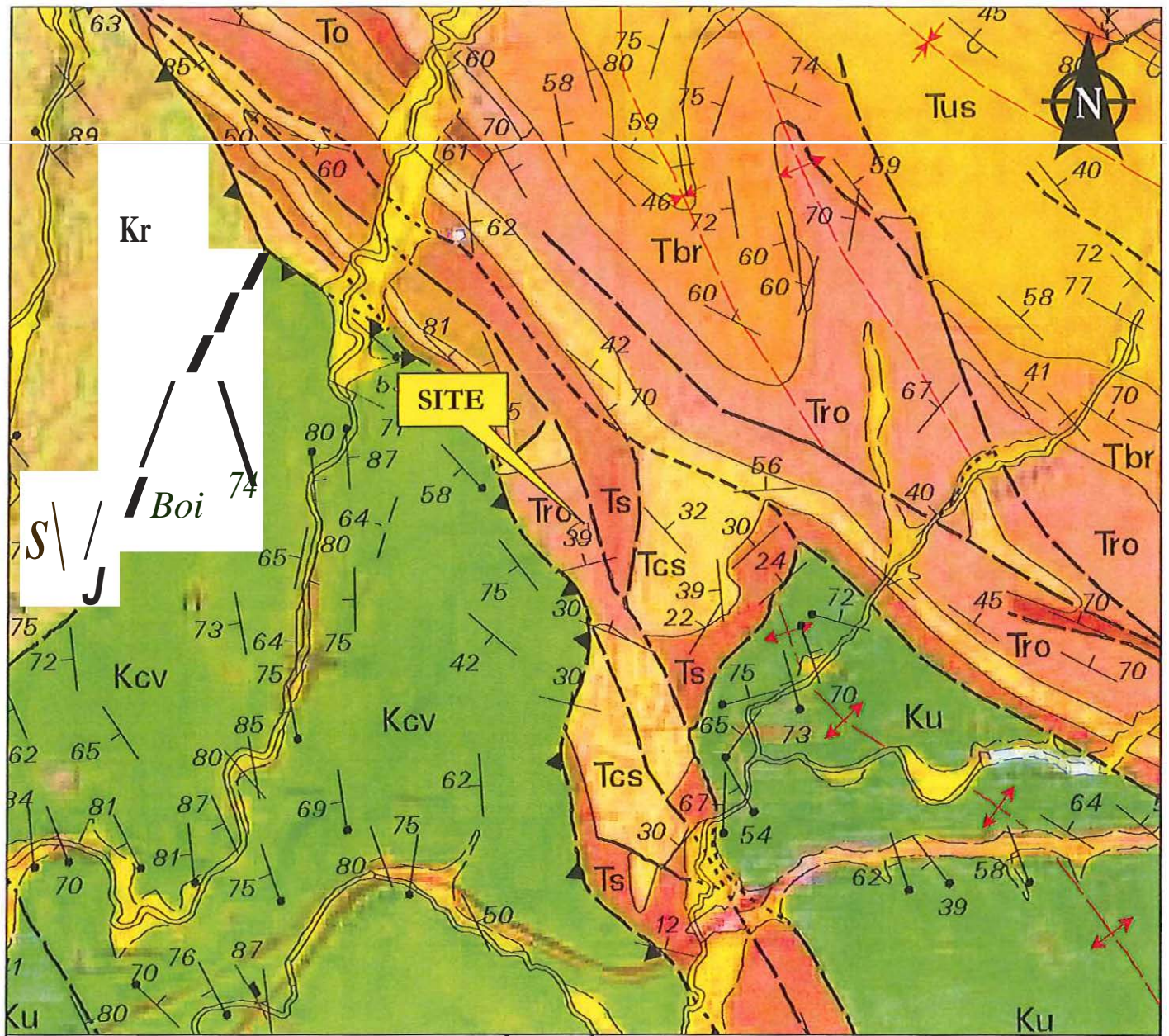
SITE PLAN

NEW RESIDENTIAL DEVELOPMENT

VILLAREAL DR & CLEMENT DR
CASTRO VALLEY, CALIFORNIA

PROJECT NO.
2072-JRt

OCTOBER 2014 | FIGURE A-2



Legend

- | | |
|---|--|
| <ul style="list-style-type: none"> Tbr Briones Formation Tro Rodeo Shale, Hambre Sandstone, Tice Shale, and Oursan Sandstone, undivided (middle Miocene) Tcs Claremont Formation - shale and chert Ts Sobrante Sandstone Ku Undivided sandstone and siltstone | <ul style="list-style-type: none"> Kcv Unnamed sandstone, conglomerate, and shale of the Castro Valley area ————— Contact, certain - - - - - Fault, dashed where approximate t r Reverse or thrust fault |
|---|--|

Base: Geologic Map and Database of the Oakland Metropolitan Area, Alameda, Contra Costa, and San Francisco Counties, California by R. Graymer, dated 2000 Scale: 1 inch = 2,000 feet.



