Permit No. AS0000027

AUTHORIZATION TO DISCHARGE UNDER THE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provision of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq.; the "Act"),

VCS Samoa Packing Company
P.O. Box 957
Pago Pago, Tutuila
American Samoa 96799

is authorized to discharge tuna processing wastewater from the cannery located at Pago Pago, American Samoa from outfall Discharge Serial No. 001:

Latitude:	14 deg.	17 min.	01 sec.	S
Longitude:	170 deg.	40 min.	02 sec.	W

to receiving waters named: Pago Pago Harbor in accordance with the effluent limitations, monitoring requirements, and other conditions set forth in Sections A through G hereof.

This permit shall become effective on _____.

This permit and the authorization to discharge shall expire at midnight, _____.

Signed this _____ day of _____.

For the Regional Administrator

Harry Seraydarian
Director
Water Management Division

A. EFFLUENT LIMITS AND MONITORING REQUIREMENTS

1. During the period beginning with the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from Outfall 001.

The effluent shall be sampled prior to its comingling with effluent from the other cannery.

Such discharges shall be limited and monitored by the permittee as specified below:(1)

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS	
	30-DAY AVG.	DAILY MAX.	MEASUREMENT FREQUENCY	SAMPLE TYPE
FLOW (MGD)	--	0.72	CONTINUOUS	RECORDER
BIOCHEMICAL OXYGEN DEMAND (5-DAY)	(6)	(6)	TWICE/MONTH	COMPOSITE
SUSPENDED SOLIDS (lbs/day)	2304	5312	TWICE/WEEK	COMPOSITE
OIL AND GREASE (lbs/day)	538	1344	TWICE/WEEK	GRAB[2]
TOTAL PHOSPHORUS (lbs/day)	208	271	TWICE/WEEK(3)	COMPOSITE
TOTAL NITROGEN (lbs/day)	800	1935	TWICE/WEEK(3)	COMPOSITE
ACUTE TOXICITY		(4)	ONCE/6 MONTHS	COMPOSITE
TOTAL AMMONIA (mg/l)	--	133	ONCE/WEEK	COMPOSITE
TEMPERATURE (°F)	90	95	CONTINUOUS	CONTINUOUS
TOTAL RESIDUAL CHLORINE (mg/l)	--	0.02(5)	ONCE/6 MONTHS	GRAB
TOTAL CADMIUM (mg/l)	(6)	(6)	ONCE/6 MONTHS	COMPOSITE
TOTAL CHROMIUM (mg/l)	"	"	"	"
TOTAL LEAD (mg/l)	"	"	"	"
TOTAL MERCURY (mg/l)	"	"	"	"
TOTAL ZINC (mg/l)	"	"	"	"
pH	--	(7)	CONTINUOUS	CONTINUOUS

NOTES:

(1) Where discharge monitoring data is reported as "below detection limit", both the detection limit obtained and the analytical method used shall be included on the monthly discharge monitoring report (DMR).

(2) Each oil and grease sample shall consist of four individual grab samples ("sub-samples") which shall be taken at even intervals during each production period in which samples are taken. Each sub-sample shall be separately analyzed and the mean value of the four sub-samples, shall be reported for daily maximum and monthly average.

(3) Permittee is required to sample twice/week on production days. Should the permittee wish to monitor the effluent on a non-production day(s), the permittee must monitor for the six consecutive days following the non-production day on which the first sample was taken. The average of all samples taken during that month will determine compliance with the "monthly average".

(4) See Section D "Toxicity" for monitoring requirements.

(5) Permit limit is effective one year from the effective date of this permit. Monitoring requirements effective immediately. Analytical results for total residual chlorine below 0.05 mg/l may be reported as "Not Quantifiable." This permit may be modified to change this level of quantification if more information becomes available.

(6) No limit set at this time. Monitoring and reporting only.

(7) The pH is limited between 6.5 and 8.6 standard units.

B. DISCHARGE SPECIFICATIONS

Samples taken at monitoring stations 8, 8a, 14, 15, 16, 17 and 18 in the receiving water shall not reveal any of the following in accordance with American Samoa Water Quality Standards:

1. Chlorophyll a levels in excess of 1.0 ug/l;

2. Light penetration depth less than 65 feet;

3. Objectionable color, odor, or taste, either alone or in combinations, or in the biota;

4. Visible floating materials, grease, oil, scum, foam, and other floating material; and,

5. Materials that will produce visible turbidity or settle to form objectionable deposits.

Samples taken at monitoring stations 8, 8a, 15, 16, 17, 18 in the receiving water (those stations outside the zone of initial dilution (ZID)) shall not reveal any of the following in accordance with American Samoa Water Quality Standards:

1. Dissolved oxygen (DO) concentration less than 5.0 mg/L; or 70% saturation;

2. Turbidity in excess of 0.75 nephelometric turbidity units; and,

3. Toxicity to aquatic life.

Samples taken at monitoring stations 15, 16, 17, and 18 in the receiving water (those stations outside the zone of mixing (ZOM)) shall not reveal the any of the following in accordance with American Samoa Water Quality Standards:

1. A temperature more than 1.5 degrees Fahrenheit from conditions that would occur naturally;

2. A level of total nitrogen in excess of 200 ug/l; and,

3. A level of total phosphorous in excess of 30 ug/l.

C. <u>PROTECTED AND PROHIBITED USES</u>

1. The protected uses of Pago Pago Harbor are as follows:

   a. Recreational and subsistence fishing;
   b. Boat-launching ramps and designated mooring areas;
   c. Subsistence food gathering, e.g. shellfish harvesting;
   d. Aesthetic enjoyment;
   e. Whole and limited body-contact recreation, e.g. swimming, snorkeling, surfing and scuba diving.
   f. Support and propagation of marine life;
   g. Industrial water supply;
   h. Mari-culture development;
   i. Normal harbor activities; e.g. ship movements, docking, loading and unloading, marine railways and floating drydocks; and
   j. Scientific investigation.

2. Prohibited uses include but are not limited to:

   a. Dumping or discharge of solid waste;
   b. Animal pens over or adjacent to any shoreline;
   c. Dredging and filling activities, except when permitted by the American Samoa Environmental Quality Commission (ASEQC) in accordance with the Environmental Quality Act (Title 24, American Samoa Code); AND
   d. Radioactive waste discharges; and
   e. Discharge of oil sludge, oil refuse, fuel oil, or bilge water, or any other waste water from any vessel or unpermitted shoreside facility.

D. TOXICITY

1. Proposed Effluent Biomonitoring

Beginning 90 days after the effective date of this permit, the permittee shall conduct, or have a contract laboratory conduct, semi-annual 96-hr. static renewal acute bioassays on composite effluent samples according to the methods described in Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms (Fourth Edition EPA/600/4-90/027) using the white shrimp, Penaeus vannamei postlarvae. Tests shall be conducted using a ≤ 0.5 dilution series (ie., 100%, 25%, 12.5%, 6.25%, 3.13%, 1.56%).

