



Honolulu International Airport

Trash Reduction Plan



**PROTECT
OUR WATER**
MĀLAMA I KA WAI
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION

STATE OF HAWAII, DEPARTMENT OF
TRANSPORTATION, AIRPORTS DIVISION
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NPDES Permit No. HIS000005



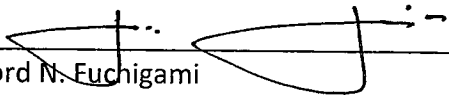
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Plan Approval:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



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 Director
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APPENDICES

Appendix A: HNL Trash Generation Map

ACRONYMS

ACR	Annual Compliance Report
AIR-EE	DOTA, Engineering Branch, Environmental Section
AIR-OMF	DOTA, Oahu District, Airfield & Ground Maintenance Unit (Baseyard)
AOA	Air Operations Area
ARFF	Aircraft Rescue Fire Fighting Unit
BAT	Best Available Technology
BMP	Best Management Practice
CDS	Continuous Deflective Separation Units
COP	Continual Improvement, Obey Laws, Prevent Pollution
DOT	State of Hawaii Department of Transportation
DOTA	State of Hawaii Department of Transportation, Airports Division
EHS	Environmental Health Specialist
ENV	City and County of Honolulu Department of Environmental Services
FOD	Foreign Object Debris / Foreign Object Damage
IDDE	Illicit Discharge Detection and Elimination
USEPA	United States Environmental Protection Agency
FAA	Federal Aviation Administration
HAR	Hawaii Administrative Rules
HNL	Honolulu International Airport
LID	Low Impact Development
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
PSA	Public Service Announcement
SWMPP	Storm Water Management Program Plan
TRP	Trash Reduction Plan

1.0 INTRODUCTION

The Honolulu International Airport (HNL) facility is owned by The State of Hawaii Department of Transportation, Airports Division (DOTA) and is operated within the Oahu District. The airport consists of 4,520 acres of land on the southern portion of the island of Oahu. HNL is the busiest airport in the State of Hawaii and consists of four active runways and associated taxiways, three terminals, air carrier facilities, general aviation facilities, a maintenance baseyard, and two aircraft rescue and firefighting (ARFF) stations.

DOTA is subject to the requirements under the National Pollutant Discharge Elimination System (NPDES) Program for storm water discharges. This Trash Reduction Plan (TRP) was submitted to comply with the conditions of the NPDES Permit No. HI S000005, effective April 14, 2014. The municipal separate storm sewer system (MS4 Permit, Part D.1.f.(1).(v) requires DOTA to develop and submit a TRP within three years of the effective date of the MS4 Permit (April 14, 2017).

1.1 DEFINITIONS, SOURCES, AND PATHWAYS

Trash that enters the MS4 at HNL is a result of activities that occur both outside and within the airports boundary. Numerous connections with adjacent storm water systems (Hawaii DOT and Honolulu City and County) represent outside pathways for trash to enter the MS4 at HNL. Trash that originates within the boundary of HNL may be generated by inadequate waste management practices such as overflowing receptacles, improper disposal, and poor landscaping practices.

The HNL MS4 Permit (HI S000005) defines *trash* as “improperly discarded waste material, excluding vegetation, except for yard/landscaping waste that is illegally disposed of in the storm drain system. Examples of trash include, but are not limited to, convenience food, beverage, and other product packages or containers constructed of aluminum, steel, glass, paper, plastic, and other natural and synthetic materials”. *Trash* is considered analogous to *litter*. For the purpose of this plan, *debris* includes rock, sediment, and vegetation in addition to items defined above as trash.

The “**BMP-Collected Trash Load**” is defined as the total amount of trash that is intercepted by all BMPs that would otherwise be discharged from the MS4. This is the sum of all trash that is collected via sweeping, permanent BMPs, booms, manual cleaning of the MS4 and canals, volunteer events, and other BMPS.

The “**MS4-Discharged Trash Load**” is defined as the total amount of trash that bypasses all BMPs and is discharged from the MS4 to the environment. The main objective of this TRP (Trash Reduction Plan) is to reduce this value to zero over a given amount of time.

The “**Generated Trash Load**” is defined as the sum of the MS4-discharged trash load and the BMP-Collected trash load (Equation 1).

EQUATION 1. GENERATED TRASH LOAD

Generated Trash Load = BMP-Collected Trash Load + MS4-Discharged Trash Load

2.0 CURRENT TRASH CONTROL MEASURES AT HNL

This section describes the control measures that DOTA has implemented at HNL to manage storm water runoff and MS4-related debris. Trash that is currently intercepted through these measures is thus considered BMP-Collected Trash. DOTA currently utilizes the following control measures:

- Institutional Control Measures
- Land-based Interception Control Measures
- MS4 Interception Control Measures

These BMP programs are implemented to reduce trash discharges from the DOTA MS4 to receiving water bodies. These control measures are also discussed in more detail in the comprehensive State of Hawaii Department of Transportation, Airports Division, *Storm Water Management Program Plan (SWMPP)*.

2.1 Institutional Control Measures

Institutional control measures prevent or reduce the potential of trash to be deposited into the environment. DOTA implements both preventative and corrective institutional control measures.

2.1.1 Public Education, Outreach, and Training

DOTA places a high emphasis on their Public Education Program which increases the general public understanding those actions of individuals can have a significant cumulative impact on water quality. The goal of the Public Education Program is to raise awareness in targeted groups to cultivate greater behavioral and cultural changes to ultimately protect and improve water quality.