NEW RESIDENTIAL DEVELOPMENT
VILLAREAL DR & CLEMENT DR

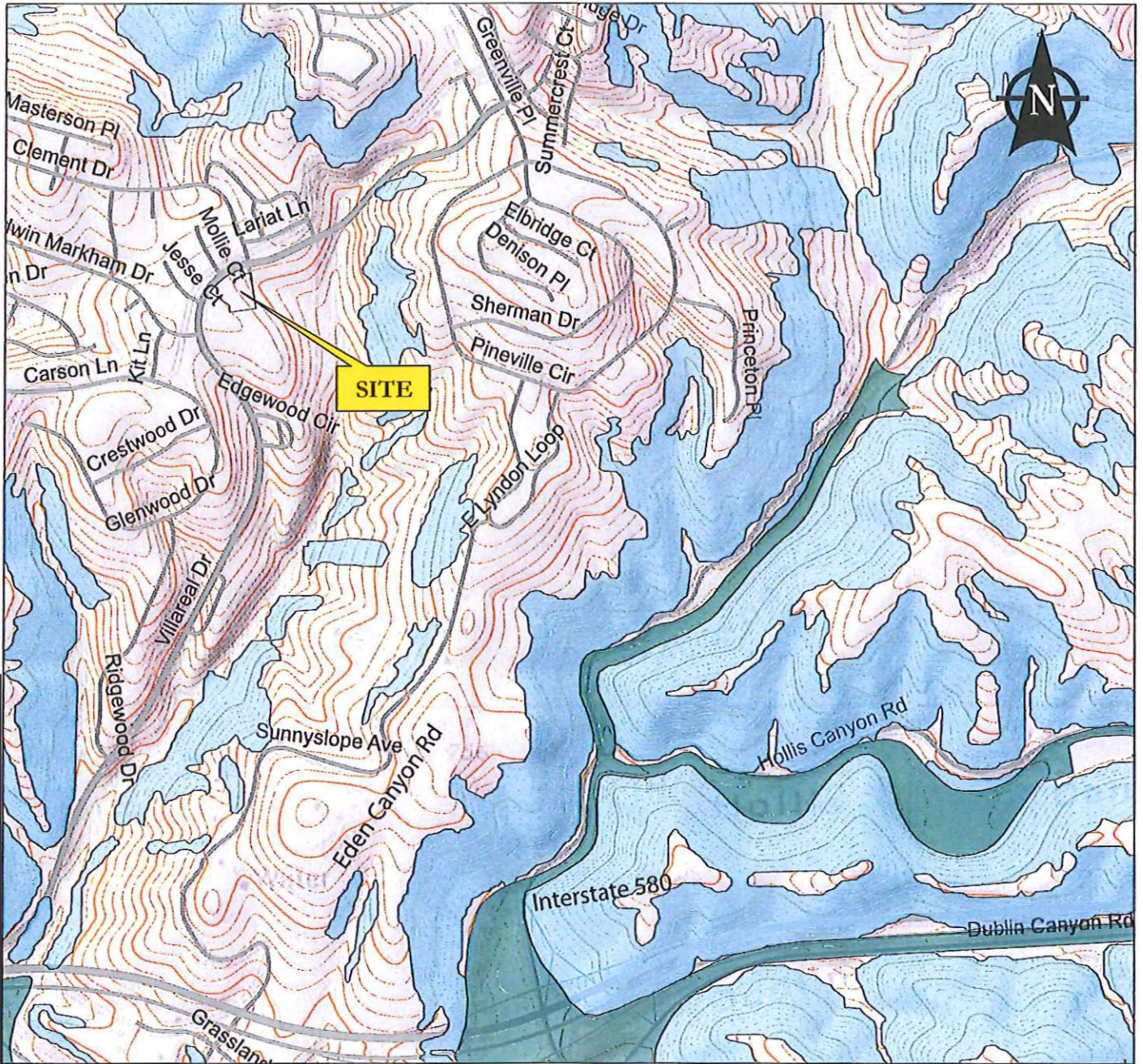
VICINITY
GEOLOGIC MAP

PROJECT

NO. 2072-IRI

OCTOBER 2014

FIGURE-3



Legend



Areas where historic occurrence of liquefaction, or local, geological, geotechnical and groundwater conditions indicate a potential for earthquake induced liquefaction

