

# Promoting the Use of Green Stormwater Infrastructure in American Samoa

Regulatory and Programmatic Recommendations

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**Prepared for:**

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## Introduction

This report presents recommendations by the Horsley Witten Group (HW) on strategies to improve stormwater management and increase the implementation of green infrastructure (GI) practices in American Samoa, as requested by the Coral Reef Advisory Group (CRAG). GI practices, such as organic filters, infiltration practices, rainwater harvesting, constructed wetlands, and permeable pavements, are an alternative to conventional pipe and pond (offsite conveyance and detention) approaches to stormwater management. The GI approach offers onsite management options for small storms and relies primarily on infiltration, reuse, and evapotranspiration to reduce runoff volumes and plants and engineered soils for pollutant removal.<sup>1</sup> GI provides other co-benefits such as improved air quality, reduced heat island effects, habitat and biodiversity improvements, and educational opportunities.

While GI practices exist across Tutuila, their implementation has been ad hoc with no large-scale plan for improved water quality or reduction of stormwater runoff volume. Implementation of GI can be hindered by outdated stormwater regulations, local codes, unwritten policies, and guidance documents that conflict with GI goals; lack of education by contractors and agencies regarding the benefits or design of GI practices; as well as lack of material resources and technical expertise needed for implementation and maintenance.

## Methods

HW reviewed current Territorial regulations and permitting requirements for stormwater management to identify existing requirements, gaps, and opportunities to improve post-construction stormwater management. More specifically, barriers and incentives related to the use of GI were also evaluated. We also interviewed knowledgeable individuals from the Department of Commerce (DOC), American Samoa Environmental Protection Agency (ASEPA), Department of Public Works (DPW), U.S. Environmental Protection Agency (USEPA), as well as practitioners (on and off-island) with experience in site design, construction, and stormwater management in American Samoa (see **Attachment 1**). This research, in addition to over a decade of watershed and stormwater experience in American Samoa and other Pacific islands, formed the basis of our recommendations.

## General Observations

During our review, the following key observations were made:

1. The greatest threats to near-shore water quality and to the health of the reefs in American Samoa are from runoff from the land (Tuitele, 2016). Runoff can carry pollutants (sediment, oils, nutrients, and toxins, etc.) into streams, wetlands, and coastal waters; contribute to localized flooding and infrastructure damage; and cause erosion and habitat loss. “ASEPA has determined that all impaired designated uses in the Territory are due to nonpoint sources”, and ten coastal waterbodies on the 303(d) Impaired Waters list have been

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<sup>1</sup> *Accelerating Cost-Effective Green Stormwater Infrastructure: Learning from Local Implementation*. 2015. Nell Green Nylen and Michael Kiparsky. Wheeler Institute for Water Law & Policy, Berkeley Law: [https://www.law.berkeley.edu/files/CLEE/GSI\\_Report\\_Full\\_2015-02-25.pdf](https://www.law.berkeley.edu/files/CLEE/GSI_Report_Full_2015-02-25.pdf)

identified as impaired due to nonpoint sources (Tuitele et al., 2016). Runoff from development and impervious surfaces such as roads, parking lots, buildings is an important component of this land-based load. Changes to natural hydrologic processes caused by development can lead to reductions in infiltration and evapotranspiration, resulting in increased stormwater runoff.

2. American Samoa’s water quality regulations address runoff control from land disturbing activities such as agricultural areas, construction sites, and developments; however, the emphasis on stormwater management permitting and enforcement has been on erosion and sediment control for these activities. Impacts from stormwater runoff are long-term, and successful management of runoff cannot simply focus on erosion and sediment control issues during construction. Roads, buildings, parking lots, and other hard surfaces generate stormwater runoff (and pollutants other than sediment) every time it rains, not just during construction. New development typically adds impervious surfaces and, if not managed, can increase the volume of polluted runoff generated during rain events and discharged to wetlands and downstream waterbodies.
3. American Samoa is behind most other states and territories in post-construction stormwater management. In the Pacific region alone, Guam, Commonwealth of Northern Mariana Islands (CNMI), Hawaii, and Palau all adopted formal standards and design criteria for post-construction stormwater management. American Samoa, while requiring a stormwater control plan as part of the land use permit process (i.e., Project Notification Review System or PNRS), focuses on the implementation of regulatory standards for measures to control erosion and sedimentation during construction. Requirements vary by jurisdiction, but these other jurisdictions have water quality, recharge, and flood control criteria that define the amount of rainfall that must be managed on a given site, as well as guidance manuals describing Best Management Practice (BMP) selection, sizing, design, construction, and maintenance requirements.
4. The PNRS process, specifically permit application approval conditions, is the primary mechanism for administering stormwater requirements. While efficiently streamlined, this process can result in gaps in ASEPAs oversight of stormwater control plans and inconsistent application of post-construction stormwater management requirements.
5. Because the regulatory stormwater slate is relatively “clean” in American Samoa, so to speak, there is a tremendous opportunity to adopt the most current and innovative approach to stormwater management at the outset. Most programs around the U.S. are shifting to an emphasis on volume reduction and targeted water quality treatment using green infrastructure as a climate resilient management approach.
6. Agency capacity and staffing resources for supporting a comprehensive stormwater program (permitting, enforcement, education, and infrastructure & maintenance) are limited in American Samoa. This is not unique. Sustainable funding options should be aggressively explored to support building a stormwater program with many of the elements of the National Pollutant Discharge Elimination System (NPDES) Phase II Municipal Separate Storm Sewer System (MS4) program.



7. Upon review of American Samoa’s codes related to stormwater management, only a few present potential barriers to GI implementation (e.g., paved parking lot requirements). However, certain departments implement international standards and codes, like the [International Building Code](#). Those codes have not been reviewed in their entirety, and as such, we have recommended additional coordination between territorial departments (e.g., ASEPA and DPW). See recommendation 4 for a detailed discussion.

This report offers several options for improving the use of GI in American Samoa for consideration by the relevant agencies, environmental managers, and policy makers. Further discussion amongst these managers will be needed to determine the most locally-appropriate implementation mechanisms. The recommendations described in the remainder of this report focus primarily on improving post-construction stormwater management and, secondarily, on promoting green infrastructure in American Samoa.

### **Recommendation 1: Update existing Territorial pollution control regulations to clarify post-construction stormwater management requirements**

Stormwater management is regulated under the provisions of the Territorial Environmental Quality Act, Title 24 Water Quality Standards, [Pollution Control](#) (A.S.A.C. § 24.0208).

Under these regulations, ASEPA is required to “prevent negative impacts to receiving waters and ground waters as

a result of disruption in natural drainage patterns caused by development.” These regulations require a stormwater control plan for development projects and post-construction standards; however, the provisions of this regulation applicable to development have been primarily implemented for erosion and sediment control during construction activities.

