Appendix B
Water Quality Parameters for the San Gabriel River Wet Weather Models

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Prepared for:
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Table B-1. Model Parameters Describing Suspended Sediment Washoff Behavior (SCCWRP, 2004)

Parameter	Land Use*						
	AGR	COM	HDR	IND	LDR	MIX	OPEN
Pervious							
Splash detachment							
SMPF	1	1	1	1	1	1	1
KRER	0.35	0.35	0.35	0.35	0.35	0.35	0.35
JRER	2	2	2	2	2	2	2
AFFIX	0.003	0.003	0.003	0.003	0.003	0.003	0.003
COVER	0	0	0	0	0	0	0
NVSI	20	20	20	20	20	20	20
Soil matrix scouring							
KSER	8	8	8	8	8	8	8
JSER	2	2	2	2	2	2	2
KGER	0	0	0	0	0	0	0
JGER	2	2	2	2	2	2	2
Impervious							
KEIM	0.05	0.05	0.1	0.35	0.15	0.05	0.2
JEIM	1	2	2	2	2	2	2
ACCSDP	0.04	0.004	0.004	0.004	0.004	0.004	0.004
REMSDP	0.25	0.025	0.025	0.025	0.025	0.025	0.025

*Land Use: AGR = Agriculture; COM = Commercial; HDR = High Density Residential; IND = Industrial; LDR = Low Density Residential; MIX = Mixed Urban; OPEN = Open

Parameter Descriptions:

SMPF is the supporting management practice factor.
KRER is the coefficient in the soil detachment equation.
JRER is the exponent in the soil detachment equation.
AFFIX is the fraction by which detached sediment storage decreases each day as a result of soil compaction.
COVER is the fraction of land surface which is shielded from rainfall erosion (not considering snow cover, which is handled by the program).
NVSI is the rate at which sediment enters detached storage from the atmosphere.
KSER and *JSER* are the coefficient and exponent in the detached sediment washoff equation.
KGER and *JGER* are the coefficient and exponent in the matrix soil scour equation, which simulates gully erosion.
KEIM is the coefficient in the solids washoff equation.
JEIM is the exponent in the solids washoff equation.
ACCSDP is the rate at which solids accumulate on the land surface.
REMSDP is the fraction of solids storage which is removed each day when there is no runoff.

Table B-2. Model Parameters Describing Suspended Sediment In-Stream Behavior (SCCWRP, 2004)

Reach GEN	*BEDWID*	*BEDWRN*	*POR*			
	1	1	0.3			
Reach Sand	*D*	*W*	*RHO*	*KSAND*	*EXPSND*	
	0.005	0.02	2.5	0.35	3.2	
Reach Silt	*D*	*W*	*RHO*	*TAUCD*	*TAUCS*	*M*
	0.0006	0.01	2.2	0.15	0.90	3
Reach Clay	*D*	*W*	*RHO*	*TAUCD*	*TAUCS*	*M*
	0.00006	0.0001	2	0.08	0.8	5

Parameter Descriptions:

BEDWID is the width of the cross-section over which HSPF will assume bed sediment is deposited.
BEDWRN is the bed depth which, if exceeded (e.g., through deposition) will cause a warning message to be printed in the echo file.
POR is the porosity of the bed (volume voids/total volume).
D is the effective diameter of the transported particles.
W is the corresponding fall velocity in still water.
RHO is the density of the particles.
KSAND and *EXPSND* are the coefficient and exponent in the sandload power function formula.
TAUCD is the critical bed shear stress for deposition.
TAUCS is the critical bed shear stress for scour.
M is the erodibility coefficient of the sediment.

Table B-3. Land Use-Specific Washoff Potency Factor (POTFW) Parameter Values for Trace Metals (SCCWRP, 2004)

	Trace Metal		
Land Use*	**Copper**	**Lead**	**Zinc**
AGR	0.30	0.10	2.50
COM	1.00	1.00	10.20
HDR	0.80	0.80	7.50
IND	0.30	0.15	4.00
LDR	0.60	0.20	1.20
MIX	0.80	0.25	5.00
OPEN	0.12	0.02	0.50

*Land Use: AGR = Agriculture; COM = Commercial; HDR = High Density Residential; IND = Industrial; LDR = Low Density Residential; MIX = Mixed Urban; OPEN = Open

Table B-4. KEIM and JEIM Ranges for Impervious Land Uses for Suspended Sediment Wash-off Behavior Obtained through Re-modeling of the SCCWRP Models