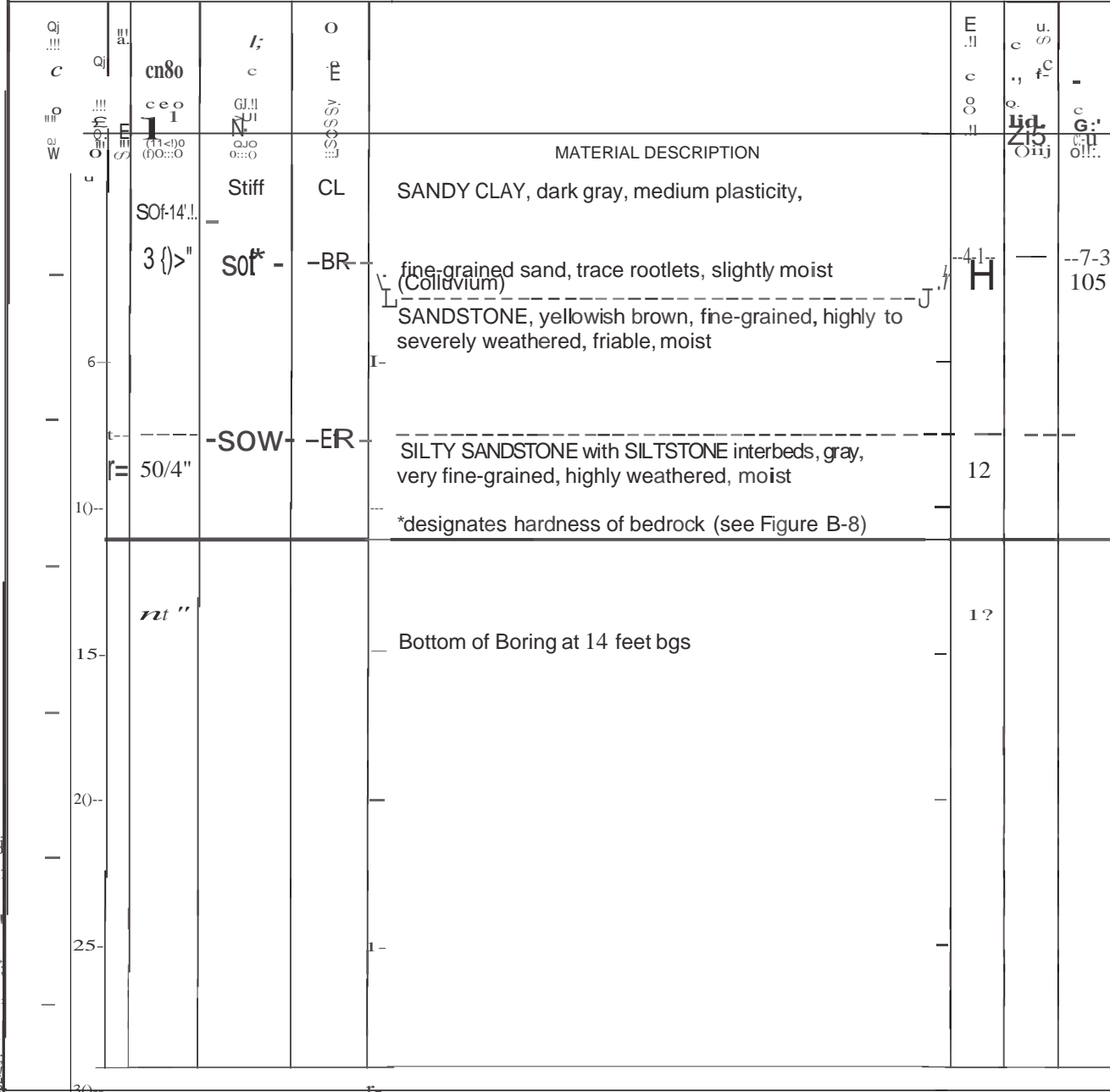


Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for earthquake induced landslide

Base: Earthquake Zones of Required Investigation, Hayward Quadrangle, California Geological Survey, 2012.
 Scale: 1 inch = 1,000 feet.

	NEW RESIDENTIAL DEVELOPMENT VILLAREAL DR & CLEMENT DR	STATE SEISMIC HAZARD ZONES MAP
	1 - - - - - cAsTrO v ALLEY, cAL - bRnIA - - - - - 1 - - - - -	

Date(s) Drilled	September 2, 2014	Logged By	RM	Checked By	JAS
Drilling Method	Hollow Stem Auger	Drill Bit Size/Type		Total Depth of Borehole	14 feet bgs
Drill Rig Type	Truck Mounted 853	Drilling Contractor	Exploration Geoservices, Inc.	Approximate Surface Elevation	
Groundwater Level and Date Measured	Not Encountered ATD	Sampling Method(s)	3" OD, 2.5" OD, & 2" OD SPT Split Spoon Samplers	Hammer Data	140 lb, 30 in drop, w/rel line
Borehole Backfill	Type II Cement	Location	Southwest corner of property adjacent to community center		



J. J. ENGINEERS INC

NEW RESIDENTIAL DEVELOPMENT
 VILLAREAL DR & CLEMENT DR
 CASTRO VALLEY, CALIFORNIA

LOG OF BORING B-1

PROJECT NO. 2072-1R11 OCTOBER 2014

FIGURE B-1

Date(s) Drilled September 2, 2014

Logged By RM

Checked By JAS

Drilling Method Hollow Stem Auger

Drill Bit Size/type 8 Inch diameter

Total Depth of Borehole 30 feet bgs

Drill Rig Type Truck Mounted 853

Drilling Contractor Exploration Geoservices, Inc.

Approximate Surface Elevation

Groundwater Level and Date Measured Not Encountered ATO

Sampling Method(s) 3" OO, 2.5" OO, & 2" OO SPT Split Spoon Samplers

Hammer Data 140 lb, 30 In drop, wireline

Borehole Backfill Type II Cement

Location Southeast corner of property near crest of descending swale

Qi	u	ij'	Q
c	cnfo	c:	o
o	a		
ii	E E•H:		
iii	oo <->		
o	<ll :ii	t>O	o

MATERIAL DESCRIPTION

SC	FILL: CLAYEY SAND with GRAVEL, yellowish brown, fine to medium grained sand, fine to medium gravels, low to medium plasticity fines, minor sandstone fragments, slightly moist	10	3.0
MC	FILL: CLAYEY SAND, yellowish brown to grayish brown with iron oxide staining, fine-grained, medium plasticity fines, minor sandstone fragments, moist	22	3.0
CL	FILL: SANDY CLAY, yellowish brown, heterogeneous, medium plasticity, fine to medium grained sand, moist	26	3.0
CUCH	FILL: SILTY to SANDY CLAY, dark gray to mottled yellow brown, heterogeneous, high plasticity, trace very fine sand, minor gravel, moist	23	2.0
CH	SILTY CLAY, olive brown, homogeneous, high plasticity, minor coarse grained sand, trace subangular to subrounded gravel, moist (Colluvium)	20	3.0

Bottom of Boring at 30 feet bgs

v_AL L...EY_c_AU_F_oR_IA

PROJECT NO. 2072-1R1j

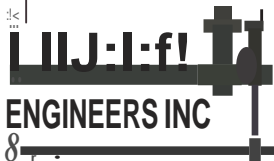
OCTOBER 2014

FIGURE B-2

Water Content,
%
Pocket Pen
Comp.
Strength, TSF
Dry Density
(PCF)

