

TRACT No. 16136 MOON CAMP (JN 9373)
EXISTING HYDROLOGY
AREA F

[SAN BERNARDINO COUNTY]

FILE NAME: 9373HEFT.DAT

TIME/DATE OF STUDY: 11:49 4/11/2002

10.0-YEAR STORM RATIONAL METHOD STUDY (AMC II LOSSES)

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CALCULATED BY: R. CLARK
CHECKED BY: R. CLARK
PAGE NUMBER 1 OF 1

CONCENTRATION POINT NUMBER	AREA (ACRES) SUBAREA	SOIL TYPE	DEV. TYPE	Tt MIN.	Tc MIN.	I in/h	Fm	Fm (Avg)	Q SUM	PATH (ft)	SLOPE ft/ft	V FPS	HYDRAULICS AND NOTES
2.00	4.1	C	Nat	..	20.0	2.84	.52	.518	8.6	848	.1592	..	INITIAL SUBAREA
5.0ft-GUTTER FLOW TO PT.# 3.00	18.7	C	Nat	1.1	21.1	2.74	.52	.518	45.6	1109	.0712	12.2	Qest.= 27.0cfs XFALL=.20000 n=.0300 D= 1.2
5.0ft-GUTTER FLOW TO PT.# 4.00	22.1	C	Nat	1.6	22.7	2.61	.52	.518	84.4	51	.0588	13.8	Qest.= 66.4cfs XFALL=.20000 n=.0300 D= 1.5
5.00				.1									Qpipe= 84.4cfs n=.0240 D= 2.4 36.0"-PIPE
5.00	44.9				22.7				84.4				STREAM SUMMARY
EFFECTIVE AREA (ACRES) =	44.88	TOTAL AREA (ACRES) =	44.88	MEAN VALUES: Fp (IN/HR) =	44.88	PEAK FLOW RATE (CFS) =	84.43						
TIME OF CONCENTRATION (MIN.) =	22.74	MEAN VALUES: Fp (IN/HR) =	44.88	PEAK FLOW RATE (CFS) =	84.43	TIME OF CONCENTRATION (MIN.) =	22.74	MEAN VALUES: Fp (IN/HR) =	44.88	PEAK FLOW RATE (CFS) =	84.43	TIME OF CONCENTRATION (MIN.) =	22.74

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PAGE NUMBER 1 OF 1

GE NUMBER I OF I

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1.000; Fm(IN/HR) =

1.000; Fm (IN/HR) =

TRACT No. 16136 MOON CAMP (JN 9373)
EXISTING HYDROLOGY
AREA I

[SAN BERNARDINO COUNTY]

FILE NAME: 9373HEIT.DAT

TIME/DATE OF STUDY: 11:51 4/11/2002

10.0-YEAR STORM RATIONAL METHOD STUDY (AMC II LOSSES)

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PAGE NUMBER 1 OF 1

CONCENTRATION POINT NUMBER	AREA (ACRES) SUBAREA	SOIL DEV. TYPE	Tt MIN.	Tc MIN.	I in/h	Fm (Avg)	Q SUM	PATH (ft)	SLOPE ft/ft	V FPS.	HYDRAULICS AND NOTES
2.00	4.3	C	4D/AC	9.4	4.82	.34	17.3	1050	.1762	..	INITIAL SUBAREA
3.00	1.8	C	2.5AC	10.2	4.55	.51	22.9	292	.0514	8.4	Qpipe= 17.3cfs n=.0240 D= .8 24.0"-PIPE ADD SUBAREA
4.00	5.3	C	Nat	10.8	4.37	.52	40.2	73	.0274	8.8	Qest.= 32.0cfs XFALL= .20000 n=.0300 D= 1.0
5.00				11.0			40.2				Qpipe= 40.2cfs n=.0240 D= 2.0 33.0"-PIPE
5.00	11.4										STREAM SUMMARY
EFFECTIVE AREA (ACRES) =	11.38	TOTAL AREA (ACRES) =	11.38	MEAN VALUES: Fp (IN/HR) =	11.38	PEAK FLOW RATE (CFS) =	40.16				
TIME OF CONCENTRATION (MIN.) =	10.99	MEAN VALUES: Fp (IN/HR) =	10.99	PEAK FLOW RATE (CFS) =	40.16	TIME OF CONCENTRATION (MIN.) =	10.99				

Moon Camp Tentative Tract 16136

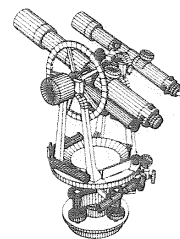
APPENDIX B

Modified Rational Method - Proposed Condition
10 year and 100 year

**FAWNSKIN, CALIFORNIA
MOON CAMP
Tentative Tract 16136**

***PRELIMINARY DRAINAGE STUDY
HYDROLOGY AND HYDRAULICS
SUMMARY REPORT***
APRIL 2002

**EXHIBIT C
PROPOSED HYDROLOGY
10-YEAR RUNOFF**



Hicks & Hartwick, Inc.
CIVIL ENGINEERS - LAND SURVEYORS
37 EAST OLIVE AVENUE
REDLANDS, CALIFORNIA 92373
909.793.2257 or FAX 909.792.3763

TRACT No. 16136 MOON CAMP (JN 9373)
 PROPOSED HYDROLOGY
 AREA A

[SAN BERNARDINO COUNTY]

FILE NAME: 9373HPAT.DAT

TIME/DATE OF STUDY: 9:28 4/10/2002

10.0-YEAR STORM RATIONAL METHOD STUDY (AMC II LOSSES)

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 PAGE NUMBER 1 OF 2

CONCENTRATION POINT NUMBER	AREA (ACRES) SUBAREA	SOIL TYPE	DEV. TYPE	Tt MIN.	Tc MIN.	I in/h	Fm (Avg)	Q SUM	PATH (ft)	SLOPE ft/ft	V FPS.	HYDRAULICS AND NOTES
2.00	3.0	D	Nat	..	16.6	3.24	.40	.398	779	.3440	..	INITIAL SUBAREA
5.0ft-GUTTER FLOW TO PT.# 3.00	9.4	D	Nat	1.2	17.8	3.09	.40	.398	730	.1603	15.1	Qest.= 19.3cfs XFALL=.20000 n=.0300 D=.8
5.0ft-GUTTER FLOW TO PT.# 7.00	17.2	D	Nat	1.0	18.8	2.98	.40	.398	869	.1438	15.2	Qest.= 50.3cfs XFALL=.20000 n=.0300 D= 1.2
7.00	29.7				18.8	2.98		69.0				FOR CONFLUENCE
5.00	4.7	D	Nat	..	18.4	3.02	.40	.398	890	.2719	..	INITIAL SUBAREA
5.0ft-GUTTER FLOW TO PT.# 6.00	12.6	D	Nat	.9	19.2	2.93	.40	.398	719	.1405	14.1	Qest.= 25.2cfs XFALL=.20000 n=.0300 D= 1.2
5.0ft-GUTTER FLOW TO PT.# 7.00	8.8	D	Nat	.9	20.1	2.84	.40	.398	719	.1293	13.8	Qest.= 49.1cfs XFALL=.20000 n=.0300 D= 1.2
CONFLUENCE ANALYSIS FOR POINT# 7.00												LARGEST CONFLUENCE Q= 125.6

PEAK FLOW RATE(CFS) = 125.6

TIME OF CONCENTRATION(MIN.) = 18.8

MEAN VALUES: Fp(IN/HR) = .398; Ap = 1.000; Fm(IN/HR) = .398

EFFECTIVE AREA(ACRES) = 54.15 TOTAL AREA(ACRES) = 55.85

Q(cfs) Tc(min) Fp(avg) Ap(avg) Fm(avg) I(in/hr) Ae(acres) NODE

125.65 18.78 .398 1.00 .398 2.98 54.15 1.0

122.71 20.09 .398 1.00 .398 2.84 55.85 4.0

TRACT No. 16136 MOON CAMP (JN 9373)
 PROPOSED HYDROLOGY
 AREA A

[SAN BERNARDINO COUNTY]

FILE NAME: 9373HPAT.DAT

TIME/DATE OF STUDY: 9:28 4/10/2002

10.0-YEAR STORM RATIONAL METHOD STUDY (AMC II LOSSES)

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CALCULATED BY: R. CLARK
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 PAGE NUMBER 2 OF 2

CONCENTRATION POINT NUMBER	AREA (ACRES) SUBAREA	SUM	SOIL TYPE	DEV. TYPE	Tt MIN.	Tc MIN.	I in/h	Fm (Avg)	Q SUM	PATH SLOPE (ft) ft/ft	V FPS.	HYDRAULICS AND NOTES
5.0ft-GUTTER FLOW TO PT.# 8.00	24.9	79.0	C	Nat	1.4	20.2	2.83	.52	.436	170.1	15.0	Qest.= 151.5cfs XFALL=.20000 n=.0300 D= 1.9
5.0ft-GUTTER FLOW TO PT.# 9.00	11.9	91.0	C	2.5AC	.7	20.9	2.77	.51	.445	189.9	11.8	Qest.= 182.2cfs XFALL=.20000 n=.0300 D= 2.3
10.00					.1					86	.0814	Qpipe= 189.9cfs n=.0240 D= 2.9 48.0"-PIPE
5.0ft-GUTTER FLOW TO PT.# 11.00	6.0	96.9	C	1D/AC	1.0	21.9	2.67	.45	.446	194.3	11.7	Qest.= 195.8cfs XFALL=.20000 n=.0300 D= 2.4
11.00		96.9				21.9				194.3		STREAM SUMMARY
EFFECTIVE AREA (ACRES) =	96.91	TOTAL AREA (ACRES) =	98.61	PEAK FLOW RATE (CFS) =	194.30							
TIME OF CONCENTRATION (MIN.) =	21.89	MEAN VALUES: Fp (IN/HR) =	.457; Ap =	.975; Fm (IN/HR) =	.446							