Use probit analysis to calculate the LC50 and 95% confidence intervals. Use Analysis of Variance and Dunnett's multiple comparison test to calculate the No Observed Effect Concentrations (NOECs). These results will be reported on the permittee's Discharge Monitoring Reports (DMR's).

2. Priority Pollutant Scan

The permittee shall have a priority pollutant scan of the effluent conducted concurrent with the bioassays required above. The results of shall be submitted to the USEPA and ASEPA within 4 months of the effective date of the permit and yearly thereafter.

3. Toxicity Reopener

Should any of the monitoring indicate that the discharge causes, has reasonable potential to cause, or contributes to an excursion above a water quality criteria, the permit may be reopened for the imposition of water quality-based limits and/or whole effluent toxicity limits. Also, this permit may be modified, in accordance with the requirements set forth at 40 CFR 122.44 and 124.14, to include appropriate conditions or limits to address demonstrated effluent toxicity, or to implement any EPA-approved new state water quality standards or testing methods applicable to effluent toxicity.

E. RECEIVING WATER QUALITY MONITORING PROGRAM

To determine compliance with water quality standards, the receiving water quality monitoring program must document water quality at the outfall, at areas near the zone of initial dilution (ZID) and zone of mixing (ZOM) boundaries, at areas beyond these zones where discharge impacts might reasonably be expected, and at reference/control areas. The permittee, cooperatively with Star-Kist Samoa Co., shall perform or cause to be performed, water quality monitoring at stations along the shoreline and offshore at regular frequencies as detailed below.

Should any monitoring reveal, in the judgement of either ASEPA or EPA, that the water quality, coral reef, or overall biological health of the harbor is being impaired as a result of the new outfall discharge, either agency may at any time prohibit further discharge.

All water quality samples should be collected and processed according to the protocols found in EPA's guidance document entitled, Quality Assurance and Quality Control (QA/QC) for 301(h) Monitoring Programs: Guidance on Field and Laboratory Methods (EPA, 1987a). Monitoring reports shall be submitted to EPA on a quarterly basis.

Monitoring stations shall be designated and located as shown (also see Figures 1 and 2):

Offshore Station	Vicinity	Location	Coordinates Latitude	Longitude
5	Transition Zone			
6	Outer harbor	Central		
7	Outer harbor	East, South		
8	Outer harbor	East		
8a	Middle harbor	East		
9	Middle harbor	East		
9a	Middle harbor	East		
10	Middle harbor	West		
11	Inner harbor	Center, East		
11a	Inner harbor	Center, East		
12	Inner harbor	Center		
13	Inner harbor	Center, West		
14	Middle harbor	Diffuser		
15	Middle harbor	ZOM Edge, North		
16	Middle harbor	ZOM Edge, West		
17	Middle harbor	ZOM Edge, East		
18	Outer harbor	ZOM Edge, South		

It is recommended that the stations be located using the sextant angle resection positioning method or a positioning system which affords an equivalent degree of accuracy and precision. Other means may be used if, in the judgment of ASEPA and EPA Region 9, they are of sufficient accuracy and precision to allow reoccupation of the stations within plus or minus six (6) meters.

The following shall constitute the Water Quality Monitoring Program as shown:

Parameter	Units	Sample Stations	Sample Type	Frequency
Temperature	°F	all	grab	monthly
pH		"	"	"
Dissolved Oxygen	mg/l	"	"	"
Suspended Solids	mg/l	"	"	"
Light Penetration	ft	"	"	"
Turbidity	NTU	"	"	"
Salinity	ppt	"	"	"
Chlorophyll a	ug/l	"	"	"

Total Nitrogen	ug/l	"	"	"
Total Phosphorus	ug/l	"	"	"
Total Ammonia	ug/l	"	"	"

Measurements should be taken at three depths for each location: 1 meter above the bottom, 1 meter below the surface, and at mid-depth.

F. DYE OR TRACER STUDIES

Within one week of the effective date of this permit, the permittee shall submit a plan to the ASEPA and EPA to perform dye and/or tracer studies in order to better understand the fate of the effluent plume. The permittee shall perform these studies twice for one year (one during each of the two primary seasons of the year) and submit its findings 30 days after conducting each study. The first study shall be performed within a month after receiving approval from the ASEPA.

G. SEDIMENT MONITORING

Sediment monitoring is conducted to determine the character of the sediments in relation to long-term high nutrient discharge by the permittee in the harbor and if harbor recovery will be affected by resuspension of the nutrients.

The permittee, cooperatively with Star-Kist Samoa Co., shall undertake a yearly sediment monitoring program in Pago Pago Harbor in order to assess the concentration of nutrient and organic components, the distribution of stored nutrients, the size of the nutrient reservoir and the rate of accumulation of nutrients. Seven sites shall be located within Pago Pago Harbor and analyzed for total nitrogen, total phosphorus, percent organics, percent solids, bulk density, oxidation-reduction potential and sulfides. Three sites shall be located in inner Pago Pago Harbor and four sites shall be located in the outer harbor. These sites and monitoring plan shall be submitted within three months of the effective date of the permit for approval by ASEPA and EPA. Thereafter, these sites shall be approved annually by the anniversary date of the effective date of the permit. A report of the sediment monitoring program findings shall be submitted to the ASEPA and EPA 90 days after completion of sampling.

H. EUTROPHICATION STUDY

The permittee cooperatively with Star-Kist Samoa Co., shall complete a study in which a direct assessment of the algal-nutrient relationships in Pago Pago Harbor is obtained. This study shall include construction of algal-nutrient response curves for a range of nitrogen-to-phosphorus ratios, nitrogen and phosphorus levels, salinity levels, and phytoplankton species. This study is not intended to be exhaustive in nature, but to provide information on phytoplankton dynamics

in Pago Pago Harbor. The study may be partially completed utilizing data from past and future water quality and sediment montiroing programs and/or may be conducted in conjuunction with these programs as possible.

A proposed study design shall be submitted to ASEPA and EPA for approval within six months of the effective date of the permit. The study shall be completed and report submitted to ASEPA and EPA within one year of the effective date of the permit.

I. CORAL REEF SURVEY

Within six months of the effective date of this NPDES permit, the permittee, in cooperation with StarKist Samoa, Inc., shall submit a field study design for approval by ASEPA and EPA Region 9 to assess the potential impacts of the discharge on the nearby coral reef. The study shall include coral reef transects which shall conform to locations found on Figure 4 in the USE ATTAINABLILITY AND SITE-SPECIFIC CRITERIA ANALYSES; PAGO PAGO HARBOR, AMERICAN SAMOA, FINAL REPORT (CH2M Hill, March 15, 1991). The intent of this annual survey is to detect significant differences, if any, from the database information found in the above-cited document. Videos shall be submitted to both the USEPA and ASEPA. Guidance for designing such surveys is provided in the "Design of 301(h) Monitoring Programs for Municipal Wastewater Discharges to Marine Waters," November 1982, EPA #430/0-82-010 (pages 70-71). In addition, the discharger should consult "Ecological Impacts of Sewage Discharges on Coral Reef Communities," September 1983, EPA #430/9-83-010, for further information. The study shall be conducted within one year of the effective date of this permit and every two years thereafter.

