Appendix I-3

Updated Runoff and Sediment Basin Capacities

Bulot, Inc. February 2008

BONADIMAN

Joseph E. Bonadiman, P.E. (1903 – 1990)
Charles F. Bonadiman, L.S. (1898 – 1986)

January 24, 2013

Lilburn Corporation
1905 Business Center Drive
San Bernardino, CA 92408

Attn: Marty Derus
Re: Drainage Report – Super Creek Quarry

Dear Mr. Derus:

The following Drainage Report has been prepared by Joseph E. Bonadiman & Associates, Inc. (JBA) per the request of Lilburn Corporation (Lilburn) for the Super Creek Quarry in San Bernardino County, CA, for the purpose of verifying adequate total combined capacity of the existing and proposed sediment basins located at the eastern toe of the tailings area slope, for the calculated 20-year, 1-hour hydrograph runoff volume.

20-Year, 1-Hour Hydrograph Calculations:

Attachment No. 1 is a copy of the project location exhibit provided by Lilburn. Attachment No. 2 is a copy of the Riverside County Flood Control & Water Conservation District (County) Hydrology Manual precipitation maps (2-year/1-hour=0.57"" and 100-year/1-hour=1.59"), which were used to establish the 20-year, 1-hour rainfall (1.17") for the site. Attachment No. 3 is a copy of the County Hydrology Manual soils map for the site (soil type "B"), as well as the determined SCS number for the site (86 for soil type "B" and barren/graded land; note that this was increased to 89 to account for the 1.5-to-1 slope of the drainage area, which will reduce infiltration opportunities). For the 20-year storm event, Antecedent Moisture Condition 2 was used. Attachment No. 4 is a copy of the hydrology study map (based on the project site plan provided by Lilburn).

Based on the information discussed above, the calculated 20-year, 1-hour runoff volume for the drainage area in question is **1.97 a.f.**

Existing/Proposed Sediment Basins Capacity:

Attachment No. 6 are copies of the existing/proposed debris basins typical sections, as well as capacity calculations for the basins in question (Source: Webber and Webber Mining Consultants, 2007; Stantec 2009, Lilburn 2013), which show the proposed combined basins capacity to be **2.06 a.f.**

Conclusion:

Based on the above, the combined basins capacity of 2.06 a.f. is adequate to capture the calculated 20-year, 1-hour volume of 1.97 a.f.

Joseph E. Bonadiman & Associates, Inc.
Engineers • Surveyors • Planning • G.I.S.
Tel. (909) 885-3806 • Fax (909) 381-1721
www. bonadiman.com

Please do not hesitate to call me at (909) 885-3806 x127 if you have any questions regarding this document or its attachments.

Very Truly Yours,

Jesse Nash, Associate

Prepared under supervision of:

