ATTACHMENT D

Accident Prevention Plan/ Activity Hazard Analysis

Kawaiele and Nohili Pump Stations

Pacific Missile Range Facility

Kauai, Hawaii

Agribusiness Development Corp.

State of Hawaii

235 South Beretania Street, Room 205

Honolulu, HI 96813

ATTACHMENTS

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ATTACHMENT 1

EMPLOYEE SIGNOFF FORM

The ADC project employees and subcontractors listed below have been provided with a copy of this APP, have read and understood it, and agree to abide by its provisions.			
Project Name:		**Contract Number:** N62478-26-T-2424	
EMPLOYEE NAME (Please print)	**EMPLOYEE SIGNATURE**	**COMPANY**	**DATE**

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ATTACHMENT 2

DAILY HEALTH AND SAFETY TAILGATE MEETING FORM	
Site Health and Safety Officer Conducting Meeting :	
Date :	**Weather:**
Personnel In Attendance :	
Meeting Minutes (Brief description of topics, special concerns and sites discussed):	
Signature of Attendees' :	
"THE BEST JOB IS ONE DONE SAFELY! "	

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ATTACHMENT 3

CONTRACTOR SIGNIFICANT INCIDENT REPORT

☐ Initial Report

☐ Follow-up Report

☐ Final Report

Contractor Significant Incident Report (CSIR)

1. General Information

Contracting Activity/ROICC Office:

Accident Classification:

☐ Injury ☐ Fatality ☐ Environment ☐ Procedural Issues ☐ Lessons Learned

☐ Illness ☐ Property Damage ☐ Other_____

Involving:

☐ Confined Space ☐ Equip/Mrt Ver/Mat Handling (Heavy Construction Equip.) ☐ Hazardous Material

☐ Crane and Rigging ☐ Equip/Mrt Ver/Mat Handling (Material Handling) ☐ Trenching/Excavation

☐ Diving ☐ Equip/Mrt Ver/Mat Handling (Man-Lift/Elevated Platform) ☐ Waterfront/Marine

☐ Demolition/Renovation ☐ Fall from Ladder ☐ Fall from Scaffold ☐ Other_____

☐ Electrical ☐ Fall from Roof ☐ Fire

2. Personal Information

Name (Last, First, MI):	**Age:**	**Sex:**
Job Title/Description:	**Employed By:**	
Supervisor Name (Last, First, MI) & Title:	**Was the person trained to perform this activity/task?** ☐ **Yes** ☐ **No**	
What type of training was received (OJT, classroom, etc)?	**Date of the most recent formal training and topics discussed?**	

3. Witness Information

Witness #1: Name (Last, First, MI):	**Job Title/Description:**
Employed By:	**Supervisor Name (Last, First, MI):**
Witness #2: Name (Last, First, MI):	**Job Title/Description:**
Employed By:	**Supervisor Name (Last, First, MI):**

Additional Witnesses: ☐ **Yes** ☐ **No**

(List any additional witnesses on a separate sheet and attach.)

4. Contract Information

Type of Contract:

☐ A/E ☐ BOS ☐ CLEAN ☐ Construction ☐ Design Build ☐ FSCC ☐ FSSC

☐ JOC ☐ RAC ☐ Service ☐ Other_____

Contract Number & Title:	**Industrial Group & Industrial Type:**
Prime Contractor Name/Address/Phone & Fax No:	**Sub Contractor Name/Address/Phone & FAX No:**
Safety Manager (Last, First, MI):	**Safety Manager (Last, First, MI):**
Insurance Carrier:	**Insurance Carrier:**

5. Accident Description

Date of Accident:	**Time of Accident:**	**Exact Location of Accident:**

Describe the accident in detail in your words: ***(Use the back of page if you need additional space)***

Direct Cause(s) of Accident:

Indirect Cause(s) of Accident:

Action(s) taken to prevent re-occurrence or provide on-going corrective actions:

Corrective Action Beginning Date:	**Anticipated Completion Date:**

Personal Protective Equipment:

☐ Available and used ☐ Available and not used ☐ Not Required

☐ Not related to Mishap ☐ Wrong PPE for job

List PPE Used:

Type of Construction Equipment (Make, Model, Serial #, VIN#) Involved:

Was Hazardous Material Spilled/Released? ☐ **Yes** ☐ **No**

Please List Hazardous Material(s) Involved:

Who provided first aid or cleanup of mishap site?

Any blood-borne pathogen exposure, other than EMTs? ☐ **Yes** ☐ **No**

Who?

List OSHA and EM-385-1-1 standards that were violated:

Was site secured and witness statements taken immediately? ☐ **Yes** ☐ **No**

By Whom?

6. Injury Illness/Fatality Information

Severity of Injury/Illness:

- ☐ Fatality
- ☐ Lost Workday Case Involving Days Away From Work
- ☐ Temporary Disabillity
- ☐ Recordable Workday Case Involving Restricted Duty
- ☐ Permanent Total Disability
- ☐ Other Recordable Case
- ☐ Recordable First Aid Case
- ☐ Permanent Partial Disability
- ☐ Non-Recordable Case
- ☐ No Injury

Estimated Days Lost:	Estimated Days Hospitalized:	Estimated Days Restricted Duty:

List Primary Body Part Affected:	List Other Body Part(s) Affected:

Nature of Injury/Illness for Primary Body Part (Examples: Amputation, Burn, Hernia):

Type of Accident (Examples: Fall same level, Lifting, Bitten, Exerted):

Source of Accident (Examples: Crane, Carbon Monoxide, Ladder, Welding Equipment):

7. Causal Factors *(Explain answers on supplementary sheet)*

☐ Design – Design of facility, workplace, or equipment was a factor?	☐ Yes ☐ No
☐ Inspection/Maintenance – Inspection & Maintenance procedures were a factor?	☐ Yes ☐ No
☐ Persons Physical Condition – In your opinion, the physical condition of the person was a factor?	☐ Yes ☐ No
☐ Operation Procedures – Operating procedures were a factor?	☐ Yes ☐ No
☐ Job Practices – One or more job safety/health practices not being followed when the accident occurred contributed to the accident?	☐ Yes ☐ No
☐ Human Factors – One or more human factors, such as a person's size or strength contributed to the accident?	☐ Yes ☐ No
☐ Environmental Factors – Heat, cold, dust, sun, glare, etc., contributed to the accident?	☐ Yes ☐ No
☐ Chemical and Physical Agent Factors – Exposure to chemical agents, such as dust, fumes, mist, vapors, or physical agents such as noise, radiation, etc., contributed to the accident?	☐ Yes ☐ No
☐ Office Factors – Office setting such as lifting office furniture, carrying, stooping, contributed to the accident?	☐ Yes ☐ No
☐ Support Factors – Inappropriate tools/resources were provided to perform the task?	☐ Yes ☐ No
☐ PPE – Improper selection, use or maintenance of PPE contributed to the accident?	☐ Yes ☐ No
☐ Drugs/Alcohol – In your opinion, were drugs or alcohol a factor?	☐ Yes ☐ No
☐ Job Hazard Analysis – The lack of an adequate (IAW-EM-385-1-1 Sec 01.A) activity hazard analysis was a contributing factor.	☐ Yes ☐ No
☐ Job Hazard Analysis – JHA was not site specific and/or did not address the type of work/operations performed when the mishap occurred.	☐ Yes ☐ No
☐ Management – A lack of adequate supervision contributed to the accident.	☐ Yes ☐ No
☐ Management – Inadequate information was provided at pre con meeting.	☐ Yes ☐ No

8. OSHA Information			
Date OSHA was Notified:	**Date(s) of Investigation:**	**Date of citation:** *(Attach Copy)*	**Dollar amount of Penalties:**

9. Report Preparer	
Name (Last, First, MI):	**Date of Report:**
Title: **Employer:** **Phone #:**	**Signature:**

CONTRACTOR SIGNIFICANT INCIDENT REPORT (CSIR) INSTRUCTIONS

Complete Sections Appropriate to Incident (Rev. 06/02).

NOTE: THE ATTACHED CSIR FORM IS TO BE USED BY CONTRACTORS TO RECORD THE RESULTS OF THEIR ACCIDENT/INCIDENTS INVESTIGATIONS AND SHALL BE PROVIDED TO THE CONTRACTING OFFICER WITHIN THE REQUIRED TIMEFRAMES.

GENERAL. Complete a separate report for each person who was injured in the accident. A report needs to be completed for all OSHA recordable accidents, property damage in excess of $2000.00 (This amount is for record purposes only. GOV is not required to enter property damage reports into FAIR database if it is less than $10,000.00.), WHE accidents, or near miss/high visibility mishaps.
Please type or print legibly. Appropriate items shall be marked with an "X" in box(es), non-applicable sections shall be marked "N/A". If additional space is needed, provide the information on a separate sheet of paper and attach to the completed form.

Mark the report:
INITIAL – If this form is being used as initial notification of a Fatality or High Visibility Mishap. The initial form is due within 4 hours of a serious accident. A form marked 'Follow-up' or 'Final' is required within 5 days.
FOLLOW-UP – If you are providing additional information on a report previously submitted. **FINAL** – If you are providing a completed report and expect no changes.

SECTION 1 – GENERAL INFORMATION

CONTRACTING ACTIVITY/ROICC OFFICE - Enter the name and address of the Contracting Office administering the contract under which the mishap took place (e.g. ROICC MCBH, ROICC NORFOLK, PWC GUAM, etc.).

ACCIDENT CLASSIFICATION - INJURY/ILLNESS/FATALITY/PROPERTY DAMAGE/-PROCEDURAL ISSUES/-ENVIRONMENTAL/LESSONS LEARNED/OTHER – Mark the appropriate block(s) if the incident resulted in any of these conditions.

INVOLVING - If the mishap involved any of the conditions listed under "Involving" mark the appropriate box(es). Specific questions associated with each of these conditions are available from the Contracting Officer to assist you in your investigation. When these questions are used they shall be attached as part of this report.

SECTION 2 - PERSONAL INFORMATION

NAME - Enter last name, first name, middle initial of person involved. **AGE** - Enter age.
SEX - Enter M for Male and F for Female.
JOB TITLE/DESCRIPTION - Enter the job title/description assigned to the injured person (e.g. carpenter, laborer, surveyor, etc.). **EMPLOYED BY** - Enter employment company name of the person involved.
SUPERVISOR'S NAME & TITLE - Enter name and title of the immediate supervisor.
WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK? - For the purpose of this section "trained" means the person has been provided the necessary information (either formal and/or on-the-job (OJT) training) to competently perform the activity/task in a safe and healthful manner.
TYPE OF TRAINING - Indicate the specific type of training (classroom or on-the-job) that the injured person received before the accident happened.
DATE OF MOST RECENT FORMAL TRAINING/TOPICS DISCUSSED - Enter the month, day, and year of the last *formal* training completed that covered the activity/task being performed at the time of the accident. List topics that were discussed at the training identified above.

SECTION 3 - WITNESS INFORMATION

The following applies to Witness #1 and Witness #2:
WITNESS NAME - Enter last name, first name, middle initial of the witness.
JOB DESCRIPTION/TITLE - Enter the job title/description assigned to the witness (e.g. carpenter, laborer, surveyor, etc.). **EMPLOYED BY** - Enter the name of the employment company of the witness.
SUPERVISORS NAME - Enter name of immediate supervisor of the witness.
ADDITIONAL WITNESSES - Provide same information, as above, for each witnesses. Use additional pages if necessary.

