GUAM ENVIRONMENTAL PROTECTION AGENCY

GUAM WATER QUALITY STANDARDS
2001 REVISION

"ALL LIVING THINGS OF THE EARTH ARE ONE "

HARMON PLAZA COMPLEX UNIT D-107
130 ROJAS ST.
HARMON, GUAM 96911

OFFICE OF THE GOVERNOR
GUAM

AUG 1 0 2001

The Honorable Joanne M. S. Brown
Legislative Secretary
I Mina'Bente Sais na Liheslaturan Guåhan
Twenty-Sixth Guam Legislature
Suite 200
130 Aspinal Street
Hagåtña, Guam 96910

Received by: EMM
Time: 2:40 PM
Date: 8-10-01

Dear Legislative Secretary Brown:

Enclosed please find Substitute Bill No. 80 (LS) entitled: "AN ACT TO *AMEND* THE GUAM ENVIRONMENTAL PROTECTION AGENCY WATER QUALITY STANDARDS" which I have **signed** into law as **Public Law No. 26-32.**

Very truly yours,

Madeleine Z. Bordallo
I Maga'Lahen Guåhan, Akto
Acting Governor of Guam

Attachment: copy attached for signed bill or overridden bill
original attached for vetoed bill

cc: The Honorable Antonio R. Unpingco
Speaker

OFFICE OF THE LEGISLATIVE SECRETARY
ACKNOWLEDGMENT RECEIPT
Received By
Time 220pm
Date 8/20/01

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MINA'BENTE SAIS NA LIHESLATURAN GUÅHAN
2001 (FIRST) Regular Session

CERTIFICATION OF PASSAGE OF AN ACT TO *I MAGA'LAHEN GUÅHAN*

This is to certify that Substitute Bill No. 80 (LS), "AN ACT TO *AMEND* THE GUAM ENVIRONMENTAL PROTECTION AGENCY WATER QUALITY STANDARDS," was on the 5th day of July, 2001, duly and regularly passed.

ANTONIO R. UNPINGCO
Speaker

Attested:

JOSEPH F. ADA, Acting
Legislative Secretary

This Act was received by *I Maga'lahen Guåhan* this 30th day of July, 2001, at 4:30 o'clock P.M.

Assistant Staff Officer
Maga'lahi's Office

APPROVED:

MADELEINE Z. BORDALLO
I Maga'lahen Guåhan, Akto

Date: 8/10/01

Public Law No. 26-32

MINA'BENTE SAIS NA LIHESLATURAN GUÅHAN
2001 (FIRST) Regular Session

Bill No. 80 (LS)
As substituted by the
Committee on Natural
Resources and amended.

Introduced by:

J. M.S. Brown
K. S. Moylan
J. F. Ada
T. C. Ada
F. B. Aguon, Jr.
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A. L.G. Santos
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J. T. Won Pat

AN ACT TO *AMEND* THE GUAM ENVIRONMENTAL PROTECTION AGENCY WATER QUALITY STANDARDS.

BE IT ENACTED BY THE PEOPLE OF GUAM:

Section 1. Legislative Findings and Intent. In accordance with the Administrative Adjudication Law, Chapter 9 of Title 5 of the Guam Code Annotated, the Guam Environmental Protection Agency ("GEPA") transmitted to *I Liheslaturan Guåhan*, the *"Guam Environmental Protection Agency Water Quality Standards."* *I Liheslaturan Guåhan* seeks to amend said regulations.

1 **Section 2. Amendment of GEPA Regulations.** *I Liheslaturan Guåhan*
2 hereby amends the GEPA rules and regulations entitled, "*Guam Environmental*
3 *Protection Agency Water Quality Standards,*" to read as set forth in **Exhibit A,**
4 and incorporated herein by reference.
5 **Section 3. Effective Date of Water Quality Standards.** These water
6 quality standards shall become applicable for the waters of Guam upon the
7 determination by the U.S. E.P.A. under § 303(c)(3) of the Clean Water Act, also
8 known as the Water Pollution Control Act, that the revised or new standards
9 meet the requirements of the Water Pollution Control Act.
10 **Section 4. Severability.** *If* any provision of this Law or its application
11 to any person or circumstance is found to be invalid or contrary to law, such
12 invalidity shall *not* affect other provisions or applications of this Law which can
13 be given effect without the invalid provisions or application, and to this end the
14 provisions of this Law are severable.

Exhibit A

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GAR GEPA.
Division II - Water Control.
Chapter 5.
Water Quality Standards.

Section 5101. Policies.

A. Statement of Policy. It shall be the public policy of Guam to:

1. conserve, protect, maintain, and improve the quality of Guam's waters for human consumption (drinking, fish and shellfish harvesting and food processing); for the growth and propagation of aquatic life; for marine research; for the preservation of coral reefs and wilderness areas; and for domestic, agricultural, commercial, industrial, recreational and other legitimate uses;

2. provide that no pollutant is discharged into any of Guam's waters, unless: (a) the discharge first receives processing/treatment to remove all harmful or hazardous products, or provides the control technology necessary to protect the designated beneficial uses of waters; (b) the discharge meets the effluent limitations established for that discharge; and (c) best management practices are applied as necessary;

3. provide for the prevention, abatement and control of new and existing water pollution sources;

4. maintain and improve the chemical, physical and biological integrity of the waters of Guam as necessary to meet Clean Water Act Section 101(a);

5. provide protection from point or non-point source discharges to wetlands in the same way as other surface waters;

6. provide protection from point and non-point discharges, including discharges from ponding basins and sinkholes to groundwater in the same way as surface waters; and

7. eliminate all point source discharges to certain near-shore waters.

Further, under the terms of the U.S. Water Pollution Control Act 92-500, as amended by all Public Laws through 1986:

1. it is Guam's goal to eliminate the discharge of pollutants into Guam's waters; and

2. it is Guam's goal that effective water quality guidelines are established and enforced which provide for the protection and propagation of fish, shellfish and other aquatic and marine life, and provide for safe public recreation in and on Guam's waters.

Therefore, pursuant to the authority contained in the Guam Water Pollution Control Act (Sections 47104 and 47108 of Chapter 47, Title 10 of the Guam Code Annotated), which authorized the formulation of standards of water purity and classification of waters according to their most beneficial uses, the Guam Environmental Protection Agency hereby adopts the following standards of water quality for Guam.

B. Anti-Degradation Policy.

1. Existing in-stream water uses, and the level of water quality necessary to protect these uses, shall be maintained and protected. No further water quality degradation which would interfere with or become injurious to existing designated uses is allowable.

2. Water quality for those waters not attaining their uses due to impacts from pollution shall be improved so uses are attained. Where the natural conditions are of lower quality than criteria assigned, the natural conditions shall constitute the water quality criteria.

3. If a project has been proposed, and its implementation may lower water quality in a water whose quality exceeds levels necessary to support the propagation of fish, shellfish and other commonly harvested organisms, and wildlife and recreation in and on the water, that water quality shall be maintained and protected unless:

a. an interdisciplinary review consistent with the National Environmental Policy Act ("NEPA") has been submitted for the project. This review will insure that the project complies with the applicable local and Federal laws and regulations and procedures relating to the protection and enhancement of the environment. As necessary, the determination will include mitigative provisions as a condition for granting approval of a specific project. The three (3) basic environmental determinations that will apply to a specific project are:

i. a determination to categorically exclude a project from a formal environmental review;

ii. a Finding of No Significant Impact ("FNSI") based upon formal environmental review supported by an Environmental Impact Document ("EID"); and

iii. a determination to prepare an Environmental Impact Statement ("EIS"). The environmental impact determination will consider such technical, economic, social and other criteria as provided by Sections 301 and 302 of the Clean Water Act;

b. the public has been notified of the anticipated action, and has been provided the information necessary for meaningful public involvement and response at least thirty (30) days before the action; a public hearing or meeting has been held (in accordance with the Administrative Adjudication Law, 5 GCA Chapter 9, and with a thirty (30) day notice) if the Agency determines that there is significant public interest or that a hearing or meeting would be useful; and a responsiveness summary has been completed (which shall identify the public participation activity conducted, describe the matter on which the public was consulted, summarize the public's views and significant comments and set forth the Agency's responses); and

c. the Administrator finds that:

i. allowing lower water quality is necessary to accommodate important economic or social development;

ii. existing uses will be protected; and

iii. the project associated with the lowering includes the highest statutory and regulatory requirements for all new and existing point and non-point sources, and all cost-effective and reasonable best management practices for non-point sources.

4. When more than one (1) set of water quality criteria apply, including an overlap of category designations or at a boundary water between two (2) categories, the more stringent standard shall prevail.

5. Water quality shall be maintained and protected in Guam's Outstanding Resource Waters.

6. In those cases where potential water quality impairment associated with a thermal discharge is involved, the anti-degradation policy and implementing method shall be consistent with Section 316 of the Clean Water Act.

C. Groundwater Protection Zone ("GPZ").

A primary means of groundwater pollution prevention is to direct, control and encourage appropriate land uses, land use intensities and land use development patterns to achieve sustainable groundwater quality over the long term. The Groundwater Protection Zone ("GPZ") is an environmental land use management system which designates much of the land surface above Guam's principal source aquifer, the Northern Aquifer, for the protection of Resource Zone (G-1) waters and the Recharge Zone (G-2) waters.

A GPZ map has been developed as a land use management overlay applicable to any and all zoning and subdivision development requirements in Guam, including military land use activities. One (1) primary determinate of land use development potential, use intensity, density and patterns of growth is the availability of public sewer systems. This determinant is especially critical over Guam's Northern Aquifer to ensure that many potentially harmful (wastewater) pollutants generated are transported to acceptable treatment/disposal works.

The GPZ includes most, but not all, of the following: drinking water production wells and their respective well head protection zones, the Northern Guam Watershed, high development-potential, substantial agricultural, government subsidized rural housing, military, and existing industrial and commercial development lands.

1. Land use guidelines and performance standards should be applied in all appropriate circumstances within the GPZ and over the Northern Aquifer, including, but not limited to, the following:

a. industrial development should not occur without adequate public sewer infrastructure;

b. high density residential development (more than one (1) dwelling per one-half (1/2) acre should not occur without adequate public sewer service;

c. individual wastewater disposal systems and ponding basins and similar point source waste or storm water disposal works should not be permitted within a Wellhead Protection Zone; and

d. as practical, storm water disposal systems should be designed and operated to terminate in close proximity to, or within project property boundaries, to facilitate groundwater recharge.

Section 5102. Categories of Waters.

The categories of water established under these standards are Groundwater, Marine waters, and Surface waters. All categories of water are referenced on the Water Classification Map. Scaled down copies of these maps are included in these standards, enabling readers to understand their relative position, application and use.

A. Groundwater.

This category encompasses all subsurface water and includes basal and parabasal water, perched water, all water below the groundwater table, water percolating through the unsaturated zone (vadose water), all saline waters below and along the perimeter of the basal fresh water body (freshwater lens), and water on the surface that has been collected with the specific intent of recharging or disposing of that water to the subsurface by means of injection, infiltration, percolation, etc. The Northern Guam Water lens, which is the Principal Source Aquifer, and any other groundwater resources, as they are identified, shall continue to receive protection under the Guam Wellhead Protection Program and other applicable groundwater regulations.

1. Category G-1 Resource Zone.

The primary use of groundwater within this zone is for drinking (human consumption) and this use must be protected. Virtually all water of the saturated zone of Guam is included. Specifically, it includes all water occurring in the saturated zone below the groundwater table, all vadose water occurring in an unsaturated zone extending one hundred (100) feet (30.5 m) above any water table, or within twenty (20) feet of the ground surface of all fresh groundwater bodies, all water of the basal and parabasal freshwater bodies, and all water of and below the freshwater/salt-water transition zone beneath the basal water body (e.g. Wells A-1, A-2, A-3, MJ-1, & MJ-5). Tables 1 and 2 contain specific numerical standards for inorganic and organic chemicals, radionuclides and microorganisms.

2. **Category G-2 Recharge Zone.**

Water within this zone is tributary to, replenishes, and recharges the Category G-1 groundwater and must be of drinking water quality before it enters the Resource Zone. Water discharges within the Recharge Zone must receive treatment to the degree necessary to protect the underlying Category G-1 groundwater from any contamination, and must comply with the requirements of the groundwater quality standards, unless it can be shown by an engineering feasibility study that there will be no significant adverse effects on G-1 waters.

B. Marine Waters.

This category includes all coastal waters off-shore from the mean high water mark, including estuarine waters, lagoons and bays, brackish areas, wetlands and other special aquatic sites, and other inland waters that are subject to ebb and flow of the tides.

1. **Category M-1 Excellent.**

Water in this category must be of high enough quality to protect for whole body contact recreation, and to ensure the preservation and protection of marine life, including corals and reef-dwelling organisms, fish and related fisheries resources, and enable the pursuit of marine scientific research as well as aesthetic enjoyment. This category of water shall remain substantially free from pollution attributed to domestic, commercial and industrial discharges, shipping and boating, or mariculture, construction and other activities which can reduce the waters' quality.

2. **Category M-2 Good.**

Water in this category must be of sufficient quality to allow for the propagation and survival of marine organisms, particularly shellfish and other similarly harvested aquatic organisms, corals and other reef-related resources, and whole body contact recreation. Other important and intended uses include mariculture activities, aesthetic enjoyment and related activities.

3. **Category M-3 Fair.**

Water in this category is intended for general, commercial and industrial use, while allowing for protection of aquatic life, aesthetic

enjoyment and compatible recreation with limited body contact. Specific intended uses include the following: shipping, boating and berthing, industrial cooling water, and marinas.

C. Surface Waters.

This category includes all of surface freshwater and includes: (1) waters that flow continuously over land surfaces in a defined channel or bed, such as streams and rivers; (2) standing water in basins, such as lakes, wetlands, marshes, swamps, ponds, sinkholes, ponding basins, impoundments, and reservoirs, either natural or man-made; and (3) all waters flowing over the land as runoff, or as runoff confined to channels with intermittent flow.

1. Category S-1 High.

Surface water in this category is used for drinking water, wilderness areas, propagation and preservation of aquatic life, whole body contact recreation and aesthetic enjoyment. It is the objective of these standards that these waters shall be kept free of substances or pollutants from domestic, commercial and industrial discharges, or agricultural activities, construction or other land-use practices that may impact water quality.

2. Category S-2 Medium.

Surface water in this category is used for recreational purposes, including whole body contact recreation, for use as potable water supply after adequate treatment is provided, and propagation and preservation of aquatic wildlife and aesthetic enjoyment.

3. Category S-3 Low.

Surface water in this category is primarily used for commercial, agricultural and industrial activities. Aesthetic enjoyment and limited body contact recreation are acceptable in this zone, as well as maintenance of aquatic life. Discharges within this zone may be required to have construction and/or discharge permits under existing Guam Sediment and Soil Erosion regulations or under National Pollution Discharge Elimination System ("NPDES").

D. **Outstanding Resource Waters.**

1. **Category Outstanding Resource Waters.**

These waters may include surface waters (marine, freshwater, wetlands, etc.) in parks, wildlife refuges, and publicly owned lakes and reservoirs, and waters of exceptional recreational or ecological significance (e.g. waters which provide a habitat for identified threatened or endangered species), as determined by the Administrator.

Section 5103. Water Quality Criteria.

A. **General Criteria Applicable to All Waters of Guam.**

1. All waters shall meet generally accepted aesthetic qualifications, shall be capable of supporting desirable aquatic life, and shall be free from substances, conditions or combinations thereof attributable to domestic, commercial and industrial discharges or agricultural, construction and land-use practices or other human activities that:

a. cause visible floating materials, debris, oils, grease, scum, foam, or other floating matter which degrades water quality or use;

b. produce visible turbidity, settle to form deposits or otherwise adversely affect aquatic life;

c. produce objectionable color, odor or taste, directly or by chemical or biological action;

d. injure or are toxic or harmful to humans, animals, plants or aquatic life; or

e. induce the growth of undesirable aquatic life.

2. Analytical testing methods for these criteria shall be in accordance with the most recent editions of "Standard Methods for the Examination of Water and Wastewater" prepared and published jointly by American Public Health Association ("APHA"), American Water Works Associations ("AWWA"), and Water Pollution Control Federation ("WPCF") (now Water Environment Federation); "Methods for Chemical Analysis of Water and Wastes" (U.S. Environmental Protection Agency Environmental Monitoring & Support Division, Cincinnati, Ohio 45268, (EPA-600/4-79-020)

March 1983), and other methods acceptable to GEPA and possessing adequate procedural precision and accuracy.

B. Water Quality Criteria For Groundwater G-1 and G-2.

1. The numerical groundwater quality standards limit the physical, chemical, radiological and microbiological characteristics of drinking water in terms of maximum acceptable concentrations. Although the groundwater limits presented herein represent drinking water of acceptable quality, there is no inference that better quality water supplies may be degraded.

2. Table 1 presents groundwater quality standards to protect drinking water quality by limiting the levels of specific contaminants that can adversely affect public health and are known to occur in public water systems. The table divides these contaminants into Inorganic Chemicals, Organic Chemicals, Radionuclides and Microorganisms.

TABLE 1.
INORGANIC CHEMICALS.

Pollutants	(mg/l)
Antimony	0.006
Arsenic	0.05
Asbestos (fibers >10μm)	7 MF/L (million fibers/liter > 10 μm)
Barium	2.0
Beryllium	0.004
Cadmium	0.005
Chromium (total)	0.1
Copper	1.3
Cyanide (as free cyanide)	0.2
Fluoride	4.0
Lead	0.015
Inorganic Mercury	0.002
Nickel	0.1
Nitrate (as nitrogen)	10
Nitrite (as nitrogen)	1
Selenium	0.05
Sulfate	500
Thallium	0.0005

ORGANIC CHEMICALS.

Pollutants	(mg/l)
Acrylamide	zero
Alachlor	0.002
Aldicarb	0.001
Aldicarb sulfone	0.001
Aldicarb sulfoxide	0.001
Atrazine	0.003
Benzo(a)anthracine (PAH)	0.0001
Benzene	0.005
Benzo(a)pyrene (PAH)	0.0002
Benzo(k)fluoranthene (PAH)	0.0002
Butyl benzyl phthalate (PAE)	0.1
Carbofuran	0.04
Carbon tetrachloride	0.005
Chlordane	0.002
Chrysene (PAH)	0.00032
2,4-D	0.07
Dalapon	0.2
Di{2-ethylhexyl}adipate	0.4
Dibenzo(a,h)anthracene (PAH)	0.0003

Pollutants	(mg/l)
1,2-Dibromo-3-chloropropane (DBCP)	0.0002
Dichlorobenzene(orth-)	0.6
Dichlorobenzene (dmeta-)	0.6
Dichlorobenzene (para-)	0.075
Dichloroethane (1,2-)	0.005
Dichloroethylene (1,1-)	0.007
Dichloroethylene (cis-1,2-)	0.07
Dichloroethylene (trans-1,2-)	0.1
Dichloromethane (methylene chloride)	0.005
Dichloropropane (1,2-)	0.005
Di(2-ethylhexyl) phthalate (PAE)	0.006
Dinoseb	0.007
Diquat	0.02
Endothall	0.1
Endrin	0.002
Epichlorohydrin	zero
Ethylbenzene	0.7
Ethylene dibromide	0.00005
Gylphosate	0.7
Heptachlor	0.0004
Heptachlor epoxide	0.0002

Pollutants	(mg/l)
Hexachlorobenzene	0.001
Hexachlorocyclopentadiene	0.05
Indeno(1,2,3-c,d)pyrene	0.0004
Lindane	0.0002
Methoxychlor	0.04
Monochlorobenzene	0.1
Oxamyl (vydate)	0.2
Pentachlorophenol	0.001
Picloram	0.5
Polychlorinated Biphenyls (PCB's)	0.0005
Simazine	0.004
Styrene	0.1
2,3,7,8-TCDD (dioxin)	0.00000003
Tetrachloroethylene	0.005
Toluene	1
Toxaphene	0.003
2,4,5-TP (silvex)	0.05
1,2,4-Trichlorobenzene	0.07
Trichloroethane (1,1,1-)	0.2
Trichloroethane (1,1,2-)	0.003

Pollutants	(mg/l)
Trichloroethylene	0.005
Trihalomethanes * Chloroform * Bromodichloromethane * Dibromochlormethane * Bromoform	0.100
Vinyl chloride	0.002
Xylenes (total)	10

RADIONUCLIDES.

