

Water Quality Report

Table of Contents

1	Introduction	4
2	Environmental Setting	5
2.1	Physical Setting	5
2.1.1	Project Land Uses	5
2.2	Receiving Water Bodies	5
3	Regulatory Setting	6
3.1	Clean Water Act	6
3.2	Basin Plan	6
3.3	California Toxics Rule	7
3.4	MS4 Permit	7
4	Constituents of Concern and Significance Criteria	9
4.1	List of Constituents of Concern	9
4.2	Significance Criteria for Evaluating Impacts	11
4.3	Thresholds for Significance	11
5	Project Design Features	12
5.1	Site Design Principles	12
5.2	Source Controls	14
5.3	Structural Components of the Stormwater Treatment System	16
5.4	Description of the Structural BMPs	19
5.4.1	Mechanical Separation Unit	19
5.4.2	Natural Treatment System Wetland	21
6	Water Quality Assessment	22
6.1	Water Quality Model Description	22
6.2	Assessment of Modeled Constituents	23
6.2.1	Runoff & Treatment Volumes – Water Quality Modeling	24
6.2.2	TSS & Nutrient Pollutant Loads	26
6.2.3	Copper, Lead, & Zinc Pollutant Loads	29
6.2.4	Developed vs. Existing Water Quality	33
6.3	Qualitative Assessment of Other Constituents	36
6.3.1	Pesticides	36
6.3.2	Organochlorine Compounds (PCBs, DDT, Chlordane, Dieldrin, Toxaphene)	37
6.3.3	Hydrocarbons	37
6.3.4	Pathogens	38
6.3.5	Trash and Debris	39
6.3.6	Dry Weather Flows	39
6.4	Other Requirements	40

Parkside Estates Water Quality Evaluation

6.4.1	BMP Sizing Requirements	40
6.4.2	BMP Effectiveness Requirements	40
6.4.3	Construction Activities	41
6.4.4	PDFs for Project Areas with High Potential for Pollutant Generation	41
6.4.5	Maximum Extent Practicable	42
6.5	Conclusions	42
7	Monitoring	44
7.1	Objectives	44
7.2	Monitoring Activities	44
7.2.1	Visual Site Inspection	44
7.2.2	Field Tests	45
7.2.3	Basic Pollutant Suite Testing	45
7.2.4	Expanded Pollutant Suite Testing	46
7.2.5	Flow Monitoring	46
7.2.6	Aquatic Biology, Sediment, and Plant Tissue Monitoring	46
7.2.7	Vector and Pest Monitoring	47
7.3	Documentation	47
8	Operation and Maintenance	47
8.1	Objectives	47
8.2	General Operation and Maintenance Activities	48
8.3	Routine Operation and Maintenance Activities	48
8.3.1	Site Inspection	48
8.3.2	Water Quality Testing	49
8.3.3	Trash & Debris Removal	50
8.3.4	Pump/Valve Inspection, Adjustment & Maintenance	50
8.3.5	Minor Vegetation Removal/Thinning	50
8.3.6	Minor Sediment Removal	50
8.3.7	Integrated Pest/Plant Management	50
8.3.8	Intermittent Flooding/Drying	54
8.4	Major Operation and Maintenance Activities	54
8.4.1	Pump/Valve Removal & Replacement	54
8.4.2	Major Vegetation Removal & Planting	54
8.4.3	Major Sediment Removal	55
8.5	Emergency Operation and Maintenance Activities	55
9	References	56

