SWMPP SECTION H

Annual Storm Water Monitoring Plan
Honolulu International Airport
Small Municipal Separate Storm Sewer System
HI S000005

Prepared For:

State of Hawaii
Department of Transportation
Airports Division
400 Rodgers Boulevard, Suite 700
Honolulu, Hawaii 96819-1880

April 2014

Version 4.0

RECORD OF REVISION

Revision No.	Revision Date	Description	Sections Affected
1	May 2007	Version 1.0 – Initial Release	All
2	June 2009	Version 2.0 – Clarification on monitoring locations, parameters, and frequency	2.0, App A
3	June 2011	Version 3.0 – NPDES permit extension	1.2, 2.1, 2.2, 2.3
4	April 2014	Version 4.0 - Revised to comply with requirements of the Annual Monitoring Plan per the revised HIS000005	All

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.

Ford N. Fuchigami
Deputy Director - Airports
State of Hawaii
Department of Transportation

4.29.14
Date

Program Implementation Responsible Party:

HNL Environmental Health Specialist

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1.0 INTRODUCTION

1.1 Background

The State of Hawaii, Department of Transportation, Airports Division (DOTA) conducts a Storm Water Monitoring Program in order to measure the effectiveness of the Honolulu International Airport's (HNL) Small Municipal Separate Storm Sewer System (Small MS4) Storm Water Management Program (SWMP). This Annual Storm Water Monitoring Program is required by the HNL Small MS4 National Pollutant Discharge Elimination System (NPDES) Permit No. HI S000005 and the monitoring itself will serve to assess compliance with the terms of that permit. The focus of this program is to monitor storm water runoff from the HNL Small MS4 including storm water discharges from industrial facilities which discharge to state waters.

1.2 Objectives

The goal of this Monitoring Plan is to document proposed objectives and provide a description of DOTA's monitoring activities to be performed within the fiscal year. The purpose of the monitoring program is to allow DOTA and DOH to assess the effectiveness of existing storm water management procedures and to identify potential illicit discharges to the HNL Small MS4.

1.2.1 Objective #1: Compliance

Monitoring will be conducted to assess compliance with the Small MS4 permit HI S000005. Additionally, compliance may also be evaluated in accordance with Total Maximum Daily Load (TMDL) Implementation and Monitoring (I&M) Plans and to demonstrate consistency with Waste Load Allocations (WLAs). However, TMDLs and WLAs have not been assigned to the receiving waters at HNL at this time.

1.2.2 Objective #2: Effectiveness

Monitoring will be conducted to measure the effectiveness of the Storm Water Management Program (SWMP) in regards to those programs that may be implemented in that monitoring area. Specific programs are further described in Section 4.1.

1.2.3 Objective #3: Overall Health

Monitoring will be conducted to assess the overall health of the runoff based on chemical, physical, and biological impacts to receiving waters. Additionally, as a number of sampling events are conducted long term trends will be identified so that programs can be targeted to specific areas of concern.

1.2.4 Objective #4: Characterization

Monitoring will be done to characterize what is in the storm water discharges leaving the HNL Small MS4.

1.2.5 Objective #5: Pollutant Source Identification

Monitoring will be done to aid in identified specific pollutant sources. Once identified, the pollutant sources can be more readily targeted with programs or treatment devices.

1.2.6 Objective #6: IDDE

Monitoring will be conducted to assist in the illicit discharge detection and elimination (IDDE) program, which is designed to prevent illegal discharges and/or connections to the Small MS4.

1.2.7 Objective #7: Assess Receiving Water

Monitoring will be conducted to assess how runoff from the HNL Small MS4 may be contributing to water quality issues in the receiving waters (Keehi Lagoon and Pacific Ocean).

2.0 MONITORING PROGRAM

The storm water monitoring program at HNL includes two types of samples. The Small MS4 monitoring location will provide an analysis of the common discharges that occur from the airport storm drain system. The industrial activities monitoring location will provide a specific analysis of the runoff from the maintenance baseyard as well as provide an evaluation of the discharges that may be flowing into the Kaloaloa canal from the east side of the airport.

2.1 HNL Small MS4 Storm Water Monitoring Location

Storm water runoff from the MS4 is monitored at outfall 6456 to capture a representative sample of impacts from common airport activities at the terminal, ramp, and taxiways:

- **HNL 002** (Outfall 6456, Appendix A, Figure 1) shall be monitored annually and reported to evaluate runoff from the Small MS4. The sampling point captures runoff from a large portion of storm drains at HNL, including the central and ewa concourses of the overseas terminal, ramp areas, and several taxiways. Discharge flows to the Manuwai Canal, which is considered a Class 2 Inland Water with salt water intrusion from Ahua Pond / Pacific Ocean. Effluent limitations from HAR 11-54-5.2b for inland waters and salt water will be applied.

TABLE 1: SMALL MS4 MONITORING LOCATIONS

STORM DRAIN NUMBER	GPS COORDINATES	DESCRIPTION OF RUNOFF	POTENTIAL POLLUTANTS
HNL 002 Outfall 6456	21° 19' 40.6" N 157° 55' 46" W*	Aircraft maintenance and fueling – Central and Ewa Concourse of Overseas Terminal	Jet fuel / diesel/ gasoline, lubricants / oils, debris

***Note: Taxiways G and L are being redesigned and this sampling location may be shifted to accommodate. However, it will continue to capture the same discharge.**

The following parameters will be monitored annually from a representative storm event at the Outfall 6456.