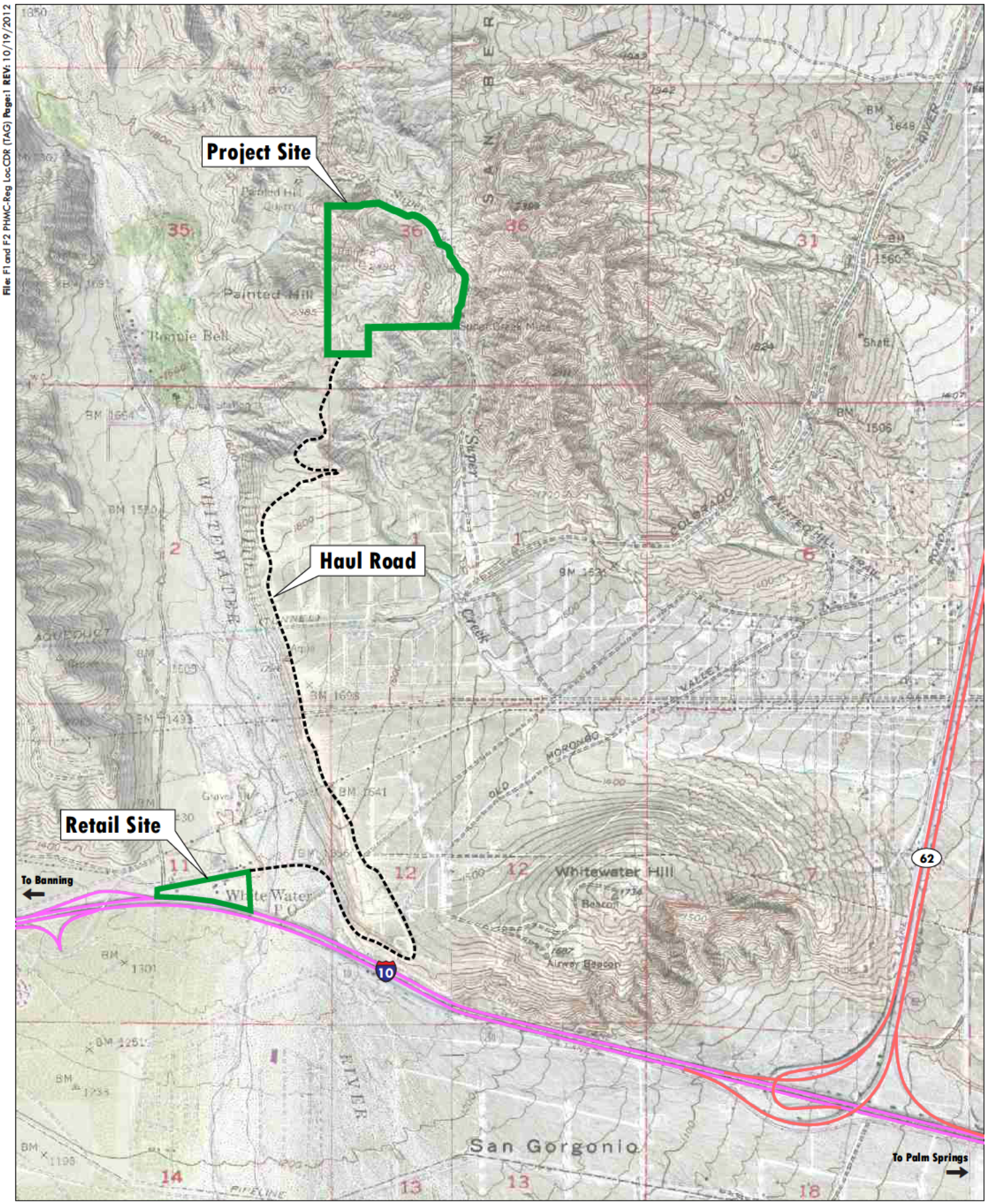
James T. Stanton, R.C.E. C-70944

Attachment No. 1:	Project Location
Attachment No. 2:	Precipitation
Attachment No. 3:	Losses
Attachment No. 4:	Study Map
Attachment No. 5:	Slope Drainage Area Hydrograph Calculations (20-Year, 1-Hour Storm Event)
Attachment No. 6:	Sediment Basins Typical Section & Volume Calculations