Pollutants	Acceptable levels
Beta particle and photon activity (formerly man-made radionuclides)	4 mrem/year
Gross alpha particle activity	15 pCi/l
Radium 226 & Radium 228	5 pCi/l
Uranium	0.02 pCi/l

MICROORGANISMS.

Pollutants	Acceptable levels
Giardia lamblia	zero
Legionella	zero
Standard Plate Count	n/a
Total Coliform (including fecal coliform and E. Coli[1]	zero
Turbidity	1.0 NTU
Viruses	zero

3. Table 2 presents groundwater quality standards that are considered advisory (MTBE (methyl-t-butyl ether)), or secondary. Secondary standards are those which may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. The Administrator may choose to utilize these as enforceable standards.

TABLE 2.

Pollutants	Numeric Standards (mg/l)
Aluminum	0.05 to 0.2
Chloride	250
Color	15 (color units)
Copper	1.0
Corrosivity	non-corrosive
Fluoride	2.0
Foaming Agents	0.5

Pollutants	Numeric Standards (mg/l)
Iron	0.3
Manganese	0.05
Odor	3 threshold odor number
pH	6.5 - 8.5
Silver	0.10
Sulfate	250
Total Dissolved Solids	500
Zinc	5
Oil and Grease	0
MTBE (methyl-t-butyl ether)	0.02

C. Numeric Water Quality Criteria for Marine and Surface Waters.

1. Microbiological Requirements	Applicable to
a. All marine water bodies require the use of enterococci bacterial indicator.	
i. Concentrations of enterococci bacteria shall not exceed 35 enterococci/100 ml based upon the geometric mean of five (5) sequential samples taken over a period of thirty (30) days. No instantaneous reading shall exceed 104 enterococci/100 ml.	M-1, M-2
ii. Concentrations of enterococci shall not exceed 35 enterococci/100 ml based upon the geometric mean of five (5) sequential samples taken over a thirty (30) day period. No instantaneous reading shall exceed 276 enterococci/100ml	M-3

b. For all surface waters, microbiological analysis may include the use of Escherichia coli (E. coli) indicator and/or enterococci indicator.	
i. Concentrations of E. coli shall be no greater than 126 CFU/100 ml based upon the geometric mean of five (5) sequential samples taken over a thirty (30) day period. No instantaneous reading shall exceed 235 CFU/100 ml.	S-1, S-2
ii. Concentrations of enterococci shall be no greater than 33 CFU/100 ml based upon the geometric mean of five (5) sequential samples taken over a thirty (30) day period. No instantaneous reading shall exceed 61 CFU/100 ml.	S-1, S-2
iii. Concentrations of E. Coli shall be no greater than 126 CFU/ml based upon the geometric mean of five (5) sequential samples taken over a thirty (30) day period, nor shall any instantaneous reading exceed 406 CFU/100 ml.	S-3
iv. Concentrations of enterococci shall be no greater than 33 CFU/100 ml based upon the geometric mean of five (5) sequential samples taken over a thirty (30) day period, nor shall any instantaneous reading exceed 108 CFU/100 ml.	S-3

c. Where shellfish are commonly collected for human consumption, the following criteria apply: (1) water samples collected at growing areas will maintain no more than a median of fourteen (14) fecal coliform/100 ml; and (2) ten percent (10%) of water samples taken from a growing area should not exceed forty-three (43) fecal coliform/100 ml.

2. pH	**Applicable to**
i. pH shall remain within the range of 6.5-8.5	M-1, M-2, M-3
ii. pH shall remain within the range of 6.5-9.0	S-1, S-2, S-3
iii. For open ocean waters where the depth is substantially greater than the euphotic zone, the pH should not be changed more than 0.2 units from the naturally occurring variation, or in any case outside the range of 6.5-8.5.	M-1, M-2, M-3

3. Nutrients	Applicable to
a. Phosphorus:	
Orthophosphate (PO_4-P) shall not exceed 0.025 mg/l	M-1 S-1
Orthophosphate (PO_4-P) shall exceed 0.05 mg/l	M-2 S-2
Orthophosphate (PO_4-P) shall not exceed 0.10 mg/l	M-3 S-3
b. Nitrogen	
Nitrate-nitrogen (NO_3-N) shall not exceed 0.10 mg/l	M-1 S-1
Nitrate-nitrogen (NO_3-N) shall not exceed 0.20 mg/l	M-2 S-2
Nitrate-nitrogen (NO_3-N) shall not exceed 0.50 mg/l	M-3 S-3
c. Ammonia nitrogen per liter limits vary with pH:	
i. The one (1) hour average concentration of total ammonia nitrogen (mg N/l) does not exceed, more than once every three (3) years on the average, the Criteria Maximum Concentration ("CMC") (see Section 5105 Definitions) calculated using the following equation:	S-1, S-2, S-3

$$CMC = \frac{0.411}{1 + 10^{(7.204 - pH)}} + \frac{58.4}{1 + 10^{(pH - 7.204)}}$$

ii. The thirty-(30) day average concentration of total ammonia nitrogen (mg N/l) does not exceed, more than once every three (3) years on the average, the Criteria Chronic Concentration ("CCC") (see Section 5105 Definitions) calculated using the following equation:

$$CCC = \frac{0.0858}{1 + 10^{(7.688 - pH)}} + \frac{3.70}{1 + 10^{(pH - 7.688)}}$$

iii. CMC and CCC (mg N/l) at a few example pH Values.

pH	CMC	CCC
6.5	48.8	3.48
7.0	36.1	3.08
7.5	19.9	2.28
8.0	8.40	1.27
8.5	3.20	0.57
9.0	1.32	0.25

iv. The ambient concentration, averaged over a period of thirty (30) days, should not exceed the CCC. The ambient concentration, averaged over four (4) days, should not exceed a concentration two (2) times greater than the CCC. The averaging period applicable to the CMC is one (1) hour.

4. Dissolved Oxygen	Applicable to
Concentration of dissolved oxygen shall not be decreased to less than seventy-five percent (75%) saturation at any time, as influenced by salinity or naturally occurring temperature variations. Where natural conditions cause lower dissolved oxygen levels, controllable water quality factors shall not cause further reductions.	M-1, M-2, M-3 S-1, S-2, S-3

TABLE I. SATURATION D.O.

Freshwater		Marine Water And Wetlands			
Sat. mg/l	75% mg/l	Temp. C	Salinity ppt	Sat. mg/l	75% mg/l
7.6	5.6	30	32	6.2	4.6
8.2	6.2	26	32	6.7	5.0

5. Salinity	Applicable to
a. No alterations of marine environments shall occur that would alter the salinity of marine or estuarine waters and wetlands of Guam more than +10% of the ambient conditions, except when due to natural conditions.	M-1, M-2, M-3 estuarine waters and wetlands
b. The maximum allowable amount of chlorides and sulfates shall be 250 mg/l, and the total dissolved solids shall not exceed 500 mg/l or one hundred thirty-three percent (133%) of the ambient condition. The salinity of freshwater sources and wetlands shall not be more than twenty percent (20%) above ambient by discharges of saline water.	S-1, S-2, S-3

6. Total Non-Filterable Suspended Solids	Applicable to
a. Concentrations of suspended matter at any point shall not be increased from ambient conditions at any time, and the total concentration should not exceed 5 mg/l, except when due to natural conditions.	M-1 S-1
b. Concentrations of suspended matters at any point shall not be increased more than ten percent (10%) from ambient at any time, and the total concentration should not exceed 20 mg/l, except when due to natural conditions.	M-2 S-2
c. Concentrations of suspended matter at any point shall not be increased more than twenty-five percent (25%) from ambient at any time, and the total concentration should not exceed 40 mg/l, except when due to natural conditions.	M-3 S-3

7. Turbidity	Applicable to
a. Turbidity at any point, as measured by nephelometric turbidity units ("NTU"), shall not exceed 0.5 NTU over ambient conditions, except when due to natural conditions.	M-1 S-1
b. Turbidity values (NTU) at any point shall not exceed 1.0 NTU over ambient conditions, except when due to natural conditions.	M-2, M-3 S-2, S-3
c. When debris, rapidly settling particles and true color give low readings when using nephelometric methods in making turbidity determinations, and one (1) or more of these conditions exist in marine and surface water, secchi-disc determinations will be used. Secchi-disc visibility shall not decrease by more than five (5) meters from ambient conditions, except when due to natural conditions.	

8. Radioactive Materials	Applicable to
Discharges of radioactive materials at any level into any waters of Guam is strictly prohibited.	M-1, M-2, M-3 S-1, S-2, S-3

9. Temperature	Applicable to
Water temperature shall not be changed more than 1.0 degree Centigrade (1.8 of the degree Fahrenheit) from ambient conditions. Effluent (thermal) not meeting this standard shall be considered as having an adverse effect on coral and other aquatic resources.	M-1, M-2, M-3 S-1, S-2, S-3

10. Concentrations of Oil or Petroleum Products	Applicable to
The limits described below are unacceptable: 1) detectable as a visible film, or sheen, or results in visible discoloration of the surface with a corresponding oil or petroleum product odor; 2) causes damage to fish, invertebrates or objectionable degradation of drinking water quality; or 3) forms an oil deposit on the shores or bottom of the receiving body of water.	M-1, M-2, M-3 S-1, S-2, S-3

11. Toxic Substances.

A. General.

i. All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological, acute or

chronic responses in human, plant, animal or aquatic life. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, bioassays of appropriate duration, or other appropriate, scientifically defensible methods.

ii. All waters shall be maintained free of toxic substances in concentrations that produce contamination in harvestable aquatic life to the extent that it causes detrimental physiological, acute or chronic responses in humans or protected wildlife, when consumed.

iii. The survival of aquatic life in marine and surface waters subjected to a waste discharge, or other controllable water quality factors, shall not be less than that for the same water body in areas unaffected by the waste discharge.

iv. Whenever natural concentrations of any toxic substance or element occur and exceed the limits established in these standards, this greater concentration shall constitute the limit; provided, that this natural concentration was not directly affected by human-induced causes.

B. Numeric Criteria.

i. Appendix A contains a matrix of the 126 CWA Section 307(A) Toxic Pollutants, as well as a table of several additional toxic pollutants. Absence from this matrix or table does not mean that a substance is non-toxic, as the results of on-going or future research may result in it being added at a later date.

All Appendix A Toxic Pollutant Criteria are to be Applied to Guam's Categories of Waters, as Follows:

Water Categories	Applicable Criteria
M-1	Columns C1, C2 and D2 all pollutants
M-2	Columns C1, C2 and D2 all pollutants
M-3	Columns C1, C2 and D2 all pollutants

Water Categories	Applicable Criteria
S-1	Columns B1, B2, and D1 all pollutants
S-2	Columns B1, B2 and D2 all pollutants
S-3	Columns B1, B2 and D2 all pollutants

ii. For those priority pollutants in the Appendix A matrix that are metals, the limits are applied as total recoverable; for those that are carcinogens, the 10 to the minus sixth power risk level will be used (10^{-6}).

C. Pesticides.

i. For acceptable concentrations of all pesticides (Organochlorides, Organo-phosphates, Carbamates, Herbicides, Fungicides, Defoliants, and Botanicals) please refer to the U.S. Water Quality Criteria Guidance "Blue Book" (NAS/NAE,1973) (US-GPO#5501-00520), "Red Book" (USEPA, 1976), "Green Book", (FWPCA, 1968) and "Gold Book" (USEPA, 1986a), which is updated periodically.

ii. The setting or publishing of maximum concentration (limits) for specific pesticides and other toxics should in no way be construed as official approval or authorization for their use where such use is contrary to U.S. Environmental Protection Agency, or other Federal or local regulations.

Section 5104. Effluent Limitations.

A. General Requirements.

The Agency reserves the right to amend or extend the following criteria as improved standard methods are developed or revisions consistent with the enhancement of water quality are justified.

1. Dilution of effluent as a sole means of treatment is not acceptable as a method of treatment of wastes in order to meet the standards set forth in this Section. Rather, it shall be the obligation of any person discharging pollutants to the waters of Guam to provide the best pollutant removal or control consistent with technological feasibility, economic reasonableness and sound engineering judgement. In making a determination as to what degree of treatment is the best pollutant removal or control within the meaning of this Paragraph, the following shall be considered:

a. the degree of waste reduction that can be achieved by process change, improved house-keeping and recovery of individual waste components for reuse; and

b. whether individual process wastewater streams should be segregated or combined.

2. All point source discharges to Guam's waters will be controlled (permitted) through the Federal National Pollutant Discharge Elimination System ("NPDES"), or through the Guam Environmental Protection Agency's local permit program, consistent with the requirements of these programs.

3. A new or expanded facility using seawater shall conduct independent baseline studies of the existing ecosystems in the area that could be affected by the facility, before its construction.

4. For each new or expanded coastal power plant or other industrial installation using seawater for cooling, heating or industrial processing, the best available site, design, technology and mitigation measures feasible shall be used to minimize the intake, detrimental impacts to and mortality of all forms of marine life.

5. Where otherwise permitted, new warmed or cooled water discharges into coastal wetlands or into areas of special biological importance, such as marine reserves, shall not impair the designated use or significantly lower the water quality of the receiving area.

6. All sewage shall be treated to the degree required by the Agency to achieve standards of water quality prior to being discharged to the waters of Guam. Industrial waters and other wastes shall also be treated to the degree required by the Agency. All permitted discharges shall comply with all applicable water quality criteria. Highest priority shall be given to improving or eliminating discharges that adversely affect any of the following:

a. wetlands, estuaries, coral and other biologically sensitive sites;

b. areas important for water contact sports;

c. areas that produce shellfish or other similarly harvested for human consumption; and

d. ocean areas subject to massive waste discharge.

7. **Secondary Treatment.** The following Paragraphs describe the minimum level of effluent quality to be attained when secondary treatment is required. However, a lower percent removal may be allowed on a case-by-case basis; provided, that the permittee satisfactorily demonstrates that: (1) the treatment works is consistently meeting, or will consistently meet, its permit effluent concentration limits, but its percent removal requirements cannot be met due to less concentrated influent wastewater; (2) to meet the percent removal requirements, the treatment works would have to achieve significantly more stringent limitations than would otherwise be required by the concentration-based standards; and (3) the less concentrated influent wastewater is not the result of excessive infiltration/inflow.

a. **Biochemical Oxygen Demand (five (5) day).**

i. The arithmetic mean of the values for effluent samples collected over a period of thirty (30) consecutive days shall not exceed 30 mg/l.

ii. The arithmetic mean of the values for effluent samples collected in over a period of seven (7) consecutive days shall not exceed 45 mg/l.

iii. The arithmetic mean of the values for effluent samples collected over a period of thirty (30) consecutive days shall not exceed fifteen percent (15%) of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (eighty-five percent (85%) removal).

b. **Suspended Solids.**

i. The arithmetic mean of the values for effluent samples collected over a period of thirty (30) consecutive days shall not exceed 30 mg/l.

ii. The arithmetic mean of the values for effluent samples collected over a period of seven (7) consecutive days shall not exceed 45 mg/l.

iii. The arithmetic mean of the values for effluent samples collected over a period of thirty (30) consecutive days shall not exceed fifteen percent (15%) of the arithmetic mean of the values for influent samples collected approximately the same times during the same period (eighty-five percent (85%) removal).

c. **Microbiology.**

i. The appropriate Guam EPA microbiological indicator and standard for receiving waters classification will apply to effluent and/or;

ii. the arithmetic mean of the fecal coliform values for effluent samples collected over a period of thirty (30) consecutive days shall not exceed 200 per 100 ml.

iii. The arithmetic mean of the fecal coliform values for effluent samples collected over a period of seven (7) consecutive days shall not exceed 400 per 100 ml.

d. **pH.**

i. The effluent values for pH shall remain within the limits of 6.0 to 9.0.

8. Toxic and hard-to-treat substances should be pretreated at the source if such substances result in pass-through or interfere with treatment process of a municipal treatment plant or which may contaminate sludge. In addition, effluent limits based upon acute and/or chronic toxicity tests of effluents may be prescribed by the Administrator.

9. No effluent shall, alone, or in combination with other sources, cause a violation of any applicable water quality standard. If the Agency finds that a discharge which complies with treatment requirements under the Authority of §5103(A) of these standards would cause, or is causing, a violation of water quality standards, the Administrator shall take appropriate action under §47109 of the Water Pollution Control Act to require the discharge to meet whatever effluent limits are necessary to ensure compliance with the water quality standards. When such a violation is caused by the cumulative effect of more than one (1) source, several sources may be joined in a schedule of compliance. Measures necessary for effluent limitations will be determined on the basis of technical feasibility, economic reasonableness and fairness to all dischargers.

10. Measurement of pollutant concentrations to determine compliance with the effluent limitations shall be made by the discharger at the point immediately following the final treatment process and before mixing with other waters. Points of measurement shall be designated by the Agency in an individual permit, after consideration of the elements contained in this Section. If necessary, the concentrations so measured shall be recomputed to exclude the effect of any dilution that is improper under this standard.

11. Compliance with toxicity requirements may be evaluated with a ninety-six (96) hour bioassay, or short-term method for estimating chronic toxicity. Allowable concentration(s) of the toxic pollutant(s) shall not exceed five percent (5%) of the ninety-six (96) hour LC50 at any time or place, one percent (0.01) of the twenty-four (24) hour average ninety-six (96) hour LC50 concentration, or a level calculated by multiplying the appropriate application factor, where available, by the ninety-six (96) hour LC50 value. The tests are to be conducted using the receiving water in question and the most sensitive species of affected aquatic organisms, as is practical.

References for these methods are: EPA 600/4-91/002 Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Second Edition, 1994; or EPA 600/4-90/027F Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Cincinnati, Ohio, EMSL, Fourth Edition, 1993; or EPA 600/4-600 R-95/136 Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine Estuarine Organisms, Cincinnati, Ohio, EMSL, May, 1995.

12. Every permitted facility discharging effluent to the waters of Guam shall submit operating reports to the Agency at a frequency to be determined by the Agency. Such reports shall contain information the Agency may reasonably require.

13. Schedule of Compliance.

a. It is presumed that new and existing permitted point source dischargers will promptly comply with any new or more restrictive water quality-based effluent limitations ("WQBELs") based upon adopted water quality criteria.

b. Where an existing discharger reasonably believes that it will be infeasible to promptly comply with a new or more restrictive WQBEL, the discharger may request approval from the permit issuing authority for a schedule of compliance.

c. A compliance schedule shall require compliance with WQBEL, as soon as possible, taking into account the discharger's technical ability to achieve compliance with such WQBEL.

d. In no event shall the permit issuing authority approve a schedule of compliance for a point source discharge which exceeds five (5) years from the date of a new permit's issuance, or an existing permit's reissuance or modification.

e. If the schedule of compliance exceeds one (1) year from the date of a new permit's issuance, or an existing permit's reissuance or modification, the schedule shall set forth interim requirements and dates for their achievement. The dates of completion between each requirement may not exceed one (1) year. If the time necessary for completion of any requirement is more than one (1) year and is not readily divisible into stages for completion, the permit shall require, at a minimum, specified dates for annual submission of progress reports on the status of interim requirements.

f. The administrative record for the permit shall reflect final permit limits and final compliance dates.

14. All discharges within Zone S-3 which are not otherwise required to have construction and/or discharge permits under existing Guam Soil Erosion Control Regulations, operating permits and/or NPDES, may be required by this Agency to obtain such permits under these regulations.

15. Any existing permitted point source discharging to near-shore waters classified as M-1 shall submit to the Administrator for approval a plan and schedule for elimination of the discharge to near-shore waters. Any such plan shall consider all alternate disposal options and give preferential consideration to eliminating all point source discharges to the waters of Guam.

B. Effluent Discharge Limitations for Groundwater Category G-2.

1. The Agency may allow discharges to G-2 waters if it can be shown by an engineering feasibility study that there will be no significant adverse effects upon G-1 waters.

2. The Agency reserves the right to set more stringent standards than those provided in Section 5103(B) Tables 1 and 2, if there is reason to believe that significant environmental damage may result from the discharge.

