DAVE OLNES P.E. INC.
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7915 CREST AVENUE, OAKLAND, CALIFORNIA 94605
PHONE & FAX: (510) 568-2162 davedlnes@sbcglobal.net

November 15, 2019 O-4668

Stacy and John Peoples
209 3rd Street #6
Sausalito, CA 94965

RE: Geotechnical Investigation
Proposed New Residence
63 Spring Lane, Fairfax

Dear Mr. and Mrs. Mrs. Peoples:

In accordance with your request, we have conducted a geotechnical investigation into the subsurface conditions at your property, located at 63 Spring Lane in Fairfax. The purpose of the investigation was to evaluate the suitability of this site for a proposed new residence.

The property is situated off the end of a spur ridge, which rises to the southeast at a moderately steep gradient. Our investigation included the drilling of six borings, covering the proposed building sites. All of the borings encountered reasonably competent Sandstone and Shale bedrock within 4 to 5 feet of the surface. The proposed structure will include a basement garage bearing on a level bedrock cut, with tall foundation walls at the perimeters. This portion of the structure may bear on a spread footing. The rest of the house, along with any other significant structures perched on sloping grades, should bear on drilled piers.

Given the convex orientation of the slope contours at this site, it is our opinion that this property is not likely to be affected by debris flow landsliding, as occurred at the adjacent property to the right (which backs up to a topographic swale). However, the site does include several old retaining walls and low, unsupported cuts, all of which will require new pier-supported retaining walls.

If you have any questions regarding the findings or recommendations contained in this report, or if you are ready for a plan review or foundation inspection, please contact our office.

Sincerely,

REGISTERED PROFESSIONAL ENGINEER DAVID A. OLNES GE 2469 Exp. 9-30-21 GEOTECHNICAL STATE OF CALIFORNIA

Dave Olnes, PE
GE 2469

2Spring(63)-Geotech

ATTACHMENT C

GEOTECHNICAL INVESTIGATION

PURPOSE AND SCOPE OF SERVICES: The purpose of this investigation was to explore the soils and geological conditions in the vicinity of proposed improvements at the subject property, and to provide appropriate geotechnical guidelines governing the construction of the proposed new residence.

The scope of services for this investigation included review of published geological literature, exploration of the subsurface conditions in the vicinity of proposed construction, limited laboratory testing and preparation of this report. This investigation did not include screening for potential hazardous materials.

SITE DESCRIPTION AND PROPOSED CONSTRUCTION: The subject property consists of a steeply up-sloping lot situated just beyond the hairpin turn in Spring Lane. The slopes at the property rise to the southeast at a gradient that varies from approximately 2:1 to 3:1 at the lower portion of the site, and up to 1.5:1 on the upper slope. A gravel fire road cuts across the base of the lot, wrapping around Spring Lane to eventually meet with Deer Park Lane to the northwest. The prior owners cut another crude dirt road that winds up the slope to the center of the lot, where a redwood deck exists. A dilapidated wood wall supports the down-slope edge of the gravel fire road across the frontage of the lot. There is another crude railroad tie wall above the proposed house site, as well as several unsupported cut banks. To the right of the proposed house site there is a large fill mound which buries the base of a mature Bay tree.

It is our understanding that you plan to construct a partial 3-story wood framed house sited on the lower third of the lot. The lowest level will contain a basement garage at the right end, formed by a foundation wall approximately 16 feet in height. There will be two bedrooms, a bathroom and a laundry room on a mid level above the garage. The main living space will occupy the upper level, expanding the footprint of the house to the left. A new concrete driveway will swing off the existing gravel road to meet the garage. The dilapidated wood walls below the gravel road will be replaced, and additional retaining walls will be needed along the driveway ramp.

GEOLOGY: Review of a geology map for the area by Smith, Rice and Strand indicates that the site is underlain by Franciscan Melange bedrock (see Figure 1). Franciscan Melange (FM) is common throughout much of Marin County, and consists of jumbled rock masses, highly altered by ancient tectonic activity. The bedrock units in the vicinity of the site are composed largely of sheared Sandstone and Shale. No bedrock is exposed in the immediate vicinity of the site (Sheared Shale weathers easily where exposed, and very difficult to identify as "rock" in older road cuts).

SLOPE STABILITY: As with much of the hillside areas of Fairfax, the slopes in the vicinity of the subject site have been mapped as an area of potential surficial landsliding (see Figure 1). Because of this, the stability study associated with the Smith-Rice map has assigned the site a stability number of 4, indicating a high potential for instability.

The site lies roughly along the alignment of a spur ridge. As a result, the slope contours across the lot are slightly convex, defined by topographic swales centered on the properties to the right and left. It is our understanding that during the major storm of New Years Eve 2005, a large debris flow event occurred within the swale to the right. Surface soils apparently sloughed off a steep section of the slope at the southwestern flank of the spur ridge, and the resulting mud flow that apparently filled up the lower floor of the neighboring house to the right (65 Spring). We have the approximate location of this slide feature on a topographic map on Figure 3. The fill mound at the base of the Bay tree at the right front corner of the subject property is probably a vestige of the clean up from that slide (the owner of that property apparently also owned the subject property, and apparently placed some of the debris to that area). In an effort to protect 65 Spring Lane from further innundation, a stout, cable-reinforced chain link fence was constructed across the up-slope perimeter of that property, to act as a debris catchment. No evidence of active sliding was observed in our reconnaissance of the property.

SITE DRAINAGE: As stated, the lot is sited along the axis of a spur ridge, off the western flank of a prominent ridge line, the crest of which is situated approximately 1000 feet to the southeast of the site, and due east of Deer Park School. The potential watershed through the site comprises roughly 2 acres (see Figure 3).

The subject property is situated at a just east of a relative high point in Spring Lane. In front of the subject site, the road surface is pitched toward the up-slope shoulder, where a subtle swale conducts storm runoff to the east, toward the hairpin turn. A 12-inch culvert carries this runoff under the driveway at 53 Spring Lane, discharging to a well defined drainage channel which passes just beyond the hairpin turn, and follows the rear property lines of the lower lots along Spring Lane.

SEISMICITY: It should be considered common knowledge that this site and the Bay Area in general are subject to strong ground shaking due to the regular occurrence of large earthquakes. The site is located approximately 7 miles east of the San Andreas Fault (type A), which has a Maximum Credible Earthquake (MCE) of 8.1 moment magnitude. Other surrounding active faults with equal or lesser expected magnitudes and probabilities include the Hayward Fault (type A), located approximately 14 miles to the east, and the Concord/Calavaras Fault (type B), located approximately 24 miles to the east.

The northern section of the San Andreas Fault has been estimated at a 22% probability for producing an earthquake larger 6.7 before 2043, and the Bay Area as a whole has a probability of 65%.

As no alluvial soils were observed in the area, there is no potential for liquefaction at the site. Since the site is located outside of the Alquist-Priolo Special Studies Zone, the risk of ground rupture is also considered to be very low. Given the shallow depth to competent bedrock, there is little risk of seismically induced landsliding.

SEISMIC DESIGN FACTORS: Design of the new improvements in accordance with the **2016 CBC** (pursuant to ASCE 7-10) should utilize the following factors:

Site Class:	B
Mapped Short Period Spectral Acceleration, S_s:	1.5
Mapped 1-Second Spectral Acceleration, S_1:	0.632
Short Period Site Coefficient, F_a:	1.0
1-Second Site Coefficient, F_v:	1.0
Modified Short Period Spectral Acceleration, S_{ms}:	1.5
Modified 1-Second Spectral Acceleration, S_{m1}:	0.632
Design Short Period Spectral Acceleration, S_{ds}:	1.000
Design 1-Second Spectral Acceleration, S_{d1}:	0.421
Design Category:	E

Design of the new improvements in accordance with the **2019 CBC** (pursuant to ASCE 7-16) should utilize the following factors:

Site Class:	B
Mapped Short Period Spectral Acceleration, S_s:	1.50
Mapped 1-Second Spectral Acceleration, S_1:	0.60
Short Period Site Coefficient, F_a:	0.9
1-Second Site Coefficient, F_v:	0.8
Modified Short Period Spectral Acceleration, S_{ms}:	1.35
Modified 1-Second Spectral Acceleration, S_{m1}:	0.48
Design Short Period Spectral Acceleration, S_{ds}:	0.90
Design 1-Second Spectral Acceleration, S_{d1}:	0.32
Design Category:	E

FIELD AND LABORATORY INVESTIGATION: Subsurface conditions at the site were investigated by performing six exploratory borings at the locations shown on the attached Boring Location Plan (Figure 2). The first two borings B1 and B2 were drilled with a truck mounted rig along the proposed driveway alignment. These borings utilized at 6-inch auger and were sampled with a 140-pound dropping hammer. The other four borings were performed on the slope using a 2-inch hand auger, and were sampled with a 70-pound dropping hammer. The blow counts at each hand auger location were converted to standard values using a conversion factor of 2/3. Samples were initially logged in the field and later returned to the laboratory for extrusion and further identification. The samples were then weighed and dried for moisture content determination. Logs of the borings are included on attached Figures 4 through 8.

SUBSURFACE FINDINGS: The upper borings encountered a soft top soil layer consisting of brown fine sandy Silt with Sandstone fragments, which typically varied from 2 to 3 feet in depth. Most of the borings contained 2 to 3 feet of residual soils, consisting of rusty tan-brown silty fine Sand with increasing rock structure. Tan-brown to grey-brown sheared Shale and Sandstone bedrock was typically encountered at depths of 4 to 5 feet. However, the boring at the center of the existing lower driveway (B1), which is apparently located within a cut below the original grade, encountered sheared bedrock at a depth of just 2 feet.

The first two borings at the proposed driveway were extended to depths of 18 and 21 feet to assess the quality of the bedrock at depth. As is typically the case with Franciscan Melange, the bedrock was found to have a variable structure, and contained layers of sheared Shale. This material should not be difficult to drill or excavate, but will require shoring or lay-back at the deep vertical cuts for the garage.

No groundwater was encountered during drilling.

CONCLUSIONS AND COMMENTARY: Based on our assessment, it is our opinion that the subject site is stable and suitable for the proposed construction. Portions of the new house structure will be sited on the slope, and therefore will require pier and grade beam foundations. The piers should be 18 inches in diameter and should be drilled at least 8 feet into bedrock. Thus total depths of 12 to 15 feet should be anticipated.