ATTACHMENT 1

PROJECT LOCATION

File: F1and F2 PHMC-Reg Loc.CDR (TAG) Page:1 REV: 10/19/2012



N

0 2500

FEET

Source: LILBURN CORP., 2012

LILBURN CORPORATION

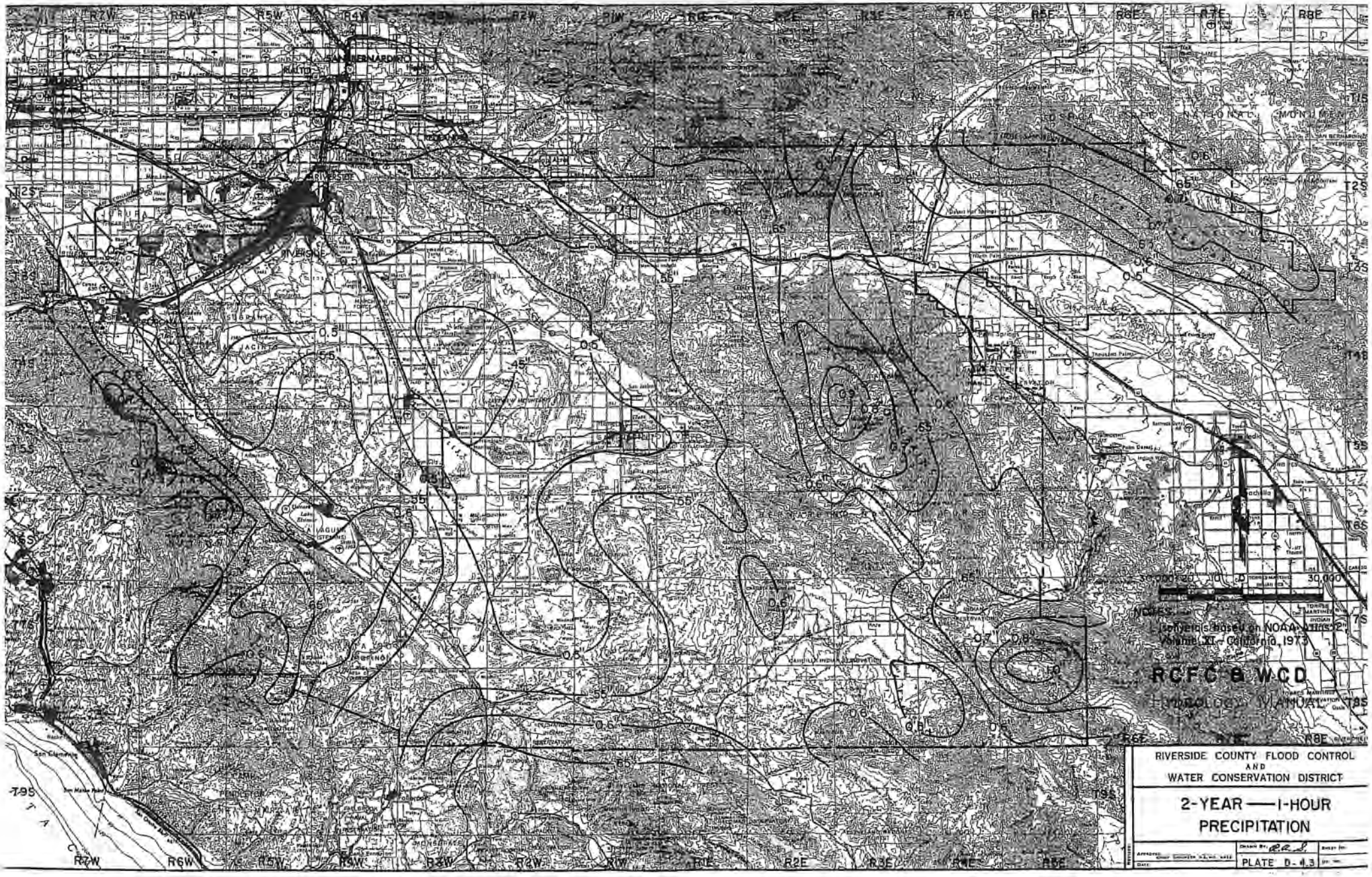
PROJECT VICINITY

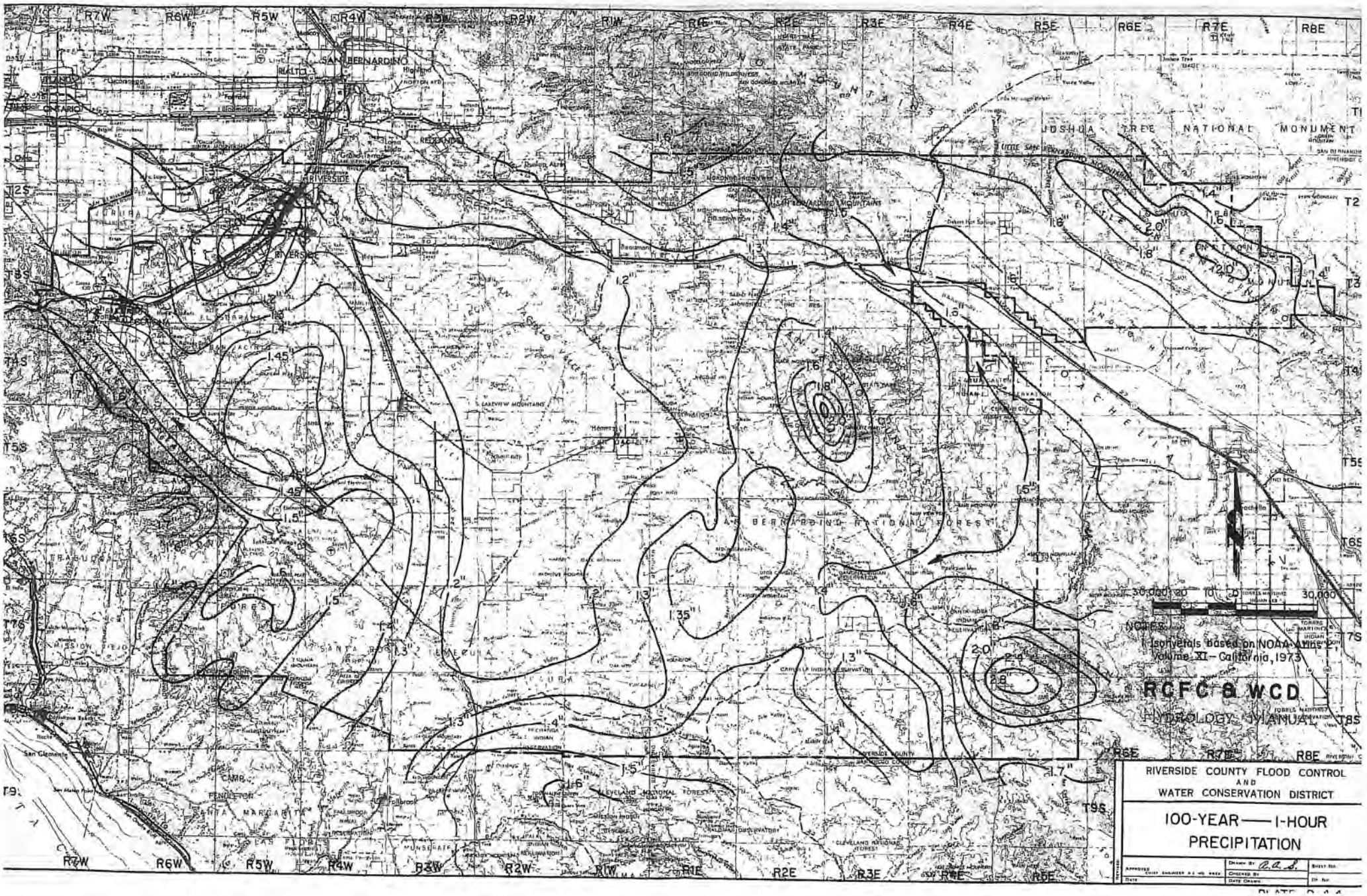
SUPER CREEK QUARRY
Painted Hills Mining Company
San Bernardino County, California