PEAK FLOW RATE TABLE

Q (cfs)	Tc (min)	Fp (avg)	Ap (avg)	Fm (avg)	I (in/hr)	Ae (acres)	NODE
194.30	21.89	.457	.98	.446	2.67	96.91	1.0
188.25	23.21	.456	.98	.445	2.57	98.61	4.0

TRACT No. 16136 MOON CAMP (JN 9373)
PROPOSED HYDROLOGY
AREA B

[SAN BERNARDINO COUNTY]

FILE NAME: 9373HPBT.DAT

TIME/DATE OF STUDY: 9:31 4/10/2002

10.0-YEAR STORM RATIONAL METHOD STUDY (AMC II LOSSES)

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PAGE NUMBER 1 OF 1

CONCENTRATION POINT NUMBER	AREA (ACRES) SUBAREA	SUM	SOIL TYPE	DEV. TYPE	Tt MIN.	Tc MIN.	I in/h	Fm	Fm (Avg)	Q SUM	PATH (ft)	SLOPE ft/ft	V FPS.	HYDRAULICS AND NOTES
2.00	6.6	6.6	C	1D/AC	..	8.7	5.10	.45	.453	27.5	603	.1658	..	INITIAL SUBAREA
3.00					.1						34	.0588	10.5	Qpipe= 27.5cfs n=.0240 D= 1.6 24.0"-PIPE
3.00		6.6				8.8				27.5				STREAM SUMMARY

EFFECTIVE AREA (ACRES) = 6.57 TOTAL AREA (ACRES) = 6.57 PEAK FLOW RATE (CFS) = 27.49
TIME OF CONCENTRATION (MIN.) = 8.75 MEAN VALUES: Fp (IN/HR) = .566; Ap = .800; Fm (IN/HR) = .453

TRACT No. 16136 MOON CAMP (JN 9373)
 PROPOSED HYDROLOGY
 AREA D

FILE NAME: 9373HPDT.DAT
 TIME/DATE OF STUDY: 6:35 4/11/2002
 10.0-YEAR STORM RATIONAL METHOD STUDY (AMC II LOSSES)

[SAN BERNARDINO COUNTY]

CALCULATED BY: R. CLARK
 CHECKED BY: R. CLARK
 PAGE NUMBER 1 OF 1

CONCENTRATION		AREA (ACRES)		SOIL DEV.	Tt	Tc	I	Fm	Fm	Q	PATH	SLOPE	V	HYDRAULICS AND NOTES
POINT NUMBER	SUBAREA	SUM	TYPE	MIN.	MIN.	MIN.	in/h	(Avg)	(Avg)	SUM	(ft)	ft/ft	FPS	
2.00	2.4	2.4	C	2.5AC	..	8.2	5.33	.51	.509	10.4	579	.2522	..	INITIAL SUBAREA
26.ft-STREET FLOW TO PT.#														
3.00	5.2	7.6	C	1D/AC	1.6	9.8	4.71	.45	.471	29.1	620	.0753	7.5	Qest.= 20.5cfs D=.4 ,D*V= 2.8 FLOODWIDTH=1.8
26.ft-STREET FLOW TO PT.#														
4.00	2.0	9.6	C	1D/AC	.9	10.7	4.41	.45	.467	34.1	75	.2267	18.6	Qest.= 32.6cfs D=.5 ,D*V= 2.7 FLOODWIDTH= 3.2
5.00					.1									Qpipe= 34.1cfs n=.0240 D= 1.2 21.0"-PIPE
5.00		9.6				10.8				34.1				STREAM SUMMARY

EFFECTIVE AREA (ACRES) = 9.59 TOTAL AREA (ACRES) = 9.59
 TIME OF CONCENTRATION (MIN.) = 10.77 MEAN VALUES: Fp (IN/HR) = .566; Ap = .825; Fm (IN/HR) = .467

TRACT No. 16136 MOON CAMP (JN 9373)
PROPOSED HYDROLOGY
AREA E

FILE NAME: 9373HPET.DAT

TIME/DATE OF STUDY: 6:44 4/11/2002

10.0-YEAR STORM RATIONAL METHOD STUDY (AMC II LOSSES)
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PAGE NUMBER 1 OF 1

CONCENTRATION POINT NUMBER	AREA (ACRES) SUBAREA	SOIL DEV. TYPE	Tt MIN.	Tc MIN.	I in/h	Fm (Avg)	Q SUM	PATH (ft)	SLOPE ft/ft	V FPS	HYDRAULICS AND NOTES
2.00	.2	C	.3	5.8	6.75	.06	1.3	280	.0304	..	INITIAL SUBAREA
3.00								105	.1429	6.6	Qpipe= 1.3cfs n=.0240 D= .3 18.0"-PIPE
3.00	.2			6.1			1.3				STREAM SUMMARY

EFFECTIVE AREA (ACRES) = .22 TOTAL AREA (ACRES) = .22
TIME OF CONCENTRATION (MIN.) = 6.09 MEAN VALUES: Fp (IN/HR) = .566; Ap = .100; Fm (IN/HR) = .057

PEAK FLOW RATE (CFS) = 1.33
Fm (IN/HR) = .057

TRACT No. 16136 MOON CAMP (JN 9373)
PROPOSED HYDROLOGY
AREA F

---[SAN BERNARDINO COUNTY]---

FILE NAME: 9373HPFT.DAT

TIME/DATE OF STUDY: 6:45 4/11/2002

10.0-YEAR STORM RATIONAL METHOD STUDY (AMC II LOSSES)

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CALCULATED BY: R. CLARK
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PAGE NUMBER 1 OF 1

CONCENTRATION POINT NUMBER	AREA (ACRES) SUBAREA	SOIL TYPE	DEV. TYPE	Tt MIN.	Tc MIN.	I in/h	Fm (Avg)	Q SUM	PATH SLOPE (ft) ft/ft	V FPS.	HYDRAULICS AND NOTES
2.00	1.0	C	Com	..	9.5	4.80	.06	4.3	831	.0235	.. INITIAL SUBAREA
3.00				.2					102	.0882	Qpipe= 4.3cfs n=.0240 D=.5 18.0"-PIPE
3.00	1.0				9.7			4.3			STREAM SUMMARY

EFFECTIVE AREA (ACRES) = 1.00 TOTAL AREA (ACRES) = 1.00 PEAK FLOW RATE (CFS) = 4.27
TIME OF CONCENTRATION (MIN.) = 9.69 MEAN VALUES: Fp (IN/HR) = .566; Ap = .100; Fm (IN/HR) = .057

TRACT NO. 16136 MOON CAMP (JN 9373)
PROPOSED HYDROLOGY
AREA H

[SAN BERNARDINO COUNTY]

FILE NAME: 9373HPHT.DAT

TIME/DATE OF STUDY: 6:56 4/11/2002

10.0-YEAR STORM RATIONAL METHOD STUDY (AMC II LOSSES)

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CALCULATED BY: R. CLARK

CHECKED BY: R. CLARK

PAGE NUMBER 1 OF 1

CONCENTRATION POINT NUMBER	AREA (ACRES) SUBAREA	SOIL TYPE	DEV. TYPE	Tc MIN.	I in/h	Fm	Fm (Avg)	Q SUM	PATH (ft)	SLOPE ft/ft	V FPS.	HYDRAULICS AND NOTES
2.00	.3	C	Com	.2	7.6	5.63	.06	1.5	511	.0274	..	INITIAL SUBAREA
3.00									73	.1781	7.4	Qpipe= 1.5cfs n=.0240 D= .3 18.0"-PIPE
3.00	.3				7.7			1.5				STREAM SUMMARY

EFFECTIVE AREA (ACRES) = .30 TOTAL AREA (ACRES) = .30 PEAK FLOW RATE (CFS) = 1.50
TIME OF CONCENTRATION (MIN.) = 7.73 MEAN VALUES: Fp (IN/HR) = .566; Ap = .100; Fm (IN/HR) = .057

1

1

TRACT NO. 16136 MOON CAMP (JN 9373)
 PROPOSED HYDROLOGY
 AREA J

FILE NAME: 9373HPJT.DAT
 TIME/DATE OF STUDY: 7:11 4/11/2002
 10.0-YEAR STORM RATIONAL METHOD STUDY (AMC II LOSSES)
 [SAN BERNARDINO COUNTY] CALCULATED BY: R. CLARK
 CHECKED BY: R. CLARK
 PAGE NUMBER 1 OF 2