J. VERIFICATION OF MODELING PREDICTIONS

Within three months after both dye studies have been completed, the permittee, cooperatively with Star-Kist Samoa Co., shall utilize the results from the monitoring data and from the dye studies to verify the models used in the determination of the mixing zones (the 30-second dilution zone, the ZID, and the ZOM). A report summarizing renewed predictions of dilution rates and the size, location, and movement of the plume based on the calibrated models shall be submitted to the USEPA and ASEPA. Also, through the use of an appropriate model and one year's worth of ambient data, the permittee shall examine the effects of BOD_5 in the effluent on Dissolved Oxygen (DO) in the receiving water.

K. WASTEWATER TREATMENT SYSTEM EVALUATION

The permittee shall retain an independent consultant(s) to conduct a complete diagnostic evaluation of the wastewater treatment system. The purpose of the evaluation is to review

current plant operations and equipment and to identify possible modifications in order to decrease pollutant loads, specifically of nitrogen and phosphorus, to the harbor.

The evaluation shall identify all the components of the wastewater treatment system. Nitrogen, phosphorus, total suspended solids, oil and grease loadings from each waste stream of the Dissolved Air Flotation (DAF) influent (thaw-water, spray-cooling, plant-washdown) shall be determined. Methods for reducing the amount of wastewater and the pollutant loadings of the components of the DAF influent shall be examined.

The DAF equipment shall be reviewed to determine its effectiveness. The report should examine the working order of the equipment and the existing system controls. The report shall compare the design parameters of the DAF system with the average and maximum operating values for air-to-solids ratio (lb air:lb solids), solids loading ($lb/ft_2/hr$), and hydraulic loading (gpm/ft^2).

Current chemical treatment shall be analyzed to determine effective dosages. Jar and pilot DAF chemical coagulating testing shall be performed using at least three coagulants. Reduction in nitrogen and phosphorous, and total suspended solids shall be reported for each chemical tested and compared to current treatment.

In conclusion, the report shall list in order of importance all recommended improvements to the system, and estimate the cost of each improvement.

This study shall be performed and a report submitted to the ASEPA, and the EPA within one year of the effective date of this permit and again by the expiration date of this permit. The permittee shall submit for approval by ASEPA and EPA, within sixty days of completing the report, a schedule for implementing the recommended improvements. Should the permittee view some of the improvements economically infeasible or technically impossible, the report should substantiate those views.

If such a study has been performed during the year preceding the effective date of this permit, the permittee is not required to have the first study performed. The permittee must, however submit an implementation schedule within sixty days of the effective date of this permit. One year from the effective date of this permit, and annually thereafter, a report shall be submitted documenting the progress made in implementing these recommendations.

L. POLLUTION PREVENTION PROGRAM

1. Within six months of the effective date of this permit, the permittee shall develop and implement a Pollution Prevention Program. The purpose of the program is to evaluate and implement methods of reducing or eliminating

pollutants listed under section A of this permit from the outfall, stormwater drain(s), plant-site runoff, sludge disposal and fishing vessels. A component of this plan will be a water conservation program.

2. The permittee shall review all facility components or systems (including storage areas; in-plant transfer, process and handling areas; loading and unloading operations; and sludge and waste disposal areas) where these pollutants are generated, stored or handled to evaluate methods for reducing the release of these pollutants to the harbor. In performing such an evaluation, the permittee shall consider ways of preventing fish scraps, oil and grease, etc., from entering the wastewater streams and shall consider typical industry practices such as employee training, inspections and records, preventive maintenance, and good housekeeping. In addition, the permittee may consider structural measures (such as secondary containment devices) where appropriate.

3. The permittee shall retain an independent consultant(s) to determine the source of the high levels of metals (Cadmium, Chromium, Lead, Mercury, and Zinc) in the cannery's effluent, and shall examine methods to reduce the current levels. Such an analyis shall be submitted to the ASEPA and USEPA for approval within six months of the effective date of this permit.

4. The Pollution Prevention Program shall also evaluate ways of preventing fishing vessels from discharging engine oil into the harbor. Such a plan shall explore options such as accepting used oil for burning in the cannery's boilers or for recycling, issuing a multi-lingual statement to each fishing vessel outlining the regulations against illegal dumping, and establishing a company policy that would prohibit the canneries from purchasing tuna from any vessel found responsible for discharging oil.

5. The Pollution Prevention Program shall be documented in narrative form and shall include any necessary pilot plans, drawings or maps. Other documents already prepared for the facility such as a Safety Manual or a Spill Prevention, Control and Countermeasure (SPCC) plan may be used as part of the program and may be incorporated by reference. The Pollution Prevention plan shall be submitted to ASEPA and EPA within six months of the effective date of this permit and a copy shall be maintained at the facility and annual reports submitted documenting program progress.

M. DEFINITIONS

1. "Ambient conditions" means the existing conditions in the surrounding waters not influenced by the discharger's effluent.

2. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility whose operation is necessary to maintain compliance with the terms and conditions of this permit.

3. "Whole-effluent toxicity" is the aggregate toxic effect of an effluent measured directly with a "toxicity test".

4. "Composite sample" means, for flow rate measurements, the arithmetic mean of no fewer than eight individual measurements taken at equal intervals for 24 hours or for the duration of the discharge, whichever is shorter.

   "Composite sample" means, for other than flow rate measurement,

   a. A combination of at least eight individual portions obtained at equal time intervals for 24 hours, or the duration of the discharge, whichever is shorter. The volume of each individual portion shall be directly proportional to the discharge flow rate at the time of sampling.

   OR

   b. A combination of at least eight individual portions of equal volume obtained over a 24-hour period. The time interval will vary such that the volume of wastewater discharged between samplings remains constant.

   The compositing period shall equal the specified sampling period, or 24 hours, if no period is specified.

5. "Daily discharge" means:

   a. For flow rate measurement, the average flow rate measured during a calendar day or during any 24-hour period reasonably representative of the calendar day for purposes of sampling.

   b. For pollutant measurements, the concentration or mass emission rate measured during a calendar day or during any 24-hour period reasonably representative of the calendar day for purposes of sampling.

6. "Daily maximum" limit means the maximum acceptable "daily discharge". For pollutant measurements, unless otherwise specified, the results to be compared to the "daily maximum" limit are based on "composite samples."

7. "Duly authorized representative" is one whose:

   a. Authorization is made in writing by a principal executive officer or ranking elected official;

   b. Authorization specifies either an individual or a position having responsibility for the overall

operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.); and

c. Written authorization is submitted to the ASEPA and EPA. If an authorization becomes no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements must be submitted to ASEPA and EPA prior to or together with any reports, information, or other applications to be signed by an authorized representative.

8. "Grab sample" is defined as any individual sample collected in a short period of time not exceeding 15 minutes. "Grab samples" shall be collected during normal peak loading conditions for the parameter of interest, which may or may not be during hydraulic peaks. It is used primarily in determining compliance with "daily maximum" limits.