C. Mixing Zones in Receiving Waters.

The following requirements apply to all mixing zones:

1. Mixing Zones may be permitted during the NPDES permit process on a case-by-case basis after careful analyses of the nature of the effluent, a thorough study to assess the consequences of the effluent on the environment, and approval of an Environmental Impact Statement. A mixing zone shall be considered designated only when approved by the Guam Environmental Protection Agency and when concurrence of the U.S. E.P.A. has been received.

2. The area or volume of an individual mixing zone shall be limited to an area or volume that will minimize impacts on uses. Whenever a mixing zone is allowed by the Agency, the zone in which mixing occurs will not adversely affect the designated uses of the receiving waters. Water quality standards for a receiving water must be met at every point outside the boundaries of the designated mixing zone.

3. Water quality limits will be established if the limits in Section 5104 are to be revised in the zone of mixing.

4. Mixing Zones will not be allowed within categories M-1 and S-1.

5. Mixing Zones shall be restricted such that they do not encroach upon areas often used for fish harvesting, particularly of stationary species such as shellfish.

6. Whenever mixing zones are allowed, zones of passage shall be provided.

7. Biologically important areas, including spawning and nursery areas, and habitat for threatened and endangered species, shall be protected.

8. Mixing Zones shall not cause conditions to be lethal to those aquatic life and wildlife passing through the zone, or become injurious to human health in the event of a temporary exposure.

9. **Mixing Zones for Aquaculture Projects.** The Federal regulations relating to aquaculture (40 CFR §§ 122.56 and 125.11) provide that the aquaculture project area and project approval must not result in the enlargement of any previously approved mixing zone, or include so large a portion of the body of water that a substantial portion of the indigenous biota will be exposed to conditions within the designated projects area. Areas designated for approved aquaculture

projects should be treated in the same manner as other mixing zones. Special allowances shall not be made for these areas.

10. Mixing Zones for the Discharge of Dredged or Fill Material. The Federal regulations (40 CFR § 230.11(f)) provide guidelines for determining the acceptability of mixing discharge zones. The particular pollutant involved should be evaluated carefully in establishing dredging mixing zones. Dredged spoil discharges generally result in temporary short-term disruption and do not represent continuous discharge that will affect designated uses on a long-term. Minimal disruption of uses should be the primary consideration in establishing mixing zones for dredge and fill activities.

11. Critical Low-Flows. During critical low-flow conditions, waters shall be free from substances that settle to form objectionable deposits; float as debris, scum, oil or other matter; produce objectionable color, odor, taste or turbidity; cause acutely toxic conditions; or produce undesirable or nuisance aquatic life.

Specific low-flow requirements for streams and rivers are adopted to protect designated uses against the effects of toxics (refer to Technical Guidance Manual for Water Quality-based Toxics Control (USEPA, 1991a); Technical Guidance Manual for Performing Wasteloads, Book 6, Design Conditions, (USEPA, 1986c)). In the case of aquatic life, more frequent violations than the assumed exceedence of once every three (3) years would result in diminished vitality of stream ecosystems characteristics by the loss of desired species. Numeric water quality criteria should apply at all flows that are equal to or greater than flows specified in Table 3.

TABLE 3.

AQUATIC LIFE	
Acute Criteria (CMC)	1Q10 or 1B3
Chronic Criteria (CCC)	7Q10 or 4B3

HUMAN HEALTH	
Non-carcinogens	30Q5
Carcinogens	Harmonic Mean Flow

Where:
1Q10 - is the lowest one (1) day flow with an average recurrence frequency of once in ten (10) years, determined hydrologically;
1B3 - is biologically based and indicates an allowable exceedence of once every three (3) years. It is determined by EPA's computerized method (DFLOW model);
7Q10 - is the lowest average seven (7) consecutive day low-flow with an average recurrence frequency of once in ten (10) years, determined hydrologically;
4B3 - is biologically based and indicates an allowable exceedence for four (4) consecutive days once every three (3) years. It is determined by EPA's computerized method (DFLOW model);
30Q5 - is the lowest average thirty (30) consecutive day low-flow with an average recurrence frequency of once in five (5) years, determined hydrologically; and
Harmonic Mean Flow - is a long-term mean flow value calculated by dividing the number of daily flows analyzed by the sum of the reciprocals of those daily flows.

It should be noted that when a criterion specifies a four (4) day average concentration that should not be exceeded more than once every three (3) years, this should not be interpreted as implying that a 4Q3 low-flow is appropriate for use as the design flow.

D. Mixing Zones for Non-Thermal Discharges.

1. Mixing Zones for Non-Thermal Discharges into Streams and Rivers.

a. For non-thermal discharges into streams and rivers, the mixing zone, at the point of discharge, is limited to twenty-five percent (25%) of the cross sectional area of the stream at the minimum flow at which the appropriate water quality standard can be met by thorough mixing of the effluent with the receiving waters.

b. The length of the mixing zone shall extend downstream no more than five (5) times the natural width of the stream at the point of discharge at the minimum flow condition.

c. The applicable water quality standard must be achieved at all points outside the mixing zone.

d. Mixing zones will not be permitted in standing bodies of water.

2. **Mixing Zones for Non-Thermal Discharges into Coastal Waters.**

a. For non-thermal discharges to coastal waters, the mixing zone shall be equal in depth to the depth of the water over the diffuser, in width to twice the depth of the water plus the width of the diffuser, and in length to twice the depth of the water plus the length of the diffuser, with the diffuser geographically centered within the mixing zone.

b. All discharges to marine waters will comply with the ocean discharge criteria promulgated under Section 403(6)(c) of the Federal Clean Water Act.

c. When practical, discharges and mixing zones should be located within coastal waters entrapped below the thermocline.

E. **Mixing Zones for Thermal Discharges.**

Thermal discharges pertain to effluent water with a temperature component either above or below ambient conditions of the receiving body of water. All thermal discharges, existing or proposed, into M-2 or M-3 receiving bodies of water shall be subject to provisions established in Section 316(a) of the Federal Water Pollution Control Act ("FWPCA"), Public Law Number 95-217.

1. **All Above-Ambient Discharges.**

a. Above-Ambient Discharges shall conform to a zone of mixing defined for that particular discharge on a case-by-case basis. This zone of mixing shall be defined by "EPA/505/2-90-001, PB91-127415, March 1991 Technical Support Document For Water Quality- based Toxic Control," or other references depicting appropriate thermal mixing zone models, and take into consideration the following criteria:

i. time of exposure;

ii. temperature of effluent;

iii. depth of discharge;

iv. type of environment;

v. volume of discharge;

vi. mass of pollutant rate of critical materials; and

vii. aesthetics and the assessment of damage to biota on the population basis.

b. Above-Ambient Discharges shall not increase the temperature of the receiving body of water to cause substantial damage or harm to the flora and fauna, or interfere with the beneficial uses assigned therein.

c. Above-Ambient Discharges shall comply with all other water quality criteria as defined in these standards, and specific criteria established in the discharge permit.

d. These zones of mixing shall be monitored by the discharger on a regular schedule established by the NPDES Permit, to ensure compliance with established criteria.

e. If the Agency, pursuant to notice and opportunity for public hearings, finds evidence that a discharge has caused substantial damage, it may require conversion of such discharge to an approved alternative method. In making such a determination, the Agency may consider:

i. the nature and extent of damage to the environment;

ii. projected lifetime of discharge;

iii. adverse economic and environmental impacts, marine and terrestrial, resulting from such conversion;

iv. all available data, reports, surveys and projects related to the discharge;

v. such other factors which may prove to be appropriate.

2. Above-Ambient Discharges in Existence Prior to Approval of These Standards.

a. Such discharges shall be given special attention when defining a zone of mixing. All criteria established for part D-1 above, shall apply with special emphasis on specific criteria listed in part D-1a.

b. Tanguisson Power Plant Zone of Mixing: The zone of mixing for the Tanguisson Power Plant is defined as a rectangle of approximately 10,000 sq.m. with the following reference points:

i. northern boundary - north side of intake channel;

ii. south boundary - 1969 ft (600 m) south of intake channel;

iii. eastern boundary – shoreline; and

iv. western boundary - 591 ft (180 m) off-shore to a depth beyond the reef margin of about one (1) meter which is the top of the zone of passage.

c. **Piti/Cabras Zone of Mixing.** The zone of mixing for the Piti/Cabras Power Plants combined is the Piti Channel, from the power plants to a distance three hundred (300) feet back from where the channel joins the harbor proper, and from there to a depth of about one (1) meter or 3.28 feet to a line from the GORCO Pier and the Navy Fuel Pier on Dry Dock Island.

3. Below-Ambient Discharges.

All below-ambient discharges shall follow the same guidelines set down for thermal discharges and be evaluated on a case-by-case basis.

F. Prohibited Discharges.

1. No Person Shall Cause or Permit:

a. the discharge of any wastes or wastewater without first securing required NPDES permit(s) or securing local permit(s), as may be required by the Administrator under § 47106 of the Water Pollution Control Act;

b. any discharge which would cause organisms in the receiving waters to exhibit deleterious effects or otherwise impair species recruitment, reproduction or survivorship, or which would cause organisms normally harvested for food to become harmful to humans, wildlife or other organisms, if consumed, except in accordance with § 5104. This includes the discharge of any radiological, chemical, biological warfare agents, or radioactive wastes and contaminated radioactive materials;

c. any discharge which would substantially impair anchorage and navigation, including any discharge which the Secretary of the Army, acting through the Corps of Engineers, finds would result in this damage;

d. any discharge which the Administrator of the United States Environmental Protection Agency has objected to in writing pursuant to any right to object provided by the Federal Water Pollution Control Act, as amended;

e. any discharge which is in conflict with an approved Guam plan;

f. the discharge of sewage from vessels while moored, berthed or docked, or underway in waters of Guam, except through a properly functioning Coast Guard approved type II Marine Sanitation Device;

g. any new point source discharge into G-1 waters, because any water discharges within this zone will (by definition) be tributary to groundwater bodies which are actual or potential sources of fresh, potable water supply;

h. any new point source discharge into M-1 or S-1 waters;

i. any discharge of visible floating materials, including scum and foam; and

j. point source discharges to storm water drainage, except for storm water.

2. All vessels exceeding four hundred (400) gross tons which are berthed or docked in the waters of Guam, without fully functional U.S. Coast Guard approved oil pollution prevention devices (for longer than seventy-two (72) hours detention) must be completely encircled with floatation booms to contain any discharged oil. The Administrator may require any vessel, regardless of gross tonnage, operating ability, oil pollution prevention devices, duration of moorage or dockage time, will be completely encircled with floating booms if in the Administrator's opinion such measures are necessary to control potential oil discharges into waters of Guam including, but not limited to, instances where excessive oil is present on the vessel's deck or in the vessel's bilges; when major machinery repairs are undertaken; or when a vessel cannot close its scuppers effectively during bunkering operations.

G. **Land Disposal of Treated Wastewaters.**

1. Approval of land disposal of treated liquid wastewater requires that:

a. wastewaters shall be restricted to the premises of the disposal site;

b. provision shall be made by the discharger for monitoring the quality of the effluent with the exception of single-family dwelling units, unless there are more than five (5) units connected to a single system, or the Agency requires it after identifying a potential hazard;

c. all monitoring data and reports required under a discharge permit shall be submitted to the Agency;

d. land disposal shall not create a public health hazard, a nuisance condition or an air pollution problem;

e. these standards do not solely govern water/wastewater to be reused to produce products which may end up in the human food chain, such as crops and animal products. The Agency will consider such reuse on a case-by-case basis using available guidelines on best available technology.

2. The evaluation for a permit for land treatment and/or disposal of wastewater(s) should include, but not necessarily be limited to, consideration of the following items:

a. The type of wastewater proposed for disposal. The wastewater should be biologically degradable but other wastewater will be considered; provided, it can be shown that disposal of the wastewater will not adversely affect the designated use of the waters underlying or adjacent to the disposal site.

b. The nature of the earth material(s) underlying the disposal site. The applicant must provide positive assurance that the earth material(s) underlying the proposed disposal site will not allow movement of pollutants into underlying ground waters so as to exceed ground water standards.

c. The vegetative cover of the disposal site. The selection of a vegetative cover should reflect the disposal season(s), the duration and frequency of disposal and the response of the vegetative cover to the wastewater. If the wastewater proves to be deleterious to vegetative cover, a higher degree of treatment or another means of disposal will be required.

3. Improperly and/or inadequately treated sewage shall not be allowed to accumulate on the ground surface in such a manner that it may create a health hazard and/or a nuisance condition.

4. It shall be a violation of these standards to store, dispose of, or allow to accumulate any solid waste or other deleterious material adjacent to or in the immediate vicinity of any streams, rivers, wetlands or marine waters in a manner that such material, or contaminated runoff, leachate or residual from such materials, will directly or indirectly enter such waters or wetlands. Such material shall include, but not be limited to, sewage sludge, trash, rubbish, garbage, oil, gasoline, chemicals, sawdust, accumulations of manure and stockpiles of soil.

5. In case of accidental spills of deleterious materials, responsible persons in charge shall immediately notify the Administrator of any such spills and make every reasonable effort to contain spilled material in such a manner that it will not pollute waters of Guam.

6. Wastewater discharged to disposal wells for underground disposal shall receive, prior to discharge, treatment necessary to protect potable water resources and any adjacent marine waters or fresh surface waters.

H. Petroleum Storage Facilities.

1. Any facility storing fifty-five (55) gallons or more of petroleum products or hazardous materials in any single above-ground container shall be provided with secondary containment to protect Guam's groundwater resources and navigable waters from potential threat from oil or hazardous materials discharges.

2. Facilities having a capacity of six hundred sixty-six (666) gallons or greater are also required to develop a Storage Facility Spill Prevention ("SFSP") Plan. The Plan shall be based on the storage capacity, type of product/hazardous materials and the potential threat the respective facility may pose to Guam's groundwater resources. Facilities should refer to 40 CFR Part 112 guidelines and/or contact the Agency when developing a SFSP Plan for their respective facility.

3. Pipeline systems that transport petroleum products and hazardous materials should comply with the following requirements with the exception of facilities regulated under the underground storage tank ("UST") regulations, 40 CFR Part 280.

a. No pipeline system component may be buried, unless that component has an external protection coating that is designed to mitigate corrosion of the buried component.

b. A cathodic protection system must be installed for all buried facilities to mitigate corrosion that might result in structural failure. A test procedure must be developed to determine whether adequate cathodic protection has been achieved.

i. Each operator shall, each calendar year (annually) conduct tests on each buried (in contact with the ground) pipeline system to determine whether the entire cathodic protection system is adequate and working properly. If the system is inadequate or not working properly, the operator shall immediately take appropriate action to repair and correct the cathodic protection system to ensure proper corrosion protection. In addition, cathodic protection rectifiers shall be inspected every two (2) months. Records of such inspections, and maintenance should be kept available at the facility for the service life of the cathodic protection system. Cathodic protection system inspections shall be carried out consistent with the API 570 guidelines.

c. No pipeline system shall be put in operation unless it has been pressure tested and found to be without leakage. In addition, no segment of pipeline that has been replaced, relocated or otherwise changed shall be returned to service until it has been pressure tested and found to be without leakage.

i. The operator shall conduct pressure testing of its pipeline systems to ensure that the pipeline system is not leaking. These tests shall be conducted within five (5) years of the initial pressure test, and at succeeding intervals not exceeding five (5) year cycles. Records of such tests shall be kept in the facility files for the service life of the facility.

d. No pipeline system shall be put in operation unless an operator prepares and follows, for each pipeline system, a manual of written procedures for conducting normal operations and maintenance activities and handling abnormal operations and emergencies. The manual shall be prepared before initial operation of a pipeline system commences, and appropriate parts shall be kept at locations where operations and maintenance are conducted.

i. The manual should contain a preventive maintenance program that ensures the continued operational reliability of any pipeline or pipeline system affecting quality, safety and pollution prevention. The program shall include all applicable guidelines prescribed in the latest edition of the API 570, Piping Inspection Code. The manual should be made available to the regulatory agency for review upon its request.

e. Each operator shall maintain each valve that is necessary for the safe operation of its pipeline systems in good working order at all times to the extent that leaks are prevented. In addition, each operator shall every six (6) months, inspect each valve in the pipeline system to ensure that it is functioning properly and not leaking.

f. Operators shall provide the Guam EPA with a schedule of compliance for existing pipelines installed before the effective date of these standards, which do not have cathodic protection and external protection coating. The schedule shall be subject to review and approval by the Administrator of Guam EPA.

Section 5105. Definitions.

A. Definitions.

The following definitions are used for the purpose of clarification where such terms, phrases and words are used or implied in the text of these water quality standards.

1. **Acute Toxicity.** Any toxic effect that is produced within a short period of time, generally ninety-six (96) hours or less. Although the effect most frequently considered is mortality, the end result could be any harmful biological effect.

2. **Administrator.** Primary responsible person of the Guam Environmental Protection Agency.

3. **Adversely Affect.** Damage to the waters of Guam that results in, but is not limited to, any of the following:

a. substantial increase or decrease in abundance or distribution of any species or representative of the highest community development achievable in receiving waters of comparable quality. A substantial decrease in abundance or diversity of indigenous species. Change(s) in community structure that are not natural for the locality and season in question;

b. degradation in appearance, odor or taste of the waters;

c. elimination of a designated or existing use; or

d. reduction of the successful completion of life cycles of indigenous species, including those of migratory species.

4. **Agency.** Guam Environmental Protection Agency ("GEPA").

5. **Ambient.** Existing environmental conditions in waters.

6. **Ambient Monitoring.** Monitoring that is carried out to determine ambient conditions. It is typically used for comparison purposes (e.g. changes over time and/or differences between locations.).

7. **Aquifer.** A water-bearing stratum of permeable rock, sand or gravel.

8. **Background Conditions.** The biological, chemical and physical conditions of a water body, upstream from the point or non-point source discharge under consideration. Background sampling location in an enforcement action will be upstream from the point of discharge, but not upstream from other inflows. If several discharges to any water body exists, and an enforcement action is being taken for possible violations to the standards, background sampling will be undertaken immediately upstream from each discharge.

9. **Basal Groundwater.** Fresh groundwater floating directly on sea water.

10. **Beneficial Uses.** Desirable uses that water quality should support. Examples are drinking water supply, primarily contact recreation (such as swimming), and aquatic life support.

11. **Best Available Technology ("BAT").** Subject to economic and engineering feasibility limitation, BAT should incorporate the best available current technology with a capacity up to and including no discharge of pollutants. Considerations include the age of the equipment and facilities involved; the process used; the engineering aspects of applying various types of control techniques; process changes; the cost of achieving the effluent reduction resulting from applying the technology; and non-water quality environmental impacts.

12. **Best Management Practice ("BMP").** Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters. BMPs also include, but are not limited

to, treatment requirements, operating procedures, and practices to decrease or eliminate generation of pollutants and to control plant site runoff, spillage or leaks, sludge or wastewater disposal, aquaculture pollutants, or drainage from raw material storage.

13. **Bioassay.** A test used to evaluate the relative potency of a chemical or a mixture of chemicals by comparing its effect on living organisms with the effect of a standard preparation on the same type of organisms.

14. **Biological Monitoring.** Monitoring which uses aquatic organisms to indicate compliance with water quality standards or effluent limits and to document water quality trends. Methods of biological monitoring may include, but are not limited to, toxicity testing (such as ambient toxicity testing or whole-effluent toxicity testing) and biological surveys. It is also known as biomonitoring.

15. **Biota.** The animal, plant and microbial life of a region.

16. **Board.** Board of Directors of the Guam Environmental Protection Agency.

17. **Boundary.** The physical interface between adjoining discreet areas. A fine line as applied to ground waters, but as applied to surface and marine waters the line may shift due to storm conditions, tides, water current changes and surface winds.

18. **Cathodic Protection System.** An external corrosion control system that is in conformance with standard engineering practice, including the appropriate standards under the National Association of Corrosion Engineers (Standard RPO 169-92).

19. **Chronic.** A stimulus that lingers or continues for a relatively long period of time, often one-tenth (.1) of the life span or more. Chronic should be considered a relative term depending on the life span of an organism. The measurement of a chronic effect can be reduced growth, reduced reproduction, etc., in addition to lethality.

20. **Coastal Waters.** Includes near-shore, off-shore and estuary waters within the jurisdiction of Guam.