Training is vital to cultivate general awareness for targeted groups about environmental regulations, DOTA policies, the impact activities may have on water quality, and BMPs that can be implemented to reduce or eliminate impacts. Training is conducted in a variety of forms including, but not limited to classroom training, training videos, printed materials, and informal training (on-the-job, information during inspections, and public inquiry response).

Advertising is an effective means to generate awareness to a broader audience. DOTA has created educational signs placed within terminal public areas and has partnered with Leeward Community College to develop a public service announcement (PSA) that has been broadcasted on the community access TV channel Olelo.

All DOTA employees and contractors are required to watch a short video that discusses airport safety. The video also promotes environmental stewardship by reminding viewers it is everyone's responsibility to pick up trash within the HNL boundary in order to prevent trash from making its way to the MS4 and receiving waters.

The DOTA utilizes two logos and branding messages to represent both the DOTA storm water program as well as its connection with the Department of Transportation, Highways and Harbors Divisions storm water programs. The airport specific logo includes a concept developed in partnership with Radford High School graphic's class and reflects the Director of

Transportation’s environmental policy (COP: Continual Improvement, Obey Laws, Prevent Pollution). This logo allows for DOTA documents to be more readily identified and invokes greater ownership by personnel at the airport.

The shared DOT logo includes the state fish, a humuhumunukunukuapua’a, in the form of a rain drop as a reminder that our storm water runoff ultimately impacts the ocean wildlife. The message, “Protect Our Water,” is designed to remind individuals of their responsibility for water quality. Both branding messages are incorporated in training and educational materials.

2.1.2 Legislative Actions

Legislative actions influence societal behavior, improve enforcement, and enhance compliance with existing laws. DOTA trash reduction efforts benefit from several existing laws aimed at reducing the amount of trash entering the environment.

- Hawaii Pollution Prevention and Waste Minimization Program – Established in 1991 to reduce hazardous waste generation and promote environmental protection.
- Green Business Program – Established in 2003 – the program offers a variety of services to businesses interested in reducing their generation of waste and conserving resources.
- State of Hawaii Department of Environmental Services (ENV) – Provides island wide waste management system that protects the environment (Bulky item collection, curbside recycling, community recycling bins, condo recycling).
- HI-5 Program – Implemented in 2005 – beverage container deposit program placed a value on glass, aluminum, and plastic beverage containers. Although general public is not required to recycle beverage containers, all agencies, restaurants, and bar serving alcoholic beverages are required to recycle aluminum, glass, and plastic. *Airline and shipping companies that transport beverages to the state are not included.*
- City and County Commercial Recycling Ordinances – Recycling requirements and landfill bans put in place by the City and County of Honolulu. Office buildings with 20,000 square feet or more of office space are required to recycle paper, newspaper, and cardboard while city agencies are required to recycle newspaper, cardboard, office paper, aluminum, glass, and plastic. Additionally, the city is required to purchase recycled paper products (toilet paper, paper towels, copier paper, and computer paper) to support the recycle paper market. Hotels, restaurants, grocery stores, food courts, food manufactures/processors, and hospitals are required to recycle food waste and used cooking oil.

2.2 Land-Based Interception Control Measures

Trash that has entered the environment at HNL may be intercepted and removed through land-based interception control measures prior to reaching the MS4 network. This includes land-based trash clean ups and street sweeping. Table 1 shows the mass of debris removed from 2013-2016 by various land-based and MS4 cleaning activities.

TABLE 1. DEBRIS REMOVAL 2013- 2016

Reporting Year	MS4			
	Inspection & Debris Cleaning (lbs)*	Surface Water Trash (lbs)	Street Sweeping Debris (ft ³)*	FOD Walk Trash (lbs)
2013-2014	118,194	23,164	5,250	730
2014-2015	204,963	32,021	10,330	1,000
2015-2016	16,046	29,623	3,190	1,508

* Value includes green waste

2.2.1 Land Based Trash Clean Up Programs

The Airport EHS Department organizes Foreign Object Debris / Foreign Object Damage (FOD) walk-downs with tenants and employees. This annual volunteer event addresses the issues of FOD that threaten the safety of aircraft, airport vehicles, equipment, and passengers while bringing together the airport community and creating awareness (Table 1).

HNL’s biannual Recycle Drive allows tenants to bring their infrequent waste items such as e-waste, tires, and other bulky objects in order to properly recycle, reuse, or dispose of these items to prevent illegal dumping or improper disposal while promoting awareness to participants. DOTA utilizes a third party contractor to recycle waste materials and used oil whenever practicable.

DOTA uses a third party contractor to conduct surface water cleaning in canals, the shoreline of the Reef Runway Pond, the shoreline along Lagoon Drive, and the shoreline near the Reef Runway Oceanside as a proactive measure to keep Hawaii’s waters clean and free of trash (Table 1). The Reef Runway Pond (Ahua Pond), catches and contains trash that escapes via the Manuwai Canal. Trash accumulated along the shorelines of Keehi Lagoon generally originates from outside sources, not from DOTA’s MS4 network; therefore, trash removed from these locations is not considered HNL-derived trash and will not be included in this plan.

2.2.2 Street Sweeping

Street sweeping is a cost effective method to remove litter, debris, and other pollutants from runways, taxiways, major streets, parking areas, and commercial and industrial streets. Street sweeping focuses on the removal of trash, green waste, sediment, and other large waste to reduce the potential of these items entering the MS4. DOTA tracks the amount of debris removed through all street sweeping operations. Based on data from 2015-2016 Annual Compliance Report (ACR), the street sweeping program removed 3,190 lbs of debris (Table 1).

