Preliminary - Project Specific
Water Quality Management Plan

For:
THE DIAMOND, LAKE ELSINORE

DEVELOPMENT NO. TENTATIVE PARCEL MAP

Prepared for:
JIC-CP, Diamond Development, LLC
7777 Civic Center Drive
Suite 300
Huntington Beach, CA 92647

(714) 230-8010

Prepared by:
Wilson Mikami Corporation
3 Peters Canyon Road, Suite 110
Irvine, CA 92606
(949) 679-0090
Scott M. Wilson, Principal

WQMP Preparation/Revision Date:
March 6, 2009
Revised January 21, 2010

OWNER'S CERTIFICATION

This project-specific Water Quality Management Plan (WQMP) has been prepared for:

JIC-CP, Diamond Development, LLC by Wilson Mikami Corporation for the project known as The Diamond Tentative Parcel Map 34346 situated in the Lake Elsinore Back Basin area, and is generally located south of Malaga Road and west of Mission Trail Road (refer to Figure 1, "Project Location Map").

This WQMP is intended to comply with the requirements of County of Riverside for Tentative Parcel Map, which includes the requirement for the preparation and implementation of a project-specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity.

The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under County of Riverside Water Quality Ordinance.

If the undersigned transfers its interest in the subject property/project, its successor in interest the undersigned shall notify the successor in interest of its responsibility to implement this WQMP.

"I certify under penalty of law that the provision of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature	Date
Owner's Printed Name	Owner's Title/Position

JIC-CP, Diamond Development, LLC
7777 Civic Center Drive
Suite 300
Huntington Beach, CA 92647

(714) 230-8010

Contents

I. Project Description

The Diamond Project is a development of approximately 87.2 acres, consisting of approximately 44.2 acres of Mixed Use including the existing Diamond Stadium, 23.7 acres of Commercial Development, 2.0 acres of Open Space, 5.6 acres of Roads, and 11.7 acres of Residential Development.. The project site may be viewed as two distinct segments. The portion north of Malaga Road around the existing Diamond Stadium is commercial development. The south portion of the project is residential development. A portion of the project is located within the FEMA Special Flood Hazards Zone AE (100-yr frequency base flood elevation of 1263). The southwesterly open space area is proposed for use in providing compensating flood storage for the project in conformance with conditions contained in the ACOE Lake Management Project 404 permit.

Project Owner: JIC-CP, Diamond Development, LLC
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WQMP Preparer: Wilson Mikami Corporation
3 Peters Canyon Road, Suite 110
Irvine, CA 92606
(949) 679-0090

Project Site Address:	Diamond Drive, Lake Elsinore
Planning Area/ Community Name:	The Diamond, Tentative Parcel Map _____
APN Number(s):	373-210-014, 373-210-016, 373-210-019, 373-210-020, 373-210-021, 373-210-023, 373-210-026, 373-210-027, 373-210-030, 373-210-032, 373-210-037, 373-210-038, 373-210-039, 373-210-040, 373-210-041, 373-210-042, 373-210-043, 365-280-022, 363-161-012, 363-161-029, 363-161-030, 363-161-031, 363-161-032, 363-161-033, 363-161-034, 363-161-035, 363-161-037, 363-150-016, 300-00-000
Thomas Bros. Map:	Riverside County Page 896
Project Watershed:	Santa Ana
Sub-watershed:	San Jacinto River Basin
Project Site Size:	87.2 Acres

Standard Industrial Classification (SIC) Code: N/A

Formation of Home Owners' Association (HOA) or Property Owners Association (POA): Y

Additional Permits/Approvals required for the Project

AGENCY	Permit required (yes or no)
State Department of Fish and Game, 1602 Streambed Alteration Agreement	Yes
State Water Resources Control Board, Clean Water Act (CWA) section 401 Water Quality Certification	No
US Army Corps of Engineers, CWA section 404 permit	No
US Fish and Wildlife, Endangered Species Act section 7 biological opinion	No
Other *(please list in the space below as required)*	

