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July 27, 2021

VIA OVERNIGHT DELIVERY AND E-MAIL

Rebecca Herrin
Assistant Planning Director
Planning Department of Plumas County
555 Main Street
Quincy, California 95971
BeckyHerrin@countyofplumas.com

Re: Plumas District Hospital; Skilled Nursing Facility

Dear Ms. Herrin:

Plumas District Hospital ("District") submits this letter and the enclosed documents in supplement of its April 15, 2021 Special Use Permit Application for the proposed Skilled Nursing Facility ("SNF") on Bucks Lake Road in Quincy (APN Nos. 115-210-009, -019, and -020). The District encloses with this letter the following documents, which includes a revised SNF site plan:

- Attachment "A": Overall Floor Plan and Site Plan;
- Attachment "B": Preliminary Grading Plan;
- Attachment "C": Preliminary Utility Plan; and
- Attachment "D": Preliminary Drainage and Stormwater Quality Study.

The revised Site Plan (Attachment "A") reflects changes addressing wetlands on the property. The wetlands were surveyed and delineated by a wetlands specialist in accordance with the technical methods outlined in the 1987 *Army Corps of Engineers Wetlands Delineation Manual* and the Army Corps' 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region.* The enclosed Site Plan accounts for and avoids impacts to that delineated wetland area.

The District also provides the following information in response to comments that the Plumas County Department of Public Works ("DPW") and the American Valley Community Services District ("CSD") provided in response to the District's April 15th Application.

I. Drainage Analysis

DPW requested that the District provide a drainage analysis and appropriate mitigation, prepared by a registered civil engineer.

Enclosed as Attachment "D" please find a July 2, 2021 Preliminary Drainage and Stormwater Quality Study for the Plumas District Hospital Skilled Nursing Facility. The enclosed study summarizes the District's hydrologic analyses and criteria for designing on-site mitigation, like the detention basin, retention basins, and storm drain system.

This letter also includes a Preliminary Grading Plan (Attachment "B"), also requested by DPW. The Preliminary Grading Plan and revised Site Plan (Attachment "A") each reflect the proposed infrastructure that the Drainage and Stormwater Quality Study assessed. This infrastructure is designed to capture run-off and mitigate the risk of any increased drainage onto adjoining properties that could result from construction of the SNF.

II. Average Daily Trips Calculation

DPW also requested an estimate of Average Daily Traffic (ADT) to determine whether a more in-depth traffic analysis is required. The District estimates that the ADT from the Facility is 48.48 average daily trips.

The District estimated the Facility's ADT based on the Institute of Transportation Engineers' *Trip Generation Manual*, 10th Edition. Under that manual, the land use category that is most relevant to the SNF is Land Use Code 253 – Congregate Care Facility. The daily trip rate under this Code is 2.02 average daily trips per dwelling unit.

To the extent the City municipal code addresses traffic forecasting, it contemplates only commercial and traditional residential "dwelling units" (e.g., single family homes). Given the SNF's intended use as a congregate care facility, the ITE trip generation calculation more accurately portrays the anticipated traffic resulting from the SNF than the Planning and Zoning Code's standard ADT calculation methodology. Under Plumas County Ordinance Code, § 9-4.703(b)(1), predicted traffic volume arising from development within 2 road miles of a United States Post Office is 8 times the number of "dwelling units." Under the City's Code, a dwelling unit consists of living, sleeping, and kitchen facilities. (Plumas County Ordinance Code, § 9-2.228.) Here, the design yields 24 resident bedrooms organized into about 6 "pods," where members of a pod share kitchen and restroom facilities.

The concept of the "pod" better fits the Zoning Code's definition for "dwelling unit" than the number of residential beds. (Plumas County Ordinance Code, § 9-2.228.) This calculation produces a predicted traffic volume of 48 average daily trips when considering each "pod" (6) as a dwelling unit. Calculating average daily trips according to section 9-4.703(b)(1), while resulting in an accurate estimate of future trips, does not reflect the SNF's intended use as a congregate care facility.

Therefore, for the sake of clean logic and sound planning, the District suggests that the County rely on 48.48 average daily trips per ITE as it better reflects "actual traffic count or analyses or both of comparable traffic situations yield alternative values." (Plumas County Ordinance Code, § 9-4.703(c).) Adoption of this methodology is permitted under County Ordinance Code section 9-4.703(c).

If the County applies the section 9-4.703(b)(1) ADT calculation method to the SNF, the District recommends that the trip generation should be 48 average daily trips, which best contemplates the number of dwelling units that compose the project insofar as dwelling units must consist of both living, sleeping, cooking, eating, and sanitation spaces.

III. Wastewater Collection Improvements

CSD submitted a comment that there may be a need for wastewater collection improvements to accommodate the Facility.

The SNF design accounts for all necessary wastewater collection improvements. For instance, the enclosed Preliminary Grading Plan (Attachment "B") and Preliminary Utility Plan (Attachment "C") detail the design for all sanitary storm drains and sewer connections, including a sewer lift station, that are necessary to accommodate the SNF. Should CSD have any specific concerns, the District will make itself available to discuss these designed improvements at CSD's convenience.

* * * * * * *

We appreciate the County's consideration of this Application for a Special Use Permit. Please feel free to let our office know if you need any further information to assist the County's review.

Very truly yours,

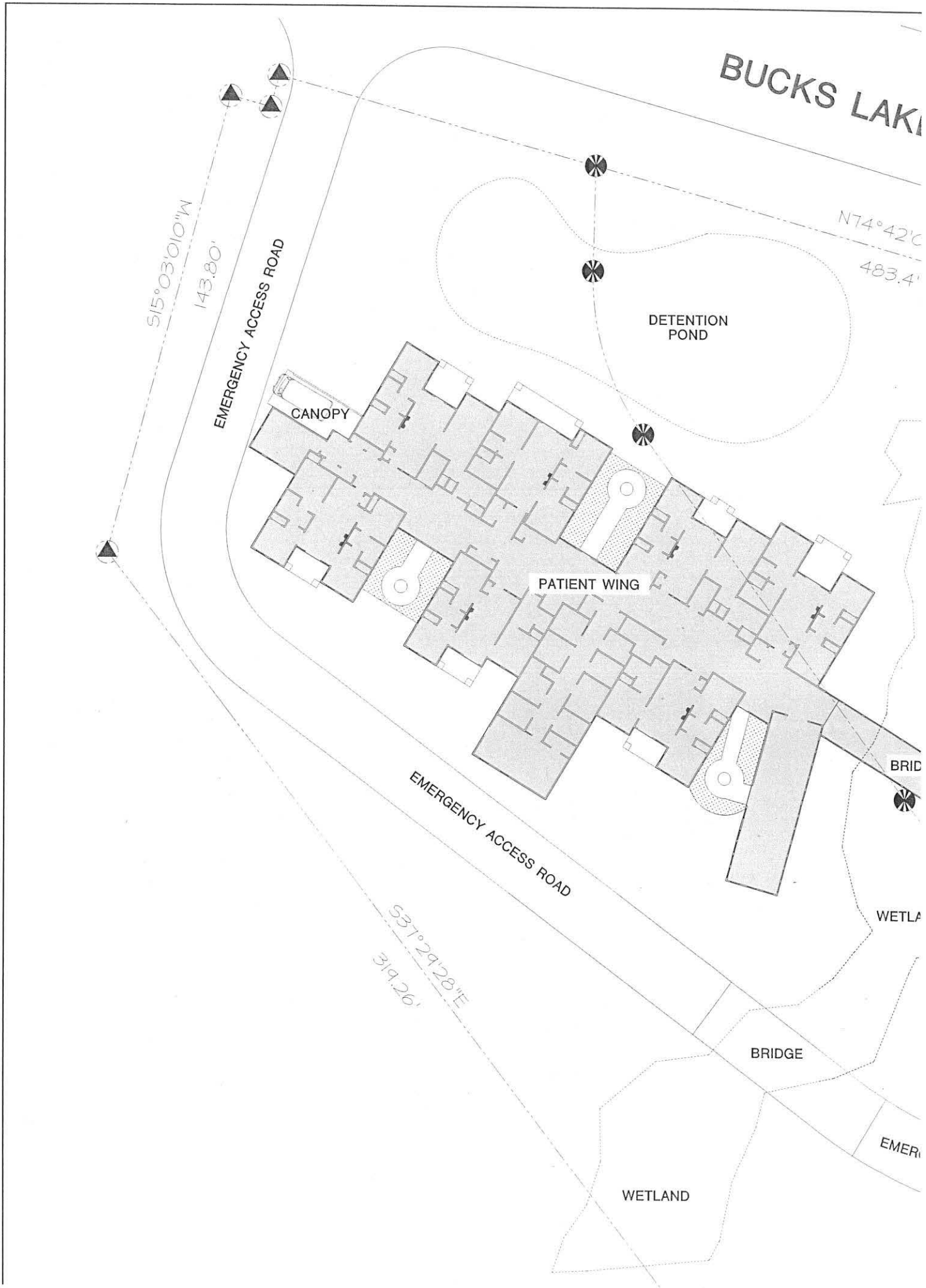
Sean G. Herman
Attorney

Encl.