*“In the past, stormwater wasn’t a priority, but it should be. We have more building, more flooding. The climate is changing.” – ASEPA*

We recommended making minor changes to the Pollution Control regulations at Section 24.0208 to achieve four main objectives:

- Clarify the difference between construction site (erosion and sediment control) and post-construction (permanent) stormwater management.
- Explain why and when permanent management of stormwater runoff (post-construction) is required.
- Identify specific post-construction requirements for an applicant’s stormwater control plan.
- Encourage an approach to stormwater management that includes volume reduction and pollutant removal.

Suggested edits and restructuring of Section 24.0208(e) are shown below as an example; however, a more comprehensive review by ASEPA may illuminate other sections in Title 24 where updates are warranted. In the example below, existing regulatory text is shown in *italics* and changes to that language are shown in **red type**.

(e) Storm Water Control (Post-construction)

*The conversion of natural areas to paved surfaces during the development process can reduce the amount of rain that is absorbed into the ground, evaporated, or taken up by plants, which leads to more surface runoff, erosion, and localized flooding. Rain falling on pavement, roofs, and compacted soils can wash pollutants (e.g., trash, oil/grease, nutrients, bacteria, sediment, and other contaminants) off these surfaces into our streams, wetlands, and coastal waters. To prevent negative impacts to receiving waters, important aquatic ecosystems, and ground waters as a result of disruption in natural drainage patterns caused by development, the following standards shall be required to control storm water for all new development projects, redevelopment projects, ~~and~~ new or modified land uses, and road construction or major repairs.*

*(1)-(2) For the planning, development, and maintenance of new, modified, and existing land uses, avoidance and prevention of water quality impacts is required. All proposed discharges of stormwater must be managed. The methods to be utilized include, but are not limited to, BMPs such as **sustainable site planning; proper use, storage, and disposal of hazardous materials; avoidance of sensitive areas; engineered stormwater practices that provide on-site infiltration, evapotranspiration, reuse, or pollutant removal, as well as safe conveyance and flood control of off-site discharges;** and proper preparation and maintenance of drainage structures, or others as required by ASEPA.*

*(2).-Nonstructural BMPs used in the plan shall **meet the standards and design criteria be these** contained in the **most up-to-date stormwater design manual or document (g) Guidance or guidance,** or other source as approved by ASEPA.*

*(3)-(1) A storm water control plan shall be completed for any construction activity or temporary or permanent development determined by ASEPA to have a potential significant impact on receiving water quality or ground water quantity or quality. Such activities include, but are not limited to, confined animal facilities, construction project staging areas, highways, bridges, parking lots, buildings, structures, and facilities utilizing hazardous materials, pesticides, fertilizers or manure. The storm water control plan required by this section shall be submitted to ASEPA and approved in writing prior to commencement of any construction activity for a new project and by the date specified by ASEPA for existing land uses. The plan shall include the following:*

- (A) An estimate of the volume of storm water to be controlled, **with runoff calculations showing pre and post conditions;***
- (B) an assessment of the potential impacts of the storm water to be addressed, **including information regarding the watershed where the proposed project is located and any listed impairments for receiving waters;***
- (C) a full description of proposed BMPs and design plans for both construction (e.g., perimeter controls, sediment traps, stabilization) and post-construction storm water controls (e.g., infiltration, vegetated filters, permeable pavements);*

- (D) the design support ~~of~~ for proposed BMPs and/or storm water controls, including sizing calculations, soil infiltration rates, pollutant removal estimates, etc.;*
- (E) ~~including~~ a location map for the controls at the site, ~~and~~*
- (F) a construction and long-term operations and maintenance plan for BMPs, included estimated annual costs; and*
- ~~(G) (B) For nonstructural BMPs, a description of the management measures or methods to be used at the site to prevent the escape of pollutants to the receiving waters or ground waters. Nonstructural BMPs used in the plan shall be those contained in the document (g) Guidance or guidance from the ASEPA, the Natural Resources Conservation Service, or other source as approved by ASEPA.~~*

Regulations should define when and where stormwater standards must be met, exemptions, administrative procedures, and enforcement provisions.

We recommend providing specific standards (e.g., managing of a specific size storm event on-site or percent pollutant reduction target) in a separate manual that is referenced in the regulations, as opposed to incorporating them directly in the regulations, even though the erosion control standards are included in the regulatory language. This allows for easy modification to the standards via manual updates, rather than a potentially lengthy legislative process. Flexibility for updating standards allows for adjustment in response to rapidly changing climate, worsening water quality conditions, and/or evolving community priorities. This is discussed in more detail under Recommendation #2.

ASEPA is listed in the Pollution Control regulations as the responsible agency for receipt and approval of the stormwater control plan required as part of the PNRS process. Currently, stormwater control plans are submitted as part of the PNRS permit application to the DOC, which may introduce a gap in the consistent administration of stormwater management regulations. See Recommendation #3 for more discussion.

Also note that the stormwater control plan is required when determined by ASEPA to have a “*potential significant impact on receiving water quality...*” As written, “significant” is not well-defined and subject to broad interpretation. We recommend requiring stormwater control plans for all non- single-family residential development projects and major renovation activities (e.g., multi-family, commercial, industrial, institutional, transportation, etc.). Alternatively, the agencies should agree on a meaningful size threshold for projects that balances water quality protection and agency permitting capacity. The erosion and sediment control provisions in the Pollution Control Section state that sites >1 acre or within 100 ft of a surface water must meet erosion control standards. In our opinion, projects well under 1 acre of disturbance should be required to meet post-construction (as well as construction) standards. Small sites (i.e., single family) should be encouraged to incorporate green infrastructure, through practices such as rain gardens and driveway disconnection practices.

To reduce confusion between construction and post-construction stormwater controls, we recommend adjusting the language in (b) Land Disturbing Activities (2) BMPs for Construction Sites as follows:

*C) For construction activities disturbing in excess of one acre or occurring within 100 feet of a surface water, ensure that the standards set forth in subdivisions (A) and (B) are met, or, in the alternative, prepare and submit an ~~construction and post-construction~~ erosion and sediment control plan for approval by ASEPA. For approval, the BMPs to be included in the plan must be those provided by the (g) Guidance document, guidance received from ASEPA or the Natural Resources Conservation Service, or other references, as approved by ASEPA. For construction activities disturbing in excess of one acre or within 100 feet of a surface water that are initiated after the effective date of these standards, the plan shall include measures to retain sediment on the site.*

## **Recommendation 2: Establish stormwater management standards and provide BMP design guidance adapted to American Samoa**

For erosion and sediment control in American Samoa, basic performance standards (e.g., sediment traps, silt fence, construction entrances) are included in the Pollution Control regulations and guidance for construction site BMPs is provided (i.e., 2001 AS-EPA Guidance Manual for Runoff Control and ESC Field Guide). A similar level of guidance is not provided for post-construction. While some post-construction BMPs exist in American Samoa, such as ponding basins, permeable pavements, bioretention/rain gardens, and green roofs, the basis for their design, performance expectations, and approval is unclear. Off-island engineers likely use guidance from other jurisdictions. Engineers, owners, and permitting and enforcement agencies need common design, installation, and maintenance criteria to determine if standards are being met and procedures for documenting compliance.

