LOLO M. MOLIGA
GOVERNOR

OFFICE OF THE GOVERNOR
AMERICAN SAMOA GOVERNMENT
Telephone: (684)633-4116 Fax: (684)633-2269

LEMANU P. MAUGA
LIEUTENANT GOVERNOR

August 13, 2019

Serial: 624

Elizabeth Sablad, Manager
NPDES Permit Sections (WTR-2-3)
U.S. Environmental Protection Agency Region 9
75 Hawthorne St.
San Francisco, CA 94105

RE: **AMERICAN SAMOA GOVERNMENT'S COMMENTS ON STARKIST'S DRAFT NPDES PERMIT NO. AS0000019**

Dear Mrs. Sablad:

Thank you very much for the opportunity accorded me to provide comments on US-EPA's draft NPDES permit for Starkist. As Governor of the Territory of American Samoa, I want to register our gratitude to the Regional Administrator of the US-EPA Region 9, Mr. Michael Stoker and to the entire U.S. Environmental Protection Agency organization for demonstrating great sensitivity to the potential devastating impact Starkist would have on the economic, social, and political survival of American Samoa.

The draft NPDES Permit reflects the accommodating perspective exhibited by US-EPA without compromising or undermining the intent of the law relative to ensuring that the environment's integrity is not jeopardized. I am thankful to see US-EPA's attempt to strike a balance between economic and social welfare of the people and protecting the environmental standards.

I am pleased to transmit, for your review, the American Samoa Government's comments as documented by our American Samoa Environmental Protection Agency, which is attached. Our comments are specific to each of the issues memorialized in the draft NPDES Permit. As noted above, we are grateful that US-EPA, AS-EPA, and Starkist are engaged in exhaustive discussion of issues before respective rulings are declared.

It is obvious that the current attitude of the United States Environmental Protection Agency is reflective of President Trump's responsiveness to the overreaching federal prohibitions that do adversely impact the abilities of States and Territories to build sustainable economies and quality of life improvements.

Sincerely,

Lolo M. Moliga

Lolo M. Moliga
Governor of American Samoa

Cc: Honorable Lemanu Peleti Mauga, Lieutenant Governor
Mr. Michael Stoker, Regional Administrator, US-EPA Region 9
Mr. Pascal Mues, Environmental Engineer, US-EPA Region 9
Mr. Fa'amao Asalele, Director, AS-EPA
HTC Fiu J. Saelua, Chief of Staff

Enclosure: AS-EPA Comments

LOLO M. MOLIGA
Governor

LEMANU P. MAUGA
Lt. Governor

AMERICAN SAMOA ENVIRONMENTAL PROTECTION AGENCY
P.O. Box PPA Pago Pago American Samoa 96799
Phone: 684.633.2304 | Fax: 684.633.5801 | www.epa.as.gov

FA'AMAO O. ASALELE JR.
Director

WILLIAM S. SILI
Deputy Director

2019-152

August 12, 2019

Elizabeth Sablad, Manager
NPDES Permit Sections (WTR-2-3)
U.S. Environmental Protection Agency Region 9
75 Hawthorne St.
San Francisco, CA 94105

Subject: AS-EPA Comments – Starkist Draft NPDES Permit (No. AS0000019)

Dear Mrs. Sablad:

The American Samoa Environmental Protection Agency (AS-EPA) are pleased to provide our comments on the subject Draft Permit for StarKist Samoa Company (StarKist). The AS-EPA has been involved closely with US EPA and StarKist throughout nearly 3 years of NPDES renewal procedures and technical analyses of treated wastewater discharges and Pago Pago Harbor water quality. AS-EPA recognizes the economic importance of StarKist for American Samoa, and seeks to support StarKist as a successful and enduring business interest in the Territory. AS-EPA has reviewed the Pre-Public Draft Permit, and the current Public Notice Draft Permit, and has met with StarKist and US EPA officials numerous times during the respective Draft review periods.

AS-EPA notes that US EPA has been very cooperative and collaborative in re-evaluating several extremely important Permit conditions and requirements, and AS-EPA fully supports continued dialogue between StarKist and US EPA, and consideration from US EPA, on these issues as the time for Final Permit issuance approaches.