TABLE 2: MONITORING PARAMETERS FOR SMALL MS4 (HNL 002)

PARAMETER	SAMPLE TYPE[2]	TEST METHOD	EFFLUENT LIMITATION[1]
Biochemical Oxygen Demand (mg/l)	Composite[3]	E405.1	Report[4]
Chemical Oxygen Demand (mg/l)	Composite[3]	E410.4	Report[4]
Total Suspended Solids (1 mg/l)	Composite[3]	E160.2	20mg/l* 10mg/l**
Total Phosphorus (mg/l)	Composite[3]	E365.4	50mg/l* 30mg/l**
Total Nitrogen (mg/l)	Composite[3]	SM4500-N	250mg/l* 180mg/l**
Nitrate + Nitrite (mg/l)	Composite[3]	E353.2	70mg/l* 30mg/l**

PARAMETER	SAMPLE TYPE[2]	TEST METHOD	EFFLUENT LIMITATION[1]
Oil and Grease (mg/l)	Grab	E1664A	15mg/l
pH (unit)	Grab	E150.1	5.5-8.0 ±0.5 from ambient
Turbidity (0.1 NTU)	Grab	E180.1	5 NTU* 2 NTU**

NOTES:
mg/l = milligrams per liter = 1000 micrograms per liter (µg/l)
*Wet Season: November 1 through April 30
**Dry Season: May 1 through October 31

[1] Pollutant concentration levels shall not exceed the storm water discharge limits or be outside the ranges indicated in the table. Actual or measured levels which exceed those storm water discharge limits or are outside those ranges shall be reported to the CWB required in HAR, Chapter 11-55, Appendix B, Section 10(c).

[2] The Permittee shall collect samples for analysis from a discharge resulting from a representative storm. A representative storm means a rainfall that accumulates more than 0.1 inch of rain and occurs at least 72 hours after the previous measurable (greater than 0.1 inch) rainfall event.

"Grab sample" means a sample collected during the first 15 minutes of the discharge.

"Composite sample" means a combination of at least two (2) sample aliquots, collected at periodic intervals. The composite shall be flow proportional; either the time interval between each aliquot or the volume of each aliquot must be proportional to the total flow of storm water discharge flow since the collection of the previous aliquot. The Permittee may collect aliquots manually or automatically.

Samples for analysis shall be collected during the first 15 minutes of the discharge and at 15-minute intervals thereafter for the duration of the discharge, as applicable. If the discharge lasts for over an hour, sample collection may cease.

[3] If the duration of the discharge event is less than 30 minutes, the sample collected during the first 15 minutes of the discharge shall be analyzed as a grab sample and reported toward the fulfillment of this composite sample specification. If the duration of the discharge event is greater than 30 minutes, the Permittee shall analyze two (2) or more sample aliquots as a composite sample.

[4] Effluent limitations are the acute water quality standards established in HAR, Chapter 11-54, Section 11-54-4. For pollutants which do not have established acute water quality standards, **any detection concentration greater than 0.01 mg/l shall be reported**.

2.2 Industrial Activities Monitoring Location

Storm water runoff from the Maintenance Baseyard located at 2919 Aolele Street, Honolulu, Hawaii is monitored:

- **HNL 003** (Outfall 4576, Appendix A, Figure 2) shall be monitored annually and reported in compliance with HAR 11-55, Appendix B. The runoff from multiple drain inlets located in the HNL DOTA Maintenance Baseyard is collected and monitored from this point. Discharge flows to the Kaloaloa Canal, which is considered a Class 2 Inland Water with salt water intrusion from Keehi Lagoon. Effluent limitations from HAR 11-54-5.2b for inland waters and fresh water will be applied.

TABLE 3: INDUSTRIAL ACTIVITIES MONITORING LOCATION

STORM DRAIN NUMBER	GPS COORDINATES	DESCRIPTION OF RUNOFF	POTENTIAL POLLUTANTS
HNL 003 Outfall 4576	21° 19' 52.9" N 157° 54' 21.3" W	HNL Baseyard vehicle maintenance and fueling, storage areas for maintenance materials	Diesel /gasoline, lubricants /oils, VOCs, heavy metals, pesticides, surfactants, debris, hazardous waste

The following parameters will be monitored annually from a representative storm event at the Maintenance Baseyard.

TABLE 4: MONITORING PARAMETERS FOR INDUSTRIAL ACTIVITIES (HNL 003)

PARAMETER	SAMPLE TYPE[2]	TEST METHOD	EFFLUENT LIMITATION[1]
Flow (gallon)	Calculate/ Estimate	rain gauge	Report[4]
Biochemical Oxygen Demand (mg/l)	Composite[3]	E405.1	Report[4]
Chemical Oxygen Demand (mg/l)	Composite[3]	E410.4	Report[4]
Total Suspended Solids (1 mg/l)	Composite[3]	E160.2	20mg/l[*] 10mg/l[**]
Total Phosphorus (mg/l)	Composite[3]	E365.4	50mg/l[*] 30mg/l[**]
Total Nitrogen (mg/l)	Composite[3]	SM4500-N	250mg/l[*] 180mg/l[**]
Nitrate + Nitrite (mg/l)	Composite[3]	E353.2	70mg/l[*] 30mg/l[**]
Oil and Grease (mg/l)	Grab	E1664A	15mg/l
pH (unit)	Grab	E150.1	5.5-8.0 $\pm$0.5 from ambient
Ammonia Nitrogen (1 µg/l)	Composite[3]	E350.3	Report[4]
Turbidity (0.1 NTU)	Grab	E180.1	5 NTU[*] 2 NTU[**]
Dissolved Oxygen (0.1 mg/l)	Grab	E360.1	Report[4]
Oxygen Saturation (1%)	Grab	SM4500-O[2]	$\geq$80%