The proposed garage structure will be carved well into the slope, and may therefore bear on spread footings. The deep cuts required for the garage should be shored to protect workers from possible collapse of the sheared rock. The side cuts may be shored with shotcrete and soil nails, or with soldier piers braced at the top by cross struts spanning across the excavation. Alternatively the cuts may be laid back at 45 degrees above a vertical height of 5 feet.

Given the convex configuration of the slope contours, it is our opinion that the site is not at a high risk for debris flow events, unlike the swales that are centered on the lots to the right and left. However, to be cautious, it would be well to replace the existing dilapidated walls on the property, and the vertical cut banks along the old road winding up to the top of the lot should be retained or laid back. The fill mound to the right of the building site should be removed.

On-site dispersal of stormwater, which is often required by permitting agencies, should be avoided in this case, as it could affect the stability of the road cut at the base of the site. It is recommended that the asphalt swale along the property frontage be improved upon, and all collected storm water should be directed to this swale.

In summary, it is our opinion that the site is suitable for the proposed construction, provided that the following recommendations are adhered to.

RECOMMENDATIONS

1. **GRADING:** Very significant cuts will be required in order to create the pad for the garage. No fill grading is anticipated. Fill soils should not be placed on the site slopes, except where retained by structural walls.

   1.1 **Site Preparation:** Areas to receive fill or flatwork shall be cleared of vegetation and stripped to a sufficient depth to remove major root systems. The stripped organic top soil material may be stock piled for later use in landscaping areas.

   1.2 **Cut Grading:** Permanent cut slopes shall be at a maximum inclination of 2:1 (horizontal to vertical) or shall be retained by structural walls in accordance with the recommendations below. Temporary cut slopes over 5 feet in height should be laid back at 45-degrees, or shall otherwise be shored with temporary walls. The design and implementation of embankment shoring, in conformance with OSHA requirements, shall be the sole responsibility of the contractor.

   1.3 **Fill Grading:** Fills placed on slopes shall be retained at the base by structural walls, and shall be progressively step benched proceeding up the slope from the wall. The undersigned Geotechnical Engineer shall inspect and approve all fill placement in progress. Fills shall be placed in level lifts no more than 8 inches in thickness, and shall be compacted to 95% relative compaction. Fill slopes shall not exceed a 2:1 gradient. Existing site soils are suitable as fill provided they are free of organic material and of rocks or rubble greater than 6 inches in diameter.

   1.4 **Backfill of Utility Trenches:** Utility trench backfill shall be compacted to a relative density of 95% under pavement and foundation areas, and 90% elsewhere. Trenches shall be capped with at least 18 inches of relatively impermeable material (site soils are acceptable).

2. **FOUNDATIONS:** Where the proposed new structures are sited in level cuts exposing bedrock, foundations may consist of continuous spread footings per Section 2.1. Structures sited on or within 10 feet of descending grades shall bear on drilled pier and grade beam foundations per Section 2.2.

   2.1 **Spread Footings:** Spread footings shall be a minimum of 18 inches in width, and shall extend a minimum 24 inches below the *existing ground surface*, or as needed to achieve full bearing in bedrock. No footings shall bear on fill or top soils. Footings located in areas of cut need only extend 12 inches into bedrock. The undersigned Geotechnical Engineer shall inspect and verify all footing trenches prior to placement of reinforcing steel concrete.

2.1a **Bearing Pressures of Footings:** Footings bearing on bedrock may be designed for bearing pressure of 2500 psf.

2.1b **Lateral Resistance of Footings:** Lateral resistance for spread footings constructed in accordance with Section 2.1, may assume a friction value of 0.40 and a passive resistance of 450pcf for footings bearing on bedrock. The bearing and passive resistance may be increased by 1/3 for short-term seismic and wind loads.

2.2 **Pier and Grade Beam Foundations:** Pier and grade beam foundations shall be used on or within 10 feet of sloping grades. All piers should be at least 18-inches in diameter and should extend at least 8 feet into bedrock, or to *minimum* depths of 12 feet.

2.2a **Bearing Friction of Piers:** Piers constructed in accordance with Section 2.2 may be designed for a friction value of 750psf for the portion of pier extending into bedrock (Assumed to begin at a depth of 4 to 5 feet in the hillside locations).

2.2b **Lateral Resistance of Piers:** No soil creep forces are assumed to exist at this site. However, resistance to retained earth forces or other lateral structural loadings may be achieved assuming a passive pressure of 450pcf, acting against 2 pier diameters, beginning at the top of bedrock (assume a depth of 4 feet). This value may be increased by 1/3 for short-term seismic loads.

2.2c **Minimal Pier Reinforcing:** All piers shall contain a minimum of six #5 bars enclosed by a #3 spiral at a 6-inch pitch.

3. **FLOOR SLABS ON GRADE:** Floor slabs constructed on grade shall be a minimum of 5 inches thick and shall be reinforced with a minimum of #4 bars at 18 inches on center each way. Slab reinforcing shall be integrated into the structural foundations. Floor slabs used as living space shall be constructed over a moisture barrier consisting of 4 inches of *3/8-inch pea gravel* (do not use 3/4-inch crushed rock as the sharp edges tend to perforate the membrane), covered by a minimum 10-mil plastic membrane.

4. **RETAINING WALLS:** Retaining walls or foundation walls shall be designed for an active pressure of 45pcf where the backfill gradient is less than 3:1, or 55pcf where the backfill gradient is steeper than 3:1. Walls bearing on level cuts exposing bedrock may be supported on spread footings per Section 2.1. Walls perched on sloping grades must be supported by drilled piers per Section 2.2.

4.1 **Vehicular Surcharge:** Walls supporting the down-slope edges of private driveways shall account for vehicular surcharge by adding 1 additional foot to the effective design height (ie a 4-foot tall wall supporting a driveway should be designed for an effective height of 5 feet.)

4.2 **Seismic Surcharge:** Walls exceeding a retained height of 6 feet shall include a uniform seismic surcharge of 10psf/foot of height (ie for a 10 foot tall wall, the surcharge would be 100psf). For retaining walls supporting bedrock cuts, the active pressure may be reduced to 30pcf when considering the seismic case. For walls supporting fill soils, there should be no reduction in active pressure, so the seismic case will govern.

4.3 **Retaining Wall Drainage:** Retaining walls and foundation walls shall ideally be fully back drained with 3/4-inch drain rock wrapped in filter cloth or CALTRANS Class II Permeable drain rock without filter cloth. However the foundation walls of the garage may utilize a Miradrain panel, if the wall is to be constructed with shotcrete, provided that the installer of the waterproofing and drainage panel are willing to guarantee the wall against leaks for a period of at least 10 years. A 4-inch PVC pipe shall be installed along the base of the wall, placed at least 6 inches below the subgrade of the adjacent floor slabs, and shall be sloped at 1% minimum to outlet to an appropriate discharge point. In addition, foundation walls shall incorporate waterproofing membranes (such as Bituthane, Prepruf or Paraseal), installed per manufacturer's recommendations. Landscape walls may utilize weep holes in lieu of drainage piping.

4.4 **Elimination of Footing Heals:** We recommend that foundation walls be designed without footing heals, as they tend to interfere with the proper placement of drainage piping, and require deeper back cuts. Walls without heals will require commensurately larger toe extensions.

5. **Drainage:** Adequate drainage is important to maintain bearing support for shallow foundations and to prevent potential mold and mildew problems related to seepage intrusion under the house.

5.1 **Surface Drainage:** All roof downspouts shall be fitted with 4-inch solid PVC discharge pipes. Surrounding yard and patio areas shall utilize cast iron or brass catch basins tied to the roof downspout lines, or shall be graded to shed runoff away from the house in an unconcentrated manner.

5.2 **Perimeter Subsurface Drainage:** A perimeter gravel subdrain shall be constructed around the up-slope and side perimeters of the house structures. The subdrain shall consist of a trench extending at least 12 inches below the adjacent floor slab or crawlspace grades, sloped at 1% toward a suitable outlet point. A perforated PVC pipe shall be placed along the bottom of the trenches, and the trenches shall be backfilled with 3/4-inch drain rock wrapped in filter cloth, or CALTRANS Class II Permeable drain rock without filter cloth.

5.3 **Piping:** All piping shall be 4-inch SDR-35 PVC. All drain lines shall be continuously sloped at 1% minimum. The manner and location of discharge shall be approved by the undersigned Geotechnical Engineer prior to implementation. Capped clean-outs shall be installed at the beginning of each subdrain line, and at alternate bends in the line.

5.4 **Maintenance:** Drainage systems require regular maintenance to ensure proper functioning. Catch basins and downspout pipes should be flushed regularly (dependant on the rate of falling leaf litter). Discharge points should also be periodically inspected to ensure that outlet piping is not obstructed. It is recommended that an accurate as-built plan of the drainage systems be prepared, and that maintenance requirements be disclosed to all future buyers of the property.

6. **EXTERIOR FLATWORK:** Exterior flatwork, including driveways, walkways and patios shall be constructed as 5-inch thick concrete slabs and should be reinforced with a minimum of #4 bars at 18-inch centers. Flexible pavements such as decomposed granite or pavers set in sand may be preferable over fill areas, as they can be built up over time if settlement occurs.

7. **PLAN REVIEW AND CONSTRUCTION OBSERVATION:** The undersigned Geotechnical Engineer should review the final foundation and drainage plans for conformance with the above recommendations. All grading work shall be inspected in progress on an intermittent basis, including approval of all benching and compaction testing for fills. All pier drilling, footing excavations and subdrain trenches should also be inspected prior to placement of reinforcing steel, concrete or backfill. Allowances should be made for potential changes to the final design requirements in the event that actual construction conditions differ from the conditions assumed in this report.

LIMIT OF LIABILITY: This report was prepared under written contractual agreement with the addressee (client) indicated above. The client has agreed to limit the liability of Dave Olnes P.E., Inc. to an amount not to exceed ten times the fee for services indicated above, for any and all matters arising from this visual examination and report. The information provided herein is for the exclusive use of the specified client. Dave Olnes P.E., Inc. shall assume no liability for other parties who use the report without its express written consent. The recommendations contained in this report are valid for a period of two years, pending further review by the undersigned Geotechnical Engineer.