Notably, several important requests by StarKist for re-evaluation and revisions to the proposed Draft Permit have been granted by US EPA. These include:

- <u>Increase in Total Nitrogen (TN) limits</u>
  The TN limits (average daily and daily maximum) have been increased by approximately 33% in the most recent Permit revision, and AS-EPA supports further analysis by US EPA to determine if further increases are supportable and still adequately protect Pago Pago Harbor water quality.

- Increase in Total Phosphorus (TP) limits
  The TP limits (average daily and daily maximum) have been increased by approximately 25% and 55%, respectively, in the most recent Permit revision, and AS-EPA supports further analysis by US EPA to determine if further increases are supportable and still adequately protect Pago Pago Harbor water quality.

- Joint StarKist/EPA review of the CORMIX plume modelling applications
  The computer-modelling of discharge plume behavior has been a point of technical discussion from the beginning of the NPDES process. US EPA has independently applied modern software for this modelling effort and has drawn conclusions which StarKist has requested to review and discuss. AS-EPA fully supports this cooperative and collaborative approach between StarKist and US EPA, with the desired outcome of a realistic and scientifically supported mutual agreement of modelling results.

- Elimination of daily average Flow limitations
  The requirement of a daily average limitation on wastewater flow (monthly basis) has been eliminated from the most recent Draft Permit, but a daily maximum limit is still in place. StarKist has requested that this limit should be eliminated as well, and AS-EPA concurs. Wastewater flow from the StarKist facility is influenced by tonnage of fish processed, and since production is limited by in-plant capacity, wastewater flow is indirectly limited. AS-EPA considers that there appears to be no need to establish a daily maximum wastewater flow rate for the facility.

- Elimination of Turbidity requirement for receiving water monitoring
  A request to eliminate turbidity measurements was granted by US EPA, based on StarKist comments that there are not suitable in-water instruments to determine an accurate measurement of turbidity. AS-EPA recommends that US EPA conducts a similar analysis of other parameters that require sensitive instrumentation, so that only parameters that can be measured appropriately are part of the Harbor water quality monitoring efforts.

- Elimination of Station 14 end-of-pipe
  The argument put forth by StarKist for this issue is considered sound by AS-EPA, and AS-EPA supports removal of this Permit-required monitoring station. Removal of this station will result in cost savings for StarKist, with no loss of monitoring integrity.

- Revised location of Station R
  AS-EPA supports the re-location of this station. US EPA approval of this request will not compromise Harbor water quality or result in loss of monitoring integrity.

  The Draft Permit notes that reference data from within the harbor/harbor mouth are necessary due to the differing American Samoa Water Quality Standards (ASWQS) for Pago Pago Harbor and the open coastal waters.

  AS-EPA notes that Reference Site R is not located in Pago Pago Harbor. Per the ASWQS, Pago Pago Harbor is defined as landward of a line drawn from Niuloa Point to Breaker's

Point. Reference Site R is located seaward of this line and as a result, is located in open coastal waters. Station R is therefore not likely to be representative of actual conditions in Pago Pago Harbor.

Pago Pago Harbor and open coastal waters are two distinct waterbody classifications, with distinct water quality standards. In order for the reference data to be useful, the reference site should be located in Pago Pago Harbor at a point that is furthest from any influence of surface water inputs or subsurface discharges.

AS-EPA recommends that Reference Site R should be located midway along the line drawn from Niuloa Point to Breaker's Point.

- Elimination of Metals from effluent and receiving waters monitoring
  The requirement for monitoring of metals in effluent and receiving waters was successfully eliminated because US EPA and StarKist were able to cooperatively evaluate past monitoring data and determine that these constituents were not present in significant quantities. AS-EPA supports that this type of cooperative analysis be applied to other parameters, if not already done so, so that StarKist will not be burdened with unnecessary monitoring requirements.

- Revised locations for new Coral Reef Stations
  AS-EPA supports the re-location of these stations. US EPA approval of this request will not compromise Harbor water quality or result in loss of monitoring integrity.