Date(s) Drilled September 2, 2014	Logged By RM	Checked By JAS
Drilling Method Hollow Stern Auger	Drill Bit Size/type 8 inch diameter	Total Depth of Borehole 14 feet bgs
Rig Truck Mounted 853	Drilling Contractor Exploration Geoservices, Inc.	Approximate Surface Elevation
Groundwater level and Date Measured Not Encountered ATD	Sampling Method(s) 3" OD, 2.5" OD, & 2" OD SPT Split Spoon Samplers	Hammer Data 140 lb, 30 In drop, wtireline
Borehole Backfill Type II Cement	location Center-east portion of property	

Elevation, feet	Depth, feet Sample Type Sampling Resistance, blows/foot	Relative Consistency	USCS Symbol	MATERIAL DESCRIPTION	Water Content, %	Pocket Pen Comp. Strength, TSF	Dry Density (PCF)
	38	Dense	SM	SILTY SAND with SANDSTONE interbeds, yellowish brown, slight iron oxide staining, very fine to fine-grained sand, low plasticity fines, moist (Colluvium)	18		75
	31				17		93
	50	Soft*	BR	SANDSTONE, yellowish brown, slight iron oxide staining, highly to severely weathered, moist *designates hardness of bedrock (see Figure B-8)	22		
50/5"					13		
1 (-)							
50					11.1		
16--				Practical Sampling Refusal			
2 (-)							
26--							
3D-							



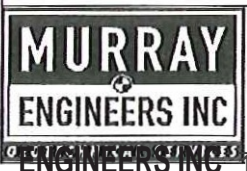
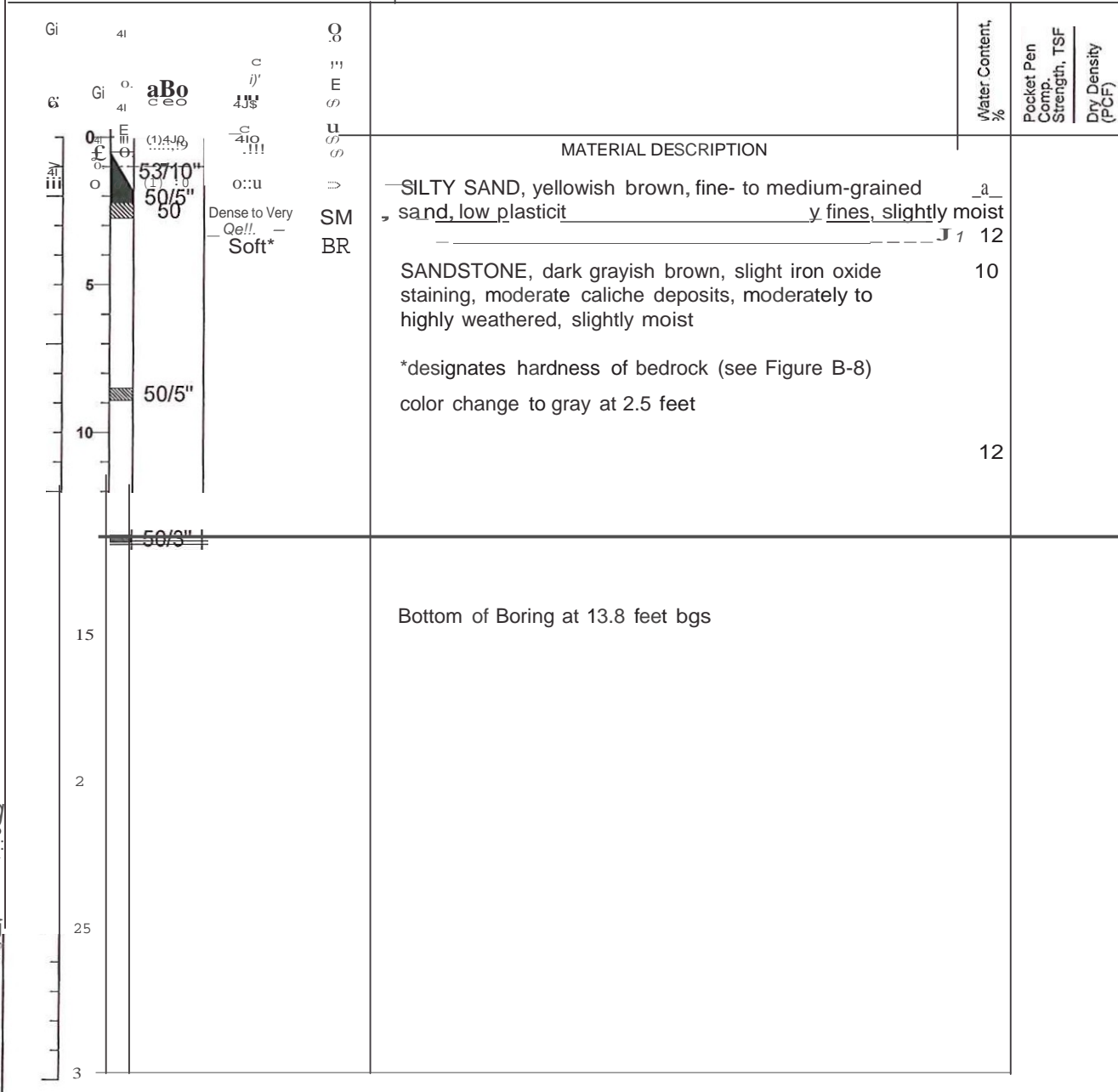
NEW RESIDENTIAL DEVELOPMENT
VILLAREAL DR & CLEMENT DR
CASTRO VALLEY, CALIFORNIA

