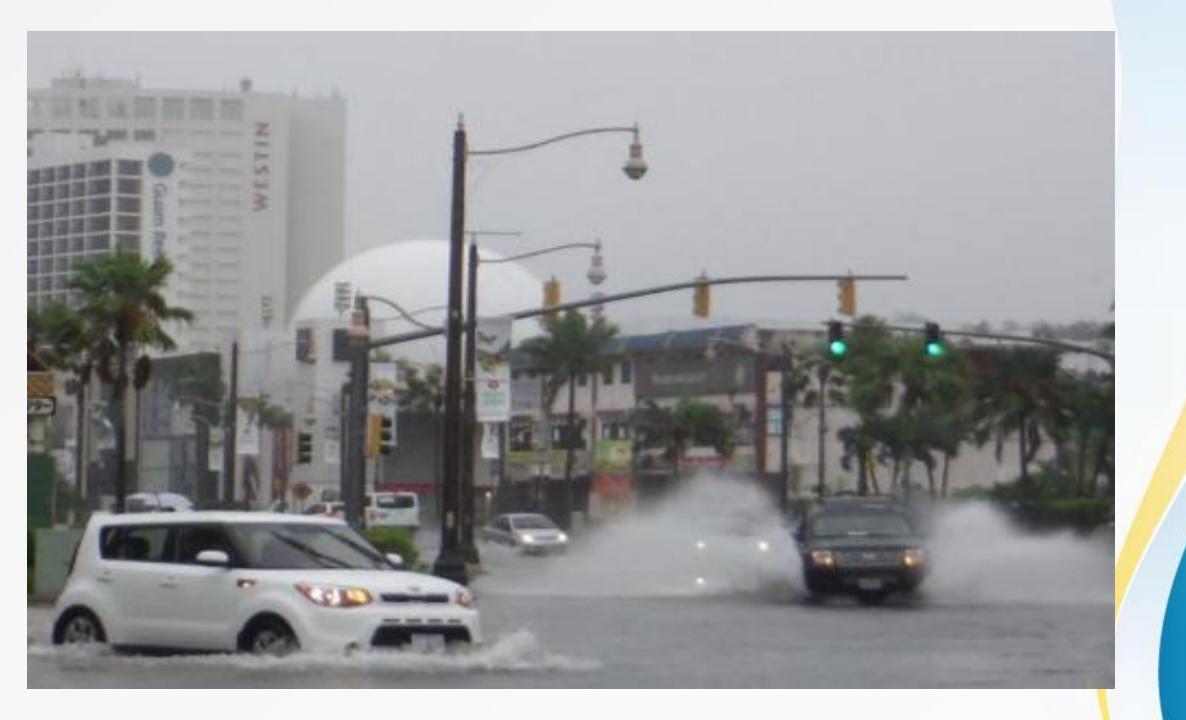
Flood Policies/Stormwater Management

Guam Standard Design Criteria in Stormwater Management



Overview

1.) 2006 CNMI & Guam Stormwater Management Manual (Vol. 1 and Vol. 2)

2.) 2010 Guam Transportation Stormwater Drainage Manual



GUAM TRANSPO STORMWATER DRAI

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Description of Public Works S42 North Harms Day Tampaning

Place (871) 848-511 Fac: (871) 848-6176

Volume I

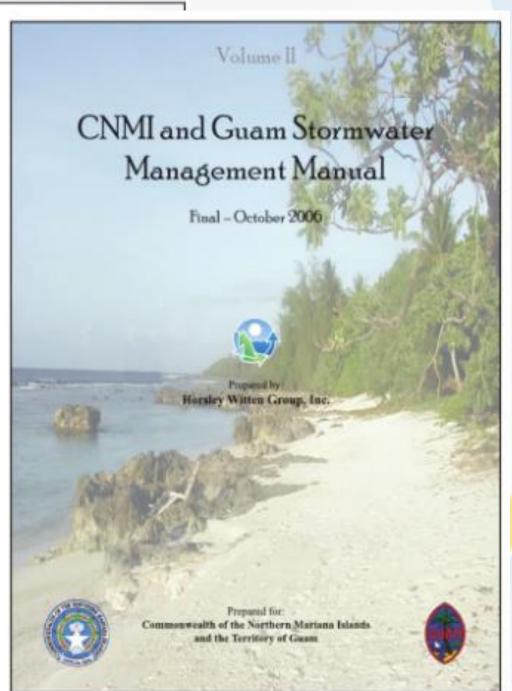
CNMI and Guam St Management M

Final - October 200



Prepared by Horsley Witten Group.