II. Site Characterization

Land Use Designation or Zoning: Commercial

Current Property Use: Vacant and Existing Baseball Stadium

Proposed Property Use: Mixed Use/Commercial/Residential/Open Space

Availability of Soils Report: Y

Phase 1 Site Assessment: Y

Receiving Waters for Urban Runoff from Site

Receiving Waters	303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
San Jacinto River	Pathogens	MUN, AGR, GWR, REC1, REC2, COLD, WILD	N/A

III. Pollutants of Concern

1. Potential pollutants associated with Urban Runoff from the proposed project are identified below. The type of development is attached residential and commercial.

Pollutant of Concern Summary Table
Residential

Pollutant Type	Expected	Potential	Listed for Receiving Water
Bacteria/Virus	X		X
Heavy Metals			
Nutrients	X		X
Pesticides	X		
Organic Compounds			
Sediments/Turbidity	X		
Trash & Debris	X		
Oxygen Demanding Substances	X		
Oil & Grease	X		
Other—specify pollutant(s):			

Pollutant of Concern Summary Table
Commercial

Pollutant Type	Expected	Potential	Listed for Receiving Water
Bacteria/Virus		X	X
Heavy Metals		X	
Nutrients		X	X
Pesticides		X	
Organic Compounds		X	
Sediments/Turbidity		X	
Trash & Debris	X		
Oxygen Demanding Substances		X	
Oil & Grease	X		
Other—specify pollutant(s):			

IV. Hydrologic Conditions of Concern

Impacts to the hydrologic regime resulting from the Project may include increased runoff volume and velocity; reduced infiltration; increased flow frequency, duration, and peaks; faster time to reach peak flow; and water quality degradation. Under certain circumstances, changes could also result in the reduction in the amount of available sediment for transport; storm flows could fill this sediment-carrying capacity by eroding the downstream channel. These changes have the potential to permanently impact downstream channels and habitat integrity. A change to the hydrologic regime of a Project's site would be considered a hydrologic condition of concern if the change would have a significant impact on downstream erosion compared to the pre-development condition or have significant impacts on stream habitat, alone or as part of a cumulative impact from development in the watershed.
This project-specific WQMP must address the issue of Hydrologic Conditions of Concern unless one of the following conditions are met:

- **Condition A:** Runoff from the Project is discharged directly to a publicly-owned, operated and maintained MS4; the discharge is in full compliance with Co-Permittee requirements for connections and discharges to the MS4 (including both quality and quantity requirements); the discharge would not significantly impact stream habitat in proximate Receiving Waters; and the discharge is authorized by the Co-Permittee.
- **Condition B:** The project disturbs less than 1 acre. The disturbed area calculation should include all disturbances associated with larger plans of development.
- **Condition C:** The project's runoff flow rate, volume, velocity and duration for the post-development condition do not exceed the pre-development condition for the 2-year, 24-hour and 10-year 24-hour rainfall events. This condition can be achieved by minimizing impervious area on a site and incorporating other site-design concepts that mimic pre-development conditions. This condition must be substantiated by hydrologic modeling methods acceptable to the Co-Permittee.

This project meets the following condition: Condition C

The project is proposed to be developed with a storm detention area that results in the project's flow rate, volume and duration for the post-development discharge condition to not exceed the pre-development condition for the 2-year, 24-hour and 10-year 24-hour rainfall events. Supporting engineering studies, calculations, and reports are included in Appendix C.

Cumulative impacts: The project is at the downstream end of the Sedco Drainage Area Master Plan, however, the project does not receive offsite drainage flows. The water quality plan for the project will provide treatment control BMPs for the project and therefore the cumulative impacts for the project from a water quality perspective are considered to be insignificant.