LOG OF
BORING B-3

PROJECT NO. 2072-1R11 OCTOBER 2014

FIGURE 3

Date(s) Drilled September 2, 2014	Logged By RM	Checked By JAS
Drilling Method Hollow Stem Auger	Drill Bit Size/Type 8 inch diameter	Total Depth of Borehole 13.8 feet bgs
Drill Rig Type Truck Mounted B53	Drilling Contractor Exploration Geoservices, Inc.	Approximate Surface Elevation
Groundwater Level and Date Measured Not Encountered ATD	Sampling Method(s) 3" OD, 2.5" OD, & 2" OD SPT Split Spoon Samplers	Hammer Data 140 lb, 30 in drop, wireline
Borehole Backfill Type II Cement	Location Western corner of property	



NEW RESIDENTIAL DEVELOPMENT
VILLAREAL DR & CLEMENT DR

LOG OF BORING B-4

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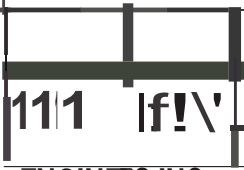
PROJECT NO. 2072-1R1

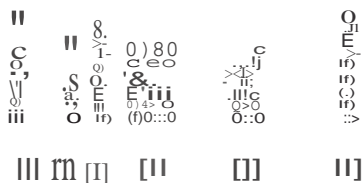
OCTOBER 2014

FIGURE B-4

Date(s) Drilled September 2, 2014	Logged By RM	Checked By JAS
Drilling Method Hollow Stem Auger	Drill Bit Size/Type 8 Inch diameter	Total Depth of Borehole 15 feet bgs
Drill Rig Type Truck Mounted 853	Drilling contractor Exploration Geoservices, Inc.	Approximate Surface Elevation
Groundwater Level and Date Measured Not Encountered ATD	Sampling Method(s) 3" OO, 2.5" OD, & 2" OO SPT Split Spoon Samplers	Hammer Data 140 lb, 30 In drop, wireline
Borehole Backfill Type II Cement	Location Northeast corner of property	

Depth (ft)	Soil Description	Soil Classification	Notes	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)
0 - 44	FILL: CLAYEY to SILTY SAND, yellowish brown, slight iron oxide staining, very fine to fine-grained sand, abundant sandstone fragments, low plasticity fines, moist	SM				
44 - 35						
35 - 32						
32 - 7	SANDY CLAY, organic-rich, dark gray, high plasticity, very moist (Buried Native Soil)	CL				
7 - 1	SILTY CLAY, yellowish brown to mottled gray, medium to high plasticity, moist (Colluvium)	CL				
1 - 15	SANDY SILTSTONE, grayish to olive brown, completely weathered, moist (Bedrock)	BR				
15 - 30	*designates hardness of bedrock (see Figure B-8) Bottom of Boring at 15 feet bgs					

	NEW RESIDENTIAL DEVELOPMENT VILLAREAL DR & CLEMENT DR CASTRO VALLEY, CALIFORNIA	LOG OF BORING B-5
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MATERIAL DESCRIPTION

Water Content, %
 Pocket Pen Comp. Strength, TSF
 Dry Density (PCF)

COLUMN DESCRIPTIONS

- [1] Elevation, feet: Elevation (MSL, feet)
- ||| Depth, feet: Depth in feet below the ground surface.
- [} Sample Type: Type of soil sample collected at the depth interval shown.
- [1] Sampling Resistance, blows/foot: Number of blows required to advance the sampler 12 inches or the distance shown. Blow counts for the 3.0-inch O.O. and 2.5-inch O.O. samplers have been corrected for sampler size to SPT values using conversion factors of 0.65 and 0.77, respectively.
- [§] Relative Consistency: Relative consistency of the subsurface material.

- (iii) USCS Symbol: USCS symbol of the subsurface material.
- (1) MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.
- [[]] Water Content, %: Water content of the soil sample, expressed as percentage of dry weight of sample.
- (1) Pocket Pen Comp. Strength, TSF: Approximate unconfined compressive strength in tons per square foot.
- (1Q) Dry Density (PCF): Dry weight per unit volume of soil sample measured in laboratory in pounds per cubic foot.

FIELD AND LABORATORY TEST ABBREVIATIONS

CHEM: Chemical tests to assess corrosivity
 COMP: Compaction test
 CONS: One-dimensional consolidation test
 LL: Liquid Limit, percent
 PI: Plasticity Index, percent

SA: Sieve analysis (percent passing No. 200 Sieve)
 UC: Unconfined compressive strength test, Qu, in ksf
 WA: Wash sieve (percent passing No. 200 Sieve)

TYPICAL MATERIAL GRAPHIC SYMBOLS

Sandstone GRAVEL (GV)
 Poorly graded GRAVEL (GP)
 Well graded GRAVEL with Silt (Gv) (GLG)
 Well graded GRAVEL with Clay (GW-GC)
 Poorly graded GRAVEL with Silty (GP-G, Q)
 Poorly graded GRAVEL with Clayey (GP-GC)
 Silty GRAVEL (GLQ)
 Clayey GRAVEL (GC)
 Well graded SAND (SV)
 Poorly graded SAND (SP)

Well graded SAND (SW-SI)
 Poorly graded SAND with Silt (SP, S, G)
 Poorly graded SAND with Clay (SP-SC)
 Silty SAND (SLI)
Clayey SAND (SC)
 SILT, SILT with SAND, SILTY SILT (LIL)
 CLAY, CLAY with SAND, CLAYEY CLAY (CL)
 SILT, SILT with SILT, SILTY SILT (L-LH)
 Fat CLAY, CLAY with SILT, CLAYEY CLAY (CH)
 SILT, SILT with SILT, SILTY SILT (L-L-LH)