21. **Coliform Bacteria.**

a. **Total Coliform Bacteria.** All of the aerobic and facultative anaerobic gram-negative, non spore-forming, rod-shaped bacteria that ferment lactose broth with gas formation within forty-eight (48) hours at thirty-five (35) degrees centigrade +/- 0.5 degrees centigrade.

b. **Fecal Coliform.** That portion of the coliform group which is present in the gut or the feces of warm-blooded animals. It generally includes organisms capable of producing gas from lactose broth in a suitable culture medium within twenty-four (24) hours at forty-four (44) degrees centigrade +/-0.2 degrees centigrade. This elevated temperature will eliminate non-fecal and non-coliform organisms and selectively culture fecal coliform bacteria.

22. **Community.** An association of living organisms in a given area or region in which the various species are more or less interdependent upon each other.

23. **Created Wetland.** A human-made wetland. Created wetlands are designed to meet a variety of human benefits including, but not limited to, the treatment of water pollution discharges (e.g. municipal wastewater, storm water, etc.) and the mitigation of wetland losses permitted under § 404 of the Clean Water Act. This term encompasses the term "constructed wetland," as used in other EPA guidance and documents. Created wetlands designed and specifically created and used solely for the purpose of wastewater treatment do not qualify as waters of Guam. The discharges from the created wetlands must meet applicable water quality standards for the receiving waters.

24. **Criteria.** Elements of water quality standards, expressed as constituent concentrates, levels or narrative statements representing a quality of water that supports a particular use. When criteria are met, water quality will generally protect the designated use.

25. **Criteria Continuous Concentration ("CCC").** A chronic concentration. It is the four (4) day average concentration of a pollutant in ambient water that should not be exceeded more than once every three (3) years on average.

26. **Criteria Maximum Concentration ("CMC").** An acute concentration. It is the one (1) hour average concentration in ambient waters that should not be exceeded more than once every three (3) years on average.

27. **Designated Uses.** Those uses specified in water quality standards for each water body or segment, whether or not they are being attained.

28. **Discharge.** The direct or indirect outflow of liquid waste or wastewater from any domestic, commercial, industrial, agricultural or any other source onto land or into waters of Guam. The term "discharge" includes either the discharge of a single pollutant or the discharge of multiple pollutants.

29. **Discharger.** Any person or entity that discharges any wastewater, substance or material into the waters of Guam, whether or not such substance causes pollution.

30. **Effluent.** The liquid waste that is discharged directly or indirectly, into a waterbody, storm drain or sewage system.

31. **Effluent Limitation.** Any restriction or prohibition established under Guam or Federal law, including, but not limited to, parameters for toxic and non-toxic discharges, standards of performance for new sources or ocean discharge criteria. The restrictions or prohibitions shall specify quantities, rates and concentrations of chemical, physical, biological and other constituents which are discharged into waters of Guam.

32. **Enterococci.** A subgroup of fecal streptococci and are able to grow in 6.5% sodium chloride, at pH 9.6, and at 10°C and 45°C. The enterococci portion of the fecal streptococcus group is a valuable bacterial indicator for determining the extent of fecal contamination of recreational surface waters. Studies indicate that swimming-associated gastroenteritis is related directly to the quality of the bathing water and that enterococci are the most efficient bacterial indicator of water quality.

33. **Environmental Impact Statement.** A document analyzing impacts of alternative proposed actions and identifying, in detail, mitigation for significant environmental impacts of a proposed project or activity.

34. **Escherichia Coli (E. Coli).** Members of the fecal coliform bacteria defined as gram-negative nonspore-forming rods that ferment lactose with gas formation within forty-eight (48) hours at 35°C. E. Coli is considered indicator organisms of water quality. E. Coli is one (1) of two (2) efficient bacterial indicators of water quality for freshwater recreational sites.

35. **Estuary.** A region of interaction between near-shore waters and rivers within which tidal action and river flow bring about mixing of fresh and salt water.

36. **Existing Uses.** Those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards.

37. External Protection Coating. A coating designed to mitigate corrosion of the buried or submerged component; has the sufficient adhesion to the metal surface to prevent under film migration of moisture; is sufficiently ductile to resist cracking; has enough strength to resist damage due to handling and soil stress and supports any supplemental cathodic protection.

38. Fecal Coliform. See "Coliform."

39. Freshwater. All waters with dissolved inorganic ions less than five hundred (500) parts per million ("ppm").

40. Geometric Mean. An estimate of central tendency of log-normal data, and is equal to the antilog of the arithmetic mean of the logarithms of the data points. The geometric mean is derived from data points using the equation:

$$\log \bar{x}_g = \sum(\log x_i)/n$$

where:

$\bar{x}_g$ = geometric mean

x_i = original data points

n = number of samples

To obtain a geometric mean, five (5) samples (taken within thirty (30) days) should be applied to the equation. (From Standard Methods 18th ed. 1992)

41. Habitat. The environment occupied by individuals of a particular species, population or community.

42. Hazardous Materials. A substance or material, including a hazardous substance, which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety and property when transported in commerce, and which has been so designated.

43. Industrial Waste. Any discharge containing gaseous, solid, dissolved or suspended material resulting from any process of industry, manufacturing, trade or business, or from the processing of any natural resource, together with such sewage as may be present, which may pollute the waters of Guam.

44. Instantaneous Reading. A single sample result obtained from the appropriate method analysis during a one-time sampling event.

45. Land Treatment. Any treatment of wastewater which involves the use of plants, soil surface and the soil matrix for wastewater treatment, including

irrigation systems, infiltration systems, overland flow systems and other systems of wastewater treatment via land application.

46. **Lethal Concentration – Fifty Percent (50%) (LC50).** That concentration of a toxic substance in water which for a given time period causes fifty percent (50 %) of the exposed individuals of an aquatic test organism to die.

47. **Limited Body Contact.** Any recreational or other use in which contact with the water is either incidental or accidental, and in which the probability of ingesting appreciable quantities of water is minimal.

48. **Line of Mean High Water.** The shoreline as indicated on the 1:24,000 Series (Topographic) Maps of the Island of Guam prepared by the U.S. Geological Survey.

49. **Marine Sanitation Device.** Equipment or process for installation on vessel or water craft which is designed to receive, retain, treat, or discharge sewage or other pollutants, or any process to treat such sewage, or other pollutants which has received U.S. Coast Guard approval.

50. **Marine Waters.** Near-shore and estuary waters within the jurisdiction of Guam having dissolved inorganic ions (salinity) greater than five hundred (500) parts per million ("ppm").

51. **Mixing Zone.** The area or volume of a waterbody within which effluent(s) shall become physically mixed with the receiving waters through initial dilution. Initial dilution is the process through which the wastewater immediately mixes with the receiving water due to the momentum of the waste discharge, and the difference in density between the discharge and the receiving water.

52. **Municipal Wastes.** Water carrying human and animal wastes from homes, buildings, industrial establishments and other places, either alone or in combination with industrial wastes.

53. **National Pollutant Discharge Elimination System ("NPDES") Permit.** A Federal program, authorized under the Clean Water Act, for issuing, modifying, revoking and reissuing, terminating, monitoring, and enforcing permits, and imposing and enforcing pretreatment requirements.

54. **Natural Conditions.** The resulting water quality in the absence of any measurable pollution effect due to human activities.

55. **Near-Shore Waters.** All coastal waters lying within a defined reef area; all waters seaward to a depth seventeen (17) fathoms (102 feet, 31.10 m.), or to a distance off-shore of one thousand (1,000) feet (305 m.), whichever is greater.

56. **New Source.** Any wastewater facility, for which construction is commenced on or after the effective date of these standards.

57. **Non-Point Source.** Diffuse pollution sources (i.e. without a single point of origin or not introduced into a receiving water from a specific outlet), that are not regulated as point sources. The pollutants are generally carried off the land by storm water.

58. **Non-Point Source Pollution.** Pollution from non-point sources. In practical terms, non-point source pollution generally results from sources such as on-site sewage disposal, automobiles, storm drain runoff and agricultural runoff.

59. **Off-Shore Waters.** All coastal waters beyond the limits defined for "near-shore waters" of Guam as recognized by International Law.

60. **Other Waste.** Garbage, municipal refuse, sand, offal, oil, tar, chemicals and all other substances which may pollute the waters of Guam.

61. **Outfall.** The conduit from its connection from wastewater treatment facilities/storm water drainage to its outlet through diffusers into off-shore waters.

62. **Parabasal Groundwater.** Fresh groundwater hydraulically connected with basal water, but lying directly on impermeable basement rock.

63. **Passageway.** A continuous stretch where water characteristics are affected only by the environment in such a manner that the free flow or continuous drifting of biota is always possible.

64. **Permit.** A permit issued pursuant to § 47106 of the Guam Water Pollution Control Act.

65. **Person(s).** Means any individual, firm, partnership, association or corporation, both public and private, including the agencies of the government of Guam and of the Federal Government.

66. **Pipe or Line Pipe.** A tube, usually cylindrical, through which oil flows from one (1) point to another.

67. **Pipeline System.** A pipeline through which oil or hydrocarbon fuel moves, including, but not limited to, line pipe, valves, other appurtenances

connected to line pipe, fabricated assemblies associated with pumping units and delivery stations, and fabricated assemblies therein. Systems included terminal and overland (above and below ground) pipeline systems.

68. **Point Source.** Any discernible, confined and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft from which pollutants are, or may be, discharged. This term does not include flows from irrigated agriculture, or agricultural storm water runoff.

69. **Pollutant.** Means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked, or discarded equipment, rock, sand, celler dirt and industrial, municipal, and agricultural waste discharged into water.

70. **Pollution.** The alteration of the physical, chemical, biological or radiological integrity of any waters of Guam due to human activities.

71. **Potable Water Resources.** Waters of Guam actually used or intended to be used for drinking water or general domestic use.

72. **Pressure Testing.** The application of internal pressure above the normal or maximum operating pressure to a pipeline or a segment of pipeline, under no-flow conditions, for a fixed period of time, utilizing a liquid test medium. Pressure testing will be consistent with the pressure testing requirements to the extent it is appropriate under the Department of Transportation pipeline safety regulations (Subpart E-Pressure Testing).

73. **Primary Treatment.** A level of sewage treatment that involves settling or screening to separate sewage solids from liquid wastes.

74. **Receiving Water(s).** Water(s) of Guam into which wastes or wastewater are, or may be, discharged.

75. **Restoration.** Return of a natural resource to a close approximation of its condition prior to disturbance.

76. **Schedule of Compliance.** A schedule of corrective measures and times, including an enforceable sequence of actions or operations leading to compliance with any control regulation or effluent limitation in a specified time period.

77. **Secondary Treatment.** A level of sewage treatment that involves the introduction of bacteria which bind to solids and aid in their removal. The liquid wastewater is also partially disinfected.

78. **Sewage.** The water-carried waste products from the residences, public buildings, institutions or other buildings, including the excrement or other discharge from the bodies of human beings or animals, together with such ground water infiltration and surface water as may be present.

79. **Shellfish.** Mollusks, crustaceans and other forms of marine animal and plant life other than finfish, marine mammals and birds.

80. **Special Aquatic Sites.** Sites possessing special ecological characteristics and values, including wetlands, wildlife sanctuaries and refuges, mud flats, vegetated shallows, coral reefs, riffle and pool complexes.

81. **Storm Water Runoff.** Water from rain which travels via flow across surfaces to storm drain systems or receiving waters. As it flows, it often picks up pollutants, such as soil, automobile fluids, animal wastes, pesticides and fertilizers.

82. **Surface Waters.** Any natural or artificial water source, including all streams, sinkholes, lakes, ponds, wetlands, impounding reservoirs, inland watercourses and waterways, springs, irrigation systems and all other inland water bodies or accumulated waters. For the purpose of this regulation, the term does not include coastal waters or those subject to the ebb and flow of tides.

83. **Thermal Discharge.** Discharge of water into the environment which has temperature component either above or below the temperature of the receiving body of water.

84. **Toxic.** Causing death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction) or physical deformations in organisms. The quantities and exposures necessary to cause these effects can vary widely.

85. **Toxicity Test.** A procedure to determine the toxicity of a chemical or an effluent using living organisms. A toxicity test measures the degree of effect on exposed test organisms of a specific chemical or effluent.

86. **Transition Zone.** In basal water the interface between the bottom of the freshwater lens and the underlying saltwater. Salinity is low at the top of the transition zone and increases to that of seawater at the bottom of the zone.

87. **Upland.** Any area that does not qualify as wetland because the associated hydrologic regime is not sufficiently wet to elicit development of vegetation, soils and/or hydrologic characteristics associated with wetlands.

88. **Wastewater.** Sewage, industrial waste or other waste, excluding thermal discharge, or any combination of these, whether treated or untreated, plus any admixed land runoff.

89. **Water Quality Standards.** Provisions of law which consist of designated use or uses of a waterbody, or a segment of a waterbody, and the water quality criteria that is necessary to protect the use or uses of that particular waterbody. Water quality standards also include an anti-degradation policy, and may contain various implementation policies.

90. **Waters of Guam.** All waters within three (3) miles from the high waterline surrounding Guam, streams (including intermittent streams), lakes, wells, springs, wetlands, irrigation systems, marshes, watercourses, waterways, sink holes, drainage systems and other bodies of water, surface and underground, publicly or privately owned.

91. **Wetland.** An area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands typically include swamps, marshes, bogs and similar areas.

92. **Wetland Functions.** The beneficial uses of wetlands which are protected by these water quality standards, including, but not limited to, groundwater recharge/discharge, flood water retention/attenuation, sediment stabilization, nutrient removal/transformation, wildlife diversity/abundance, aquatic diversity/abundance, and recreation.

93. **Whole Body Contact Recreation.** Any recreation or other use in which there is whole body contact with the water (e.g. including, but not limited to, activities such as skin diving and swimming).

94. **Zone of Passage.** A continuous water route which joins segments of river, stream, reservoir, estuary, or channel above, below or around a mixing zone without going through the mixing zone.

Section 5106. Section 401 Certifications.

A. Primary Goals of § 401 Water Quality Certification ("WQC") .

1. to restore and maintain the biological integrity of Guam's waters;

2. to protect the waters of Guam and special aquatic areas and wetlands from chemical, physical, and biological impacts and other types of alterations; and

3. to eliminate all discharges of pollutants (including dredged and fill materials).

B. Applicability for § 401 WQC.

1. An applicant for a Federal license or permit to conduct any activity, including, but not limited to, the construction or operation of facilities which may result in any discharge into waters of the United States, shall provide the licensing or permitting agency a § 401 WQC from the Agency, certifying that the discharge will comply with Guam Water Quality Standards.

2. The following more common Federal permits require a § 401 WQC prior to issuance: (It is recommended that the applicant check with the issuing Federal agency).

a. **Section 404 Permit of the Clean Water Act of 1977.** This Section of the Act prohibits the discharge of dredged or fill material into waters of the United States without a permit from the U.S. Army Corps of Engineers (ACOE). Discharge refers to the physical placement of materials into waters. Dredge or fill materials in this case are heterogeneous in nature.

b. **Nationwide Permits ("NWPs") under § 404 of the Clean Water Act.** The Agency may elect to deny, certify or waive § 401 WQC for all or certain proposed NWPs. The Agency may determine that some NWPs do not warrant an "insignificant" impact determination which may apply to other U.S. jurisdictions or as modified through regional conditioning. Because Guam has a proportionally small wetland resource base, unique landscape, and water quality resource management and biological considerations that differ from the

national perspective, the Agency often requires individual permit reviews of NWPs. The permit reviews may entail the application of a "water dependency test" and/or a practicable alternative analysis as determined to be necessary by the Administrator.

c. **Section 402 of the Clean Water Act of 1977.** This Section prohibits the discharge of dredged or fill material without a permit from the U.S. E P.A.. Dredge or fill materials in this case are homogeneous in nature.

d. National Pollution Discharge Elimination System ("NPDES") permits are required under § 402 of the Federal Clean Water Act for a number of effluent, storm and wastewater discharges to Waters of the United States. This permit (system) requirement is typically associated with continuous or periodic point source discharges from treatment plants, and other industrial and commercial facilities, to control surface water pollution and ultimately improve and/or maintain water quality of receiving waters. The assignment of pre-treatment and monitoring performance standards and conditions are generally required for target water quality parameters. Section 401 Water Quality Certification must be issued for all NPDES permits.

C. Section 401 WQC Authority.

The Administrator of the Agency is the designated issuing authority for § 401 WQC.

D. Applicable Laws, Statutes and Regulations.

1. Public Law Number 92-500, Federal Water Pollution Control Act ("FWPCA") of 1972.

2. Public Law Number 95-217, Clean Water Act ("CWA") of 1977.

3. Title 10, Chapter 47, Guam Code Annotated ("GCA"), Water Pollution Control Act, as amended by Public Law Number 17-87.

4. Guam Water Quality Standards.

E. Application Requirements and Contents.

1. A § 401 WQC application should be filed at least sixty (60) days prior to the construction or discharge date.

2. There is no filing fee for the § 401 WQC.

3. An applicant for § 401 WQC shall submit to the Administrator a completed application form (available from the Agency). This form requires information on the proposed project including, but not limited to:

a. description of the facility or activity, and associated discharges into Guam's waters.

b. A description of the system or methods for treating wastes or other effluents which may be discharged, including specification of the degree of treatment expected to be attained.

c. The date or dates on which the proposed activity will begin and end, if known, and the date or dates on which the associated discharge will take place.

d. The plan for monitoring the water quality and characteristics of the discharge, and the operation of equipment or facilities employed in the treatment or control of wastes or other effluents.

e. A description of, and potential impacts to, applicable water quality standards. (Water bodies which are Guam's resource waters are considered high quality.)

F. Additional Permit Information Requirements.

1. Construction drawings/plans and specifications (operational data such as pump/discharge rates, holding capacity, detention time, turnover rates, etc.).

2. Wetland Delineation Map.

3. A historical overview of the project. This is necessary to properly evaluate a project. This review should address:

a. known or suspected pollutant sources;

b. types of potential sediment contaminants;

c. previous dredging activities;

d. previous disposal methods; and

e. pertinent information related to the quantity and quality of dredge materials.

4. An ecological evaluation of the proposed affected site (including biota inventory and existing bioaccumulation studies). This should include a review of existing inventories describing the area's biota to identify local populations and to determine if threatened or endangered species are present. Conditions that support their well-being should be noted. Any concerns associated with the uptake of heavy metals or organics, identified through existing bioaccumulation studies or other sources of information, should be documented.

5. An Environmental Baseline Survey (marine, freshwater aquatic or adjacent upland, as appropriate), an Environmental Protection Plan, and/or an Environmental Impact Assessment/Statement ("EIA"/"EIS").

6. Characterization of the sediment particle size and composition, which is important in assessing potential contaminant levels. Sand and coarse-grained inorganic sediments (greater than 0.24 mm) rarely are contaminated. Conversely, fine organic sediments (less than 0.24 mm) generally retain the highest levels of contaminants. Generally, sediment physical characterization is conducted when in-water disposal is proposed or contamination of sediment is suspected.

7. **Sediment Chemical Analyses.** Chemical characterization of the sediment can be done in two (2) ways: (1) bulk sediment analysis, and (2) elutriate analyses. Suggested parameters include, but are not limited to, those listed below. In both cases, the parameter list should be modified as necessary to address site-specific concerns. A parameter list should be prepared on a site-specific basis, using the Guam Water Quality Standards as guidance.

a. **Suggested Parameters for Bulk Sediment Analysis**

Ammonia (NH_3-N)	Nickel (N_1)
Arsenic (As)	Oil & Grease
Cadmium (Cd)	Phosphorus (P, Total)
Chromium (Cr)	Total Kjeldahl Nitrogen
Chemical Oxygen Demand	Polychorinated Biphenols
Copper (Cu)	Volatile Solids (%)
Iron (Fe)	Total organic carbon
Zinc (Zn)	Cyanide, Total
Phenolics, Total	Mercury (Hg)
Tributlytin	

b. **Suggested Parameters for Elutriate Analyses**

Ammonia (NH_3-N)	Nickel (N_1)
Arsenic (As)	Oil and Grease
Cadmium (Cd)	Phosphorus (P, Total)
Chromium (Cr)	Iron (Fe)
Copper (Cu)	Mercury (Hg)
Zinc (Zn)	Phenolics, Total
Cyanide, Total	Polychlorinated
Biphenols	
Tributyltin	

8. **Sediment Bioassay.** An important consideration in evaluating a dredging or disposal activity is the impact upon the aquatic organisms. Bioassays, which can measure acute and chronic effects, are the most appropriate method for assessing impact. Methods and test organisms vary and it is recommended that the bioassays use local (Guam) organisms and be coordinated with the U.S. E.P.A., Region IX, the local Department of Agriculture and the U.S. Fish & Wildlife Service.