SECTION 4 - CONTRACTOR INFORMATION

TYPE OF CONTRACT - Mark appropriate box. A/E means architect/engineer. If "OTHER" is marked, specify type of contract on line provided.
CONTRACT NUMBER/TITLE - Enter complete contract number and tile of prime contract (e.g. N62477-85-C-0100, 184 Pearl City Hsg. Revitalization).
CONSTRUCTION INDUSTRIAL GROUP AND INDUSTRIAL TYPE – This is the type of construction that will be done at this project.

1. First, you must choose the Industrial Group. You have 4 choices to choose from: (**NOTE** ! Review of the Industrial Types below and knowing what the projects scope of work is will assist you in deciding what the Industrial Group should be.)

a. Buildings
b. Heavy Industrial
c. Infrastructure
d. Light Industrial

2. Once you have chosen the Industrial Group, you now select the Industrial Type. You have multiple choices under each Group, chose the one you feel fits the project most closely because on most projects there won't be an exact match:

a. Buildings:
(1) Communications Ctr.
(2) Dormitory/Hotel
(3) High-rise Office
(4) Hospital
(5) Housing
(6) Laboratory
(7) Low-rise Office
(8) Maintenance Facility
(9) Parking Garage
(10) Physical Fitness Ctr.
(11) Restaurant/Nightclub
(12) School
(13) Warehouse

b. Heavy Industrial:
(1) Chemical Mfg.
(2) Electrical (Generating)
(3) Environmental
(4) Metals Refining/Processing
(5) Mining
(6) Natural Gas Processing
(7) Oil Exploration/Production
(8) Oil Refining
(9) Pulp and Paper

c. Infrastructure:
(1) Airport
(2) Electrical Distribution
(3) Flood Control
(4) Highway
(5) Marine Facilities
(6) Navigation
(7) Rail
(8) Tunneling
(9) Water/Wastewater

d. Light Industrial:
(1) Automotive Assembly/Mfg.
(2) Consumer Products Mfg.
(3) Foods
(4) Microelectronics Mfg.
(5) Office Products Mfg.
(6) Pharmaceuticals Mfg.

CONTRACTOR'S NAME/ADDRESS/PHONE NUMBER

(1) PRIME - Enter the exact name (title of firm), address, phone and fax numbers of the prime contractor.
(2) SUBCONTRACTOR - Enter the exact name, address, phone and fax numbers of any subcontractor involved in the accident.

SAFETY MANAGER'S NAME

(1) PRIME - Enter the name of the prime contractor safety manager.
(2) SUBCONTRACTOR - Enter the name of the subcontractors safety manager.

INSURANCE CARRIER

(1) PRIME - Enter the exact name/title of the prime's insurance company. Policy number not required.
(2) SUBCONTRACTOR - Enter the exact name of the subcontractor's insurance company. Policy number not required.

SECTION 5 - ACCIDENT DESCRIPTION

DATE OF ACCIDENT - Enter the month, day, and year of accident.
TIME OF ACCIDENT - Enter the local time of accident in military time. Example: 14:30 hrs (not 2:30 p.m.).
EXACT LOCATION OF ACCIDENT - Enter facts needed to locate the accident scene (installation/project name, building/room number, street, direction and distance from closest landmark, etc.).
DESCRIBE THE ACCIDENT IN DETAIL. Fully describe the accident in the space provided. If property damage involved, give estimated dollar amount of damage and/or repair costs involved. If additional space is needed continue on a separate sheet and attach to this report. Give the sequence of events that describe what happened leading up to and including the accident. Fully identify personnel and equipment involved and their role(s) in the accident. Ensure that relationships between personnel and equipment are clearly specified. Ensure questions below regarding direct cause(s), indirect cause(s), and actions taken are answered. **NOTE!** Review questions in Section 7 below before completing.
DIRECT CAUSE(S) - The direct cause is that single factor which most directly lead to the accident. See examples below.
INDIRECT CAUSE(S) - Indirect cause are those factors, which contributed to, but did not directly initiate the occurrence of the accident.

Examples for Direct and Indirect Cause:

1. Employee was dismantling scaffold and fell 12 feet from unguarded opening.
Direct cause: Failure to provide fall protection at elevation

Indirect causes: Failure to enforce safety requirements: improper training/motivation of employee (possibility that employee was not knowledgeable of fall protection requirements or was lax in his attitude toward safety); failure to ensure provision of positive fall protection whenever elevated; failure to address fall protection during scaffold dismantling in phase hazard analysis.

2. Private citizen had stopped his vehicle at intersection for red light when vehicle was struck in rear by contractor vehicle. (note contractor vehicles was in proper safe working condition.)
Direct cause: Failure of contractor driver to maintain control of and stop contractor vehicle within safe distance. *Indirect cause:* Failure of employee to pay attention to driving (defensive driving).

ACTION(S) TAKEN TO PREVENT RE-OCCURRENCE OR PROVIDE ON-GOING CORRECTIVE ACTIONS. Fully describe all the actions taken, anticipated, and recommended to eliminate the cause(s) and prevent reoccurrence of similar accidents/illnesses. Continue on back or additional sheets of paper if necessary to fully explain and attach to the complete report form.
CORRECTIVE ACTION DATES -
(1) Beginning - Enter the date when the corrective action(s) identified above will begin.
(2) Anticipated Completion - Enter the date when the corrective action(s) identified above will be completed.
PERSONAL PROTECTIVE EQUIPMENT (PPE) - Mark appropriate box(es) and list PPE which was being used by the injured person at the time of the accident (e.g. protective clothing, shoes, glasses, goggles, respirator, safety belt, harness, etc.)
TYPE OF CONTRACTOR EQUIPMENT - Enter the Serial Number, Model Number and specific type of equipment involved in the mishap (e.g. dump truck (off highway), crane (rubber tire), pump truck (concrete), etc.).
WAS HAZARDOUS MATERIAL SPILLED/RELEASED? - Mark appropriate block and list name(s) of any reportable quantities of hazardous materials spilled/released during the mishap.
WHO PROVIDED FIRST AID OR CLEAN-UP OF MISHAP SITE? - List name(s) of individual(s) and employer, if known.
ANY BLOOD-BORNE PATHOGEN EXPOSURE, OTHER THAN EMT? - Mark appropriate block and list name(s) of individual(s) and employer, if known.
LIST OSHA AND/OR EM 385-1-1 STANDARDS THAT WERE VIOLATED. - Self explanatory.
WAS SITE SECURED AND WITNESS STATEMENT TAKEN IMMEDIATELY? - Mark appropriate block and list by whom.

SECTION 6 - INJURY/ILLNESS/FATALITY INFORMATION

SERVERITY OF INJURY/ILLNESS – Mark appropriate box.
ESTIMATED DAYS LOST - Enter the estimated number of workdays the person will lose from work. Update when final data is known.
ESTIMATED DAYS HOSPITALIZED - Enter the estimated number of workdays the person will be hospitalized. Update when final data is known.
ESTIMATED DAYS RESTRICTED DUTY - Enter the estimated number of workdays the person, as a result of the accident, will not be able to perform all of their regular duties. Update when final data is known.
BODY PART(S) AFFECTED - Enter the most appropriate primary and when applicable, secondary, etc. body part(s) affected (e.g. arm: wrist: abdomen: single eye; jaw : both elbows: second finger: great toe: collar bone: kidney, etc.).
NATURE OF INJURY/ILLNESS FOR PRIMARY BODY PART - Enter the most appropriate nature of injury/illness (e.g. amputation, back strain, dislocation, laceration, strain, asbestosis, food poisoning, heart conditions, etc.).
TYPE AND SOURCE OF INJURY/ILLNESS - Type and Source Codes are used to describe what caused the incident.
(1) TYPE Code stands for an "Action" (Example: Worker, installing conduit, lost his balance and fell five feet from a ladder. Type Code: Fell different levels".) Select the most appropriate Type of injury from the list below:

TYPE OF INJURY/ILLNESS

STRUCK BY/AGAINST	CONTACTED CONTACTED WITH (INJURED PERSON MOVING) CONTACTED BY (OBJECT WAS MOVING)
FELL, SLIPPED, TRIPPED SAME LEVEL/DIFFERENT LEVEL/NO FALL	EXERTED LIFTED, STRAINED BY (SINGLE ACTION) STRESSED BY (REPEATED ACTION)
CAUGHT ON/IN/BETWEEN	EXPOSED INHALED/INGESTED/ABSORBED/EXPOSED TO
PUNCTURED, LACERATED PUNCTURED BY/CUT BY/STUNG BY/BITTEN BY	TRAVELING IN

(2) SOURCE Code stands for an "object or substance." (Example: Worker, installing conduit, lost his balance and fell five feet from a ladder. Source Code: "Ladder".) Select the most appropriate Source of injury from the list below:

SOURCE OF INJURY/ILLNESS

BUILDING OR WORKING AREA WALKING/WORKING AREA STAIRS/STEPS LADDER FURNITURE BOILER/PRESSURE VESSEL EQUIPMENT LAYOUT WINDOWS/DOORS ELECTRICITY	DUST, VAPOR, ETC. DUST (SILICA, COAT, ETC.) FIBERS ASBESTOS GASES CARBON MONOXIDE MIST, STEAM, VAPOR, FUME WELDING FUMES PARTICLES (UNIDENTIFIED)

ENVIRONMENT CONDITION TEMPERATURE EXTREME (INDOOR) WEATHER (ICE, RAIN, HEAT, ETC.) **FIRE, FLAME, SMOTE (NOT TABACCO)** NOISE RADIATION LIGHT VENTILATION TOBACCO SMOKE STRESS (EMOTIONAL) CONFINED SPACE	CHEMICAL, PLASTIC, ETC. DRY CHEMICAL - CORROSIVE DRY CHEMICAL - TOXIC DRY CHEMICAL - EXPLOSIVE DRY CHEMICAL - FLAMMABLE LIQUID CHEMICAL - CORROSIVE LIQUID CHEMICAL - TOXIC LIQUID CHEMICAL - EXPLOSIVE LIQUID CHEMICAL - FLAMMABLE PLASTIC WATER MEDICINE
MACHINE OR TOOL HAND TOOL (POWERED: SAW, GRINDER, ETC.) HAND TOOL (NON POWERED) MECHANCIAL POWER TRANSMISSION APPARATUS GUARD, SHIELD (FIXED, MOVEABLE, INTERLOCK) VIDEO DISPLAY TERMINAL PUMP, COMPRESSOR, AIR PRESSURE TOOL HEATING EQUIPMENT WELDING EQUIPMENT	INANIMATE OBJECT BOX, BARREL, ETC. PAPER METAL ITEM, MINERAL NEEDLE GLASS SCRAP, TRASH, WOOD FOOD CLOTHING, APPAREL, SHOES
MACHINE OR TOOL HAND TOOL (POWERED: SAW, GRINDER, ETC.) HAND TOOL (NON POWERED) MECHANCIAL POWER TRANSMISSION APPARATUS GUARD, SHIELD (FIXED, MOVEABLE, INTERLOCK) VIDEO DISPLAY TERMINAL PUMP, COMPRESSOR, AIR PRESSURE TOOL HEATING EQUIPMENT WELDING EQUIPMENT	INANIMATE OBJECT BOX, BARREL, ETC. PAPER METAL ITEM, MINERAL NEEDLE GLASS SCRAP, TRASH, WOOD FOOD CLOTHING, APPAREL, SHOES
VEHICLE AS DRIVER OF PRIVATELY OWNED, RENTAL VEH. AS PASSENGER OF PRIVATELY OWNED, RENTAL VEH. DRIVER OF GOVERNMENT VEHICLE PASSENGER OF GOVERNMENT VEHICLE COMMON CARRIER (AIRLINE, BUS, ETC.) AIRCRAFT (NOT COMMERCIAL) BOAT, SHIP, BARGE	ANIMATE OBJECT DOG OTHER ANIMAL PLANT INSECT HUMAN (VIOLENCE) HUMAN (COMMUNICABLE DISEASE) BACTERIA, VIRUS (NOT HUMAN CONTACT)
MATERIAL HANDLING EQUIPMENT EARTHMOVER (TRACTOR, BACKHOE, ETC.) CONVEYOR (FOR MATERIAL AND EQUIPMENT) ELEVATOR, ESCALATOR, PERSONNEL HOIST HOIST, SLING CHAIN, JACK CRANE FORKLIFT HANDTRUCK , DOLLY	PERSONAL PROTECTIVE EQUIPMENT PROTECTIVE CLOTHING, SHOES, GLASSES, GOGGLES RESPIRATOR, MASK DIVING EQUIPMENT SAFETY BELT, HARNESS PARACHUTE

SECTION 7 - CAUSAL FACTORS

Review thoroughly. Answer each question by marking the appropriate block. **NOTE!** If any answer is yes, explain in section 5 above.