FIGURE 2

ATTACHMENT 2

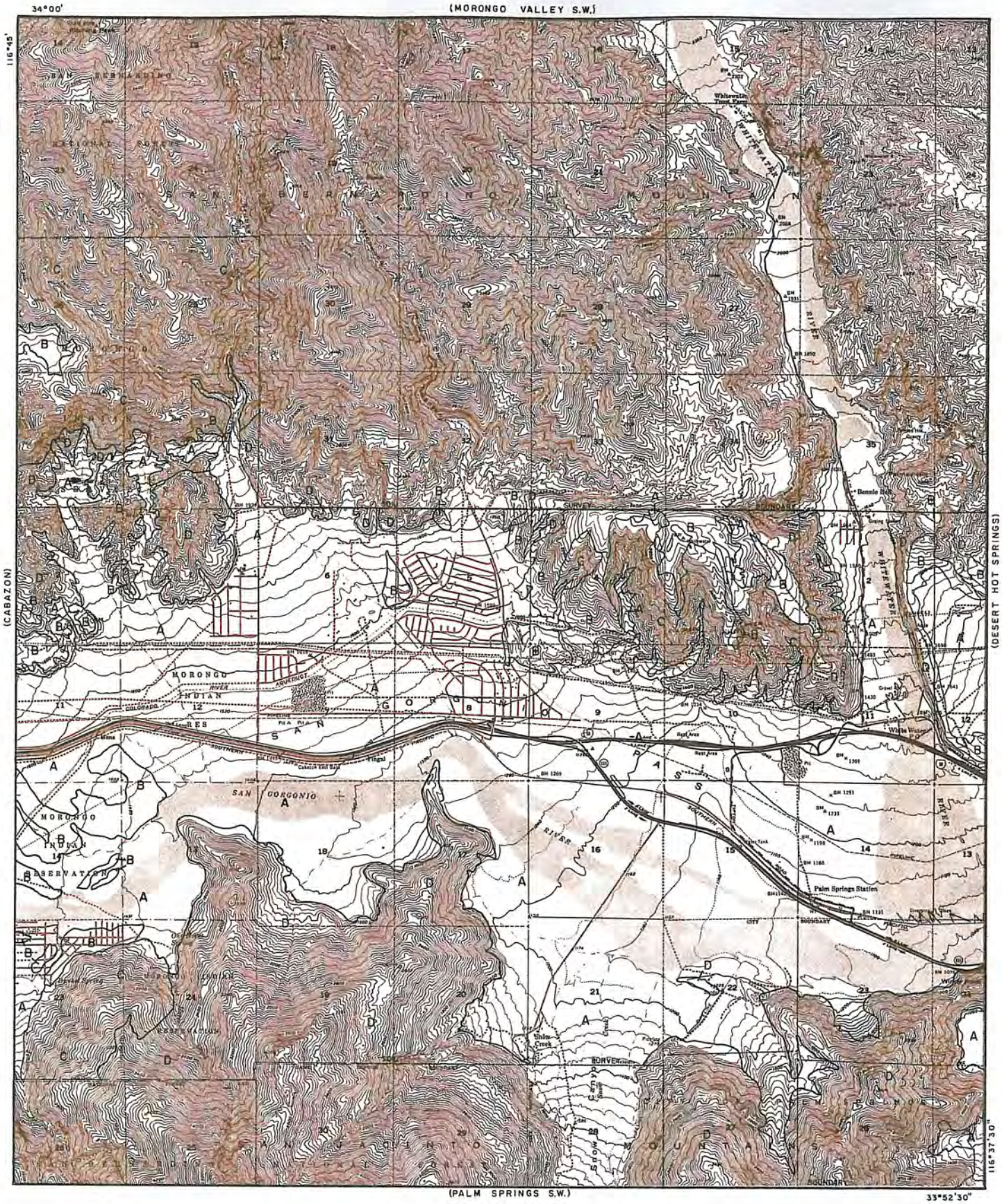
PRECIPITATION


RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
2-YEAR — 1-HOUR
PRECIPITATION
PLATE D-4.3
RCFC & WCD
HYDROLOGY MANUAL
Isohyetals based on NOAA Atlas 2,
Volume XI - California, 1973


RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR — 1-HOUR PRECIPITATION
NOTES
Isohyetals based on NOAA Atlas 2, Volume XI – California, 1973
SAN BERNARDINO NATIONAL FOREST
JOSHUA TREE NATIONAL MONUMENT
SAN JACINTO MOUNTAINS
SAN BERNARDINO MOUNTAINS
SANTA ROSA MOUNTAINS
LAKEVIEW MOUNTAINS
RIVERSIDE
SAN BERNARDINO
RIALTO
ONTARIO
CORONA
HEMET
PERRIS
TEMECULA
MURRIETA
FALLBROOK
CAMP PENDLETON
SAN CLEMENTE
CABAZON INDIAN RESERVATION
MORONGO INDIAN RESERVATION
SANTA ROSA INDIAN RESERVATION
AGUA CALIENTE INDIAN RESERVATION
TORRES MARTINEZ INDIAN RESERVATION
SAN JACINTO WILDERNESS
CLEVELAND NATIONAL FOREST
SAN GORGONIO WILDERNESS
R7W R6W R5W R4W R3W R2W RW R1E R2E R3E R4E R5E R6E R7E R8E
T2S T3S T4S T5S T6S T7S T8S T9S
T2 T3 T4 T5 T6 T7 T8
1.2" 1.3" 1.4" 1.5" 1.6" 1.7" 1.8" 2.0" 2.4" 2.8"
30,000 20 10 0 30,000

ATTACHMENT 3

LOSSES



LEGEND

—— SOILS GROUP BOUNDARY

A SOILS GROUP DESIGNATION

RCFC & WCD

HYDROLOGY MANUAL

N

0 FEET 5000

HYDROLOGIC SOILS GROUP MAP FOR WHITEWATER

PLATE C-1.21

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
NATURAL COVERS -					
Barren (Rockland, eroded and graded land)		78	86	91	93
Chaparrel, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85
	Fair	40	63	75	81
	Good	31	57	71	78
Chaparrel, Narrowleaf (Chamise and redshank)	Poor	71	82	88	91
	Fair	55	72	81	86
Grass, Annual or Perennial	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass)	Poor	63	77	85	88
	Fair	51	70	80	84
	Good	30	58	72	78
Open Brush (Soft wood shrubs - buckwheat, sage, etc.)	Poor	62	76	84	88
	Fair	46	66	77	83
	Good	41	63	75	81
Woodland (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent)	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	28	55	70	77
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
URBAN COVERS -					
Residential or Commercial Landscaping (Lawn, shrubs, etc.)	Good	32	56	69	75
Turf (Irrigated and mowed grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
AGRICULTURAL COVERS -					
Fallow (Land plowed but not tilled or seeded)		76	85	90	92