  The Draft Permit states that the Coral Reef Crest Stations (Coral-North, Coral-East, and Coral-South) shall be directly above the reef crest.

  AS-EPA acknowledges the importance of including these stations in the Receiving Water Quality Monitoring Plan to assess impacts to the coral reef.

  AS-EPA notes that for a Harbor fringing reef, nearly all diverse and healthy coral growth is typically located between 10 and 60 feet on the fore reef, seaward of the reef crest. Any sampling depth greater than 60 feet is not representative of waters in near proximity to coral, as coral growth is typically limited below 60 feet because of reduced sunlight penetration.

  AS-EPA recommends that the Coral Reef Crest Stations be located as close to the reef crest as reasonably achievable, with one sampling point at 30 feet depth for each station. The stations should be equally spaced along fore reef between the edges of the ZOM.

  The coral reef station locations will necessarily be variable per monitoring event, depending on ocean surface conditions. AS-EPA recommends that the station location criteria is not a geographical point, but rather a narrative. AS-EPA suggests the following language to describe the Coral Reef stations:

  The Coral Reef stations (Coral-N, Coral-E, Coral-S), shall be as near the breaking waves of the reef crest as is reasonably achievable, with due consideration given to vessel safety as determined by the vessel operator who is the authorized person in responsible charge,

and where a water sample can be obtained in proximity to the fore reef at a nominal depth of 30 feet.

- Revised language for Far-Field Station
  AS-EPA supports the revisions for this station. US EPA approval of this request will not compromise Harbor water quality or result in loss of monitoring integrity.

  The use of a Far-field (FF) station at a location beyond the influence of Harbor waters or the discharge, if determined to be beneficial for assessment purposes, should be located to the south and east of the defined Harbor limits, in the area of Taema Bank.

- Ammonia/Ammonium and the Ammonia Impact Ratio (AIR)

  Ammonia in water exists in two forms, NH_3 and NH_4^+. See below.

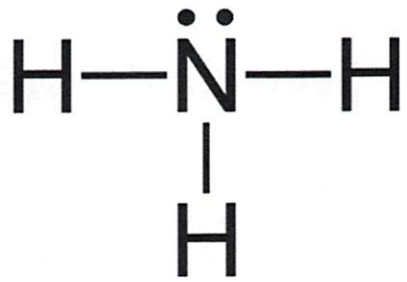

Figure 1. Ammonia (NH_3) has an un-shared pair of electrons. This creates a very slight negative charge on one side of the molecule (δ^-). The 3 hydrogens create a very slight positive charge (δ^+) on the other side. However, the NH_3 molecule is electrically neutral (0). This is the *un-ionized* form of Ammonia.

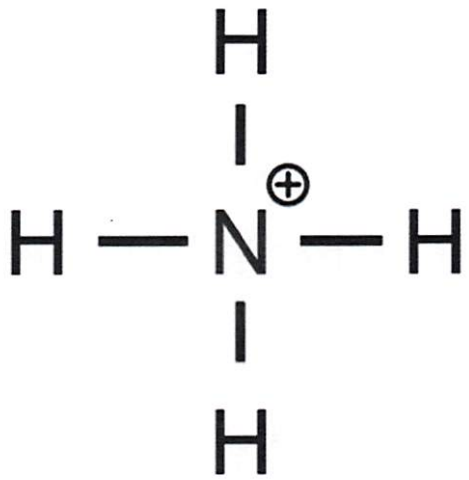

Figure 2. Ammonium (NH_4^+) is NH_3 with an attached Hydrogen atom (H^+) from solution. The H^+ may be attached by ionic attraction (+/- attraction) or a covalent bond (shared electrons). The additional hydrogen atom gives the NH_4 molecule a positive (+) electrical charge. This is the *ionized* form of Ammonia.

These two forms of Ammonia exist in varying proportions in aqueous solutions, as NH_3 + NH_4^+, depending on the pH of the solution.

Lower pH (below 7) creates greater amounts of H^+ in solution (acidic conditions), so there is more H^+ to bond with NH_3, which creates a greater proportion of NH_4^+. The lower the pH, the higher proportion of NH_4^+ in the mix of NH_3 + NH_4^+.