PARAMETER	SAMPLE TYPE[2]	TEST METHOD	EFFLUENT LIMITATION[1]
Temperature (0.1 ^{o}C)	Grab	E170.1	±1 ^{o}C from ambient
Salinity (0.1 ppt) / Conductivity (1µmhos/cm)	Grab	E120.1	$\leq$ 300µmhos/cm
Aluminum (µg/l)	Composite[3]	E6010	750 µg/l
Cadmium (µg/l)	Composite[3]	E6010	3+ µg/l
Chromium (VI) (µg/l)	Composite[3]	E6010	16 µg/l
Copper (µg/l)	Composite[3]	E6010	6+ µg/l
Lead (µg/l)	Composite[3]	E6010	29+ µg/l
Nickel (µg/l)	Composite[3]	E6010	5+ µg/l
Silver (µg/l)	Composite[3]	E6010	1+ µg/l
Zinc (µg/l)	Composite[3]	E6010	22+ µg/l
Benzene (µg/l)	Composite[3]	E8020	1800 µg/l

NOTES:
mg/l = milligrams per liter = 1000 micrograms per liter (µg/l)
+ = The value listed is the minimum standard. Depending upon the receiving water $CaCO_3$ hardness, higher standards may be calculated using the respective formula in the U.S. Environmental Protection Agency publication Quality Criteria for Water (EPA 440/5-86-001, Revised May 1, 1987).
*Wet Season: November 1 through April 30
**Dry Season: May 1 through October 31

[1] Pollutant concentration levels shall not exceed the storm water discharge limits or be outside the ranges indicated in the table. Actual or measured levels which exceed those storm water discharge limits or are outside those ranges shall be reported to the CWB required in HAR, Chapter 11-55, Appendix B, Section 10(c).

[2] The Permittee shall collect samples for analysis from a discharge resulting from a representative storm. A representative storm means a rainfall that accumulates more than 0.1 inch of rain and occurs at least 72 hours after the previous measurable (greater than 0.1 inch) rainfall event.

"Grab sample" means a sample collected during the first 15 minutes of the discharge.

"Composite sample" means a combination of at least two (2) sample aliquots, collected at periodic intervals. The composite shall be flow proportional; either the time interval between each aliquot or the volume of each aliquot must be proportional to the total

flow of storm water discharge flow since the collection of the previous aliquot. The Permittee may collect aliquots manually or automatically.

Samples for analysis shall be collected during the first 15 minutes of the discharge and at 15-minute intervals thereafter for the duration of the discharge, as applicable. If the discharge lasts for over an hour, sample collection may cease.

[3] If the duration of the discharge event is less than 30 minutes, the sample collected during the first 15 minutes of the discharge shall be analyzed as a grab sample and reported toward the fulfillment of this composite sample specification. If the duration of the discharge event is greater than 30 minutes, the Permittee shall analyze two (2) or more sample aliquots as a composite sample.

[4] Effluent limitations are the acute water quality standards established in HAR, Chapter 11-54, Section 11-54-4. For pollutants which do not have established acute water quality standards, **any detection concentration greater than 0.01 mg/l shall be reported.**

3.0 WATER QUALITY MONITORING GUIDE

This procedure will be applied when collecting a storm water sample once per fiscal year during a representative storm event at the two sampling locations.

3.1 Gather Necessary Sampling Equipment

Contact a laboratory and request that they provide a storm water sampling kit for the constituents listed in Tables 2 and 4, excluding those that will be measured in the field (typically pH, temperature, and dissolved oxygen). Inform the laboratory of the constituents that will be monitored as a grab sample and those that will be monitored as a composite sample.

HAR 11-55 defines a grab sample as a sample collected within the first 15 minutes of discharge. Therefore, only one sample container should be required for each of these constituents. However, the laboratory should provide four separate containers for each of the constituents listed as requiring a composite sample. The composite sample will be collected at 15 minute intervals for one hour or until the rainfall ceases. The laboratory will combine the composite sample containers into one container based on the amount collected once they are received.

Once the sample containers have been received from the laboratory, store them and all other sampling items in a central location so that they are easy to grab when a sampling event occurs. The following is a list of suggested sampling materials:

- Sample bottles, sample cooler with frozen media such as ice.
- Storm water scoop to aid in collecting sample. Note: May **not** be used to collect the oil and grease sample.
- pH, temperature, and dissolved oxygen meter. Note: This should be calibrated within 24 hours of collecting the sample.
- Disposable cups to hold the sample for field measurements (pH, temperature, and dissolved oxygen).
- Disposable nitrile gloves. Note: these should be worn when handling samples and containers and changed between sampling locations.
- Field notebook, sample labels, chain of custody form, and permanent marking pen. Note: it is suggested to use a rain resistant notebook.
- Personal Protective Equipment (PPE) such as AOA badge, safety vest, safety glasses, steel toed boots, hard hat, etc.

3.2 Monitor the Weather

Storm water sampling should occur during representative storm events. As defined by HAR Chapter 11-55-01, a representative storm is defined as a rainfall that accumulates more than 0.1 inches of rain and occurs at least 72 hours after the previous measurable rainfall (greater than 0.1 inches).

Personnel will monitor the data recorded on the National Oceanic and Atmospheric Administration (NOAA) website (http://www.prh.noaa.gov/data/HFO/RRAHFO) for the

Honolulu International Airport (HNL). Once personnel have determined that there has been no rain event over 0.1 inch the previous 72 hours, the weather forecast will be viewed in order to anticipate when a rain event may begin. Once a rain event begins that appears to be significant (i.e. may exceed the 0.1 inch requirement), personnel will mobilize to the site within 15 minutes or as soon as possible to collect a sample.