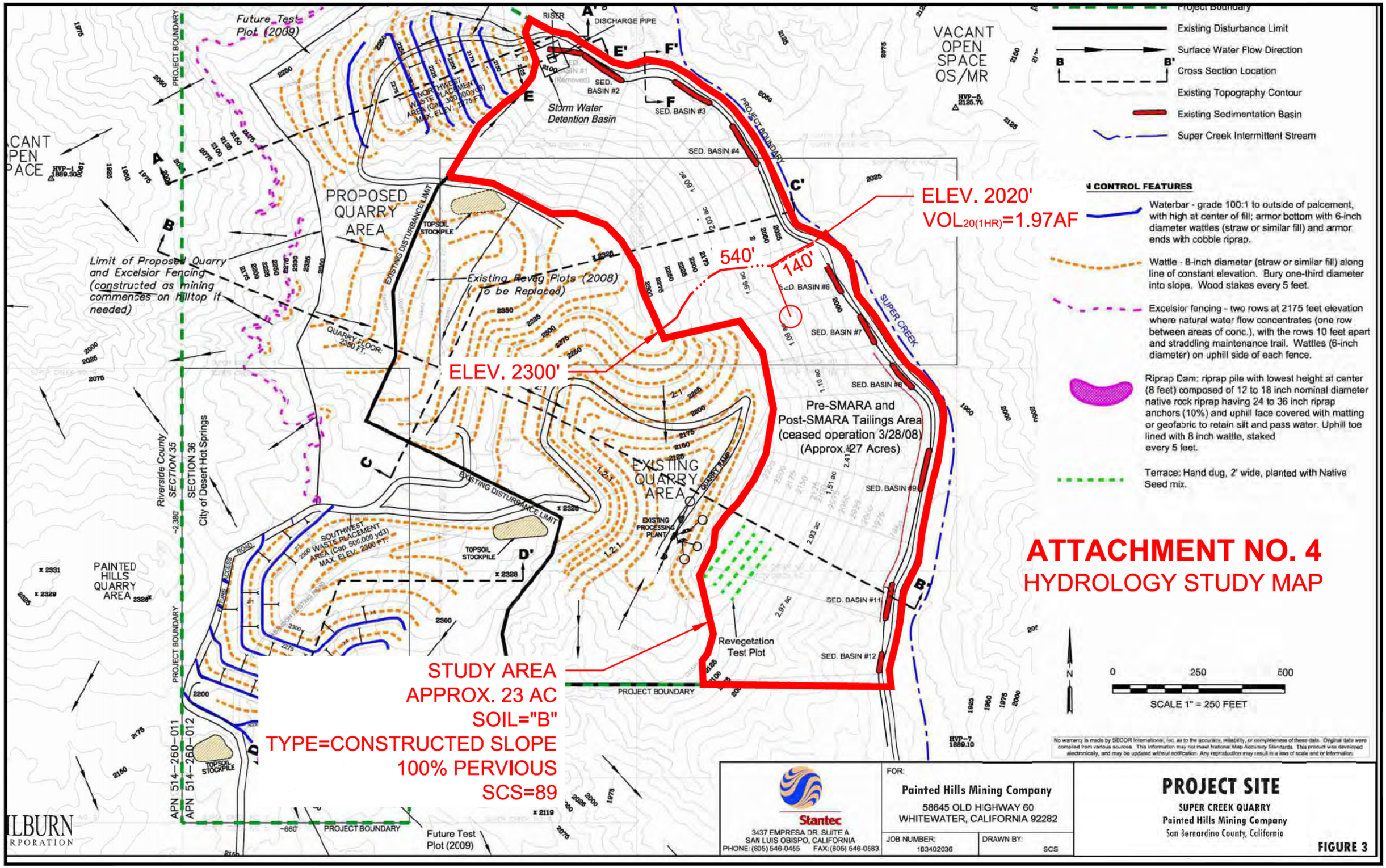
RCFC & WCD
HYDROLOGY MANUAL

RUNOFF INDEX NUMBERS FOR PERVIOUS AREAS

PLATE E-6.1 (1 of 2)

ATTACHMENT 4

STUDY MAP


Future Test Plot (2009)
PROJECT BOUNDARY
RISER
DISCHARGE PIPE
SED. BASIN #1 (Removed)
SED. BASIN #2
SED. BASIN #3
SED. BASIN #4
Storm Water Detention Basin
VACANT OPEN SPACE OS/MR
HVP-5 2125.7ft
PROJECT BOUNDARY
SUPER CREEK
SED. BASIN #6
SED. BASIN #7
SED. BASIN #8
SED. BASIN #9
SED. BASIN #11
SED. BASIN #12
ELEV. 2020'
VOL20(1HR)=1.97AF
540'
140'
ELEV. 2300'
PROPOSED QUARRY AREA
EXISTING DISTURBANCE LIMIT
TOPSOIL STOCKPILE
Limit of Proposed Quarry and Excelsior Fencing (constructed as mining commences on hilltop if needed)
Existing Revegetation Plots (2008) (To be Replaced)
QUARRY FLOOR 2350 FT.
Pre-SMARA and Post-SMARA Tailings Area (ceased operation 3/28/08) (Approx. 27 Acres)
EXISTING QUARRY AREA
EXISTING PROCESSING PLANT
QUARRY RAMP
SOUTHWEST WASTE PLACEMENT AREA (Cap. 500,000 yd3) MAX. ELEV. 2300 FT.
NORTHWEST WASTE PLACEMENT AREA (Cap. 300,000 yd3) MAX. ELEV. 2175 FT.
Revegetation Test Plot
PAINTED HILLS QUARRY AREA
FUTURE ACCESS ROAD
Riverside County
SECTION 35
SECTION 36
City of Desert Hot Springs
APN 514-260-011
APN 514-260-012
~660'
Future Test Plot (2009)
STUDY AREA
APPROX. 23 AC
SOIL="B"
TYPE=CONSTRUCTED SLOPE
100% PERVIOUS
SCS=89
Project Boundary
Existing Disturbance Limit
Surface Water Flow Direction
Cross Section Location
Existing Topography Contour
Existing Sedimentation Basin
Super Creek Intermittent Stream
N CONTROL FEATURES
Waterbar - grade 100:1 to outside of palcement, with high at center of fill; armor bottom with 6-inch diameter wattles (straw or similar fill) and armor ends with cobble riprap.
Wattle - 8-inch diameter (straw or similar fill) along line of constant elevation. Bury one-third diameter into slope. Wood stakes every 5 feet.
Excelsior fencing - two rows at 2175 feet elevation where natural water flow concentrates (one row between areas of conc.), with the rows 10 feet apart and straddling maintenance trail. Wattles (6-inch diameter) on uphill side of each fence.
Riprap Dam: riprap pile with lowest height at center (8 feet) composed of 12 to 18 inch nominal diameter native rock riprap having 24 to 36 inch riprap anchors (10%) and uphill face covered with matting or geofabric to retain silt and pass water. Uphill toe lined with 8 inch wattle, staked every 5 feet.
Terrace: Hand dug, 2' wide, planted with Native Seed mix.
ATTACHMENT NO. 4
HYDROLOGY STUDY MAP
N
0
250
500
SCALE 1" = 250 FEET
HVP-7 1889.10
No warranty is made by SECOR International, Inc. as to the accuracy, reliability, or completeness of these data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed electronically, and may be updated without notification. Any reproduction may result in a loss of scale and or information.
Stantec
3437 EMPRESA DR. SUITE A
SAN LUIS OBISPO, CALIFORNIA
PHONE: (805) 546-0455 FAX: (805) 546-0583
FOR:
Painted Hills Mining Company
58645 OLD HIGHWAY 60
WHITEWATER, CALIFORNIA 92282
JOB NUMBER: 183402036
DRAWN BY: SCS
PROJECT SITE
SUPER CREEK QUARRY
Painted Hills Mining Company
San Bernardino County, California
FIGURE 3