(1) **DESIGN** - Did inadequacies associated with the building or work site play a role? Would an improved design or layout of the equipment or facilities reduce the likelihood of similar accidents? Were the tools or other equipment designed and intended for the task at hand?
(2) **INSPECTION/MAINTENANCE** - Did inadequately or improperly maintained equipment, tools, workplace, etc., create or worsen any hazards that contributed to the accident? Would better equipment, facility, work site or work activity inspections have helped avoid the accident?
(3) **PERSONS PHYSICAL CONDITION** - Do you feel that the accident would probably not have occurred if the employee was in "good" physical condition? If the person involved in the accident had been in better physical condition, would the accident have been less severe or avoided altogether? Was overexertion a factor?
(4) **OPERATION PROCEDURES** - Did lack of or inadequacy within established operating procedures contribute to the accident? Did any aspect of the procedures introduce any hazard to, or increase the risk associated with the work process? Would establishment or improvement of operating procedures reduce the likelihood of similar accidents?
(5) **JOB PRACTICES** - Were any of the provision of the Safety and Health Requirements Manual (EM 385-1-1) violated? Was the task being accomplished in a manner which was not in compliance with an established job hazard analysis or activity hazard analysis? Did any established job practice (including EM 385-1-1) fail to adequately address the task or work process? Would better job practices improve the safety of the task?
(6) **HUMAN FACTORS** - Was the person under undue stress (either internal or external to the job)? Did the task tend toward overloading the capabilities of the person: i.e., did the job require tracking and reacting to many external inputs such as displays, alarms, or signals? Did the arrangement of the workplace tend to interfere with efficient task performance? Did the task require reach strengths, endurance, agility, etc., at or beyond the capabilities of the employee? Was the work environment ill-adapted to the person? Did the person need more training, experience, or practice in doing the task? Was the person inadequately rested to perform safely?
(7) **ENVIRONMENTAL FACTORS** - Did any factors such as moisture, humidity, rain, snow, sleet, hail, ice, fog, cold, heat, sun temperature changes, wind, tides, floods, currents, terrain; dust, mud, glare, pressure changes, lighting, etc., play a part in the accident?

(8) **CHEMICAL AND PHYSICAL AGENT FACTORS** - Did exposure to chemical agents (either single shift exposure or long-term exposure such as dusts, fibers, (asbestos, etc.), silica, gases (carbon, monoxide, chlorine, etc.), mists, steam, vapors, fumes, smoke, other particulates, liquid or dry chemicals that are corrosive, toxic, explosive or flammable, by-products of combustion or physical agents such as noise, ionizing radiation, non-ionizing radiation (UV radiation created during welding, etc.) contribute to the accident/incident?
(9) **OFFICE FACTORS** - Did the fact that the accident occurred in an office setting or to an office worker have a bearing on its cause? For example, office workers tend to have less experience and training in performing tasks such as lifting office furniture. Did physical hazards within the office environment contribute to the hazard?
(10) **SUPPORT FACTORS** - Was the person using an improper tool for the job? Was inadequate time available or utilized to safely accomplish the task? Were less than adequate personnel resources (in terms of employee skills, number of workers, and adequate supervision) available to get the job done properly? Was funding available, utilized and adequate to provide proper tools, equipment, personnel, site preparation, etc.
(11) **PERSONAL PROTECTIVE EQUIPMENT** - Did the person fail to use appropriate personal protective equipment (gloves, eye protection, hard-toed shoes, respirator, etc) for the task or environment? Did protective equipment provided or worn fail to provide adequate protection from the hazard(s)? Did lack of or inadequate maintenance of protective gear contribute to the accident?
(12) **DRUGS/ALCOHOL** - Is there any reason to believe the person's mental or physical capabilities, judgment, etc., were impaired or altered by the use of drugs or alcohol? Consider the effects of prescription medicine and over the counter medications as well as illicit drug use. Consider the effect of drug or alcohol induced "hangovers".
(13) **JOB/ACTIVITY HAZARD ANALYSIS** - Was a written Job/Activity Analysis completed for the task being performed at the time of the accident? If one was made, did it address the hazard adequately or does it need to be updated? If none made, will one be made? These may also need to be addressed in the Corrective Actions Taken section. Mark the appropriate box. If one was made, attach a copy of the analysis to the report.
(14) **MANAGEMENT** - Did the lack of supervisor or management support play a part in the mishap? Mark the appropriate box.

SECTION - 8 OSHA INFORMATION - Complete this section if applicable

SECTION 9 - REPORT PREPARER

Providing a completed CSIR to the Contracting Officer is the PRIME CONTRACTOR'S RESPONSIBILITY. Enter the name, date of report, title, employer, phone number and signature of person completing the accident report and provide it to the Contracting Officer, or his representative, responsible for oversight of that contractor activity. **NOTE!** If prepared by other than the Prime Contractor, a person employed by the Prime Contractor must sign that they have reviewed and concur with the report and it's findings (e.g. company owner, project supervisor/foreman, Safety Officer, etc.).

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ATTACHMENT 4

Emergency Contacts

Medical Emergency – 911 Facility Medical Response #: (808) 335-4333 Local Ambulance #: 911	**Local Occupational Physician (Resource)[a]** Name: Michael Kusaka, MD Straub 839 S. Beretania St. Honolulu, Oahu, HI 96813 Phone: (808) 522-4320
Fire/Spill Emergency – 911 Facility Fire Response #: (808) 335-4333 Local Fire Dept #: 911	**ADC Health and Safety and Human Resources Contact** Name: Wendy Gady Phone: (808) 586-0186
Security & Police – 911 Facility Security #: (808) 335-4523 Local Police #: 911	**Site Safety and Health Officer (SSHO)** Name: Archie Yu Cell: (808) 383-5511
Utilities Emergency All Base Utilities: Name: Leland Tottori Deputy Public Works Officer Phone: (808) 335-4213	**O&M Competent Person** Name: Brian Tuzon Cell: (808) 639-1772 Office: (808) 332-8652
ADC Program Manager Name: Wendy Gady Phone: (808) 586-0186	**ADC Kauai Property Manager** Name: Alison Neustein Phone: (808) 336-1905

Facility Contact Name : Captain Bruce Hay PMRF Public Works Department Phone : (808) 335-4213	**Worker's Compensation and Auto Claims** Report fatalities AND report vehicular accidents involving pedestrians, motorcycles, or more than two cars to the Program Manager.
Navy Point of Contact Name: Rod Martin Phone: (808) 471-6352 Cell: (808) 639-4763	
Base Information (808) 335-4111	**Evacuation Assembly Area(s):** PMRF Main gate along Nohili Road.
Facility/Site Evacuation Route(s): Proceed along Nohili Road to PMRF entrance along Hwy 50.	
Hospital Name/Address: Kauai Veterans Memorial Hospital 4643 Waimea Canyon Road Waimea, Kauai, Hawaii	**Hospital Phone #:** (808) 338-9431

[a] Local Occupational Physician is an available resource, the physician is not under contract to ADC.

Destination

Kauai Veterans Memorial Hospital

Directions To Hospital			
Starting From:	**Arriving At:**	**Distance:**	**Approximate Travel Time:**
Pacific Missile Range Facility	4643 Waimea Canyon Rd. Waimea, Kauai, HI	6.5 miles	15 minutes

	Directions	miles
1.	Start out going southeast on Kaumualii Hwy/Hwy 50 towards Lighthouse Rd.	6.2
2.	Turn left onto Waimea Canyon Drive/Hwy 550	0.2
3.	End at 4643 Waimea Canyon Drive	

Hospital Maps:

See pages that follow.


Barking Sands Pmrf
Kaumualii Hwy
Kekaha Airstrip
Kekaha Beach Park
Kekaha
Kekaha Rd
Kiki A Ola
Kikiaola Small Boat Harbor
Waimea
Waimea State Recreation Pier
Kaumualii Hwy
Kokee Rd
Waimea Canyon Dr
Kiko Rd
Kaio Rd
Mana Rd
N Sidewinder Rd
S Sidewinder Rd
Tarter Ln
Alowai Rd
50
550

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ATTACHMENT 5
ACTIVITY HAZARD ANALYSIS FORMS

Activity Hazard Analysis
Kawaiele and Nohili Pump Stations
Pacific Missile Range Facility, Kauai, HI

Activity: ***Maintenance of Canals, Culverts, and Ravines.***	**Date:**
	Project: **Kawaiele and Nohili Pump Stations**
Description of the work: Canals are to be maintained at the prescribed width and depth. Culverts and ravines are to be cleared of excessive debris at all times, especially during periods of heavy rain to prevent water from backing up to the canals and possibly causing the canal walls to collapse.	**Site Supervisor:**
	Site Safety Officer:
	Review for latest use: Before the job is performed.

Work Activity Sequence (Identify the principal steps involved and the sequence of work activities)	**Potential Health and Safety Hazards** (Analyze each principal step for potential hazards)	**Hazard Controls** (Develop specific controls for each potential hazard)
Visually inspect conditions of existing canals, culverts, and ravines for damage, overgrowth of vegetation, and proper hydraulic function.	Elevated work hazards	Access to canals, culverts, and ravines may require elevated work activities on embankments, platforms, and gangways which can constitute a fall hazard. Fall protection systems shall be used to eliminate fall hazards of 6 feet or greater.
	Slip, trip, fall hazards	Personnel shall take precautions when working in areas where slip, trip, and fall hazards exist by watching their footing and being aware of their surroundings at all times. Work areas shall be kept clear of trash, debris, and hand tools that are not in use, and personnel shall inform one another of any significant terrain hazards (e.g., embankments) in the immediate work area. Such hazards shall be marked as necessary with a traffic cone, CAUTION tape, or similar warning to avoid slips, trips, and falls.
Control vegetation, as necessary to maintain proper hydraulic function.	Heavy lifting hazard	Personnel will plan storage and staging of equipment and materials to minimize lifting and carrying distances. Personnel should use their best personal judgment in determining loads that they can lift safely. In general, individuals should not attempt to lift loads of 50 pounds or more without the assistance of another individual or appropriate lifting equipment