3.3 Take Field Measurements

Once the sampler has reached the sampling location, the following observations should be recorded in the field notebook:

- Date and time of arrival onsite.
- Names of sampling personnel present.
- Time that rainfall began.
- Other observations about the discharge such as color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, or other obvious indicators of storm water pollution.

The sampling should commence when personnel don nitrile gloves and fill a disposable cup with storm water from the outfall. Personnel will insert the pH, temperature, and dissolved oxygen meter in the sample within 15 minutes and record the measurement in the field notebook for each once the reading has stabilized (i.e. stay on a consistent number for a period of time).

3.4 Collect the Grab Sample and Measure the Flow Rate

Personnel will continue sampling by filling the container for the oil and grease sample by allowing storm water to follow directly into the bottle from the outfall. Typically, this container is a 1-liter amber glass bottle with hydrochloric acid (HCl) preservative. Note: Ensure that the bottle does not overflow or the preservative may be lost. Personnel will record the time it takes to fill the bottle in seconds in the field notebook. This will be used to complete flow calculations at a later time. Once filled, the oil and grease sample will be securely capped and placed in cooler with frozen media. The remaining grab samples should be collected at this time (i.e. turbidity, oxygen saturation, salinity).

Then the remaining sample bottles will be filled either directly or by using a scoop, capped, and placed in the cooler with frozen media. These should be marked as “Composite Part 1.” The sampling time should be recorded in the field notebook.

3.5 Collect Composite Sample, if possible

If the rain event continues for 30 minutes, then personnel will collect Composite Part 2. This will be completed by filling the second set of containers for composite constituents. These will be securely capped, marked as “Composite Part 2,” and placed into the cooler with frozen media. This process will be repeated every 15 minutes for up to 1 hour as long as the rainfall continues and samples will be labeled as appropriate (i.e. “composite part 3” and “composite part 4”).

3.6 Record Final Observations and Label Samples

Once sample collection has been completed, personnel will record the time that sampling activities are completed and/or rainfall ceases. Then sample labels should be placed on the side of each container. An example label is presented below.

Sample Label

Date: 1/1/14	Time: 0900	Collected By: J. Smith
Sampling Site: HNL 002		
Tests Required: See COC		
Sample Type: ☐ Grab ☒ Composite ☐ Other_____		

3.7 Fill Out Chain of Custody (COC)

A chain of custody form shall be properly filled out and signed by each individual handling the samples to ensure sample integrity.

3.8 Deliver Samples to Laboratory

Each sample collected must be iced in the sample cooler immediately and until received by the laboratory. Samples will only be collected Monday through Friday (not days before holidays) because contract laboratories may be closed on weekends and holidays. The testing laboratory shall be qualified to perform the EPA approved methods. The EPA methods for analyzing environmental samples contain explicit quality control requirements that must be met. These requirements include specific procedures and criteria for evaluating accuracy and precision, demonstrating the ability of the analyst to generate acceptable accuracy and precision, and demonstrating that extraneous interferences are under control. The laboratory will be required to document strict adherence to the general laboratory Quality Assurance/Quality Control (QA/QC) requirements. The laboratory shall provide appropriate QA/QC documentation with the analytical results.

3.9 Data Review and Validation

Upon receipt of the analytical results from the laboratory, personnel will perform additional data validation to determine whether analytical data is acceptable for use in the context of this site investigation. The evaluation will include an assessment of laboratory QC data and field notes. The field measured parameters will be validated by the calibration of the water quality meter prior to the start of sample collection.

4.0 ANALYSIS AND REPORTING

4.1 Data Analysis

The analytical results of the samples will be used to determine compliance with the Small MS4 permit. Should effluent limitations be exceeded, analysis will be done to determine possible sources for that exceedence. Once identified, additional measures may be taken to further contain the pollutants.

Sample HNL 002 is representative of airline activities at the airport. Therefore, the sample is representative of the effectiveness of the tenant training program, tenant inspection program, implementation best management practices (BMPs), the illicit discharge detection and elimination (IDDE) program, and the storm drain maintenance program. Should effluent limitations be exceeded, these programs may be revised to prevent the discharge of pollutants.

Sample HNL 003 is representative of industrial activities at the airport maintenance baseyard. Therefore, the sample is representative of the effectiveness of the baseyard personnel training program, the implementation of BMPs, spill response practices, and debris control program. Should effluent limitations be exceeded, these programs may be revised to prevent the discharge of pollutants.

4.2 Management Measures

The management measure proven to be most effective at reducing pollutants and flow are the various education programs. Education is provided in formal classroom setting, via handouts, during inspections, and even through several drills that have been conducted at the baseyard. DOTA has identified that once parties are aware of their impacts and what they can do to prevent water quality violations they begin to incorporate environmental concerns into their decision making process.

The management measure shown to be slightly ineffective is providing written BMP plans to facilities. It is very rare for maintenance personnel or staff conducting industrial activities to read the BMP plans. However, DOTA continues to maintain the requirement for BMP plans per environmental regulations and also as a basis for training activities.

Further evaluation of SWMP effectiveness may be found in the Annual Compliance Report.

4.3 Reporting Requirements

Once the laboratory provides the sample analysis results, the DOTA must evaluate those findings and communicate them to interested parties.

4.3.1 Discharge Monitoring Reports

DOTA will complete Discharge Monitoring Reports (DMRs) to document what the sample findings were in comparison to the effluent limitations listed in Tables 2 and 4. A DMR template is included in Appendix B. Every exceedence of the effluent limitations will be specifically noted with a plan for correction. Additionally, an oral report shall be made to the Department of Health, Clean Water Branch via telephone (808) 586-4309 during normal business hours, as soon as the results become available, detailing the suspected origin or cause of

the non-compliance and measures which will be taken to prevent re-occurrence. For after business hours, the non-compliance may be reported to the Hawaii State Hospital Operator (808) 247-2191.