V. Best Management Practices

V.1 SITE DESIGN BMPS

Project proponents shall implement Site Design concepts that achieve each of the following:

1) Minimize Urban Runoff
2) Minimize Impervious Footprint
3) Conserve Natural Areas
4) Minimize Directly Connected Impervious Areas (DCIAs)

The site is designed with the intent to maximize pervious area and to provide a grass swale downstream of impermeable surfaces within each drainage subarea. Secondary water quality treatment is provided by an existing water quality pond (infiltration basin) and detention basin downstream of the drainage area. The location of each Site Design BMP is shown on the WQMP Site Plan included in Appendix B.

Table 1. Site Design BMPs

			Included	
Design Concept	**Technique**	**Specific BMP**	**yes**	**no**
Site Design Concept 1	*Minimize Urban Runoff*			
		Maximize the permeable area (See Section 4.5.1 of the WQMP).	X	
		Incorporate landscaped buffer areas between sidewalks and streets.	X	
		Maximize canopy interception and water conservation by preserving existing native trees and shrubs, and planting additional native or drought tolerant trees and large shrubs.		X
		Use natural drainage systems.	X	
		Where soils conditions are suitable, use perforated pipe or gravel filtration pits for low flow infiltration.		X
		Construct onsite ponding areas or retention facilities to increase opportunities for infiltration consistent with vector control objectives.	X	
		Other comparable and equally effective site design concepts as approved by the Co-Permittee (Note: Additional narrative required to describe BMP and how it addresses Site Design concept).		X

Table 1. Site Design BMPs (Cont.)

			Included	
Design Concept	**Technique**	**Specific BMP**	**yes**	**no**
Site Design Concept 1	Minimize Impervious Footprint			
		Maximize the permeable area (See Section 4.5.1 of the WQMP).	X	
		Construct walkways, trails, patios, overflow parking lots, alleys, driveways, low-traffic streets and other low -traffic areas with open-jointed paving materials or permeable surfaces, such as pervious concrete, porous asphalt, unit pavers, and granular materials.		X
		Construct streets, sidewalks and parking lot aisles to the minimum widths necessary, provided that public safety and a walk able environment for pedestrians are not compromised.	X	
		Reduce widths of street where off-street parking is available.	X	
		Minimize the use of impervious surfaces, such as decorative concrete, in the landscape design.	X	
		Other comparable and equally effective site design concepts as approved by the Co-Permittee (Note: Additional narrative required describing BMP and how it addresses Site Design concept).		X
Site Design Concept 1	Conserve Natural Areas			
		Conserve natural areas (See WQMP Section 4.5.1).		X
		Maximize canopy interception and water conservation by preserving existing native trees and shrubs, and planting additional native or drought tolerant trees and large shrubs.		X
		Use natural drainage systems.		X
		Other comparable and equally effective site design concepts as approved by the Co-Permittee (Note: Additional narrative required describing BMP and how it addresses Site Design concept).		X

Table 1. Site Design BMPs (Cont.)

			Included	
Design Concept	**Technique**	**Specific BMP**	**yes**	**no**
Site Design Concept 2	Minimize Directly Connected Impervious Areas (DCIAs)	Residential and commercial sites must be designed to contain and infiltrate roof runoff, or direct roof runoff to vegetative swales or buffer areas, where feasible.		X
		Where landscaping is proposed, drain impervious sidewalks, walkways, trails, and patios into adjacent landscaping.		X
		Increase the use of vegetated drainage swales in lieu of underground piping or imperviously lined swales.	X	
		Rural swale system: street sheet flows to vegetated swale or gravel shoulder, curbs at street corners, culverts under driveways and street crossings.		X
		Urban curb/swale system: street slopes to curb; periodic swale inlets drain to vegetated swale/biofilter.		X
		Dual drainage system: First flush captured in street catch basins and discharged to adjacent vegetated swale or gravel shoulder, high flows connect directly to MS4s.		X
		Design driveways with shared access, flared (single lane at street) or wheel strips (paving only under tires); or, drain into landscaping prior to discharging to the MS4.		X
		Uncovered temporary or guest parking on private residential lots may be paved with a permeable surface, or designed to drain into landscaping prior to discharging to the MS4.		X
		Where landscaping is proposed in parking areas, incorporate landscape areas into the drainage design.	X	
		Overflow parking (parking stalls provided in excess of the Co-Permittee's minimum parking requirements) may be constructed with permeable paving.		X
		Other comparable and equally effective design concepts as approved by the Co-Permittee (Note: Additional narrative required describing BMP and how it addresses Site Design concept).		X