9. "Hazardous substance" means any substance designated under 40 CFR 116 pursuant to Section 311 of the Clean Water Act.

10. "Heavy metals" are, for the purposes of this permit, arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc.

11. "Indirect discharger" means a non-domestic discharger introducing pollutants into a publicly owned treatment and disposal system.

12. "Initial dilution" is the process which results in the rapid and irreversible turbulent mixing of wastewater with ocean water around the point of discharge.

    For a submerged buoyant discharge, characteristics of most municipal wastes that are released from the submarine outfalls, the momentum of the discharge and its initial buoyancy act together to produce turbulent mixing. Initial dilution in this case is completed when the diluting wastewater ceases to rise in the water column and first begins to spread horizontally.

    Numerically, initial dilution is expressed as the ratio of the volume of discharged effluent plus ambient water entrained during the process of initial dilution to the volume of discharged effluent.

13. "Mass emission rate" is obtained from the following

calculations for any calendar day:

$$\text{Mass emission rate (lb/day)} = 8.345/N \sum_{i=1}^{N} Qi\ Ci$$

$$\text{Mass emission rate (kg/day)} = 3.785/N \sum_{i=1}^{N} Qi\ Ci$$

in which 'N' is the number of samples analyzed in any calendar day. 'Qi' and 'Ci' are the flow rate (MGD) and the concentration (mg/L), respectively, which are associated with each of the 'N' grab samples which may be taken in any calendar day. If a composite sample is taken, 'Ci' is the concentration measured in the composite sample and 'Qi' is the average flow rate occurring during the period over which samples are composited.

The daily concentration of all constituents shall be determined from the flow-weighted average of the same constituents in the combined waste stream as follows:

$$\text{Daily concentration} = 1/Qt \sum_{i=1}^{N} Qi\ Ci$$

in which 'N' is the number of component waste streams. 'Qi' and 'Ci' are the flow rate (MGD) and the constituent concentration (mg/L), respectively, which are associated with each of the 'N' waste streams. 'Qt' is the total flow rate of the combined waste streams.

14. "Monthly average" is the arithmetic mean of daily concentrations, or of daily "mass emission rates", over the specified monthly period:

$$\text{Average} = 1/N \sum_{i=1}^{N} Xi$$

in which 'N' is the number of days samples were analyzed during the period and 'Xi' is either the constituent concentration (mg/L) or mass emission rate (kg/day or lb/day) for each sampled day.

15. "100-year frequency flood" means a flood of unusually large magnitude and which is characterized by its infrequent occurrence.

16. "Open coastal waters" means marine waters bounded by 100 fathom (183 m; 600 ft) depth contour and the shoreline excluding bays named in section 24.0206(c)(2)-(4) of the American Samoa water quality standards.

17. "Overflow" means the intentional or unintentional diversion of flow from the collection and transport systems, including the pumping facilities.

18. "Pesticides" are, for purposes of this permit, those six constituents referred to in 40 CFR 125.58(m) (demeton, guthion, malathion, mirex, methoxychlor, and parathion).

19. "Pollutant-free wastewater" means infiltration and inflow, cooling waters, and condensates which are essentially free of pollutants.

20. "Priority pollutants" are those constituents referred to in 40 CFR 401.15 and listed in the EPA NPDES Application Form 2C, pp. V-3 through V-9.

21. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a "bypass" or "overflow." It does not mean economic loss by delays in production.

22. "Sludge" means the solid, semi-liquid suspension of solids, residues, screenings, grit, scum and precipitates separated from, or created in wastewater by the unit processes of a treatment system. It also includes, but is not limited to, all supernatant, filtrate, centrate, decantate, and thickener overflow/underflow in the solids handling parts of the wastewater treatment system.

23. "Toxic pollutant" means any pollutant listed as toxic under Section 307(a)(1) of the Clean Water Act or under 40 CFR 122, Appendix D. Violation of the maximum daily discharge limitations are subject to the 24-hour reporting requirement (section P.13.f).

24. "Toxicity test" is the means to determine the toxicity of a chemical or an effluent using living organisms. A toxicity test measures the degree of response of an exposed test organism to a specific chemical or effluent.

25. "Toxic unit chronic" is the reciprocal of the effluent dilution that causes no unacceptable effect on the test organisms by the end of the chronic exposure period.

26. "Upset" means any exceptional incident in which there is unintentional and temporary noncompliance with effluent limitations in the permit because of factors beyond the reasonable control of the discharger. It does not include noncompliance caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, careless or improper operation, or those problems the discharger should have foreseen.

27. "Waste", "waste discharge", "discharge of waste", and "discharge" are used interchangeably in this permit. The requirements of this permit are applicable to the entire volume of water, and the material therein, which is disposed of to marine waters.

28. "Weekly average" is the arithmetic mean of daily concentrations, or of daily mass emission rates, over the specified weekly period:

$$\text{Average} = 1/N \sum_{i=1}^{N} Xi$$

in which 'N' is the number of days samples were analyzed during the period and 'Xi' is either the constituent concentration (mg/L) or "mass emission rate" (kg/day or lb/day) for each sampled day.

29. "Zone of initial dilution" (ZID) means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports, providing that the ZID may not be larger than allowed by mixing zone restrictions in applicable water quality standards [40 CFR 125.58(w)]. For purposes of designating monitoring stations, the region within a horizontal distance equal to a specified water depth (usually depth of outfall or average depth of diffuser) from any point of the diffuser or end of the outfall and the water column above and below that region, including the underlying seabed.

30. "Zone of mixing" (ZOM) means limited areas around outfalls and other facilities approved by ASEQC with the concurrence of EPA to allow for the initial dilution of waste discharges [American Samoa Water Quality Standards].

N. QUALITY ASSURANCE/QUALITY CONTROL

All waste material sampling procedures, analytical protocols, and quality assurance/quality control procedures shall be performed in accordance with guidelines specified by EPA. The following references shall be used by the permittee where appropriate:

1. EPA, 40 CFR 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act;

2. Tetra Tech, Inc. 1985. Summary of the U.S. EPA-approved methods and other guidance for 301(h) monitoring variables. Final program document prepared for the Marine Operations Division, Office of Marine and Estuarine Protection, U.S. Environmental Protection Agency. EPA Contract No. 68-01-693. Tetra Tech, Inc., Bellevue, WA; and

3. Tetra Tech, Inc. 1986. Quality assurance and quality control guidance for 301(h) monitoring programs. Final program document prepared for the Marine Operations Division, Office of Marine and Estuarine Protection, U.S. Environmental Protection Agency. EPA Contract No. 68-01-3968. Tetra Tech, Inc., Bellevue, WA.