In addition to the DMR, the laboratory reporting sheets for the sample with Quality Assurance / Quality Control (QA/QC) data, flow calculations, the start and end time of the monitored storm event, and the duration between the last storm event of 0.1 inch or more shall be included in the submittal (see Appendix C for field documentation template).

Completed DMRs should be signed by the Director of Transportation and submitted no later than sixty days following the sample collection via the e-permitting portal or NetDMR, once available. If there was no discharge for that fiscal year, the DMR shall be completed indicating such and submitted with the Annual Monitoring Report by August 31st.

4.3.2 Annual Monitoring Report

The Annual Monitoring Report is due by August 31st each year to the DOH, covering activities conducted during the past fiscal year and shall, at a minimum, include the following items:

a) Discussion on the activities/work implemented to meet each objective as outlined in Section 1.2, including any additional objectives identified, and the results and conclusions;
b) Written narrative of the past fiscal year's activities, including those coordinated with other agencies, objectives of activities, results and conclusions;
c) Data gathered of levels of pollutants in non-storm water discharges to the HNL Small MS4;
d) Using rainfall data collected, relate rainfall events, measured pollutant loads, and discharge volumes from the watershed;
e) Date when monitoring occurred at the Maintenance Baseyard and the results.
f) DMRs for the Maintenance Baseyard.

4.4 Budget

The budget for the sampling year 2014 is $3,000 to collect, analyze, and report the findings of the storm water sampling.

5.0 WASTELOAD ALLOCATION

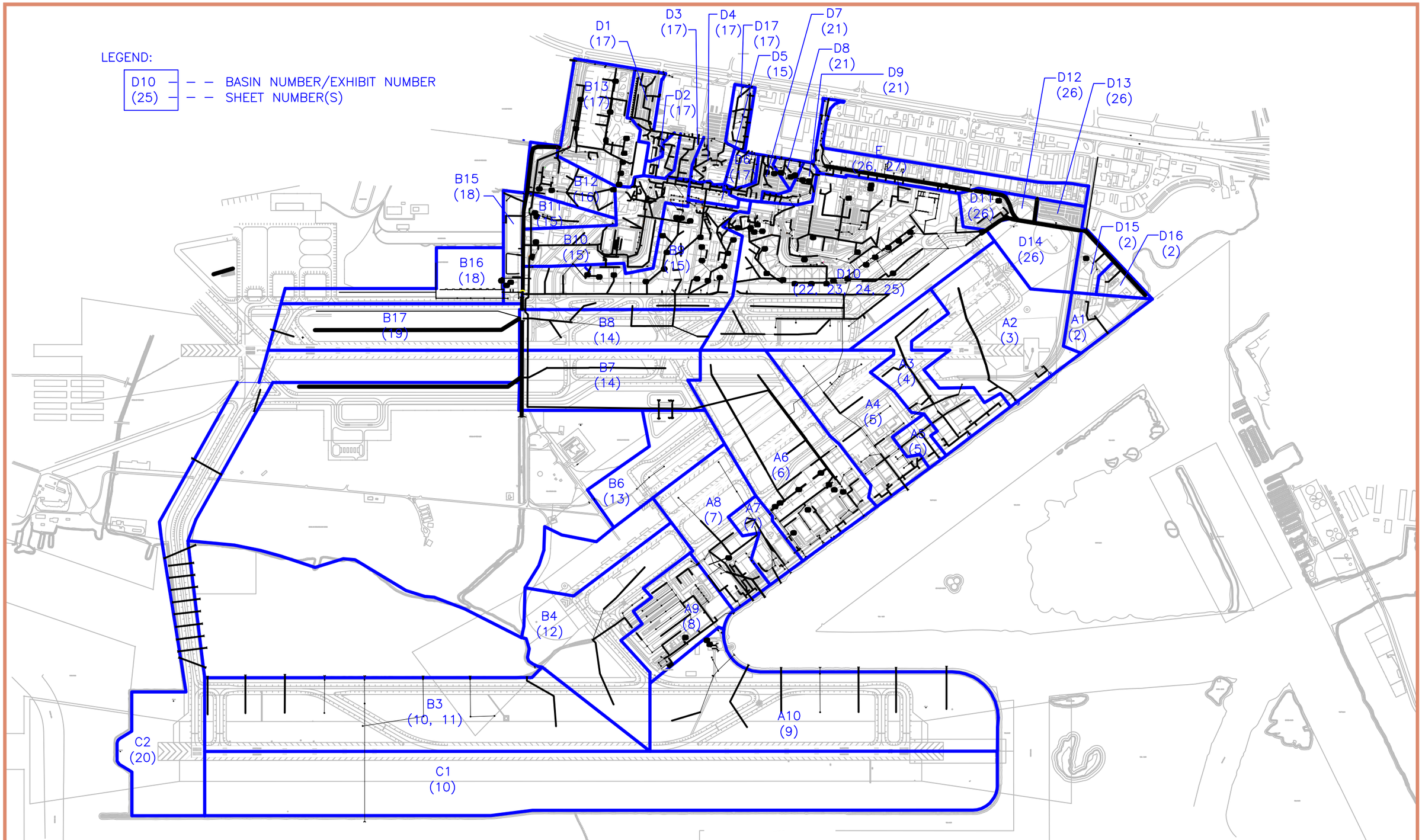
As additional Wasteload Allocations (WLAs) are adopted by DOH, Environmental Planning Office, that identify DOTA as a source, DOTA shall develop implementation and monitoring plans for a minimum of one (1) additional WLA per year within one (1) year of the adoption date.