cc: Plumas District Hospital

ATTACHMENT A

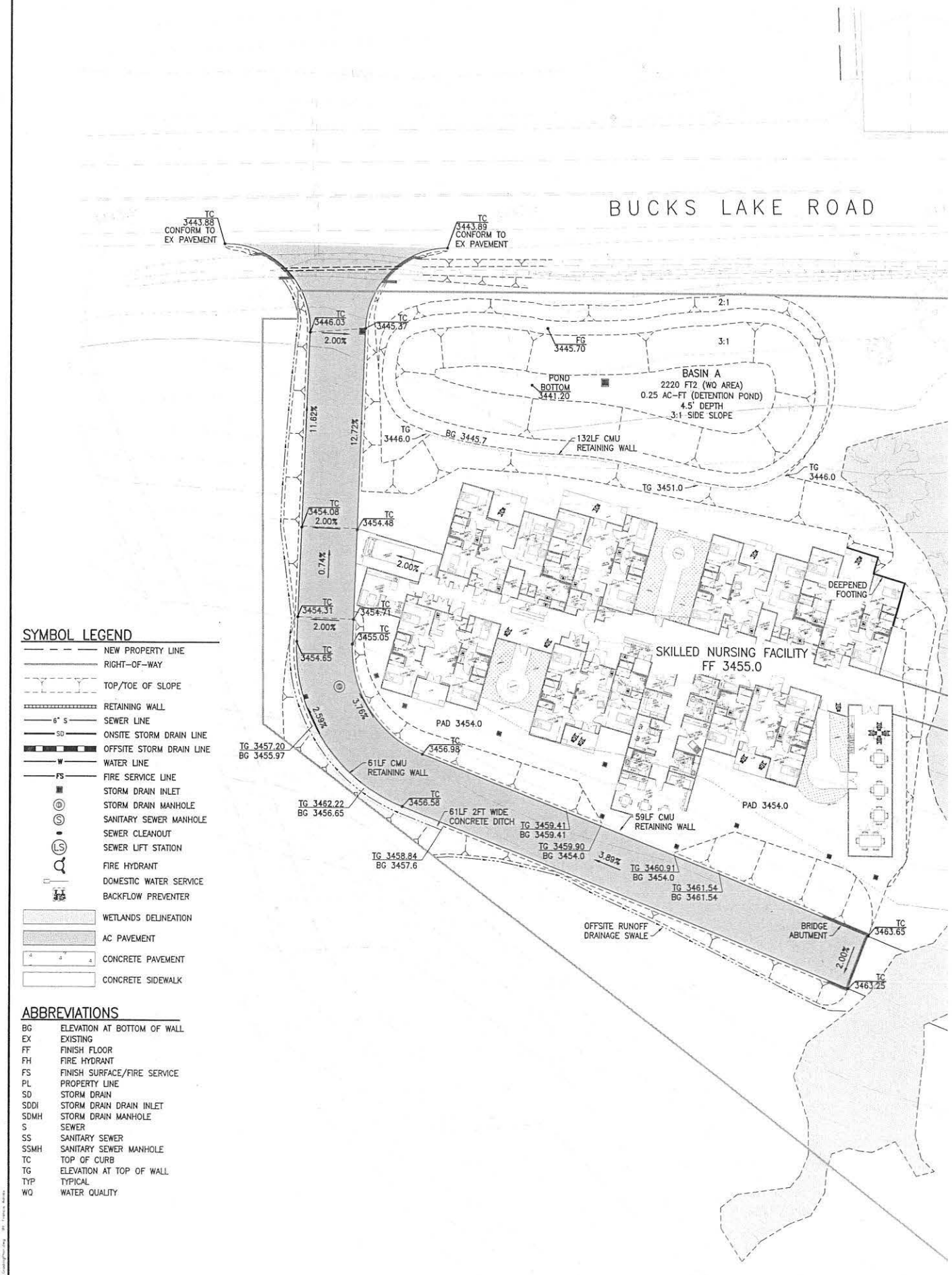
ATTACHMENT A



42". AT ANY OTHER SIZE, DISREGARD REFERENCES TO SCALE.

ATTACHMENT B

ATTACHMENT B



SYMBOL LEGEND

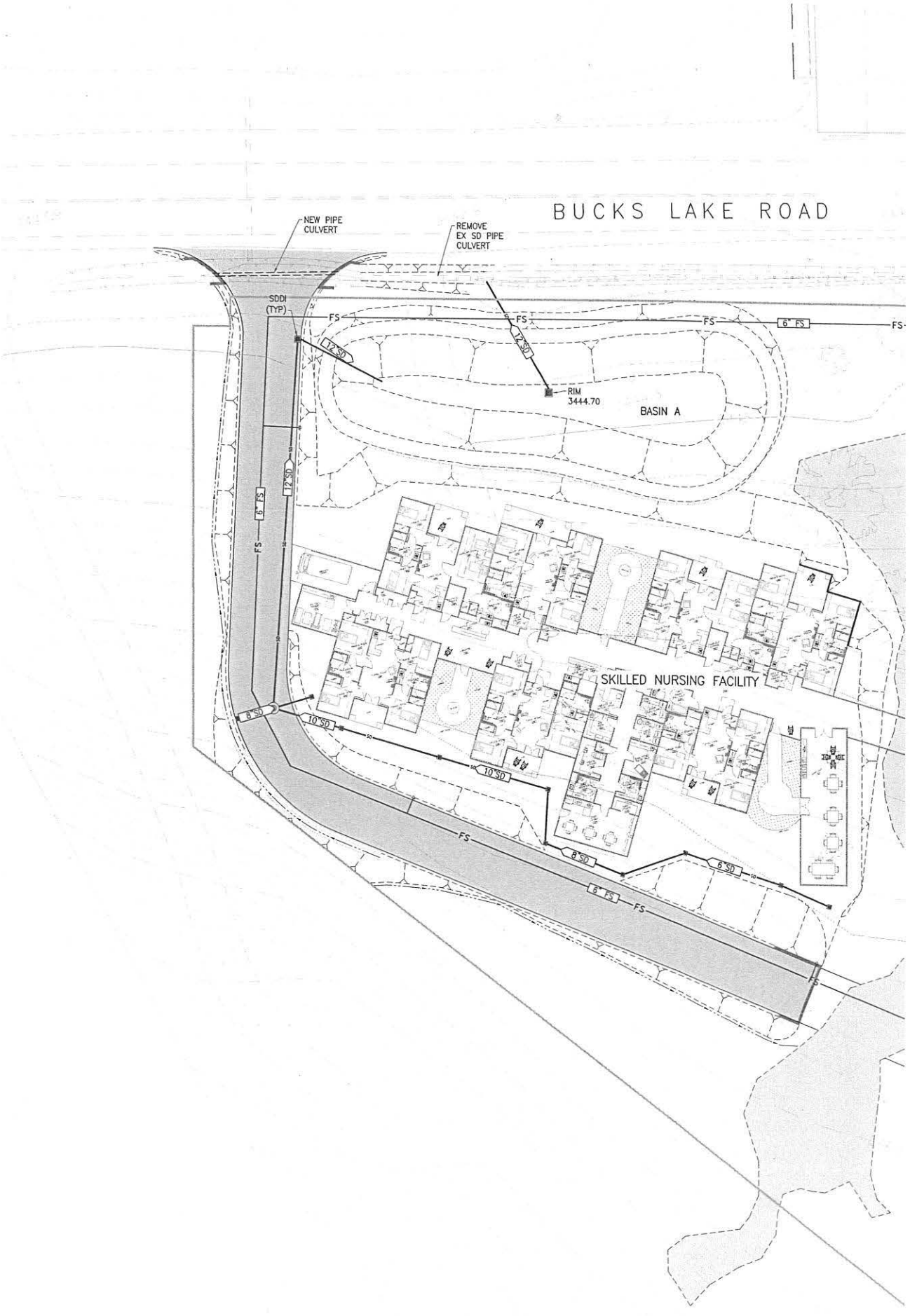
- NEW PROPERTY LINE
- RIGHT-OF-WAY
- TOP/TOE OF SLOPE
- RETAINING WALL
- 6" S — SEWER LINE
- SD — ONSITE STORM DRAIN LINE
- OFFSITE STORM DRAIN LINE
- W — WATER LINE
- FS — FIRE SERVICE LINE
- STORM DRAIN INLET
- STORM DRAIN MANHOLE
- SANITARY SEWER MANHOLE
- SEWER CLEANOUT
- LS — SEWER LIFT STATION
- FIRE HYDRANT
- DOMESTIC WATER SERVICE
- BFP — BACKFLOW PREVENTER
- WETLANDS DELINEATION
- AC PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK

ABBREVIATIONS

BG	ELEVATION AT BOTTOM OF WALL
EX	EXISTING
FF	FINISH FLOOR
FH	FIRE HYDRANT
FS	FINISH SURFACE/FIRE SERVICE
PL	PROPERTY LINE
SD	STORM DRAIN
SDDI	STORM DRAIN DRAIN INLET
SDMH	STORM DRAIN MANHOLE
S	SEWER
SS	SANITARY SEWER
SSMH	SANITARY SEWER MANHOLE
TC	TOP OF CURB
TG	ELEVATION AT TOP OF WALL
TYP	TYPICAL
WQ	WATER QUALITY

ATTACHMENT C

ATTACHMENT C


BUCKS LAKE ROAD
NEW PIPE CULVERT
REMOVE EX SD PIPE CULVERT
SDDI (TYP)
FS
12" SD
RIM 3444.70
BASIN A
6" FS
SKILLED NURSING FACILITY
8" SD
10" SD
6" SD
8" FS