V.2 SOURCE CONTROL BMPS

Complete Table 2.

Table 2. Source Control BMPs

BMP Name	Check One		If not applicable, state brief reason
	Included	Not Applicable	
Non-Structural Source Control BMPs			
Education for Property Owners, Operators, Tenants, Occupants, or Employees	X		
Activity Restrictions	X		
Irrigation System and Landscape Maintenance	X		
Common Area Litter Control	X		
Street Sweeping Private Streets and Parking Lots	X		
Drainage Facility Inspection and Maintenance	X		
Structural Source Control BMPs			
MS4 Stenciling and Signage	X		
Landscape and Irrigation System Design	X		
Protect Slopes and Channels	X		
Provide Community Car Wash Racks		X	No community car wash
Properly Design:			
Fueling Areas		X	No fueling areas
Air/Water Supply Area Drainage		X	No air/water supply area
Trash Storage Areas	X		
Loading Docks		X	No loading docks
Maintenance Bays		X	No maintenance bays
Vehicle and Equipment Wash Areas		X	No vehicle wash areas
Outdoor Material Storage Areas		X	No outdoor storage areas
Outdoor Work Areas or Processing Areas		X	No outdoor work areas
Provide Wash Water Controls for Food Preparation Areas		X	No food preparation areas

Source control BMPs will be implemented through the authority of the Homeowner's Association.

Appendix D includes copies of the educational materials that will be used in implementing this project-specific WQMP.

V.3 TREATMENT CONTROL BMPS

Treatment Contol BMPs for the project include project grass swales which are sized utilizing Urban Runoff quality design flow rate (Q_{BMP}) criteria. Maintenance of the BMPs will be provided by the City of Lake Elsinore. Secondary treatment is provided by an existing water quality pond (infiltration basin) and detetntion basin. The location of the Treatment Control BMPs is shown on the Site Plan included in Appendix B.

Supporting engineering calculations for Q_{BMP} and/or V_{BMP}, and Treatment Control BMP design details are detailed in the regional drainage plan documentation.

Table 3: Treatment Control BMP Selection Matrix

Pollutant of Concern (See Section III)		Treatment Control BMP Categories[9]							
		Veg. Swale /Veg. Filter Strips	**Detention Basins[2]**	**Infiltration Basins & Trenches/Porous Pavement[3][10]**	**Wet Ponds or Wetlands**	**Sand Filter or Filtration**	**Water Quality Inlets**	**Hydrodynamic Separator Systems [4]**	**Manufactured/ Proprietary Devices**
Sediment/Turbidity		H/M	M	H/M	H/M	H/M	L	H/M (L for turbidity)	U
Yes/No?	Yes								
Nutrients		L	M	H/M	H/M	L/M	L	L	U
Yes/No?	Yes								
Organic Compounds		U	U	U	U	H/M	L	L	U
Yes/No?	No								
Trash & Debris		L	M	U	U	H/M	M	H/M	U
Yes/No?	Yes								
Oxygen Demanding Substances		L	M	H/M	H/M	H/M	L	L	U
Yes/No?	Yes								
Bacteria & Viruses		U	U	H/M	U	H/M	L	L	U
Yes/No?	Yes								
Oils & Grease		H/M	M	U	U	H/M	M	L/M	U
Yes/No?	Yes								
Pesticides (non-soil bound)		U	U	U	U	U	L	L	U
Yes/No?	Yes								
Metals		H/M	M	H	H	H	L	L	U
Yes/No?	No								

Abbreviations:

L: Low removal efficiency H/M: High or medium removal efficiency U: Unknown removal efficiency

Notes:

(1) Periodic performance assessment and updating of the guidance provided by this table may be necessary.