O. REPORTING

Monitoring results obtained during the previous 3 months shall be summarized for each month and submitted quarterly on forms to be supplied by EPA, to the extent that the information reported may be entered on the forms. The results of all monitoring required by this permit shall be sumitted in such a format as to allow direct comparison with the limitations and requirements of this permit. Monitoring reports shall be postmarked no later than the 28th day of the month following the completed reporting period. The first report is due 4 months after the effective date of this permit. Signed copies of these and all other reports required herein shall be submitted to the EPA Regional Administrator and the Government of American Samoa at the following addresses:

Regional Administrator
Environmental Protection Agency
Region 9, Attn: Office of Pacific Island and
Native American Programs (E-4)
75 Hawthorne Street
San Francisco, CA 94105

Director
American Samoa Environmental Protection Agency
Office of the Governor
Pago Pago, American Samoa 96799

P. EPA REGION IX STANDARD CONDITIONS

See attachment.

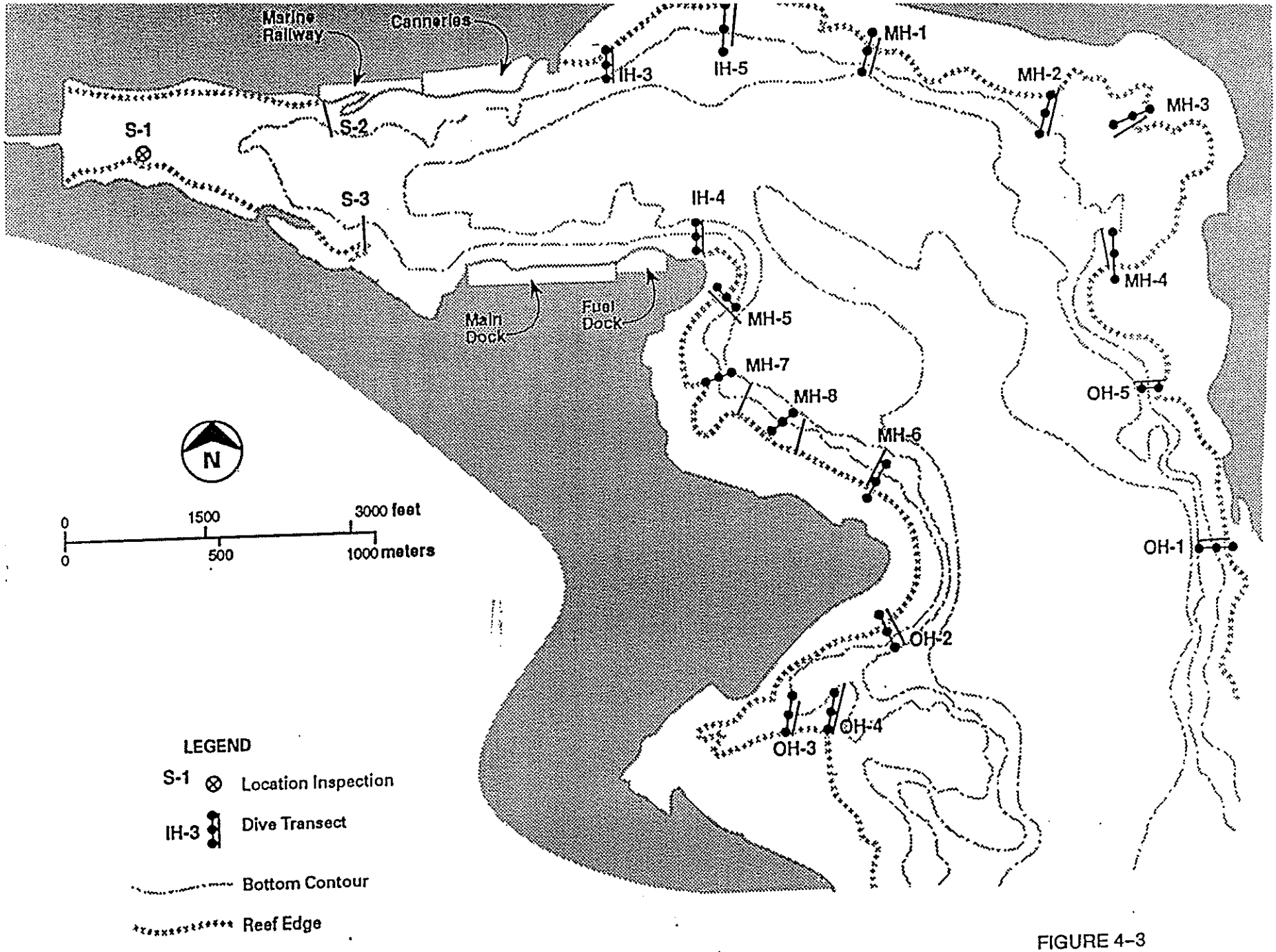


FIGURE 4-3
Coral Reef Transects from 1991 "Use Attainability Analysis", CH2M Hi

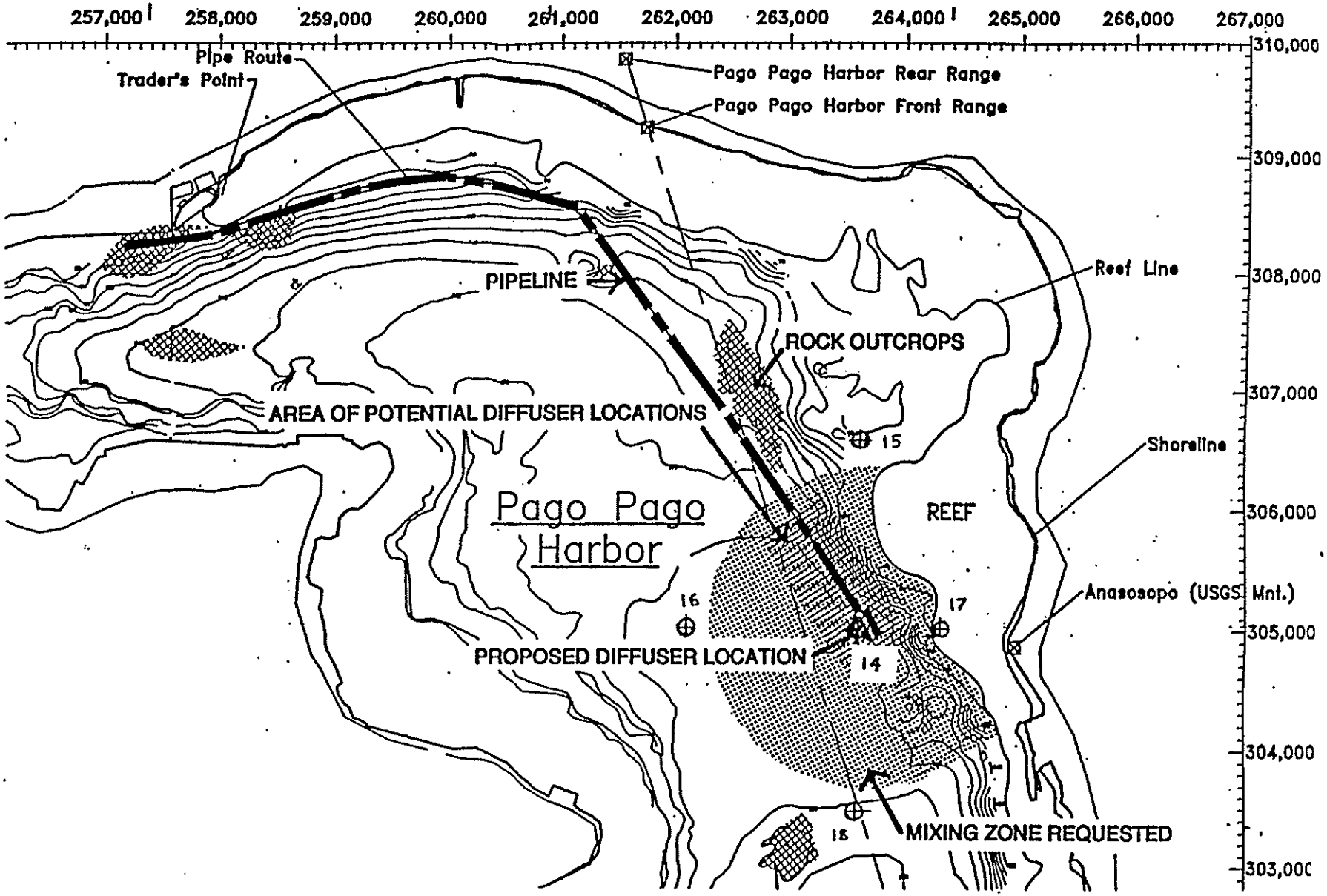
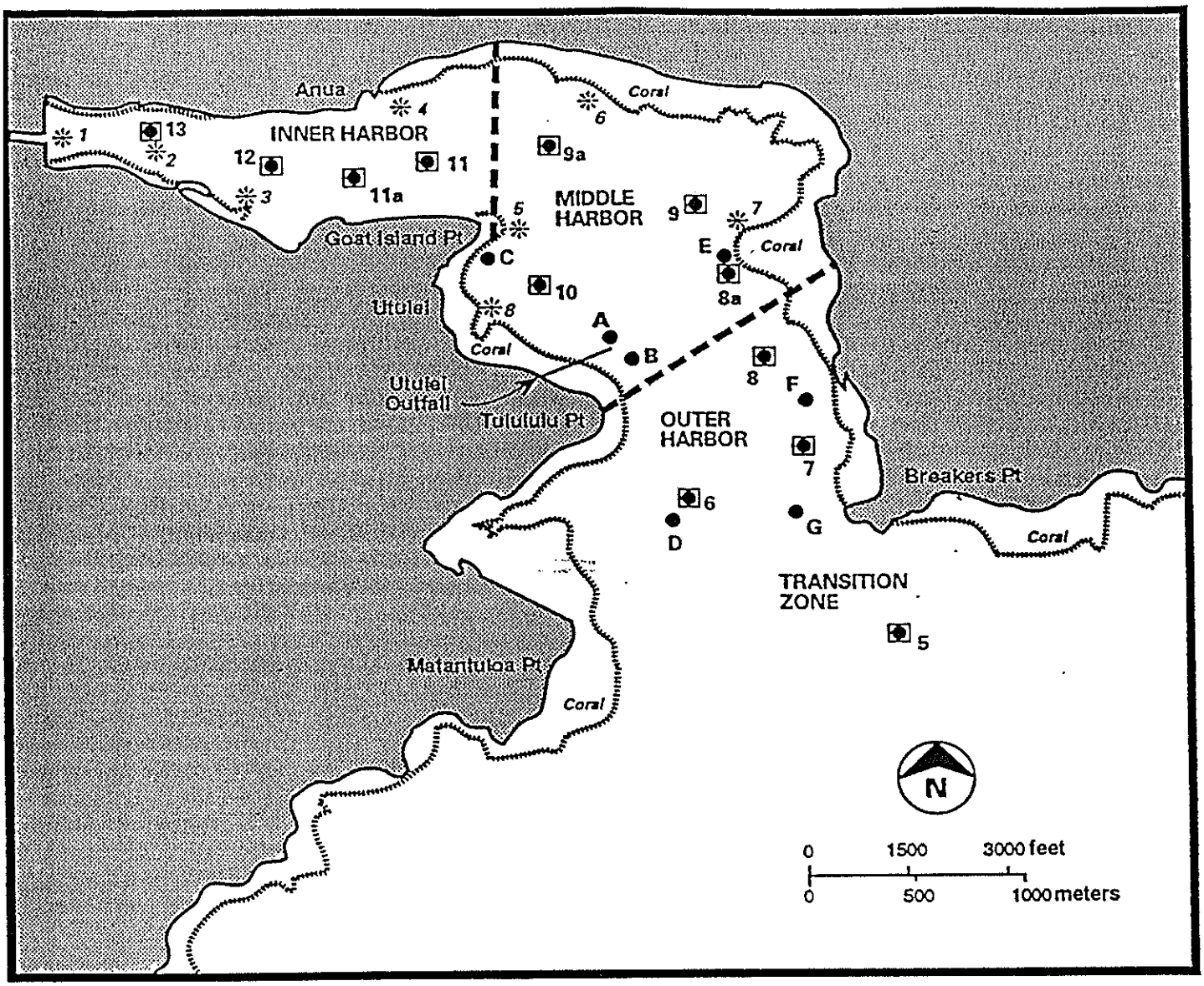


FIGURE 1. NEW MONITORING STATIONS IN PAGO PAGO HARBOR (14-18)



LEGEND

- ASG Sampling Station
- Utulei WWTP Station
- CH2M HILL Field Measurement Station (1/19/91)

FIGURE 2. LOCATION OF WATER QUALITY STATIONS IN PAGO PAGO HARBOR