CONCENTRATION		AREA (ACRES)		SOIL DEV.	Tc	I	Fm	Fm	Q	PATH	SLOPE	V	HYDRAULICS AND NOTES
POINT NUMBER	SUBAREA	SUM	TYPE	TYPE	MIN.	in/h	(Avg)	(Avg)	SUM	(ft)	ft/ft	FPS.	
2.00	4.3	4.3	C	4D/AC	9.4	4.82	.34	.340	17.3	1050	.1762	14.8	INITIAL SUBAREA
3.00										499	.1884		Qpipe= 17.3cfs n=.0240 D= .8
8.00										538	.0781	10.6	24.0"-PIPE
8.00		4.3			10.8	4.38			17.3				Qpipe= 17.3cfs n=.0240 D= 1.1
5.00	1.2	1.2	C	1D/AC	6.8	6.06	.45	.453	5.9	400	.2500		21.0"-PIPE
26.ft-STREET FLOW TO PT.#										1088	.0827	7.6	FOR CONFLUENCE
6.00	6.0	7.2	C	1D/AC	9.6	4.77	.45	.453	28.0	212	.0142	5.0	INITIAL SUBAREA
64.ft-STREET FLOW TO PT.#													Qest.= 17.7cfs D= .4 ,D*V= 2.8 FLOODWIDTH=13.0
7.00	7.0	14.2	C	1D/AC	10.3	4.53	.45	.453	51.9	210	.0190	8.2	Qest.= 40.7cfs D= .8 ,D*V= 3.9 FLOODWIDTH=32.3
8.00										210	.0190		Qpipe= 51.9cfs n=.0240 D= 2.3 39.0"-PIPE

CONFLUENCE ANALYSIS
 FOR POINT# 8.00

PEAK FLOW RATE (CFS) = 69.2
 TIME OF CONCENTRATION (MIN.) = 10.7

MEAN VALUES: Fp (IN/HR) = .566; Ap = .754; Fm (IN/HR) = .427
 EFFECTIVE AREA (ACRES) = 18.41 TOTAL AREA (ACRES) = 18.44

Q (cfs)	Tc (min)	Fp (avg)	Ap (avg)	Fm (avg)	I (in/hr)	Ae (acres)	NODE
68.89	10.83	.566	.75	.427	4.38	18.44	1.0
69.18	10.74	.566	.75	.427	4.40	18.41	4.0

LARGEST CONFLUENCE Q= 69.2

TRACT No. 16136 MOON CAMP (JN 9373)
PROPOSED HYDROLOGY
AREA J

[SAN BERNARDINO COUNTY]

FILE NAME: 9373HPJT.DAT

TIME/DATE OF STUDY: 7:11 4/11/2002

10.0-YEAR STORM RATIONAL METHOD STUDY (AMC II LOSSES)

CALCULATED BY: R. CLARK
CHECKED BY: R. CLARK
PAGE NUMBER 2 OF 2

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CONCENTRATION POINT NUMBER	AREA (ACRES) SUBAREA	SOIL TYPE	DEV. TYPE	Tt MIN.	Tc MIN.	I in/h	Fm (Avg)	Q SUM	PATH SLOPE (ft) ft/ft	V FPS	HYDRAULICS AND NOTES
9.00				.2					142 .0352	11.1	Qpipe= 69.2cfs n=.0240 D= 2.3 39.0"-PIPE
9.00	18.4				11.0			69.2			STREAM SUMMARY
EFFECTIVE AREA (ACRES) = 18.41 TOTAL AREA (ACRES) = 18.44											
TIME OF CONCENTRATION (MIN.) = 10.96 MEAN VALUES: Fp (IN/HR) = .566; Ap = .754; Fm (IN/HR) = .427											

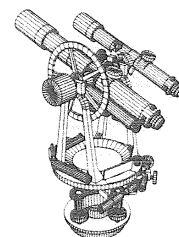
PEAK FLOW RATE TABLE

Q (cfs)	Tc (min)	Fp (avg)	Ap (avg)	Fm (avg)	I (in/hr)	Ae (acres)	NODE
69.18	10.96	.566	.75	.427	4.34	18.41	4.0
68.89	11.04	.566	.75	.427	4.32	18.44	1.0

**FAWNSKIN, CALIFORNIA
MOON CAMP
Tentative Tract 16136**

***PRELIMINARY DRAINAGE STUDY
HYDROLOGY AND HYDRAULICS
SUMMARY REPORT***
APRIL 2002

**EXHIBIT D
PROPOSED HYDROLOGY
100-YEAR RUNOFF**



Hicks & Hartwick, Inc.
CIVIL ENGINEERS - LAND SURVEYORS
37 EAST OLIVE AVENUE
REDLANDS, CALIFORNIA 92373
909.793.2257 or FAX 909.792.3763

TRACT NO. 16136 MOON CAMP (JN 9373)
 PROPOSED HYDROLOGY
 AREA A

FILE NAME: 9373HPAH.DAT
 TIME/DATE OF STUDY: 9:24 4/10/2002
 100.0-YEAR STORM RATIONAL METHOD STUDY (AMC III LOSSES)
 [SAN BERNARDINO COUNTY] [CALCULATED BY: R. CLARK
 CHECKED BY: R. CLARK
 PAGE NUMBER 1 OF 2]

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CONCENTRATION POINT NUMBER	AREA (ACRES) SUBAREA	SOIL TYPE	Tt MIN.	Tc MIN.	I in/h	Fm (Avg)	Q SUM	PATH (ft)	SLOPE ft/ft	V FPS.	HYDRAULICS AND NOTES
2.00	3.0	D		16.6	4.60	.14	12.2	779	.3440	..	INITIAL SUBAREA
5.0ft-GUTTER FLOW TO PT.#		Nat									
3.00	9.4	D	.8	17.4	4.45	.14	48.4	869	.1438	17.1	Qest.= 30.2cfs XFALL=.20000 n=.0300 D= 1.2
5.0ft-GUTTER FLOW TO PT.#		Nat									
7.00	17.2	D	.9	18.3	4.29	.14	111.0				Qest.= 80.5cfs XFALL=.20000 n=.0300 D= 1.4
7.00				18.3	4.29		111.0				FOR CONFLUENCE
5.00	4.7	D		18.4	4.29	.14	17.4	890	.2719	..	INITIAL SUBAREA
5.0ft-GUTTER FLOW TO PT.#		Nat						719	.1405	14.6	Qest.= 40.2cfs XFALL=.20000 n=.0300 D= 1.2
6.00	12.6	D	.9	19.2	4.15	.14	62.5				Qest.= 77.9cfs XFALL=.20000 n=.0300 D= 1.4
5.0ft-GUTTER FLOW TO PT.#		Nat						719	.1293	15.8	
7.00	8.8	D	.8	20.0	4.04	.14	91.6				
CONFLUENCE ANALYSIS			PEAK FLOW RATE (CFS) = 200.5								
FOR POINT#			TIME OF CONCENTRATION (MIN.) = 18.3								LARGEST CONFLUENCE
7.00			MEAN VALUES: Fp (IN/HR) = .140; Ap = 1.000; Fm (IN/HR) = .140								Q = 200.5
			EFFECTIVE AREA (ACRES) = 53.66								Q = 200.5
			TOTAL AREA (ACRES) = 55.85								

PEAK FLOW RATE (CFS) = 200.5

TIME OF CONCENTRATION (MIN.) = 18.3

MEAN VALUES: Fp (IN/HR) = .140; Ap = 1.000; Fm (IN/HR) = .140

EFFECTIVE AREA (ACRES) = 53.66 TOTAL AREA (ACRES) = 55.85

Q (cfs) 200.47 Tc (min) 18.32 Fp (avg) .140 Ap (avg) 1.00 Fm (avg) .140 I (in/hr) 4.29 Ae (acres) 53.66 NODE 1.0

195.84 19.99 .140 1.00 .140 4.04 55.85 4.0

TRACT No. 16136 MOON CAMP (JN 9373)
 PROPOSED HYDROLOGY
 AREA A

[SAN BERNARDINO COUNTY]

FILE NAME: 9373HPAH.DAT

TIME/DATE OF STUDY: 9:24 4/10/2002

100.0-YEAR STORM RATIONAL METHOD STUDY (AMC III LOSSES)

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 PAGE NUMBER 2 OF 2

CONCENTRATION POINT NUMBER	AREA (ACRES) SUBAREA	SOIL TYPE	DEV. TYPE	Tt MIN.	Tc MIN.	I in/h	Fm (Avg)	Q SUM	PATH (ft)	SLOPE ft/ft	V FPS.	HYDRAULICS AND NOTES
5.0ft-GUTTER FLOW TO PT.# 8.00	24.9	C	Nat	1.3	19.6	4.09	.22	.165	1261	.0896	16.4	Qest.= 243.7cfs XFALL=.20000 n=.0300 D= 2.3
5.0ft-GUTTER FLOW TO PT.# 9.00	11.9	C	2.5AC	.6	20.2	4.00	.24	.175	462	.0476	12.9	Qest.= 297.4cfs XFALL=.20000 n=.0300 D= 2.7
10.00				.1					86	.0814	21.9	Qpipe= 311.6cfs n=.0240 D= 3.6 57.0"-PIPE
5.0ft-GUTTER FLOW TO PT.# 11.00	6.0	C	1D/AC	.9	21.2	3.88	.22	.178	671	.0462	12.8	Qest.= 321.4cfs XFALL=.20000 n=.0300 D= 2.8
11.00	96.4				21.2			321.0				STREAM SUMMARY
EFFECTIVE AREA (ACRES)=	96.42	TOTAL AREA (ACRES)=					98.61					PEAK FLOW RATE (CFS)= 321.04
TIME OF CONCENTRATION (MIN.)=	21.17	MEAN VALUES: Fp (IN/HR)=					.182; Ap =					Fm (IN/HR) = .178