Prepared for Commonwealth of the Northern Me and the Territory of Gra



Design Standard Sizing Criteria of Both Manuals

CNMI & Guam Stormwater Management Manual	Guam Transportation Stormwater Drainage Manual
BMP design sizing criteria for Post- Construction requirements	
 uses unified sizing approach for treatment criteria: Recharge criteria-using 1.5 precipitation for limestome and based on hydrologic soil group recharge rate for volcanic dominated regions Note: Stormwater runoff from hotspot area are not allowed to infiltrate into the groundwater without 100 % pre-treatment Water Quality- 80 % rule discharge to moderate water quality and 90 % rule discharge to high quality waters and hotspots or 0.8 inch and 1.50inches precipitation respectively Channel Protection-24 hours extended detention of post-developed 1-year, 24-hour rainfall event overbank Flood Control (Qp-25)-control peak discharge from 25 year storm to 25 year predevelopment rates. (25 yr, 24 hr storm event which is 20 inches per Lander 2004) 	 Uses Rational Method or rainfall event return frequency approach for sizing BMPs Establishes that the post-development discharge rates must not exceed pre development peak discharge rates for the 25-yr, 1-hr storm event (~2.5 inches). Detention volumes for the 25-yr, 1-hr storm event should be emptied within a 72-hr period from the start of the design storm event. The stormwater quality volume to be treated in accordance with the runoff from a storm event that corresponds to the 90th or 80th percentile amount of total annual average rainfall. The 80% corresponds to 56 percent of the 2-yr, 1-hr storm precipitation depth, whereas the 90 % corresponds to 72 percent of the 2-yr, 1-hr storm precipitation depth, with a peak discharge not to exceed 25 year, 1 hr

CNMI & Guam Stormwater Management Manual (C&GSMM)	Guam Transportation Stormwater Drainage Manual (TSDM)
 Requirements are waived for Cpv and Qp-25 if the site directly discharges to the coastal waters, reservoirs, rivers or streams Uses model TR 55 or approved equivalent for determining pre-treatment peak discharge rates The manual was developed based on available local data regarding rainfall, geology, hydrology and soils. Rainfall data by Dr. Mark Lander 	 Flow based quality treatment BMPs be designed for the peak runoff flow rate from the 2-yr, 1 hr. storm event Requirement are exempted in projects discharging runoff to coastal waters subject to tidal, conveyance system to surface waters, projects over water structures like bridges and large reservoir.
 Composed of general performance standards 1-13 for stormwater management to help prevent adverse impacts of stormwater runoff 	
BMP Treatment Criteria Standards for Construction	
 Composed of general performance criteria E&SC Standard 1-11 to help prevent adverse impacts during construction 10 year frequency storm treatment criteria for all construction sites. Temporary sediment trap shall be designed to retain runoff minimum of 1.5" precipitation event or sediment basin with 5500 cu ft/acre minimum capacity 	 All temporary sediment trapping devices should be designed to treat run-off from a minimum of 3-year frequency storm BMP standards varies based on rainfall and other factors Guidelines are provided to determine which of the nine minimum requirements must be met for a given transportation project.

Guam Stormwater Drainage Manual Current Update by ACOE in partnership with Gov Guam

- 2 manuals have different methods which create confusion amongst engineering industry
- GEPA and DPW agreed that the water quality and erosion and sediment control BMPs sizing and design criteria in C&GSMM are adequate and not need to be revised
- ACOE developed the simplified methodology tools, spreadsheet type, site stormwater calculations for projects, provided with design examples
 - The tools adopt or uses Dr. Landers (2004) rainfall data
 - Calculator tools goal is to provide an easy stormwater system design calculations for engineers,
 - calculator tools are found in BSP website

In comparison between the 2 manuals for BMPs design criteria, shows some inconsistencies

- Strategies in resolving the Gaps in Stormwater Management in Guam (Guam EPA thoughts)
 - Resolve the apparent inconsistencies between the stormwater manuals. GEPA and DPW must decide which criteria has more stringent requirements to help resolve flooding and confusion.
 - Due to both manual are not governed by any regulations only through EO, policy/regulations update must consider adopting the manuals, to require the use and implementation.
 - Or maybe incorporate the 2 manuals to become one to help resolve issues of confusion.
 - Policy development, implementation and enforcement of post-construction stormwater management systems in Guam to include proper operation and maintenance anf performance evaluation (which will serve as a data for future policy update.
 - Or maybe LID concept design for residential like rain garden system

Questions?

Please contact Ms. MARICAR QUEZON, Water Pollution Control Program, Guam Environmental Protection Agency at 671-588-4751

Thank You...