In many cases, management standards and BMP design criteria are combined into a single manual that is referenced in the enabling regulations. It is not unusual for erosion control and post-construction guidance to both be presented in the same manual. The CNMI, Guam, Hawaii, and Palau have all adopted stormwater manuals that can be reviewed for inspiration:

- [2006 CNMI Guam Stormwater Management Manual- Volume I](#)
- [2006 CNMI Guam Stormwater Management Manual- Volume II](#)
- [2017 Stormwater BMP Guide for New and Redevelopment for the City and County of Honolulu](#)
- [2014 Stormwater Management in Pacific and Caribbean Islands: A Practitioner's Guide to Implementing LID](#)

Post-construction stormwater standards should: 1) identify specific documents that are required to be submitted with permit applications; 2) help designers determine the most appropriate measures to apply at a site; 3) provide guidance for determining the required dimensions for certain practices; and 4) identify certain activities that must occur to avoid enforcement action and/or permit application disapproval. A preliminary list of post-



construction standards that might be applicable to American Samoa are offered below as a starting point for further discussion:

1. No new un-managed discharges from new development, redevelopment, or road projects.
2. Runoff reduction target should manage the 1-yr, 24-hr design storm on-site through recharge, evapotranspiration or reuse. NOAA Atlas 14 sets a range for this design storm on Tutuila from 5.3-8.2 inches. Where this can't be met, the water quality treatment and channel protection targets must be met. Note: Appendix A of the 2014 Pacific and Caribbean Islands Low Impact Development (LID) guide has rainfall depth analysis for standard design storms.
3. Water quality treatment. If the runoff reduction target cannot be met, you must remove specific pollutants of concern (e.g., 85% TSS, 60% removal of pathogens, 30% removal of total nitrogen) using approved BMPs sized to capture the prescribed water quality volume (WQ<sub>v</sub>). The WQ<sub>v</sub> is equivalent to the first 2 inches of rain, which carries the most pollutants and represents the most frequent storms (note: the rainfall analysis described in Appendix A of the 2014 Island LID guide shows that the 90<sup>th</sup> and 95<sup>th</sup> percentile storms for Tutuila range from 1.4-4.3 inches). Based upon results published in the scientific literature, structural BMPs provided in a design manual would be presumed to meet these standards when properly designed, constructed, and maintained.
4. Channel protection. Discharges to streams must be moderated to prevent streambank erosion. This standard is presumably met if runoff reduction targets are achieved.
5. Conveyance. Open and piped conveyance systems must be designed to provide adequate passage for flows leading to, from, and through stormwater management facilities for at least the peak flow from the 25-year, 24-hour storm from the entire contributing drainage area. A description of flow paths during the 100-year, 24-hour design storm event shall also be included. This would serve to formalize DPW's informal (no written policy) culvert and pipe sizing requirements.

*"We don't have a written policy established, but we do verify sizing of the culverts like for 10 year-24 hr design storm for pipes along the road and 25 year for crossings, and practicability." – DPW*
6. Downstream overbank flood protection must be provided at each site by attenuating the post-development peak discharge rate to the pre-development levels for the 10-year and 100-year, 24-hour design storm events. In addition, designers must demonstrate that runoff from the site for storms up to the 100-year, 24-hour design storm events reach proposed structural practices designed to meet this standard. The objective of this standard is to prevent an increase in the frequency and magnitude of overbank flooding and to protect downstream and abutting structures from flooding. Sites with direct discharges to coastal waters are exempt from this standard.

7. Operations and Maintenance. The stormwater management system, including all non-structural and structural stormwater controls and conveyances, must have an enforceable operation and maintenance plan (O&M Plan) and agreement to ensure that it continues to function as designed. The long-term O&M Plan shall at a minimum include:
- Stormwater management system(s) owners;
  - The party or parties responsible for operation and maintenance, including how future property owners will be notified of the presence of the stormwater management system and the requirement for proper operation and maintenance;
  - The routine and non-routine maintenance tasks for each BMP to be undertaken after construction is complete and a schedule for implementing those tasks;
  - A maintenance log for tracking inspections and repairs;
  - A plan that is drawn to scale and shows the location of all stormwater BMPs along with the discharge point;
  - A description and delineation of public safety features; and
  - An estimated operation and maintenance budget and a funding source for operation and maintenance activities and equipment.
8. Pollution Prevention. All sites require the use of source control and pollution prevention measures to minimize the impact that the land use may have on stormwater runoff quality. These measures shall be outlined in the submitted Stormwater Control Plan, including how future property owners will be notified of these measures. The intent of this standard is to prevent, to the maximum extent practicable, pollutants from coming into contact with stormwater runoff.
9. Pollution Hotspots. Stormwater discharges from land uses or activities with higher potential pollutant loadings, defined as hotspots, are required to use specific structural BMPs and source control/pollution prevention practices. In addition, stormwater from a hotspot land use may not be recharged to groundwater without adequate pretreatment. The recharge prohibition at hotspots applies only to stormwater discharges that come into contact with the area or activity on the site that may generate the higher potential pollutant load. In addition, infiltration practices shall not be used where subsurface contamination is present from prior land use due to the increased threat of pollutant migration associated with increased hydraulic loading from infiltration systems. However, if contamination is removed, and the site has been remediated, infiltration practices can be proposed. In areas where infiltration is not appropriate, other green infrastructure practices can be used, as long as they are lined (e.g., lined bioretention areas). The intent of this standard is to prevent, to the maximum extent practicable, pollution from entering water resources. The following land uses and activities are automatically considered stormwater hotspots:
- Heavy manufacturing
  - Mining, oil & gas
  - Hazardous waste facilities

- Landfills and Recycling facilities
- Steam electric power plants
- Transportation industries (includes marinas and boatyards)
- Sewage treatment facilities
- Light industry
- Auto fueling facilities (i.e., gas stations);
- Exterior vehicle service, maintenance and equipment cleaning areas;
- Outdoor storage and loading/unloading of hazardous substances; and
- Others that may be identified by the approving agency as necessary

10. Illicit Discharges. The stormwater management system is the system for conveying, treating, and infiltrating stormwater on site, including stormwater best management practices and any pipes intended to transport stormwater to ground water or surface water. All illicit discharges to stormwater management systems are prohibited, including untreated gray water and discharges from septic systems. Illicit discharges to the stormwater management system (i.e., illicit connections) are discharges not entirely comprised of stormwater. The objective of this standard is to prevent pollutants from being discharged into Waters of the Territory, and to safeguard natural resources and the environment, public health, safety, and welfare.

11. Climate change. Demonstrate that redundancy and resiliency has been built in for BMPs susceptible to rising sea levels, rising groundwater tables, and other anticipated climate change factors.