REFERENCES

Knudsen, Keith L., Sowers, Janet M. Witter, Robert S., Wentworth, Carl M, Helley, Edward J., "Preliminary Maps of Quaternary Deposits and Liquefaction Susceptibility, Nine-County San Francisco Bay Region, California", USGS Open File Report 00-444, 2000.

Rice, Salem J.; Smith, Theodore C.; Strand, Rudolph G., State of California Division of Mines and Geology, Open File Report 76-2, "Geology for Planning: Central and Southwest Marin County, California", 1976.

State of California Division of Mines and Geology,"Maps of Known Active Fault Near-Source Zones in California and Adjacent portions of Nevada", 1998.

BORING: 1 | Location: CENTER OF EXISTING LOWER DRIVEWAY

DESCRIPTION	DEPTH FEET	SAMPLE NUMBER	BLOW COUNT	MOISTURE CONTENT	COMMENTS
Baserock and Rocky Fill	0–2				Fill
tan-brown decomposed SANDSTONE-SHALE	2	1-1	16	7%	Weathered Bedrock
	5	1-2	53	7%	
	10	1-3	62	8%	
grey-brown SANDSTONE-SHALE	13				Bedrock
	15	1-4	100+	11%	
	17	1-5	100+	7%	
Probe Terminated @ 18'	18				Auger Refusal No Groundwater
	20				
	25				
	30				

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Figure: 4

BORING: 2 | Location: Ne Driveway

DESCRIPTION	DEPTH FEET	SAMPLE NUMBER	BLOW COUNT	MOISTURE CONTENT	COMMENTS
brown Clayey SILT (ML)					Topsoil
rusty-tan-brown Silty CLAY (CL-ML) with rock fragments		2-1	47	10%	Residual Soil
rusty-tan SANDSTONE-SHALE	5	2-2	50	12%	Bedrock
	10	2-3	38	15%	
	15	2-4	48	9%	
grey SERPENTINIZED SHALE	20	2-5	100+	11%	
Bottom of Boring @ 21'	25				Refusal No Groundwater
	30				

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Figure: 5

BORING: 3 Location: WE[illegible] SIDE OF PROPOSED RESIDENCE

DESCRIPTION	DEPTH FEET	SAMPLE NUMBER	BLOW COUNT	MOISTURE CONTENT	COMMENTS
dark grey-brown Clayey SILT (ML) with Sandstone fragments					Topsoil/Colluvium
rusty-tan fine Sandy SILT (SM)					Residual Soil
tan Decomposed SANDSTONE-SHALE	5	3-1	30	9%	Bedrock
Bottom of Boring @ 7'	10				Drilling Terminated No Groundwater
	15				
	20				
	25				

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Figure: 6

BORING: 4 Location: CE[illegible]TER OF PROPOSED RESIDENCE

DESCRIPTION	DEPTH FEET	SAMPLE NUMBER	BLOW COUNT	MOISTURE CONTENT	COMMENTS
dark grey-brown Clayey SILT (ML) with Sandstone fragments					Topsoil/Colluvium
mottled tan-brown Silty CLAY (CL-ML) with Increasing rock texture					Residual Soil
grey-brown Fractured SHALE	5	4-1	100+	8%	Bedrock
Bottom of Boring @ 5.5'					Refusal No Groundwater
	10				
	15				
	20				
	25				

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Figure: 7

BORING: 5 Location: EAST END OF PROPOS[illegible] RESIDENCE

DESCRIPTION	DEPTH FEET	SAMPLE NUMBER	BLOW COUNT	MOISTURE CONTENT	COMMENTS
dark grey-brown Clayey SILT (ML) with Sandstone fragments					Topsoil/Colluvium
mottled tan-brown Silty CLAY (CL-ML) with Increasing rock texture					Residual Soil
grey-brown Fractured SHALE	5	5-1	100+	10%	Bedrock
Bottom of Boring @ 5.5'					Refusal No Groundwater
	10				
	15				
	20				
	25				
	30				

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Figure: 8

BORING: 6 Location: RC CUT ABOVE PROPOSED RESIDENCE

DESCRIPTION	DEPTH FEET	SAMPLE NUMBER	BLOW COUNT	MOISTURE CONTENT	COMMENTS
dark grey-brown Clayey SILT (ML) with Sandstone fragments					Topsoil/Colluvium
mottled tan-brown Silty CLAY (CL-ML) with Increasing rock texture					Residual Soil
grey-brown Fractured SHALE	5	6-1	100+	6%	Bedrock
Bottom of Boring @ 5.5'					Refusal No Groundwater
	10				
	15				
	20				
	25				
	30				

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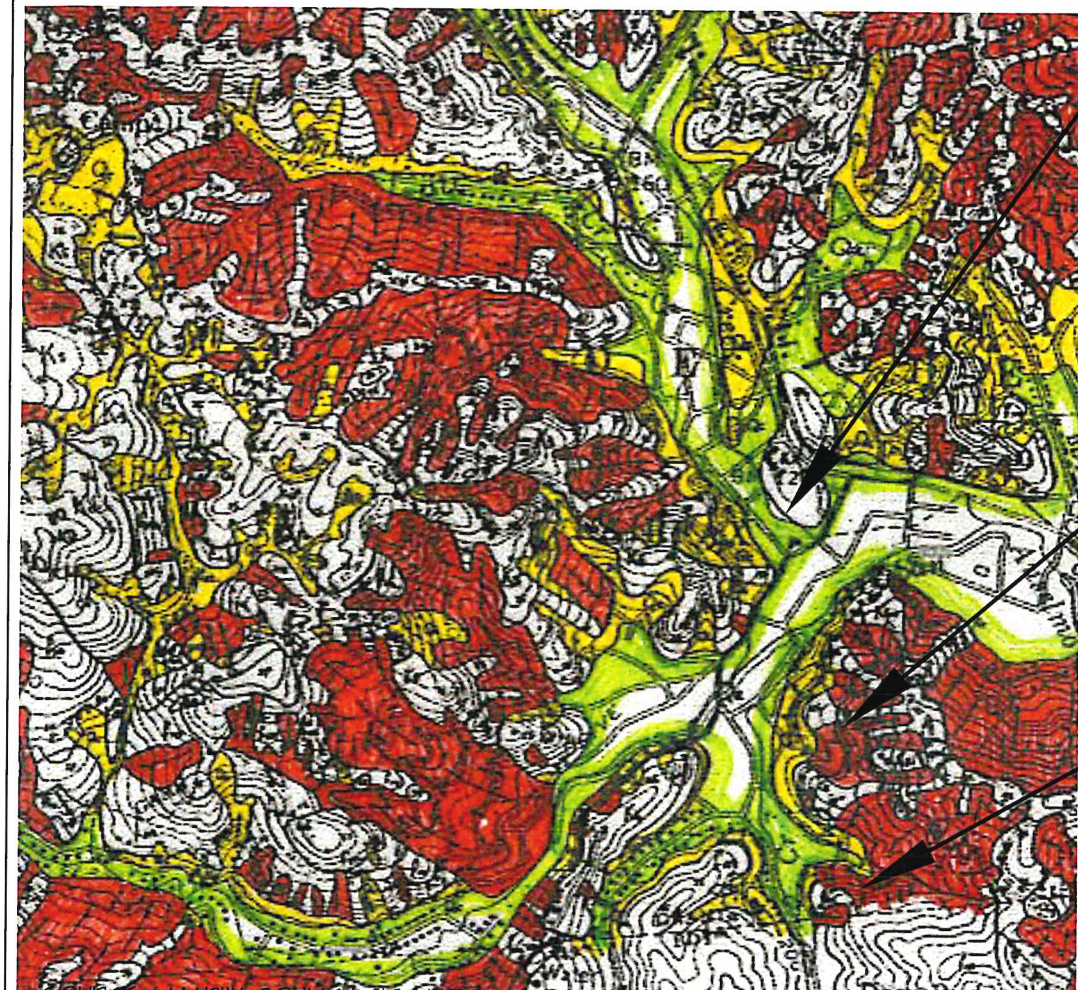
Figure: 9



SOURCE: MARIN COUNTY GIS MAPS.

ALLUVIAL (GREEN) AND COLLUVIAL (YELLOW) SOILS MAPPED IN FLATTER AREAS BELOW.

TYPICAL MAPPED LANDSLIDE ZONE (RED).

SITE, MAPPED AS FRANCISCAN MELANGE (Fm). ALSO INDICATED AS POTENTIAL LANDSLIDE.

SOURCE:
STATE OF CALIFORNIA DEPT. OF MINING & GEOLOGY, OPEN FILE REPORT 76-2
GEOLOGY FOR PLANNING: CENTRAL & SOUTHEAST MARIN COUNTY, CALIFORNIA,
SALEM J. RICE, THEODORE C. SMITH & RUDOLPH G. STRAND, 1976.