ATTACHMENT D

ATTACHMENT D

RICK
ENGINEERING COMPANY

July 2, 2021

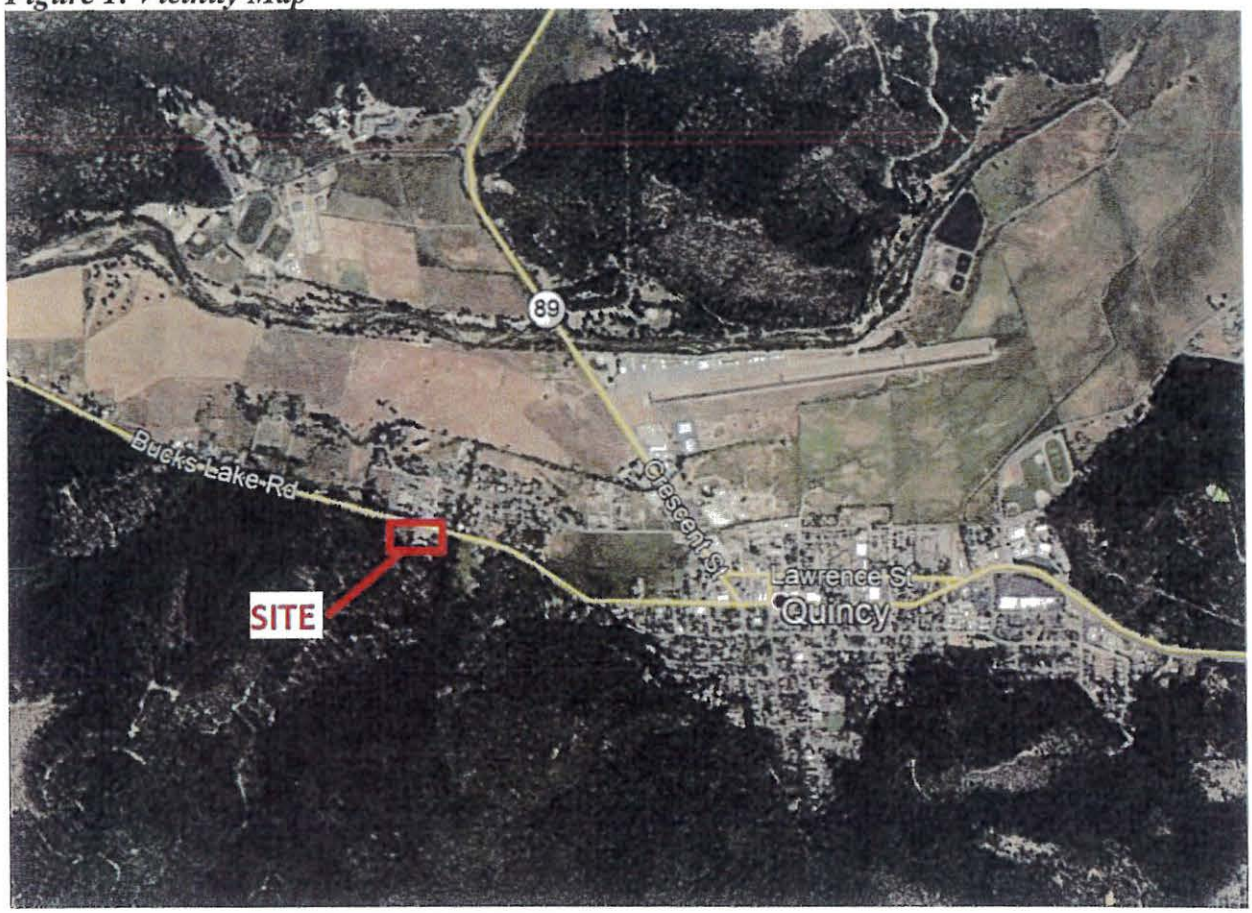
Nathan Morgan
President/CEO
Aspen Street Architects, Inc.
494 N. Main Street
Angels Camp, CA 95222

SUBJECT: Preliminary Drainage and Stormwater Quality Study for the Plumas District Hospital Skilled Nursing Facility
(RICK Job Number: 19314)

1.0 Introduction

This memorandum presents the results of the preliminary drainage and stormwater quality analysis prepared for the proposed Plumas District Hospital Skilled Nursing Facility project. The project is on Bucks Lake Road in Quincy, Plumas County, California on APNs 115-210-009, -019 & -020. The site location is shown on the vicinity map in Figure 1, below. The project site consists of approximately 4.1± acres, is zoned C-2 (Periphery Commercial) and currently includes a dental clinic and parking lot with the remainder of the site undeveloped. The proposed project will replace the existing dental clinic and is a skilled nursing facility to be constructed with associated improvements.

Figure 1: Vicinity Map



2.0 Hydrology

2.1 Hydrologic Methodology

Hydrologic peak flow calculations for the sizing of drainage conveyance on-site have been computed utilizing the Rational Method:

$Q = C * i * A$

Q = Peak runoff in cubic feet per second.
C = Weighted runoff coefficient.
i = Rainfall intensity in inches per hour.
A = Watershed area in acres.

Precipitation intensity was determined utilizing the NOAA Atlas 14 Precipitation Frequency Data Server (PFDS) at the approximate centroid of the watershed area. A copy of the NOAA PFDS precipitation data is included in Attachment 2. A workmap for the hydrologic analysis is included in Attachment 1. Rational Method calculations are included in Attachment 2.

2.2 Detention Analysis Methodology

Detention hydrologic calculations were computed in accordance with the USDA NRCS Technical Release 55 (TR-55), Urban Hydrology for Small Watersheds dated June 1986. Peak flows for the 2-, 10-, and 100-year, 24-hour storms pre- and post-project conditions were calculated using the United States Army Corps of Engineers' HEC-HMS version 4.1 hydrologic model. A workmap for the hydrologic analysis is included in Attachment 1. An electronic copy of the HEC-HMS models developed in this study are included with the electronic files in Attachment 6.

2.2.1 Precipitation

The 2-, 10-, and 100-year; 24-hour storm event point precipitation depth was determined utilizing the NOAA Atlas 14 PFDS at the approximate centroid of the watershed area. Pursuant to the TR-55 guidance document Figure B-2, the watershed studied in this memorandum is located within the Type 1a rainfall distribution boundary which was utilized for this study. A copy of the NOAA PFDS precipitation data is included in Attachment 2.

2.2.2 Runoff Curve Number

The runoff curve number is a representation of the physical watershed characteristics used in determining the fraction of rainfall that becomes runoff. Its determination is based on the distribution of land uses, vegetative cover, and hydrologic soil types within the watershed. Soils information was derived from USDA NRCS web soil survey data. Curve numbers were assigned to each land use utilizing aerial imagery in accordance with Table 2-2 of the TR-55 guidance document. An excerpt from the NRCS web soil survey data is included in Attachment 2 and a full copy of the web soil survey data is included with the electronic files in Attachment 6.

2.2.3 Lag Calculations

Lag was assumed to be equal to 15 minutes in the existing condition and 10 minutes in the proposed condition for the site.

2.2.4 Detention

The proposed detention basins were analyzed utilizing the storage function in HEC-HMS. The preliminary calculations assume a storage-discharge relationship and iterate the storage volume to determine the volume required to mitigate peak flows to be equal or less than the existing condition. The calculations and design of the detention basin outflow structures will be determined at final design once the grading of the detention basins has been completed. Preliminary calculations for the storage and discharge from the two proposed detention basins are included in Attachment 2.

2.3 Hydrologic Results

The peak discharges for the 2-, 10-, and 100-year storm events have been calculated for the proposed project site using Rational Method for the sizing of drainage conveyances and HEC-HMS for the sizing of the proposed detention facilities. The existing and proposed condition hydrologic output from the HEC-HMS models are included in Attachment 2. A hydrologic workmap for the proposed project site is included in Attachment 1. Hydrologic calculation supporting information is included in Attachment 2. See Table 1, following, for a summary of the peak flow rates calculated for each storm event in the HEC-HMS model and the preliminarily determined storage required.

Table 1: Hydrologic Results Summary

Design Point	Storm Event Peak Flow Rates (cfs)									Required Detention Volume (acft)
	2-Year			10-Year			100-Year			
	Pre-	Post-Project		Pre-	Post-Project		Pre-	Post-Project		
		Un-Det.	Detained		Un-Det.	Detained		Un-Det.	Detained	
100	0.44	0.94	0.42	0.95	1.51	0.86	1.72	2.32	1.59	0.12
200	0.35	0.69	0.33	0.77	1.15	0.70	1.39	1.81	1.32	0.08

As shown in Table 1, the peak flow rate at basins 100 and 200 are each equal to or reduced in the proposed condition for each storm event utilizing the calculated detention volumes.

3.0 Hydraulics

3.1 Inlets

The proposed onsite grate inlets will be designed to convey the 10-year storm event flow. The grate inlets will be designed assuming 50% clogging to account for the grate and debris build up. Preliminary calculations for the sizing of the inlets are included in Attachment 3.

3.2 Storm Drain System

The proposed storm drain system will be designed to convey the 10-year storm event flow. The on-site storm drain system will be designed to maintain a minimum of 1-foot freeboard to the grate inlets. The starting water surface elevation for the on-site storm drain system will be based on normal depth. Preliminary calculations for the sizing of the on-site pipes are included in Attachment 3.

3.3 Interception Ditches

A hillside drains towards the project site along the south side of the site. An interception ditch is proposed at the top of the retaining wall to route flows around the proposed improvements and to storm drains at the site frontage. The ditch will be sized to convey the 10-year storm event peak flow and maintain a minimum of 0.5' freeboard.. Preliminary calculations for the sizing of the ditches are included in Attachment 3.

3.3 Overland Release

The on-site grading for drainage across the site and along the street frontage will be designed such that overland release for the 100-year peak flow is provided while maintaining 1-foot of freeboard to the proposed structure Finished Floor elevations assuming no flow is intercepted by the proposed storm drain system.

3.4 FEMA Floodplain

The project site is shown on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) number 06063C0904E, effective March 2, 2005. The project site is shown to include areas within FEMA Zone X (shaded), areas of moderate flood hazard, along the projects frontage of Bucks Lake Road. Based on the mapping it is anticipated that the projects frontage would be inundated in a 500-year storm event due to flow overtopping the banks and culvert under Bucks Lake Road of Gansner Creek east of the site. The proposed project does not include impacts to the FEMA regulated Zone AE floodplain for Gansner Creek, so no FEMA submittals are anticipated for the project. However, the potential flow along the project frontage will be analyzed at final design to confirm that the flow can be safely conveyed downstream without negative impacts to existing or proposed structures.in the projects vicinity. An annotated FIRMette and excerpts from the Flood Insurance Study (FIS) are included in Attachment 4.

4.0 Water Quality

The proposed project is over 1-acre and is anticipated to fall under the requirements of the Construction General Permit guidance for Post-Construction BMPs. The proposed project is anticipated to provide vegetated swale post-construction BMPs to treat site runoff and provide downspout disconnection. Calculations from the Post-Construction Water Balance Calculator

and preliminary sizing calculations for the vegetated swales are included in Attachment 5. The vegetated swales are shown on the workmap in Attachment 1.