Low-Fat CLAY, CLAY with SILT, SILTY CLAY (CL-CH)
 Silty CLAY (CL-L)
 Fat CLAY, PEAT (CL-LH)
 Fat CLAY SILT (CH-LH)
 Fat CLAY/PEAT (CH-OH)
 Silty SAND to Silty SILT (SL-L...L)
 Silty SAND to Silty SILT (SL-L-LH)
 Poorly graded SAND with CLAY (SC-GL)
 Poorly graded SAND with CLAY (SC-GH)
 Silty CLAY (L-L-L)
 Poorly graded SAND with CLAY (SC-ISM)

TYPICAL SAMPLER GRAPHIC SYMBOLS

2 inch-OD Unlined Split Spoon (SPT) Shelby Tube (thin-walled, fixed head) Pitcher Sample
 1 2.5 inch-OD Unlined Split Spoon Grab Sample Other Sampler
 3 inch-OD Unlined Split Spoon Bulk Sample

OTHER GRAPHIC SYMBOLS

Water level (at time of drilling, ATD)
 Water level (after waiting a given time)
 Minor change in material properties within a stratum
 Inferred or gradational contact between strata
 Queried contact between strata

GENERAL NOTES

- Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual geologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
- Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

INGRS Rosewood-2072-1, Lanes 1123, Murray, 32, W.C.

PRIMARY DIVISIONS		SOIL TYPE	SECONDARY DIVISIONS	
COARSE GRAINED SOILS (<50% Fines)	GRAVEL	CLEAN GRAVEL {<5% Fines}	GW	Well graded gravel, gravel-sand mixtures, little or no fines.
			GP	Poorly graded gravel or gravel-sand mixtures, little or no fines.
		GRAVEL with FINES	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines.
	SAND	CLEAN SAND (<5% Fines)	GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines.
			SW	Well graded sands, gravelly sands, little or no fines.
		SAND with FINES	SP	Poorly graded sands or gravelly sands, little or no fines.
			SM	Silty sands, sand-silt mixtures, non-plastic fines.
	FINE GRAINED SOILS (>50% Fines)	SILT AND CLAY <i>Liquid limit <50%</i>	SC	Clayey sands, sand-clay mixtures, plastic fines.
ML			Inorganic silts and very fine sands, with slight plasticity.	
CL			Inorganic clays of low to medium plasticity, lean clays.	
SILT AND CLAY <i>Liquid limit >50%</i>		OL	Organic silts and organic clays of low plasticity.	
		MH	Inorganic silt, micaceous or diatomaceous fine sandy or silty soil.	
		CH	Inorganic clays of high plasticity, fat clays.	
		OH	Organic clays of medium to high plasticity, organic silts.	
HIGHLY ORGANIC SOILS		Pt	Peat and other highly organic soils.	

RELATIVE DENSITY	
SAND & GRAVEL	BLOWS/FOOT*
VERY LOOSE	0 to 4
LOOSE	4 to 10
MEDIUM DENSE	10 to 30
DENSE	30 to 50
VERY DENSE	OVER 50

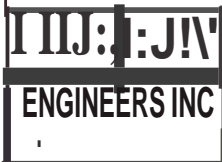
CONSISTENCY		
SILT & CLAY	STRENGTH"	BLOWS/FOOT*
VERY SOFT	0 to 0.25	0 to 2
SOFT	0.25 to 0.5	2 to 4
MEDIUM STIFF	0.5 to 1	4 to 8
STIFF	1 to 2	8 to 16
VERY STIFF	2 to 4	16 to 32
HARD	OVER 4	OVER 32

GRAIN SIZES							
BOULDERS	COBBLES	GRAVEL		SAND			SILT & CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	
12"	3"	3/4"	4	10	40	200	
SIEVE OPENINGS		U.S. STANDARD SERIES SIEVE					

Classification is based on the Unified Soil Classification System; fines refer to soil passing a No. 200 sieve.

*Standard penetration test (SPT) resistance using a 140-pound hammer falling 30 inches on a 2-inch outside diameter split spoon sampler; blow counts for the 3.0-inch O.D. and 2.5-inch O.D. samplers have been corrected for sampler size to SPT values using conversion factors of 0.65 and 0.77, respectively.

1) Shear strength in tons/sq. ft. as estimated by SPT resistance, field and laboratory tests, and/or visual observation.



NEW RESIDENTIAL DEVELOPMENT
VILLAREAL DR & CLEMENT DR
CASTRO VALLEY, CALIFORNIA

PROJECT NO. 2072-1R1 | OCTOBER 2014

UNIFIED SOIL
CLASSIFICATION
SYSTEM

FIGURE B-7

WEATHERING

Fresh

Rock fresh, crystals bright, few joints may show slight staining. Rock rings under hammer if crystalline.

Very Slight

Rock generally fresh, joints stained, some joints may show thin clay coatings, crystals in broken face show bright. Rock rings under hammer if crystalline.

Slight

Rock generally fresh, joints stained, and discoloration extends into rock up to 1 inch. Joints may contain clay. In granitoid rocks some occasional feldspar crystals are dull and discolored. Crystalline rocks ring under hammer.

Moderate

Significant portions of rock show discoloration and weathering effects. In granitoid rocks, most feldspars are dull and discolored; some are clayey. Rock has dull sound under hammer and shows significant loss of strength as compared with fresh rock.

Moderately Severe

All rock except quartz discolored or stained. In granitoid rocks, all feldspars dull and discolored and majority show kaolinization. Rock shows severe loss of strength and can be excavated with geologist's pick. Rock goes "clunk" when struck.

Severe

All rock except quartz discolored or stained. Rock "fabric" clear and evident, but reduced in strength to strong soil. In granitoid rocks, all feldspars kaolinized to some extent. Some fragments of strong rock usually left.