We recommend updating the 2001 Guidance Manual for Runoff Control to: 1) add post-construction standards and BMP design criteria, and 2) update standards and guidance for erosion control practices to address lessons learned over the last two decades. At a minimum, this revised stormwater management manual for American Samoa should include the following elements:

- Stormwater performance standards (for construction and post-construction)
- Descriptions of preferred BMPs that can be used to meet standards, including green infrastructure
- Precipitation analyses and water quality standards and impairments
- Photos and graphics of island BMPs
- BMP design criteria and specifications
- Pollutant removal performance tables and BMP selection matrix
- Example sizing calculations
- Design examples
- Inspection and maintenance checklists (for installation and long-term O&M)
- Guidance on transitioning between temporary and permanent runoff controls
- Native plants list
- List of construction materials that could be leveraged locally (e.g., permeable concrete pavers)

This manual should be designed for online accessibility through ASEPA or other and linked to PNRS application materials.

### **Recommendation 3: Strengthen post-construction stormwater management compliance within the PNRS permit process**

The PNRS permit application, managed by the American Samoa Coastal Management Program (ASCMP) under DOC, is one of the best mechanisms for ensuring proper stormwater management during land development. Currently, a stormwater control plan is required as part of the permit application, but it is unclear the extent to which post-construction stormwater management is part of that plan. Reportedly, stormwater management can be added as a condition of the permit, but this occurs at the end of the design process when the most preferred strategies are often hard to implement. Furthermore, it is unclear if ASEPA, a reviewing authority on the PNRS Board, has the capacity to evaluate stormwater control plans for all developments, as required under the WQS.

To ensure design and installation of post-construction stormwater BMPs, especially GI, we recommend the following:

1. Update the PNRS permitting regulations and:
  - Require submission of a stormwater control plan in accordance with recommended regulatory revisions to Section 24.0208 (See Recommendation 1).
  - Require completion of a stormwater checklist of the most up-to-date stormwater standards. See Section [26.0207](#).
  - Amend Section [26.0220 Standards and criteria for review](#) to encourage stormwater management and green infrastructure throughout the design process.

See **Attachment 2** for more specific regulatory language revisions. In addition, the following changes to the PNRS process could be considered to ensure design and installation of post-construction stormwater BMPs.

2. Require government agencies to pay land use permit fees (See regulations at [26.0207](#) Land use permit application procedures, fees, and penalties). Currently there are no administrative fees for government agency-funded projects or projects of U.S. not-for-profit corporations. However, Territory regulations indicate that penalties shall be assessed for government and not-for-profit projects that commence prior to the Director issuing a land use permit. Without requirements to pay an upfront permit application fee, the Territory has little room to offer financial incentives to developers for implementing more effective stormwater management controls. For an example of incentivizing a permit through fee reductions, see CNMI's Major Siting Permit Guidance<sup>2</sup>. The CNMI offers permit fee reductions for implementing LEED measures, BMPs, and redeveloping of existing

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<sup>2</sup> [https://dcrm.gov.mp/wp-content/uploads/crm/Final-Guide\\_finalv2.pdf](https://dcrm.gov.mp/wp-content/uploads/crm/Final-Guide_finalv2.pdf)

structures/developed land. CNMI's permit fees range from \$200-\$2000 depending on the project size and offer fee reductions of up to 50%

3. Increase ASEPA capacity for a more thorough review process at the PNRS Board Review stage. As previously stated, our findings indicate that ASEPA capacity for review of stormwater control plans is limited. Regulations indicate that the land use permit is reviewed by the Board member agency (i.e., ASEPA) having jurisdiction over the conditions imposed who shall be responsible for the enforcement of the conditions. Other than the penalty for beginning a project without a permit (see [26.0207](#)). The PNRS Board can revoke a land use permit based upon any of the grounds for bringing an enforcement action (See [26.0216 Revocation of a land use permit](#)). However, without the capacity to thoroughly review stormwater control plans and issue applicable permit conditions, this process is minimally effective in ensuring that adequate post-construction stormwater management controls, including GI, are in place.
4. ASCMP could contract with a third-party reviewer to review stormwater plans for compliance with the standards, at the expense of the applicant, if PNRS review board capacity to review technical stormwater plans is a concern.
5. ASCMP could award additional points to bidders that include green infrastructure installation in proposed project plans. The PNRS application is evaluated by ASCMP on a points system. Higher scores could then warrant an expedited permit approval process, for example.
6. To incentivize green stormwater infrastructure, ASCMP could consider encouraging PNRS applicants meet LEED certification requirements or other sustainable design criteria that includes innovative stormwater management. More information on sustainable design practices can be found at:
  - GSA Requirements that all new federal buildings meet LEED design requirements: <https://www.gsa.gov/real-estate/design-construction/design-excellence/sustainability/sustainable-design>
  - Sustainable CNMI: A Manual for Design, Construction, and Operations for the Hotel Sector: [https://dcrm.gov.mp/wp-content/uploads/crm/2018-CNMI-Sustainable-Hotel\\_Final.pdf](https://dcrm.gov.mp/wp-content/uploads/crm/2018-CNMI-Sustainable-Hotel_Final.pdf)
7. ASCMP could require PNRS applicants subject to federal NPDES Permit requirements to integrate the stormwater control plan with the required Stormwater Pollution Prevention Plan (SWPPP) and to ensure that stormwater treatment and monitoring parameters focus on known water quality impairments.
8. Require follow up. Relevant PNRS Board Agencies should evaluate stormwater compliance under approved applications over the past 10 years to determine if any post-construction stormwater conditions were fully implemented. As part of this evaluation, a BMP tracking geodatabase could be developed (see Recommendation #5). The USEPA could be asked to do a similar evaluation of relevant post-construction stormwater measures of existing NPDES permit holders.



## Recommendation 4: Identify site development codes that restrict or incentivize stormwater green infrastructure

American Samoa’s existing codes and regulations that we reviewed were, in general, not interpreted as barriers to GI implementation. However, as regulations are updated or new standards are adopted in the future, it is important to ensure that regulatory language does not unintentionally restrict the implementation of stormwater management and GI practices. Building codes, pipe sizing standards, or design criteria can inadvertently prohibit some GI practices. For example, policies and codes may prevent the use of permeable pavers by requiring that surface parking be paved; limit surface practices, like raingardens, by prohibiting ponding; or limit rainwater reuse options by disallowing cistern water for flushing toilets. Our review of the current plumbing code (Section [26.11](#)) found no explicit barriers to GI implementation. The Sanitation code ([Section 25.0703 and 25.0704](#)), however, may be interpreted as prohibitive to GI. Alternatively, future development code requirements for parking lot landscaping, for example, could incentivize the use of vegetative filters and canopy cover for shading.

*There are already examples of green infrastructure on Tutuila. The American Samoa Power Authority installed rainwater harvesting equipment for landscaping irrigation and toilet flushing. Designs like this reduce the volume of stormwater runoff on a site and reduce water use. – Brian Rippy, Green Building Designer, AS EPA Building Renovation*

**Table 1** lists types of green infrastructure practices, the regulatory barriers that could prevent their implementation, and suggested recommendations to consider to promote GI. Where appropriate and related to existing codes, applicable references are included.

The Territory could consider offering incentives to developers, if regulatory change proves to be difficult. For example, tax incentives could be offered for contractors or property owners that promote and install green infrastructure. In addition, the Territory could provide access to federal funding – through grants or loans – to individuals or contractors who are implementing green infrastructure.