G. **Prohibited Discharges.**

The discharge of dredged or fill material is prohibited (i.e. certification not be issued) if:

1. there are less-damaging practical alternatives, regardless of the availability of compensatory mitigation. A discharge that is water dependent, but for which upland alternatives are available, is prohibited. Mitigation cannot be used to justify unnecessary fills;

2. impacts cannot be reasonably mitigated through acceptable certification conditioning (Mitigation as used here are those control measures that would reduce, lessen or minimize impacts in the immediate vicinity of the discharge. "Compensatory" mitigation differs in that it implies that an agreed upon plan to compensate or replace resources lost through or resulting from an authorized permit was developed.);

3. appropriate and practical steps have not been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem (i.e. mitigation requirements);

4. it would cause or contribute to violations of any applicable Guam Water Quality Standard, or would cause or contribute to significant degradation of the waters of Guam;

5. it would jeopardize any Federal or Guam-listed threatened or endangered species;

6. it would violate any Federal marine sanctuary requirement; or

7. the project is not water-dependent and the discharge associated with the project is proposed in "special aquatic sites" (e.g. wetlands, mudflats, sanctuaries, refuges and preserves, vegetated shallows, coral reef areas, or riffle and pool complexes), and the project applicant has failed to prove that there is no less-damaging practical alternative available to achieve the overall project purposes, regardless of economic considerations.

The "water dependency test" means: the project's purpose is dependent upon fill in a special aquatic site (i.e. restaurants, by definition, do not require fill in wetlands to be restaurants).

H. Mitigation Policy Statements.

GEPA will actively promote and support mitigation for all projects subject to § 404 of the Clean Water Act in accordance with the 404(b)(1) Guidelines (40 CFR § 230.10).

1. The Agency will actively promote project alternatives which avoid all adverse environmental impacts associated with the proposed action, consistent with 40 CFR § 230.10(a). For proposed discharges of dredged or fill material for non-water dependent activities in special aquatic sites, the burden of proof shall be on the applicant to demonstrate that practical, less environmentally damaging alternatives are not available regardless of economic considerations. For all other proposed discharges, GEPA will require information demonstrating that the proposed action is the only available practical alternative. In the absence of such demonstration, the Agency will deny approval or require modification of the § 401 WQC. In evaluating an analysis of practical alternatives, proposed habitat compensation will not be considered in determining which of the alternatives examined is the least environmentally damaging.

2. The Agency will actively promote alternatives which reduce or minimize adverse environmental impacts. This will include requirements to reduce the amount and extent of fill (or dredging), and to modify the timing of construction.

3. For projects which have been conclusively demonstrated to have no practical alternative, the Agency may consider compensation by in-kind aquatic habitat replacement in close proximity to the project site.

4. The Agency will promote and support pre-application conferences and field inspections to develop acceptable mitigation proposals, including the exploration of reasonable alternatives which avoid or minimize adverse environmental impacts upon the aquatic ecosystem.

5. The Agency will coordinate mitigation activities with the U.S. Fish & Wildlife Service, the Corps of Engineers, the U.S. E.P.A., and other appropriate Federal and local agencies in order to address all relevant concerns and avoid duplication of effort.

6. The Agency will seek the inclusion of mitigation as an integral part of projects subject to § 404 permit authority, and will deny § 401 WQC approval for any project which does not include an acceptable mitigation plan. The Agency will deny approval of § 401 WQC unless it is clear that the permitting authority can revoke or suspend the permit for failure to implement the approved mitigation, and unless the permit conditions involving mitigation are enforceable.

7. The Agency will require monitoring for all mitigative actions involving habitat creation, enhancement or restoration. The period of monitoring will be determined on a case-by-case basis, in consultation with appropriate local and Federal resource agencies, and will be of sufficient length to adequately assess project success.

8. The Agency may require pilot studies for any mitigative action which has not been scientifically demonstrated to be successful, or about which there is significant resource agency uncertainty. The pilot studies must be completed, before a § 401 WQC is issued.

9. The Agency will consider mitigation banking only in those instances where such an approach will result in resource gains which are demonstrably superior to those expected using case-by-case mitigation.

10. Where feasible, GEPA will promote the fee title transfer of mitigation sites to the local resource agency with management responsibility for the created or preserved aquatic habitat.

11. Preservation of existing aquatic resources, in the absence of any enhancement of those resources, will not be considered mitigation, as such a policy would sanction an irretrievable net loss of aquatic resources.

I. Public Process Procedures.

The procedures for application and issuance of § 401 WQC include the Agency's review, preliminary determination, possible public noticing and public hearing, and a final decision.

1. Projects requiring § 401 WQC which do not require public notices or public hearings include, but are not limited to, the following:

a. In general, all Nationwide Permits ("NWPs") may be exempted from public noticing unless the Administrator otherwise determines that significant environmental or water quality issues warrant public involvement. This conditional exemption stems from the Agency's position that some NWPs do not take into consideration small tropical island environmental conditions. The Agency maintains the option of individual certification reviews of any NWP.

b. In general, all National Pollution Discharge Elimination System ("NPDES") Permits may be exempted since all such permits and permit renewals are publicly noticed by U.S. E.P.A. with full opportunity for public hearing and comment on Guam.

2. The applicant shall submit a § 401 WQC application to the Agency. After reviewing the application, the Administrator shall make an initial determination that the proposed activity will or will not meet the applicable Guam WQS. After the Administrator's initial determination, the Agency may prepare the public notice for publication in the newspaper(s) and distribution to interested parties.

a. All costs for public notices of intent to issue, or to modify § 401 WQC, or for public hearings for § 401 WQC, shall be borne by the applicant.

b. Publication shall be two (2) consecutive days in a newspaper of general circulation on dates specified by the Administrator.

c. It is imperative that the public notice is published on the date(s) specified by the Administrator so that delays in the processing of the § 401 WQC request are minimized. In addition, when the public notice proof copy is edited by the applicant, it should be carefully checked for accuracy to avoid republication. An affidavit certifying publication will be required.

d. The Administrator may elect to provide public notice by letter to affected or interested parties.

3. In the event that a reasonable request is made for a public hearing, the Administrator shall provide a public hearing, in accordance with the Guam Administrative Adjudication Law.

a. Publication of public hearing notices shall be as specified in the Guam Administrative Adjudication Law. The public notice will be published in a local newspaper of general circulation as directed by the Administrator.

b. Public hearings will be arranged (date, time, place) by the Agency and will be conducted by the Administrator. Agency staff will be present to serve as a resource. The applicant or the applicant's representative, should attend the scheduled hearing to present testimony supporting the § 401 WQC request.

4. After the public notice and/or public hearing, the Administrator shall consider all evidence and testimonies presented and make a final § 401 WQC determination. This determination will be completed within sixty (60) days of the submittal of the application, or not less than thirty (30) days after any required public notice or hearing, whichever is longer.

5. The Administrator shall issue § 401 WQC for a term equal to, but not exceeding, five (5) years for NPDES and other facility operational permits. Furthermore, the term of any re-certification shall not exceed one (1) extension for construction-related permits. Subsequent requests for certification extensions (second, third, etc.) for construction-related or temporary discharge permits may be granted, and if granted, may not coincide with the associated Federal permit term. The Administrator reserves the right to adjust any and all certification terms.

6. Any order or decision of the Administrator pursuant to these regulations shall become final, unless a hearing before the GEPA Board of Directors is requested within thirty (30) days after the notice of the final decision.

7. If an appeal is filed, the GEPA Board of Directors shall have the power to review and to affirm, modify or reverse any order or decision of the Administrator. Such appeal shall be made pursuant to the provisions of the Administrative Adjudication Law, Title 5, Guam Code Annotated § 9100 et. seq.

8. Any order or decision of the Board pursuant to these regulations shall be subject to an appeal therefrom to the Superior Court of Guam. Such appeal shall be made pursuant to the provisions of the Administrative Adjudication Law, Title 5, Guam Code Annotated § 9100 et. seq.

J. Content of the Agency's § 401 WQC.

1. The name and address of the applicant.

2. A description of the information used by the Administrator to make the Administrator's decision.

3. A statement that there is a reasonable assurance that the activity will be conducted in a manner which will not violate applicable WQS.

4. Any conditions which the Administrator deems necessary or desirable with respect to the discharge or the activity.

5. Any other conditions as the President's may determine to be appropriate.

K. Signatory Requirement for § 401 WQC.

1. For Guam Environmental Protection Agency - the Administrator, as Chief Executive Officer of the Agency.

2. In the case of Federal agencies, the chief executive officer of the agency, or the senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

3. For a partnership or sole proprietorship, a general partner (partnership) or a proprietor (sole proprietorship).

4. For a corporation, the President or the President's representative.

L. Modification, Suspension, or Revocation of a § 401 WQC.

1. The Administrator may, on the Administrator's own motion or the application of any person, modify, suspend or revoke the § 401 WQC, if the Administrator determines that:

a. there is a violation of any condition of the § 401 WQC;

b. the § 401 WQC was obtained by misrepresentation, or failure to disclose fully all relevant facts; or

c. there is an unreasonable or significant change in the scope of the project and activity.

M. Dam Construction Review for § 401 WQC.

1. An applicant must complete an Environmental Impact Assessment or Statement ("EIA"/"EIS") for any dam or reservoir project prior to a request for § 401 WQC.

a. The Agency will not act on a § 401 WQC request until the EIA/EIS has been approved and full opportunity for public comment has been provided on the proposed project.

b. As part of an EIA/EIS for a dam, the applicant must conduct investigations of and assess the impact(s) which will occur as a result of the project on all aquatic and terrestrial biological resources, including those associated with wetlands, streams and forested areas which will be lost as a result of the project.

c. Potential for mitigation (restoration, replacement or enhancement) must be thoroughly investigated to determine if there are mitigation locations within the same watershed as the proposed activity at upstream or headwater areas. Only after a thorough investigation reveals that this potential does not exist shall off-site or alternative watershed locations be considered.

d. Compensatory mitigation for the aquatic resource being lost must occur on an acre-for-acre basis.

e. Compensatory mitigation should be designed to match in-kind resource types and/or functions lost.

f. The applicant shall submit a watershed management plan to minimize pollution loadings into the reservoir. This plan must be approved by the Agency prior to operation of the new dam facility. Any pollutant loading identified during field surveys shall be eliminated or minimized to the extent possible given available technology.

2. Section 401 WQC may be denied if:

a. The construction and operation of the project will result in the significant loss of wetlands and related habitat and acreage. More specifically:

i. the destruction of the wetlands will have an adverse impact on the river ecosystem.;

ii. the destruction of the wetlands will cause the loss of beds of emergent aquatic vegetation that serve as habitat for juvenile fish which will adversely affect the relative abundance of juvenile and adult fish;

iii. the resources or wetlands which will be lost are critical habitat in the affected area, including listed species or those which are candidates for listing; or

iv. all affected wetlands areas are important and, to the extent that the loss of these wetlands can be mitigated, the applicant has failed to demonstrate that the mitigation proposed is adequate.

b. The applicant has: (1) failed to demonstrate that there will be no adverse water quality impacts from increased groundwater levels resulting from the project; (2) used a groundwater model that is not acceptable due to erroneous assumptions or the lack of sensitivity analysis; or (3) not provided sufficient information concerning the impact of increased groundwater levels on existing sites of subsurface contamination, adequacy of subsurface sewage replacement

areas or the impact of potential increased surface flooding. Additionally, the certification may be denied if information was not provided to adequately assess the effect of raised groundwater on sewer rehabilitation measures and the potential for increased flows at a specified wastewater treatment plant.

c. The applicant has failed to demonstrate that there will not be an unacceptable water quality impact upstream or downstream of the proposed project.

d. The applicant has failed to demonstrate that the construction and operation of the proposed dam will not have an adverse impact upon the aquatic resources upstream of the proposed impoundment.

e. Dam construction will have an adverse impact on upstream and downstream migration of fish, even with the construction of fish passageways for migration.

APPENDICES.

Appendix A. Priority Toxic Pollutants.

I. List of 126 Priority Toxic Pollutants Designated Under Section 307(a) (1) of the Clean Water Act Which Are Codified at 40 CFR 131.36(b), July 1995.*

Acenaphthene	1,2-dichlorobenzene
Acenapthylene (PAH)**	1,3-dichlorobenzene
Acrolein	1,4-dichlorobenzene
Acrylonitrile	3,3-dichlorobenzidine
Aldrin	1,1-dichloroethane
Antimony	1,2-dichloroethane
Anthracene	1,1-dichloroethylene
Arsenic	1,2-trans-dichloroethylene
Asbestos	Dichlorobromomethane (Halomethanes)
1,2-benzanthracene (PAH)	Dichloromethane (Halomethanes)

Benzene
Benzidine
Benzo(a)pyrene (3,4-benzo-pyrene) (PAH)
3,4-benzofluoranthene (PAH)
Benzo(k)fluoranthene (PAH)
1,12-benzoperylene (PAH)
Beryllium
Bromoform (Tribromomethane)
Bromomethane (Methyl Bromide)
4-bromophenyl phenyl ether
Cadmium

Carbon tetrachloride
(tetrachloromethane)
Chlordane
Chlorobenzene (monochloro-benzene)
Chlorodibromomethane (halomethane)
Chloroethane (monochloroethane)
Fluorene (PAH)
Bis(2-chloroethyl)ether
Bis(2-chloroethoxy)methane
2-chloroethyl vinyl ether (mixed)
4-chloro-3-methylphenol
Chloromethane (methyl chloride)
Chloroform (trichloromethane)
2-chlorophenol
Bis(2-chloroisopropyl)ether
2-chloronaphthalene
4-chlorophenyl ether
Chromium (HEX) avalent

2,4-dichlorophenol
1,2-dichloropropane
1,3-dichloropropane
Dieldrin
2,4-dimethylphenol
Diethylphthalate
Dimethylphthalate
2,4-dinitrotoluene
2,6-dinitrotoluene
2,4-dinitrophenol
2,3,7,8- tetrachlorodibenzo-p-dioxin
(TCDD)
1,2-diphenylhydrazine
Alpha endosulfan
Beta endosulfan
Endosulfan sulfate
Endrin
Endrin aldehyde
Ethylbenzene
Fluoranthene
Heptachlor
Heptachlor epoxide
Hexachloroethane
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclohexane (lindane)
Hexachlorocyclohexane (Alpha)
Hexachlorocyclohexane (Beta)
Hexachlorocyclohexane (Delta)
Hexachlorocyclopentadiene

Chromium (TRI) valent
Chrysene (PAH)
Copper
4,4-DDT
4,4-DDE (p,p-DDX)
4,4-DDD (p,p-TDE)
1,2,5,6-bibenzanthracene
{dibenzo(a,h) anthracene}
Di-n-octyl phthalate
Pyrene (PAH)
Selenium
Silver
1,1,2,2-tetrachloroethane
Tetrachloroethylene
Thallium
Toluene
Toxaphene
1,2,4-trichlorobenzene
1,1,1-trichloroethane
1,1,2-trichloroethane
Trichloroethylene
2,4,6-Trichlorophenol
Vinyl chloride (chloroethylene)
Phenanthrene (PAH)
Bis(2-ethyl hexyl)phthalate

Indeno (1,2,3-cd) pyrene (PAH)
Isophorone
Lead
Mercury
Naphthalene
Nickel
Nitrobenzene
Di-N-butyl phthalate
2-nitrophenol
4-nitrophenol
4,6-dinitro-2-methylphenol
N-nitrosodimethylamine
N-nitrosodiphenylamine
N-nitrosodi-n-propylamine
PCB-1242
PCB-1254
PCB-1221
PCB-1232
PCB-1248
PCB-1260
PCB-1016
Phenol
Pentachlorophenol
Zinc
Butyl benzyl phthalate

Note:

*Three (3) volatile chemicals were removed from the original of one hundred twenty-nine (129) (44 CFR § 44502, July 30,1979, as amended at 46 FR 2266, January 8, 1981, 46 FR 10724, February 4, 1981)
** (PAH) means Polycyclic Aromatic Hydrocarbon

II. AQUATIC LIFE CRITERIA TOXIC POLLUTANTS

1. Arsenic	11. Cyanide	21. Heptachlor
2. Cadmium	12. Pentachlorophenol	22. Heptachlor-epoxide
3. Chromium (III and VI)	13. Aldrin	23. PCB-1242
4. Copper	14. Gamma-BHC	24. PCB-1254
5. Lead	15. Chlordane	25. PCB-1221
6. Mercury	16. 4,4-DDT	26. PCB-1232
7. Nickel	17. Dieldrin	27. PCB-1248
8. Selenium	18. Alpha-endosulfan	28. PCB-1260
9. Silver	19. Beta-endosulfan	29. PCB-1016
10. Zinc	20. Endrin	30. Toxaphene

III. Numerical Criteria for Priority Toxic Pollutants:

A		B		C		D	
(#)COMPOUND	CAS Number	FRESHWATER		SALTWATER		HUMAN HEALTH	
		CMC d (ug/l) B1	CCC d (ug/l) B2	CMC d (ug/l) C1	CCC d (ug/l) C2	For Consumption of: Water & Organisms (ug/) D1	Organism Only (ug/l) D2
1. Antimony	7440360					14a	4300 a
2. Arsenic	7440382	340 m	150 m	69	36	5	
3. Beryllium	7440417					j	j
4. Cadmium	7440439	3.9 d, m	1.1 d, m	42	9.3	j	j
5a. Chromium (III)	16065831	1700 d	210 d			j	j
b. Chromium (VI)	8540299	16 m	11 m	1100	50	j	j
6. Copper	7440508	18 d, m	12 d, m	4.8	3.1	1300	
7. Lead	7439921	82 d	3.2 d	210	8.1	j	j
8. Mercury	7439976	2.4 m	0.012 m	2.1	0.025	0.050 a	0.051 a
9. Nickel	7440020	470 d, m	52 d, m	74	8.2	610 a	4600 a
10. Selenium	7782492	20	5.0	290	71	j	j

A		B		C		D	
(#)COMPOUND	CAS Number	FRESHWATER		SALTWATER		HUMAN HEALTH	
		CMC d (ug/l) B1	CCC d (ug/l) B2	CMC d (ug/l) C1	CCC d (ug/l) C2	For Consumption of: Water & Organisms (ug/) D1	Organism Only (ug/l) D2
11. Silver	7440224	4.1 d		2.3			
12. Thallium	7440280					1.7 a	6.3 a
13. Zinc	7440666	120 d, m	110 d, m	95	86	9,100	69,000
14. Cyanide	57125	22 n	5.2 n	1	1	700 a	200,000 ah
15. Asbestos	1332214					7,000,000 fibers/L	i
16. 2,3,7,8-TCDD (Dioxin)	1746016					0.000000013 b	0.000000014 b
17. Acrolein	107028					320	780
18. Acrylonitrile	107131					0.059 a, b	0.66 a, b
19. Benzene	71432					1.2 a, b	71 a, b
20. Bromoform	75252					4.3 a, b	360 a, b
21. Carbon Tetrachloride	56235					0.25 a,b	4.4 a, b

A		B		C		D	
(#)COMPOUND	CAS Number	FRESHWATER		SALTWATER		HUMAN HEALTH For Consumption of:	
		CMC d (ug/l) B1	CCC d (ug/l) B2	CMC d (ug/l) C1	CCC d (ug/l) C2	Water & Organisms (ug/) D1	Organism Only (ug/l) D2
22. Chlorobenzene	108907					680 a	21,000 a, h
23. Chlorodibromomethane	124481					0.41 a, b	34 a, b
24. Chloroethane	75003						
25. 2-Chloroethylvinyl-Ether	110758						
26. Chloroform	67663					5.7 a, b	470 a, b
27. Dichlorobrpmomethane	75274					0.56 a, b	46 a, b
28. 1,1-Dichloroethane	75343						
29. 1,2Dichloroethane	107062					0.38 a, b	99 a, b