PEAK FLOW RATE TABLE

Q(cfs)	Tc(min)	Fp(avg)	Ap(avg)	Fm(avg)	I (in/hr)	Ae (acres)	NODE
321.04	21.17	.182	.98	.178	3.88	96.42	1.0
310.39	22.86	.181	.98	.177	3.67	98.61	4.0

TRACT No. 16136 MOON CAMP (JN 9373)
PROPOSED HYDROLOGY
AREA B

[SAN BERNARDINO COUNTY]

FILE NAME: 9373HPBH.DAT

TIME/DATE OF STUDY: 9:31 4/10/2002

100.0-YEAR STORM RATIONAL METHOD STUDY (AMC III LOSSES)

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PAGE NUMBER 1 OF 1

CONCENTRATION POINT NUMBER	AREA (ACRES) SUBAREA	SOIL TYPE	DEV. TYPE	Tt MIN.	Tc MIN.	I in/h	Fm	Fm (Avg)	Q SUM	PATH SLOPE (ft)	V ft/ft FPS.	HYDRAULICS AND NOTES
2.00	6.6	C	1D/AC	..	8.7	7.23	.22	.218	41.5	603	.1658	INITIAL SUBAREA
3.00				.0						34	.0588	Qpipe= 41.5cfs n=.0240 D= 1.7 30.0"-PIPE
3.00	6.6				8.7				41.5			STREAM SUMMARY
EFFECTIVE AREA (ACRES) = 6.57 TOTAL AREA (ACRES) = 6.57										PEAK FLOW RATE (CFS) = 41.45		
TIME OF CONCENTRATION (MIN.) = 8.74 MEAN VALUES: Fp (IN/HR) = .272; Ap = .800; Fm (IN/HR) = .218												

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1
2
3

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1
2
3

1	2
1	1
1	1

17

17. 79

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17. 79

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17. 79

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17. 79

17

17. 79

TRACT No. 16136 MOON CAMP (JN 9373)
PROPOSED HYDROLOGY
AREA D

[SAN BERNARDINO COUNTY]

FILE NAME: 9373HPDH.DAT

TIME/DATE OF STUDY: 6:34 4/11/2002

100.0-YEAR STORM RATIONAL METHOD STUDY (AMC III LOSSES)

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PAGE NUMBER 1 OF 1

CONCENTRATION POINT NUMBER	AREA (ACRES) SUBAREA	SOIL TYPE	DEV. TYPE	Tt MIN.	Tc MIN.	I in/h	Fm (Avg)	Q SUM	PATH (ft)	SLOPE ft/ft	V FPS.	HYDRAULICS AND NOTES
2.00	2.4	C	2.5AC	..	8.2	7.55	.24	15.8	579	.2522	..	INITIAL SUBAREA
26.ft-STREET FLOW TO PT.# 3.00	5.2	C	1D/AC	1.3	9.5	6.79	.22	45.1	620	.0753	8.9	Qest.= 31.3cfs D=.4 ,D*V= 3.6 FLOODWIDTH= .0
26.ft-STREET FLOW TO PT.# 4.00	2.0	C	1D/AC	.8	10.3	6.42	.22	53.5	322	.0258	6.9	Qest.= 50.6cfs D=.5 ,D*V= 3.7 FLOODWIDTH= 6.6
5.00				.1					75	.2267	20.6	Qpipe= 53.5cfs n=.0240 D= 1.5 24.0"-PIPE
5.00	9.6				10.4			53.5				STREAM SUMMARY

EFFECTIVE AREA (ACRES) = 9.59 TOTAL AREA (ACRES) = 9.59 PEAK FLOW RATE (CFS) = 53.46
TIME OF CONCENTRATION (MIN.) = 10.37 MEAN VALUES: Fp (IN/HR) = .272; Ap = .825; Fm (IN/HR) = .224

TRACT No. 16136 MOON CAMP (JN 9373)
PROPOSED HYDROLOGY
AREA F

[SAN BERNARDINO COUNTY]									
FILE NAME: 9373HPFH.DAT									
TIME/DATE OF STUDY: 6:43 4/11/2002									
100.0-YEAR STORM RATIONAL METHOD STUDY (AMC III LOSSES)									
[(c) 1983-1994 ADVANCED ENGINEERING SOFTWARE]									
CONCENTRATION	AREA (ACRES)	SOIL DEV.	Tt	Tc	I	Fm	Fm	Q	PATH SLOPE
POINT NUMBER	SUBAREA	TYPE	MIN.	MIN.	in/h	(Avg)		SUM	(ft) ft/ft
2.00	1.0	C	..	9.5	6.81	.03	.027	6.1	831 .0235
3.00			.2						102 .0882
3.00	1.0			9.7				6.1	
EFFECTIVE AREA (ACRES) = 1.00 TOTAL AREA (ACRES) = 1.00									
TIME OF CONCENTRATION (MIN.) = 9.67 MEAN VALUES: Fp (IN/HR) = .272; Ap = .100; Fm (IN/HR) = .027									
INITIAL SUBAREA									
Qpipe = 6.1cfs									
n = .0240 D = 18.0" - PIPE									
STREAM SUMMARY									
PEAK FLOW RATE (CFS) = 6.10									
Fm (IN/HR) = .027									

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PAGE NUMBER 1 OF 1

HYDRAULICS
AND NOTES

TRACT No. 16136 MOON CAMP (JN 9373)
PROPOSED HYDROLOGY
AREA G

-----[SAN BERNARDINO COUNTY]

FILE NAME: 9373HPGH.DAT

TIME/DATE OF STUDY: 6:49 4/11/2002

100.0-YEAR STORM RATIONAL METHOD STUDY (AMC III LOSSES)

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CONCENTRATION POINT NUMBER	AREA (ACRES) SUBAREA	SOIL DEV. TYPE	Tt MIN.	Tc MIN.	I in/h	Fm (Avg)	Q SUM	PATH SLOPE (ft)	V FPS	HYDRAULICS AND NOTES
2.00	4.1	C	1.4	20.0	4.03	.22	14.1	848	1592	INITIAL SUBAREA
5.0ft-GUTTER FLOW TO PT.# 3.00	29.6	C	1.4	21.4	3.85	.22	110.2	1298	18.3	Qest.= 61.5cfs XFALL=.20000 n=.0300 D= 1.2
4.00								132	.0833	Qpipe= 110.2cfs n=.0240 D= 2.4 39.0"-PIPE
5.0ft-GUTTER FLOW TO PT.# 5.00	6.0	C	.7	22.3	3.74	.22	126.0	537	.0689	Qest.= 119.7cfs XFALL=.20000 n=.0300 D= 1.9
6.00								202	.0545	Qpipe= 126.0cfs n=.0240 D= 2.6 45.0"-PIPE
6.00	39.7			22.5			126.0			STREAM SUMMARY
EFFECTIVE AREA (ACRES) =	39.71	TOTAL AREA (ACRES) =	39.71							PEAK FLOW RATE (CFS) = 126.04
TIME OF CONCENTRATION (MIN.) =	22.47	MEAN VALUES: Fp	(IN/HR) =				.225; Ap =			.970; Fm (IN/HR) = .218

TRACT No. 16136 MOON CAMP (JN 9373)
PROPOSED HYDROLOGY
AREA H

FILE NAME: 9373HPHH.DAT
TIME/DATE OF STUDY: 6:53 4/11/2002
100.0-YEAR STORM RATIONAL METHOD STUDY (AMC III LOSSES)
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[SAN BERNARDINO COUNTY]

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PAGE NUMBER 1 OF 1

CONCENTRATION POINT NUMBER	AREA (ACRES) SUBAREA	SUM	SOIL TYPE	DEV. TYPE	Tt MIN.	Tc MIN.	I in/h	Fm (Avg)	Q SUM	PATH SLOPE (ft)	V FPS	HYDRAULICS AND NOTES
2.00	.3	.3	C	Com	.1	7.6	7.97	.03	.027	511	.0274	INITIAL SUBAREA
3.00									2.1	73	.1781	Qpipe= 2.1cfs n=.0240 D= .3 18.0"-PIPE
3.00		.3				7.7			2.1			STREAM SUMMARY

EFFECTIVE AREA (ACRES) = .30 TOTAL AREA (ACRES) = .30
TIME OF CONCENTRATION (MIN.) = 7.71 MEAN VALUES: Fp (IN/HR) = .272; Ap = .100; Fm (IN/HR) = .027

PEAK FLOW RATE (CFS) = 2.14
Fm (IN/HR) = .027

TRACT NO. 16136 MOON CAMP (JN 9373)
 PROPOSED HYDROLOGY
 AREA J

FILE NAME: 9373HPJH.DAT
 TIME/DATE OF STUDY: 7:10 4/11/2002
 100.0-YEAR STORM RATIONAL METHOD STUDY (AMC III LOSSES)
 [SAN BERNARDINO COUNTY]

[(c) 1983-1994 ADVANCED ENGINEERING SOFTWARE]									
CONCENTRATION	AREA (ACRES)	SOIL DEV.	Tt	Tc	I	Fm	Fm	Q	HYDRAULICS
POINT NUMBER	SUBAREA	TYPE	MIN.	MIN.	in/h	(Avg)	(ft)	SLOPE	AND NOTES
9.00									
9.00	18.3			10.5					
EFFECTIVE AREA (ACRES) = 18.28 TOTAL AREA (ACRES) = 18.44									
TIME OF CONCENTRATION (MIN.) = 10.50 MEAN VALUES: Fp (IN/HR) = .272; Ap = .755; Fm (IN/HR) = .205									