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SCALE: ~1"=2000'

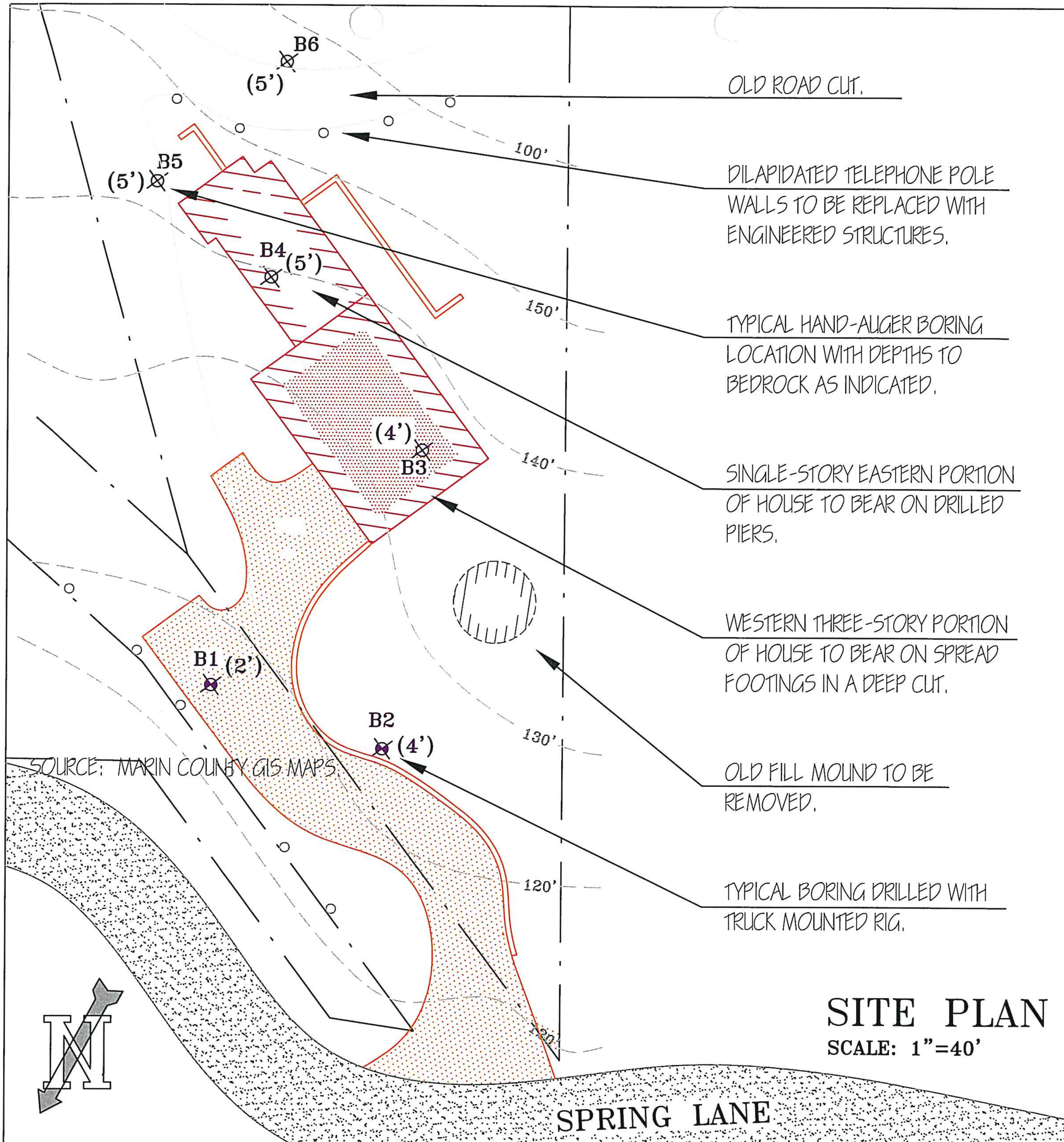
JOB #: 0-4668

DRAWN: DAO/OSO

DATE: 11/15/19

GEOTECHNICAL INVESTIGATION
63 SPRING LANE
FAIRFAX, CALIFORNIA

FIGURE: 1



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SCALE: 1"=40'

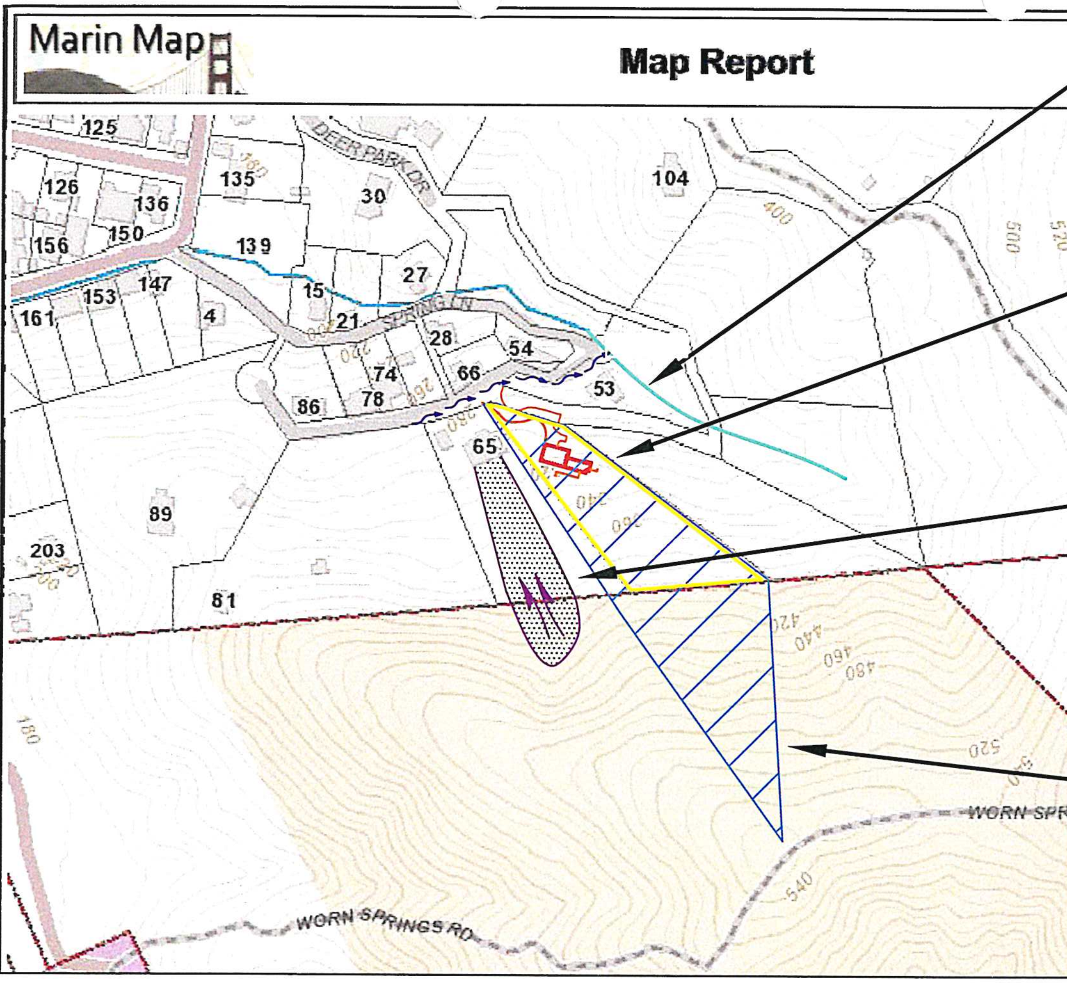
JOB #: 0-4668

DRAWN: DAO/OSO

DATE: 11/15/19

GEOTECHNICAL INVESTIGATION
63 SPRING LANE
FAIRFAX, CALIFORNIA

FIGURE: 2



DITCH AT UP-SLOPE SIDE OF UPPER SPRING LANE RUNS TO NATURAL DRAIN CHANNEL.

SUBJECT PROPERTY WITH APPROXIMATE LOCATIONS OF PROPOSED STRUCTURES.

SITE OF DEBRIS FLOW SLIDE IN 2005, WITHIN SUBTLE TOPOGRAPHIC SWALE DESCENDING THROUGH 65 SPRING LANE.

APPROXIMATE WATERSHED THROUGH SITE FROM CREST OF RIDGE (±2 ACRES).

SOURCE: MARIN COUNTY GIS MAPS.

WATERSHED MAP

SCALE: 1"~300'

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PH & FX: (510)568-2162 daveolnes@sbcglobal.net

SCALE: 1"~300'
JOB #: 0-4668
DRAWN: DAO/OSO
DATE: 11/15/19

GEOTECHNICAL INVESTIGATION
63 SPRING LANE
FAIRFAX, CALIFORNIA

FIGURE: 3

Planning
Civil Engineering
Project Management
Construction Management
Surveying
Entitlements
Concept Design
Feasibility Studies

DRAINAGE REPORT

for

63 SPRING LANE

FAIRFAX, CA

APN 002-174-05

REGISTERED PROFESSIONAL ENGINEER
DANIEL JOHN HUGHES
No.C 60225
Exp. 6-30-20
CIVIL
STATE OF CALIFORNIA

DANIEL JOHN HUGHES
RCE 60225 Exp. 6/30/20

Prepared for:
Stacy and John Peoples
209 3rd Street, #6
Sausalito, CA 94965

Prepared under the supervision of:
Dan Hughes
RCE #60225
License Expires 6/30/20

Report Date: May 21st, 2020

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ATTACHMENT D

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Project Narrative:

This drainage report details the methodology and calculations for the drainage improvements proposed for the new residence at 63 Spring Lane in Fairfax. This project includes the construction of new patios, garage, residence and a new driveway. The 0.97-acre site has an average slope across the site of approximately 35%.

Existing site drainage consists of stormwater runoff flowing downhill to existing road drainages along Spring Lane. Proposed improvements will route the storm water from new downspouts, inlets, and hardscape areas through pipes to a horizontal storage pipe as shown on the site plan. After passing through the horizontal storage pipe, excess runoff will outlet via a side-opening outlet to improved asphalt roadside drainage along Spring Lane. As such, the proposed drainage improvements will act to mimic existing roadside drainage patterns. The County of Marin typically requires volume storage areas to be sized to detain the increase in runoff from the 100-year storm that would result from the new development. As demonstrated in the volume retention calculations, the increase for this project will require 60.6 cf of storage. A total of 66.0 cf of storage will be provided within the horizontal storage pipe. Total volume retention for the project is 66.0 cf which is adequately sized for the 100-year design storm event.

Design Parameters

Hydrology

This drainage study was developed using the Drainage Design Criteria from the County of Marin Department of Public Works Hydrology Manual, "Revision 8/2/00". All flow calculations were performed using the Rational Method (Q=CIA). Detailed calculations are presented in the exhibits.

Review of the Hydrology Manual provides the following mathematical models and constant values used in the hydraulic analysis:

- Initial Time of Concentration — $t_c = \frac{1.8(1.1-C)\sqrt{L}}{\sqrt[3]{S(100)}} + 5\,min$
- Zone from Map V — Zone C2, 0.70/0.67
- I_{60} from Map I — 1.4"/hr
- Runoff Coefficient — C = 0.7 for vegetated areas; C = 0.9 for hard scape areas

The initial time of concentration was calculated following county standards with a minimum of 5 minutes. A C(p) value of 0.9 was used for impervious

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(hardscape) area and a C(v) value of 0.7 was used for pervious (vegetated) area, to calculate the weighted runoff coefficients. The rainfall intensities are calculated based on Chart K, Zone C (sub-zone 2) of the Caltrans District 4 Hydrology Procedures included in the County of Marin Drainage Criteria Standards.