5.0 Attachments

Attachment 1: Drainage Workmap
Attachment 2: Hydrologic Analysis
Attachment 3: Hydraulic Analysis
Attachment 4: FEMA FIRMette and FIS Data
Attachment 5: Water Quality Calculations
Attachment 6: Electronic Files

Sincerely,

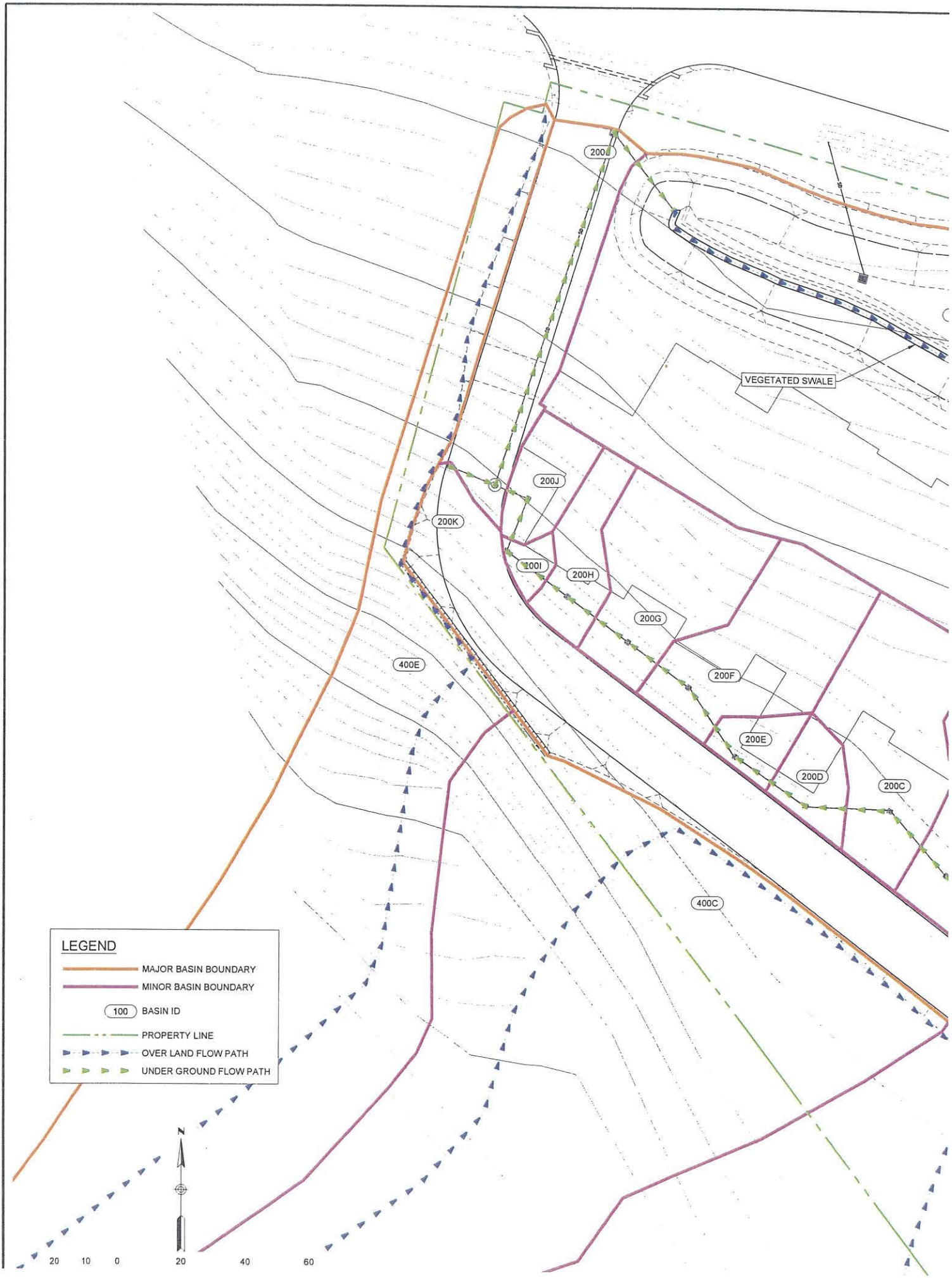
RICK ENGINEERING COMPANY

David Montgomery, PE, CFM
Project Engineer

M. Scott Lillibridge
R.C.E. #52504, Exp. 12/22
Region Manager

Attachment 1

Drainage Workmap


200L
VEGETATED SWALE
200J
200K
200I
200H
200G
200F
200E
200D
200C
400E
400C
LEGEND
MAJOR BASIN BOUNDARY
MINOR BASIN BOUNDARY
100 BASIN ID
PROPERTY LINE
OVER LAND FLOW PATH
UNDER GROUND FLOW PATH
N
20 10 0 20 40 60

Attachment 2

Hydrologic Analysis

RICK
ENGINEERING COMPANY

Rational Method Calculations

Job Name: Skilled Nursing Facility
Job Number: 19314
Date: 7/2/2021

Basin	Area (ac)	Runoff Coefficient [C]	Time of Concentration [Tc] (min)	Intensity [i] (in/hr)			Peak Flow Rate [Q] (cfs)		
				2-Year	10-Year	100-Year	2-Year	10-Year	100-Year
100A	0.12	0.80	10.0	2.05	3.16	4.76	0.20	0.31	0.47
100B	0.05	0.80	10.0	2.05	3.16	4.76	0.07	0.11	0.17
100C	0.28	0.80	10.0	2.05	3.16	4.76	0.46	0.71	1.07
100D	0.19	0.80	10.0	2.05	3.16	4.76	0.32	0.49	0.73
100E	0.29	0.80	10.0	2.05	3.16	4.76	0.48	0.74	1.12
100F	0.11	0.80	10.0	2.05	3.16	4.76	0.18	0.28	0.42
100	0.20	0.80	10.0	2.05	3.16	4.76	0.33	0.51	0.76
200A	0.04	0.80	10.0	2.05	3.16	4.76	0.06	0.09	0.14
200B	0.05	0.80	10.0	2.05	3.16	4.76	0.09	0.13	0.20
200C	0.06	0.80	10.0	2.05	3.16	4.76	0.10	0.16	0.24
200D	0.01	0.80	10.0	2.05	3.16	4.76	0.02	0.04	0.05
200E	0.01	0.80	10.0	2.05	3.16	4.76	0.02	0.03	0.04
200F	0.06	0.80	10.0	2.05	3.16	4.76	0.09	0.14	0.21
200G	0.05	0.80	10.0	2.05	3.16	4.76	0.09	0.13	0.20
200H	0.02	0.80	10.0	2.05	3.16	4.76	0.03	0.05	0.08
200I	0.01	0.80	10.0	2.05	3.16	4.76	0.01	0.01	0.02
200J	0.02	0.80	10.0	2.05	3.16	4.76	0.03	0.04	0.07
200K	0.15	0.80	10.0	2.05	3.16	4.76	0.25	0.39	0.59
200L	0.07	0.80	10.0	2.05	3.16	4.76	0.11	0.18	0.27
200	0.45	0.80	10.0	2.05	3.16	4.76	0.74	1.15	1.73
300A	0.45	0.35	15.0	1.66	2.55	3.84	0.26	0.40	0.60
300B	0.46	0.35	15.0	1.66	2.55	3.84	0.27	0.41	0.62
400A	0.96	0.35	15.0	1.66	2.55	3.84	0.56	0.85	1.29
400B	0.53	0.35	15.0	1.66	2.55	3.84	0.31	0.47	0.71
400	16.81	0.35	20.0	1.48	2.27	3.42	8.69	13.35	20.10