PEAK FLOW RATE TABLE

Q (cfs)	Tc (min)	Fp (avg)	Ap (avg)	Fm (avg)	I (in/hr)	Ae (acres)	NODE
106.68	10.50	.272	.75	.205	6.34	18.28	4.0
104.78	10.89	.272	.75	.205	6.18	18.44	1.0

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Qpipe= 106.7cfs
 n=.0240 D= 2.8
 45.0"-PIPE
 STREAM SUMMARY

15.10 Jurisdictional Delineation

DELINEATION OF JURISDICTIONAL WATERS
Moon Camp
Tentative Tract #16136
County of San Bernardino, California

Prepared For:

County of San Bernardino
385 N. Arrowhead Avenue, 1st Floor
San Bernardino, California 92415
Contact: Mr. Mike Williams
909/387-4168

Prepared By:

RBF Consulting
14725 Alton Parkway
Irvine, California 92618
Contact: Mr. Trevor Smith
949/855-5718

March 2002

JN 10-101901

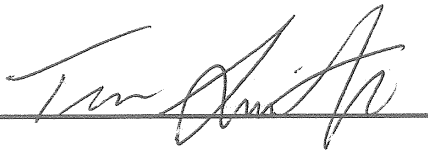
**Delineation of Jurisdictional Waters
for the Moon Camp Project (Tentative Tract #16136)
County of San Bernardino, California**

The undersigned certify that this report is a complete and accurate account of the findings and conclusions of a jurisdictional "waters of the U.S." determination for the above-referenced project.

RBF Consulting



Richard Beck
Environmental Analyst



Trevor Smith
Project Manager

March 2002

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1.0 INTRODUCTION AND PURPOSE

This report was prepared for the County of San Bernardino in order to delineate U.S. Army Corps of Engineers' and California Department of Fish and Game's (CDFG) jurisdictional authority for unnamed drainages located within the project site known as Moon Camp-Tentative Tract #16136, a residential subdivision. The proposed project is located along the north shore of Big Bear Lake, in the community of Fawnskin, County of San Bernardino, State of California (refer to Exhibit 1, *Regional Vicinity Map*, and Exhibit 2, *Site Vicinity Map*).

1.1 Project Description

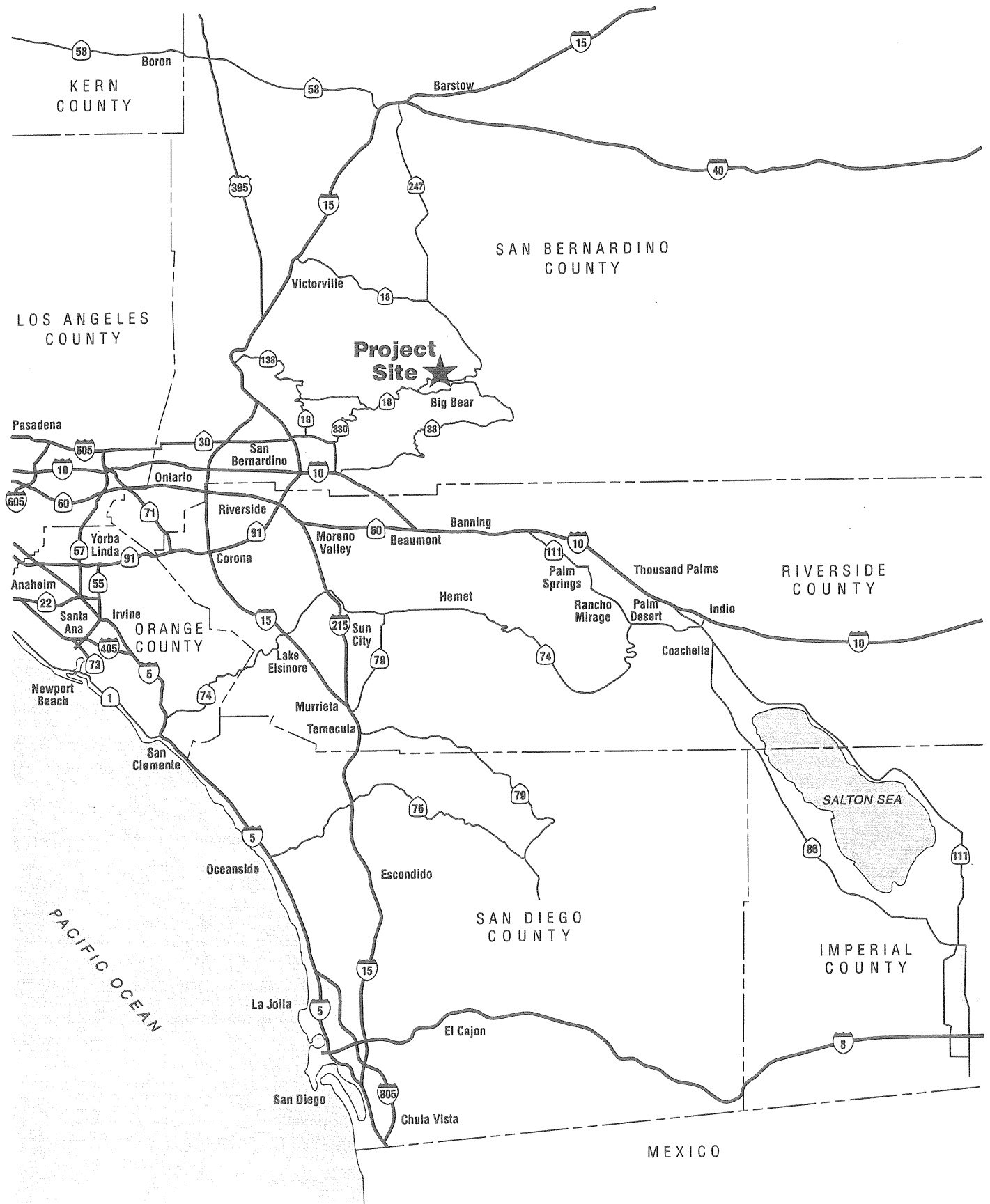
The proposed project consists of a 95-lot residential subdivision with lots ranging in size from 0.17-acres to 2.11-acres (refer to Exhibit 3, *Project Site Plan*). The project site includes 62.43-acres and is in a relatively undeveloped eastern portion of Fawnskin.

2.0 SUMMARY OF REGULATIONS

There are three key agencies that regulate activities within inland streams, wetlands and riparian areas in California. The U.S. Army Corps of Engineers (Corps) Regulatory Program regulates activities pursuant to Section 404 of the Federal Clean Water Act, and Section 10 of the Rivers and Harbors Act. The California Department of Fish and Game (CDFG) regulates activities under the Fish and Game Code Section 1600-1607, and the Regional Water Quality Control Board (RWQCB) under Section 401 of the Federal Clean Water Act and the California Porter-Cologne Act.

2.1 Army Corps of Engineers

The Corps of Engineers has regulatory authority over the discharge of dredged or fill material into the waters of the United States under Section 404 of the Clean Water Act (CWA). The term "waters of the United States" includes (1) all waters that have, are, or may be used in interstate or foreign commerce (including sightseeing or hunting), including all waters subject to the ebb and flow of the tide; (2) wetlands; (3) all waters such as interstate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds; the use, degradation or destruction of which could affect interstate or foreign commerce; (4) all impoundments of water mentioned above; (5) all tributaries of waters mentioned above; (6) the territorial seas; and (7) all wetlands adjacent to the waters mentioned above. Under this definition, and in the absence of wetlands, the limits of the Corps' jurisdiction in non-tidal waters extend to the ordinary high water mark (OHWM), which is defined as "...that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."