Work Activity Sequence (Identify the principal steps involved and the sequence of work activities)	Potential Health and Safety Hazards (Analyze each principal step for potential hazards)	Hazard Controls (Develop specific controls for each potential hazard)
Control vegetation, as necessary to maintain proper hydraulic function. (cont.)	Heavy equipment hazards	Drivers and/or operators of motor vehicles and heavy equipment must have the appropriate qualifications, training, and licensing (as necessary based upon State or local requirements) to drive or operate each specific vehicle or machine. Heavy equipment operators shall be aware of the location of all other site workers while operating the equipment, and site workers shall maintain contact with the operators through verbal communication , line of sight, or other means as appropriate. Drivers of vehicles must take responsibility for ensuring the safety of all passengers and the stability of equipment and materials being hauled or transported. Vehicles and equipment should be inspected by the site safety officer prior to use and periodically during the on-site field activities. Operators should perform daily inspections of their own equipment and machinery and should maintain documentation of these inspections. Vehicles and heavy machinery/equipment should be utilized only for the purpose they were designed and should be operated in accordance with the manufacturer's recommendations and specified limitations.
	Hand/power tool hazards	Hand and power tools shall be used, inspected, and maintained in accordance with the manufacturer's instructions, and recommendations shall be used only for the purpose for which designed. Hand and power tools will be in good repair and with all required safety devices install and properly adjusted: Power tools designed to accommodate guards shall be equipped with such guards. Reciprocating, rotating and moving parts of equipment shall be guarded if exposed to contact by employees or otherwise create a hazard.
	Excavation (canal dredging) hazards	Competent person will have training, experience, and knowledge of soil analysis; use of protective systems; have the ability to detect conditions that could result in cave-ins, failures in protective systems, and other hazards; and have the authority to take prompt corrective measures to eliminate existing and predictable hazards and stop work when required. Prior to digging, the appropriate dig permit must be obtained and all underground utilities clearly identified. Digging within 2 feet or less of a known utility must be performed by hand digging. Accessible areas within the swing radius of the backhoe or excavator shall be barricaded in such a manner as to prevent an employee from

		being struck or crushed by the equipment. All personnel shall don ANSI compliant hardhats and safety glasses to protect the head and eyes from potential airborne debris/objects. Test the soil to find out if it is stable or likely to collapse. Use a protective system to shore, brace, or slope the sides of the trench. Manufacturer's tabulated data and specifications for shoring or benching will be readily available onsite for review. All personnel in the vicinity of the backhoe/excavator should make eye contact with the operator prior to passing through or near equipment operations so as to make the operator aware of their presence. Only one person shall signal the backhoe/excavator operator. This person shall be thoroughly familiar with all of the equipments operation and shall be able to communicate with the equipment operator with the appropriate hand signals.
	Chemical use/application hazards	Roundup™ may be used for vegetation control in accordance with manufacturers' instructions. Employees will read MSDS for vegetation control materials that will be used on site. If airborne hazards are possible from chemical spray application either suspend activity until hazard is abated or evaluate to see if a respirator is needed.

Equipment to be used (List equipment to be used in the work activity)	**Inspection Requirements** (List inspection requirements for the work activity)	**Training Requirements** (List training requirements including hazard communication)
PPE-Level D as specified in Section 4 of APP.	Before each use.	NA
Earth moving equipment (e.g., backhoe,/excavator)	Before each use.	Heavy equipment operator must have the appropriate qualifications, training, and licensing specific to that equipment. Equipment should have safe operating certificate. Competent persons should have training, experience, and knowledge of soil analysis, use of protective systems; have the ability to detect conditions that could result in cave-ins, failures in protective systems, hazardous atmospheres, and other hazards

Equipment to be used (List equipment to be used in the work activity)	**Inspection Requirements** (List inspection requirements for the work activity)	**Training Requirements** (List training requirements including hazard communication)
		including those associated with confined spaces; and have the authority to take prompt corrective measures to eliminate existing and predictable hazards and stop work when required.
Tree/brush trimmers	Before each use (per manufacturer's specification).	NA
Hand/Power Tools	Before each use (per manufacturer's specification)	NA

Activity Hazard Analysis
Kawaiele and Nohili Pump Stations
Pacific Missile Range Facility, Kauai, HI

	PRINT NAME	SIGNATURE	
Supervisor Name:			**Date/Time:**
Safety Officer Name:			**Date/Time:**
Employee Name(s):			**Date/Time:**
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Activity Hazard Analysis
Kawaiele and Nohili Pump Stations
Pacific Missile Range Facility, Kauai, HI

Activity: ***Flood Gates - Operation and Maintenance***	**Date:**
	Project: **Kawaiele and Nohili Pump Stations**
Description of the work: The dry ditch flood gates and flap gates shall be maintained and operational at all times.	**Site Supervisor:**
	Site Safety Officer:
	Review for latest use: Before the job is performed.

Work Activity Sequence (Identify the principal steps involved and the sequence of work activities)	Potential Health and Safety Hazards (Analyze each principal step for potential hazards)	Hazard Controls (Develop specific controls for each potential hazard)
Inspect flood and flap gates for damage and perform basic maintenance for proper operation and function.	Elevated work hazards	Access to existing flood gates may require elevated work activities on embankments, platforms, and gangways which can constitute a fall hazard. Fall protection systems shall be used to eliminate fall hazards of 6 feet or greater.
	Entanglement hazards	Equipment shall not be repaired while it is in operation. Loose or frayed clothing shall not be worn where it can become entangled.
	Hand/power tool hazards	Hand and power tools shall be used, inspected, and maintained in accordance with the manufacturer's instructions and recommendations and shall be used only for the purpose for which designed. Hand and power tools will be in good repair and with all required safety devices install and properly adjusted: Power tools designed to accommodate guards shall be equipped with such guards. Reciprocating, rotating and moving parts of equipment shall be guarded if exposed to contact by employees or otherwise create a hazard.
	Drowning	Use caution when working near steep banks, elevated work areas, and deep or fast water. Where applicable, work in teams of two or more. Assess the need of fall/slip arrest protection (see above) Use flotation device as indicated in Section 4.0.

Equipment to be used (List equipment to be used in the work activity)	**Inspection Requirements** (List inspection requirements for the work activity)	**Training Requirements** (List training requirements including hazard communication)
PPE-Level D as specified in Section 4 of APP.	Before each use.	NA
Hand/Power Tools	Before each use (per manufacturer's specification)	NA

Activity Hazard Analysis
Kawaiele and Nohili Pump Stations
Pacific Missile Range Facility, Kauai, HI

	PRINT NAME	SIGNATURE	
Supervisor Name:			**Date/Time:**
Safety Officer Name:			**Date/Time:**
Employee Name(s):			**Date/Time:**
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Activity Hazard Analysis
Kawaiele and Nohili Pump Stations
Pacific Missile Range Facility, Kauai, HI

Activity: ***Maintenance of Power Poles, Transmission Lines, and Pole Transformers.***	**Date:**
	Project: **Kawaiele and Nohili Pump Stations**
Description of the work: The electrical power lines must be maintained such that there shall be no loss of power to the pump stations. The maintenance work will include pole transformers, guy wires, cross arms, and insulators and any other related items that made the power transmission possible. Specific tasks will include any tree trimming to avoid contact with the power lines. No major repair work is required other than periodic preventive maintenance.	**Site Supervisor:**
	Site Safety Officer:
	Review for latest use: Before the job is performed.

Work Activity Sequence (Identify the principal steps involved and the sequence of work activities)	Potential Health and Safety Hazards (Analyze each principal step for potential hazards)	Hazard Controls (Develop specific controls for each potential hazard)
Visually inspect power poles, transmission lines, and pole transformers	Traffic hazards	All personnel in and around the work area will wear orange safety vests to increase visibility to passing traffic when working in these areas. Personnel shall also exercise caution and be aware of their surroundings at all times.
	Electrical hazards	Workers shall not tamper with electrical wiring and equipment unless qualified to do so. Only qualified personnel may work on energized equipment that is not being controlled by lockout/tagout procedures. All electrical wiring and equipment must be considered energized until lock-out/tag-out testing procedures are implemented. Only authorized personnel may lockout or tagout machines or equipment in order to perform servicing or maintenance on that machine or equipment.
	Slip, trip, fall hazards	Personnel shall take precautions when working in areas where slip, trip, and fall hazards exist by watching their footing and being aware of their surroundings at all times. Work areas shall be kept clear of trash, debris, and hand tools that are not in use, and personnel shall inform one another of any significant terrain hazards (e.g., embankment, potholes) in the immediate work area. Such hazards shall be marked as necessary with a traffic cone, CAUTION tape, or similar warning to avoid slips, trips, and falls.
Control vegetation as necessary to eliminate potential contact with power lines.	Traffic hazards	Orange DOT traffic cones will be placed around the perimeter of the working area in order to direct traffic around the work area. All personnel in and around the work area will wear orange safety vests to increase visibility to passing traffic when working in these areas. Personnel shall also exercise caution and be aware of their surroundings at all times. Work will not be performed in heavy vehicle traffic areas after dark.

Activity Hazard Analysis
Kawaiele and Nohili Pump Stations
Pacific Missile Range Facility, Kauai, HI

Work Activity Sequence (Identify the principal steps involved and the sequence of work activities)	**Potential Health and Safety Hazards** (Analyze each principal step for potential hazards)	**Hazard Controls** (Develop specific controls for each potential hazard)
Control vegetation as necessary to eliminate potential contact with power lines.	Heavy equipment use	Drivers and/or operators of motor vehicles and heavy equipment must have the appropriate qualifications, training, and licensing (as necessary based upon State or local requirements) to drive or operate each specific vehicle or machine. Drivers of vehicles must take responsibility for ensuring the safety of all passengers and the stability of equipment and materials being hauled or transported. Heavy equipment operators shall be aware of the location of all other site workers while operating the equipment, and site workers shall maintain contact with the operators through verbal communication , line of sight, or other means as appropriate. Vehicles and equipment should be inspected by the site safety officer prior to use and periodically during the on-site field activities. Operators should perform daily inspections of their own equipment and machinery and should maintain documentation of these inspections. Vehicles and heavy machinery/equipment should be utilized only for the purpose they were designed and should be operated in accordance with the manufacturer's recommendations and specified limitations.
	Tree/brush pruning hazards	Brush hooks, machetes, limb saws and similar tools used to cut brush and branches should be kept sharp. Always use leather work gloves when using sharp tools. Wear safety glasses when cutting brush to prevent eye injuries. All personnel shall don ANSI-compliant hardhats and safety glasses to protect the head and eyes from potential airborne debris/objects during tree trimming activities. Sharp cutting edges should always be guarded when transporting tools. Always carry cutting tools at your side with the cutting edge away from your body. Machetes should always be kept in sheaths when not in use. Brush hooks, machetes, and hatchets must never be transported in the passenger compartment of vehicles unless they are adequately tied down
	Hand/power tool use	Hand and power tools shall be used, inspected, and maintained in accordance with the manufacturer's instructions and recommendations and shall be used only for the purpose for which designed. Hand and power tools will be in good repair and with all required safety devices installed and properly adjusted; power tools designed to accommodate guards shall be equipped with such guards. Reciprocating, rotating and moving parts of equipment shall be guarded if exposed to contact by employees or otherwise pose a hazard.