A		B		C		D	
(#)COMPOUND	CAS Number	FRESHWATER		SALTWATER		HUMAN HEALTH	
		CMC d (ug/l) B1	CCC d (ug/l) B2	CMC d (ug/l) C1	CCC d (ug/l) C2	For Consumption of: Water & Organisms (ug/) D1	Organism Only (ug/l) D2
30. 1,1-Dichloroethylene	75354					0.057 a, b	3.2 a, b
31. 1,2-Dichloropropane	78875					0.52 a	39 a
32. 1,3-Dichloropropene	542756					10 a	1700 a
33. Ethylbenzene	100414					3,100 a	29,000 a
34. Methyl Bromide	74839					48 a	4,000 a
35. Methyl Chloride	74873					j	j
36. Methylene Chloride	75092					4.7 a, b	1,600 a, b
37. 1,1,2,2-Tetra-chloroethane	79345					0.17 a, b	11 a, b

A (#)COMPOUND CAS Number	B FRESHWATER CMC d (ug/l) B1	 CCC d (ug/l) B2	C SALTWATER CMC d (ug/l) C1	 CCC d (ug/l) C2	D HUMAN HEALTH For Consumption of: Water & Organisms (ug/) D1	 Organism Only (ug/l) D2
38.Tetrachloroethylene 127184					0.8 b	8.85 b
39. Toluene 108883					6,800 a	200,000 a
40. 1,2-Trans-Dichloro-ethylene 156605					700 a	140,000 a
41. 1,1,1-Trichloroethane 71556					j	j
42. 1,1,2-Trichloroethane 79005					0.60 a, b	42 a, b
43. Trichloroethylene 79016					2.7 b	81 b

A		B		C		D	
(#)COMPOUND	CAS Number	FRESHWATER		SALTWATER		HUMAN HEALTH	
		CMC d (ug/l) B1	CCC d (ug/l) B2	CMC d (ug/l) C1	CCC d (ug/l) C2	For Consumption of: Water & Organisms (ug/) D1	Organism Only (ug/l) D2
44. Vinyl Chloride	75014					2 b	525 b
45. 2-Chlorophenol	95578					120 a	400 a
46. 2,4-Dichlorophenol	120832					93 a	790 a
47. 2,4-Dimethylphenol	105679					540 a	2300 a
48. 2-Methyl-4,6-Dinitro-phenol	534521					13.4	765
49. 2,4-Dinitrophenol	51285					70 a	14,000 a
50. 2-Nitrophenol	88755						
51. 4-Nitrophenol	100027						

A		B		C		D	
(#)COMPOUND	CAS Number	FRESHWATER		SALTWATER		HUMAN HEALTH	
		CMC d (ug/l) B1	CCC d (ug/l) B2	CMC d (ug/l) C1	CCC d (ug/l) C2	For Consumption of: Water & Organisms (ug/) D1	Organism Only (ug/l) D2
52. 3-Methyl-4-Chloro-phenol	59507						
53. Pentachlorophenol	87865	19 e, m	15 e, m	13	7.9	0.28 a, b	8.2 a, b, h
54. Phenol	108952					21,000 a	4,600,000 a,h
55. 2,4,6-Trichlorophenol	88062					*2.1 a, b	6.5 a, b
56. Acenaphtene	83329					1,200 a	2,700 a
57. Acenaphthylene	208968						
58. Anthracene	120127					9,600 a	110,000 a
59. Benzidine	92875					0.00012 a, b	0.00054 a, b
60. Benzo(a)Antracene	56553					0.0044 a, b	0.049 a, b
61. Benzo(a)Pyrene	50328					0.0044 a, b	0.049 a, b

62. Benzo(b)Fluofranthene 205992			0.0044 a, b	0.049 a, b
63. Benzo(ghi)Perylene 191242				
64. Benzo(k)Fluoranthene 207089			0.0044 a, b	0.049 a, b
65. Bis(2-Chloroethoxy) - Methane 111911			0.031 a, b	1.4 a, b
66. Bis(2-Chloroethyl)-Ether 111444				
67. Bis(2-Chloroisopropyl)- Ether 108601			1,400 a	170,000 a
68. Bis(2-Ethylhexyl)- Phthalate 117817			1.8 a, b	5.9 a, b

69. 4-Bromophenyl Phenyl Ether 101553				
70. Butylbenzyl Phthalate 85687			3,000 a	5,200 a
71. 2-Chloronaphthalene 91587			1,700 a	4,300 a
72. 4-Chlorophenyl - Phenyl Ether 7005723				
73. Chrysene 218019			0.0044 a, b	0.049 a, b
74. Dibenzo (a,h) Anthracene 53703			0.0044 a, b	0.049 a, b
75. 1,2-Dichlorobenzene 95501			2,700 a	17,000 a
76. 1,3-Dichlorobenzene 541731			400	2,600

77. 1,4-Dichlorobenzene 106467			400	2,600
78. 3,3-Dichlorobenzidine 91941			0.04 a, b	0.077 a, b
79. Diethyl Phthalate 84662			23,000 a	120,000 a
80. Dimethyl Phthalate 131113			313,000	2,900,000
81. Di-n-Butyl Phthalate 84742			2,700 a	12,000 a
82. 2,4-Dinitrotoluene 121142			0.11 b	9.1 b
83. 2,6-Dinitrotoluene 606202				
84. Di-n-Octyl Phthalate 117840				
85. 1,2-Diphenylhydrazine 122667			0.040 a, b	0.54 a, b
86. Fluoranthene 206440			300 a	370 a

87. Fluorene 86737			1,300 a	14,000 a
88. Hexachlorobenzene 118741			0.00075 a, b	0.00077 a, b
89. Hexachlorobutadiene 87683			0.44 a, b	50 a, b
90. Hexachlorocyclopen-tadiene 77474			240 a	17,000 a,h
91. Hexachloroethane 67721			1.9 a, b	8.9 a, b
92. Indeno(1,2,3-cd)-Pyrene 193395			0.0044 a, b	0.049 a, b
93. Isophorone 78591			36 b	2,600 b
94. Napthalene 91203				
95. Nitrobenzene 98953			17a	1,900 a,h

96. N-Nitrosodimethylamine 62759					0.00069 a, b	8.1 a, b
97. N-NitrosodiPropylamine 621647					0.005 a, b	1.4 a, b
98. N-Nitrosodiphenyl-amine 86306					5.0 a, b	16 a, b
99. Phenanthrene 85018					960 a	11,000 a
100. Pyrene 129000						
101. 1,2,4-Trichlorobenzene 120821					260	940
102. Aldrin 309002	3 f		1.3 f		0.00013 a, b	0.00014 a,b
103. alpha-BHC 319846					0.0039 a, b	0.013 a, b
104. beta-BHC 319857					0.014 a, b	0.046 a, b
105. gamma-BHC 58899		0.95 m		0.16 f	0.019 b	0.063 b
106. delta-BHC 319868						
107. Chlordane 57749		2.4 f	0.0043f	0.09 f	0.004 f	0.0021 a, b	0.0022 a, b
108. 4-4-DDT 50293		1.1f	0.001 f	0.13 f	0.001 f	0.00059 a, b	0.00059 a, b

109. 4,4-DDE	72559				0.00059 a, b	0.00059 a, b
110. 4,4-DDD	72548				0.00083 a, b	0.00084 a, b
111. Dieldrin	60571	0.24 m	0.056 m	0.71 f	0.0019 f	0.00014 a, b	0.00014 a, b
112. alpha-Endosulfan	959988	0.22 f	0.056 f	0.034 f	0.0087 f	110 a	240 a
113. beta-Endosulfan	33213659	0.22 f	0.056 f	0.034 f	0.0087 f	110 a	240 a
114. Endosulfan Sulfate	1031078					110 a	240 a
115. Endrin	72208	0.086 m	0.036 m	0.037 f	0.0023 f	0.76 a	0.81 a, h
116. Endrin Aldehyde	7421934					0.76 a	0.81 a, h
117. Heptachlor	76448	0.52 f	0.0038 f	0.053 f	0.0036 f	0.00021 a, b	0.00021 a, b
118. Heptachlor Epoxide	1024573	0.52 f	0.0038 f	0.053 f	0.0036 f	0.00010 a, b	0.00011 a, b
119. PCBs			0.014 f, k		0.03 f, k	0.00017 l	0.00017 l
126. Toxaphene	8001352	0.73	0.0002	0.21	0.0002	0.00073 a, b	0.00075 a, b
Total No. of Criteria (h) =		24	28	23	27	99	97

FOOTNOTES:

a. These criteria have been revised to reflect the U.S. E.P.A. q1* or RfD, as contained in the Integrated Risk Information System ("IRIS") as of October 1, 1996. The fish tissue bioconcentration factor ("BCF") from the 1980 documents was retained in each case.

b. These criteria are based upon carcinogenicity of 10 (-6) risk.

c. The Criteria Maximum Concentration ("CMC") is an acute concentration. It is the one (1) hour average concentration in ambient waters that should not be exceeded more than once every three (3) years on average. Criteria Continuous Concentration ("CCC") is a chronic concentration. It is the four (4) day average concentration of a pollutant in ambient water that should not be exceeded more than once every three (3) years on average. ug/l equals micrograms per liter.

d. These freshwater aquatic life criteria for metals are expressed as a function of total hardness (mg/l) in the water body. Values displayed above in the matrix correspond to a total hardness of 100 mg/l. The equations for calculating metals criteria are provided below:

$CMC = WER \times CMC \times (\exp\{m_A[\ln(hardness)]+b_A\})$
$CCC = WER \times CCC \times (\exp\{m_C[\ln(hardness)]+b_C\})$
Where WER = Water Effects Ratio
Final CMC and CCC values should be rounded to two (2) significant figures.

Metal	m_A	b_A	m_C	b_C
Cadmium	1.128	-3.6867	0.7852	-2.715
Copper	0.9422	-1.700	0.8545	-1.702
Chromium (III)	0.8190	3.688	0.8190	1.561
Lead	1.273	-1.460	1.273	-4.705
Nickel	0.8460	2.255	0.8460	0.0584
Silver	1.72	-6.52	------	-------
Zinc	0.8473	0.884	0.8473	0.884

NOTE: The term "exp" represents the base exponential function.
For waters with a hardness of 400 mg/l or less as calcium carbonate, the actual ambient hardness of the surface water shall be used in those equations. For waters with a hardness of over 400 mg/l as calcium carbonate, a hardness of 400 mg/l as calcium carbonate shall be used with a default Water-Effect Ratio ("WER") of one (1), or the actual hardness of the ambient surface water shall be used with a WER.

e. These freshwater aquatic life criteria for pentachlorophenol are expressed as a function of pH. Values displayed above in the matrix correspond to a pH of 7.8. Values are calculated as follows:

$$CMC = \exp(1.005(pH) - 4.869)$$
$$CCC = \exp(1.005(pH) - 5.134)$$

f. These aquatic life criteria for these compounds were issued by the U.S. E.P.A. in 1980 utilizing the 1980 Guidelines for criteria development. The acute values shown are final acute values ("FAV"), which by the 1980 Guidelines are instantaneous values as contrasted with a CMC which is a short-term average.

g. These totals simply sum the criteria in each column. For aquatic life, there are thirty (30) priority toxic pollutants with some type of freshwater or saltwater, acute or chronic criteria. For human health, there are one hundred (100) priority toxic pollutants with either "water + organism" or "organism only" criteria. Note that these totals count chromium as one pollutant even though U.S. E.P.A. has developed criteria based upon two (2) valence states. In the matrix, the Agency has assigned numbers 5a and 5b to the criteria for chromium to reflect the fact that this list of one hundred twenty-six (126) priority pollutants includes only a single listing for chromium.

h. No criteria for protection of human health from consumption of aquatic organisms (excluding water) was presented in the 1980 criteria document, or in the 1986 Quality Criteria for Water. Nevertheless, sufficient information was presented in the 1980 document to allow a calculation of a criterion, even though the results of such a calculation were not shown in the document.

i. This criterion for asbestos is the MCL (40 CFR § 141.62).

j. The Agency is not adopting human health criteria for these contaminants. However, permit authorities should address these contaminants in NPDES permit actions using Guam's existing narrative criteria for toxics.

k. PCBs are a class of chemicals which include aroclors 1242, 1254, 1221, 1232, 1248, 1260 and 1016, CAS numbers 53469219, 11097691, 11104282, 11141165, 12672296, 11096825 and 12674112, respectively. The aquatic life criteria apply to this set of PCBs.

l. This criterion applies to total PCBs or congener or isomer analyses.

m. This criterion has been recalculated pursuant to the 1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water, Office of Water, EPA-820-B-96-001, September, 1996. See also Great Lakes Water Quality Initiative Criteria Documents for the Protection of Aquatic Life in Ambient Water, Office of Water, EPA-80-B-95-004, March, 1995.

n. This criterion is expressed as µg free cyanide (as CN) /l.

General Notes:

1. This chart lists all of EPA's priority toxic pollutants, whether or not criteria guidance are available. Blank spaces indicate the absence of criteria guidance. Because of variations in chemical nomenclature systems, this listing of toxic pollutants does not duplicate the listing in Appendix A of 40 CFR Part 423. The Chemical Abstracts Service ("CAS") registry numbers are added to provide a unique identification for each chemical.

2. The following chemicals have organoleptic-based criteria recommendations that are not included on this matrix: zinc, 3-methyl-4-chlorophenol.

TABLE IV.

Additional Toxic Pollutants.

Substance*	Maximum Numerical Limits		Application Factors
	Marine Water	Fresh Water	
Aluminum	0.20 mg/l	1.0 mg/l	0.01
Ammonia	0.02 mg/l		0.05
Barium	0.50 mg/l		0.05
Boron	5.00 mg/l		0.10
Bromine (free as Bromate)	0.10 mg/l 100.0 mg/l		- -
Chlorine [1] (Total Residual)	0.0075 mg/l	0.011 mg/l	0.1
Fluoride	1.50 mg/l	0.80 mg/l	0.1
Iron	0.05 mg/l	3.00 mg/l	-
Manganese	0.02 mg/l		0.2
Molybdenum	-		0.0
Sulfide	0.005 mg/l		0.1 (Applicable to 20-day LC data)
Tributyltin (TBT)	Marine Water Chronic - 0.010 µg/l Acute - 0.356µg/l	Fresh Water Chronic - 0.64 µg/l Acute - 0.442µg/l	

Uranium [2]	0.00 mg/l	0.01
Vanadium	-	0.05

* Total amounts in indicated chemical state of form.
[1] Greater concentrations of Chlorine may be used to treat a source of drinking water in order to meet the requirements of Subsection II.B.1 of these standards.
[2] Naturally occurring Uranium has been reported in concentrations of 0.003mg/l, 0.00004 mg/l (river water).

Note: Whenever natural concentrations of any toxic substance or element occur and exceed the limits established in these standards, this greater concentration shall constitute the limit; provided, that this natural concentration was not directly affected by non-induced causes.

APPENDIX B.
Wetlands.

1. Official Wetland Map.

The National Wetlands Inventory ("NWI") map published by the United States Fish & Wildlife Service ("FWS"), is the official, interim wetland map adopted for Guam pursuant to Executive Order Number 90-13, entitled, "Protection of Wetlands," dated June 12, 1990. See Appendix "D."

2. Wetland Classification.

The Classification of Wetlands and Deepwater Habitats was developed by Cowardin et. al. in 1979 for the FWS. This system provides the basis for wetland-related activities with the FWS. The Cowardin system is hierarchical and thus can provide several levels of detail in classifying wetlands. The "System" and "Subsystem" levels of detail appear to be the most promising for water quality standards. Guam may choose to evaluate wetland function and values for all the wetlands within the Island of Guam based upon wetland type (using Cowardin (1979); see Figure 1). It may also evaluate wetlands on a case-by-case basis as individual permit decisions arise to ensure that designated uses are being protected and have reflected existing uses. This interim map is used by Guam for classification, inventory and mapping wetlands, until such time as a new system is developed and accepted for use.

3. Criteria for Wetland Identification.

The latest version of the Corps of Engineers Wetlands Delineation Manual, adopted by the United States Army Corps of Engineers is adopted by reference by these standards. This manual describes technical criteria, field indicators and other sources of information, and methods for identification and delineation of jurisdictional wetlands. This manual shall serve as the technical basis for identifying and delineating jurisdictional wetlands in Guam.

4. Wetland Evaluation.

Wetland evaluations should include a plant and wildlife inventory and an evaluation of the wetland functions. High quality wetlands should maintain water quality and protect against erosion, and include, but are not limited to, those which provide habitat for threatened or endangered species and/or wetlands which are locally or regionally scarce or threatened.

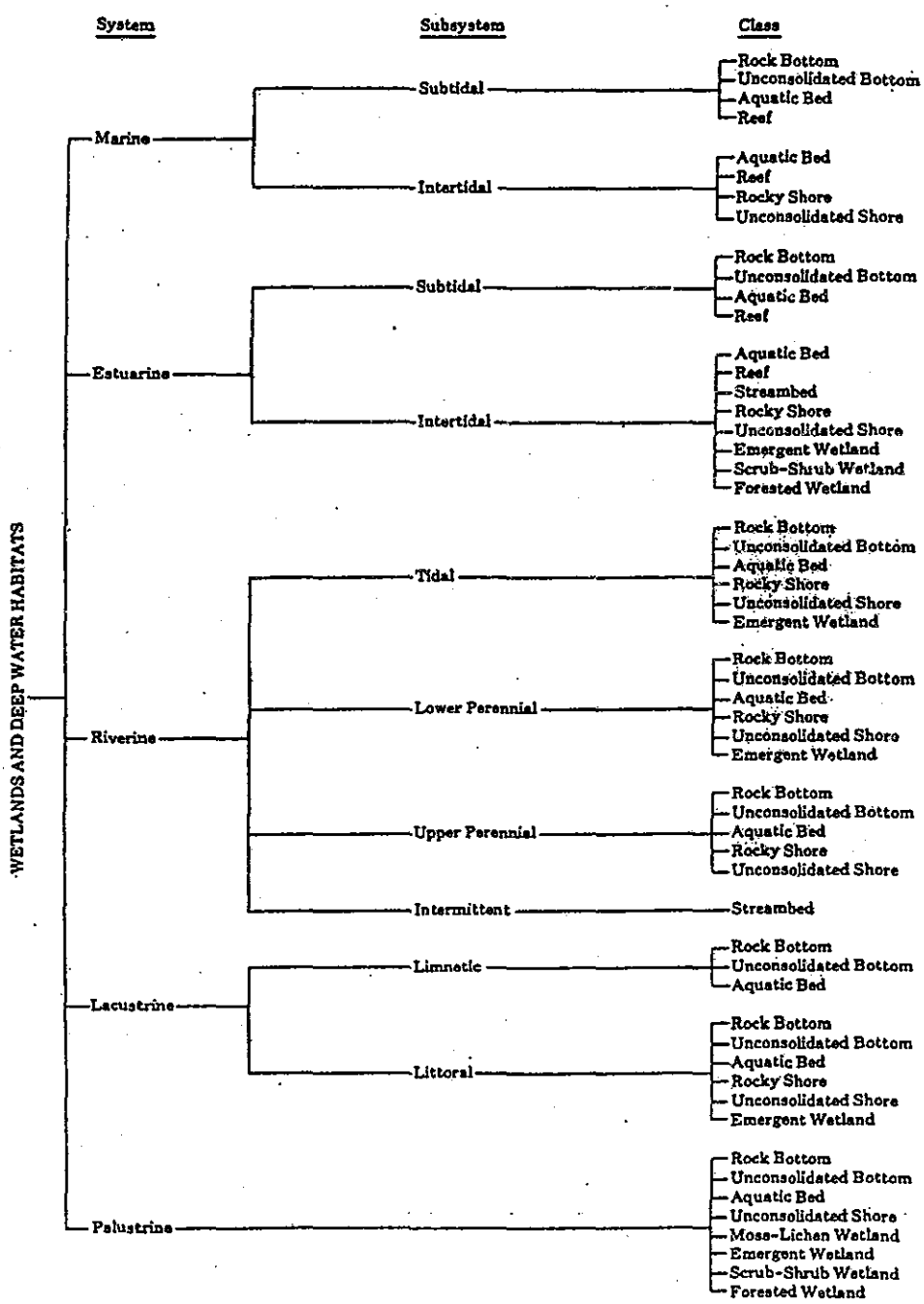
5. Mitigation.