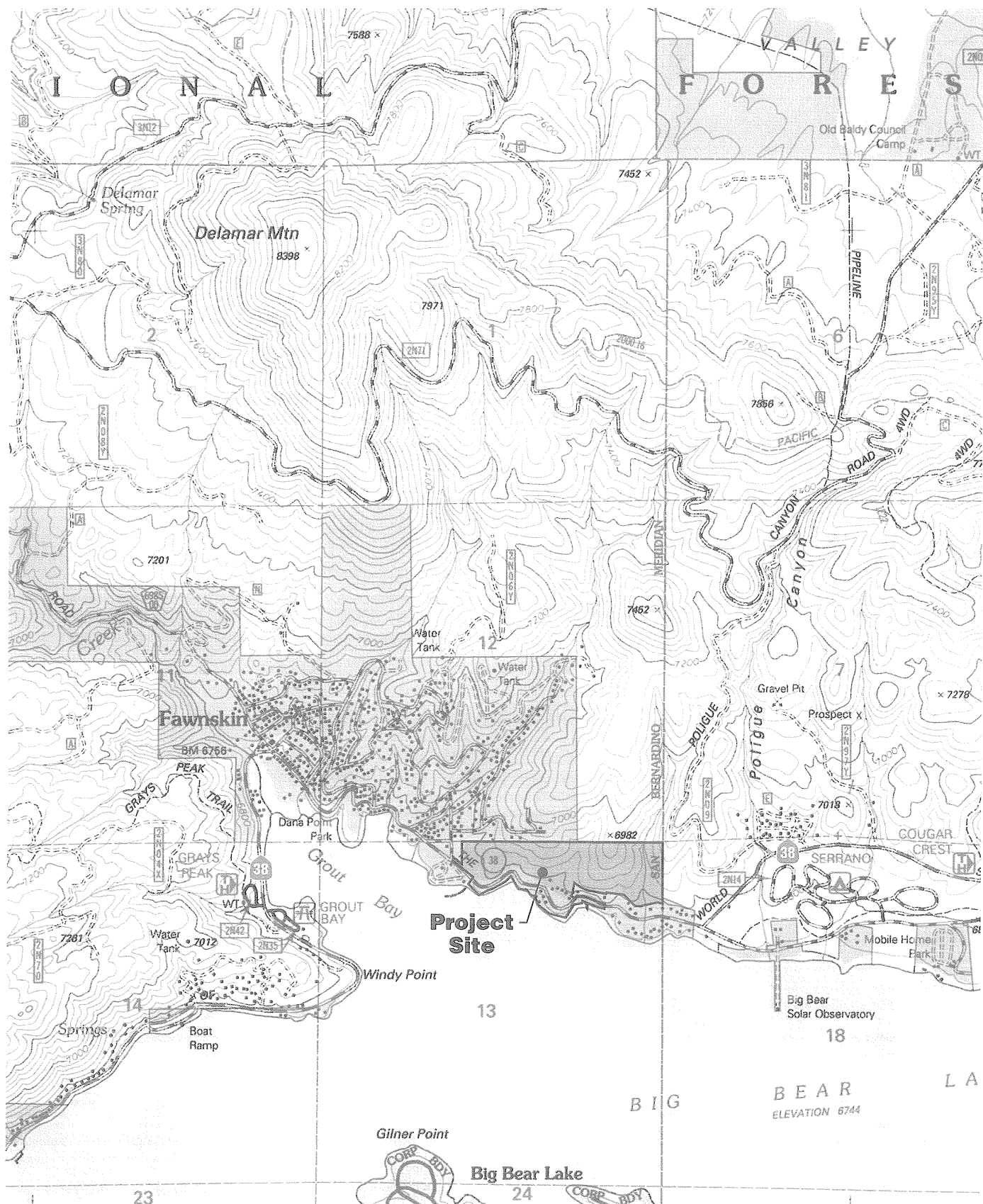


MOON CAMP-TENTATIVE TRACT #16136
JURISDICTIONAL DELINEATION

Regional Vicinity

Exhibit 1





USGS Topo, Fawnskin, Calif., 1996

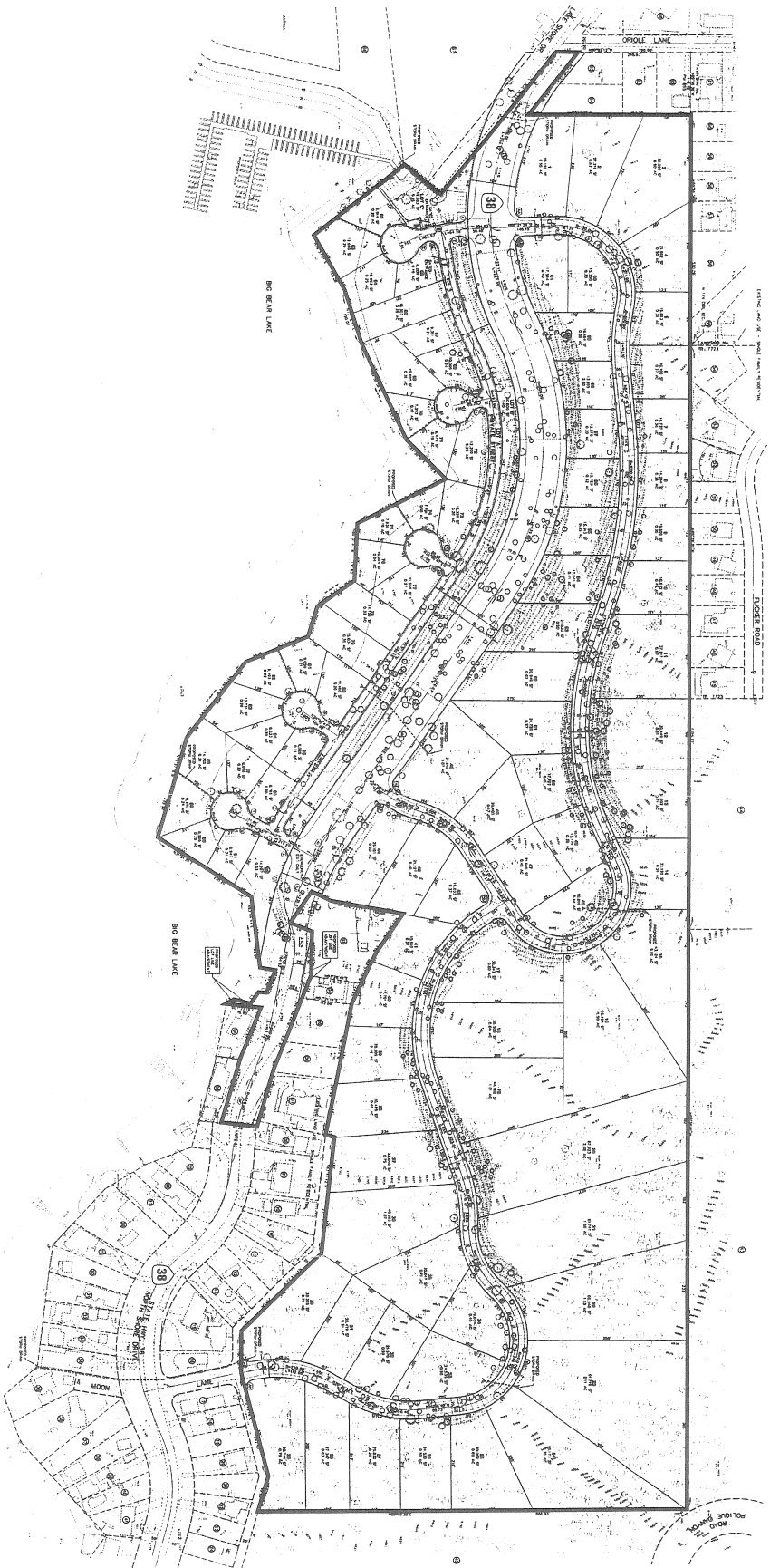
RBF
CONSULTING

0 2000'
3/13/02 JN 10-101901-9314

MOON CAMP-TENTATIVE TRACT #16136
JURISDICTIONAL DELINEATION

Site Vicinity

Exhibit 2



Source: Tentative Tract No. 16136 Map,
Fawcett, County of San Bernardino,
Hicks & Hawick, Inc. 5/21/01

Wetlands, a subset of jurisdictional waters, are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions". The Corps has developed a methodology for determining the boundaries of jurisdictional wetlands that is published in the document known as the *1987 Manual*. The methodology set forth in the manual is based on the following **three** indicators that are normally present in wetlands: (1) hydrology providing permanent or periodic inundation by groundwater or surface water, (2) hydric soils, and (3) hydrophytic vegetation. In order to be considered a wetland, an area must exhibit at least minimal hydric characteristics within these three parameters.

2.2 Regional Water Quality Control Board

The Regional Water Quality Control Board (RWQCB) is the primary agency responsible for protecting water quality in California. The RWQCB regulates discharges to surface waters under the federal Clean Water Act and the California Porter-Cologne Water Quality Control Act. The RWQCB's jurisdiction extends to all waters of the State and to all waters of the United States, including wetlands.

The Clean Water Act Section 401 gives the RWQCB the authority to regulate through 401 Certification any proposed federally-permitted activity which may affect water quality. Among such activities are discharges of dredged or fill material permitted by the Corps under Clean Water Act Section 404. Certification must be based on a finding that the proposed discharge will comply with water quality standards.

2.3 California Department of Fish and Game

The State of California regulates activities in rivers, streams, and lakes pursuant to Sections 1600-1607 of the California Fish and Game Code. These sections discuss the process by which an individual, government agency, or public utility must notify the Department of Fish and Game prior to any activity that would "substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream or lake..." Following such notification, the Department must inform the individual, agency, or utility of the existence of any fish and wildlife resource that may be substantially adversely affected by the activity. The Department must also include a proposal for measures to protect fish and wildlife resources. This proposal is called a "Streambed Alteration Agreement" (1601 Agreement for public agencies and utilities, and a 1603 Agreement for private party activities).

Jurisdictional limits of the CDFG are not as clearly defined by regulation as those of the Corps. While they closely resemble the limits described by Corps regulations, they exclude isolated wetlands (those not associated with a stream, river, or lake, such as isolated vernal pools) and include riparian habitat supported by a river, stream, or lake regardless of the presence or absence of hydric soils and saturated soil conditions. Generally, CDFG takes jurisdiction to the bank of the stream or to the outer limit of the adjacent riparian vegetation, whichever is greater.