Table 1. GI Practices, Barriers, and Recommendations

Practice	Barriers	Recommendation
<b>Green/blue roofs</b>	<ul style="list-style-type: none"> <li>• Building code material specifications that exclude standard green/blue roof construction materials/vegetation</li> <li>• Typhoon safety that limits the materials that can be attached to roofs</li> <li>• Fire safety and access requirements that prohibit vegetative cover or temporary water storage on roof</li> </ul>	<ul style="list-style-type: none"> <li>• Review material specifications in the <a href="#">International Building Code</a> to identify building requirements for rooftops. Design standards, for example, should be reviewed to understand how green and blue roofs can be constructed to withstand typhoon force winds. See <a href="#">Section 26.10</a> for regulatory authority.</li> <li>• Encourage coordination between the Department of Public Safety (DPS), DPW, and ASEPA to understand fire safety and access requirements and any potential conflicts with rooftop vegetative cover or temporary rooftop water storage.</li> <li>• Provide green/blue roof standards in a design manual.</li> </ul>
<b>Infiltration Practices</b> (e.g., Infiltration Basins/Trenches, Dry Wells, Permeable Pavements)	<ul style="list-style-type: none"> <li>• Required curbing, sidewalk, and utility placement which limits stormwater options in road ROW</li> <li>• Parking requirements that generate excess impervious cover and limit available space for stormwater management</li> </ul>	<ul style="list-style-type: none"> <li>• Review regulations at <a href="#">Section 26.0310(a)</a> and consider specifying the allowable use of permeable/pervious surfaces (that support vehicles and are ADA compliant)</li> <li>• Review regulations to ensure that that language does not prohibit the use of permeable pavement options in situations where permeable/pervious pavement could support the use. For example, <a href="#">Section 26.0310(e)(1)(E)</a> requires that all parking lots with greater than 5 spaces be paved and striped.</li> <li>• Encourage coordination between DPS, DPW, and ASEPA to understand how permeable pavement options can meet local fire access requirements.</li> <li>• Provide criteria for infiltration practices in a design manual.</li> </ul>
<b>Rainwater harvesting</b> (e.g., Cisterns, Rain barrels, Underground Chambers)	<ul style="list-style-type: none"> <li>• Plumbing codes that prohibits reuse of rainwater</li> <li>• Concerns with blocking of fire access</li> </ul>	<ul style="list-style-type: none"> <li>• Encourage coordination between DPW, ASPA, and ASEPA to ensure that future revisions to plumbing codes do not specifically prohibit the reuse of rainwater for non-potable uses such as irrigation. See the implementing regulation at <a href="#">Section 26.11</a>.</li> <li>• Encourage coordination between DPS, DPW, and ASEPA to understand permeable pavement options meet local fire access requirements.</li> <li>• Provide criteria for rainwater harvesting practices in a design manual.</li> </ul>
<b>Other vegetated practices</b>	<ul style="list-style-type: none"> <li>• Drainage codes and/or nuisance regulations that prohibit temporary ponding of water</li> <li>• Street and parking standards, and lot setbacks that reduce available space for stormwater practices</li> </ul>	<ul style="list-style-type: none"> <li>• Review Sanitation code language to evaluate whether it may be considered prohibitive to implement GI and other surface stormwater management measures due to temporary ponding and mosquito-breeding concerns. This likely involves coordination between ASEPA and the Department of Health. See the implementing regulations at <a href="#">Sections 25.0703 (Water overflow and drainage water-Prohibited runoff)</a> and <a href="#">25.0704 (Control of mosquitoes)</a>.</li> <li>• Review street and parking standards to ensure that current and future language does not encourage development that reduces available space for stormwater practices. See Zoning <a href="#">Section 26.0310</a>.</li> <li>• Provide criteria for other vegetated practices, such as Submerged Gravel Wetlands, Bioretention, Rain Gardens, Swales, Enhanced Filters, Soil Compost Amendments, Stormwater Planters, Expanded Tree Pits, Curb Extensions, Foundation Planters, and Reforestation, in a design manual.</li> </ul>

## Recommendation 5: Build a stormwater management program organized around the NPDES MS4 minimum measures

American Samoa is not currently regulated by the USEPA under the NPDES Phase II permit for municipal separate storm and sewer systems ('MS4 program'), presumably due to population size. However, MS4 permits can be (and have been) triggered by 303(d) water quality impairments. This offers an opportunity to use federal dollars for stormwater program elements that would not be available to a regulated community. Regardless, American Samoa could proactively begin organizing a stormwater management program around the basic MS4 six minimum measures for stormwater management. Program elements and examples of what American Samoa is already doing include:

1. Public participation and involvement—This is an easily implemented measure, especially given the number of government and NGO-sponsored activities taking place related to water quality. Territorial agencies such as CRAG and ASEPA are implementing this with rain garden installations, for example.
2. Public education—Every stormwater program does this since it is relatively simple to develop and distribute educational materials. Examples include brochures and workshops with village leaders on stormwater management, tours of the ASEPA and ASPA building stormwater features, dry compost piggery campaigns, etc.
3. Construction site runoff control—Regulations, permitting, training, and enforcement is in place, but there may be opportunities to strengthen activities.
4. Post-construction runoff management—This is one area that needs work! Not only to update regulations and develop of standards and design manual, but also tracking and maintenance of BMPs and mapping of stormwater infrastructure. Water quality monitoring efforts would also fall into this management measure.
5. Pollution prevention and good housekeeping—This measure involves addressing stormwater management needs on public properties/infrastructure (e.g., cleaning of public drainage infrastructure, source control at public works yards and other facilities).
6. Illicit discharge detection and elimination—Efforts to keep sewage out of the stormwater drainage system. This involves coordination with ASPA. American Samoa sewer regulations already require illicit discharge detection and elimination. These regulations keep wastewater and other non-stormwater discharges out of the storm drainage system.

A few recommended MS4 resources include:

- EPA MS4 program basics: <https://www.epa.gov/npdes/stormwater-discharges-municipal-sources>
- Managing Stormwater in Your Community: A Guide for Building an Effective Post-Construction Program: <https://www3.epa.gov/npdes/pubs/stormwaterinthecommunity.pdf>

Example Pacific Islands MS4 Permits:

- CNMI: <https://www.epa.gov/npdes-permits/island-saipan-municipal-separate-storm-sewer-system-saipan-mp-mps040000>
- Guam: <https://www.epa.gov/npdes-permits/guam-ms4-tamuning-gu-gus040001>
- Maui: <https://www.mauicounty.gov/2129/Storm-Water-Management-Program>

Since there is no federal requirement, American Samoa could develop an overall stormwater program plan and determine what kinds of activities to coordinate under it (mapping, permit review, training, retrofitting, education, maintenance, etc.). Capacity is reportedly low for agencies to administer a stormwater program, even though many activities are already being conducted.