Very Severe

All rock except quartz discolored and stained. Rock "fabric" discernible, but mass effectively reduced to "soil" with only fragments of strong rock remaining.

Complete

Rock reduced to "soil". Rock fabric not discernible or discernible only in small scattered locations. Quartz may be present as dikes or stringers.

HARDNESS

Very Hard

Cannot be scratched with knife or sharp pick. Hand specimens require several hard blows of geologist's hammer.

Hard

Can be scratched with knife or pick only with difficulty. Hard blow of hammer required to detach hand specimen.

Moderately Hard

Can be scratched with knife or pick. Gouges or grooves to 1/4 inch deep can be excavated by hard blow of point of a geologist's pick. Hard specimen can be detached by moderate blow.

Medium

Can be grooved or gonged 1/16 inch deep by firm pressure on knife or pick point. Can be excavated in small chips to pieces about 1/2 inch maximum size by hard blows of the point of geologist's pick.

Soft

Can be gouged or grooved readily with knife or pick point. Can be excavated in chips to pieces several inches in size by moderate blows of a pick point. Small thin pieces can be broken by finger pressure.

Very Soft

Can be carved with knife. Can be excavated readily with point of pick. Pieces 1/2 inch or more in thickness can be broken with finger pressure. Can be scratched readily by fingernail.

JOINT BEDDING & FOLIATION SPACING

Spacing	Joints	Bedding & Foliation
Less than 2 in.	Very Close	Very Thin
2 in to 1 ft.	Close	Thin
1 ft. to 3 ft.	Moderately Close	Medium
3 ft. to 10 ft.	Wide	Thick
More than 10 ft.	Very Wide	Very Thick

ROCK QUALITY DESIGNATOR (RQD)

RQD, as a percentage	Descriptor
Exceeding 90	Excellent
90 to 75	Good
75 to 50	Fair
50 to 25	Poor
Less than 25	Very Poor

MURRA
ENGINEERS INC.

NEW RESIDENTIAL DEVELOPMENT
VILLAREAL DR & CLEMENT DR

KEY TO BEDROCK

1---c_A_s_T_R_o_vALL_EY_e_AUF_o_RN_I_A ---1---

D_Esc_R_IP_TI_o_N_s ---

GEOTECHNICAL SERVICE

PROJECT NO. 2072-1R1

OCTOBER 2014

FIGURE B-8

APPENDIX C

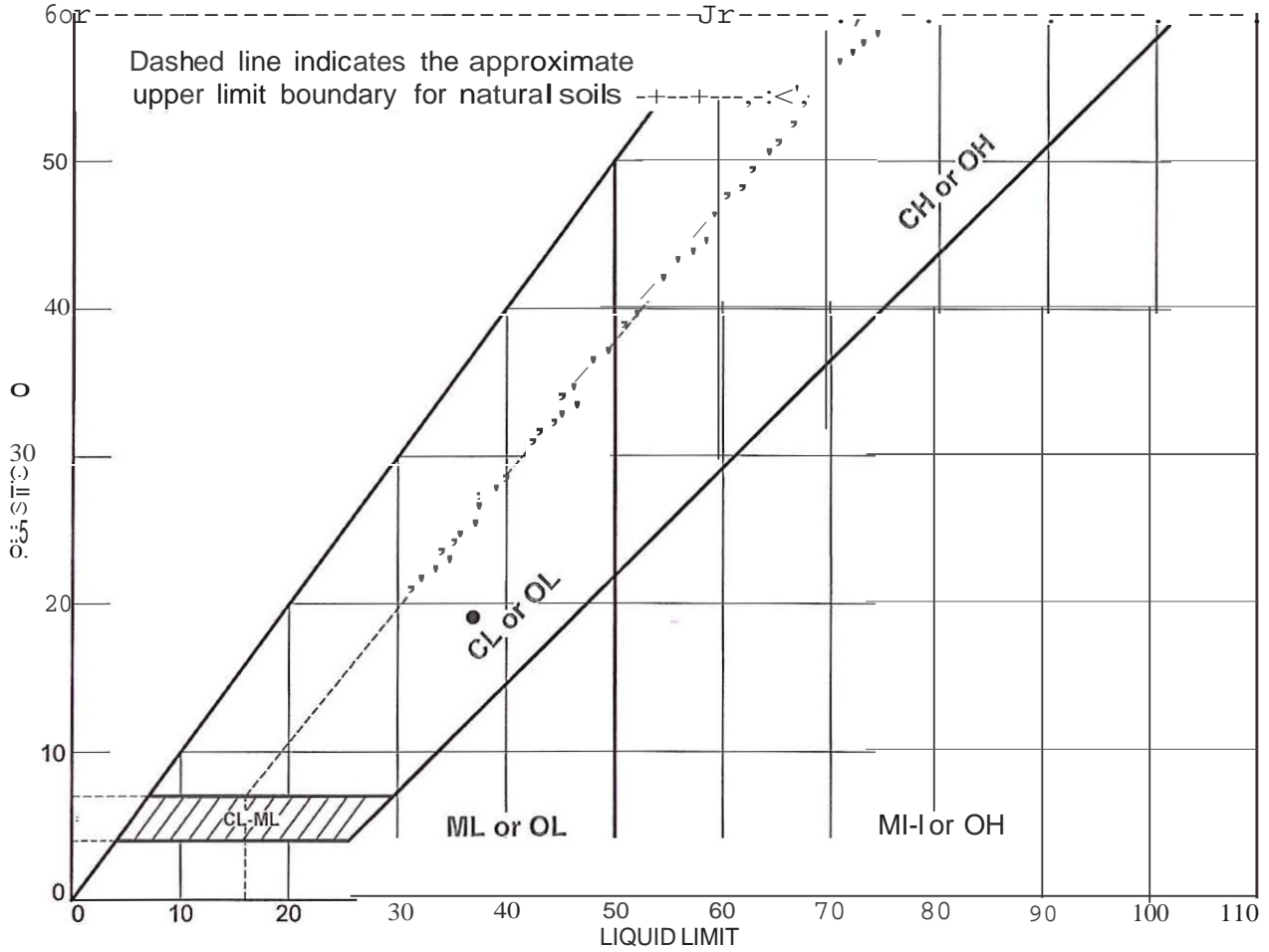
LABORATORY TESTS

Samples from the subsurface exploration were selected for tests to evaluate the physical and engineering properties of the soils. The tests performed are briefly described below.