All wetlands in Guam are classified as Guam Resource Waters under this regulation and are protected from degradation. However, in certain instances, limited degradation may be permitted; provided, reasonable and/or practical alternatives are not available, and the applicants have implemented best management practices, worked to avoid impacts due to hydromodification (including reducing the scale of a proposed project), minimized the impacts and agreed to mitigate for the destruction of wetland habitat.

Acceptable mitigation includes construction of a wetland designed to replace the wetland functions destroyed, altered or impaired, and restoration or enhancement of an existing degraded wetland. Protection of an existing functional wetland is not acceptable mitigation for destruction of a wetland, however, as part of a mitigation plan, certification conditions may require protection of on-site wetlands through establishment of deed restrictions or easements. Mitigation conditions may also require long term biological monitoring. The feasibility and general acceptability of a given investigation scheme cannot be used to justify permitted alterations.

Figure 1.

Classification hierarchy of wetlands and deepwater habitats, showing systems, subsystems and classes. The Palustrine System does not include deepwater habitats (from Cowardin et al., 1979).



APPENDIX C.

Constructed Wetlands for Water Quality Improvement.

This guidance encourages the expansion and use of Guam's Wetland Resources through the creation and restoration and to allow for the use of natural wetlands for wastewater treatment if specific requirements are met.

If the wetland is created as part of the treatment process, the minimum requirements on the degree of pretreatment shall include secondary treatment, and applicable water quality standards must be met for water bodies that receive the effluent from the wetland treatment system. If the wetland currently exists, the following requirements shall be applied:

1. minimum of secondary treatment prior to discharge to the wetland;

2. advanced treatment prior to discharge to the wetland, if necessary to meet Guam Water Quality Standards applicable to the wetland;

3. discharge to the wetland free of toxic contaminants, e.g. chlorine, at levels that would impair beneficial uses;

4. monitoring in the wetland to detect accumulation of toxic contaminants and changes to the plant/animal communities;

5. Section 402 NPDES permit;

6. Section 404 permit, if alterations of the wetland are required as part of construction; and

7. review on a case-by-case basis. The Agency may utilize any scientific and regulatory guidance documents to evaluate wetland treatment system designs, objectives and operational considerations as may be appropriate, on a case-by-case basis.

Appendix D.

Executive Order Number 90-13.

APPENDIX "D"

TERRITORY OF GUAM
OFFICE OF THE GOVERNOR
AGAÑA, GUAM 96910
U.S.A.

EXECUTIVE ORDER NO. 90-13

PROTECTION OF WETLANDS

WHEREAS, Executive Order 78-21 directed the Territorial Land Use Commission to officially designate wetland areas on Guam; and

WHEREAS, Government agencies have been utilizing three separate maps to identify wetland areas due to the lack of an officially adopted map; and

WHEREAS, wetlands are areas of particular concern that provide an essential habitat for maintenance of native plant and animal life, prevent soil erosion and stormwave damage, and valuable locations for scientific and educational investigations, and act as floodplains during periods of excessive water flow and a source of fresh water for domestic and agricultural purposes; and

WHEREAS, the rapid pace of development currently experienced on Guam has placed greater pressure on this valuable resource; and

WHEREAS, the management of this resource cannot begin until landowners, developers and the Government of Guam utilize a consistent source of wetland information.

NOW, THEREFORE, I, JOSEPH F. ADA, Governor of the Territory of Guam, pursuant to the authority vested in me by the Organic Act of Guam, do hereby declare that:

1. The official, interim wetland map for Guam shall be the National Wetlands Inventory map published by the United States Fish and Wildlife Service.

2. All Government of Guam agencies shall utilize this map in the review of physical development projects.

3. The appropriate land use agencies including the Guam Environmental Protection Agency, the Department of Agriculture, and the Bureau of Planning shall complete a study of wetlands; prepare public information material; and draft all necessary legislation, rules and regulations, and/or executive orders for processing through the appropriate channels.

4. The Executive Order shall remain in effect until the results of such study recommended legal framework are approved as required by applicable law.

5. Executive Order 78-21 is repealed in its entirety.

SIGNED AND PROMULGATED this 12th day of JUNE, 1990.

JOSEPH F. ADA
Governor of Guam

COUNTERSIGNED:

FRANK F. BLAS
Lieutenant Governor of Guam

Appendix E.

Executive Order Number 96-26.

Executive Order No. 96-26.

Relative to creating the Application Review Committee to replace the Development Review Committee, and to streamline the review process for the Territorial Land Use Commission/Territorial Seashore Protection Commission/Guam Natural Resources Board.

TERRITORY OF GUAM
OFFICE OF THE GOVERNOR
AGAÑA, GUAM 96910
U.S.A.

EXECUTIVE ORDER NO. 96-26

RELATIVE TO CREATING THE APPLICATION REVIEW COMMITTEE TO REPLACE THE DEVELOPMENT REVIEW COMMITTEE, AND TO STREAMLINE THE REVIEW PROCESS FOR THE TERRITORIAL LAND USE COMMISSION/TERRITORIAL SEASHORE PROTECTION COMMISSION/GUAM NATURAL RESOURCES BOARD.

WHEREAS, Title 21, Guam Code Annotated created the Territorial Land Use Commission/Territorial Seashore Protection Commission/Guam Natural Resources Board (hereinafter collectively and individually referred to as the "Commission") and invested in the Commission the authority to review all matters pertaining to the zoning, subdivision, granting of conditional uses and variances, and other land and water related uses of public and private land and development within the Territory of Guam; and

WHEREAS, in general, matters coming before the Commission represent exceptions or departures from the Master Plan or existing land use laws of Guam and thus comprise requests for the Commission, acting on behalf of the people of Guam, to grant such exceptions; and

WHEREAS, Executive Orders Nos. 90-09 and 92-06 established and revised the Development Review Committee (DRC) in order to review the impact of proposed developments in the Territory of Guam, Executive Order No. 90-15 established interim guidelines for the DRC, and Executive Order No. 90-10 established requirements for Environmental Impact Assessments for all Commission actions; and

WHEREAS, there is a need for a more efficient and streamlined review process, which entails replacing the existing Development Review Committee (DRC) with a new Application Review Committee ("Committee" or "ARC"), and charging the ARC with the responsibility of evaluating applications for land use matters, and reporting its findings and recommendations to the Commission; and

WHEREAS, the ARC is formulated for the purpose of providing the Commission with technical and professional review, analysis, and advice through individual agency positions concerning various development activities on Guam, so that the Commission can ensure that proposed developments achieve both maximum utility and livability, through provisions for adequate utilities and facilities such as power, water, drainage, schools, parks, traffic circulation, and open spaces for light and air; and

WHEREAS, commercial and residential development in Guam continues at an accelerated rate, and many aspects of these developmental activities create a significant impact upon the environment of Guam; and

WHEREAS, the Guam Environmental Protection Agency (GEPA), pursuant to Chapters 45 through 52, Title 10, Guam Code Annotated, is responsible for providing a

unified, integrated, and comprehensive territory-wide program of environmental protection and procedures to fulfill that responsibility; and

WHEREAS, conducting environmental review and impact assessments is a vital and integral part of the development planning process and is therefore of substantial value and utility to developers and landowners, as well as being in the public interest.

NOW, THEREFORE, I, CARL T. C. GUTIERREZ, Governor of Guam, by virtue of the authority vested in me by the Organic Act of Guam, as amended, and the laws of Guam, do hereby order that, notwithstanding any other executive order:

(1) For the purposes of implementing this Executive Order and supplementing definitions not contained in Chapters 61 through 63 of Title 21, Guam Code Annotated, the following definitions shall apply:

(a) "Accessory use" means a use of land or a building or a portion thereof, when such use is customary and incidental to the actual principal use of the land or building and such accessory use is located on the same parcel of property as the principal use.

(b) "Applicant" means the person, government, or other entity which submits any application for consideration before the Commission.

(c) "Application" means the complete application form and all supporting documentation required for a project.

(d) "Barracks" means a building containing One (1) or more rooms intended or designed to be used or rented for living and sleeping purposes, typically but not exclusively housing provided by an employer for employees. A barracks shall not be construed to mean a hotel.

(e) "Bed and Breakfast Inn" means a house, or portion thereof, where short-term lodging rooms and meals are provided. The operator of the inn shall live on the premises or in adjacent premises.

(f) "Club" means an organization which operates an establishment for objectives of an athletic, patriotic, political or social nature and not for pecuniary gain, having a bona fide membership list, the majority of members of which pay dues at least once in every year.

(g) "Clubhouse" means a building used to house a club or social organization, not conducted for private profit and not an adjunct to, operated by, or in connection with a public tavern, bar, cafe, or other public place.

(h) "Day" means a calendar day unless otherwise specified.

(i) "Lodging House" or "Rooming House" means any building, or portion thereof, containing not more than five guest rooms which are used by not more than five guests where rent is paid in money, goods, labor or otherwise. A lodging house shall

comply with all of the requirements of the Building Code for dwellings.

(j) "Planned Unit Development" means land under unified control to be planned and developed as a whole in a single development operation or a programmed series of development operations or phases. A planned unit development generally as a range of uses including residential, commercial, office, and recreational that are designed to be in a harmonious relationship with each other. Such a development is built according to specific plans that include not only streets, utilities, lots, and building locations, but also site plans for all buildings that are intended to be located, constructed, used and related to each other and plans for other uses and improvements on the land as related to the buildings.

(k) "Project" means any type of proposal that comes before the Commission for approval.

(2) There is created an Application Review Committee ("Committee" or "ARC") which is comprised of the following permanent voting members:

(a) Department of Land Management, Planning Division (DLM);

(b) Guam Environmental Protection Agency (GEPA);

(c) Department of Agriculture (DAGR);

(d) Guam Waterworks Authority (GWA);

(e) Guam Power Authority (GPA);

(f) Department of Parks and Recreation (DPR);

(g) Department of Public Works (DPW); and

(h) Bureau of Planning (BOP).

The heads of such agencies shall assign senior members of their respective departments to attend the ARC meetings.

(3) Interim ARC Guidelines are hereby established, pending promulgation as rules through the Administrative Adjudication Law. The Interim Guidelines are attached as Appendix A.

(4) This Executive Order shall govern all land and water uses that come before the ARC and the Commission. All applications and other matters that come before the ARC or Commission shall be in compliance with this Executive Order and the attached and incorporated Interim Application Review Committee (ARC) Guidelines. The requirement to conform to the Interim Guidelines shall cease upon the promulgation of rules pursuant to the Administration Adjudication Law.

(5) All applications for Commission action shall first be submitted to the voting member agencies of the ARC for their technical review and analysis. The period of this review and analysis shall not exceed Sixty (60) days from the first ARC meeting at which the application appears on the ARC's agenda; provided, however, that this period may be reasonably extended by the Commission upon written request of an ARC member or the applicant. No items shall be placed on the Commission agenda unless the items are first approved by the ARC. All Commission agenda items must be approved by the ARC not less than Two (2) weeks prior to the scheduled Commission meeting. Except for applications for zone changes, the applicant shall apply for and receive a building or grading permit for the approved project within One (1) year of the date of recordation of the Notice of Action, otherwise, the approval of the project as granted by the Commission shall expire; provided, however, that the Commission may grant Two (2) one-year extensions of the above approval period.

(6) All applications for conditional use, zone change, variance, subdivision approval, golf courses, any proposed developmental action in wetlands, or for development of aquaculture facilities shall be required to submit an Environmental Impact Assessment (EIA) in the format required by the Guam Environmental Protection Agency (GEPA) Administrator; provided, however, that the proposed action may be determined by the GEPA Administrator to be exempt from the EIA requirement as set forth below:

(a) One (1) or Two (2) single family dwelling units on a single lot;

(b) a single duplex;

(c) sign or setback variances;

(d) reduction, relocation or deletion of easements; and

(e) horizontal property regimes.

The above listed projects shall not be exempt from the EIA requirement if the project involves construction and is located within an environmentally sensitive area, which includes, but is not limited to, areas that affect seashore, rivers and streams, wetlands, critical fauna and flora habitats, and aquifer recharge areas.

(7) When there is a change in ownership, management, or directorship of any development project before, during, or after construction on the project, and the project requires an EIA under provisions of this Executive Order, each subsequent owner, manager, or director of the development project shall be subject to all provisions of the EIA in the same manner as the original owner, manager, or director of the development. The owner of the development project shall give written notice to the GEPA and the Territorial Planner of a change in ownership, project manager, or directorship, within Thirty (30) days of the change.

(8) The Planning Division of the Department of Land Management shall provide administrative support staff and services for the ARC.

(9) No act prohibited or restricted by any statute, rule, law, or executive order shall be permitted by reason of compliance with this Executive Order No. 96-26.

(10) No permit, license, or requirement under any statute, rule, or law, federal or territorial, shall be waived by reason of compliance with this Executive Order No. 96-26.

(11) This Executive Order No. 96-26 shall operate prospectively only, and applies to all applications submitted to the Department of Land Management after the effective date of this Executive Order No. 96-26. All previously submitted applications shall continue under the procedures in force when the applications were accepted by the Department of Land Management.

(12) The provisions of this Executive Order No. 96-26 are severable and if any provision or part is held invalid, unconstitutional, or inapplicable to any person or circumstances, such invalidity, unconstitutionality, or inapplicability shall not affect or impair the remaining provisions of this Executive Order. If the use of the Interim Application Review Committee (ARC) Guidelines are invalid or unlawful, the existing Development Review Committee (DRC) Rules and Regulations, promulgated January 1995, as far as practicable, shall govern all matters before the ARC and Commission until the ARC Rules can be promulgated pursuant to the Administrative Adjudication Law.

(13) Executive Orders Nos. 90-09, 90-10, 90-15, and 92-06 are rescinded.

SIGNED AND PROMULGATED at Agaña, Guam this 28th day of October, 1996.

CARL T. C. GUTIERREZ
Governor of Guam

COUNTERSIGNED:

MADELEINE Z. BORDALLO
Lieutenant Governor of Guam

APPENDIX A
of Executive Order No. 96-26

INTERIM
APPLICATION REVIEW COMMITTEE (ARC)
GUIDELINES

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§900. Voting.
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§100. **Authority.** These Interim Guidelines are established under the authority of Executive Order 96-26 pending promulgation through the Administrative Adjudication Law, Chapter 9 of Title 5, Guam Code Annotated.

§200. **Official Name.** The official name of the Committee is the "Application Review Committee", referred to as "ARC" or "Committee".

§300. **Purpose.** The Committee is formulated for the purpose of providing the Territorial Land Use Commission/Territorial Seashore Protection Commission/Guam Natural Resources Board (hereinafter referred to as the "Commission") with technical and professional review, analysis, and advice through individual agency positions concerning various development activities in Guam. Within its mandated area of authority, each ARC agency shall:

(a) Ensure compliance with applicable law, regulatory standards, procedures, policies, and rules within its mandated area of concern;

(b) Evaluate alternative development strategies with the applicant to provide the best development plan for the developer and the community; and

(c) Develop and provide official position statements on applications submitted to the Commission.

§400. Organization. (a) Permanent Voting Members. The permanent voting members of the ARC as defined in this Executive Order are:

(1) Department of Land Management, Planning Division (DLM); (the Territorial Planner shall be the Chairperson)
(2) Guam Environmental Protection Agency (GEPA);
(3) Department of Agriculture (DAGR);
(4) Guam Waterworks Authority (GWA);
(5) Guam Power Authority (GPA);
(6) Department of Parks and Recreation (DPR);
(7) Department of Public Works (DPW); and
(8) Bureau of Planning (BOP).

(b) **Ex-Officio Members.** Ex-officio members shall be informed of meeting locations, times, and agendas. They shall have no vote on matters before the ARC and shall not be required to submit position statements and Infrastructure Certification Forms. The ex-officio members are:

(1) Chamorro Language Commission;
(2) Department of Commerce;
(3) Department of Education;
(4) Guam Fire Department; and
(5) Department of Public Health and Social Services.

Upon approval of the ARC, other agencies may become ex-officio members.

(c) The Chairperson shall call all meetings to order, oversee the application procedure and transmit all comments, recommendations, position statements, and Infrastructure Certification Forms to the Commission. Any Acting Territorial Planner shall automatically become Acting Chairperson of ARC.

(d) The Attorney General's office shall provide legal assistance as necessary.

§500. **Support Staff.** The Planning Division of the Department of Land Management shall provide support staff and services to implement Executive Order No. 96-26 and these Interim Rules. Such support shall include, but not be limited to:

(a) Retaining complete project files by municipal district, tract, block, lot number, petitioner, and type of application, and developing a means of cross-referencing project files;

(b) Developing an application package and revising it as needed;

(c) Providing application package to applicant and receiving the completed application package from applicant;

(d) Providing ARC minutes to Committee members;

(e) Receiving the ARC position statements and providing them to the Commission and applicant;

(f) Providing a summary of Commission actions to the ARC by the next ARC meeting; and

(g) Providing, upon request, to ARC members at no cost, and to the public at cost, copies of the approved Commission minutes.

§600. Meetings. (a) There shall be at least Two (2) regular ARC meeting per month. The meetings shall be held on alternate Thursdays from the Commission meetings, unless the ARC meeting falls on a legal holiday. If a regular ARC meeting is not held on the aforementioned Thursday, the ARC meeting shall be on the subsequent Tuesday.

(b) Special meetings for administrative matters only may be called by the Territorial Planner. Special meetings shall require at least Four (4) days notice to all permanent voting members.

(c) Majority (50% + 1) of the permanent voting members shall constitute a quorum for the purpose of conducting its business and for all other purposes. A quorum is required for all business conducted.

(d) The Committee shall hold its meetings at a location to be determined by a majority vote of the permanent voting members at any meeting.

§700. Application Procedure. (a) Applications for:

(1) Conditional Uses;
(2) Zone Changes;
(3) Zone Variances;
(4) Subdivision Variances;
(5) Tentative and Final Subdivisions;
(6) Wetland Permits;
(7) Seashore Clearances;
(8) Tentative Development Plan;
(9) Agricultural Subdivisions and Lot Parceling; and
(10) Other land use permit applications

shall meet the requirements of all relevant laws, executive orders, rules, and the requirements of the Commission and ARC. The applications for the above are available from the Territorial Planner. Completed applications shall be submitted to the Territorial Planner. Applications should be accompanied by an executive summary.

(b) Applications shall be received and initialed by the Territorial Planner or his or her authorized representative, who shall stamp the date and time the application was received.

(c) Upon receipt of the application, the Territorial Planner shall review the application to ensure that all required materials are included, prior to acceptance. The application shall include an affidavit of ownership or authorization signed by the owner, authorizing the application before the Commission. Incomplete applications shall not be accepted by the Territorial Planner who shall notify the applicant thereof. The Territorial Planner may conduct preliminary interviews with the applicant where needed.

(d) After acceptance by the Territorial Planner, applications shall be transmitted to ARC members at least Two (2) weeks prior to the ARC meeting at which the application is scheduled.

(e) The Territorial Planner shall provide a tentative ARC agenda to be approved by the ARC not less than Two (2) weeks prior to its next regularly scheduled meeting. Only agenda items approved by the ARC at its previous meeting shall be considered and heard by the Committee. In no event shall the agenda exceed Ten (10) applications for review at each meeting.

(f) The Committee shall hold a regularly scheduled meeting with the applicant to discuss the application, thus commencing the Sixty (60) day assessment period, which shall not be extended without Commission approval.

(1) At the time of its initial meeting with the applicant, the ARC shall tentatively set the project application for the first regularly scheduled Commission meeting falling after the Sixty (60) day assessment period and the Two (2) week period required under Subsections (a) and (b) of §800 of these Interim Rules, below, has elapsed; provided, however, that the ARC may reschedule the matter to an earlier Commission meeting if all permanent voting members of the ARC have submitted their required positions and Infrastructure Certification Forms and there is no objection from the applicant.