In our interviews with various staff, consensus was not reached on which agency should be responsible for administering a program. ASEPA has regulatory authority under Section 24.0208 to address nonpoint sources and they also manage the water quality monitoring and 303(d) program, but they would likely need to hire a stormwater coordinator with education and outreach or an engineering background. DPW is another option for housing a stormwater program as they currently have engineers on staff with the technical capabilities support stormwater control plan review, design, and implementation. ASEPA may have stronger enforcement authority than DPW. Because the PNRS permit process is under ASCMP's jurisdiction (and DOC), ASCMP could also house a stormwater program and provide GIS capacity for mapping and infrastructure. However, as PNRS Board agencies, DPW, ASCMP, and ASEPA can work together to administer a stormwater management program if designated under ASCMP and as part of the PNRS process.

There are several multi-sector NPDES permits for specific facilities in American Samoa that are regulated directly by USEPA Region 9. However, the permits reviewed on EPA's website are expired or appear to have issues with stormwater monitoring and performance evaluations.

## **Recommendation 6: Implement green infrastructure demonstration projects on public properties**

Demonstration of green infrastructure practices should be promoted during restoration activities that address drainage improvements to existing conditions, including public projects such as road repairs, facility renovations, and other capital improvements. Parks, schools, and other public spaces should be inventoried and opportunities for GI identified. We recommend reviewing capital improvement projects planned over the next five years (DPW and others) that could incorporate GI. Private properties should be encouraged to utilize green infrastructure when coming in for permits to fix drainage problems or renovation/repairs.

*A small village would be a good community of practice to demonstrate and show the benefits of stormwater green infrastructure. – Coastal Management Program Staff*

Watershed planning efforts in Faga’alu and in Vatia (presumably) have generated green infrastructure retrofit projects to address existing issues caused by runoff. Additional watershed planning projects should also identify these types of projects. For example, planning in the Nu’uuli watershed, which has relatively high density of commercial and industrial land use and impervious cover is likely to revolve around improving water quality. A successful model for GI demonstrations is the rain garden clinics initiated by NOAA and CRAG, which has led to the installation of several rain gardens in public spaces over the past few years (see Faga’alu Park). Efforts to distribute GI demonstrations equitably across various villages is important to build support and local buy-in.

New development projects would be required to use GI once stormwater standards and permitting requirements are in place. Construction is ongoing in American Samoa, and our research indicates that most of the development is for government buildings. American Samoa has already set a precedent with the design and construction of both the ASEPA and ASPA buildings – both LEED certified, so there are examples on-island of green infrastructure. Federal construction projects, including DOD projects, are already required to meet LEED standards. We recommend American Samoa consider adopting the same requirement for Territorial construction and major private developments. The requirement may be done through an Executive Order from the governor or possibly incorporated into the PNRS permit as a condition of approval. For more information, see the GSA requirement that all new federal buildings meet LEED design requirements: <https://www.gsa.gov/real-estate/design-construction/design-excellence/sustainability/sustainable-design>

Whether retrofits of existing areas or new construction, the costs, before and after photos, designs, performance indicators, and maintenance of GI installations should be tracked (a function of the stormwater program manager) for future GI guidance.

### **Recommendation 7: Establish a sustainable funding source for stormwater management activities**

Stormwater management is not free. Administering a stormwater, permitting, and water quality program, as well as construction and maintenance for public stormwater drainage infrastructure, costs money. We recommend American Samoa investigate potential funding options concurrently to any discussions regarding building of a stormwater program. A discussion of what a stormwater program budget includes and where the funding will come from is critical. For most regulated MS4 communities, a combination of general funds, federal grants and loans, fees/fines/penalties, or a dedicated funding source (user fees) are required to support stormwater program elements. The private sector is expected to pay for the proper management of stormwater generated by development and redevelopment activities or, in some cases, to provide sufficient mitigation dollars to support offsite stormwater management activities.



Developers may see stormwater green infrastructure as more costly than traditional stormwater management practices. GI practices can appear to have a higher construction costs on a per impervious acre treated basis when compared to a large detention pond; however, when savings associated with reduced pavement, pipes, land value, and downstream restoration/cleanup projects are accounted for, GI practices generally cost less (HW & CWP, 2014). Regardless, having a consistent and dedicated funding source for stormwater management in general could potentially offset the Territory's costs for government building construction and maintenance.

### **Grant Funding**

Currently, most commercial building development in American Samoa is construction and renovation of government buildings. Accordingly, grant funding can augment project budgets. Grant funding is available to American Samoa to implement stormwater management practices that ultimately protect and improve water quality in streams and marine waters. For example, as a U.S. Department of Interior designated "Insular Area," the Territory is eligible for many grants to improve environmental conditions. In addition, the U.S. Department of Housing and Urban Development (HUD) Community Development Block Grant (CDBG) Program finances projects that incorporate green infrastructure into their design and construction. Chicago, for example, has used CDBG funding to put a new green roof on its historic Cultural Center.

Territories can also apply for U.S. Environmental Protection Agency (EPA) Clean Water Act Nonpoint Source Grants (Section 319 Grants). Under Section 319, states, territories, and tribes receive grant money to support a wide variety of nonpoint source pollution management activities, including: ***technical and financial assistance, education and training, technology transfer, demonstration projects, and monitoring to assess the success of projects implemented under the grant program.*** 319 grant funds for American Samoa may be managed through the Environmental Protection Consolidated Grants for the Insular Areas. This consolidated program support grant is an alternative assistance delivery mechanism which allows an agency eligible for assistance for two or more pollution control programs to consolidate its assistance requests into a single application and receive a single consolidated award. For more information on this dual application, contact EPA Region 9.

Additional information on grant funding for stormwater green infrastructure is available on EPA's website at: <https://www.epa.gov/green-infrastructure/green-infrastructure-funding-opportunities>

### **Fees, Fines, and Penalties**

American Samoa does not appear to have a permitting fee structure or fines and penalties that would support stormwater programs efforts. While administrative fees and fines exist as they relate to the land use permit under the PNRS process, it is unlikely that their contribution would be very significant. As mentioned above, government and non profit applicants are not required to pay land use permit fees.

## Implement a “Green” Tax

The Republic of Palau has implemented a \$100/person environmental fee.<sup>3</sup> Every international airline is required to include this fee in the price of a flight into Palau. Palauan passport holders, pilots and crews, diplomats and transit passengers are exempt from the fee. This money is collected and used to fund environmental restoration projects as part of Palau’s commitment to environmental sustainability. Current U.S. Federal Aviation Administration (FAA) requirements prohibit such a fee for airline passengers. However, American Samoa could consider a few options for collecting taxes outside of airfare prices.

As an example, American Samoa could increase the current *hotel occupancy tax*. Currently the hotel occupancy tax in American Samoa is only 5 percent. In comparison with other Pacific Island jurisdictions like Hawaii (10.25%), Guam (13%), and CNMI (15%), this is extremely low. Recognizing that hotels may feel that increasing the hotel tax will hurt business, discounted tax rates could exist for Samoans and/or other Pacific Island neighbors. Money collected as part of this tax could be specifically directed to a “green” fund to allocate money specifically to environmental project, such as improved stormwater management.