The project site falls within the region of 1.4-inches for the P(10) Isopleths according to the Design Rainfall Intensities – Map "I" included in the exhibits. The site falls into area "C2" (0.70/0.67) for the design rain fall variations – Map "V" included in the exhibits.

Refer to the following pages for 10- and 100-year hydrology calculations.

Pre- vs. Post-Construction Analysis:

Retention of post-construction runoff that exceeds pre-construction values is required as part of the project conditions of approval. Runoff retention is necessary to offset a calculated increase in flows between pre- and post-construction scenarios.

Pre-Construction Runoff: 100-Year = 0.987 cfs
Post-Construction Runoff: 100-Year = 1.077 cfs
Difference in Pre- and Post-: 100-Year = 0.089 cfs

Due to the increase between pre- and post- construction runoff, runoff volume retention is required. Per the attached calculations, the proposed retention provided by the horizontal storage pipe will be more than sufficient.

Hydraulics

Hydraulic analysis was used to determine the 100-year depth of flow for the worst-case scenario of the proposed system. The worst-case storm drain is pipe with the largest contributing flow relative to other collection pipes, and the shallowest slope. In this case, this is a 6" stormdrain pipe at the flattest proposed pipe slope (3% minimum proposed) assumed to be receiving the entire combined runoff of Trib 1. Similarly, the worst-case scenario swale is the worst-case swale is assumed the flattest proposed swale (2% minimum proposed), and conservatively assumed to convey flow of 50% Trib 1 (no individual proposed swale collects even 25% of the drainage of Trib 1).

Hydraflow Express Extension within AutoCAD Civil 3D was used to perform capacity calculations for the worst-case storm drain and the worst-case swale, using the channel calculator. Refer to the attached capacity analyses for input and output of these calculations. The calculations show that the proposed worst-case stormdrains and swale have sufficient capacity for even 100-year flows. Because all other drainage features convey less flow

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and/or at a steeper slope, it follows that the entire proposed drainage system is adequately sized for the 100-year design storm event.

Conclusion:

In conclusion, the proposed project will:

- Provide adequate flow capacity for all proposed on-site drainage conveyances for the 100-year design storm event
- Provide sufficient volume capture to offset any increase in post-project runoff resulting from construction for the 100-year design storm event
- Not significantly alter the site hydrology, because no additional runoff will cross property lines, and runoff leaving the site will continue to outlet to the roadside drainage along Spring Lane

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BASMAA POST CONSTRUCTION MANUAL
APPENDIX C WORKSHEET

Use Permit & Design Review Analysis for
63 Spring Lane
63 Spring Lane, Fairfax (County of Marin)

Step 1: Project Data Form and Runoff Reduction Measure Selection

Project Name/Number	63 Spring Lane
Application Submittal Date [to be verified by municipal staff]	TBD
Project Location [Street Address if available, or intersection and/or APN]	63 Spring Lane, Fairfax APN 002-174-05
Name of Owner or Developer	Stacy and John Peoples
Project Type and Description [Examples: "Single Family Residence," "Parking Lot Addition," "Retail and Parking"]	Single Family Residence
Total Project Site Area (acres)	±42,200 SF (0.97 acre total Parcel size)
Total New or Replaced Impervious Surface Area (square feet) [Sum of impervious area that will be constructed as part of the project]	±6,831 SF
Total Pre-Project Impervious Surface Area	±2,460 SF (±0 SF within subject parcel)
Total Post-Project Impervious Surface Area	±8,731 SF (±4,835 SF within subject parcel)
Runoff Reduction Measures Selected (Check one or more)	☐ 1. Disperse runoff to vegetated area ☑ 2. Pervious pavement ☑ 3. Cisterns or Rain Barrels ☐ 4. Bioretention Facility or Planter Box

Weighted Runoff Coefficient Calculations
63 Spring Lane
63 Spring Lane, Fairfax
5/21/2020

PRE-CONSTRUCTION						
Tributary	Area (ac)	Pervious Area (ac)	Pervious C	Impervious Area (ac)	Impervious C	Composite C
1	0.439	0.382	0.7	0.056	0.9	0.726
TOTAL	**0.439**	**0.382**	**0.700**	**0.056**	**0.900**	**0.726**

POST-CONSTRUCTION						
Tributary	Area (ac)	Pervious Area (ac)	Pervious C	Impervious Area (ac)	Impervious C	Composite C
1	0.439	0.238	0.7	0.200	0.9	0.791
TOTAL	**0.439**	**0.238**	**0.7**	**0.200**	**0.9**	**0.791**

Composite Runoff Coefficient Equation:

$$C_T = C_V \frac{A_V}{A_T} + C_P \frac{A_P}{A_T}$$

Time of Concentration Calculations
63 Spring Lane
63 Spring Lane, Fairfax
5/21/2020

PRE-CONSTRUCTION					
Tributary	**Inlet/DS**	**Length (ft)**	**Slope (ft/ft)**	**C**	**Tc (min)**
1	none	247	0.30	0.726	8.41

POST-CONSTRUCTION					
Tributary	**Inlet/DS**	**Length (ft)**	**Slope (ft/ft)**	**C**	**Tc (min)**
1	Inlets/Downspouts/ Stormdrains	253	0.16	0.791	8.47

Time of Concentration Calculations
63 Spring Lane
63 Spring Lane, Fairfax
5/21/2020

PRE-CONSTRUCTION					
Tributary	**Inlet/DS**	**Length (ft)**	**Slope (ft/ft)**	**C**	**Tc (min)**
1	none	247	0.30	0.726	8.41

POST-CONSTRUCTION					
Tributary	**Inlet/DS**	**Length (ft)**	**Slope (ft/ft)**	**C**	**Tc (min)**
1	Inlets/Downspouts/ Stormdrains	253	0.16	0.791	8.47

Peak Flow Calculations
63 Spring Lane
63 Spring Lane, Fairfax
5/21/2020

PRE-CONSTRUCTION									
Tributary	**Inlet/DS**	**Area (acres)**	**C**	**Tc (min)**	**I (60) (in/hr)**	**Rd (10)**	**I 100-year (Chart "K")**	**Q 100-year (ft^3/s)**	**Description**
1	none	0.439	0.726	8.41	1.4	0.717	3.10	0.987	Overland Flow
	Total	0.439						0.987	Total Pre- Runoff

POST-CONSTRUCTION									
Tributary	**Inlet/DS**	**Area (acres)**	**C**	**Tc (min)**	**I (60) (in/hr)**	**Rd (10)**	**I 100-year (Chart "K")**	**Q 100-year (ft^3/s)**	**Description**
1	Inlets/Downspouts/ Stormdrains	0.439	0.791	8.47	1.4	0.717	3.10	1.077	Overland Flow
	Total	0.439						1.077	Total Post- Runoff

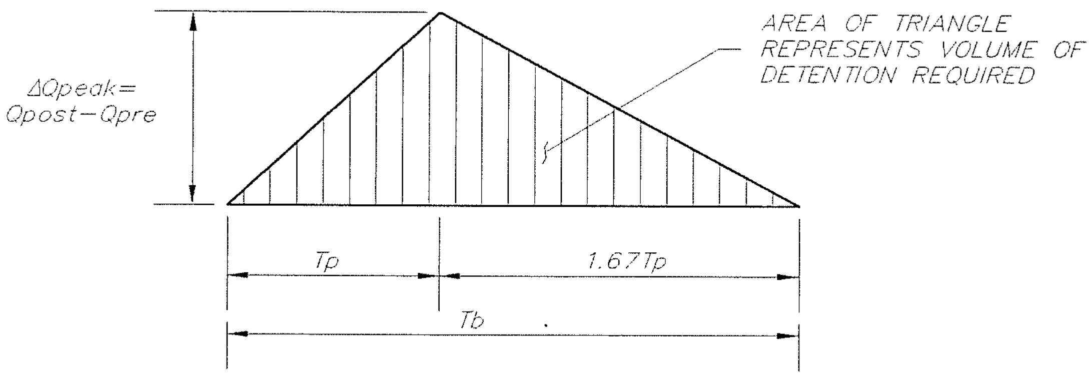
WORST CASE FLOW TOTALS	Q 100-yr (cfs)
6" Storm Drain w/ Largest Flow (Trib 1)	1.077
6" Swale w/ Largest Flow (Trib 1 x 50%)	0.538

Volume Retention Calculations
63 Spring Lane
63 Spring Lane, Fairfax
5/21/2020

	Tributary 1
Qpre=	0.987 cfs
Qpost=	1.077 cfs
ΔQ=	0.089 cfs

Triangular Hydrograph Method*:

*The triangular hydrograph is an approximation of the NRCS dimensionless unit hydrograph. According to Debo and Rees (1995) this method produces results that are sufficiently accurate for most stormwater management facility designs. In this model, the base of the hydrograph is 2.67 times the time of concentration (Tp).