NOAA Atlas 14, Volume 6, Version 2
Location name: Quincy, California, USA*
Latitude: 39.9388°, Longitude: -120.9624°
Elevation: 3451.64 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	2.18 (1.86-2.59)	2.87 (2.44-3.40)	3.73 (3.17-4.44)	4.40 (3.71-5.30)	5.30 (4.28-6.64)	5.98 (4.70-7.66)	6.64 (5.09-8.76)	7.44 (5.51-10.2)	9.14 (6.46-13.1)	10.6 (7.18-15.8)
10-min	1.57 (1.34-1.86)	2.05 (1.75-2.44)	2.67 (2.27-3.18)	3.16 (2.66-3.80)	3.80 (3.07-4.76)	4.28 (3.37-5.49)	4.76 (3.64-6.28)	5.33 (3.95-7.27)	6.56 (4.63-9.38)	7.59 (5.14-11.3)
15-min	1.26 (1.08-1.50)	1.66 (1.41-1.96)	2.15 (1.83-2.56)	2.55 (2.14-3.06)	3.06 (2.48-3.83)	3.45 (2.72-4.43)	3.84 (2.94-5.06)	4.30 (3.18-5.86)	5.28 (3.73-7.56)	6.12 (4.15-9.11)
30-min	0.846 (0.722-1.00)	1.11 (0.944-1.32)	1.44 (1.22-1.72)	1.71 (1.43-2.05)	2.05 (1.66-2.57)	2.31 (1.82-2.97)	2.57 (1.97-3.39)	2.88 (2.13-3.93)	3.54 (2.50-5.07)	4.10 (2.78-6.11)
60-min	0.580 (0.495-0.687)	0.760 (0.647-0.901)	0.988 (0.839-1.18)	1.17 (0.982-1.41)	1.41 (1.14-1.76)	1.58 (1.25-2.03)	1.76 (1.35-2.32)	1.97 (1.46-2.69)	2.42 (1.71-3.47)	2.81 (1.90-4.18)
2-hr	0.403 (0.344-0.478)	0.508 (0.432-0.602)	0.638 (0.542-0.759)	0.739 (0.622-0.888)	0.870 (0.703-1.09)	0.966 (0.762-1.24)	1.06 (0.811-1.40)	1.15 (0.853-1.57)	1.27 (0.896-1.82)	1.42 (0.961-2.11)
3-hr	0.335 (0.286-0.397)	0.415 (0.354-0.493)	0.514 (0.437-0.612)	0.591 (0.497-0.711)	0.690 (0.557-0.862)	0.761 (0.600-0.976)	0.830 (0.635-1.10)	0.898 (0.665-1.22)	0.984 (0.695-1.41)	1.05 (0.710-1.56)
6-hr	0.247 (0.211-0.293)	0.301 (0.257-0.357)	0.367 (0.311-0.437)	0.417 (0.351-0.502)	0.481 (0.389-0.602)	0.527 (0.415-0.676)	0.571 (0.437-0.754)	0.614 (0.455-0.837)	0.668 (0.471-0.956)	0.707 (0.479-1.05)
12-hr	0.179 (0.153-0.212)	0.224 (0.190-0.265)	0.278 (0.236-0.331)	0.319 (0.269-0.384)	0.372 (0.301-0.465)	0.410 (0.323-0.525)	0.446 (0.341-0.588)	0.481 (0.356-0.656)	0.526 (0.371-0.752)	0.558 (0.378-0.831)
24-hr	0.129 (0.113-0.150)	0.167 (0.146-0.194)	0.214 (0.187-0.250)	0.251 (0.218-0.295)	0.298 (0.250-0.362)	0.332 (0.273-0.411)	0.365 (0.293-0.463)	0.397 (0.311-0.517)	0.438 (0.330-0.594)	0.468 (0.341-0.657)
2-day	0.089 (0.079-0.104)	0.116 (0.102-0.135)	0.149 (0.130-0.174)	0.175 (0.152-0.206)	0.209 (0.175-0.254)	0.233 (0.192-0.289)	0.258 (0.207-0.327)	0.282 (0.221-0.367)	0.313 (0.236-0.424)	0.336 (0.245-0.471)
3-day	0.072 (0.063-0.084)	0.093 (0.081-0.108)	0.119 (0.104-0.139)	0.140 (0.122-0.165)	0.167 (0.141-0.203)	0.188 (0.154-0.232)	0.207 (0.167-0.263)	0.227 (0.178-0.296)	0.253 (0.191-0.343)	0.273 (0.199-0.382)
4-day	0.061 (0.053-0.070)	0.078 (0.068-0.091)	0.100 (0.088-0.117)	0.118 (0.102-0.138)	0.141 (0.118-0.171)	0.158 (0.130-0.195)	0.175 (0.140-0.221)	0.191 (0.150-0.249)	0.214 (0.161-0.290)	0.230 (0.167-0.322)
7-day	0.042 (0.037-0.049)	0.054 (0.048-0.063)	0.070 (0.061-0.081)	0.082 (0.071-0.096)	0.098 (0.082-0.119)	0.110 (0.090-0.136)	0.122 (0.098-0.155)	0.134 (0.105-0.175)	0.150 (0.113-0.203)	0.162 (0.118-0.227)
10-day	0.033 (0.029-0.039)	0.043 (0.037-0.050)	0.055 (0.048-0.064)	0.064 (0.056-0.076)	0.077 (0.064-0.093)	0.086 (0.071-0.106)	0.095 (0.076-0.120)	0.104 (0.081-0.135)	0.115 (0.087-0.156)	0.124 (0.090-0.174)
20-day	0.022 (0.019-0.026)	0.028 (0.025-0.033)	0.036 (0.032-0.042)	0.042 (0.036-0.050)	0.049 (0.041-0.060)	0.055 (0.045-0.068)	0.059 (0.048-0.075)	0.064 (0.050-0.083)	0.070 (0.053-0.095)	0.074 (0.054-0.104)
30-day	0.018 (0.015-0.021)	0.023 (0.020-0.027)	0.029 (0.025-0.034)	0.033 (0.029-0.039)	0.039 (0.033-0.047)	0.043 (0.035-0.053)	0.046 (0.037-0.059)	0.049 (0.039-0.064)	0.053 (0.040-0.072)	0.056 (0.041-0.079)
45-day	0.014 (0.013-0.017)	0.018 (0.016-0.021)	0.023 (0.020-0.027)	0.027 (0.023-0.031)	0.031 (0.026-0.037)	0.034 (0.028-0.042)	0.036 (0.029-0.046)	0.038 (0.030-0.050)	0.041 (0.031-0.056)	0.043 (0.031-0.060)
60-day	0.012 (0.011-0.015)	0.016 (0.014-0.019)	0.020 (0.018-0.023)	0.023 (0.020-0.027)	0.026 (0.022-0.032)	0.029 (0.023-0.035)	0.031 (0.025-0.039)	0.032 (0.025-0.042)	0.034 (0.026-0.047)	0.036 (0.026-0.050)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical

Project: 19314_SkilledNursing Simulation Run: EX002

Start of Run: 01Jan1990, 12:00
End of Run: 02Jan1990, 12:01
Compute Time: 01Jul2021, 16:22:22

Basin Model: Existing
Meteorologic Model: 002-Year
Control Specifications: Control 1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
100	0.00195	0.435	01Jan1990, 20:08	1.728
200	0.00158	0.353	01Jan1990, 20:08	1.728
Site	0.00353	0.788	01Jan1990, 20:08	1.728
Downstream	0.00353	0.788	01Jan1990, 20:08	1.728

Project: 19314_SkilledNursing Simulation Run: EX010

Start of Run: 01Jan1990, 12:00 Basin Model: Existing
End of Run: 02Jan1990, 12:01 Meteorologic Model: 010-Year
Compute Time: 01Jul2021, 16:22:27 Control Specifications: Control 1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
100	0.00195	0.948	01Jan1990, 20:07	3.367
200	0.00158	0.768	01Jan1990, 20:07	3.367
Site	0.00353	1.716	01Jan1990, 20:07	3.367
Downstream	0.00353	1.716	01Jan1990, 20:07	3.367

Project: 19314_SkilledNursing Simulation Run: EX100

Start of Run: 01Jan1990, 12:00 Basin Model: Existing
End of Run: 02Jan1990, 12:01 Meteorologic Model: 100-Year
Compute Time: 01Jul2021, 16:24:02 Control Specifications: Control 1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
100	0.00195	1.719	01Jan1990, 20:06	5.807
200	0.00158	1.393	01Jan1990, 20:06	5.807
Site	0.00353	3.112	01Jan1990, 20:06	5.807
Downstream	0.00353	3.112	01Jan1990, 20:06	5.807

Project: 19314_SkilledNursing Simulation Run: PR002

Start of Run: 01Jan1990, 12:00 Basin Model: Proposed
End of Run: 02Jan1990, 12:01 Meteorologic Model: 002-Year
Compute Time: 01Jul2021, 16:31:10 Control Specifications: Control 1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
100	0.00195	0.937	01Jan1990, 20:01	3.238
Det-100	0.00195	0.415	01Jan1990, 20:32	3.105
200	0.00158	0.689	01Jan1990, 20:02	2.962
Det-200	0.00158	0.328	01Jan1990, 20:30	2.858
Site	0.00353	0.743	01Jan1990, 20:31	2.994
Downstream	0.00353	0.743	01Jan1990, 20:31	2.994

Project: 19314_SkilledNursing Simulation Run: PR010

Start of Run: 01Jan1990, 12:00 Basin Model: Proposed
End of Run: 02Jan1990, 12:01 Meteorologic Model: 010-Year
Compute Time: 01Jul2021, 16:31:38 Control Specifications: Control 1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
100	0.00195	1.512	01Jan1990, 20:01	5.119
Det-100	0.00195	0.861	01Jan1990, 20:22	4.913
200	0.00158	1.149	01Jan1990, 20:02	4.800
Det-200	0.00158	0.701	01Jan1990, 20:20	4.637
Site	0.00353	1.561	01Jan1990, 20:21	4.789
Downstream	0.00353	1.561	01Jan1990, 20:21	4.789

Project: 19314_SkilledNursing Simulation Run: PR100

Start of Run: 01Jan1990, 12:00 Basin Model: Proposed
End of Run: 02Jan1990, 12:01 Meteorologic Model: 100-Year
Compute Time: 01Jul2021, 22:08:55 Control Specifications: Control 1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
100	0.00195	2.320	01Jan1990, 20:01	7.754
Det-100	0.00195	1.591	01Jan1990, 20:16	7.446
200	0.00158	1.805	01Jan1990, 20:01	7.400
Det-200	0.00158	1.320	01Jan1990, 20:14	7.155
Site	0.00353	2.910	01Jan1990, 20:15	7.316
Downstream	0.00353	2.910	01Jan1990, 20:15	7.316