Natural moisture content was established on most samples recovered from our borings and dry density was established on select samples. The samples were initially trimmed to obtain volume and wet weight measurements and subsequently dried in accordance with ASTM D2216. After drying, the weight of each sample was obtained to establish the moisture content and dry density representative of field conditions and time the samples were collected. The results are presented on the boring logs at the appropriate sample depths.

The Atterberg Limits were evaluated on one sample in accordance with ASTM D 4318. The Atterberg limits are the moisture content within which the soil is workable or plastic. The results of this test are presented in Figure C-1 and on the boring log at the appropriate sample depth.

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	uses
●	Boring 2	I	0.5' to 2'	9.9	18	37	19	CL



NEW RESIDENTIAL DEVELOPMENT
VILLAREAL DR & CLEMENT DR

LIQUID & PLASTIC

---c_A_sTRo_vAL_L_EY_c AL F oR_N_I_A --- L_I_M_I_T_s_T_E_s_T_R_E_P_o_R_T

*PRELIMINARY ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COSTS
 RUT/SHAUSER PROPERTY
 CASTRO VALLEY, ALAMEDA COUNTY, CALIFORNIA
 (8 Single Family Lots)*

October 6, 2014
 Job No. 141069

SUMMARY

A.	GRADING/SITE WORK	\$64,800
B.	ASPHALT PAVING	\$78,620
C.	CONCRETE	\$50,290
D.	SANITARY SEWER	\$46,550
E.	STORM DRAIN	\$211,400
F.	WATER LINE	\$135,500
G.	JOINT TRENCH	\$70,500
H.	MISCELLANEOUS	\$121,720
	TOTAL=	<u>\$779,380</u>
	15% CONSTRUCTION CONTINGENCY=	<u>\$116,910</u>
	TOTAL ESTIMATED CONSTRUCTION COST=	<u>\$896,290</u>
	COST PER LOT (8) =	\$112,040

Notes:-

1. All cost figures are given as estimates only. Actual cost will be dependent on the cost figures at bidding time; the general market situation, contractor's work load, seasonal factor, labor and cost, etc. This engineering firm cannot be responsible for fluctuations in cost factors.
2. This engineer's opinion is based on the Preliminary Site Plan, dated October 6, 2014, prepared by Ruggeri-Jensen-Azar and the Vesting Tentative Map, dated October 6, 2014, prepared by Ruggeri-Jensen-Azar.
3. This engineer's opinion does not include any agency fees.
4. This engineer's opinion does not include any new fencing or gates stated by the Landscape plan.
5. This engineer's opinion does not include any geotechnical recommendation, if required, since a geotechnical investigation is not available at the time this opinion is prepared.



PRELIMINARY ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COSTS
RUTISHAUSER PROPERTY

CASTRO VALLEY, ALAMEDA COUNTY, CALIFORNIA
(8 Single Family Lots)

October 6, 2014
Job No. 141069

Table with 4 columns: DESCRIPTION, QUANTITY, UNIT PRICE, AMOUNT. Rows include categories A. GRADING/SITE WORK, B. ASPHALT PAVING, C. CONCRETE, D. SANITARY SEWER, and E. STORM DRAIN with various sub-items and their respective costs.

PRELIMINARY ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COSTS
 RUTISHAUSERPROPERTY
 CASTRO VALLEY, ALAMEDA COUNTY, CALIFORNIA
 (8 Single Family Lots)

October 6, 2014
 Job No. 141069

DESCRIPTION	QUANTITY	UNIT PRICE	AMOUNT
F. WATER LINE			
1. 8" PVC (Including Valves and Fittings)	1,200 LF	\$75.00	\$90,000
2. Fire Hydrant & Valve	1 EA	\$5,000.00	\$5,000
3. Connect to Existing Water Line	2 EA	\$5,000.00	\$10,000
4. 1" Domestic Wate Meter & Service	8 EA	\$3,500.00	\$28,000
5. 1" Irrigation Meter & Service	1 EA	\$2,500.00	\$2,500
		SUBTOTAL=	\$135,500
G. JOINT TRENCH			
1. Joint Trench	400 LF	\$100.00	\$40,000
2. Street Lights	3 EA	\$3,500.00	\$10,500
3. Transformer (Assume one only)	1 EA	\$20,000.00	\$20,000
		SUBTOTAL=	\$70,500
H. MISCELLANEOUS			
1. Signing and Striping	LS	\$3,000.00	\$3,000
2. Retaining Wall (Avg. 2' High)	170 LF	\$100.00	\$17,000
3. Retaining Wall (Avg. 3.5' High)	150 LF	\$120.00	\$18,000
4. Landscaping	9,840 SF	\$8.00	\$78,720
5. Irrigation Sleeve	1 LS	\$2,500.00	\$2,500
6. Street Monument	5 EA	\$500.00	\$2,500
		SUBTOTAL=	\$121,720