2.3 MS4 Interception Control Measures

The Honolulu International Airport operates within 4,520 acres of land adjacent to Keehi Lagoon (Appendix A- HNL Trash Generation Map). Once trash enters the MS4, it may be intercepted

and removed through routine MS4 structure cleaning. The DOTA MS4 network at HNL consists of the following key structures:

- 2 Caps
- 33 Box Culverts
- 247 Catch Basins
- 10 Head Walls
- 837 Inlets
- 407 Manholes
- 3 Evaporation Ponds
- 102 Oil Water Separators
- 2 Continuous Deflective Separation Units (CDS)
- 69 Trench Drains
- 137 Outfalls
- Sorbant Booms in 3 Canals
- 2 Catch Basin Trash Trays
- 7 Hydrodynamic Separators
- 1 Infiltration Bed
- 19 Swales/Vegetated Filter Strips
- 1 Parking lot with pervious pavement

MS4 structures have been previously ranked according to the mass of trash removed during a reporting year. The most recent ranking information shown below was obtained from the 2015-2016 HNL Annual Compliance Report.

- High – 24 structures
- Medium – 387 structures
- Low – 676 structures

2.3.1 *Inspection and Cleaning Program*

DOTA's pollution prevention program is successful at capturing large amounts of debris that would otherwise discharge to the receiving water. DOTA's long term maintenance contracts ensure that all MS4 drains, oil water separators, and canal areas are routinely inspected and cleaned. Additionally, sorbent booms are placed in the two main discharge canals (Kaloaloa and Manuwai), which not only capture petroleum sheens, but also capture floating trash. In general, the MS4 cleaning program produces the most recovered debris (Table 1). Current contractors (as of 2017) and their responsibilities are described in Table 2.

TABLE 2: DOTA CONTRACTOR RESPONSIBILITIES (2017)

CONTRACTOR	INSPECTION AND CLEANING RESPONSIBILITY
Eckard Brandes, Inc.	<ul style="list-style-type: none"> • Maintains wet wells and catchment basins
EnviroServices & Training Center, LLC	<ul style="list-style-type: none"> • Waste materials, used oil, used batteries, old tires, and e-waste disposal services
Hawaii Industrial Services, Ltd.	<ul style="list-style-type: none"> • Drainage Canal Booms Maintenance for Ditch Pollution Control • Inspect and Clean HNL MS4 (drainage manholes, catch basins, inlets, box culverts, outfalls, head walls, and trench drains) • Oil water separator and evaporation pond maintenance • Storm drainage canal vegetative clearing & fugitive litter removal
Smalt & Co. Inc.	<ul style="list-style-type: none"> • Provides shoreline cleaning on Lagoon Drive, the Reef Runway Oceanside, and the Reef Runway Pond

2.3.2 Permanent BMP Program

HNL’s Storm Water Management Program Plan (SWMPP), Section D Post-Construction Storm Water Management requires that specified construction projects include permanent Best Management Practices (BMPs). DOTA considers BMPs in the following categories:

1. Low Impact Development Strategies (LID)
2. Source Control BMPs (Source Control)
3. Storm Water Treatment BMPs (Treatment)

DOTA completed an action plan for retrofitting permanent BMPs at HNL that strives to achieve the following performance goals:

1. Pollutant Removal
2. Reduce on-site trash and floatables
3. Reduce Runoff volume
4. Provide outdoor learning and community outreach opportunities at HNL

Additional information can be found in HNL’s SWMPP, Section D.

3.0 CURRENT ESTIMATE OF THE BASELINE TRASH LOAD

To estimate the current baseline trash load, historical data from canal cleaning contracts was analyzed.

3.1 Available Data

All data collected by trash removal activities is accessible via the DOTA online database Enviance.

3.1.1 Trash Removed from Canals and Booms

Canals represent the last possible location to quantify trash before it is discharged to state waters. Since data collection began, 32,102 lbs of trash (not including landscaping waste) was removed from the canals and booms (Figure 1) over the course of 3 years (canal cleaning contracted ended 5/31/16). To estimate the current baseline MS4-discharged trash load, the last two years of data will be used. The average amount of trash removed from 7/3/14 to 5/31/16 was roughly 633 lbs per month or 7,598 lbs per year.

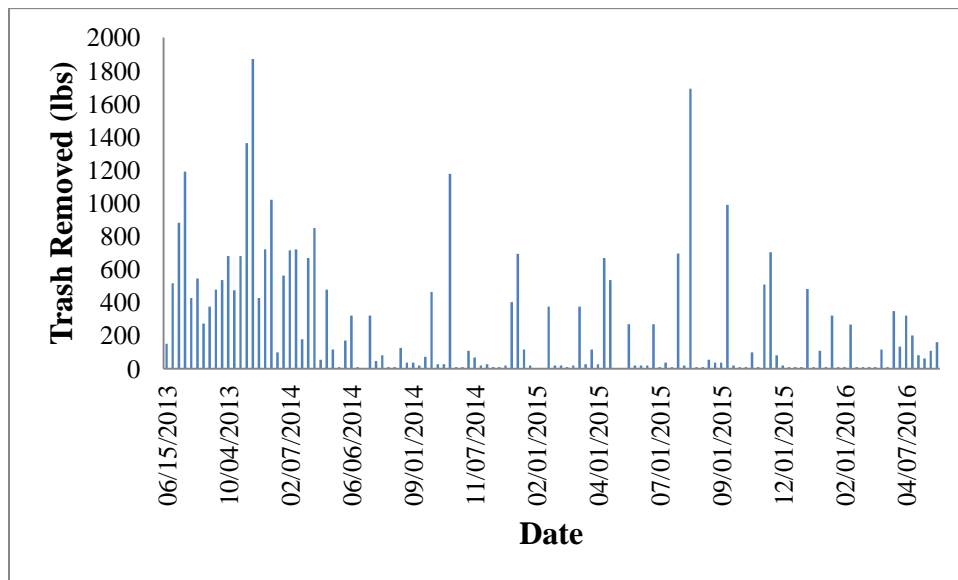


FIGURE 1. TRASH REMOVED FROM CANALS AND BOOMS (2013-2016)

3.1.2 Trash Removed From MS4 Cleaning, Sweeping, and Volunteer Events

Significant amounts of debris are regularly removed from surfaces and the MS4 via cleaning, sweeping, and volunteer events (Table 1), however the available data does not distinguish between types of debris. Therefore, the amount of trash removed during these events is unknown; this must be quantified in order to show increased trash capture and trash load reductions in the future.