(2) Includes grass swales, grass strips, wetland vegetation swales, and bioretention.

(3) Includes extended/dry detention basins with grass lining and extended/dry detention basins with impervious lining. Effectiveness based upon minimum 36-48-hour drawdown time.

(4) Includes infiltration basins, infiltration trenches, and porous pavements.

(5) Includes permanent pool wet ponds and constructed wetlands.

(6) Includes sand filters and media filters.

(7) Also known as hydrodynamic devices, baffle boxes, swirl concentrators, or cyclone separators.

(8) Includes proprietary stormwater treatment devices as listed in the CASQA Stormwater Best Management Practices Handbooks, other stormwater treatment BMPs not specifically listed in this WQMP, or newly developed/emerging stormwater treatment technologies.

(9) Project proponents should base BMP designs on the Riverside County Stormwater Quality Best Management Practice Design Handbook. However, project proponents may also wish to reference the California Stormwater BMP Handbook – New Development and Redevelopment (www.cabmphandbooks.com). The Handbook contains additional information on BMP operation and maintenance.

(10) Note: Projects that will utilize infiltration-based Treatment Control BMPs (e.g., Infiltration Basins, Infiltration Trenches, Porous Pavement) must include a copy of the property/project soils report as Appendix E to the project-specific WQMP. The selection of a Treatment Control BMP (or BMPs) for the project must specifically consider the effectiveness of the Treatment Control BMP for pollutants identified as causing an impairment of Receiving Waters to which the project will discharge Urban Runoff.

V.4 EQUIVALENT TREATMENT CONTROL ALTERNATIVES

Not Applicable.

V.5 REGIONALLY-BASED TREATMENT CONTROL BMPS

None

VI. Operation and Maintenance Responsibility for Treatment Control BMPs

Operation and maintenance (O&M) of the project BMPs will be the responsibility of the City of Lake Elsinore for the Drainage Area A grass swale and the facility owner for the Drainage Area B grass swale..