6.0 REFERENCES

- State of Hawaii, Department of Health. December 2013. *Hawaii Administrative Rules, Chapters 11- 54.*
- State of Hawaii, Department of Health. December 2013. *Hawaii Administrative Rules, Chapters 11- 55.*
- State of Hawaii, Department of Transportation, Airports Division. June 2011. *Honolulu International Airport, Small Municipal Separate Storm Sewer System, Storm Water Management Program, Section H.*
- State of Hawaii, Department of Transportation, Airports Division. April 14, 2014. *National Pollutant Discharge Elimination System, Permit Number HI S000005,* expires March 13, 2019.

Appendix A

Storm Water Monitoring Location Maps



1500 0 1500 3000
GRAPHIC SCALE IN FEET

North

HONOLULU INTERNATIONAL AIRPORT

Date : JUNE 2011

EXHIBIT:

Airports Division

INDEX

DRAINAGE NETWORK
HONOLULU INTERNATIONAL
AIRPORT

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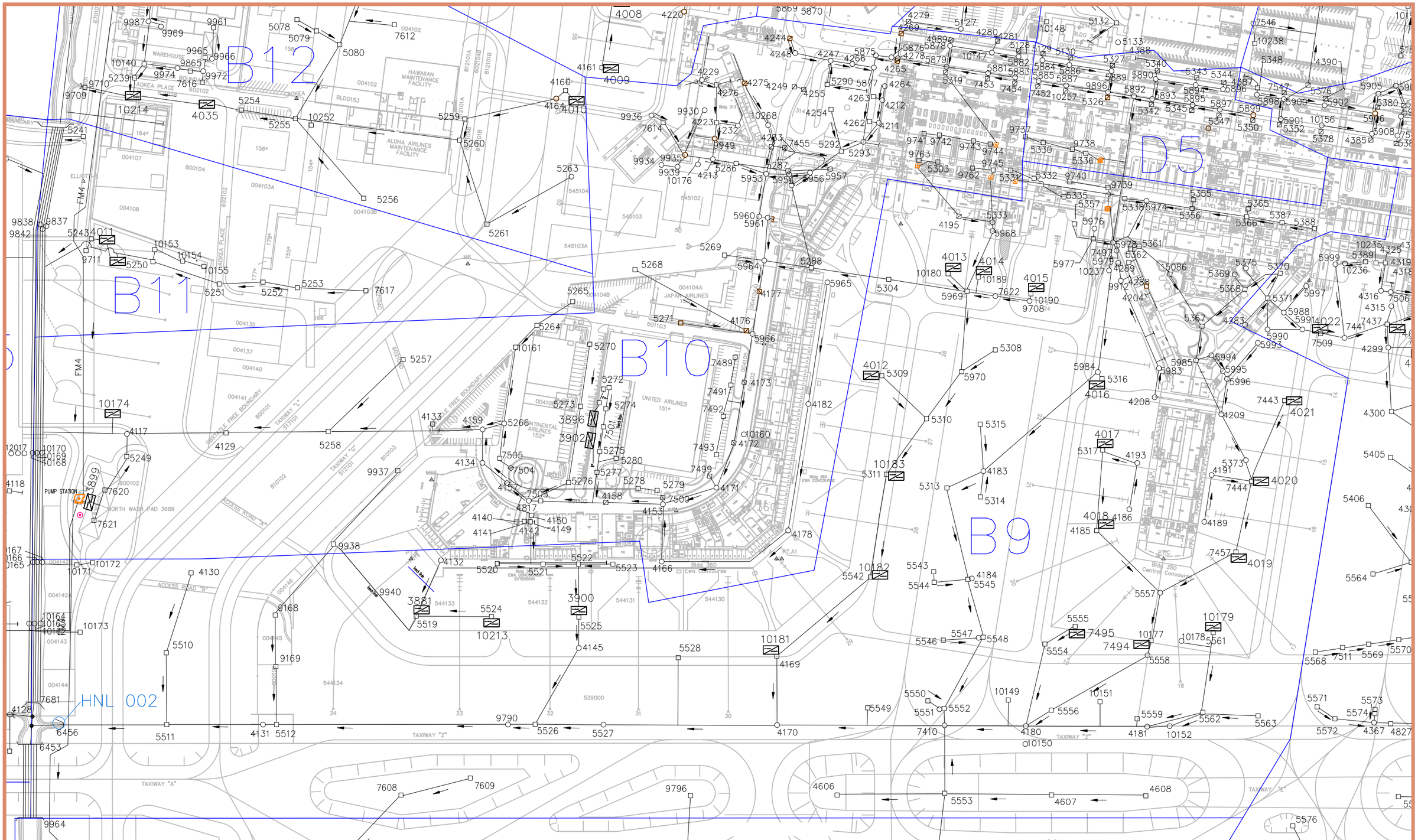