Equipment to be used (List equipment to be used in the work activity)	**Inspection Requirements** (List inspection requirements for the work activity)	**Training Requirements** (List training requirements including hazard communication)
PPE-Level D as specified in Section 4 of APP.	Before each use.	NA
Heavy equipment (e.g., man-lift), repairs	Before each use.	Heavy equipment operator must have the appropriate qualifications, training, and licensing specific to that equipment. Equipment should have safe operating certificate. Workers completing work on electrical equipment at height should also be trained in electrical safety and fall protection. Examples of controls would be shutting down the power supplying the area where work will be performed, placing guards to prevent direct contact with the lines if the worker falls while on the man lift, etc.
Tree/brush trimmers	Before each use (per manufacturer's specification).	NA
Hand/Power Tools	Before each use (per manufacturer's specification)	NA

Activity Hazard Analysis
Kawaiele and Nohili Pump Stations
Pacific Missile Range Facility, Kauai, HI

	PRINT NAME	SIGNATURE	
Supervisor Name:			**Date/Time:**
Safety Officer Name:			**Date/Time:**
Employee Name(s):			**Date/Time:**
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Activity Hazard Analysis
Kawaiele and Nohili Pump Stations
Pacific Missile Range Facility, Kauai, HI

Activity: Pump Station Operation and Maintenance	**Date:**
	Project: **Kawaiele and Nohili Pump Stations**
Description of the work: A total of six pumps at two pumping stations operate as necessary to lower the level of water at their respective wet wells to a minimum of -2.0 feet mean sea level (msl). All infrastructure that supports the pumps at the pumping stations shall be maintained.	**Site Supervisor:**
	Site Safety Officer:
	Review for latest use: Before the job is performed.

Work Activity Sequence (Identify the principal steps involved and the sequence of work activities)	Potential Health and Safety Hazards (Analyze each principal step for potential hazards)	Hazard Controls (Develop specific controls for each potential hazard)
Visually inspect all pumps and associated pump station infrastructure for damage and proper function.	Elevated work hazards	Access to existing flood gates and pump stations may require elevated work activities on embankments, platforms, and gangways which can constitute a fall hazard. Fall protection systems shall be used to eliminate fall hazards of 6 feet or greater.
	Slip, trip, fall hazards	Personnel shall take precautions when working in areas where slip, trip, and fall hazards exist by watching their footing and being aware of their surroundings at all times. Work areas shall be kept clear of trash, debris, and hand tools that are not in use; and personnel shall inform one another of any significant terrain hazards (e.g., embankments) in the immediate work area. Such hazards shall be marked as necessary with a traffic cone, CAUTION tape, or similar warning to avoid slips, trips, and falls.
Maintain pumps as necessary to ensure they are operational and functioning as designed.	Entanglement hazards	Equipment shall not be repaired while it is in operation. Loose or frayed clothing shall not be worn where it can become entangled.
	Electrical hazards	Workers shall not tamper with electrical wiring and equipment unless qualified to do so. Only qualified personnel may work on energized equipment that is not being controlled by lockout/tagout procedures. All electrical wiring and equipment must be considered energized until lock-out/tag-out testing procedures are implemented. Only authorized personnel may lockout or tagout machines or equipment in order to perform servicing or maintenance on that machine or equipment.

Activity Hazard Analysis
Kawaiele and Nohili Pump Stations
Pacific Missile Range Facility, Kauai, HI

Work Activity Sequence (Identify the principal steps involved and the sequence of work activities)	**Potential Health and Safety Hazards** (Analyze each principal step for potential hazards)	**Hazard Controls** (Develop specific controls for each potential hazard)
Maintain pumps as necessary to ensure they are operational and functioning as designed.	Hand/power tool hazards	Hand and power tools shall be used, inspected, and maintained in accordance with the manufacturer's instructions, and recommendations shall be used only for the purpose for which designed. Hand and power tools will be maintained in good repair and with all required safety devices installed and properly adjusted; power tools designed to accommodate guards shall be equipped with such guards. Reciprocating, rotating, and moving parts of equipment shall be guarded if exposed to contact by employees or otherwise pose a hazard.
General work area considerations.	Drowning	Use caution when working near steep banks, elevated work areas, and deep or fast-moving water. Where appropriate, work in teams of two or more. Assess the need of fall/slip arrest protection (see above). Use flotation device as indicated in Section 4.0.

Equipment to be used (List equipment to be used in the work activity)	**Inspection Requirements** (List inspection requirements for the work activity)	**Training Requirements** (List training requirements including hazard communication)
PPE-Level D as specified in Section 4 of APP.	Before each use.	NA
Hand/Power Tools	Before each use (per manufacturer's specification)	NA

Activity Hazard Analysis
Kawaiele and Nohili Pump Stations
Pacific Missile Range Facility, Kauai, HI

	PRINT NAME	SIGNATURE	
Supervisor Name:			Date/Time:
Safety Officer Name:			Date/Time:
Employee Name(s):			Date/Time:
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Activity Hazard Analysis
Kawaiele and Nohili Pump Stations
Pacific Missile Range Facility, Kauai, HI

Activity: Access Road Maintenance and Repair	**Date:**
	Project: Kawaiele and Nohili Pump Stations
Description of the work: The access roads are dirt roads except for approximately ¼ mile that is paved. The roads will be maintained and free of major potholes and associated embankments will be maintained and free of vegetation that may hinder driving conditions.	**Site Supervisor:**
	Site Safety Officer:
	Review for latest use: Before the job is performed.

Work Activity Sequence (Identify the principal steps involved and the sequence of work activities)	Potential Health and Safety Hazards (Analyze each principal step for potential hazards)	Hazard Controls (Develop specific controls for each potential hazard)
Visually inspect access roads and associated embankments.	Traffic hazards	All personnel in and around the work area will wear orange safety vests to increase visibility to passing traffic when working in these areas. Personnel shall also exercise caution and be aware of their surroundings at all times.
	Slip, trip, fall hazards	Personnel shall take precautions when working in areas where slip, trip, and fall hazards exist by watching their footing and being aware of their surroundings at all times. Work areas shall be kept clear of trash, debris, and hand tools that are not in use; and personnel shall inform one another of any significant terrain hazards (e.g., embankment, potholes) in the immediate work area. Such hazards shall be marked as necessary with a traffic cone, CAUTION tape, or similar warning to avoid slips, trips, and falls.
Repair potholes, as necessary.	Traffic hazards	Orange DOT traffic cones will be placed around the perimeter of the working area in order to direct traffic around the work area. All personnel in and around the work area will wear orange safety vests to increase visibility to passing traffic when working in these areas. Personnel shall also exercise caution and be aware of their surroundings at all times. Work will not be performed in heavy vehicle traffic areas after dark.
	Heavy lifting hazard	Personnel will plan storage and staging of equipment and materials to minimize lifting and carrying distances. Personnel should use their best personal judgment in determining loads that they can lift safely. In general, individuals should not attempt to lift loads of 50 pounds or more without the assistance of another individual or appropriate lifting equipment

Work Activity Sequence (Identify the principal steps involved and the sequence of work activities)	**Potential Health and Safety Hazards** (Analyze each principal step for potential hazards)	**Hazard Controls** (Develop specific controls for each potential hazard)
Repair potholes, as necessary. (cont.)	Heavy equipment hazards	Drivers and/or operators of motor vehicles and heavy equipment must have the appropriate qualifications, training, and licensing (as necessary based upon State or local requirements) to drive or operate each specific vehicle or machine. Drivers of vehicles must take responsibility for ensuring the safety of all passengers and the stability of equipment and materials being hauled or transported. Heavy equipment operators shall be aware of the location of all other site workers while operating the equipment, and site workers shall maintain contact with the operators through verbal communication , line of sight, or other means as appropriate. Vehicles and equipment should be inspected by the site safety officer prior to use and periodically during the on-site field activities. Operators should perform daily inspections of their own equipment and machinery and should maintain documentation of these inspections. Vehicles and heavy machinery/equipment should be utilized only for the purpose they were designed and should be operated in accordance with the manufacturer's recommendations and specified limitations.
	Hand/power tool hazards	Hand and power tools shall be used, inspected, and maintained in accordance with the manufacturer's instructions, and recommendations shall be used only for the purpose for which designed. Hand and power tools will be in good repair and with all required safety devices install and properly adjusted: Power tools designed to accommodate guards shall be equipped with such guards. Reciprocating, rotating, and moving parts of equipment shall be guarded if exposed to contact by employees or otherwise create a hazard.
Control vegetation, as necessary.	Traffic hazards	Orange DOT traffic cones will be placed around the perimeter of the working area in order to direct traffic around the work area. All personnel in and around the work area will wear orange safety vests to increase visibility to passing traffic when working in these areas. Personnel shall also exercise caution and be aware of their surroundings at all times. Work will not be performed in heavy vehicle traffic areas after dark.
	Tree/brush pruning hazards	Brush hooks, machetes, limb saws, and similar tools used to cut brush and branches should be kept sharp. Always use leather work gloves when using sharp tools. Wear safety glasses when cutting brush to prevent eye injuries. All personnel shall don ANSI compliant hardhats and safety glasses to protect the head and eyes from potential airborne debris/objects during tree trimming activities. Sharp cutting edges should always be guarded when transporting tools. Always carry cutting tools at your side with the cutting edge away from your body. Machetes should always be kept in sheaths when not in use. Brush hooks, machetes, and hatchets must never be transported in the passenger compartment of vehicles unless they are adequately tied down

	Chemical use/application hazards	Roundup™ may be used for vegetation control in accordance with manufacturers' instructions. Employees will read MSDS for vegetation control materials that will be used on site. If airborne hazards are possible from chemical spray application either suspend activity until hazard is abated or evaluate to see if a respirator is needed.

Equipment to be used (List equipment to be used in the work activity)	**Inspection Requirements** (List inspection requirements for the work activity)	**Training Requirements** (List training requirements including hazard communication)
PPE-Level D as specified in Section 4 of APP.	Before each use.	NA
Earth moving equipment (e.g., loader, grader, backhoe	Before each use.	Heavy equipment operator must have the appropriate qualifications, training, and licensing specific to that equipment. Equipment should have safe operating certificate.
Tree/brush trimmers	Before each use (per manufacturer's specification).	NA
Hand/Power Tools	Before each use (per manufacturer's specification)	NA

Activity Hazard Analysis
Kawaiele and Nohili Pump Stations
Pacific Missile Range Facility, Kauai, HI

	PRINT NAME	SIGNATURE	
Supervisor Name:			**Date/Time:**
Safety Officer Name:			**Date/Time:**
Employee Name(s):			**Date/Time:**
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ACTIVITY HAZARD ANALYSIS

U.S. NAVY CONTRACT NO. N62478-26-T-2424

SCOPE OF WORK

DELIVERY ORDER NUMBER

JOB TITLE OPERATION & MAINTENANCE OF DRAINAGE CANAL & PUMPS AT THE PMRF, KEKAHA, KAUAI, HAWAII

EARTHWORK

APPROVED BY:

DATE: September 30, 2013

STEP	ACTIVITY	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
1.	MOBILIZATION EQUIPMENT	INJURY FROM EQUIPMENT EXCAVATOR BACKHOE	ENSURE EQUIPMENT HAVE WORKING BACK-UP ALARMS ENSURE ALL EQUIPMENT CHECKED DAILY BEFORE USE. EQUIPMENT OPERATOR SHALL BE RESPONSIBLE TO CHECK AND COMPLETE INSPECTION REPORTS. REPORTS SHALL BE TURNED IN WEEKLY TO SSHO FOR REVIEW. SET BRAKES AND REMOVE KEYS WHEN EQUIPMENT IS NOT IN USE. USE CHOCKS IF ON INCLINE VERIFY VEHICLES HAVE FIRE EXTINGUISHER, SEAT BELTS, AND ROLL OVER CABS AT END OF WORKDAY, INSTRUCT EQUIPMENT OPERATORS TO PARK EQUIPMENT IN DESIGNATED AREA HEAVY EQUIPMENT OPERATORS SHALL BE AWARE OF THE LOCATION OF ALL OTHER SITE WORKERS WHILE OPERATING THE EQUIPMENT, AND SITE WORKERS SHALL MAINTAIN CONTACT WITH THE OPERATORS THROUGH VERBAL COMMUNICATION, LINE OF SIGHT, OR OTHER MEANS AS APPROPRIATE. DRIVERS OF VEHICLES MUST TAKE RESPONSIBILITY FOR ENSURING THE SAFETY OF ALL PASSENGERS AND THE STABILITY OF EQUIPMENT AND MATERIALS BEING HAULED OR TRANSPORTED. HAND AND POWER TOOLS SHALL BE USED, INSPECTED,