VII. Funding

Funding source for O&M for BMPs: Landscape and Lighting District

Appendix A

Conditions of Approval

City Council Resolution TBD

Dated TBD

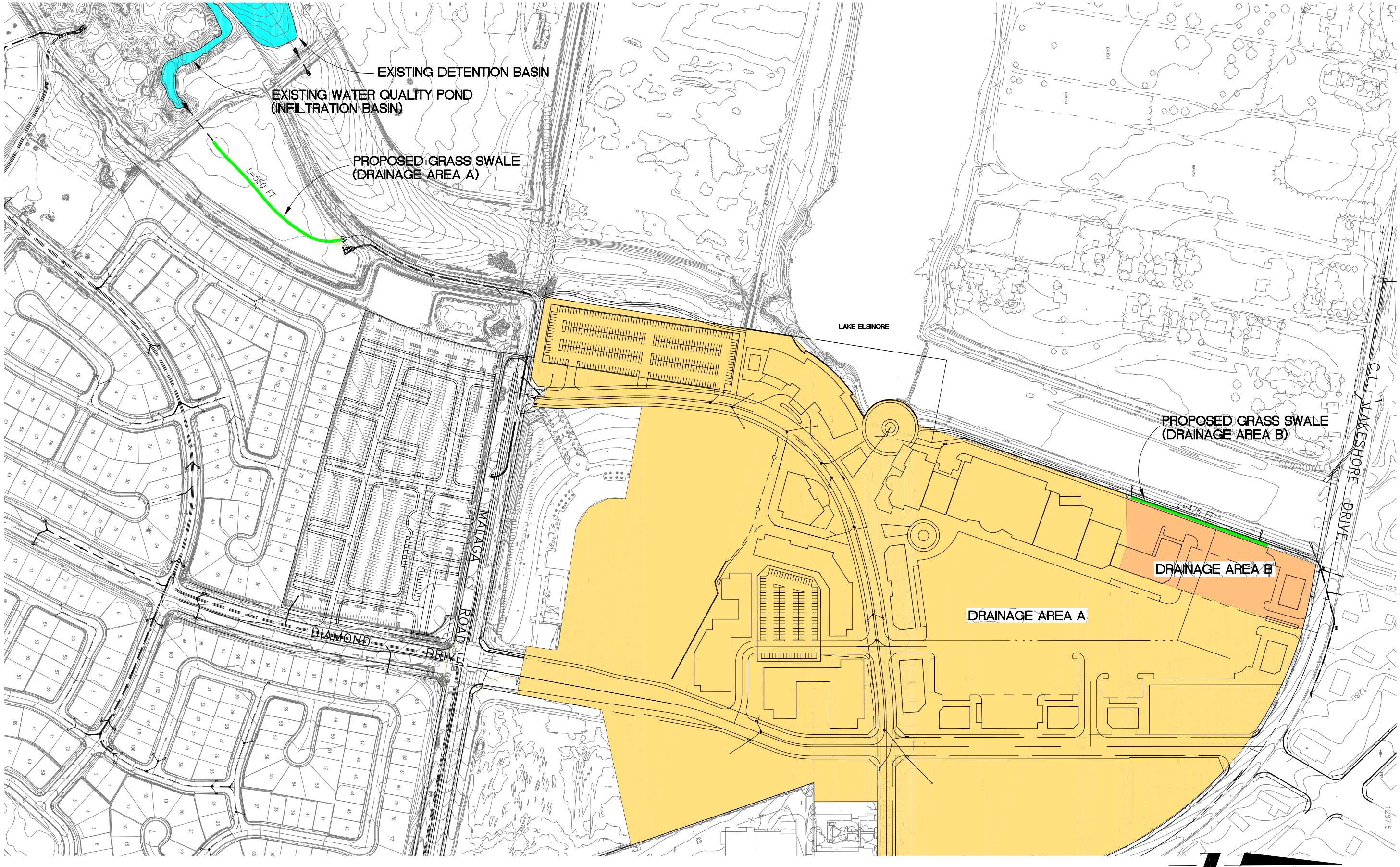
Appendix B

Location Map and Site Plan

PROJECT LOCATION MAP

FIGURE 1

S:\10003.10\drainage\LocationMap.doc



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THE DIAMOND
WATER QUALITY MANAGEMENT PLAN
SITE PLAN

PROJECT NO. 10088.00

SHEET 1 OF 1

Appendix C

Supporting Detail Related to Hydraulic Conditions of Concern

Reference is made to the report entitled “Conceptual Hydrology Report The Diamond Project, JIC-CP, Diamond Development, LLC, 19.4-Acre Project, City of Lake Elsinore, County of Riverside, Ca”, dated March 6, 2009, prepared by Wilson Mikami Corporation.

Appendix D

Educational Materials

Future

Appendix E

Soils Report

Reference is made to the report entitled “Preliminary Geologic / Geotechnical Investigation, JIC-CP, Diamond Development, LLC 87.2-Acre Property, City of Lake Elsinore, County of Riverside, Ca”, prepared by Neblett & Associates, Inc.