Tables

Table 6-1: Project and Surrounding Land Uses, Areas, and Imperviousness 24
Table 6-2: Average Storm Runoff & Dry Weather Flow Volumes for Water Quality
Modeling 25
Table 6-3: Average Annual Storm TSS & Nutrient Loads 26
Table 6-4: Average Annual Storm TSS & Nutrient Concentrations for Scenario 2 27
Table 6-5: Average Annual Dry Weather TSS & Nutrient Loads 28
Table 6-6: Average Annual Nutrient Loads – Summation Wet & Dry Weather Results . 29
Table 6-7: Average Annual Stormwater Trace Metal Loads 30
Table 6-8: Average Annual Stormwater Trace Metal Concentrations Scenario 2..... 31
Table 6-9: Average Annual Dry Weather Flow Trace Metal Loads..... 32
Table 6-10: Average Annual Trace Metal Loads – Summation Wet & Dry Weather
Results 33
Table 6-11: Comparison of Pollutant Load Removal: Treating Project Flows Only &
Treating Combined Flows..... 35
Table 7-1: Monitoring Activities 45
Table 8-1: Typical Operation & Maintenance Activities..... 49

Figures

Figure 5-1: Graphic of Modeled Structural BMPs of the Stormwater Management System
..... 18
Figure 5-2: Modeled Structural BMPs of the Stormwater Management System
superimposed over aerial photograph 19
Figure 5-3: Plan View of Proposed NTS Wetland..... 20
Figure 5-4: Cross-section View of Proposed NTS Wetland 20
Figure 5-5: CDS® Separation Unit..... 21

Water Quality Model Appendices

Table of Contents

A	Water Quality Modeling Methodology.....	A-1
	A.1. Introduction.....	A-1
	A.2. Project Design Features	A-2
	A.3. Modeling Steps	A-4
	A.4. Model Methodology.....	A-5
	A.5. Model Parameters	A-7
	A.1.1 Annual Rainfall Depth (Step 1a).....	A-7
	A.1.2 Dry Weather Runoff Rate (Step 1b)	A-8
	A.1.3 Land Use Areas & Percent Imperviousness (Step 2).....	A-9
	A.1.4 Event Mean Concentrations (EMCs) (Step 3a)	A-10
	A.1.5 Dry Weather Runoff Concentrations (Step 3b)	A-12
	A.1.6 Capture Efficiency of Stormwater Runoff (Step 4a)	A-14
	A.1.7 Capture Efficiency of Dry Weather Flows (Step 4b).....	A-18
	A.1.8 Stormwater Treatment Performance (Step 5a)	A-18
	A.1.9 Dry-Weather Treatment Performance (Step 5b).....	A-19
	A.6. References.....	A-20
B	CDS Performance Estimates.....	B-1
	B.1. Particle Size Distributions.....	B-1
	B.2. CDS Particle Size Removal	B-2
	B.3. Estimates for removal of trace metals and nutrients.....	B-4
	B.4. References.....	B-4

Tables

Table A-1: Parameters Used for Selection of NCDC Rainfall Station.....	A-8
Table A-2: Rainfall Analysis Statistics (analysis for storms > 0.1 inches depth)	A-8
Table A-3: Land Use (ares) and Percent Imperviousness for the Project Area	A-9
Table A-4: LA County Stations used for Land Use Water Quality Modeling	A-11
Table A-5: Event Mean Concentration Results for Selected Land Uses	A-12
Table A-6: Dry Weather Concentrations	A-13
Table A-7: Soils Parameters	A-16
Table A-8: SWMM Runoff Parameters.....	A-16
Table A-9: Evaporation Parameters for Hydrology Model	A-17
Table A-10: BMP Performance – Modeled Effluent Concentration or % Removal	A-19
Table A-11. Estimated Effluent Quality from the San Joaquin Marsh.....	A-20
Table B-1: Particle Size Distributions by Weight from Runoff Studies.....	B-1
Table B-2: Schwartz and Wells Results for CDS Unit with 2400-Micron Screen at 125 GPM Flow Rate	B-3
Table B-3: Average Particle Size Distribution by Weight for Use in Estimating CDS Unit Sediment Removal.....	B-3

Figures

Figure A-1: % Capture as a Function of Design Flow Rate (in/hr)..... A-14
Figure B-1: Cumulative Particle Size Distributions (by weight), Study Results and
Average Values B-2