	Tributary 1
Tc=Tp=	8.47 minutes
Tp=	508 seconds
Tb=2.67*Tp=	1357 seconds
V=0.5*ΔQ*Tb=	**60.6 cubic ft.**

Horizontal Storage Pipe Volume Calculations				
Storage Pipe ID	Pipe Diameter	Pipe Length	Pipe Storage Volume	Total Storage Volume
	(ft)	(ft)	(cf)	(cf)
1	2.0	21.0	66.0	66.0
			Total Volume:	**66.0** cf

Channel Report

Worst-case 100yr SD Pipe Capacity

Circular

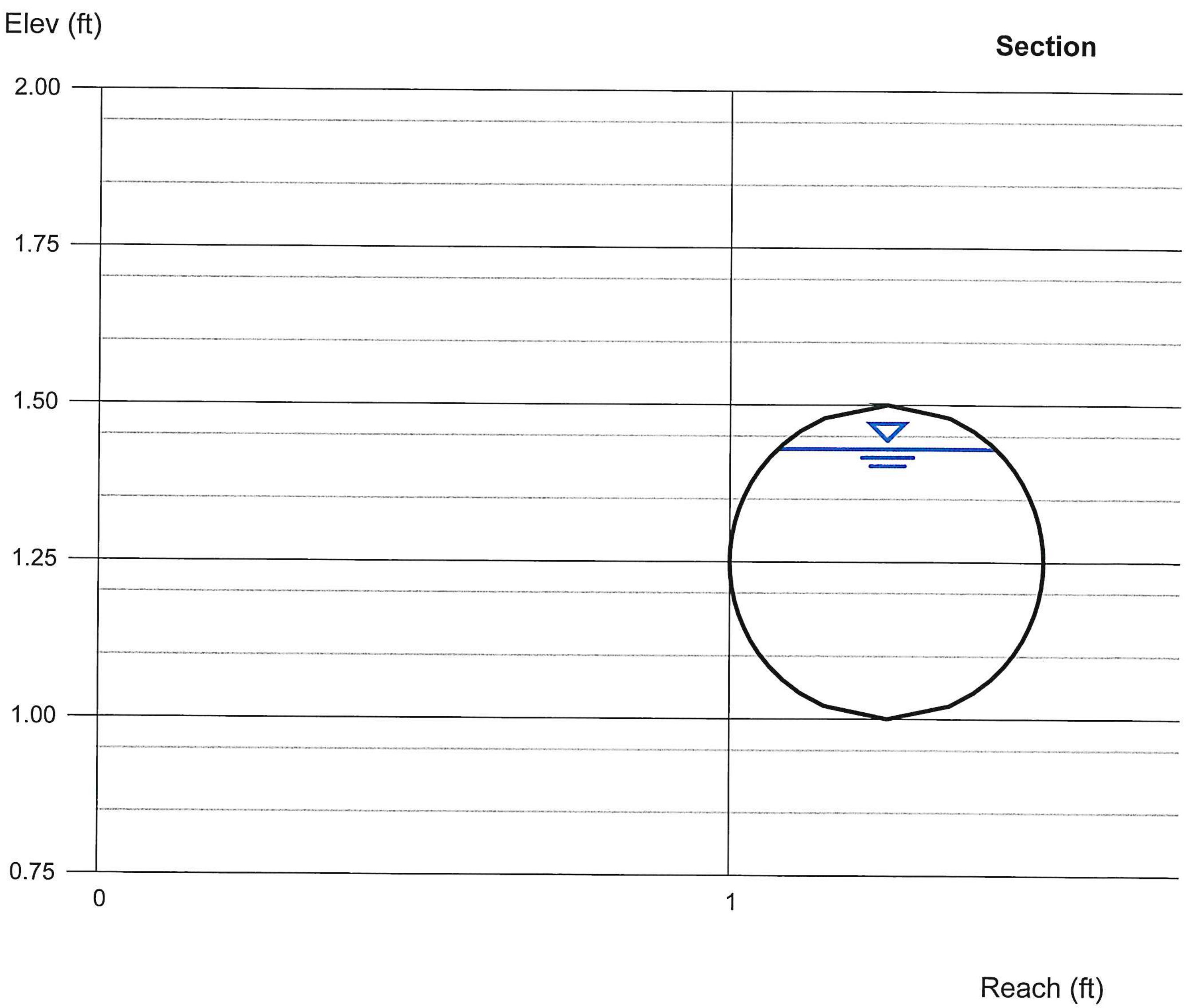
Diameter (ft)	= 0.50
Invert Elev (ft)	= 1.00
Slope (%)	= 3.00
N-Value	= 0.012

Calculations

Compute by:	Known Q
Known Q (cfs)	= 1.08

Highlighted

Depth (ft)	= 0.43
Q (cfs)	= 1.080
Area (sqft)	= 0.18
Velocity (ft/s)	= 6.01
Wetted Perim (ft)	= 1.19
Crit Depth, Yc (ft)	= 0.48
Top Width (ft)	= 0.35
EGL (ft)	= 0.99



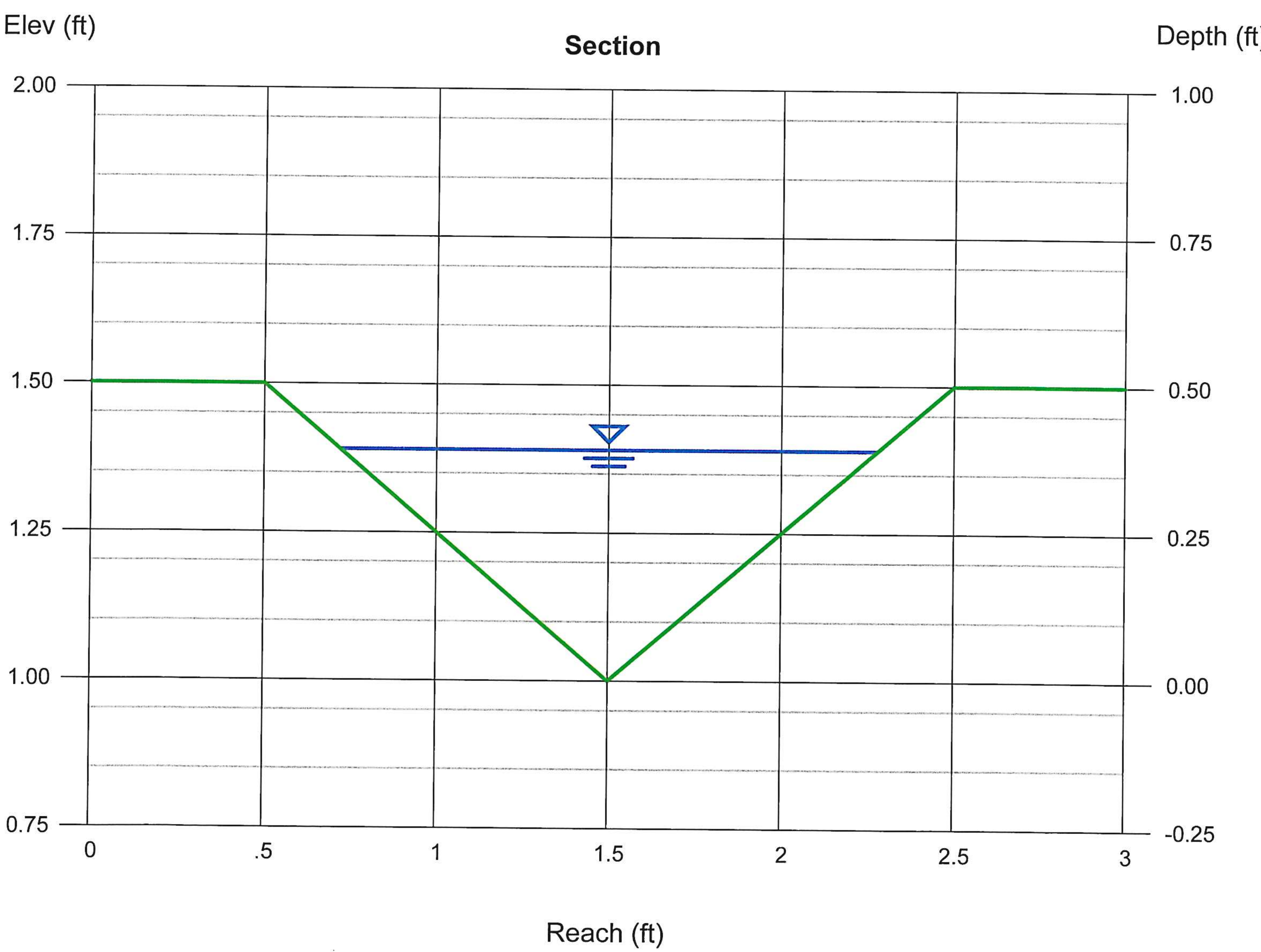
Channel Report

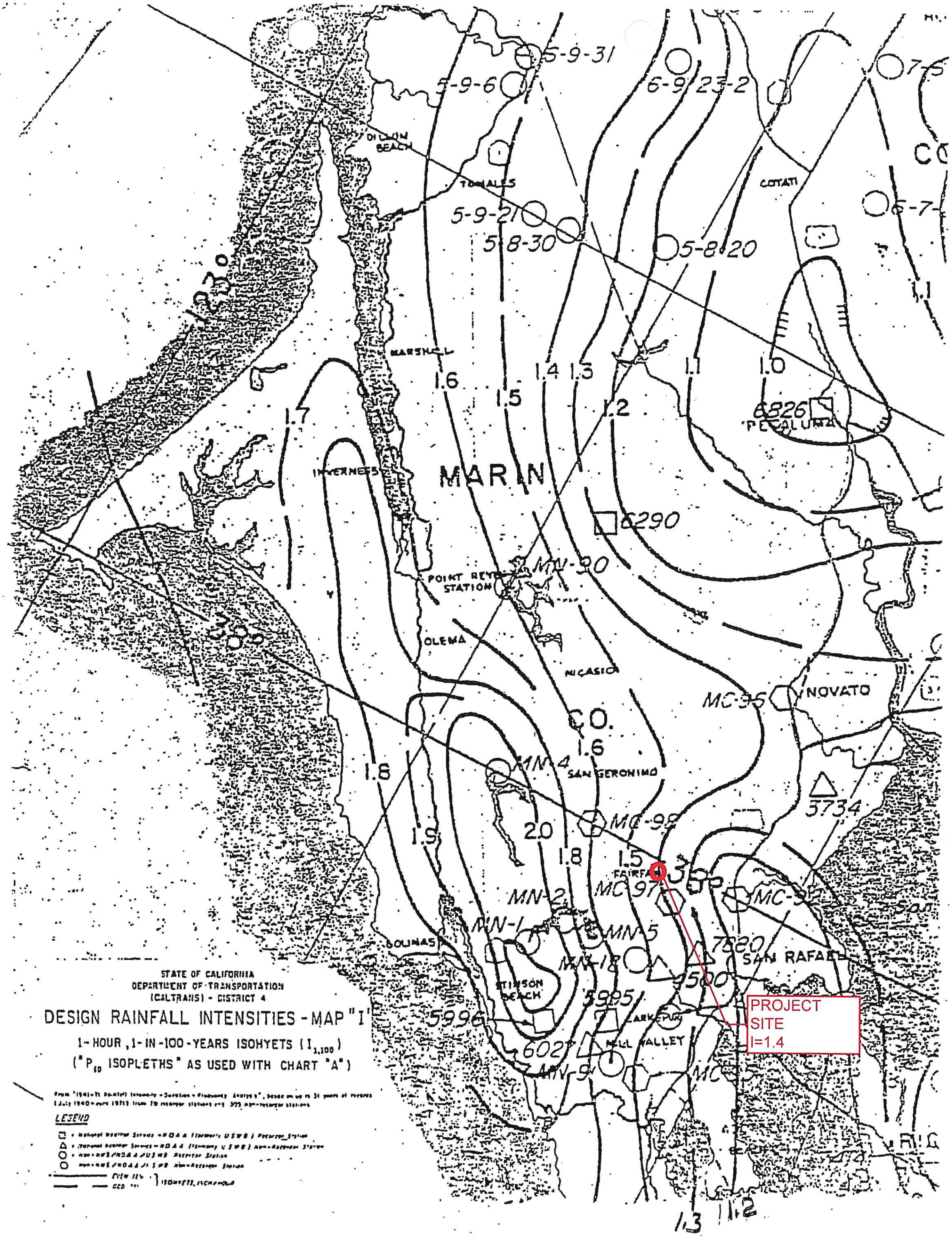
Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Jun 3 2020