STATEMENT OF BASIS

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I. Description of Facility

The applicant operates a tuna cannery located on Tutuila Island, American Samoa. Process discharges from the cannery enter Pago Pago Harbor at 14 deg. 17 min. 01 sec. South latitude and 170 deg. 40 min. 02 sec. West longitude. The cannery receives whole tuna which is processed into canned tuna and dried fish meal. Waste streams from this operation consist mainly of fish waste, fresh water, and sea water which are treated by Dissolved Air Floatation process. The DAF sludge and the high strength waste (pre-cooker condensate, press juice, fish meal plant wash water, etc.) are barged to sea for disposal. Approximately 320 tons of fish are processed per day. The resulting discharge to Pago Pago Harbor has been a maximum monthly average of 0.58 MGD and a long-term average of 0.49 MGD.

Section 24.0206 (c)(2) of the American Samoa water quality standards states that "Pago Pago Harbor has been designated by the American Samoa Government to be developed into a transhipment center for the South Pacific. Recognizing its unique position as an embayment where water quality has been degraded from the natural condition, the EQC has established a separate set of standards for Pago Pago Harbor." A trienniel review of American Samoa water quality standards was begun in 1987 and the results of that review were adopted in 1990. Section 24.0207 (c) specifies the standards that apply specifically to Pago Pago Harbor.