3.2 Current Estimate of the Baseline MS4-Discharged Trash Load

MS4-discharged trash enters Keehi Lagoon and the Pacific Ocean from canals, Ahua pond, or directly from MS4 outfalls (Appendix A- HNL Trash Generation Map). As shown in Appendix A and Figure 2, 22 % (994 acres) of HNL areas drain to the Manuwai and Kalaoloa canals.

Approximately 10 % (452 acres) of the total HNL area is categorized as areas that generate trash and that discharge storm water directly Keehi Lagoon via outfalls; these outfalls are typically submerged. The remaining 68% (3,074 acres) of the total HNL area is categorized as non-trash generating due to the extremely limited activities that take place in these areas. Much of these non-trash generating areas are runways and taxiways (and associated grassy areas) that are frequently and thoroughly cleaned with sweepers to remove any FOD that would pose an aviation risk (Figure 2, Appendix A).

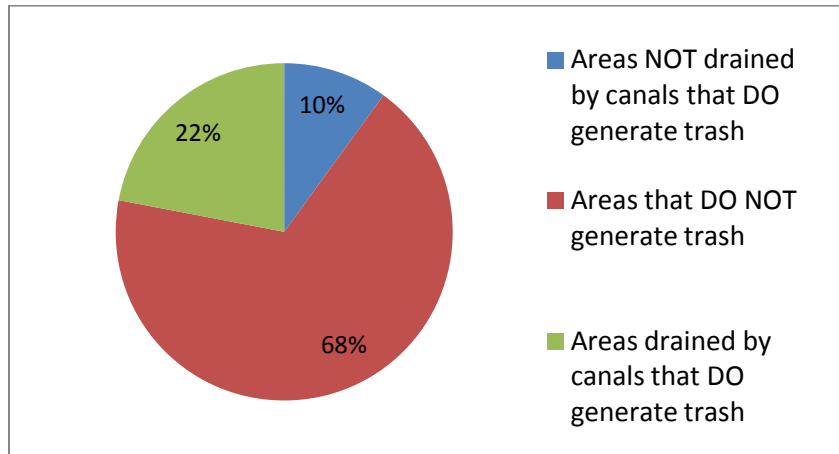


FIGURE 2. TRASH GENERATION FROM HNL AREAS

3.2.1 MS4-discharged trash from areas drained by canals

In order to estimate MS4-discharged trash for areas drained by canals (994 acres), it is assumed that an additional 10 % of all trash that was removed from canals (7,600 lbs per year) actually bypasses these BMPs and is discharged to the environment; therefore, approximately **760** lbs of trash is estimated to escape canals as MS4-discharged trash each year.

3.2.2 MS4-discharged trash from areas NOT drained by canals

As stated above, canals at HNL drain storm water from approximately 22 % (994 acres) of the airport areas that generate trash (Figure 2, Appendix A). MS4-discharged trash from the remaining 78 % of the airport must be estimated using a different method from that used in section 3.2.1.

Assumptions:

- 1) MS4-discharged trash from areas not drained by canals will be proportional (by area) to the amount of trash that enters canals (8,360 lbs).
- 2) Areas classified non-trash generating do not generate trash.

The amount of trash that enters canals can be estimated as the sum the mass of trash that is discharged from canals (760 lbs) and the mass of trash that is removed from canals (7,600 lbs). Therefore, it is estimated that 8,360 lbs of trash enter canals (but is not necessarily discharged to the environment). This is equal to 8.4 lbs per acre of trash from areas that generate trash and that

discharge storm water to canals. The estimated mass of MS4-discharged trash from areas not drained by canals (452 acres) is equal to **3,797 lbs** (8.4 lbs / acre X 452 acres).

3.2.3 Total estimate for current baseline MS4-Discharged trash load

The baseline MS4-discharged trash load is the sum of estimated MS4-discharged trash loads from section 3.2.1 and 3.2.2. HNL areas that drain to canals are estimated to discharge an average **760 lbs** of trash. HNL areas that do not drain to canals are estimated to discharge an average **3,797 lbs** of trash to state waters. Thus, the baseline MS4-Discharged trash load for HNL is **4,557 lbs**.

3.3 Current Estimate of the Baseline BMP-Collected Trash Load

The baseline BMP-Collected trash load is the total amount of trash removed from land surfaces and the MS4 system by all BMPs combined. Because historical data from street sweeping, FOD walks and MS4 cleaning activities did not quantify the amount of trash with respect to other debris, an estimate for the current baseline BMP-Collected Trash cannot be calculated. Estimation of a baseline for this parameter will be essential to quantifying future trash reductions.

3.4 Current Estimate of the Baseline Generated Trash Load

The baseline Generated Trash Load is the sum of the baseline BMP-Collected Trash Load (section 3.2) and baseline MS4-Discharged Trash Load (section 3.3). This value is the total estimated trash that is generated/arrives at the airport that has the potential to be discharged to receiving waters via the airports MS4 system. This does not include waste that is properly disposed or recycled at HNL. Because an estimate for the baseline BMP-Collected Trash Load is not available, an estimate for the baseline Generated Trash Load cannot be calculated. Estimation of a baseline for this parameter (Generated Trash Load) will be essential to quantifying trash reductions in the future.