2.4 Activities Requiring Permits

Any development proposal that involves impacting the drainages, streams, or wetlands on the site through filling, stockpiling, conversion to a storm drain, channelization, bank stabilization, road or utility line crossings, or any other modification would require permits from the Corps, the RWQCB, and the CDFG before any development could commence on the project site. Both permanent and temporary impacts are regulated and would trigger the need for permits. Processing of the 401 and 1603 can occur concurrently with the Corps permit process and can utilize the same information and analysis. The Corps will not issue its authorization until the RWQCB completes the Section 401 Water Quality Certification. Applications to both the RWQCB and the CDFG requires submittal of a valid California Environmental Quality Act (CEQA) document along with the application.

3.0 METHODOLOGY

Prior to visiting the site, RBF conducted a review of USGS topographic maps (Quadrangle *Fawnskin, California*, dated 1996) and aerial photographs to identify areas that *may* fall under any agency's jurisdiction. Corps jurisdictional wetlands are delineated using the methods outlined in the Corps of Engineers *Wetland Delineation Manual* (1987) based on hydrologic and edaphic features of the site, and on the vegetation composition of the site. Non-wetland waters of the U.S. are delineated based on the limits of the OHWM as determined by erosion, the deposition of vegetation or debris, and changes in the vegetation. CDFG jurisdiction is defined to the bank of the stream/channels or to the limit of the adjacent riparian vegetation.

Analysis presented in this document consists of field surveys and verification of current conditions conducted on March 15, 2002. While in the field, jurisdictional areas were recorded onto a base map at an approximate scale of 1"=300' using visible landmarks. Conditions during field work were generally good and it is assumed that conditions encountered at the time of field investigations represented a "normal" rainfall year.

3.1 Vegetation

Cover of vegetation is estimated and are ranked according to their dominance. Species that contribute to a cumulative total of 50% of the total dominant coverage, plus any species that comprise at least 20% (also known as the "50/20 rule") of the total dominant coverage are recorded a wetland data sheet. Wetland indicator status is assigned to each species using *The List of Plant Species that Occur in Wetlands* (FWS, 1996). If greater than 50% of the dominant species from all strata were Obligate, Facultative-wetland, or Facultative species, the criteria for wetland vegetation was considered to be met. Plant indicator status categories are described below:

- ◆ **Obligate Wetland (OBL):** Plants that occur almost always (estimated >99 percent) in wetlands under natural conditions, but which may also occur rarely (estimated <1 percent) in non-wetlands.

- ◆ **Facultative Wetland (FACW):** Plants that occur usually (estimated >67 to 99 percent) in wetlands, but also occur (estimated 1 to 33 percent) in non-wetlands.
- ◆ **Facultative (FAC):** Plants with similar likelihood (estimated 33 to 67 percent) of occurring in both wetlands and non-wetlands.
- ◆ **Facultative Upland (FACU):** Plants that occur sometimes (estimated 1 to <33 percent) in wetlands, but occur more often (estimated >67 to 99 percent) in non-wetlands.
- ◆ **Obligate Upland (UPL):** Plants that occur rarely (estimated 1 percent) in wetlands, but occur almost always (estimated >99 percent) in non-wetlands under natural conditions.

3.2 Soils

The presence of hydric soils are initially investigated by comparing the mapped soil series for the site to the county list of hydric soils. Soil characteristics are verified by digging soil pits along each transect to a depth of at least 18 inches. At each soil pit, the soil texture and color are recorded by comparison with standard plates within a *Munsell Soil Chart* (1994). Any indicators of hydric soils, such as redoximorphic features, buried organic matter, organic streaking, reduced soil conditions, gleyed or low-chroma soils, or sulfuric odor are also recorded. It should also be noted that the limits of wetland hydrology indicators are used as a guide for locating soil pits. If any hydric soil features are located, progressive pits are dug moving laterally away from the active channel until hydric features are no longer present within the top 18 inches of the soil profile.

3.3 Hydrology

If wetland vegetation criteria is met, the presence of wetland hydrology is evaluated at each transect by recording the extent of observed surface flows, depth of inundation, depth to saturated soils, and depth to free water in the soil test pits. In addition, indicators of wetland or riverine hydrology are recorded including Ordinary High Water Marks (OHWM), drift lines, rack, debris, and sediment deposits. The lateral extent of the hydrology indicators are used as a guide for locating soil pits for evaluation of hydric soils and jurisdictional areas. In portions of the stream where the flow is divided by multiple channels with intermediate sand bars, the entire area between the channels is considered within the OHWM and the wetland hydrology indicator is considered met for the entire area.

4.0 SITE CONDITIONS

The 62.43-acre site (designated RL-40, Rural Living, by the County of San Bernardino) gently slopes from south to north. Elevations range from 6,747 at the lakefront, to a high of 6,960 at the northeast boundary. Total relief is therefore 483 feet and slopes range from five percent to 40 percent. The site is vegetated in Jeffrey Pine forest and pebble plain habitat occurs in scattered patches in the western portion of the property. Dirt roads and

trails traverse the property; access to the project site is provided via Highway 38 (refer to Exhibit 4, *Project Site Aerial Photo* and Exhibit 5, *Site Photographs*).

4.1 Vegetation

Vegetation within the drainages of the project site consisted of upland habitat, dominated by jeffery pines.

4.2 Soils

Soils within the drainages were documented to be silty-sand (large grain). Soil samples taken on-site were generally dry and lacked characteristics of hydric soils (i.e., odor, streaking, mottling).

4.3 Hydrology

No flow within the on-site drainages was observed during the March 15, 2002 field visit. However, evidence of an OHWM was observed within the drainages, primarily indicated by sediment deposits.

5.0 FINDINGS

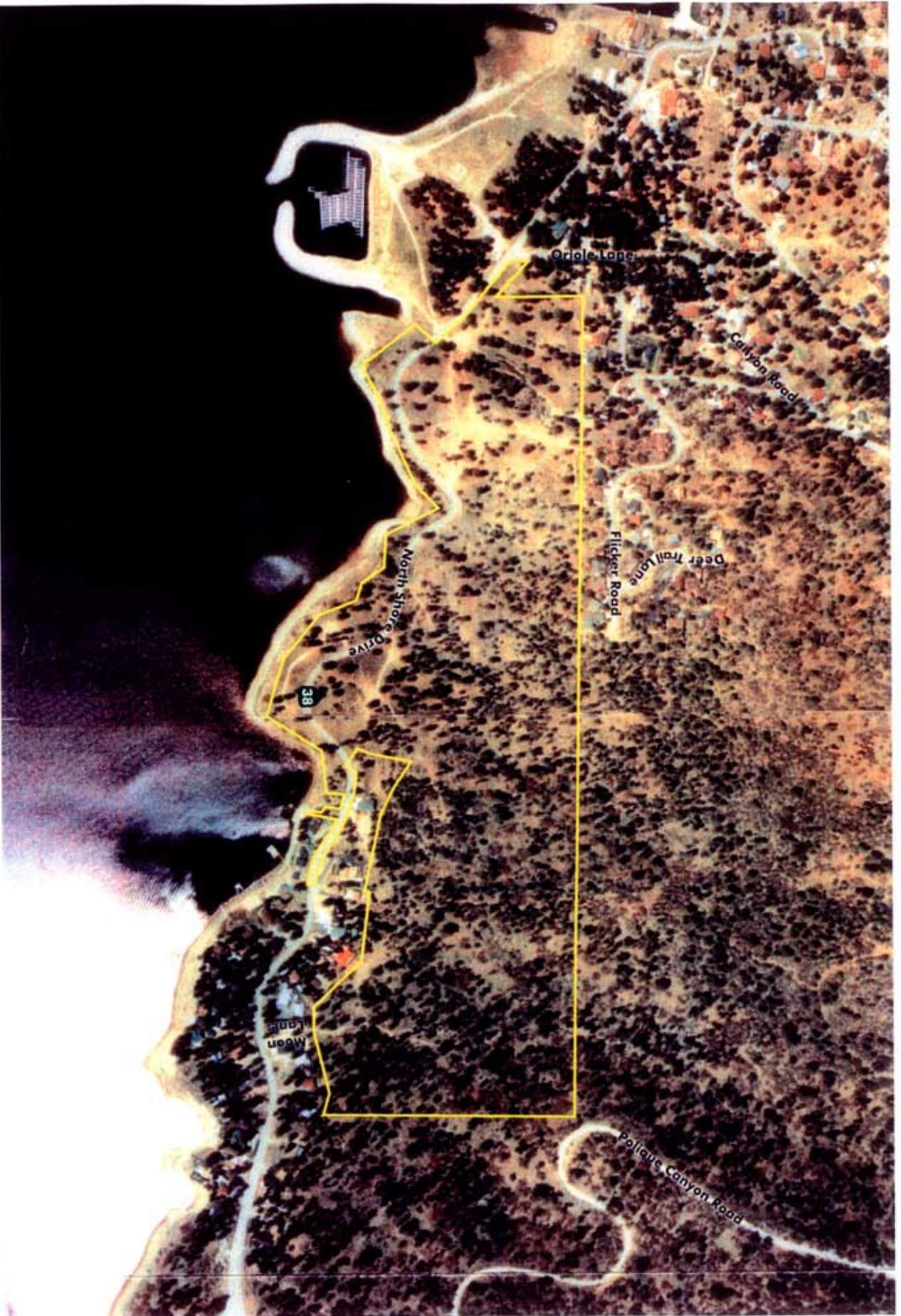
5.1 Waters of the U.S. (Wetland) Determination

The Corps and the EPA jointly define wetlands as: *Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas* (33 CFR §328.3(b)). Wetlands have the following general diagnostic environmental characteristics:

Vegetation: The prevalent vegetation consists of macrophytes that are typically adapted to areas having hydrologic and soil conditions. Hydrophytic species, due to morphological, physiological, and/or reproductive adaptation(s), have the ability to grow, reproduce, and/or persist in anaerobic soil conditions.