Ammonia occurs as nearly pure NH_4^+ in low pH systems (pH < 5).

Ammonia occurs as nearly pure NH_3 in high pH systems (pH > 11).

In the pH range of 6-10, the range that includes fresh and ocean waters, Ammonia occurs as a mix of NH_3 + NH_4^+.

The point where concentration of NH_3 and NH_4^+ are equal, that is, 50% NH_3 and 50% NH_4^+, is around pH 9.5.

Freshwater has pH in the range of 6.5-7.5, so NH_4^+ will be the greater proportion of Ammonia in these systems.

Seawater has a pH of 8.1-8.5. At this pH, NH_4^+ will be the greater proportion of the mix, greater than 50% because pH is less than 9.5, but there will be more NH_3 in these systems than in freshwater.

Based on the above, in the range of pH for the Utulei and StarKist effluents (6.5 – 7.5+) and the Pago Pago Harbor seawater (8.0 – 8.2), the greater proportion of Ammonia is in the NH_4^+ form, for both effluent and seawater.

The scientific literature widely supports that in aquatic systems NH_3 has much greater toxicity than NH_4^+. In aquatic systems NH_4^+ has been described as mildly toxic, and even non-toxic.

The scientific literature somewhat weakly supports that temperature and salinity can elevate the toxicity of NH_3 and NH_4^+. The increase in toxicity is not well described in the literature and there is very little direct investigative evidence of this. Notwithstanding, temperature and salinity are incorporated in Ammonia toxicity consideration.

The Ammonia Impact Ratio (AIR) uses a concentration of Total Ammonia in the effluent (mg/L), a mix of NH_3 + NH_4^+, Attachment D, Column B. This Ammonia in the effluent will have NH_4^+ in greater proportion than NH_3 because pH is well below 9.5.

The proportions of NH_3 and NH_4^+ will change as the effluent mixes into the seawater (dilution) and the pH rises to that of the seawater. Under this action, NH_3 will increase a little, and NH_4^+ will decrease a little. "*A little*" because the pH difference between effluent and seawater is not great. After dilution, NH_4^+ will remain the dominant form of Ammonia in the seawater, as it was in the effluent.

The AIR uses concentration of Total Ammonia in the effluent, a mix of NH_3 + NH_4^+, with NH_4^+ being the greater proportion because of effluent pH.

The ASWQS tables present concentration of Ammonia as NH_3.

The AIR is adequately protective, because the ASWQS tables present Ammonia concentration in terms of 100% NH_3, and the Total Ammonia in the effluent will never be 100% NH_3.

The actual AIR will always be less than the calculated AIR.

Example:

Table II, Four-day Average, receiving water T= 30 C°, pH = 8.2, limit = 30.94 mg/L as NH_3.

If effluent Total Ammonia is measured at 30.94 mg/L, then the calculated AIR = 1.0.

However, Total Ammonia in the effluent is actually a mix of NH_3 + NH_4^+, so NH_3 will be less than 30.94 mg/L, so the actual AIR with regard to Ammonia toxicity (NH_3) will be less than the calculated AIR.

The actual AIR is indeterminable unless some very sophisticated, time consuming, and expensive sampling and analytical chemistry is used.

It should be recognized that if effluent Total Ammonia is greater than the ASWQS limit for a specific temperature and pH, and the calculated AIR > 1.0, there is still a conservative margin, because the actual AIR will be less than the calculated AIR for reasons discussed above. Of course, as the Total Ammonia in the effluent increases, eventually the actual AIR will exceed 1.0 with regard to Ammonia toxicity (NH_3).

----- end of comments -----

In closing, AS-EPA supports StarKist efforts to achieve fair and reasonable requirements and conditions for the renewal of NPDES Permit AS0000019. Our comments herein are intended to support a continued cooperative and collaborative effort between US EPA and StarKist, to achieve this goal. AS-EPA looks forward to a favorable response to comments and to a favorable outcome for StarKist.

Sincerely,

Fa'amao O. Asalele Jr., Director

Cc: Michael Stoker, Regional Administrator – US EPA Region 9
Pascal Mues, Environmental Engineer – US EPA Region 9