4.0 BASELINE TRASH LOAD QUANTIFICATION AND CHARACTERIZATION STUDY

In order to meet future trash reduction goals outlined in this plan, it is essential to calculate an accurate estimate of the baseline Generated-Trash Load. To accomplish this, a baseline study that quantifies and characterizes both MS4-Discharged Trash and BMP-Collected Trash is essential. In addition, this study will provide insight into which airport activities (and sources) are associated with various types and amounts of trash. This approach will allow DOTA to focus trash reduction efforts on certain areas or activities in order to meet trash reduction goals in the future. In order to account for annual and seasonal variability, a three-year baseline study will be implemented.

4.1 Trash Quantification and Characterization Method

Debris that is removed from HNL areas will be quantified empirically and visually characterized. For a particular activity in a particular area (eg. Canal 1 cleaning), the volume and mass of items collected will be measured. A visual estimate of the percent of total volume will then be recorded for debris that falls into each of the categories below:

- a. Single-use plastics (bags, bottles, straws, cutlery, packaging etc.), polystyrene foam (Styrofoam), and rubber products
- b. Metal (nuts and bolts, rust chips, cans), glass and fiberglass, paper, and cardboard
- c. Cigarette butts and other misc. man-made trash
- d. Green trash (landscaping debris, cut wood, plant/grass clippings, etc.)
- e. Green waste (vegetation, branches, leaves, non-landscaping green waste, etc.)
- f. Sediment, sand, rock, aggregate, and asphalt debris

Per the definition given in section 1.1, trash includes the amount of debris that falls into categories a-d.

4.2 MS4-Discharged Trash Load Baseline

The total MS4-Discharged Trash Load is equal to the sum of the amount of trash (debris removed that falls into categories a-d) removed from the Baseline-Booms (section 4.2.1) and the estimate of MS4-Discharged Trash from areas not drained by canals (section 4.2.2). This value will be calculated annually for the three-year duration of this baseline study. To account for annual variability, the average of these values will represent the baseline value for MS4-Discharged Trash Load.

4.2.1 MS4-discharged trash from areas drained by canals

The most accurate way to estimate the actual MS4-Discharged Trash Load (trash that is currently bypassing all existing BMP and is discharged to state waters) is to install end-of-pipe full capture trash devices at all outfalls and canals. For areas that ultimately drain to canals, this will be achieved by the installation of an additional trash boom (with a submerged net to catch non-floatables) in both the Manuwai and Kalaoloa canals at a location near the canal mouth (or closest practical location). Debris that is removed from these “Baseline-Booms” will be quantified and categorized as above in section 4.1.

4.2.2 MS4-discharged trash from areas NOT drained by canals

The installation of end-of-pipe catchment devices may not be feasible for outfalls in areas that are not drained by canals due to high costs and logistical issues (the majority outfalls are submerged). Therefore, the baseline value for MS4-Discharged Trash from areas not drained by canals will be estimated using a similar method to that used in section 3.2.2. The baseline value for MS4-Discharged Trash from areas not drained by canals is equal to 10 % of trash removed from “Baseline-Booms” (section 4.2.1).

4.3 BMP-Collected Trash Load Baseline

Over the duration of this three-year study, trash removed via BMPs and activities such as MS4 and canal cleaning, FOD Walks, street sweeping, etc., will be quantified and categorized as shown in section 4.1. Only trash removed by BMPs within areas categorized as trash producing areas will be used in trash reduction calculations. To account for annual variability, the three year average of these values will represent the baseline value for the BMP-Collected Trash Load.

4.4 Total Generated Trash Load Baseline

During this three-year baseline study, both MS4-discharged and BMP-Collected trash loads will be calculated annually. The annual Generated Trash Load is the sum of both of these values (Eq. 1). To account for annual variability, the average of these values will represent the Baseline value for Total Generated Trash Load.

5.0 TRASH LOAD REDUCTION CALCULATION

The long term goal of this trash reduction plan is to increase the amount of BMP-Collected trash, through the implementation and enhancement of various control measures, until the amount of BMP-Collected trash in a given year is equal or greater than the baseline value of Total Generated Trash. Similarly, the goal is also to increase the amount of BMP-collected trash to a point where the increase in trash collected (above the baseline BMP-collected trash value) is equal to or greater than the baseline value for MS4-discharged trash.

Future trash load reductions will be calculated by comparing the BMP-collected trash in a given year to the baseline values as calculated in section 4. The following equation shows the calculation for the trash load reduction using the mass of trash (volume can also be used).

EQUATION 2. CALCULATION OF PERCENT LOAD REDUCTION

$$\% \text{ Reduction} = \frac{(\text{Baseline Generated Load} - \text{Current BMP Collected Load})}{\text{Baseline MS4 Discharged Load}} \times 100$$

The following is an example of reduction calculations for year X; note the slight variability in values during the baseline study (years 1-3). The MS4-Discharged Load is not estimated after the baseline study (year 1-3) because baseline booms are considered permanent BMPs after year 3.

TABLE 3. TRASH REDUCTION CALCULATION EXAMPLE

Year	BMP- Collected Load (lbs)	MS4- discharged Load (lbs)	Generated Load (lbs)
Baseline 1	= 76	19	95
Baseline 2	= 80	20	100
Baseline 3	= 84	21	105
<i>Average Baseline</i>	= 80	20	100
Year X	= 88	N/A	88

$$\text{Year X Reduction} = (100 - 88) / 20 = 60 \% \text{ Trash Reduction from Baseline}$$

6.0 PLAN IMPLEMENTATION SCHEDULE

This section describes the implementation schedule, which consists of a Short-Term Plan and a Long-Term Plan to meet the trash reduction targets set at 50% by 2023 and 100% by 2036, respectively.