ATTACHMENT 5

SLOPE DRAINAGE AREA HYDROGRAPH CALCULATIONS
20-YEAR, 1-HOUR STORM EVENT

U n i t H y d r o g r a p h A n a l y s i s

Study date 01/24/13 File: QUARRY120.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6303

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

13xxxx LILBURN CORPORATION - SUPER CREEK QUARRY - RIVERSIDE COUNTY, CA
SLOPE AREA RUNOFF VOLUME CALCULATION
20-YEAR, 1-HOUR STORM EVENT
BY: JDN, DATE: 01-24-13

Drainage Area = 23.00(Ac.) = 0.036 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 23.00(Ac.) = 0.036 Sq. Mi.
Length along longest watercourse = 540.00(Ft.)
Length along longest watercourse measured to centroid = 140.00(Ft.)
Length along longest watercourse = 0.102 Mi.
Length along longest watercourse measured to centroid = 0.027 Mi.
Difference in elevation = 280.00(Ft.)
Slope along watercourse = 2737.7778 Ft./Mi.
Average Manning's 'N' = 0.050
Lag time = 0.028 Hr.
Lag time = 1.69 Min.
25% of lag time = 0.42 Min.
40% of lag time = 0.68 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
23.00	0.57	13.11

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
23.00	1.59	36.57

STORM EVENT (YEAR) = 20.00
Area Averaged 2-Year Rainfall = 0.570(In)
Area Averaged 100-Year Rainfall = 1.590(In)

Point rain (area averaged) = 1.170(In)
Areal adjustment factor = 99.98 %
Adjusted average point rain = 1.170(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
23.000	89.00	0.000

Total Area Entered = 23.00(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
89.0	89.0	0.141	0.000	0.141	1.000	0.141
					Sum (F) =	0.141

Area averaged mean soil loss (F) (In/Hr) = 0.141

Minimum soil loss rate ((In/Hr)) = 0.071
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.5800

U n i t H y d r o g r a p h
DESERT S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	295.193	55.617	12.892
2	0.167	590.387	39.062	9.054
3	0.250	885.580	5.322	1.234
		Sum = 100.000	Sum=	23.180

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	3.60	0.505	0.141	(0.455)	0.364
2	0.17	4.20	0.590	0.141	(0.531)	0.448
3	0.25	4.40	0.618	0.141	(0.556)	0.476
4	0.33	4.60	0.646	0.141	(0.581)	0.505
5	0.42	5.00	0.702	0.141	(0.632)	0.561
6	0.50	5.60	0.786	0.141	(0.708)	0.645
7	0.58	6.40	0.899	0.141	(0.809)	0.757
8	0.67	8.10	1.137	0.141	(1.024)	0.996
9	0.75	13.10	1.839	0.141	(1.655)	1.698
10	0.83	34.50	4.844	0.141	(4.360)	4.703
11	0.92	6.70	0.941	0.141	(0.847)	0.799
12	1.00	3.80	0.534	0.141	(0.480)	0.392
		(Loss Rate Not Used)				
Sum =		100.0			Sum =	12.3

Flood volume = Effective rainfall 1.03(In)
times area 23.0(Ac.)/[(In)/(Ft.)] = 2.0(Ac.Ft)
Total soil loss = 0.14(In)
Total soil loss = 0.271(Ac.Ft)
Total rainfall = 1.17(In)
Flood volume = 85887.8 Cubic Feet
Total soil loss = 11805.5 Cubic Feet

Peak flow rate of this hydrograph = 77.272(CFS)