ACTIVITY HAZARD ANALYSIS

U.S. NAVY CONTRACT NO. N62478-26-T-2424

SCOPE OF WORK

DELIVERY ORDER NUMBER

JOB TITLE OPERATION & MAINTENANCE OF DRAINAGE CANAL & PUMPS AT THE PMRF, KEKAHA, KAUAI, HAWAII

EARTHWORK

APPROVED BY:

DATE: September 30, 2013

STEP	ACTIVITY	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
			AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH DESIGNED
		INJURY USING EQUIPMENT	DRIVERS AND/OR OPERATORS OF MOTOR VEHICLES AND HEAVY EQUIPMENT MUST HAVE THE APPROPRIATE QUALIFICATIONS, TRAINING, AND LICENSING TO DRIVE OR OPERATE EACH SPECIFIC VEHICLE OR MACHINE
			OBTAIN SITE AS-BUILT DRAWINGS AND TONING REPORTS BEFORE STARTING ANY EXCAVATION WORK WHEN REQUIRED. ENSURE ALL UTILITY LINE MARKERS ARE CLEARLY VISIBLE
		INJURY SERVICING EQUIPMENT	EQUIPMENT MUST BE TURNED OFF, BRAKES SET BEFORE PERFORMING SERVICING FUNCTIONS
			ENSURE MINIMUM 10 LB. ABC FIRE EXTINGUISHER IS ON HAND WHEN PERFORMING SERVICING OR FUELING
			ENSURE NO SMOKING WITHIN 50 FT FROM FUELING OPERATIONS AREA. NO SMOKING SIGNS SHALL BE POSTED
2.	PERSONNEL PROTECTIVE EQUIPMENT	INJURY TO PERSONNEL	VERIFY THAT ALL WORKERS HAVE REQUIRED PPE'S CHECK FOR HARD HATS, STEEL TOED SHOES, SLEEVED SHIRT AND LONG PANTS

ACTIVITY HAZARD ANALYSIS

U.S. NAVY CONTRACT NO. N62478-26-T-2424

SCOPE OF WORK

DELIVERY ORDER NUMBER

JOB TITLE OPERATION & MAINTENANCE OF DRAINAGE CANAL & PUMPS AT THE PMRF, KEKAHA, KAUAI, HAWAII

EARTHWORK

APPROVED BY:

DATE: September 30, 2013

STEP	ACTIVITY	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
			DURING HEAVY EQUIPMENT OPERATION, CHECK FOR USE OF HEARING PROTECTION PLUGS OR MUFFS FALL PROTECTION SYSTEMS SHALL BE USED TO ELIMINATE FALL HAZARDS OF 6 FEET OR GREATER. PERSONNEL EXPOSED TO ELEVATED WORK HAZARDS MUST COMPLY WITH EM385-1-1 SECTION 21 PERSONNEL SHALL TAKE PRECAUTIONS WHEN WORKING IN AREAS WHERE SLIP, TRIP AND FALL HAZARDS EXIST BY WATCHING THEIR FOOTING AND BEING AWARE OF THEIR SURROUNDINGS AT ALL TIMES WORK AREAS SHALL BE KEPT CLEAR OF TRASH, DEBRIS, AND HAND TOOLS THAT ARE NOT IN USE, AND PERSONNEL SHALL INFORM ONE ANOTHER OF ANY SIGNIFICANT TERRAIN HAZARDS IN THE IMMEDIATE WORK AREA. SUCH HAZARDS SHALL BE MARKED AS NECESSARY WITH A TRAFFIC CONE, CAUTION TAPE, OR SIMILAR WARNING TO AVOID SLIPS, TRIPS, AND FALLS PERSONNEL WILL PLAN STORAGE AND STAGING OF EQUIPMENT AND MATERIALS TO MINIMIZE LIFTING AND CARRYING DISTANCES. PERSONNEL SHOULD USE THEIR BEST PERSONAL JUDGEMENT IN DETERMINING LOADS THAT THEY CAN LIFT SAFELY. IN GENERAL, INDIVIDUALS SHOULD NOT ATTEMPT TO LIFT LOADS OF 50 POUNDS OR MORE WITHOUT THE ASSISTANCE OF ANOTHER INDIVIDUAL OR APPROPRIATE LIFTING

ACTIVITY HAZARD ANALYSIS

U.S. NAVY CONTRACT NO. N62478-26-T-2424

SCOPE OF WORK

DELIVERY ORDER NUMBER

JOB TITLE OPERATION & MAINTENANCE OF DRAINAGE CANAL & PUMPS AT THE PMRF, KEKAHA, KAUAI, HAWAII

EARTHWORK

APPROVED BY:

DATE: September 30, 2013

STEP	ACTIVITY	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
			EQUIPMENT PERSONAL FLOATATION DEVICES WILL BE PROVIDED AND USED DURING CANAL EXCAVATION AND GRUBBING WORK. IN ADDITION, A FLOATION BUOY WITH 90 FEET OF LINE WILL BE AVAILABLE AT CLOSE PROXIMITY OF THE WORK WHEREVER THERE IS A POTENTIAL DROWNING HAZARD.
		INJURY TO VISITORS	CHECK PERIMETER BARRICADE DAILY TO ENSURE NO UNAUTHORIZED VISITORS ENTERS WORK AREA. IF VISITORS ENTER AREA, THEY MUST COMPLY WITH REQUIRED SAFETY PPE'S
3.	EARTHWORK OPERATIONS PERFORMANCE OF WORK (GRUBBING)	INJURY DURING DREDGING	COMPETENT PERSON SHALL DETERMINE THE STABILITY OF THE CANAL SURFACE BEFORE GRUBBING WORK BEGINS COMPETENT PERSON SHALL INSPECT AND APPROVE WORK ACTIVITIES OF GRUBBING AND/OR CANAL CLEARING BEFORE ANY WORK IS PERMITTED.. DAILY SAFETY INSPECTION REPORTS SHALL BE COMPLETED AND TURNED IN WEEKLY TO SSHO ENSURE EXCESS MATERIAL REMOVED TO STOCKPILE AREA WITHIN BARRICADED FENCING AREA USE SPRAYED WATER TO CONTROL DUST HAZARD

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STEP	ACTIVITY	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
			ENSURE PERSONNEL REMAIN CLEAR WHEN DREDGING. USE SPOTTERS WHEN WORKING NEAR UTILITIES OR AROUND SLOPES OR OTHER PERSONNEL ENSURE EQUIPMENT IS SECURELY FOOTED BEFORE ENGAGING EQUIPMENT ACCESSIBLE AREAS WITHIN THE SWING RADIUS OF THE BACKHOE OR EXCAVATOR SHALL BE BARRICADED IN SUCH A MANNER AS TO PREVENT AN EMPLOYEE FROM BEING STRUCK OR CRUSHED BY EQUIPMENT. ALL PERSONNEL SHALL DON ANSI COMPLIANT HARDHATS AND SAFETY GLASSES TO PROTECT THE HEAD AND EYES FROM POTENTIAL AIRBORNE DEBRIS/OBJECTS HIGH VISIBILITY APPAREL WILL BE WORN WHEN PERSONNEL ARE EXPOSED TO VEHICULAR OR EQUIPMENT TRAFFIC THE AREA AROUND THE TOP SLOPE WILL BE CLEARED BEFORE THE EXCAVATING MACHINE TRAVELS ANYWHERE NEAR THE TOP SLOPE. THIS WILL ALLOW THE OPERATOR TO VISUALLY INSPECT THE SOIL CONDITION. EQUIPMENT SUITABLE TO REACH FROM A SAFE CONDITION WILL BE UTILIZED AT ENCOUNTERED SITES DEEMED UNSAFE THE DRAINAGE CANALS THAT THIS CONTRACT REQUIRES CLEANING & DREDGING, WAS BUILT BY THE

STEP	ACTIVITY	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
			SUGAR PLANTATION OVER EIGHTY YEARS AGO. UNTIL THE KEKAHA SUGAR PLANTATION CEASED ITS OPERATIONS TEN YEARS AGO, THEY HAD MAINTAINED THESE CANALS. ALONG THE EDGE OF THE CANAL THERE IS A PATHWAY FOR VEHICLE TO TRAVEL. THIS PATHWAY IS NOW OVERGROWN BUT WITH VEGETATION TRIMMING WILL SERVE AS THE LOCATION FOR HEAVY EQUIPMENT TO OPERATE FROM. ALL EQUIPMENT SELECTED FOR THE AREA OF WORK IS CAPABLE TO OPERATE FROM A SAFE DISTANCE FROM THE TOP EDGE OF THESE CANALS
		INJURY FROM UTILITY LINES	USE HAND EXCAVATION WHEN NEAR UTILITY LINES. CHECK THAT ALL UTILITY LINES ARE CLEARLY MARKED WITH LOCATION AND TYPE OF UTILITY UNDERGROUND PRIOR TO DIGGING, THE APPROPRIATE DIG PERMIT MUST BE OBTAINED AND ALL UNDERGROUND UTILITIES CLEARLY IDENTIFIED. DIGGING WITHIN 2 FEET OR LESS OF A KNOWN UTILITY MUST BE PERFORMED BY HAND DIGGING NO WORK ADJACENT TO OVERHEAD LINES WILL BE PERFORMED UNTIL TOMCO CONDUCTS A SURVEY TO DETERMINE MINIMUM SAFE CLEARANCE. A DESIGNATED MOBILIZATION SPOTTER WILL OVERSEE THE MOBILIZATION OF EQUIPMENT AND IDENTIFY HAZARDS PRIOR TO AND DURING THE MOVEMENT OF

STEP	ACTIVITY	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
			EQUIPMENT. THE MOBILIZATION SPOTTER SHALL ALSO HAVE THE AUTHORITY TO STOP WORK UNTIL THE HAZARDOUS CONDITION IS MITIGATED. ANY OVERHEAD WIRE SHALL BE CONSIDERED ENERGIZED UNLESS THE PERSON OWNING SUCH LINE OR OPERATING OFFICIALS OF THE ELECTRICAL UTILITY SUPPLYING THE LINE CERTIFIES THAT IT IS NOT ENERGIZED AND IT HAS BEEN VISIBLY GROUNDED AND TESTED, OR WHERE INSULATING BARRIERS HAVE BEEN INSTALLED TO PREVENT PHYSICAL CONTACT IN TRANSIT WITH THE BOOM LOWERED AND NO LOAD, THE EQUIPMENT CLEARANCE SHALL COMPLY WITH MINIMUM CLEARANCE FROM ENERGIZED OVERHEAD ELECTRIC LINES, TABLE 11-1 IN SAFETY & HEALTH MANUAL EM 385-1-1
		UNAUTHORIZED ACCESS	ENSURE AREA IS SECURELY BARRICADED TO PREVENT UNAUTHORIZED ACCESS. CHECK BARRICADE FENCE DAILY. REPAIR BREAKS AS SOON AS POSSIBLE COMPETENT PERSON WILL HAVE TRAINING, EXPERIENCE, AND KNOWLEDGE OF ESCAVATION; USE OF PROTECTIVE SYSTEMS; HAVE THE ABILITY TO DETECT CONDITIONS THAT COULD RESULT IN CAVE-INS, FAILURES IN PROTECTIVE SYSTEMS, AND OTHER HAZARDS; AND HAVE THE AUTHORITY TO TAKE PROMPT CORRECTIVE MEASURE TO ELIMINATE