6.1 TRASH BASELINE LOAD

DOTA plans to install full capture trash devices wherever feasible as described in section 4 and initiate the three year baseline study as soon as possible. The exact start date will be determined by the date agree upon in new/revised contracts for the cleaning and sorting of debris from canals and MS4 structures.

6.2 SHORT-TERM PLAN

DOTA plans to adopt a variety of feasible control measures to efficiently meet the 50% reduction from the MS4-Discharged load by 2023. DOTA will benefit from implementing new control measures and enhancing those that are currently in place.

6.2.1 *Enhancement of Existing Control Measures*

DOTA intends to enhance the following control measures that have already been implemented.

Public Education: DOTA continuously holds tenant and airport employee training events and distributes educational handouts on storm water issues throughout the year. PSAs and educational signs have been created by DOTA which reaches a broader audience to educate and promote storm water awareness. In addition to continuing existing education and outreach activities, DOTA plans to increase the amount of educational signs displayed around the airport and educational materials sent to tenants and airport employees.

Permanent BMPs: There are currently 145 Permanent BMPs installed which function as trash capture devices. DOTA will continue to monitor, maintain, and evaluate the trash removal efficiency of the current Permanent BMPs to estimate potential future trash load reductions.

Cleaning Contracts: DOTA ensures that storm drainage structures such as catch basins, inlets, curb gutters, open ditches, canals, trenches, and evaporation ponds are inspected every six months to identify any maintenance or cleaning requirements. Cleaning of these structures is done on an as needed basis following inspection.

The full capture trash booms installed in canals as part of the baseline study will remain in place after the baseline study period to act as permanent BMPs. This alone will provide a



large reduction in the amount of trash that escapes the MS4. Because canals drain roughly 70 % of airport areas that generate trash (22 % of total HNL area), these trash booms are expected to play a large role in meeting the short goal of 50 % trash reduction.

Drainage structures in the movement area are classified as a low priority and have historically not required maintenance cleaning because the only activities conducted in this area are aircraft taxiing, take-off, and landing, which generally do not create debris.

DOTA will increase inspection and cleaning (if needed) of Ahua Pond. Trash resulting from potential cleaning activities along the shoreline of Keehi lagoon or the Pacific Ocean is not considered to have originated from HNL and thus will not be used in trash reduction calculations.

Sweeping: Street and runway/taxiway sweeping is performed to remove litter, debris, and other pollutants from surface vehicle and aircraft travel ways before they are discharged to the MS4. DOTA maintenance Section (AIR-OMF) conducts sweeping operations at runways, taxiways, major streets, and streets in industrial and commercial areas once per week or more frequently if a complaint is received. Sweeping is also initiated when the FAA requests cleaning the area due to FOD concerns, AIR-EE inspectors require that an area be swept where there is a potential threat of discharge to State waters, and/or if operators fill two sweeper trucks and there is additional debris remaining on the ground. DOTA will increase sweeping frequency in selected basin areas that are considered to be high priority or contain structures identified as hot spots based on previous data.

Recycling Programs: HNL's biannual Recycle Drive allows tenants to bring their infrequent waste items such as bulky items, papers, magazines, binders, general office equipment, scrap metal, carpet, appliances, and e-waste in order to properly recycle, reuse, or dispose items in order to prevent illegal dumping or improper disposal of these items. Sustainable HNL targets an increased recycling rate to 4% by 2020. This includes scrap metals, pallets, hazardous waste, office paper, newspaper, cardboard, green waste, and e-waste.

Clean-Up Events: HNL's FOD Walk program is an annual volunteer event that brings together the airport community while addressing the issues of Foreign Object Debris / Foreign Object Damage (FOD) that threatens the safety of aircraft, airport vehicles, equipment, and passengers at HNL. HNL's FOD Walk program will be expanded to multiple events per year that will focus on different areas and known hot spots.

Employee Responsibility: All airport employees must complete AOA training which promotes environmental stewardship and responsibility of all employees to pick up trash at HNL. Baseyard and street sweeper personnel are trained to be the "eyes and ears" for Illicit Discharge Detection and Elimination (IDDE).

Tenant and Construction Inspections: DOTA inspectors generally consist of AIR-EE, Environmental Health Specialists (EHS), and their consultants. They are required to receive annual training for Industrial and Commercial Tenant Site Inspections and Construction Site

Inspections. These inspections have been put in place to verify site conditions and ensure BMPs are properly maintained and effective in containing potential pollutants.

6.2.2 Future Control Measures

Future control measures are needed for DOTA to meet trash load reduction goals. Based on the findings of the baseline study, DOTA will prioritize management and implementation of suitable BMPS to address trash generated by specific activities in specific areas. The baseline characterization of trash will allow DOTA to identify the types of trash associated with specific areas of HNL. Several BMPs are available to meet the stated reduction targets:

Cigarette Butt Program: The goal of this future program is to increase educational signs and handouts in areas where smokers congregate to eliminate improper disposal. Increasing cigarette butt receptacles around the airport will further enhance the program goals.

Waste Receptacles: This future control measure will increase amount and visibility of proper waste and recycling receptacles throughout HNL. Improvements in trash bin and container management will also help to prevent dumping around bins/containers and overflow related issues.