Worst-case 100yr Swale Capacity

Triangular	
Side Slopes (z:1)	= 2.00, 2.00
Total Depth (ft)	= 0.50
Invert Elev (ft)	= 1.00
Slope (%)	= 2.00
N-Value	= 0.035
Calculations	
Compute by:	Known Q
Known Q (cfs)	= 0.54

Highlighted	
Depth (ft)	= 0.39
Q (cfs)	= 0.538
Area (sqft)	= 0.30
Velocity (ft/s)	= 1.77
Wetted Perim (ft)	= 1.74
Crit Depth, Yc (ft)	= 0.34
Top Width (ft)	= 1.56
EGL (ft)	= 0.44





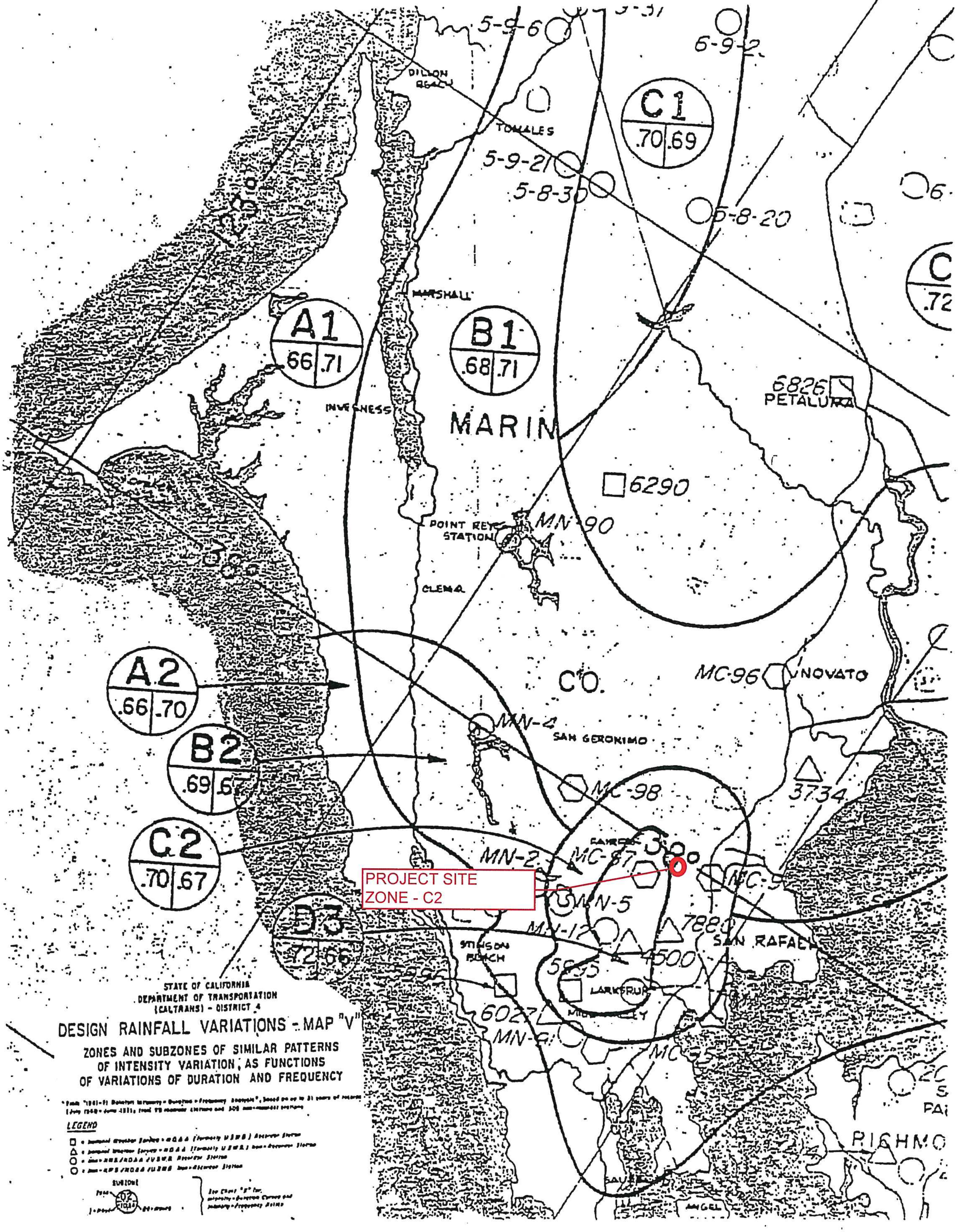
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
(CALTRANS) - DISTRICT 4

DESIGN RAINFALL INTENSITIES - MAP "I"

1-HOUR, 1-IN-100-YEARS ISOHYETS ($I_{1,100}$)

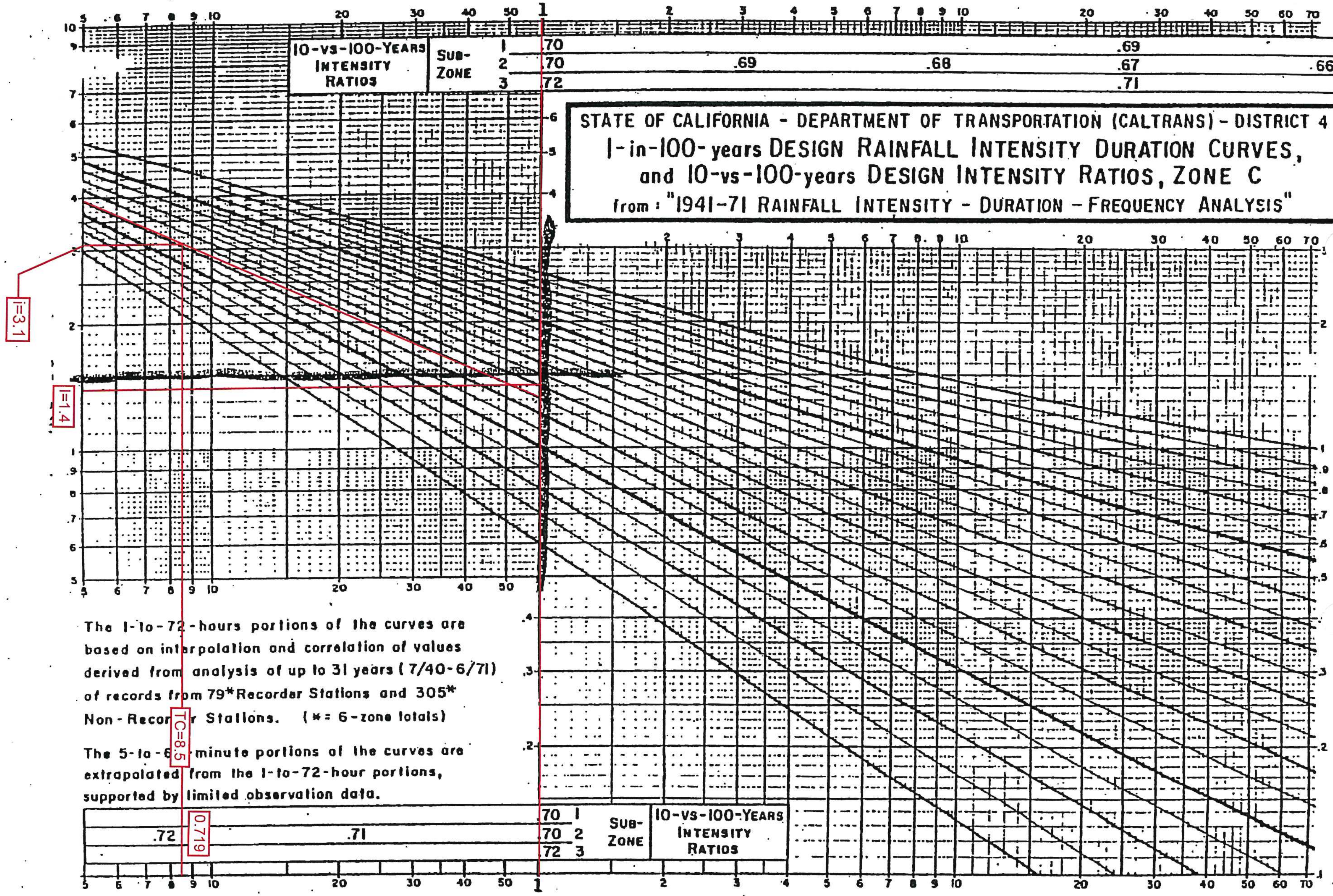
("P_{60} ISOPLETHS" AS USED WITH CHART "A")