	Impervious Land Use*						
Parameter	**AGR**	**COM**	**HDR**	**IND**	**LDR**	**MIX**	**OPEN**
Maximum KEIM	0.5	0.05	0.5	0.35	0.2	0.35	0.2
Minimum KEIM	0.05	0.025	0.05	0.2	0.1	0.05	0.2
Maximum JEIM	2	2	2	2	2	2	2
Minimum JEIM	1	1	1	1	1	1	1
ACCSDP	0.04	0.004	0.004	0.004	0.004	0.004	0.004
REMSDP	0.25	0.025	0.025	0.025	0.025	0.025	0.025

*Land Use: AGR = Agriculture; COM = Commercial; HDR = High Density Residential; IND = Industrial; LDR = Low Density Residential; MIX = Mixed Urban; OPEN = Open

Parameter Descriptions:
KEIM is the coefficient in the solids washoff equation.
JEIM is the exponent in the solids washoff equation.
ACCSDP is the rate at which solids accumulate on the land surface.
REMSDP is the fraction of solids storage which is removed each day when there is no runoff.

Table B-5. Model Parameters Describing Suspended Sediment Wash-off Behavior for the San Gabriel River Watershed

Pervious Land Use												
Parameter	Barren	Cropland	Forest	Pasture	Strip Mining	Residential	Wetlands	Commercial	Transportation	Heavy Industrial	Light Industrial	Mixed
Splash detachment												
SMPF	1	1	1	1	1	1	1	1	1	1	1	1
KRER	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
JRER	2	2	2	2	2	2	2	2	2	2	2	2
AFFIX	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
COVER	0	0	0	0	0	0	0	0	0	0	0	0
NVSI	20	20	20	20	20	20	20	20	20	20	20	20
Soil matrix scouring												
KSER	8	8	8	8	8	8	8	8	8	8	8	8
JSER	2	2	2	2	2	2	2	2	2	2	2	2
KGER	0	0	0	0	0	0	0	0	0	0	0	0
JGER	2	2	2	2	2	2	2	2	2	2	2	2

Impervious Land Use						
Parameter	Transportation	Commercial	Heavy Industrial	Light Industrial	Residential	Mixed
KEIM	0.35	0.05	0.35	0.35	0.5	0.35
JEIM	2	2	2	2	2	2
ACCSDP	0.004	0.004	0.004	0.004	0.004	0.004
REMSDP	0.025	0.025	0.025	0.025	0.025	0.025

Table B-6. Model Parameters Describing Suspended Sediment In-Stream Behavior (Modified from SCCWRP, 2004).

Reach GEN	*BEDWID*	*BEDWRN*	*POR*			
	1	1	0.3			
Reach Sand	*D*	*W*	*RHO*	*KSAND*	*EXPSND*	
	0.005	0.02	2.5	0.35	3.2	
Reach Silt	*D*	*W*	*RHO*	*TAUCD*	*TAUCS*	*M*
	0.0006	0.01	2.2	0.15	999*	3
Reach Clay	*D*	*W*	*RHO*	*TAUCD*	*TAUCS*	*M*
	0.00006	0.0001	2	0.08	999*	5

* Resuspension of sediment is turned of by setting extremely high critical shear stresses for erosion 999.

Parameter Descriptions:

BEDWID is the width of the cross-section over which HSPF will assume bed sediment is deposited.
BEDWRN is the bed depth which, if exceeded (e.g., through deposition) will cause a warning message to be printed in the echo file.
POR is the porosity of the bed (volume voids/total volume).
D is the effective diameter of the transported particles.
W is the corresponding fall velocity in still water.
RHO is the density of the particles.
KSAND and *EXPSND* are the coefficient and exponent in the sandload power function formula.
TAUCD is the critical bed shear stress for deposition.
TAUCS is the critical bed shear stress for scour.
M is the erodibility coefficient of the sediment.

Table B-7. Land Use-Specific Washoff Potency Factor (POTFW) Parameters Values for Trace Metals for the San Gabriel River Model

	Trace Metal		
Land Use*	**Copper**	**Lead**	**Zinc**
Barren	0.12	0.02	0.50
Cropland	0.30	0.10	2.50
Forest	0.12	0.02	0.50
Pasture	0.30	0.10	2.50
Strip Mining	0.30	0.18	4.00
Residential Pervious	0.62	0.27	1.93
Wetlands	0.12	0.02	0.50
Commercial Pervious	1.00	1.00	10.20
Transportation Pervious	0.30	0.18	4.00
Heavy Industrial Pervious	0.30	0.18	4.00
Light Industrial Pervious	0.30	0.18	4.00
Mixed Pervious	0.80	0.25	5.00
Transportation Impervious	0.30	0.18	4.00
Commercial Impervious	1.00	1.00	10.20
Heavy Industrial Impervious	0.30	0.18	4.00
Light Industrial Impervious	0.30	0.18	4.00
Residential Impervious	0.62	0.27	1.93
Mixed Impervious	0.80	0.25	5.00