(2) If any permanent voting Committee member finds an application to be incomplete or lacking pertinent information which may reasonably be deemed necessary to formulate comments or recommendations at any time within the first Forty-five (45) days of the assessment period, the ARC member shall notify the applicant in writing (with a copy of the letter or notice to the Territorial Planner) as to precisely what additional information is required from the applicant to adequately review the application.

(3) If at any time within the Sixty (60) day assessment period a permanent voting member of the ARC or the applicant requires additional time for adequate review and determination of a position on the project application,

the member or applicant may, in writing, notify the Territorial Planner, and the applicant, if necessary, that additional time is required and the precise reasons therefor. The Commission shall hear the request for additional time at the earliest opportunity, consistent with law, executive orders, and these Guidelines, but not later than the Commission meeting wherein the matter itself is scheduled to be heard.

(4) Permanent voting members of the ARC shall submit written comments in individual position statements and Infrastructure Certification Form, if required, to the Territorial Planner not later than Sixty (60) days from the initial ARC meeting on the project application.

(g) The position statements shall contain a clear and unambiguous statement indicating whether the agency APPROVES, DISAPPROVES, or APPROVES WITH CONDITIONS the project application. If an Approval with Conditions is given, specific conditions for the approval must be clearly stated. The position statement from GPA, DPW, GWA and GEPA shall include a completed Infrastructure Certification Form, a sample copy of which is attached hereto.

§800. **Approval of Commission Agendas.** (a) The Territorial Planner shall compile all position statements and Infrastructure Certification Forms and prepare the tentative Commission agenda. No item shall be placed on the Commission agenda unless the item is approved by the ARC. All tentative Commission agenda items must be approved by the ARC not less than Two (2) weeks in advance of the scheduled Commission meeting.

(b) The Territorial Planner shall transmit the approved agenda, applications packages, Infrastructure Certification Forms and position statements to the Commission not later than One (1) week before the Commission meeting.

§900. Voting. (a) Subject to the ARC quorum requirements, motions on all matters before the ARC shall be passed by majority vote of the permanent voting members present, provided, however, that at least Four (4) affirmative votes shall be required for any action to be approved by the Committee.

(b) The Chairperson of the Committee shall vote on all matters before the Committee.

(c) Except as otherwise provided, the parliamentary procedures set forth in Robert's Rules of Order shall govern the conduct of all Committee meetings.

§1000. Order of Business. At the regular meetings of the Committee, the following shall be the order of business:

(a) Attendance;
(b) Approval of Minutes;

(c) Old or Unfinished Business;
(d) New Business;
(e) Approval of ARC Agenda;
(f) Approval of Commission Agenda;
(g) Administrative and Miscellaneous Matters; and
(h) Adjournment.

§1100. *Severability.* The provisions of these Interim Guidelines are severable and if any provision or part is invalid, unconstitutional, or inapplicable to any person or circumstance, such invalidity, unconstitutionality, or inapplicability shall not affect or impair the remaining provisions of these Interim Guidelines.

SIGNED and ESTABLISHED at Agaña, Guam, on this 28th day of October, 1996.

CARL T. C. GUTIERREZ
Governor of Guam

ATTACHMENT TO APPENDIX A OF EXECUTIVE ORDER NO. 96-26

Use a separate form for each activity, service or facility certified.

Infrastructure Certification Form

Agency Certifying: _____
Applicant: _____
Location: Tract _____ Block _____ Lot No. _____ Village _____
Type of Application: _____
TLUC/TSPC Application No.: _____
Brief Project Description: _____
_____

For the purposes of this Certification, GOVERNMENT SERVICES, FACILITIES and INFRASTRUCTURE include, but are not limited to: **power lines, poles and facilities; water lines, pumps and facilities; sewer and liquid waste disposal; storm water disposal; solid waste disposal; telephone lines and facilities; schools; health facilities; police and fire fighting service and facilities; roads; traffic and street lights; parks and recreational facilities.**

1. I hereby certify that the required GOVERNMENT SERVICES, FACILITIES and INFRASTRUCTURE are currently AVAILABLE AND IN PLACE to support this project: Yes _____/ No _____/

2. If the answer to #1 above is YES, then:
I hereby certify that the required GOVERNMENT SERVICES, FACILITIES and INFRASTRUCTURE are currently ADEQUATE to support this project:
Yes _____/ No _____/

3. If the required GOVERNMENT SERVICES, FACILITIES and INFRASTRUCTURE currently in place are NOT AVAILABLE or they are AVAILABLE, BUT NOT ADEQUATE, itemize the services, facilities and infrastructure that are needed, the estimated cost thereof and whether funds are currently available and identified to develop such services, facilities and infrastructure:

Services, Facilities and Infrastructure Needed	Cost of Upgrades	Funds Available	Date Available	Funds Identified
_____	_____	Yes/No	_____	Yes/No
_____	_____	Yes/No	_____	Yes/No
_____	_____	Yes/No	_____	Yes/No
_____	_____	Yes/No	_____	Yes/No
_____	_____	Yes/No	_____	Yes/No

I hereby certify that the foregoing is true and correct to the best of my knowledge.

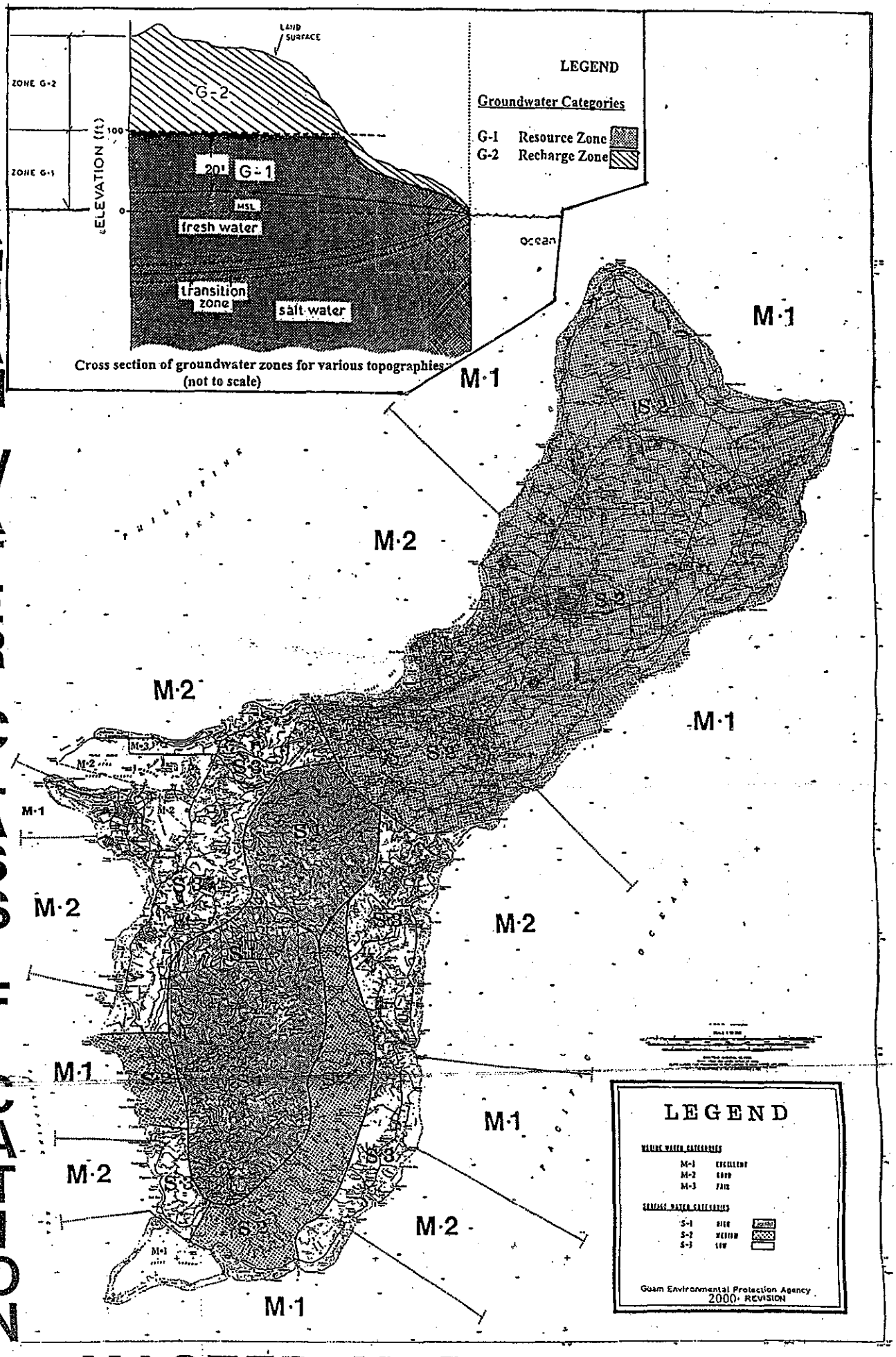
Agency/Department Head Date,

Comments:

Appendix F.

Guam Water Classification Map.

GUAM WATER CLASSIFICATION MASTER MAP



Appendix G.

Recommended Potential Treatment Efficiencies.

RECOMMENDED POTENTIAL TREATMENT EFFICIENCIES. *

CONVENTIONAL PROCESS						SPECIAL PROCESS						
Parameter	**Aera-tion**	**Chemical oxidation (chlorin-ation, etc)**	**Coagul-ation Floccul-ation**	**Lime Soft en-ing**	**Filtra tion**	**Activated carbon adsorption PAC**	**GAC**	**Air strip-ping**	**Demineralizing (reverse osmosis, etc.)**	**Ion exch-ange**	**Ozo ne**	**Comments**
Aldrin	P		P			G	VG				VG	
Antimony			X		A		X					
Arsenic		A	L- G	G-VG	A	P			G-VG	VG		Valencies important
Asbestos			G-VG		G							
Barium			P	G-VG	A	P	P		VG	VG		

Boron			X				G-VG		X	G-VG		
Cadmium			L-G	VG	A		P-L					pH Important
Chlordane		P	L	L		VG	VG					
Chloride									VG	VG		
Chromium			G	G	A	P	P		X	X		Valencies important
Color			VG		A						VG	
Copper	A		F-G		A							
Cyanide		VG									VG	
2, 4-D		P	P		A	VG	X					
DDT		P	L-VG	F		VG	X				P	
Diazinon							X(L)					
Dieldrin			P-L				G-VG	L				
Endrin			L			G-VG	X-VG					

Fluoride									G	G-VG		
Heptachlor						V-VG	X(VG)					
Heptachlor Epoxide						VG	X					
Iron	A	A		A	VG					VG		
Lead			G-VG	VG	A		X		G-VG	X		
Lindane		P	P		P	G	G-VG					
Manganese		A	LG	G	A					VG		
Mercury			G	F-G	A	VG	VG					Form important
Methoxy-chlor			G	G-VG	A	VG	VG					
Methyl Parathion						X	X				X	
Nitrate									F	F-VG		

NTA		P									G-VG	
Odor	A	VG				VG	VG				VG	
Parathion		P-VG	P	P	A	VG	L-VG				G-VG	
pH	A		A	A								
Phenol		G	P			G-VG	X				G-VG	
Radionuclide												
226Ra			P	G-VG	A			VG	G-VG			
90Sr			P	G-VG					G-VG			
137Cs				P	AQ			VG	VG			
131I			P		P-f							
				L				VG				
Selenium			P-G	P-F	A				F-G	X		Valencies important

Silver			F-G	G-VG	A	P		X	X		
Sulphate								G-VG	G-VG		
Sulphide	F-VG	F-VG								F-VG	pH important
2,4,5-TP		P	X(F)			X(G) X(G-VG)					
T.Dissolved Solids]								G-VG	G-VG		
Toxaphene		P	P			VG X(VG)	X				
Trihalo-methane						F-G	F-G				Process generated
Turbidity			G-VG		A						
Uranium			L-G	F-G	A	P			VG		
Zinc			P	P-G	A						

VG = 90 - 100% removal
X = possible candidate process (data lacking)
G = 70 - 90% removal
F = 50 - 70% removal
L = 25 - 50% removal
P = 0 - 25% removal
A = auxilliary process

PAC = Powdered Activated Carbon
GAC = Granular Activated Carbon
* = Treatment based on available full-scale, pilot or bench studies and should only be as potential indicators.
Treatability studies and/or site experience should be assessed for specific applications.

Source: McDonald 1986.

Appendix H.

Water Quality Criteria Documents.

The U.S. Environmental Protection Agency has published water quality criteria for toxic pollutant(s). Copies of water quality criteria documents are available from the National Technical Information Service ("NTIS"), 5285 Front Royal Road, Springfield, VA 22161, (703) 487-4650. Prices of individual documents may be obtained by contacting NTIS. Order numbers are listed below. Where indicated, documents may be obtained from the Water Resource Center, 401 M St., S.W. RC-4100, Washington, DC 20460, (202) 260-7786.

Chemical	NTIS Order No.	EPA Document No.
Acenaphthene	PB81-117269	EPA 440/5-80-015
Acrolein	PB81-117277	EPA440/5-80-016
Acrylonitrile	PB81-117285	EPA440/5-80-017
Aesthetics	PB263943	EPA440/9-76-023
Aldrin/Dieldrin	PB81-117301	EPA440/5-80-019
Alkalinity	PB263943	EPA440/9-76-023

Aluminum	PB88-245998	EPA440/5-86-008
Ammonia	PB-85-227114	EPA440/5-85-001
Ammonia (saltwater)	PB-89-195242	EPA440/5-88-004
Antimony	PB81-117319	EPA440/5-80-020
Antimony(III)–aquatic (draft)	resource center	
Arsenic –1980 –1984	PB81-117327 PB86-227445	EPA440/5-80-021 EPA440/5-84-033
Asbestos	PB81-117335	EPA440/5-80-022
Bacteria–1976 –1984	PB263943 PB86-158045	EPA440/9-76-023 EPA440/5-84-002
Barium	PB163943	EPA440/9-76-023
Benzene	PB81-117293	EPA440/5-80-018
Benzidine	PB81-117343	EPA440/5-80-023
Beryllium	PB81-117350	EPA440/5-80-024

Boron	PB263943	EPA440/9-76-023
Chemical	NTIS Order No.	EPA Document No.
Cadmium –1980 –1984	PB81-117368 PB85-224031	EPA440/5-80-025 EPA440/5-84-032
Carbon Tetrachloride	PB81-117376	EPA440/5-80-026
Chlordane	PB81-117384	EPA440/5-88-027
Chloride	PB81-115047	EPA440/5-88-001
Chlorinated Benzenes	PB81-117392	EPA440/5-80-028
Chlorinated Ethanes	PB81-117400	EPA440/5-80-029
Chlorinated Naphthalene	PB81-117426	EPA440/5-80-031
Chlorinated Phenols	PB81-117434	EPA440/5-80-032
Chlorine	PB85-227429	EPA440/5-84-030
Chloroalkyl Ethers	PB81-117418	EPA440/5-80-030

Chloroform	PB81-117442	EPA440/5-80-033
2-Chlorophenol	PB81-117459	EPA440/5-80-034
Cholophenoxy Herbicides	PB263943	EPA440/9-76-023
Chlorpyrifos	PB87-105359	EPA440/5-86-005
Chromium–1980 –1984	PB81-117467 PB85-227478	EPA440/5-80-035 EPA440/5-84-031
Color	PB263943	EPA440/9-76-023
Copper–1980 –1984	PB81-117475 PB85-227023	EPA440/5-80-036 EPA440/5-84-031
Cyanide	PB85-227460	EPA440/5-84-028
Cyanides	PB81-117483	EPA440/5-80-037
DDT and Metabolites	PB81-117491	EPA440/5-80-038
Demeton	PB263943	EPA440/9-76-023
Dichlorobenzenes	PB81-117509	EPA440/5-80-039

Dichlorobenzidine	PB81-117517	EPA440/4-80-040
Dichlorothylenes	PB81-117525	EPA440-5-80-041
2,4-Dimethylphenol	PB81-117558	EPA440/5-80-044
Dinitrotoluene	PB81-117566	EPA440/5-80-045
Chemical	NTIS Order No.	EPA Document No.
Diphylhydrazine	PB81-117731	EPA440/5-80-062
D-2-Ehylhexyl Phthalate-aquatic (draft)	resource center	
Dissolved Oxygen	PB86-208253	EPA440/5-86-003
Endosulfan	PB81-117574	EPA440/5-80-046
Endrin	PB81-117582	EPA440/5-80-047
Ethylbenzene	PB81-117590	EPA440/5-80-048
Fluoranthese	PB81-117608	EPA440/5-80-049
Gasses, Total Dissolved	PB263943	EPA440/9-76-023

Guidelines for Deriving National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses	PB85-227049	
Guthion	PB263943	EPA440/9-76-023
Haloethers	PB81-117616	EPA440/5-80-050
Halomethanes	PB81-117624	EPA440/5-80-051
Hardness	PB263943	EPA440/9-76-023
Heptachlor	PB81-117632	EPA440/5-80-052
Hexachlorobenzene–aquatic (draft)	resource center	
Hexachlorobutadiene	PB81-117640	EPA/5-80-053
Hexachlorocyclohexane	PB81-117657	EPA440/5-80-054
Hexachlorocyclopentadiene	PB81-1176665	EPA440/5-80-055
Iron	PB263943	EPA440/9-76-023

Isophorone	PB81-117673	EPA440/5-80-056
Lead –1980 –1984	PB81-117681 PB85-227437	EPA440/5-80-057 EPA440/5-84-027
Malathion	PB263943	EPA440/9-76-023
Manganese	PB263943	EPA440/9-76-023
Mercury–1980 –1984	PB81-117699 PB85-227452	EPA440/5-80-058 EPA440/5-84-026
Methoxylchlor	PB263943	EPA440/9-76-023
Chemical	NTIS Order No.	EPA Document No.
Mirex	PB263943	EPA440/9-76-023
Naphthalene	PB81-117707	EPA440/5-80-059
Nickel–1980 –1986	PB81-117715 PB870105359	EPA440/5-80-060 EPA440/5-86-004
Nitrates/Nitrites	PB263943	EPA440/9-76-023

Nitrobenzene	PB81-117723	EPA440/5-80-061
Nitrophenols	PB81-117749	EPA440/5-80-063
Nitrosamines	PB81-117756	EPA440/5-80-064
Oil & Grease	PB263943	EPA440/9-76-023
Parathion	PB87-105383	EPA440/5-86-007
Pentachlorophenol–1980 –1986	PB81-117764 PB87-105391	EPA440/5-80-065 EPA440/5-85-009
pH	PB263943	EPA440/9-76-023
Phenanthrene–aquatic (draft)	resource center	
Phenol	PB81-117772	EPA440/5-80-066
Phosphorus	PB263943	EPA440/9-76-023
Phthalate Esters	PB81-117780	EPA440/5-80-067
Polychlorinated Biphenyls	PB81-117798	EPA440/5-80-068

Polynuclear Aromatic Hydrocarbons	PB81-117806	EPA440/5-80-069
Selenium–1980 –1987	PB81-117814 PB88-142239	EPA440/5-80-070 EPA440/5-87-008
Silver	PB81-117822	EPA440/5-80-071
Silver–aquatic (draft)	resource center	
Solids (dissolved) and Salinity	PB263943	EPA440/9-76-023
Solids (suspended) and Turbidity	PB263943	EPA440/9-76-023
Sulfides/Hydrogen Sulfide	PB263943	EPA440/9-76-023
Tainting Substances	PB263943	EPA440/9-76-023
Temperature	PB263943	EPA440/9-76-023
2,3,7,8 -Tetrachlorodibenzo-P-Dioxin	PB89-169825	EPA440/5-84-007
Chemical	NTIS Order No.	EPA Document No.
Tetrachloroethylene	PB81-117830	EPA440/5-80-074

Thallium	PB81-117848	EPA440/5-80-074
Toluene	PB81-117863	EPA440/5-80/075
Toxaphene–1980 –1986	PB81-117863 PB87-105375	EPA440/5-80-076 EPA440/5-86-006
Tributyltin–aquatic (draft)	resource center	
Trichloroethylene	PB87-117871	EPA440/5-80-077
2,4,5-Trichlorophenol–aquatic (draft)	resource center	
Vynil Chloride	PB81-117897	EPA440/5-80-078
Zinc–1980 –1987	PB81-117897 PB87-143581	EPA440/5-80-079 EPA440/5-87-003