LEGEND



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
(CALTRANS) - DISTRICT 4
DESIGN RAINFALL VARIATIONS - MAP "V"
ZONES AND SUBZONES OF SIMILAR PATTERNS
OF INTENSITY VARIATION, AS FUNCTIONS
OF VARIATIONS OF DURATION AND FREQUENCY
LEGEND
SUBZONE
PROJECT SITE
ZONE - C2
A1 .66 .71
B1 .68 .71
C1 .70 .69
A2 .66 .70
B2 .69 .67
C2 .70 .67
D3 .72 .66
MARIN
CO.
DILLON BEACH
TOMALES
MARSHALL
INVERNESS
POINT REYES STATION
OLEMA
SAN GERONIMO
NOVATO
PETALUMA
SAN RAFAEL
STINSON BEACH
LARKSPUR
ANGEL
RICHMO
5-9-6
6-9-2
5-9-21
5-8-30
5-8-20
6826
6290
MN-90
MC-96
MN-4
MC-98
3734
MN-2
MC-87
MN-5
MN-12
7880
4500
5835
6027
MN-9

Q=CIA



MINUTES — DURATION — HOURS

CHART "K" . ZONE C

EK/ERR
9/74

APPENDIX "D"-C

MPEG MILLER PACIFIC ENGINEERING GROUP

July 29, 2020
File: 201.188bltr.doc

Town of Fairfax
Planning and Building Services Department
142 Bolinas Avenue
Fairfax, California 94930

Attn: Ms. Linda Neal, Principal Planner

Re: Second Planning-Level Geologic, Geotechnical, and Civil Engineering Review
New Single-Family Residence
63 Spring Lane (APN 002-174-05)
Fairfax, California

Introduction

In response to your request and in accordance with our agreement dated March 20, 2018, we have reviewed project plans and supporting documentation for the proposed construction of a new single-family residence and associated improvements at 63 Spring Lane (APN 002-174-05) in Fairfax, California. The purpose of our services is to review the submitted documents, comment on the completeness and adequacy of the submittal in consideration of Town requirements, and to provide a recommendation to Town Planning and Building staff regarding project approval.

The scope of our services includes:

- A site reconnaissance to observe existing conditions and review proposed development features;
- Review of provided project documents for conformance to the Town of Fairfax Hill Area Residential Development Ordinance, specifically Town Code Sections 17.072.080(B), (C), (E), and (F), and Section 17.072.110 (C).
- Development of opinions regarding project compliance with applicable Town Code requirements; and
- Development of recommendations to Town staff as to whether the project may be safely constructed in consideration of any geologic, hydrologic, or geotechnical hazards.

It should be noted that the scope of our review is limited solely to geologic, geotechnical, and civil portions of the project, and does not include review of structural, architectural, mechanical, or other items beyond the scope of our qualifications. We recommend that non-geotechnical aspects of the plans be reviewed by suitably qualified professionals.

Project Description

The project generally includes constructing a new, approximately 3,150 square-foot, 3-story residence with an attached garage on a currently-vacant, approximately 0.97-acre parcel. Access will be provided by a new access driveway, which will be shared with two adjacent, currently undeveloped properties to the east of the site. Construction will be accommodated via a combination of excavation and filling, with maximum planned excavations on the order of about

ATTACHMENT E

10-feet deep. Ancillary improvements will include new underground utilities, site retaining walls, exterior patio/hardscape areas, landscaping, and other "typical" residential items.

Project Review

We performed a brief site reconnaissance on February 14, 2020 to observe existing conditions at the site. Additionally, we previously reviewed the following documents provided by the Town for our First review:

- Stewart Title, "Preliminary Report, Order No. 01180-266814, Title Unit No. 7531, APN 002-174-05, Fairfax, CA, 94930" dated July 3, 2017.
- Stephen J. Flatland, P.L.S. (2019), "Boundary and Topographic Survey, For: John and Stacy Aldrich, 63 Spring Lane, Fairfax, California, APN 002-174-05", Job No. F1137, Sheet 1 of 1, revised October 2019.
- Dave Olnes, P.E. (2019), "Geotechnical Investigation, Proposed New Residence, 63 Spring Lane, Fairfax", dated November 15, 2019 (partial copy).
- County of Marin Assessor-Recorder (2019), "Eastment Grant Deed, APN 002-174-05/002-174-06", dated November 16, 2019.
- Marin Tree Service (2019), "Landscape Tree Inspection Report, 63 Spring Lane, Fairfax, California", dated December 5, 2019.
- DVC Group (2020), "Drainage Report for 63 Spring Lane, Fairfax, California", dated January 7, 2020.
- DVC Group (2020), "Grading and Drainage Plan for 63 Spring Lane, Fairfax, CA, APN 002-174-05", Sheets C1 through C7 and H1, Job No. 67-19, dated January 7, 2020.
- Thompson Studio Architects (2020), "Design Review and HRD Review, New Home & Site Improvements, 63 Spring Lane, Fairfax" (Project Narrative Addressing Design Review and HRD Requirements), dated January 22, 2020.
- Thompson Studio Architects (2020), "Ross Valley Fire Review of Proposed Project, New Home & Site Improvements, Fire Apparatus Access Road in Unimproved Right-of-Way, Fire Apparatus Turn on to Right-of-Way from Spring Lane, Fairfax" (Project Narrative Addressing RVFD Review Requirements), dated January 22, 2020.
- Thompson Studio Architects (2020), "Peoples Residence, 63 Spring Lane, Fairfax" (Site Photographs and Keymap), dated January 23, 2020.
- Thompson Studio Architects (2020), "Peoples Residence, 63 Spring Lane, Fairfax" (Architectural Plans), sheets A0.1 through A9.4, Planning/Design Review set dated January 23, 2020.

- Thompson Studio Architects (2020), "Variance Scope and Findings, Site Improvement Needed to Construct the Fire Apparatus Access, Spring Lane, Fairfax" (Project Narrative Addressing Design Review and HRD Requirements), dated January 26, 2020.

More recently, we reviewed the following materials submitted in response to our First Review comments:

- Dave Olnes, P.E. (2019), "Geotechnical Investigation, Proposed New Residence, 63 Spring Lane, Fairfax", dated November 15, 2019 (complete copy).

- Stephen J. Flatland, P.L.S. (2020), "Record of Survey, Lands of Peoples", Sheet 1 of 1, recorded February 14, 2020.

- Thompson Studio Architects (2020), "Peoples Residence, 63 Spring Lane, Fairfax" (Architectural Plans), sheets A0.1 through A9.4, Design Review revision set dated May 21, 2020.

- DVC Group (2020), "Grading and Drainage Plan for 63 Spring Lane, Fairfax, CA, APN 002-174-05", Sheets C1 through C7 and H1, Job No. 67-19, dated May 21, 2020.

- Dave Olnes, P.E. (2020), "Response to Planning Comments, Proposed New Residence, 63 Spring Lane, Fairfax", dated June 16, 2020.

- Thompson Studio Architects (2020), "Planning, Design Review, & RVFD Completeness Review Response, Undeveloped Lot on Unimproved R/W off of Spring Lane", dated June 22, 2020.

Conclusions

Based on our site reconnaissance and document review, the following submittal items required by the Town of Fairfax Hill Area Residential Development Ordinance remain outstanding.

Hill Area Residential Development Ordinance

- Section 17.072.080(B) – Topographic and Boundary Survey

1) We note that the legal property description in the Preliminary Title Report, the property boundary distances and dimensions shown on the Topographic and Boundary Survey, and the property and boundary distances shown on the Record of Survey and Architectural plans do not match exactly. We note that the Surveyor has checked his dimensions and distances.

   Although the distance/dimension discrepancies are relatively minor, we judge that the project Surveyor should provide brief commentary on the basis for his determination of property boundaries and the reasons for the observed discrepancies. All plan sheets should be cross-checked to verify consistent boundaries and dimensions matching the Record and topographic/boundary survey sheets.

- Section 17.072.080(C) – Site Plan

2) The Easement Diagram shown on Sheet A1-0 indicates that a new fire apparatus access road will be created within what is labeled as an unimproved portion of the Spring Lane right-of-way. In to meet minimum curve radius and maximum slope requirements set by the Ross Valley Fire District, the proposed access road will need to cross portions of the properties at 63 Spring Lane (applicant; APN 002-174-05) and 65 Spring Lane (APN 002-174-06). The submitted Easement Grant Deed provides legal access for the applicants to construct the improvements on the necessary portion of the property at 65 Spring Lane.

   However, we note that new underground utilities, including water (MMWD), gas (PG&E), and sewer (RVSD) are proposed to extend up the new access road alignment, and that the public right-of-way also provides access to several other (currently-undeveloped) private parcels (APN 002-174-01 through -04).

   In order to accommodate future access and maintenance of those utilities planned in the public right-of-way, access easements across APN 002-174-05 and APN 002-174-06 should be provided for the applicable utility agencies and for the Town of Fairfax. Additionally, access easements should be provided to the Owners of affected parcels, APN 002-174-01 through -04, whose future access to their lands will require use of the new access road across the 63 and 65 Spring Lane parcels. We note the applicants' indicate such easements will be created upon conditional approval of the project, which we judge is appropriate.

3) Project plans indicate that the new driveway will be accommodated by a retaining wall on the upslope side which ranges in height to about 14-feet. The wall appears to lie within about 15-feet laterally of the existing residence at 65 Spring Lane, and is aligned at the edge of the easement. As such, retaining wall design and construction sequencing should be carefully considered in order to maintain adequate lateral support for the property and improvements at 65 Spring Lane. A detailed Temporary Shoring Plan should be submitted along with project structural plans at the building level.

4) All improvements in the public right-of-way should be subject to Town of Fairfax minimum design standards. An encroachment permit should be required for all work in the right-of-way.

- Section 17.072.080(F) – Grading and Drainage Plan

5) The Grading and Drainage plan indicates that over 700 cubic yards of excess soil will be offhauled from the site. Given the extremely limited access, a detailed Construction Management and Staging Plan should be required at the building submittal level.

Recommendations

From a geotechnical perspective, we recommend that the project be approved at the Planning level. We judge that outstanding comments, including review of brief commentary regarding survey discrepancies, Grant Deeds providing access easements to affected stakeholders (MMWD, PG&E, RVSD, Town of Fairfax, and Owners of APN 002-174-01 through -04), Construction Management Plans, Temporary Shoring Plans, and design-level Structural and Civil engineering plans may be handled at the Building Permit submittal level with minimal anticipated impact.

We trust that this letter contains the information you require at this time. If you have any questions, please call. We will directly discuss our comments with the applicant's consultants if they wish to do so.

Yours very truly,
MILLER PACIFIC ENGINEERING GROUP

REVIEWED BY:

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