Soil: Soils are present and have been classified as hydric, or they possess characteristics that are associated with reducing soil conditions.

Hydrology: The area is inundated either permanently or periodically at mean water depths ≤ 6.6 feet, or the soil is saturated to the surface at some time during the growing season of the prevalent vegetation.





View looking at sediment deposits within the main eastern drainage.



Typical view of on-site drainage and surrounding vegetation.

As previously noted, in order to be considered a wetland, an area must exhibit **all three** of the wetland parameters identified above per the evaluation criteria in the Wetland Delineation Manual. Based on the results of the field investigations, it was determined that not all three parameters were present within the drainages (hydric soils nor riparian vegetation were present). As a result, RBF identified no Corps wetlands on the proposed project site.

5.2 Waters of the U.S. (Non-Wetland) Determination

The unnamed drainages within the proposed project site exhibited evidence of flow (i.e., sediment/silt deposition) sufficient to document the Ordinary High Water Mark (i.e., channel bed and bank lines), thus meeting the criteria for jurisdictional waters. Refer to Exhibit 5, *Site Photographs*, for representative photos of the jurisdictional drainages. Also, refer to Exhibit 6, *Jurisdictional Map*, for an illustration of jurisdictional boundaries.

Based on the results of the field observations and data collection, RBF identified 0.15-acre of Corps jurisdictional "waters of the U.S." within the 62.43-acre proposed project site. The drainages are ephemeral. Utilizing the most current development plans, it was also determined that roadway improvements would impact 0.04-acre of Corps jurisdiction.

5.3 California Department of Fish and Game (1603) Jurisdiction

Based on the results of the field observations and data collection, RBF identified 0.15 -acre of CDFG jurisdictional waters. Utilizing the most current development plans, it was also determined that roadway improvements would impact 0.04-acre of CDFG jurisdiction (refer to Exhibit 6, *Jurisdictional Map*).

6.0 OVERVIEW OF REGULATORY APPROVAL PROCESS

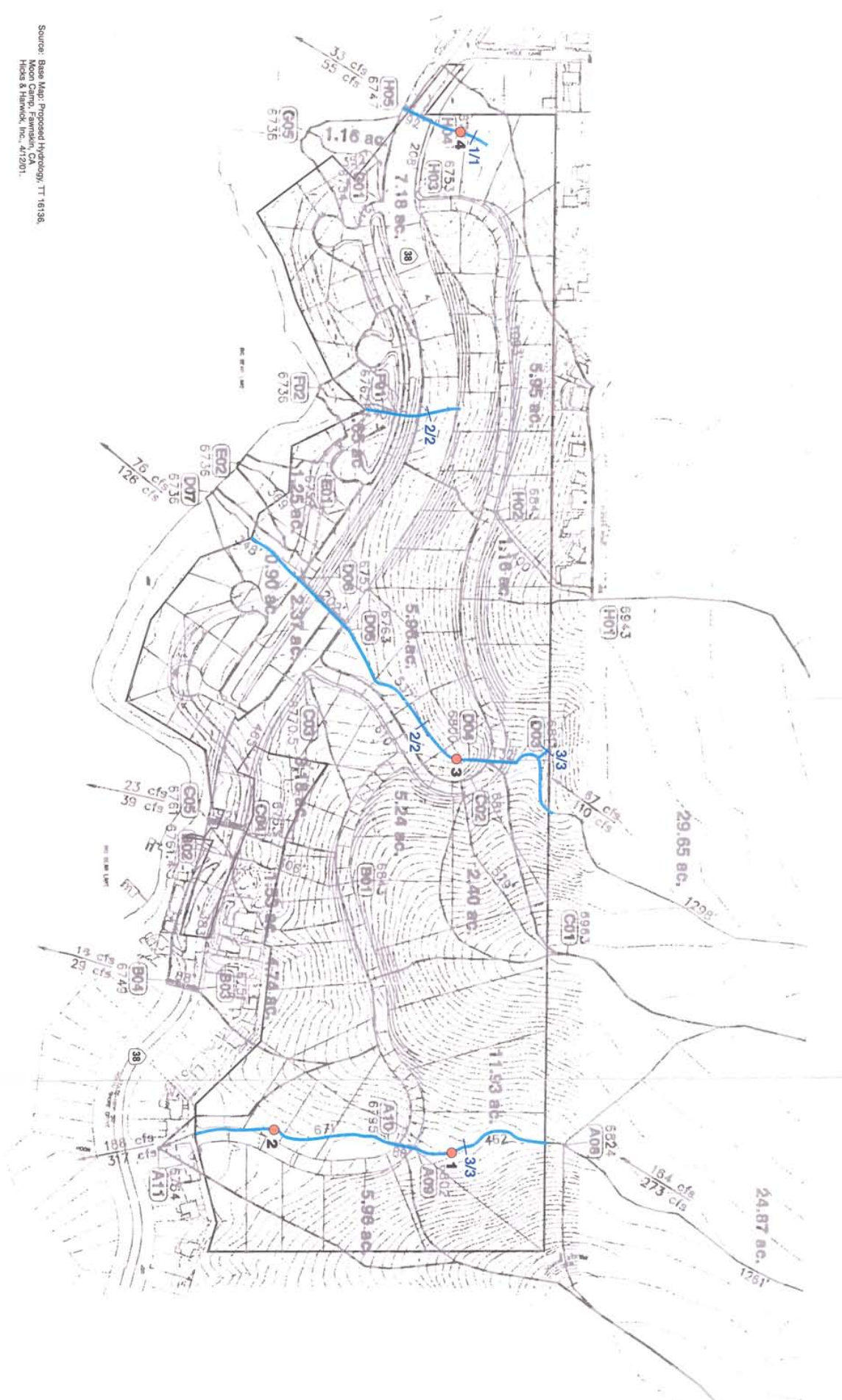
The following is a summary of the various permits, agreements, and certifications required before construction activities take place within the above mentioned jurisdictional areas.

6.1 Army Corps of Engineers

The Corps regulates discharges of dredged fill materials into "waters of the United States" under Section 404 of the Clean Water Act (CWA). Since improvements associated with the proposed project will result in the discharge of material within the jurisdiction of the Corps, a 404 permit will be required.

6.2 California Department of Fish and Game

As noted above, the drainage within the proposed project area meets the CDFG's definition as streambed and thus would be regulated by them. An agreement from the Department must be obtained. The CDFG agreement will require a \$1,390.50 fee and approximately 45 days processing time. CEQA Compliance is necessary in order for the Agreement to be issued.



Source: Base Map, Proposed Hydrology, TT 16136,
 Moon Camp-Tentative Tract #16136,
 Hides & Harwick, Inc., 4/12/01.



6.3 Regional Water Quality Control Board

The RWQCB requires that a CEQA compliance certification be obtained before starting this process. Processing time should not exceed 60 days following submission of a complete application (determination of what constitutes a complete application is made by the Regional Water Quality Control Board). Additionally, the RWQCB requires that water quality concerns related to urban storm water runoff be addressed. Any 401 Certification application submitted to the RWQCB should incorporate the use of Best Management Practices (BMPs) for the treatment of pollutants carried by storm water runoff in order to be considered a complete application. For the 404 permit to be approved, a 401 water certification will be required. A \$1,000 fee is required as part of the application submittal.

7.0 REFERENCES

Army Corps of Engineers (ACOE) Wetland Delineation Manual, 1987.

Munsell Soil Color Charts, 1994.

National List of Vascular Plant Species that Occur in Wetlands, U.S. Fish and Wildlife Service, 1996.

Site Visit, conducted on March 15, 2002.

USGS Topographic Map, Fawnskin, California, Quadrangle, 1996.

APPENDICES

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>MOON CAMP</u> Applicant/Owner: _____ Investigator: <u>R. BECK / T. SMITH</u>	Date: <u>3/15/02</u> County: <u>S.B.</u> State: <u>CA</u>
Do Normal Circumstances exist on the site? ☒ Yes ☐ No Is the site significantly disturbed (Atypical Situation)? ☐ Yes ☐ No Is the area a potential Problem Area? ☐ Yes ☒ NO (If needed, explain on reverse.)	Community ID: <u>—</u> Transect ID: <u>—</u> Plot ID: <u>1</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>JEFFERY PINE</u>	<u>TREE</u>	<u>—</u>	9. _____	_____	_____
2. _____	_____	_____	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): _____

Remarks:
upland habitat / dry

HYDROLOGY

— Recorded Data (Describe in Remarks): — Stream, Lake, or Tide Gauge — Aerial Photographs — Other ☒ No Recorded Data Available Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	Wetland Hydrology Indicators: Primary Indicators: — Inundated — Saturated in Upper 12 Inches — Water Marks — Drift Lines ☒ Sediment Deposits — Drainage Patterns in Wetlands Secondary Indicators (2 or more required): — Oxidized Root Channels in Upper 12 Inches — Water-Stained Leaves — Local Soil Survey Data — FAC-Neutral Test — Other (Explain in Remarks)
Remarks: <u>No flow present. Sediment, rock observed, small banks. Pine needle ground cover.</u>	