NOAA Atlas 14, Volume 6, Version 2
Location name: Quincy, California, USA*
Latitude: 39.9388°, Longitude: -120.9624°
Elevation: 3451.64 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.182 (0.155-0.216)	0.239 (0.203-0.283)	0.311 (0.264-0.370)	0.367 (0.309-0.442)	0.442 (0.357-0.553)	0.498 (0.392-0.638)	0.553 (0.424-0.730)	0.620 (0.459-0.846)	0.762 (0.538-1.09)	0.882 (0.598-1.31)
10-min	0.261 (0.223-0.310)	0.342 (0.291-0.406)	0.445 (0.378-0.530)	0.527 (0.443-0.633)	0.634 (0.512-0.793)	0.714 (0.562-0.915)	0.793 (0.607-1.05)	0.889 (0.659-1.21)	1.09 (0.771-1.56)	1.26 (0.857-1.88)
15-min	0.316 (0.270-0.374)	0.414 (0.352-0.491)	0.538 (0.457-0.641)	0.637 (0.535-0.765)	0.766 (0.619-0.958)	0.863 (0.680-1.11)	0.959 (0.734-1.26)	1.08 (0.796-1.47)	1.32 (0.932-1.89)	1.53 (1.04-2.28)
30-min	0.423 (0.361-0.502)	0.555 (0.472-0.658)	0.721 (0.612-0.858)	0.853 (0.717-1.02)	1.03 (0.830-1.28)	1.16 (0.911-1.48)	1.29 (0.984-1.70)	1.44 (1.07-1.96)	1.77 (1.25-2.53)	2.05 (1.39-3.05)
60-min	0.580 (0.495-0.687)	0.760 (0.647-0.901)	0.988 (0.839-1.18)	1.17 (0.982-1.41)	1.41 (1.14-1.76)	1.58 (1.25-2.03)	1.76 (1.35-2.32)	1.97 (1.46-2.69)	2.42 (1.71-3.47)	2.81 (1.90-4.18)
2-hr	0.806 (0.687-0.955)	1.01 (0.864-1.20)	1.28 (1.08-1.52)	1.48 (1.24-1.78)	1.74 (1.41-2.18)	1.93 (1.52-2.48)	2.12 (1.62-2.80)	2.30 (1.71-3.14)	2.54 (1.79-3.64)	2.84 (1.92-4.22)
3-hr	1.01 (0.858-1.19)	1.25 (1.06-1.48)	1.55 (1.31-1.84)	1.78 (1.49-2.13)	2.07 (1.67-2.59)	2.29 (1.80-2.93)	2.49 (1.91-3.29)	2.70 (2.00-3.68)	2.96 (2.09-4.23)	3.15 (2.13-4.69)
6-hr	1.48 (1.26-1.76)	1.80 (1.54-2.14)	2.20 (1.87-2.62)	2.50 (2.10-3.00)	2.88 (2.33-3.60)	3.16 (2.49-4.05)	3.42 (2.62-4.51)	3.68 (2.72-5.01)	4.00 (2.82-5.72)	4.23 (2.87-6.31)
12-hr	2.16 (1.84-2.56)	2.70 (2.30-3.20)	3.35 (2.84-3.99)	3.85 (3.24-4.63)	4.48 (3.62-5.61)	4.94 (3.89-6.33)	5.37 (4.11-7.09)	5.80 (4.29-7.90)	6.33 (4.47-9.06)	6.72 (4.56-10.0)
24-hr	3.09 (2.71-3.59)	4.01 (3.51-4.67)	5.14 (4.50-6.01)	6.02 (5.22-7.09)	7.15 (6.01-8.68)	7.97 (6.56-9.87)	8.76 (7.04-11.1)	9.53 (7.46-12.4)	10.5 (7.92-14.3)	11.2 (8.19-15.8)
2-day	4.30 (3.77-5.00)	5.57 (4.88-6.48)	7.16 (6.25-8.36)	8.40 (7.29-9.89)	10.0 (8.42-12.2)	11.2 (9.23-13.9)	12.4 (9.95-15.7)	13.5 (10.6-17.6)	15.0 (11.3-20.4)	16.1 (11.7-22.6)
3-day	5.18 (4.55-6.03)	6.69 (5.86-7.79)	8.59 (7.51-10.0)	10.1 (8.75-11.9)	12.1 (10.1-14.6)	13.5 (11.1-16.7)	14.9 (12.0-18.9)	16.4 (12.8-21.3)	18.2 (13.7-24.7)	19.6 (14.3-27.5)
4-day	5.81 (5.10-6.76)	7.49 (6.56-8.73)	9.62 (8.41-11.2)	11.3 (9.80-13.3)	13.5 (11.3-16.4)	15.1 (12.5-18.8)	16.8 (13.5-21.3)	18.4 (14.4-23.9)	20.5 (15.4-27.8)	22.1 (16.1-31.0)
7-day	7.09 (6.22-8.25)	9.11 (7.98-10.6)	11.7 (10.2-13.6)	13.7 (11.9-16.2)	16.4 (13.8-20.0)	18.5 (15.2-22.9)	20.5 (16.5-26.0)	22.5 (17.6-29.3)	25.2 (18.9-34.1)	27.2 (19.8-38.1)
10-day	7.99 (7.01-9.30)	10.3 (9.00-12.0)	13.1 (11.5-15.3)	15.4 (13.4-18.1)	18.4 (15.4-22.3)	20.6 (16.9-25.5)	22.7 (18.3-28.8)	24.8 (19.5-32.4)	27.6 (20.8-37.5)	29.7 (21.6-41.7)
20-day	10.5 (9.25-12.3)	13.7 (12.0-15.9)	17.4 (15.2-20.3)	20.2 (17.5-23.8)	23.7 (19.9-28.8)	26.2 (21.6-32.4)	28.5 (22.9-36.2)	30.8 (24.1-40.1)	33.5 (25.2-45.5)	35.5 (25.9-49.8)
30-day	12.7 (11.1-14.8)	16.5 (14.4-19.2)	20.9 (18.2-24.4)	24.1 (20.9-28.4)	28.1 (23.6-34.1)	30.8 (25.3-38.1)	33.3 (26.8-42.2)	35.6 (27.9-46.5)	38.5 (29.0-52.2)	40.5 (29.5-56.8)
45-day	15.4 (13.5-17.9)	19.9 (17.4-23.2)	25.1 (21.9-29.3)	28.8 (25.0-33.9)	33.2 (27.9-40.3)	36.2 (29.8-44.9)	38.9 (31.3-49.4)	41.4 (32.4-53.9)	44.3 (33.4-60.1)	46.3 (33.7-65.0)
60-day	18.0 (15.8-20.9)	23.1 (20.2-26.9)	28.9 (25.3-33.7)	33.0 (28.6-38.9)	37.9 (31.8-46.0)	41.1 (33.8-50.9)	44.0 (35.4-55.8)	46.6 (36.5-60.7)	49.6 (37.3-67.3)	51.7 (37.6-72.4)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Plumas National Forest Area, California

May 5, 2021

Soil Map


120° 58' 17" W
120° 57' 17" W
39° 56' 30" N
39° 56' 0" N
673400
673500
673600
673700
673800
673900
674000
674100
674200
674300
674400
674500
674600
674700
4423200
4423100
4423000
4422900
4422800
4422700
4422600
4422500
4422400
23
18
222
264
Oroville-Quincy
Edgewood Dr
Gansner Creek
Soil Map may not be valid at this scale.
Map Scale: 1:6,510 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 50 100 200 300
Feet
0 300 600 1200 1800
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
18 A	Forgay-Urban land complex, 0 to 5 percent slopes.	44.9	28.4%
23 C	Greenhorn loam, 0 to 1 percent slopes.	1.6	1.0%
222 C	Kistirn-Aiken-Deadwood families complex, 30 to 50 percent slopes.	85.5	54.0%
264 C	Skalan-Deadwood-Kistirn families complex, 50 to 70 percent slopes.	26.1	16.5%
Totals for Area of Interest		**158.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

Attachment 3

Hydraulic Analysis

RICK
ENGINEERING COMPANY

Inlet Capacity Calculations

Job Name: Skilled Nursing Facility
Job Number: 19314
Date: 5/10/2021

Weir Equation:

$$Q = C*L*H^{1.5}$$

Inlet Size	Weir Length (ft)	Weir Coefficient	Headwater (in)	Q (cfs)	50% Clogging Wier Length (ft)	50% Clogging Q (cfs)
12"x12" Grate Inlet	4	2.6	2	0.71	2	0.35
24"x24" Grate Inlet	8	2.6	2	1.42	4	0.71
36"x36" Grate Inlet	12	2.6	2	2.12	6	1.06
12"x12" Grate Inlet	4	2.6	3	1.30	2	0.65
24"x24" Grate Inlet	8	2.6	3	2.60	4	1.30
36"x36" Grate Inlet	12	2.6	3	3.90	6	1.95
12"x12" Grate Inlet	4	2.6	12	10.40	2	5.20
24"x24" Grate Inlet	8	2.6	12	20.80	4	10.40
36"x36" Grate Inlet	12	2.6	12	31.20	6	15.60

RICK
ENGINEERING COMPANY

Preliminary Pipe Sizing Calculations

Job Name: Skilled Nursing Facility
Job Number: 19314
Date: 5/10/2021

Manning's Equation:

$$V = (1.49 / n) \times (A / Pw)^{(2/3)} \times (S)^{(1/2)}$$

$$Q = V \times A$$

Calculation Assumes Pipe is Flowing Full in Order to be Conservative

Manning's n [n]	0.015

Pipe Diameter (in)	Pipe Slope [S] (ft/ft)	Area [A] (ft^2)	Wetted Perimeter [Pw] (ft)	Velocity [V] (fps)	Flow [Q] (cfs)
6	0.0110	0.20	1.57	2.60	0.51
8	0.0070	0.35	2.09	2.52	0.88
10	0.0060	0.55	2.62	2.70	1.47
12	0.0050	0.79	3.14	2.79	2.19
15	0.0035	1.23	3.93	2.71	3.32
18	0.0035	1.77	4.71	3.06	5.40
24	0.0035	3.14	6.28	3.70	11.63
30	0.0035	4.91	7.85	4.30	21.09
36	0.0035	7.07	9.42	4.85	34.29
42	0.0035	9.62	11.00	5.38	51.72
48	0.0020	12.57	12.57	4.44	55.82

RICK
ENGINEERING COMPANY

Interception Ditches

Job Name: Skilled Nursing Facility
Job Number: 19314
Date: 5/10/2021

Manning's Equation:

$$V = (1.49 / n) \times (A / Pw)^{(2/3)} \times (S)^{(1/2)}$$

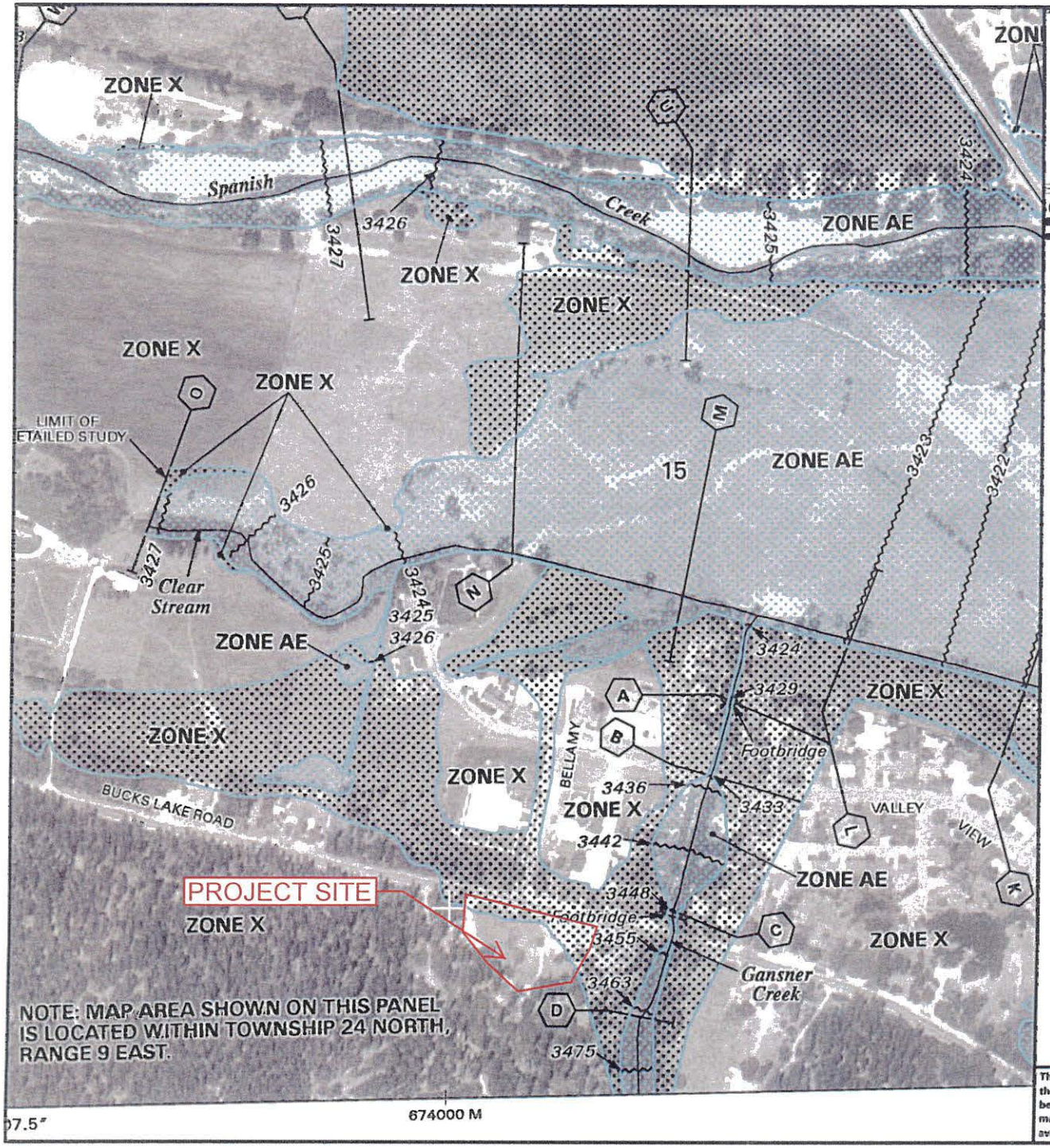
$$Q = VA$$

Notes:
No. 2 Backing 1.1' Min Thickness
If Velocity is greater than 10fps, use grouted riprap
If Velocity is greater than 20fps, reduce slope.

Side Slope (xH:1V)	2.0		2.0		2.0		2.0		2.0		2.0		2.0		2.0		2.0	
Depth + 0.5' Freeboard (ft)	0.5		0.5		0.5		0.5		0.5		0.5		0.5		0.5		0.5	
Base Width (ft)	0		1		2		3		4		5		6		8		10	
Manning's n Value Un-Grouted	0.037		0.037		0.037		0.037		0.037		0.037		0.037		0.037		0.037	
Manning's n Value Grouted	0.030		0.030		0.030		0.030		0.030		0.030		0.030		0.030		0.030	
Slope (ft/ft)	Velocity (fps)	Flow (cfs)	Velocity (fps)	Flow (cfs)	Velocity (fps)	Flow (cfs)	Velocity (fps)	Flow (cfs)	Velocity (fps)	Flow (cfs)	Velocity (fps)	Flow (cfs)	Velocity (fps)	Flow (cfs)	Velocity (fps)	Flow (cfs)	Velocity (fps)	Flow (cfs)
0.005	1.0	0.5	1.3	1.3	1.4	2.1	1.5	3.0	1.5	3.9	1.6	4.7	1.6	5.6	1.6	7.4	1.7	9.2
0.01	1.5	0.7	1.8	1.8	2.0	3.0	2.1	4.2	2.2	5.5	2.2	6.7	2.3	8.0	2.3	10.5	2.4	13.0
0.02	2.1	1.0	2.6	2.6	2.9	4.3	3.0	6.0	3.1	7.7	3.2	9.5	3.2	11.3	3.3	14.8	3.3	18.4
0.03	2.6	1.3	3.2	3.2	3.5	5.2	3.7	7.3	3.8	9.5	3.9	11.6	3.9	13.8	4.0	18.1	4.1	22.5
0.04	3.0	1.5	3.7	3.7	4.0	6.0	4.2	8.5	4.4	10.9	4.5	13.4	4.6	15.9	4.7	21.0	4.7	26.0
0.05	3.3	1.7	4.1	4.1	4.5	6.8	4.7	9.5	4.9	12.2	5.0	15.0	5.1	17.8	5.2	23.4	5.3	29.1
0.06	3.6	1.8	4.5	4.5	4.9	7.4	5.2	10.4	5.4	13.4	5.5	16.5	5.6	19.5	5.7	25.7	5.8	31.8
0.07	3.9	2.0	4.9	4.9	5.3	8.0	5.6	11.2	5.8	14.5	5.9	17.8	6.0	21.1	6.2	27.7	6.3	34.4
0.08	4.2	2.1	5.2	5.2	5.7	8.6	6.0	12.0	6.2	15.5	6.3	19.0	6.4	22.5	6.6	29.6	6.7	36.8
0.09	4.5	2.2	5.5	5.5	6.0	9.1	6.4	12.7	6.6	16.4	6.7	20.2	6.8	23.9	7.0	31.4	7.1	39.0
0.1	4.7	2.3	5.8	5.8	6.4	9.6	6.7	13.4	6.9	17.3	7.1	21.2	7.2	25.2	7.4	33.1	7.5	41.1
0.15	5.7	2.9	7.1	7.1	7.8	11.7	8.2	16.4	8.5	21.2	8.7	26.0	8.8	30.9	9.0	40.6	9.2	50.3
0.25	7.4	3.7	9.2	9.2	12.4	18.6	13.1	26.1	13.5	33.8	13.8	41.4	14.0	49.1	14.4	64.6	14.6	80.1
0.33	8.5	4.3	13.0	13.0	14.3	21.4	15.0	30.0	15.5	38.8	15.9	47.6	16.1	56.4	16.5	74.2	16.7	92.1
0.5	12.9	6.5	16.1	16.1	17.6	26.4	18.5	37.0	19.1	47.7	19.5	58.6	19.9	69.5	20.3	91.4	20.6	113.3
0.67	15.0	7.5	18.6	18.6	20.3	30.5	21.4	42.8	22.1	55.3	22.6	67.8	23.0	80.4	23.5	105.8	23.9	131.2

Attachment 4

FEMA FIRMette and FIS Data



MAP SCALE 1" = 500'

250 0 500 1000 FEET

0 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0904E

FIRM

FLOOD INSURANCE RATE MAP

PLUMAS COUNTY,
CALIFORNIA AND
INCORPORATED AREAS

PANEL 904 OF 1650

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
PLUMAS COUNTY, UNINCORPORATED AREAS	060244	0904	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06063C0904E

EFFECTIVE DATE:
MARCH 2, 2005

Federal Emergency Management Agency

FLOOD INSURANCE STUDY

PLUMAS COUNTY, CALIFORNIA,
AND INCORPORATED AREAS

Community Name	Community Number
PORTOLA, CITY OF	060456
PLUMAS COUNTY	
UNINCORPORATED AREAS	060244

March 2, 2005

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
06063CV000A

Table 1. Summary of Discharges

Flooding Source and Location	Drainage Area (sq. mi.)	Peak Discharges (cfs) 10-Year	50-Year	100-Year	500-Year
Boyle Ravine					
Upstream of confluence with Nugget Creek	1.78	193	429	597	991
Upstream of confluence with unnamed tributary	1.25	145	325	453	755
Upstream of High Street	1.17	49[1]	87[1]	114[1]	150[1]
Upstream of Alder Street	1.05	43[1]	73[1]	94[1]	114[1]
Chandler Creek					
Upstream of confluence with Greenhorn Creek	1.51	131[1]	158[1]	165[1]	171[1]
Clear Stream					
Upstream of confluence with Spanish Creek	4.10	50[2]	50[2]	50[2]	50[2]
Upstream of SH 89/70	3.89	269[1]	426[1]	449[1]	471[1]
Gansner Creek					
Upstream of confluence with Clear Stream	2.36	83	91	95	107
Greenhorn Creek					
Upstream of confluence with Spanish Creek	73.04	3,593	7,467	10,036	16,700
Upstream of confluence of Chandler Creek	69.10	3,394	7,077	9,528	15,900
Upstream of confluence of Taylor Creek	53.88	2,748	5,770	7,796	13,000
Upstream of confluence of Thompson Creek	43.84	2,176	4,521[1]	5,422[1]	9,628[1]
Middle Fork Feather River					
At Gulling Street Bridge	572	--[3]	--[3]	21,000	--[3]
Mill Creek					
Overflow (Includes Upper Mill Creek Shed)	8.34	567[1]	1,224[1]	1,684[1]	2,790[1]
Mill Creek					
Upstream of confluence with Spanish Creek	12.60	916	1,959	2,670	4,240
Upstream of Quincy Junction Road	8.87	488[1]	536[1]	615[1]	681[1]
Upstream of Bell Lane	7.92	633[1]	851[1]	989[1]	1,158[1]
Upstream of SH 89/70	6.72	575[1]	745[1]	918[1]	1,415[1]
Nugget Creek					
Upstream of confluence with Mill Creek	3.27	355	763	3,716[4]	12,337[4]
Upstream of confluence of Boyle Ravine	0.94	134	264	408	670

Attachment 5

Water Quality Calculations

Post-Construction Water Balance Calculator

User may make changes from any cell that is orange or brown in color (similar to the cells to the immediate right). Cells in green are calculated for you.		(Step 1a) If you know the 85th percentile storm event for your location enter it in the box below	(Step 1b) If you can not answer 1a then select the county where the project is located (click on the cell to the right for drop-down): This will determine the average 85th percentile 24 hr. storm event for your site, which will appear under precipitation to left.	PLUMAS
			(Step 1c) If you would like a more percise value select the location closest to your site. If you do not recgonize any of these locations, leave this drop-down menu at location. The average value for the County will be used.	HAMILTON BRANCH FIRE DE

Project Information		Runoff Calculations		
Project Name:	Skilled Nursing Facility	(Step 2) Indicate the Soil Type (dropdown menu to right):	Group C Soils	Low infiltration. Sandy clay loam. Infiltration rate 0.05 to 0.15 inch/hr when wet.
Waste Discharge Identification (WDID):	--	(Step 3) Indicate the existing **dominant** non-built land Use Type (dropdown menu to right):	Pasture/Grassland/Range: 50% to 75% ground cover & not heavily grazed	
Date:	7/1/2021	(Step 4) Indicate the proposed **dominant** non-built land Use Type (dropdown menu to right):	Pasture/Grassland/Range: 50% to 75% ground cover & not heavily grazed	
Sub Drainage Area Name (from map):	100			

Runoff Curve Numbers			Complete Either		
			Sq Ft	Acres	Acres
Existing Pervious Runoff Curve Number	79	(Step 5) Total Project Site Area:		2.26	2.26
Proposed Development Pervious Runoff Curve Number	88	(Step 6) Sub-watershed Area:		1.25	1.25
		Percent of total project		55%	

Design Storm		
Based on the County you indicated above, we have included the 85 percentile average 24 hr event - P85 (in)^ for your area.	0.69	in
The Amount of rainfall needed for runoff to occur (Existing runoff curve number -P from existing RCN (in)^)	0.54	In
P used for calculations (in) (the greater of the above two criteria)	0.69	In

^Available at www.cabmphandbooks.com

(Step 7) Sub-watershed Conditions	Complete Either		Calculated Acres
	Sq Ft	Acres	
Sub-watershed Area (acres)			1.25
Existing Rooftop Impervious Coverage			0.00
Existing Non-Rooftop Impervious Coverage			0.00
Proposed Rooftop Impervious Coverage	10104		0.23
Proposed Non-Rooftop Impervious Coverage	15786		0.36

Pre-Project Runoff Volume (cu ft)	40	Cu.Ft.
Project-Related Runoff Volume Increase w/o credits (cu ft)	1,299	Cu.Ft.
Project-Related Volume Increase with Credits (cu ft)	-189	Cu.Ft.