## Stormwater Utility

Another option is to create a stormwater utility, where residents and businesses are charged an annual fee for contributing stormwater to public drainage infrastructure or for direct discharges to waterways. Stormwater utilities are common in most parts of the U.S. (except New England, ironically). The City and County of Honolulu are currently in the process of a feasibility study. Fees are often established based on the amount of stormwater runoff generated/ amount of impervious cover for a typical resident or business. Depending on how rate structures are currently assessed for water and sewer, a stormwater fee may or may not be easily assessed. These fees are used to support stormwater program activities including maintenance, retrofitting, and education and to manage drainage from the road network used by everyone. There are several options for how to implement a stormwater utility. For guidance on how to explore developing a stormwater utility fee, visit:

- EPA’s *Evaluation of the Role of Public Outreach and Stakeholder Engagement in Stormwater Funding Decisions in New England: Lessons from Communities*. 2014: <https://www.epa.gov/sites/production/files/2015-09/documents/eval-sw-funding-new-england.pdf>
- EPA 2015 Webcast Presentation: Paying for Stormwater-the Benefits of a Utility: [https://www.epa.gov/sites/production/files/2015-12/documents/sw\\_utility\\_-\\_combined\\_slides\\_-\\_aug\\_13\\_2015.pdf](https://www.epa.gov/sites/production/files/2015-12/documents/sw_utility_-_combined_slides_-_aug_13_2015.pdf)
- Resources from the California Stormwater Quality Association (CASQA): [https://www.casqa.org/sites/default/files/downloads/09\\_setting\\_up\\_a\\_stormwater\\_utility\\_pwoi\\_2017.pdf](https://www.casqa.org/sites/default/files/downloads/09_setting_up_a_stormwater_utility_pwoi_2017.pdf)

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<sup>3</sup> Public Notice: Palau Pristine Paradise Environmental Fee (PPEF): [http://www.palaucustoms.org/files/common\\_unit\\_id/c8672894-ba61-43f7-b6c4-6a69acbd1b61/PUBLIC%20NOTICE.pdf](http://www.palaucustoms.org/files/common_unit_id/c8672894-ba61-43f7-b6c4-6a69acbd1b61/PUBLIC%20NOTICE.pdf)

- *Local Government Stormwater Financing Manual*, Environmental Finance Center, University of Maryland:  
<https://efc.umd.edu/localgovernmentstormwaterfinancingmanual.html>
- Western Kentucky University Stormwater Utility Survey 2018:  
<https://www.wku.edu/seas/undergradprogramdescription/swusurvey2018.pdf>

## References

Horsley Witten Group and Center for Watershed Protection Inc. (HW and CWP) (2014). *Stormwater management in Pacific and Caribbean Islands: A practitioner's guide to implementing LID*. prepared for NOAA Coral Reef Conservation Program. 186 pp.

Leong, J.-A., J. J. Marra, M. L. Finucane, T. Giambelluca, M. Merrifield, S. E. Miller, J. Polovina, E. Shea, M. Burkett, J. Campbell, P. Lefale, F. Lipschultz, L. Loope, D. Spooner, and B. Wang, 2014: *Ch. 23: Hawai'i and U.S. Affiliated Pacific Islands. Climate Change Impacts in the United States: The Third National Climate Assessment*, J. M. Melillo, Terese (T.C.) Richmond, and G. W. Yohe, Eds., U.S. Global Change Research Program, 537-556. doi:10.7930/JOW66HPM.

National Park Service (NPS). Weather in American Samoa.  
<https://www.nps.gov/npsa/planyourvisit/weather.htm>

Pacific Islands Climate Education Partnership (PCEP). 2014. *Climate Change in American Samoa*. Funded by the National Science Foundation (NSF) under Grant #1239733.

Tuitele, Christianera, Buchan Edna L., Regis Josephine, Tuiasosopo Jewel, Faaiuso, Siumukuka and Soli, Lise. 2016. *American Samoa Integrated Water Quality Report*. April 1, 2016.

## Attachment 1 – Interviewees and Documents Reviewed

### List of Interviewees

- Jewel Tuiasosopo and Christianera Tuitele, AS EPA (phone Interview)
- Brian Rippy, Project Manager AS EPA LEED Building Design and Renovation (phone interview)
- Monty Chin, AS DPW Contractor (phone interview)
- Dave Smith, Sea Engineering (phone interview)
- Sandra Lutu, ASCMP/DOC, PNRS Permitting (information provided via email)
- Estela Rubin, AS DPW (information provided via email)
- Tim Bodell, PE, Project Engineer for AS EPA LEED Building Design and Renovation (information provided via email)

### List of Documents and Regulations Reviewed

#### *Regulations*

- [Title 24 Ecosystem - Ecosystem Protection and Development - Chapter 02 - Water Quality Standards - 24.0208 Pollution Control](#)
  - [2013 Water Quality Standards](#)
  - [2001 Runoff Control Manual and ESC BMPs](#)
- [Title 26 - Environment Safety and Land Management - Chapter 02 - Coastal Management.](#)
  - [26.0220 Standards and criteria for review.](#)
  - [26.0221 Special Management Areas.](#)
  - [26.0222 Wetlands](#)
  - [26.0223 Coastal hazards.](#)
- [Chapter 03 - Zoning Regulations](#)
- [Title 12 - Public Utilities and Energy, Chapter 03-Water, Chapter 04-Sewer](#)
- [Title 26 - Environmental Safety and Land Management - Chapter 10 - Uniform Building Code](#)
- [Chapter 11 – Plumbing Code.](#)
- [Title 25 - Environmental Health , Chapter 07 – Sanitation](#)
  - [25.0703 Water overflow and drainage water-Prohibited runoff.](#)
  - [25.0704 Control of mosquitoes.](#)

#### *Documents*

- Integrated WQ Monitoring and Assessment Report (2016)
- American Samoa Watershed Management and Protection Program Annual Report (2017)
- ESC Field Guide
- PNRS Permitting Application Materials and Applicant Guide Book
- ASCMP Land Use Permit Brochure
- NOAA's 2018 Report - *Coral reef condition: A status report for American Samoa*
- Leong, J.-A., et al. *Ch. 23: Hawai'i and U.S. Affiliated Pacific Islands. Climate Change Impacts in the United States: The Third National Climate Assessment*
- Pacific Islands Climate Education Partnership (PCEP). 2014. *Climate Change in American Samoa.*

## Attachment 2 – Recommended Regulatory Revisions to the PNRS Process

Regulatory revisions are recommended below in red type as they relate to the land use permit associated with the PNRS process and improving post-construction stormwater management and encouraging GI. Policy makers can consider these recommendations alongside programmatic recommendations made in the report. These revisions do not include the changes suggested for the Water Quality Standards Regulations at Pollution Control Section 24.0208(e). Changes to those regulations are included in the Report under Recommendation 1 report.