Administrative orders were issued by EPA in June 1990 to both Star-Kist Samoa and Samoa Packing Company for violations of water quality-based effluent limits of their respective 1987 NPDES permits. The orders established interim effluent limits and a schedule for compliance with water quality-based effluent limits by March 7, 1992. Concurrently, the American Samoa Government (ASG) also issued consent decrees mirroring EPA's compliance orders, with stipulated penalties for failure to meet interim effluent limits and compliance schedule deadlines.

Both canneries were required by the orders and consent decrees to segregate high strength waste streams and dispose of these wastes and DAF sludge at a designated ocean disposal site beginning in August 1990. Feasibilility studies were also required to be conducted by both canneries for alternatives by which they could achieve compliance with their NPDES permit effluent limits and ASG water quality standards for their remaining discharge into the harbor. The canneries chose to construct a 7,000-foot joint outfall which extends into the outer harbor. The new outfall will be jointly operated by both canneries for discharge of their effluent.

The two canneries also applied for a mixing zone consistent with the requirements set forth in Section 24.0208 of the American Samoa Water Quality Standards. The mixing zone requested extends approximately 1300 feet in radius from the discharge point. The mixing zone was approved by American Samoa Environmental Quality Commission (ASEQC) on November 27, 1991.

Discharge in compliance with this NPDES permit should ensure achievement of all applicable water quality standards. These standards are designed to prevent degradation of water quality. Therefore, compliance with this NPDES permit should prevent any "unreasonable degradation" of the marine environment, and in accordance with section 403(c) of the Clean Water Act, an NPDES permit may be issued.

II. Effluent Limitations

Discharges from fish processing facilities are not subject to any effective EPA effluent limitations guidelines. Therefore, permit requirements were established using best professional judgment and specific water quality standards in order to ensure protection of the beneficial uses of the receiving waters.

A. pH

The Best Practicable Technology (BPT) limit for pH is "within the range of 6.0 to 9.0." However, water quality standards listed under 24.0207 (c)(7) state: "The pH range shall be 6.5 to 8.6 and be within 0.2 pH units of that which would occur naturally." Because the water quality standards are more stringent, and because the mixing zone application states that "other water quality standards (beside total nitrogen, total phosphorus and temperature) will be met within the zone of mixing (e.g. pH, fecal coliform)..." the more stringent standard will apply as the limit.

B. Temperature

Water quality standards specify a temperature limit of 85°

F which is to apply to water at the edge of the mixing zone. It is the best professional judgement of this permit writer, that the water will cool at least 10° from the point it enters the discharge pipe to the edge of the mixing zone. Furthermore, modeling studies were performed by the canneries' consultant assuming the effluent was 85° F and 90° F with no significant difference in dilution rates. Therefore, the permit limit contains a 90° F monthly average and a 95° F daily maximum.

C. Oil and Grease

40 CFR 408.140 sets the BPT limit for oil and grease at a daily maximum of 2.1 lbs/1000 lbs of seafood processed and a monthly average of 0.84 lbs/1000 lbs of seafood processed. Limits for oil and grease were calculated by multiplying the BPT limits stated above, by the average daily production level of 320 tons seafood processed/day. Thus the daily maximum for oil and grease is set at 1,344 lbs/day and the monthly average at 538 lbs/day.

D. Total Suspended Solids

Limits were set for Total Suspended Solids (TSS) using the same rationale detailed in Section C (Oil and Grease). 40 CFR 408.140 sets the BPT limit for TSS at a daily maximum of 8.3 lbs/1000 lbs of seafood processed and a monthly average of 3.3 lbs/1000 lbs of seafood processed. Limits for TSS were calculated by multiplying the BPT limits stated above, by the average daily production level of 320 tons seafood processed/day. Thus the daily maximum for TSS is set at 5,312 lbs/day and the monthly average at 2,304 lbs/day.

E. Total Nitrogen

The mixing zone analysis performed by the canneries' consultant, CH2MHill, indicates that the mixing zone can assimilate 60,000 lbs. of total nitrogen per month. Assuming a 30-day month, an average of 2,000 lbs. of total nitrogen/day can be discharged between the two canneries. The two canneries have agreed between themselves to each assume a portion of this average. Samoa Packing will assume 800 lbs/day as a monthly average limit for total nitrogen.

The canneries are required to sample twice/week for total nitrogen on production days. Averaging only these samples will yield a number that assumes weekend values are equal to production days. The canneries have claimed that they discharge significantly less nutrients on the weekends. Therefore, should the permittee wish to monitor the effluent on a non-production day(s), the permittee must monitor for the six consecutive days following the non-

production day on which the first sample was taken. The average of all samples taken during that month will determine compliance with the "monthly average". This requirement will ensure that the monitoring is representative of the discharge, and if the canneries are in compliance with their monthly average limits, the mixing zone's capacity of 60,000 lbs/month of total nitrogen will not be exceeded.

Samoa Packing Company's daily maximum limit was 1,595 lbs/day, as set in EPA's Administrative Order of June 18, 1990. StarKist's daily maximum effluent limit for total nitrogen was 2,440 lbs/day as stated in EPA's letter of October 30, 1991, amending its Administrative Order. These limits were initially to be retained in the new permits. However, the canneries expressed a desire to allocate the total of 4,035 lbs/day between themselves. Since the combined number is the same, the canneries were permitted to do so. StarKist agreed to accept a limit of 2,100 lbs/day, and Samoa Packing Company agreed to a limit of 1,935 lbs/day.

The canneries have claimed that total nitrogen and total phosphorus levels in the effluent have no significant correlation to production levels, and their monitoring data supports such a statement (See Appendix B, "Technical Memorandum for Site-Specific Zone of Mixing Determination for Joint Cannery Outfall Project", CH2M Hill, August 26, 1991). Therefore these effluents limits for total nitrogen and total phosphorus do not limit the canneries' production levels.

F. Total Phosphorus

Limits were set for total phosphorus using the same rationale as that detailed in Section E (Total Nitrogen). The total assimilative capacity of the zone of mixing was caculated by CH2MHill to be a monthly average of 400 lbs. of total phosphorus/day. This total was divided between the two canneries and Samoa Packing has agreed to assume a montly average limit of 208 lbs. of total phophorus/day.

The combined total of daily maximum limits set in the Administrative Orders was 580 lbs. of total phosphorus/day and will be retained in the current permits. The canneries agreed to reapportion their share of the total. Samoa Packing will assume a daily maximum of 271 lbs. of total phosphorus/day.

G. Toxicity

Section 24.0208 (b)(5) of the American Samoa water quality standards states, "Those water quality parameters which are subject to zone of mixing are chlorophyll a, light

penetration depth, nutrients, pH, temperature, turbidity, and fecal coliform. Determination of effluent limits for toxic substances must comply with 24.0207 (a) (8)(A)-(E) and 24.0207 (a)(9)..."

Section 24.0207 (a)(8)(A) states, "All effluents containing materials attributable to the activities of man shall be considered harmful and not permissible until acceptable bioassay tests have shown otherwise."