Credits	Acres	Square Feet
Porous Pavement	0.00	0
Tree Planting	0.00	0
Downspout Disconnection	0.12	5,227
Impervious Area Disconnection		
Green Roof	0.00	0
Stream Buffer	0.00	0
Vegetated Swales	0.59	25,700
Subtotal	0.71	30,928
Subtotal Runoff Volume Reduction Credit	1488 Cu. Ft.	

You have achieved your minimum requirements

(Step 9) Impervious Volume Reduction Credits	Volume (cubic feet)
Rain Barrels/Cisterns	0 Cu. Ft.
Soil Quality	0 Cu. Ft.
Subtotal Runoff Volume Reduction	0 Cu. Ft.
Total Runoff Volume Reduction Credit	1,488 Cu. Ft.

Downspout Disconnection Credit Worksheet

Please fill out a downspout disconnection credit worksheet for each project subwatershed. If you answer yes to all questions, all rooftop area draining to each downspout will be subtracted from your proposed rooftop impervious coverage.

Downspout Disconnection Credit Criteria					
Do downspouts and any extensions extend at least six feet from a basement and two feet from a crawl space or concrete slab?				○ Yes	◉ No
Is the area of rooftop connecting to each disconnected downspout 600 square feet or less?				○ Yes	◉ No
Is the roof runoff from the design storm event fully contained in a raised bed or planter box or does it drain as sheet flow to a landscaped area large enough to contain the roof runoff from the design storm event?				○ Yes	◉ No
The Stream Buffer and/or Vegetated Swale credits **will not** be taken in this sub-watershed area?				○ Yes	◉ No
Percentage of existing	0.00	Acres	of rooftop surface has disconnected downspouts	100	
Percentage of the proposed	0.23	Acres	of rooftop surface has disconnected downspouts	100	
				Return to Calculator	

Vegetated Swale Credit Worksheet

Please fill out a vegetated swale worksheet for each project subwatershed. If you answer yes to all questions, you may subtract all impervious surface draining to each stream buffer that has not been addressed using the Downspout Disconnection credit.

Vegetated Swale Credit Criteria

Have all vegetated swales been designed in accordance with Treatment Control BMP 30 (TC-30 - Vegetated Swale) from the California Stormwater BMP Handbook, New Development and Redevelopment (available at www.cabmphandbooks.com)?	(●) Yes ( ) No
Is the maximum flow velocity for runoff from the design storm event less than or equal to 1.0 foot per second?	(●) Yes ( ) No

Percentage of existing	0.00	Acres of impervious area draining to a vegetated swale	0.00	
Percentage of the proposed	0.59	Acres of impervious area draining to a vegetated swale	100.00	%

Return to Calculator

Post-Construction Water Balance Calculator

User may make changes from any cell that is orange or brown in color (similar to the cells to the immediate right). Cells in green are calculated for you.		(Step 1a) If you know the 85th percentile storm event for your location enter it in the box below	(Step 1b) If you can not answer 1a then select the county where the project is located (click on the cell to the right for drop-down): This will determine the average 85th percentile 24 hr. storm event for your site, which will appear under precipitation to left.	PLUMAS
			(Step 1c) If you would like a more percise value select the location closest to your site. If you do not recgonize any of these locations, leave this drop-down menu at location. The average value for the County will be used.	HAMILTON BRANCH FIRE DE

Project Information		Runoff Calculations		
Project Name:	Skilled Nursing Facility	(Step 2) Indicate the Soil Type (dropdown menu to right):	Group C Soils	Low infiltration. Sandy clay loam. Infiltration rate 0.05 to 0.15 inch/hr when wet.
Waste Discharge Identification (WDID):	--	(Step 3) Indicate the existing **dominant** non-built land Use Type (dropdown menu to right):	Pasture/Grassland/Range: 50% to 75% ground cover & not heavily grazed	
Date:	7/1/2021	(Step 4) Indicate the proposed **dominant** non-built land Use Type (dropdown menu to right):	Pasture/Grassland/Range: 50% to 75% ground cover & not heavily grazed	
Sub Drainage Area Name (from map):	200		Complete Either Sq Ft	Acres / Acres
Runoff Curve Numbers		(Step 5) Total Project Site Area:		2.26 / 2.26
Existing Pervious Runoff Curve Number	79	(Step 6) Sub-watershed Area:		1.01 / 1.01
Proposed Development Pervious Runoff Curve Number	89	Percent of total project :	45%	

Design Storm			(Step 7) Sub-watershed Conditions	Complete Either Sq Ft	Acres	Calculated Acres
Based on the County you indicated above, we have included the 85 percentile average 24 hr event - P85 (in)^ for your area.	0.69	in	Sub-watershed Area (acres)			1.01
The Amount of rainfall needed for runoff to occur (Existing runoff curve number -P from existing RCN (in)^)	0.54	In	Existing Rooftop Impervious Coverage			0.00
P used for calculations (in) (the greater of the above two criteria)	0.69	In	Existing Non-Rooftop Impervious Coverage			0.00
^Available at www.cabmphandbooks.com			Proposed Rooftop Impervious Coverage	15786		0.36
			Proposed Non-Rooftop Impervious Coverage	8069		0.19

			Credits	Acres	Square Feet
Pre-Project Runoff Volume (cu ft)	32	Cu.Ft.	Porous Pavement	0.00	0
			Tree Planting	0.00	0
Project-Related Runoff Volume Increase w/o credits (cu ft)	1,186	Cu.Ft.	Downspout Disconnection	0.18	7,841
			Impervious Area Disconnection		
			Green Roof	0.00	0
			Stream Buffer	0.00	0
Project-Related Volume Increase with Credits (cu ft)	-333	Cu.Ft.	Vegetated Swales	0.55	23,958
			Subtotal	0.73	31,799
			Subtotal Runoff Volume Reduction Credit	1519 Cu. Ft.	

You have achieved your minimum requirements

(Step 9) Impervious Volume Reduction Credits	Volume (cubic feet)
Rain Barrels/Cisterns	0 Cu. Ft.
Soil Quality	0 Cu. Ft.
Subtotal Runoff Volume Reduction	0 Cu. Ft.
Total Runoff Volume Reduction Credit	1,519 Cu. Ft.

Downspout Disconnection Credit Worksheet

Please fill out a downspout disconnection credit worksheet for each project subwatershed. If you answer yes to all questions, all rooftop area draining to each downspout will be subtracted from your proposed rooftop impervious coverage.

Downspout Disconnection Credit Criteria					
Do downspouts and any extensions extend at least six feet from a basement and two feet from a crawl space or concrete slab?				○ Yes	◉ No
Is the area of rooftop connecting to each disconnected downspout 600 square feet or less?				○ Yes	◉ No
Is the roof runoff from the design storm event fully contained in a raised bed or planter box or does it drain as sheet flow to a landscaped area large enough to contain the roof runoff from the design storm event?				○ Yes	◉ No
The Stream Buffer and/or Vegetated Swale credits **will not** be taken in this sub-watershed area?				○ Yes	◉ No
Percentage of existing	0.00	Acres	of rooftop surface has disconnected downspouts		
Percentage of the proposed	0.36	Acres	of rooftop surface has disconnected downspouts	100	
				Return to Calculator	

Vegetated Swale Credit Worksheet

Please fill out a vegetated swale worksheet for each project subwatershed. If you answer yes to all questions, you may subtract all impervious surface draining to each stream buffer that has not been addressed using the Downspout Disconnection credit.

Vegetated Swale Credit Criteria

Have all vegetated swales been designed in accordance with Treatment Control BMP 30 (TC-30 - Vegetated Swale) from the California Stormwater BMP Handbook, New Development and Redevelopment (available at www.cabmphandbooks.com)?	(●) Yes ( ) No
Is the maximum flow velocity for runoff from the design storm event less than or equal to 1.0 foot per second?	(●) Yes ( ) No

Percentage of existing	0.00	Acres of impervious area draining to a vegetated swale	0.00
Percentage of the proposed	0.55	Acres of impervious area draining to a vegetated swale	100.00 %

Return to Calculator

RICK
ENGINEERING COMPANY

Vegetated Swale Sizing

Job Name: Skilled Nursing Facility
Job Number: 19314
Date: 7/1/2021

Design Intensity (in/hr)	0.2
Design Manning's n	0.2

Swale	Treatment Flow Rate			Swale Geometry			Depth (in)	3	Depth (in)	5	Sizing Checks		Minimum Swale Length for 7 minute Contact Time (ft)
	Tributary Area (ac)	Runoff Coefficient	Water Quality Flow (cfs)	Bottom Width (ft)	Side Slope (x:1)	Slope (ft/ft)	Capacity (cfs)	Velocity (fps)	Capacity (cfs)	Velocity (fps)	3" < Depth < 5"	Velocity < 1 fps	
100	1.25	0.8	0.20	2	3	0.005	0.121	0.175	0.314	0.232	OK	OK	86
200	1.01	0.8	0.16	2	3	0.005	0.121	0.175	0.314	0.232	OK	OK	81
				2ft - 10ft	3:1 min	0.005-0.025							

Attachment 6

Electronic Files