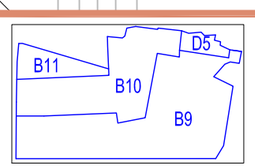

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GRAPHIC SCALE IN FEET

North

HONOLULU INTERNATIONAL AIRPORT

Date : JUNE 2011

EXHIBIT: B9-B11, D5

Airports Division

NODES

DRAINAGE NETWORK
HONOLULU INTERNATIONAL AIRPORT

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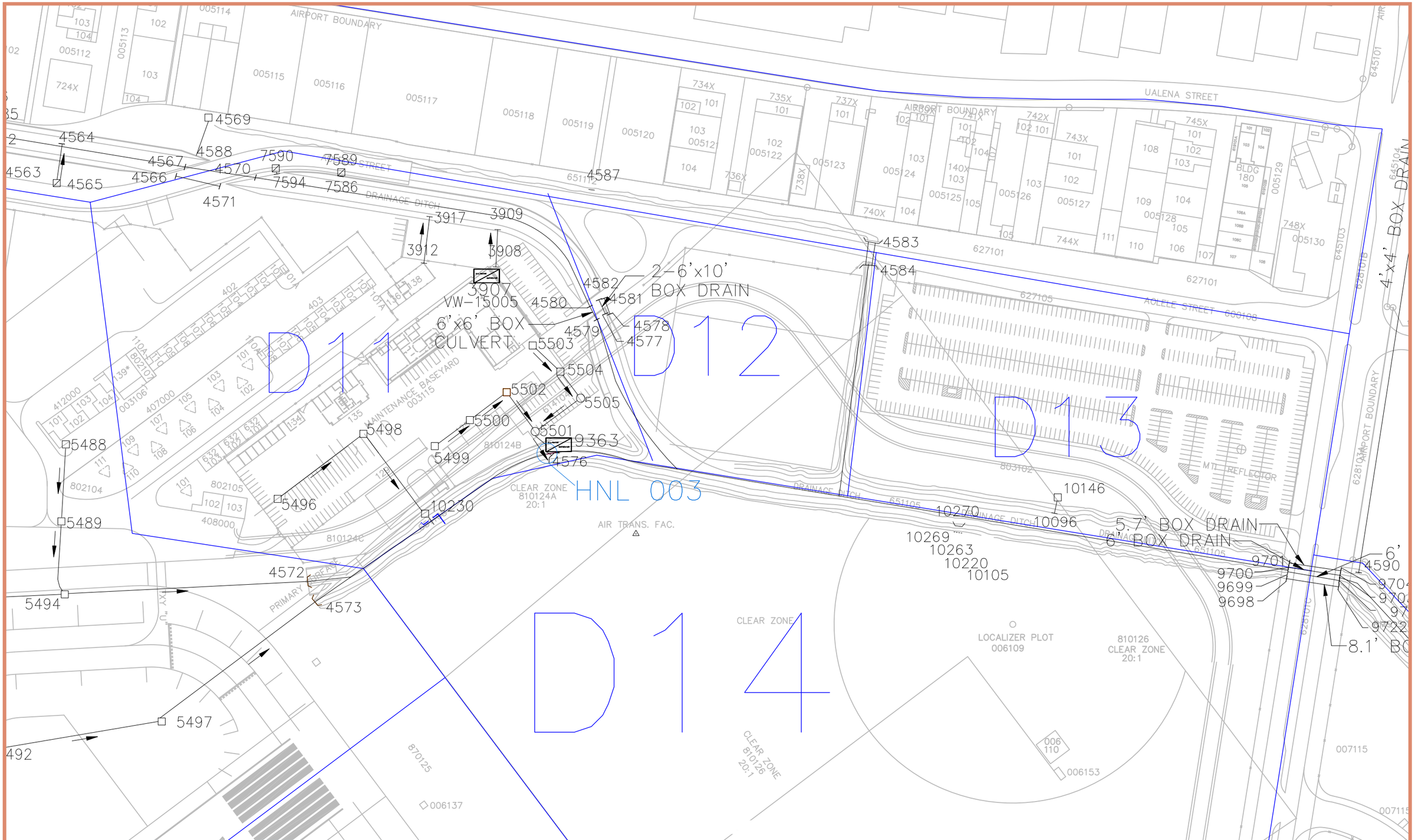

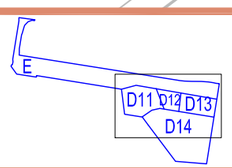

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GRAPHIC SCALE IN FEET

North

HONOLULU INTERNATIONAL AIRPORT

Airports Division

NODES

Date : JUNE 2011

DRAINAGE NETWORK
HONOLULU INTERNATIONAL AIRPORT

EXHIBIT:
D11-
D14, E

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Appendix B

Blank Discharge Monitoring Report Form

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*

DISCHARGE MONITORING REPORT *(DMR)*

Form Approved.

OMB No. 2040-0004

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

NAME State of Hawaii, Department of Transportation, Airports Division

ADDRESS 400 Rodgers Blvd, Suite 700
Honolulu, Hawaii 96819

FACILITY Honolulu International Airport

LOCATION 300 Rodgers Blvd, Suite 12
Honolulu, Hawaii 96819

HI S000005	HNL 002
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD							
	YEAR	MO	DAY		YEAR	MO	DAY
FROM				TO			

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
Flow	SAMPLE MEASUREMENT							gallon			
	PERMIT REQUIREMENT				Report					1/365	Calc
Biochemical Oxygen Demand	SAMPLE MEASUREMENT							mg/L			
	PERMIT REQUIREMENT				Report					1/365	CP
Chemical Oxygen Demand	SAMPLE MEASUREMENT							mg/L			
	PERMIT REQUIREMENT				Report					1/365	CP
Total Suspended Solids	SAMPLE MEASUREMENT							mg/L			
	PERMIT REQUIREMENT				20 (wet) / 10 (dry)					1/365	CP
Total Phosphorus	SAMPLE MEASUREMENT							mg/L			
	PERMIT REQUIREMENT				50 (wet) / 30 (dry)					1/365	CP
Total Nitrogen	SAMPLE MEASUREMENT							mg/L			
	PERMIT REQUIREMENT				250 (wet) / 180 (dry)					1/365	CP
Nitrate + Nitrite Nitrogen	SAMPLE MEASUREMENT							mg/L			
	PERMIT REQUIREMENT				70 (wet) / 30 (dry)					1/365	CP

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER	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.		TELEPHONE		DATE		
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

Form Approved.