Permanent BMP Retrofits: Baseline trash booms installed for the baseline study will remain in place as permanent BMPs. If possible, other full and partial capture devices will be installed at specific locations. In addition, DOTA has produced a Retrofit Action Plan (HNL SWMPP) that includes a tentative schedule for each Retrofit BMP Project as shown in Table 4.

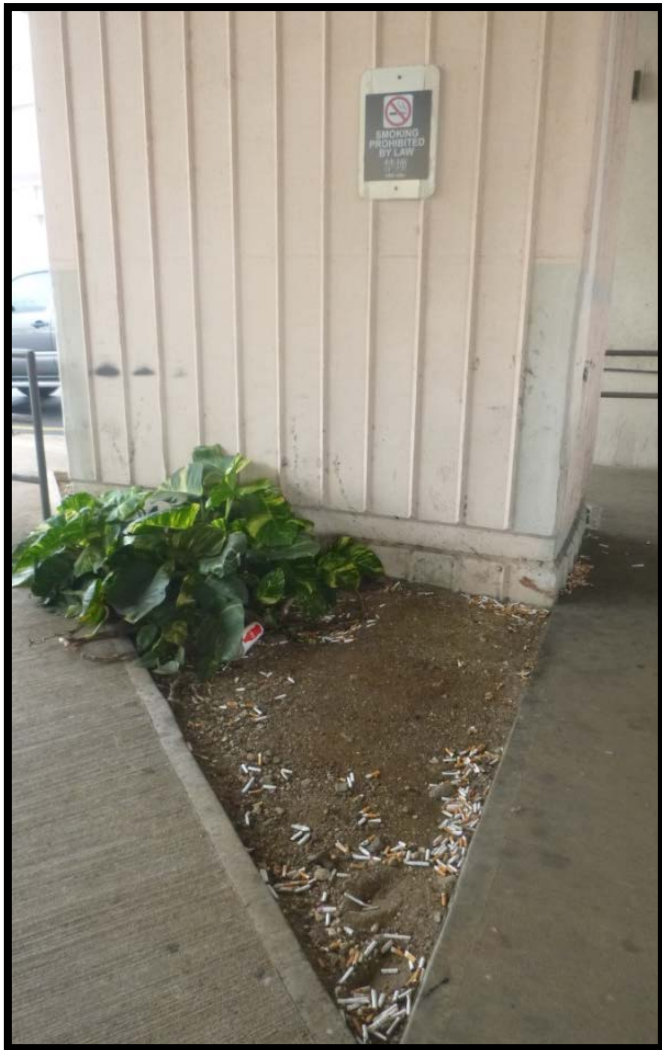


TABLE 4. RETROFIT SCHEDULE

RETROFIT BMP PROJECT DESCRIPTION	BMP TYPE	YEAR	YEAR	YEAR	YEAR	YEAR
		1 2015	2 2016	3 2017	4 2018	5 2019
New Employee Parking Lot	Pervious Concrete	X				
South Ramp Fuel Rack	OWS	X				
New Hawaiian Hangar	CDS Units		X			
Widening of Taxiways G&L, P1	CDS Units		X			
Diamond Head Site Improvement	CDS Units			X		
Diamond Head Commuter Terminal	CDS Units			X		
CONRAC Phase 2B (Rental Car Facility)	Detention Basin					X
New Mauka Concourse	Detention Basin					X
Various Storm Drains (Table 5)	Filtration Products				X**	
D10-1 Access "A" Canal	Canal Stabilization				X	
D14-1 Kaloaloe Canal	Canal Stabilization	To Be Determined				
Triturator	Redesign for Containment	To Be Determined				
A9-3 Lagoon Drive Parking Lot	Permeable Pavers	To Be Determined				

* Based on construction start dates and may be subject to change. Timeframes are based on calendar years.

** Storm Drain retrofits may also be included as an addition to other projects and will be subject to their construction schedule. At least one of the storm drain retrofits will be completed by this date.

6.3 LONG-TERM PLAN

In 2024, an assessment of data collected during implementation of the Short-Term Plan will be completed in order to verify the efficiency of trash control measures. This will allow an additional 16 years after completion of the Short-Term Plan to create new programs and alter existing ones. Throughout the duration of the Long-Term Plan, DOTA plans to enhance all successful control measures to meet the 100% trash load reduction from the baseline MS4-Discharged Trash Load by 2036.

The Long Term Plan may include these control measures:

- Install PBMPs and retrofits
- Install additional full catchment devices in canals and outfalls where feasible
- Stringent rules plastic bags and plastic bottles
- An ordinance to ban Styrofoam within HNL
- Implementation of monetary fine for tenants or individuals caught littering

6.3.1 Single-use Plastic Bag and Plastic Bottle Ordinances

Single-use plastic bags and plastic bottles have harmful effects on the environment and these items can compromise the functionality of the MS4. DOT-A will benefit from a municipal ordinance designed to reduce the environmental impacts of single-use plastic bags within HNL boundaries.

Prohibiting distribution of single-use carryout plastic bags at all restaurants/food service institutions and retail establishments will ultimately reduce the amount of waste generated at the airport and the risk of trash waste entering the MS4. Increased water bottle refill stations and a plastic bottle ban within the AOA will promote the use of re-useable bottles and reduce the risk of plastic water bottles entering the MS4.

6.3.2 Polystyrene Foam Food Service Ware Ordinances

Polystyrene foam is used as food ware in the food service industry and has the potential to impact human health, wildlife, and the aquatic environment (USEPA 2002). Prohibiting restaurants and food vendors from distributing polystyrene foam containers and replacing polystyrene with less hazardous, compostable or readily recyclable products will protect public health and safety at HNL, as well as the surrounding environment and waterways.