Appendix F

Treatment Control BMP Sizing Calculations and Design Details

Datasheet

Grass Swale

Site Conditions

A_{total} = 69.2 acres (Subarea A)
Land Use: Commercial
Impervious Cover = 90%
Q_{BMP} = 11.62 cfs (from worksheet 2)

Design Assumptions

1. Swale Geometry

Sideslope =	11.31	Degrees	(5:1 sideslope)
Channel Slope =	0.6%		
Flow Depth =	11.185	inches	

$Q_{BMP} = (1.49/n)AR^{2/3}s^{1/2}$

n =	0.15	
Base width =	15	ft
A =	18.325	sf
P =	24.505	ft
R =	0.7478	ft
s =	0.6%	
Q_{BMP} =	11.62	cfs
V =	0.63	fps

2. Design Length

L =	266	ft (7 minute contact)
L provided =	550	ft (OK)

Design Procedure Form for Design Flow

Uniform Intensity Design Flow

Designer: S. WILSON
Company: WILSON MIKAMI CORP.
Date: 3/6/09
Project: THE DIAMOND, LAKE ELSINORE, CA
Location: DIAMOND DRIVE / LAKESHORE DRIVE

1. Determine Impervious Percentage	SUBAREA "A"	
a. Determine total tributary area	A_{total} = 69.2 acres	*(1)*
b. Determine Impervious %	i = 0.90 %	*(2)*
2. Determine Runoff Coefficient Values Use **Table 4** and impervious % found in step 1		
a. A Soil Runoff Coefficient	C_a =	*(3)*
b. B Soil Runoff Coefficient	C_b =	*(4)*
c. C Soil Runoff Coefficient	C_c =	*(5)*
d. D Soil Runoff Coefficient	C_d = 0.84	*(6)*
3. Determine the Area decimal fraction of each soil type in tributary area		
a. Area of A Soil / *(1)* =	A_a =	*(7)*
b. Area of B Soil / *(1)* =	A_b =	*(8)*
c. Area of C Soil / *(1)* =	A_c =	*(9)*
d. Area of D Soil / *(1)* =	A_d = 1.0	*(10)*
4. Determine Runoff Coefficient		
a. C = *(3)*x*(7)* + *(4)*x*(8)* + *(5)*x*(9)* + *(6)*x*(10)* =	C = 0.84	*(11)*
5. Determine BMP Design flow		
a. Q_{BMP} = C x I x A = *(11)* x 0.2 x *(1)*	Q_{BMP} = 11.62 $\frac{ft^3}{s}$	*(12)*

Table 4. Runoff Coefficients for an Intensity = 0.2 $^{in}/_{hr}$ for Urban Soil Types*

Impervious %	A Soil RI =32	B Soil RI =56	C Soil RI =69	D Soil RI =75
0 (Natural)	0.06	0.14	0.23	0.28
5	0.10	0.18	0.26	0.31
10	0.14	0.22	0.29	0.34
15	0.19	0.26	0.33	0.37
20 (1-Acre)	0.23	0.30	0.36	0.40
25	0.27	0.33	0.39	0.43
30	0.31	0.37	0.43	0.47
35	0.35	0.41	0.46	0.50
40 (1/2-Acre)	0.40	0.45	0.50	0.53
45	0.44	0.48	0.53	0.56
50 (1/4-Acre)	0.48	0.52	0.56	0.59
55	0.52	0.56	0.60	0.62
60	0.56	0.60	0.63	0.65
65 (Condominiums)	0.61	0.64	0.66	0.68
70	0.65	0.67	0.70	0.71
75 (Mobilehomes)	0.69	0.71	0.73	0.74
80 (Apartments)	0.73	0.75	0.77	0.78
85	0.77	0.79	0.80	0.81
90 (Commercial)	0.82	0.82	0.83	0.84
95	0.86	0.86	0.87	0.87
100	0.90	0.90	0.90	0.90

*Complete District's standards can be found in the Riverside County Flood Control Hydrology Manual

Datasheet

Grass Swale

Site Conditions

A_{total} = 3.4 acres (Subarea B)
Land Use: Commercial
Impervious Cover = 90%
Q_{BMP} = 0.57 cfs (from worksheet 2)

Design Assumptions

1. Swale Geometry

Sideslope =	18.43	Degrees	(3:1 sideslope)
Channel Slope =	1.0%		
Flow Depth =	4.1	inches	