Existing Regulations	Recommend Language
<b>Title 26 – Environment Safety and Land Management</b>	
<b>Chapter 02 – Coastal management</b>	
<p><a href="#">26.0207(F)(1)(c)</a>  <b>Land Use Permit Application procedures, fees, and penalties</b>  <i>F. Application package.</i></p>	<p>1. The land use permit application shall be accompanied by the following documents:            ...            c. an erosion control plan necessary to reduce non-point source pollution that includes <b>the following:</b>  <b>(1) existing contours and proposed final grading of the site,</b>  <b>(2) existing and proposed drainage,</b>  <b>(3) a description of adjacent and down slope sites, <del>and</del></b>  <b>(4) a narrative of how the proposed drainage plan will impact those sites;</b>  <b>(5) an operations and maintenance plan for all erosion control measures;</b>  <b>d. a stormwater control plan accordance with A.S.A.C. § 24.0208.</b>  <del>d. e.</del> a federal consistency certification (or if a federal agency, a consistency determination) and an environmental assessment, if applicable; and  <del>e. f.</del> any other supporting documentation that may be required by law or by the provisions of the chapter.</p>
<p><a href="#">26.0220(C)(5)(b)</a>  <b>Standards and criteria for review.</b>  <i>C. Archaeological/ cultural/historic resources</i></p>	<p>5. If the effect on the historic resource may be adverse, mitigation shall be conducted by the applicant.</p> <p>a. The applicant, in consultation with the Board, shall enter into a mitigation agreement that determines what mitigation shall occur.            b. Mitigation may include, but is not limited to:  <b>(1) Avoidance of the historic property.</b>  <b>(2) Monitoring with data recovery.</b>  <b>(3) Data recovery.</b>  <b>(4) Museum displays related to the historic property adversely affected.</b>  <b>(5) Educational videos related to the historic property adversely affected.</b>  <b>(6) Research projects related to the historic property adversely affected.</b>  <b>(7) Stormwater management or green infrastructure retrofits to reduce adverse impacts to the historic property.</b></p>
<p><a href="#">26.0220(D)(2)</a>  <b>Standards and criteria for review.</b>  <i>D. Commercial Agricultural development</i></p>	<p>2. Commercial and subsistence agriculture shall be encouraged on lands suitable for cultivation. Agricultural action shall be accompanied by best management practices designed to protect land and water resources and maintain crop yields, which include:            a. cultivation on suitable slopes;            b. use of adequate ground cover to prevent soil erosion;            c. proper use of pesticides, herbicides, and fertilizers;            d. techniques to maintain soil fertility; e.g. fallow periods; <del>and</del>            e. techniques to reduce non-point source pollution and protect water quality-;  <b>including proper stormwater management.</b></p>



Existing Regulations	Recommend Language
<p><a href="#">26.0220(F)(2)(d)</a>  <b>Standards and criteria for review.</b>  <i>F. Marine resources, reef and fisheries</i></p>	<p>2. Coral reefs shall be protected and restored.</p> <p>a. Coral means any living aquatic organism of the subphylum cnidaria that are capable of secreting hard skeletal parts or can incorporate stony secretions within or around their tissues, including, but not limited to, hermatiyic corals, black coral, organpipe corals, fire corals, and lace corals.</p> <p>b. Coral reef means a structure which may or may not be adjacent to the shoreline, formed and bounded by the gradual deposition and calcareous secretions of coralline materials.</p> <p>c. Coral reefs and other submerged lands shall not be dredged, filled, or otherwise altered or channeled unless it can be demonstrated that there is a public need, there are no feasible, environmentally preferable alternatives, and unless measures are taken to minimize adverse impacts.</p> <p>d. Coral reefs shall be protected from sedimentations, over fishing, runoff, and the impacts resulting directly and indirectly from other activities to the maximum extent feasible. Degraded reefs shall be restored wherever feasible.</p> <p><b>(i) Coral reefs shall be protected from sedimentation, runoff, and impacts resulting from land disturbance activities in accordance with A.S.A.C. § 24.0208.</b></p> <p><b>(ii) Stormwater BMPs should be used to mitigate existing land use and proposed land use which results in sedimentation, runoff, and water quality impacts.</b></p> <p><b>(iii) If stormwater runoff will be discharged directly to marine resources that may have a deleterious effect upon the receiving waters, adequate treatment of stormwater discharges shall be provided. Stormwater runoff from land uses with higher potential pollutant loads may be subject to additional requirements at the discretion of the ASCMP.</b></p>
<p><a href="#">26.0220(G)</a>  <b>Standards and criteria for review.</b>  <i>G. Recreation and public access</i></p>	<p>G. Recreation and public access</p> <p>1. Recreation opportunities and shorefront public access shall be improved and increased for the public.</p> <p>a. The acquisition, siting, development, and maintenance of varied types of recreation facilities that are compatible with their surrounding landscape and land uses, and which serve the recreation and <del>shorefront</del> shorefront public access needs of villages shall be promoted.</p> <p>b. Acquisition and/or use agreements and minimal development of passive recreation sites such as marine and wildlife conservation areas, scenic overlooks, trails, parks, and historic sites shall be promoted.</p> <p>1. Public access to and along the ocean shall be maintained, improved and increased in accordance with ASCA §§ 18.0100 et. seq., the Department of Parks and Recreation Act., including:</p> <p>a. shorefront areas suitable for recreation use shall be reserved for such use and physical access to these areas shall be provided where feasible; and</p> <p>b. visual access to the ocean from the road parallel to and near the shoreline shall be maintained where feasible.</p> <p><b>c. stormwater management in recreation areas and public shorefront areas shall be provided.</b></p> <p>2. Public lands shall be managed to maintain physical and visual public access. Where public access must be eliminated because of security or other reasons, similar access shall be created as near as practical to the curtailed access.</p>

Existing Regulations	Recommend Language
<p><a href="#">26.0220(H)</a>  <b>Standards and criteria for review.</b>  <i>G. Water and Air Quality</i></p>	<p>1. Water quality shall be maintained.</p> <p>a. Territorial water quality standards shall be the standards of the American Samoa Coastal Management Program and land use permit applications shall adhere to those standards, in accordance with ASCA §§ 24.0100 et. seq., the Environmental Quality Act.</p> <p>b. Consistent with Territorial water quality standards, degraded water quality shall be restored to acceptable levels and potential threats to water quality shall be prevented where feasible.</p> <p>c. Non-point source pollution shall be controlled through implementation of best management practices.</p> <p><b>(1) Green infrastructure should be implemented to reduce or eliminate impacts from non-point source pollution.</b></p> <p>2. Safe drinking water shall be protected and maintained.</p> <p>a. Territorial safe drinking water standards shall be the standards of the American Samoa Coastal Management Program and land use permit applications shall adhere to those standards, in accordance with ASCA §§ 24.0100 et. seq., the Environmental Quality Act.</p> <p>b. Drinking water sources, including aquifer recharge areas, above and below ground, shall be protected from contamination due to sedimentation, saltwater intrusion, or other sources of pollution.</p> <p><b>(1) Stormwater management shall be provided to protect drinking water sources from contamination.</b></p> <p>c. Drinking water systems shall be improved to protect public health and welfare.</p>