6.3.3 Anti-Littering Enforcement

Successful anti-littering and illegal dumping enforcement activities include laws and ordinances which prohibit littering or dumping. Laws are enforced by various municipal agency staff who issue citations in response to citizen complaints or other enforcement methods such as surveillance cameras or signs/barriers at illegal dumping “hot spots”. DOT-A will support local government actions that reduce illegal littering through enforcement, surveillance, and increasing visibility and distribution of proper waste and recycling receptacles.

7.0 TRASH LOAD REDUCTION MONITORING AND REPORTING

All data associated with trash collection, quantification, and characterization will be input to the online database system Enviance. Enviance will be configured to produce reports that automatically calculate annual trash reductions in addition to detecting “hot spot” locations for particular types of trash.

7.1 ANNUAL REPORTING

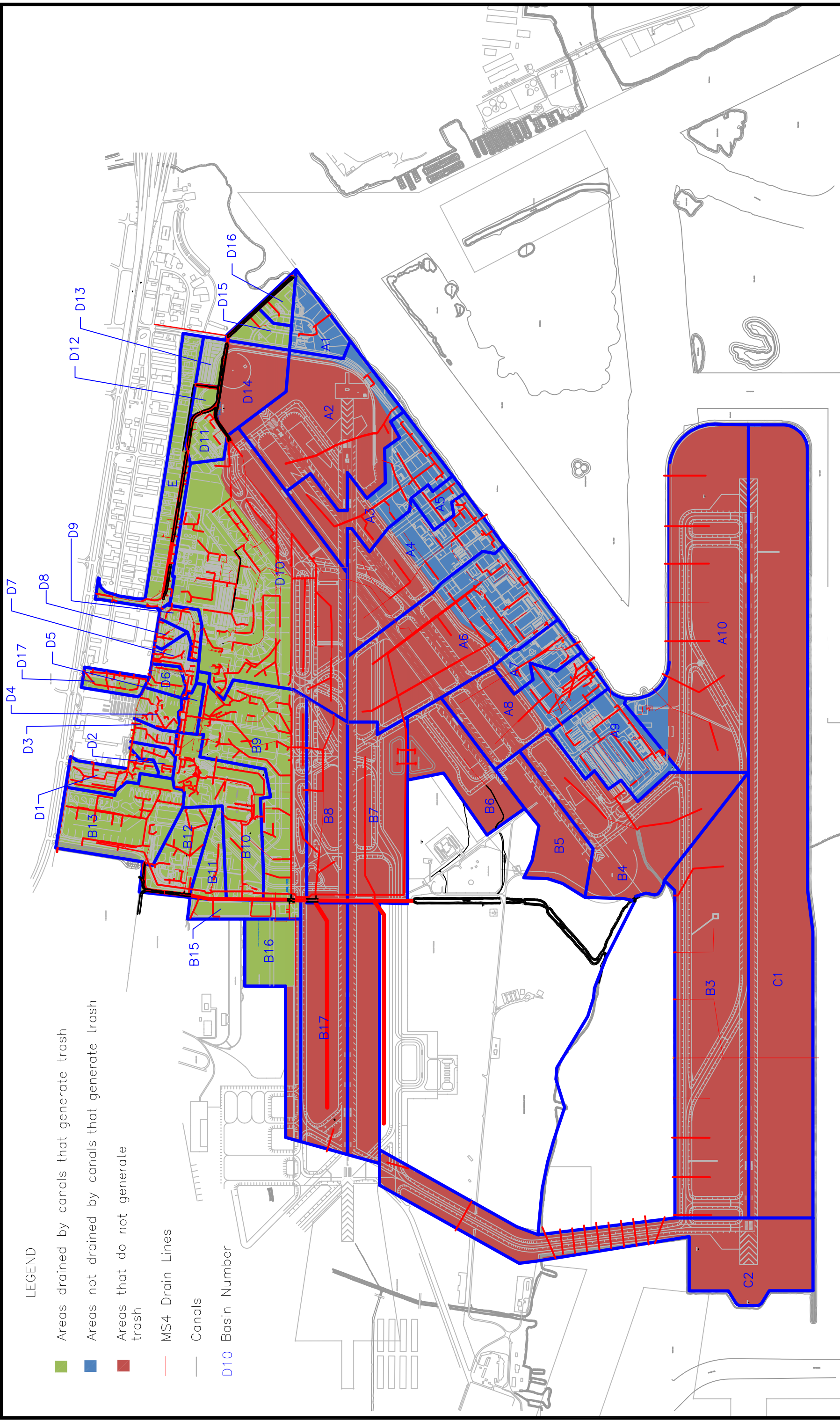
HNL’s annual report (due August 31st) will include a summary of its trash reduction actions (control measures and BMPs) including types of actions and levels of implementation. This will include total trash loads and dominant types of trash removed by specific trash reduction actions.

8.0 REFERENCES

- State of Hawaii, Department of Transportation, Airports Division. April 14, 2014. *National Pollutant Discharge Elimination System, Permit Number HI S000005.*
- State of Hawaii, Department of Transportation, Airports Division. June 2015. *Honolulu International Airport, Small Municipal Separate Storm Sewer System, Storm Water Management Program Plan.*
- State of Hawaii, Department of Transportation, Airports Division. 2016. *sustainableDOTA, sustainableHNL Sustainable Management Plan, A flight plan for the DOT-A flagship airport.*


Appendix A

HNL Trash Generation Map



LEGEND

- Areas drained by canals that generate trash
- Areas not drained by canals that generate trash
- Areas that do not generate trash
- MS4 Drain Lines
- Canals
- D10 Basin Number

	Airports Division	HNL Trash Generation Map	Appendix A
HONOLULU INTERNATIONAL AIRPORT		Date: April 2017	