++

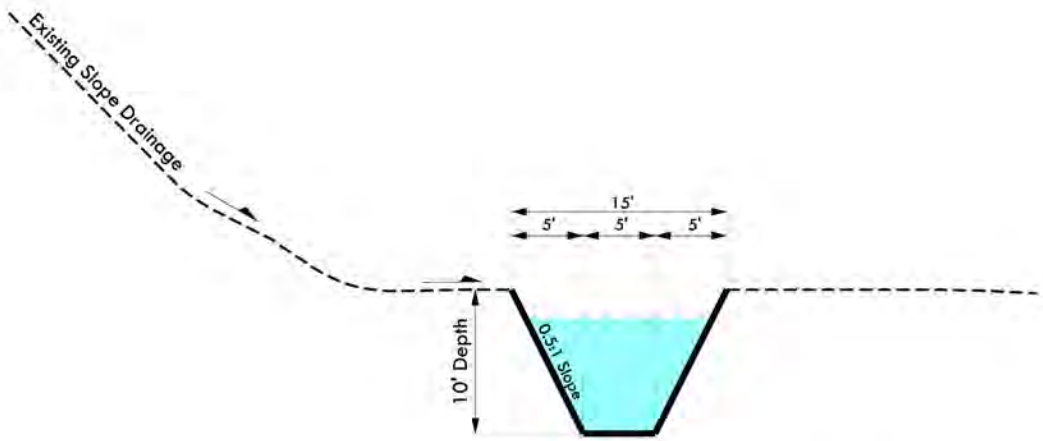
1 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	20.0	40.0	60.0	80.0
0+ 5	0.0323	4.70	V Q				
0+10	0.0949	9.08	|V Q				
0+15	0.1683	10.66	| V Q				
0+20	0.2466	11.38	| Q				
0+25	0.3320	12.39	| Q				
0+30	0.4285	14.02	| QV				
0+35	0.5408	16.30	| Q V				
0+40	0.6820	20.50	| Q V				
0+45	0.9014	31.86	| Q V				
0+50	1.4336	77.27	| V	Q			
0+55	1.8124	55.01	| Q	V			
1+ 0	1.9371	18.10	| Q	V			
1+ 5	1.9684	4.54	| Q	V			
1+10	1.9717	0.48	Q	V			

ATTACHMENT 6

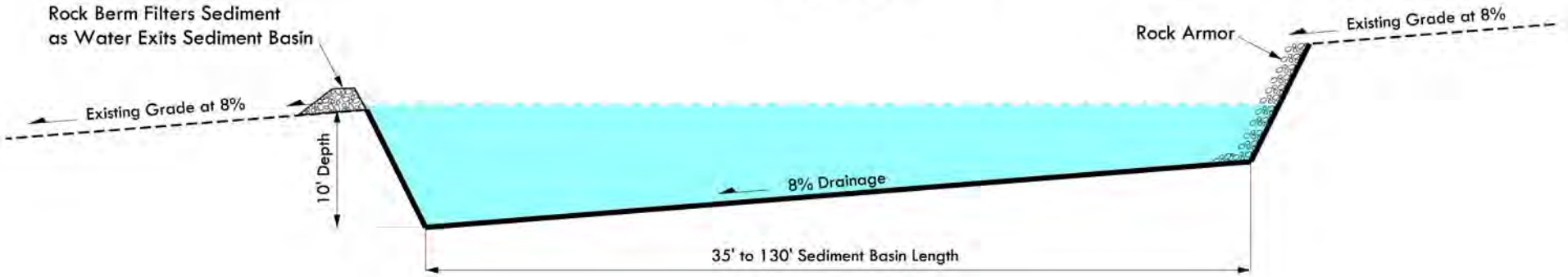
SEDIMENTATION BASINS TYPICAL SECTIONS & VOLUME CALCULATIONS



Typical Sediment Basin Cross Section

Super Creek Quarry

Not to Scale



Typical Sediment Basin

Super Creek Quarry

Not to Scale

Table 2 (Revised January 2013)
Sedimentation Basins
At Base of Eastern Waste Material Slopes

Sedimentation Basin #	Length (feet)	Width (feet)	Depth (feet)	Capacity (cy)
1*	92	15	10	216
2	130	15	10	231
3	115	15	10	230
4	130	15	10	231
5	56	15	10	150
6	87	15	10	210
7	88	15	10	211
8	85	15	10	208
9	117	15	10	230
10	77	15	10	196
11	104	15	10	225
12	50	15	10	148
Total				2,255 cy (1.4 af)
Proposed Sediment Basins				
2A	25	15	10	100
2B	25	15	10	100
2C	30	15	10	110
2D	30	15	10	110
4A	75	15	10	190
11A	85	15	10	208
12	+30	15	10	+50
13	80	15	10	200
Total Proposed	7 new; 1 extended			1068 cy (0.66 af)
Total				2.06 af

* Sedimentation Basin #1 will be eliminated upon construction of the planned detention basin at the base of the Northwest Waste Placement Stockpile.

Source: Webber and Webber Mining Consultants, 2007; Stantec 2009, Lilburn 2013