$Q_{BMP} = (1.49/n)AR^{2/3}s^{1/2}$

n =	0.15	
Base width =	3	ft
A =	1.375	sf
P =	5.161	ft
R =	0.266	ft
s =	1.0%	
Q_{BMP} =	0.57	cfs
V =	0.41	fps

2. Design Length

L =	173	ft (7 minute contact)
L provided =	475	ft (OK)

Design Procedure Form for Design Flow

Uniform Intensity Design Flow

Designer: S. WILSON
Company: WILSON MIKAMI CORP.
Date: 3/6/09
Project: THE DIAMOND, LAKE ELSINORE
Location: DIAMOND DRIVE / LAKESHORE DRIVE

1. Determine Impervious Percentage		
a. Determine total tributary area	A_{total} = 3.4 acres	*(1)*
b. Determine Impervious %	i = 0.90 %	*(2)*
2. Determine Runoff Coefficient Values Use **Table 4** and impervious % found in step 1		
a. A Soil Runoff Coefficient	C_a =	*(3)*
b. B Soil Runoff Coefficient	C_b =	*(4)*
c. C Soil Runoff Coefficient	C_c =	*(5)*
d. D Soil Runoff Coefficient	C_d = 0.84	*(6)*
3. Determine the Area decimal fraction of each soil type in tributary area		
a. Area of A Soil / *(1)* =	A_a =	*(7)*
b. Area of B Soil / *(1)* =	A_b =	*(8)*
c. Area of C Soil / *(1)* =	A_c =	*(9)*
d. Area of D Soil / *(1)* =	A_d = 1.0	*(10)*
4. Determine Runoff Coefficient		
a. C = *(3)*x*(7)* + *(4)*x*(8)* + *(5)*x*(9)* + *(6)*x*(10)* =	C = 0.84	*(11)*
5. Determine BMP Design flow		
a. Q_{BMP} = C x I x A = *(11)* x 0.2 x *(1)*	Q_{BMP} = 0.571 $\frac{ft^3}{s}$	*(12)*

Swales

Tributary Area	Swale Segment	Area Directly Tributary to the Swale: Tributary Area	Percent Imperviousness	Runoff Coefficient	Design Intensity	Design Flow Rate	Cumulative Design Flow Rate	Calculated Flow Rate	Flow Velocity	Roughness	Flow Depth	Longitudinal Slope	Side Slopes	Bottom Width	Freeboard	Segment Depth	Top width of Segment	Segment Length	Segment Footprint	Segment Residence Time	Cumulative Residence Time
		A	*I*	*C*	*i*	*Q*	*Q*	*Q*	*V*	*n*	*d*	*S*	*θ*	*b*	*f*	*df*	W_T	*L*	A_T	*t*	*t*
		acres	(%)		in/hr	cfs	cfs	cfs	ft/sec		in	%	deg	ft	ft	ft	ft	ft	acres	(min)	(min)
WEST SWALE																					
Area A	**1**	69.20	100%	0.840	0.2	11.72	11.72	11.72	0.64	0.150	11.2	0.6%	11.3	15.0	0.3	1.27	27.7	550	0.35	14	14
Area B	**1**	3.40	100%	0.840	0.2	0.58	0.58	0.58	0.41	0.150	4.2	1.0%	18.4	3.0	0.3	0.65	6.9	475	0.07	19	19

Appendix G

AGREEMENTS – CC&RS, COVENANT AND AGREEMENTS AND/OR OTHER MECHANISMS FOR ENSURING ONGOING OPERATION, MAINTENANCE, FUNDING AND TRANSFER OF REQUIREMENTS FOR THIS PROJECT-SPECIFIC WQMP

FUTURE

Appendix H

PHASE 1 ENVIRONMENTAL SITE ASSESSMENT – SUMMARY OF SITE REMEDIATION CONDUCTED AND USE RESTRICTIONS

FUTURE