SCOPE OF WORK

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STEP	ACTIVITY	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
			EXISTING AND PREDICTABLE HAZARDS AND STOP WORK WHEN REQUIRED
		INJURY WHEN PLACING IMPORT	WHEN PLACING IMPORTED SOIL ONTO THE SITE, ENSURE THAT WORKERS REMAIN CLEAR OF DUMP TRUCK. USE SPOTTER TO ENSURE AREA IS CLEAR WHEN DUMPING
4.	REMOVAL OF DEBRIS OR UNACCEPTABLE SOIL	INJURY TO DRIVERS ON ROAD	CONFIRM HAUL ROUTE FOR HEAVY TRUCKS EXITING AND ENTERING THE SITE
			CHECK THAT DEBRIS ON TRUCKS WILL NOT FALL OFF
		DRIVING HAZARD WITH SOIL	WHEN SOIL IS MUDDY OR WET, CHECK TRUCKS LEAVING THE SITE FOR MUD ON WHEELS. USE SPRAYED WATER TO REMOVE MUD BEFORE EXITING THE SITE. ENSURE BASE COURSE INSTALLED AT ENTRANCWAY TO PROJECT ON TO CONTROL SOIL OFF TRUCK TIRES
5.	OPERATING EQUIPMENT/MACHINERY ON CANAL DIRT ENBANKMENT AND ROAD	CRUSHING/CONTUSIONS TYPE INJURIES	PRIOR TO COMMENCING ANY DRAINAGE CANAL CLEANING/CLEARING WORK, A COMPLETE EVALUATION OF THE CANAL DIRT EMBANKMENT AND ROAD SHALL BE EVALUATED BY COMPETENT PERSON RICHARD ASAHI TO DETERMINE IF THE CANAL EMBANKMENT AND ROAD IS CAPABLE OF SUPPORTING WITHOUT FAILURE THE WEIGHT OF THE EXCAVATOR AND OTHER MACHINERY SAFELY DURING THE MOVEMENT OF THE EQUIPMENT

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STEP	ACTIVITY	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
			DAILY INSPECTIONS SHALL BE CONDUCTED BY RICHARD ASAHI AND THE EQUIPMENT OPERATOR TO ENSURE THE STABILITY OF CANAL EMBANKMENT AND ROAD
			DURING GRUBBING THERE WILL BE A DEMARCATION OF 1 TO 2 FEET FROM THE EDGE OF THE CANAL AS A GUIDE FOR THE EQUIPMENT. EACH EQUIPMENT WILL BE ASSIGNED A SPOTTER WHO WILL HELP MONITOR THE EQUIPMENT AND OPERATOR
			ALL EQUIPMENT OPERATORS SHALL BE TRAINED AND APPROVED.
			OPERATORS SHALL BE REQUIRED TO WEAR SEAT BELTS WHENEVER OPERATING ANY EQUIPMENT WITH A ROPS (ROLL OVER PROTECTIVE STRUCTURE) SYSTEM
			OPERATOR WILL BE RESPONSIBLE TO INSURE THAT A “NO RIDER” POLICY IS FOLLOWED. NO PERSONNEL SHALL BE TRANSPORTED OR MOVED IN ANY BUCKETS, FORKS, ETC. THAT IS NOT DESIGNED TO TRANSPORT PERSONNEL
			OPERATOR SHALL IDENTIFY ANY OVERHEAD HIGH VOLTAGE LINES TO DETERMINE AND MARK AT LEAST A MINIMUM OF 10 FEET CLEARANCE AT ALL TIMES

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STEP	ACTIVITY	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
			WHENEVER THE EQUIPMENT IS PARKED, THE PARKING BRAKES SHALL BE SET AND ON INCLINES THE WHEELS SHALL BE CHOCKED
			ALL PERSONNEL EXPOSED TO MOVING EQUIPMENT SHALL WEAR HIGH VISIBILITY APPAREL AT ALL TIMES
			COMPETENT PERSON AND SHALL BE RESPONSIBLE TO DETERMINE THE TYPE OF SOIL ON THE CANAL EMBANKMENT AND TO DETERMINE ANY SHORING, SLOPING AND/OR SHIELDING THAT MAY BE REQUIRED
		EQUIPMENT FAILURE DROPPED LOAD AND LOAD MOVEMENT EQUIPMENT TIPPING EXCEEDING LOAD CAPACITY	INSPECT EQUIPMENT FOR PROPER OPERATION ON A DAILY BASIS. ANY DEFECTIVE EQUIPMENT SHALL BE REMOVED FROM THE WORK SITE
			EQUIPMENT MINIMALLY RATED FOR MAXIMUM LOAD TO BE IMPOSED. NO LOADING MODIFICATIONS OR ADDITIONS SHALL BE MADE AFFECTING CAPACITY OR NORMAL SAFE OPERATION
		PERSONAL INJURY PERSONNEL UNAWARE OF EQUIPMENT OPERATION	EQUIPMENT OPERATION AREA SHALL BE CLEARLY DEMARCATED
			ONLY AUTHORIZED PERSONNEL SHALL ENTER MARKED AREAS
			WARNING HORNS AND REVERSE INDICATORS SHALL BE

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STEP	ACTIVITY	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
			USED AND ENFORCED

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
EXCAVATOR	VEHICLE CERTIFICATION AND DAILY CHECK USING CHECKLIST	TRAINED AND APPROVED EQUIPMENT OPERATOR

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ATTACHMENT 6

APPLICABLE MATERIAL SAFETY DATA SHEETS

MASTER MSDS LIST

- Chevron GST Oil ISO32
- Chevron Ultra Duty Grease EP
- Aquamaster

Material Safety Data Sheet

Chevron GST® Oils

MSDS: 6710 Revision #: 6 Revision Date: 11/08/00

Click here to search the product data sheet database

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

CHEVRON GST Oil

PRODUCT NUMBER(S): CPS220091 CPS253026 CPS253027 CPS253028
CPS253029 CPS253034
SYNONYM: CHEVRON GST Oil EP ISO 32
CHEVRON GST Oil EP ISO 46
CHEVRON GST Oil ISO 100
CHEVRON GST Oil ISO 32
CHEVRON GST Oil ISO 46
CHEVRON GST Oil ISO 68
CHEVRON Turbine Oil GST EP ISO 32
CHEVRON Turbine Oil GST ISO 100
CHEVRON Turbine Oil GST ISO 32
CHEVRON Turbine Oil GST ISO 46
CHEVRON Turbine Oil GST ISO 68

COMPANY IDENTIFICATION	EMERGENCY TELEPHONE NUMBERS
Chevron Products Company	HEALTH (24 hr): (800)231-0623 or
Lubricants and Specialty Products	(510)231-0623 (International)
6001 Bollinger Canyon Rd., T3325/B10	TRANSPORTATION (24 hr): CHEMTREC
San Ramon, CA 94583	(800)424-9300 or (703)527-3887
www.chevron-lubricants.com	Emergency Information Centers
	are located in U.S.A.
	Int'l collect calls accepted

PRODUCT INFORMATION: MSDS Request:(800)414-6737 email:lubemsds@chevron.com
Environmental, Safety, & Health Info: (925) 842-5535
Product Information: (800) 582-3835

2. COMPOSITION/INFORMATION ON INGREDIENTS

100.0 % CHEVRON GST Oil

CONTAINING

COMPONENTS	AMOUNT	LIMIT/QTY	AGENCY/TYPE
LUBRICATING BASE OIL			
SEVERELY REFINED PETROLEUM DISTILLATE			
	> 98.00%	5 mg/m3 (mist)	ACGIH TWA
		10 mg/m3 (mist)	ACGIH STEL
		5 mg/m3 (mist)	OSHA PEL

The BASE OIL may be a mixture of any of the following: CAS 64741884, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, or CAS 72623837.

ADDITIVES
< 2.00%

COMPOSITION COMMENT:
All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

3. HAZARDS IDENTIFICATION

IMMEDIATE HEALTH EFFECTS
EYE:
Not expected to cause prolonged or significant eye irritation.
SKIN:
Contact with the skin is not expected to cause prolonged or significant irritation. Not expected to be harmful to internal organs if absorbed through the skin. High-Pressure Equipment Information: Accidental high-velocity injection under the skin of materials of this type may result in serious injury. Seek medical attention at once should an accident like this occur. The initial wound at the injection site may not appear to be serious at first; but, if left untreated, could result in disfigurement or amputation of the affected part.
INGESTION:
Not expected to be harmful if swallowed.
INHALATION:
Contains a petroleum-based mineral oil. May cause respiratory irritation or other pulmonary effects following prolonged or repeated inhalation of oil mist at airborne levels above the recommended mineral oil mist exposure limit.

4. FIRST AID MEASURES

EYE:
No specific first aid measures are required because this material is not expected to cause eye irritation. As a precaution remove contact lenses, if worn, and flush eyes with water.
SKIN:
No specific first aid measures are required because this material is not expected to be harmful if it contacts the skin. As a precaution, remove clothing and shoes if contaminated. Wash skin with soap and water. Wash or clean contaminated clothing and shoes before reuse.
INGESTION:
No specific first aid measures are required because this material is not expected to be harmful if swallowed. Do not induce vomiting. As a precaution, give the person a glass of water or milk to drink and get medical advice. Never give anything by mouth to an unconscious person.
INHALATION:
If exposed to excessive levels of material in the air, move the exposed person to fresh air. Get medical attention if coughing or respiratory discomfort occurs.
NOTE TO PHYSICIANS:
In an accident involving high-pressure equipment, this product may be injected under the skin. Such an accident may result in a small, sometimes bloodless, puncture wound. However, because of its driving force, material injected into a fingertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain. Immediate treatment at a surgical emergency center is recommended.

5. FIRE FIGHTING MEASURES

SPECIAL NOTES: Leaks/ruptures in high pressure systems using materials of this type can create a fire hazard when in the vicinity of ignition sources (eg. open flame, pilot lights, sparks, or electric arcs).
FIRE CLASSIFICATION:
Classification (29 CFR 1910.1200): Not classified by OSHA as flammable or combustible.
FLAMMABLE PROPERTIES:
FLASH POINT: (COC) 374F (190C) Min.
AUTOIGNITION: NDA
FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA
EXTINGUISHING MEDIA:
CO2, Dry Chemical, Foam, Water Fog
NFPA RATINGS: Health 0; Flammability 1; Reactivity 0.
FIRE FIGHTING INSTRUCTIONS:
This material will burn although it is not easily ignited. For fires

involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.
COMBUSTION PRODUCTS:
Normal combustion forms carbon dioxide and water vapor; incomplete combustion can produce carbon monoxide.

6. ACCIDENTAL RELEASE MEASURES

CHEMTREC EMERGENCY NUMBER (24 hr): (800)424-9300 or (703)527-3887
International Collect Calls Accepted
ACCIDENTAL RELEASE MEASURES:
Stop the source of the leak or release. Clean up releases as soon as possible, observing precautions in Exposure Controls/Personal Protection. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

7. HANDLING AND STORAGE

DO NOT USE IN HIGH PRESSURE SYSTEMS in the vicinity of flames, sparks and hot surfaces. Use only in well ventilated areas. Keep container closed.

Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner, or properly disposed of. Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:
Consider the potential hazards of this material (see Section 3), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

Special Note: Do not use in breathing air apparatus or medical equipment.

ENGINEERING CONTROLS
Use in a well-ventilated area. If user operations generate an oil mist, use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below the recommended mineral oil mist exposure limits.