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PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD							
	YEAR	MO	DAY		YEAR	MO	DAY
FROM				TO			

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
Oil and Grease	SAMPLE MEASUREMENT							mg/L			
	PERMIT REQUIREMENT						15			1/365	GR
pH	SAMPLE MEASUREMENT							unit			
	PERMIT REQUIREMENT				5.5		8.0			1/365	GR
Turbidity	SAMPLE MEASUREMENT							NTU			
	PERMIT REQUIREMENT				5 (wet) / 2 (dry)					1/365	GR
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

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HI S000005	HNL 003
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD							
	YEAR	MO	DAY		YEAR	MO	DAY
FROM				TO			

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
Flow	SAMPLE MEASUREMENT							gallon			
	PERMIT REQUIREMENT				Report					1/365	Calc
Biochemical Oxygen Demand	SAMPLE MEASUREMENT							mg/L			
	PERMIT REQUIREMENT				Report					1/365	CP
Chemical Oxygen Demand	SAMPLE MEASUREMENT							mg/L			
	PERMIT REQUIREMENT				Report					1/365	CP
Total Suspended Solids	SAMPLE MEASUREMENT							mg/L			
	PERMIT REQUIREMENT				20 (wet) / 10 (dry)					1/365	CP
Total Phosphorus	SAMPLE MEASUREMENT							mg/L			
	PERMIT REQUIREMENT				50 (wet) / 30 (dry)					1/365	CP
Total Nitrogen	SAMPLE MEASUREMENT							mg/L			
	PERMIT REQUIREMENT				250 (wet) / 180 (dry)					1/365	CP
Nitrate + Nitrite Nitrogen	SAMPLE MEASUREMENT							mg/L			
	PERMIT REQUIREMENT				70 (wet) / 30 (dry)					1/365	CP

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HI R80B333	SD-1
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD							
	YEAR	MO	DAY		YEAR	MO	DAY
FROM	2009	01	01	TO	2009	12	31

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
Oil and Grease	SAMPLE MEASUREMENT							mg/L			
	PERMIT REQUIREMENT						15			1/365	GR
pH	SAMPLE MEASUREMENT							unit			
	PERMIT REQUIREMENT				5.5		8.0			1/365	GR
Ammonia Nitrogen	SAMPLE MEASUREMENT							µg/L			
	PERMIT REQUIREMENT				Report					1/365	CP
Turbidity	SAMPLE MEASUREMENT							NTU			
	PERMIT REQUIREMENT				5 (wet) / 2 (dry)					1/365	GR
Dissolved Oxygen	SAMPLE MEASUREMENT							Mg/L			
	PERMIT REQUIREMENT				Report					1/365	GR
Oxygen Saturation	SAMPLE MEASUREMENT							%			
	PERMIT REQUIREMENT				80%					1/365	GR
Temperature	SAMPLE MEASUREMENT							°C			
	PERMIT REQUIREMENT				± 1°C					1/365	GR

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DISCHARGE MONITORING REPORT *(DMR)*

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HI S000005	HNL 003
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD							
	YEAR	MO	DAY		YEAR	MO	DAY
FROM				TO			

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
Salinity / Conductivity	SAMPLE MEASUREMENT							ppt / µmhos/cm			
	PERMIT REQUIREMENT						300			1/365	GR
Aluminum	SAMPLE MEASUREMENT							µg/L			
	PERMIT REQUIREMENT						750			1/365	CP
Cadmium	SAMPLE MEASUREMENT							µg/L			
	PERMIT REQUIREMENT						3+			1/365	CP
Chromium (VI)	SAMPLE MEASUREMENT							µg/L			
	PERMIT REQUIREMENT						16			1/365	CP
Copper	SAMPLE MEASUREMENT							µg/L			
	PERMIT REQUIREMENT						6+			1/365	CP
Lead	SAMPLE MEASUREMENT							µg/L			
	PERMIT REQUIREMENT						29+			1/365	CP
Nickel	SAMPLE MEASUREMENT							µg/L			
	PERMIT REQUIREMENT						5+			1/365	CP

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	YEAR	MO	DAY		YEAR	MO	DAY
FROM	2009	01	01	TO	2009	12	31

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
Silver	SAMPLE MEASUREMENT							µg/L			
	PERMIT REQUIREMENT						1+			1/365	CP
Zinc	SAMPLE MEASUREMENT							µg/L			
	PERMIT REQUIREMENT						22+			1/365	CP
Benzene	SAMPLE MEASUREMENT							µg/L			
	PERMIT REQUIREMENT						1800			1/365	CP
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
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Appendix C

Sample Field Documentation Template

Estimated Flow Rate Calculations and Field Parameters

1. Name of Sampler:_____
2. Date:_____
3. Duration of Storm:_____
4. Time Storm Began:_____
5. Magnitude:_____ inches
6. Date of Last Rain Event Greater than 0.1 inches:_____ (days)
7. Sample ID Number: _____
8. Water Quality (appearance, odor, etc.):_____
9. pH: _____
10. Temperature: _____ °C
11. Dissolved Oxygen: _____
12. Flow Rate: _____ (gallons per minute - gpm)

<u>CALCULATION OF DISCHARGE FLOW RATE</u>

$$Flow\ Rate\ (gpm) = \frac{Volume\ of\ Containter\ (liters)}{Time\ to\ Fill\ (\text{seconds})} \times \frac{60\ sec}{min} \times \frac{1\ gal}{3.78541178\ liters}$$

Example: *It took 5 seconds to fill up the 1L amber.*

$$Flow\ Rate\ (gpm) = \frac{1\ liter}{5\ sec} \times \frac{60\ sec}{min} \times \frac{1\ gal}{3.78541178\ liters} = 3.17\ GPM$$