Section 24.0207 (a)(8)(C) states, "The survival of test organisms in discharge waters shall not be less than that for water from the same water body in areas unaffected by sewage, industrial wastes, or other activities of man..."

In its permit application, Samoa Packing reported that "No toxic pollutants or hazardous substances present in discharge from existing outfall 001 or from proposed joint cannery outfall." However, the reported level of ammonia in the effluent as indicated in the permit application greatly exceeds national criteria for acute toxicity in marine waters at a pH above 6.7. The average pH of the outer harbor is 8.5. Also, reported levels of zinc and lead exceed the acute criteria, and mercury, cadmium and chromium exceed chronic criteria. Numerical limitations and/or monitoring requirements have been placed in this permit on all the known toxic constituents of the effluent. However, since the degree of toxicity of the whole effluent remains unknown, a monitoring requirement for toxicity has been included in this permit.

The water quality standards state at Section 24.0207 (a)(8)(C), "As a minimum, compliance with the standard as stated in the previous sentence shall be evaluated with a 96-hour bioassay or short-term method for estimating chronic toxicity."

The permittee is required to conduct a semi-annual 96-hr static renewal acute bioassays on composite effluent samples using the white shrimp, Penaeus vannamei postlarvae. The white shrimp is a warm-water species that is currently being used in acute bioassays performed in labs in Hawaii.

The permittee is also required to conduct a priority pollutant scan yearly in conjunction with the bioassay.

H. Ammonia

The canneries have requested that they be exempt from the acute toxicity requirement within a mixing zone. The ASEQC approved this request. Little technical guidance exists, however, to define a mixing zone in marine waters that prevents lethality to passing organisms. The

technical support document for the canneries' zone of mixing application cites a few alternatives, but none seems appropriate to this situation.

CH2MHill proposed to use an 80:1 dilution. This dilution, according to their modeling, occurs 30 seconds after the effluent leaves the pipe. The area associated with an 80:1 dilution is approximately 12 meters. They claim that such a dilution will ensure no lethality to passing organisms.

EPA National Water Quality Criteria for un-ionized ammonia is 0.233 mg/l for marine waters. This value is the Criterion Maximum Concentration (CMC). Multiplying this 0.233 by 80 yields 18.64 mg/l. Referencing the manual "Tables of the fraction of Ammonia in the Undissociated form... for ph 6 to 9, temperature 0-30°C, TDS 0-300 mg/l and salinity 5-35 g/kg," by H.P. Skarheim of the University of California, Berkeley, College of Engineering, and using a pH value of 8.5, temperature of 29 °C, and salinity 35 g/kg (all characteristics of harbor waters), the un-ionized fraction of ammonia is 14 percent. Therefore the ammonia limit for the canneries is established at 133 mg/l.

I. Metals

Significant initial dilution should ensure no toxicity from metals within the zone of mixing. However, because metal readings in Pago Pago Harbor have historically been high, the canneries shall continue to monitor annually for cadmium, chromium, lead, mercury, and zinc. Under the Pollution Prevention Program, the canneries are also required to conduct a study in order to determine the source of the metals in the effluent and to examine ways of reducing those metals.

J. Total Residual Chlorine (TRC)

Section 24.0207(a)(12) states that total residual chlorine in discharge waters shall not exceed 20 ug/l. Table 3 in the application for a zone of mixing indicates that the canneries are able to meet the TRC standard at the end of the pipe. However, since the effluent has never been tested for TRC in support of such a statement, and since the canneries do chlorinate their process water, there is reasonable potential to believe the effluent may exceed the TRC standard. A limit and monitoring requirement has therefore been included in this permit.

Because the effluent has never been tested, the permit limit of 20 ug/l will not be effective until one year from the effective date of this permit. This will allow the permittee time to modify operations or install

dechlorination facilities if they are unable to meet the current limit.

K. Pago Pago Harbor Monitoring Program

Because the discharge point has been moved to a less degraded portion of the harbor, a monitoring program has been designed to assess the environmental impacts of the canneries' discharge on the entire harbor, and to ensure compliance with the water quality standards. Compliance with water quality standards for chlorophyll a, light penetration depth, and visible floating materials is to be determined throughout the mixing zone (at monitoring stations 8, 8a, 14-18). Compliance with turbidity, dissolved oxygen is to be determined outside the Zone of Initial Dilution (ZID) (at monitoring stations 8, 8a, 15-18). Compliance with the Total Phosphorus and Total Nitrogen and Temperature is to be determined outside the Zone of Mixing (ZOM) (at monitoring stations 15-18). The constituents of the program are as follows:

1. Quantitative Data

   Temperature, pH, dissolved oxygen, total suspended solids, light penetration, turbidity, salinity, chlorophyll a, total nitrogen, total phosphorus, and total ammonia are all measured to ensure compliance with numerical limits of the receiving water.

2. Dye or Tracer Studies

   Dye or tracer studies should provide useful information for better understanding the fate of the plume, which, according to CH2MHill's modeling, should remain submerged below 60 feet. The plan for conducting these studies and reporting the information shall be submitted by the canneries to the ASEPA and EPA for approval before the studies are performed.

3. Model Verification

   The permittee is required to verify the models used to predict the mixing zones using results of the dye studies, effluent monitoring data, and ambient water quality data.

4. Eutrophication Study

   Eutrophication of the harbor is of great concern because of the extremely high amounts of nutrients in the effluent. The study proposed shall examine algal-nutrient relationships of the harbor.

5. Sediment Monitoring

Sediment monitoring is conducted to determine the character of the sediments in relation to long-term high nutrient discharge by the canneries in the harbor and if harbor recovery will be affected by resuspension of the nutrients.

6. Coral Reef Survey

A coral reef marks one edge of the mixing zone. Because of its close proximity to the outfall, there may be effects on the local coral community. Possible effects should be analyzed through a survey that utilizes the coral reef survey performed in the 1991 Use Attainability Analysis as baseline data. The survey should be performed once after a year from the effective date of the permit and every two years thereafter. Should the survey reveal significant degradation of the coral community, subsequent analysis may be required in order to determine more accurately the causes of the degradation.

L. Wastewater Treatment System Evaluation

The permittee should be continuously seeking ways to improve the quality of its effluent. In order to foster that search, the permit includes a requirement to hire an independent consultant to examine the plant and provide a report on possible improvements. The permittee is then required to implement those improvements unless it can be shown, to the satisfaction of ASEPA and EPA, that the recommendations are economically infeasible or technically impossible.

The guidance in the permit for conducting this evaluation was derived from a study performed by CH2MHill on Samoa Packing Company's wastewater treatment system in June, 1991.

M. Pollution Prevention Program

Often the most significant way to reduce the amount of pollutants in the effluent is to stop them at the source. In developing a Pollution Prevention Program, the permittee must examine ways to ensure that a minimum amount of pollutants are entering the harbor as well as a minimum amount of wastewater. The pollution prevention program shall also examine ways to reduce the amount of oil illegally dumped in the harbor by tuna vessels. Finally, it shall include an analyses on the high metal concentrations in the effluent to determine the source(s) and ways to reduce current levels.