

DEPARTMENT OF BUILDING SURVEYING FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING UNIVERSITI TEKNOLOGI MARA

WATER CONSERVATION SYSTEM PRACTICES AT BUILDING IN KLANG VALLEY

This academic project is submitted in partial fulfillment of the requirement for the Bachelor Of Building Surveying (Hons.)

NURUL HUDA BT. ABD. KADIR (2006131231)

OCTOBER 2009

CHAPTER 1

INTRODUCTION

1.0 Introduction

This chapter discussed regarding problem arising on water conservation system practice in Klang Valley, the significance of study, research question was developed in this chapter, objectives of this study also clearly mentioned, the scope and limitation and thesis overview also revealed in this chapter.

LIST OF FIGURE

Figure No.		Page
Figure 2.1	Area of Klang Valley	26
Figure 2.2	Dual-flush Cera toilet from lab uses 0.3	30
	gallon (1. 1 liter) for a half flush and 1.6	
	gallons (6 liters) for a full flush, with	
	flush levels adjustable up and down	
Figure 2.3	Waterless urinals save about 40,000 gallons	30
	(151,400 liters) of water per year per fixture.	
	A Sloan Valve Company waterless urinal.	
Figure 2.4	The rainwater harvesting system for Rinker	37
	Hall at the University of Florida has a	
	cast-in-place cistern (shown here under	
	construction) located under the South	
	stairwell of the building. The rainwater is	
	used for flushing the building's toilets	
Figure 2.5	Cooling Tower Schematic	43
Figure 2.6	Cooling Tower Water Consumption vs.	44
	Concentration Ratio	
Figure 2.7	A restored wetland at the Lewis	65
	Environmental Studies Center at Oberlin	
	College in Oberlin, Ohio, accepts waste	
	water treated by the building's Living	
	Machine.	

Figure 3.1	Detail diagram of Data Collection	87
Figure 3.2	Detail diagram of Data Analysis	88
Figure 3.3	Flow Chart Summary of Research Methodology	89
Figure 4.1	External View of Freescale	95
Figure 4.2	The Location Plan of Fresscale	100
Figure 4.3	The Organisation Chart of Freescale	101
	Semiconductor	
Figure 4.4	The Organisation Chart of Freescale	101
	Project Management Team	
Figure 4.5	The Site Plan of Plant	103
Figure 4.6	The Flow chart of System Introduction	104
Figure 4.7	The Flow Chart of Semiconductor Industrial	105
	Waste water Treatment System	
Figure 4.8	The flow chart of Semiconductor Industrial	107
	Waste Water Treatment System	
Figure 4.9	The Monitor Page for 1st Equalization Tanks	110
Figure 4.10	The 1 st Equalization Tanks	110
Figure 4.11	pH 1 Adjustment Tank	112
Figure 4.12	Ozone Oxidation Tank	113
Figure 4.13	Ozone Generator	113
Figure 4.14	Aeration Tank	114
Figure 4.15	Concentrate Ozone Oxidation Tank	115
Figure 4.16	The Monitor Page for Adjustment Tank	117
Figure 4.17	pH 2 and 3 Adjustment Tank	118
Figure 4.18	The monitor page for CMF Supply Tank	119
Figure 4.19	CMF Supply Tank	119
Figure 4.20	The Monitor Page for CMF Filtration	121
Figure 4.21	CMF Filtration	121
Figure 4.22	Backwash Tank	122

Figure 4.23	Filtration Tank	124
Figure 4.24	The Monitor Page for ACF Filtration	125
Figure 4.25	ACF Filtration	126
Figure 4.26	RO Feed Tank	127
Figure 4.27	The Monitor Page for RO Filter	129
Figure 4.28	RO Filter	129
Figure 4.29	CIP Tank for RO	130
Figure 4.30	Permeate Tank	131
Figure 4.31	The Monitor Page for Equalization Tank 2	132
Figure 4.32	Equalization Tank 2	133
Figure 4.33	Flow Meter	134
Figure 4.34	The Monitor Page for pH Adjustment Tank	135
Figure 4.35	pH Adjustment Tank	136
Figure 4.36	Rapid Mix Tank	136
Figure 4.37	Flocculation Tank	137
Figure 4.38	Clarifier Tank	138
Figure 4.39	Transfer Tank	139
Figure 4.40	Multi-Media Filters	140
Figure 4.41	The Monitor Of pH Adjustment Tank	142
Figure 4.42	Final pH Adjustment Tank	142
Figure 4.43	Caustic Supply System	143
Figure 4.44	Cooling Tower	145
Figure 4.45	Water Closet	146
Figure 4.46	Urinal	146
Figure 4.47	Landscaping Area of Freescale	147
Figure 4.48	The Front View of Zoo Negara	148
Figure 4.49	The Location Map of Zoo Negara	150
Figure 4.50	Zoo Negara Organisation Chart	151
Figure 4.51	Details of Board	153
Figure 4.52	Piping System with Diameter of 450mm - 500mm	154
Figure 4.53	The Stainless Steel Filter	154
Figure 4.54	The Storage Tank	155