PERSONAL PROTECTIVE EQUIPMENT
EYE/FACE PROTECTION:
No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.
SKIN PROTECTION:
No special protective clothing is normally required. Where splashing is possible, select protective clothing depending on operations conducted, physical requirements and other substances. Suggested materials for protective gloves include: <Nitrile> <Silver Shield> <Viton> <4H>
RESPIRATORY PROTECTION:
No respiratory protection is normally required. If user operations generate an oil mist, determine if airborne concentrations are below the recommended mineral oil mist exposure limits. If not wear a NIOSH approved

respirator that provides adequate protection from measured concentrations of this material. Use the following elements for air-purifying respirators: particulate.

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9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION:
Clear to yellow liquid.

pH:	NA
VAPOR PRESSURE:	<0.01 mm Hg at 100F
VAPOR DENSITY (AIR=1):	Heavier than air.
BOILING POINT:	>600F (>315C)
FREEZING POINT:	NA
MELTING POINT:	NA
SOLUBILITY:	Soluble in hydrocarbon solvents; insoluble in water.
SPECIFIC GRAVITY:	0.86 - 0.88 @ 15.6/15.6C
VOLATILE ORGANIC COMPOUNDS (VOC):	1.8 wt. %, 15.51 g/l. (approx.)
VISCOSITY:	28.8 - 90 cSt @ 40C (Min.)

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10. STABILITY AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:
No data available.
CHEMICAL STABILITY:
Stable.
CONDITIONS TO AVOID:
No data available.
INCOMPATIBILITY WITH OTHER MATERIALS:
May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
HAZARDOUS POLYMERIZATION:
Polymerization will not occur.

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11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:
The eye irritation hazard is based on an evaluation of the data for the components.
SKIN EFFECTS:
The skin irritation hazard is based on an evaluation of the data for the components.
ACUTE ORAL EFFECTS:
The acute oral toxicity is based on an evaluation of the data for the components.
ACUTE INHALATION EFFECTS:
The acute respiratory toxicity is based on an evaluation of the data for the components.
ADDITIONAL TOXICOLOGY INFORMATION:
This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

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12. ECOLOGICAL INFORMATION

ECOTOXICITY:
This material is not expected to be harmful to aquatic organisms.
ENVIRONMENTAL FATE:
This material is not expected to be readily biodegradable.

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13. DISPOSAL CONSIDERATIONS

Oil collection services are available for used oil recycling or disposal. Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods.

14. TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT SHIPPING NAME: NONE
DOT HAZARD CLASS: NONE
DOT IDENTIFICATION NUMBER: NONE
DOT PACKING GROUP: N/A
ADDITIONAL INFO: Petroleum Lubricating Oil - Not Hazardous by U.S. DOT.
ADR/RID Hazard class - Not applicable.

15. REGULATORY INFORMATION

SARA 311 CATEGORIES:		
	1. Immediate (Acute) Health Effects:	NO
	2. Delayed (Chronic) Health Effects:	NO
	3. Fire Hazard:	NO
	4. Sudden Release of Pressure Hazard:	NO
	5. Reactivity Hazard:	NO

REGULATORY LISTS SEARCHED:

01=SARA 313	11=NJ RTK	22=TSCA Sect 5(a)(2)
02=MASS RTK	12=CERCLA 302.4	23=TSCA Sect 6
03=NTP Carcinogen	13=MN RTK	24=TSCA Sect 12(b)
04=CA Prop 65-Carcin	14=ACGIH TWA	25=TSCA Sect 8(a)
05=CA Prop 65-Repro Tox	15=ACGIH STEL	26=TSCA Sect 8(d)
06=IARC Group 1	16=ACGIH Calc TLV	27=TSCA Sect 4(a)
07=IARC Group 2A	17=OSHA PEL	28=Canadian WHMIS
08=IARC Group 2B	18=DOT Marine Pollutant	29=OSHA CEILING
09=SARA 302/304	19=Chevron TWA	30=Chevron STEL
10=PA RTK	20=EPA Carcinogen	

The following components of this material are found on the regulatory lists indicated.

SEVERELY REFINED PETROLEUM DISTILLATE
is found on lists: 14,15,17,

NEW JERSEY RTK CLASSIFICATION:
Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows:
PETROLEUM OIL
WHMIS CLASSIFICATION:
This product is not considered a controlled product according to the criteria of the Canadian Controlled Products Regulations.

16. OTHER INFORMATION

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0;
HMIS RATINGS: Health 1; Flammability 1; Reactivity 0;
(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT:
This revision updates Section 4 (First Aid Measures), Section 9 (Physical and Chemical Properties), and Section 15 (Regulatory Information).

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	PEL - Permissible Exposure Limit
C - Ceiling Limit	CAS - Chemical Abstract Service Number
A1-5 - Appendix A Categories	() - Change Has Been Proposed
NDA - No Data Available	NA - Not Applicable

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by the Toxicology and Health Risk Assessment Unit, CRTC, P.O. Box 1627, Richmond, CA 94804

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The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

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Material Safety Data Sheet

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

Chevron Ultra-Duty Grease EP

Product Number(s): CPS238011, CPS238012, CPS238013
Synonyms: Chevron Ultra-Duty Grease EP NLGI 2, Chevron Ultra-Duty Grease EP NLGI 1, Chevron Ultra-Duty Grease EP NLGI 0

Company Identification
ChevronTexaco Global Lubricants
6001 Bollinger Canyon Rd.
San Ramon, CA 94583
United States of America
www.chevron-lubricants.com

Transportation Emergency Response
CHEMTREC: (800) 424-9300 or (703) 527-3887
Health Emergency
ChevronTexaco Emergency Information Center: Located in the USA. International collect calls accepted. (800) 231-0623 or (510) 231-0623
Product Information
email : lubemsds@chevron.com
Product Information: (800) LUBE TEK
MSDS Requests: (800) 414-6737

SECTION 2 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
Highly refined mineral oil (C15 - C50)	Mixture	65 - 80 %weight
Lithium thickener	Mixture	5 - 15 %weight
Additives including	Mixture	10 - 20 %weight
Zinc dialkyldithiophosphate	68649-42-3	1 - 5 %weight

SECTION 3 HAZARDS IDENTIFICATION

IMMEDIATE HEALTH EFFECTS
Eye: Not expected to cause prolonged or significant eye irritation.
Skin: Contact with the skin is not expected to cause prolonged or significant irritation. Not expected to be harmful to internal organs if absorbed through the skin. High-Pressure Equipment Information: Accidental high-velocity injection under the skin of materials of this type may result in serious injury. Seek medical attention at once should an accident like this occur. The initial wound at the injection site may not appear to be serious at first; but, if left untreated, could result in disfigurement or amputation of the affected part.
Ingestion: Not expected to be harmful if swallowed.
Inhalation: Not expected to be harmful if inhaled. Contains a petroleum-based mineral oil. May cause respiratory irritation or other pulmonary effects following prolonged or repeated inhalation of oil mist at airborne levels above the recommended mineral oil mist exposure limit. Symptoms of respiratory irritation may include coughing and difficulty breathing.

SECTION 4 FIRST AID MEASURES

Eye: No specific first aid measures are required. As a precaution, remove contact lenses, if worn, and flush eyes with water.
Skin: No specific first aid measures are required. As a precaution, remove clothing and shoes if contaminated. To remove the material from skin, apply a waterless hand cleaner, mineral oil, or petroleum jelly. Then wash with soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.
Ingestion: No specific first aid measures are required. Do not induce vomiting. As a precaution, get medical advice.
Inhalation: No specific first aid measures are required. If exposed to excessive levels of material in the air, move the exposed person to fresh air. Get medical attention if coughing or respiratory discomfort occurs.
Note to Physicians: In an accident involving high-pressure equipment, this product may be injected under the skin. Such an accident may result in a small, sometimes bloodless, puncture wound. However, because of its driving force, material injected into a fingertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain. Immediate treatment at a surgical emergency center is recommended.

SECTION 5 FIRE FIGHTING MEASURES

FIRE CLASSIFICATION:
OSHA Classification (29 CFR 1910.1200): Not classified by OSHA as flammable or combustible.

NFPA RATINGS: Health: 0 Flammability: 1 Reactivity: 0

FLAMMABLE PROPERTIES:
Flashpoint: 274 °C (525 °F) (Min)
Autoignition: NDA
Flammability (Explosive) Limits (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.
PROTECTION OF FIRE FIGHTERS:
Fire Fighting Instructions: This material will burn although it is not easily ignited. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.
Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion. Combustion may form oxides of: Phosphorus, Sulfur, Zinc, Lithium .

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures: Eliminate all sources of ignition in vicinity of spilled material.
Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Clean up spills immediately, observing precautions in Exposure Controls/Personal Protection section.
Reporting: Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

SECTION 7 HANDLING AND STORAGE

Precautionary Measures: Keep out of the reach of children.
General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.
Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating an accumulation of electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures. For more information, refer to OSHA Standard 29 CFR 1910.106, 'Flammable and Combustible Liquids', National Fire Protection Association (NFPA 77, 'Recommended Practice on Static Electricity', and/or the American Petroleum Institute (API) Recommended Practice 2003, 'Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents'.
Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may

rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:
Consider the potential hazards of this material (see Section 3), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS:
Use in a well-ventilated area.

PERSONAL PROTECTIVE EQUIPMENT
Eye/Face Protection: No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.
Skin Protection: No special protective clothing is normally required. Where splashing is possible, select protective clothing depending on operations conducted, physical requirements and other substances in the workplace. Suggested materials for protective gloves include: Neoprene, Nitrile Rubber, Silver Shield, Viton.
Respiratory Protection: No respiratory protection is normally required.
If user operations generate an oil mist, determine if airborne concentrations are below the occupational exposure limit for mineral oil mist. If not, wear an approved respirator that provides adequate protection from the measured concentrations of this material. For air-purifying respirators use a particulate cartridge.
Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Limit	TWA	STEL	Ceiling	Notation
Highly refined mineral oil (C15 - C50)	ACGIH_TLV	5 mg/m3	10 mg/m3		
Highly refined mineral oil (C15 - C50)	OSHA_PEL	5 mg/m3			

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Red
Physical State: Semi-solid
Odor: Petroleum odor
pH: NA
Vapor Pressure: <0.01 mmHg @ 100°C (212°F)
Vapor Density (Air = 1): >1
Boiling Point: >260°C (500°F)
Solubility: Soluble in hydrocarbon solvents; insoluble in water.

Melting Point: 165°C (329°F) (Min)
Specific Gravity: 0.9 @ 15.6°C (60.1°F) / 15.6°C (60.1°F)
Density: @ 15°C (59°F)
Viscosity: 18 cSt @ 100°C (212°F) (Min)
Evaporation Rate: NDA

SECTION 10 STABILITY AND REACTIVITY

Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
Incompatibility With Other Materials: May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Hazardous Decomposition Products: Hydrogen Sulfide (Temperatures >149 °F (65 °C))
Hazardous Polymerization: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

IMMEDIATE HEALTH EFFECTS
Eye Irritation: The Draize eye irritation mean score in rabbits for a 24-hour exposure was: 6.7/110.
Skin Irritation: For a 24-hour exposure, the Primary Irritation Score (PIS) in rabbits is: 0.6/8.0.
Skin Sensitization: No product toxicology data available.
Acute Dermal Toxicity: 24 hour(s) LD50: >2g/kg (rat).
Acute Oral Toxicity: The acute oral toxicity hazard is based on evaluation of data for similar materials or product components.
Acute Inhalation Toxicity: The acute inhalation toxicity hazard is based on evaluation of data for similar materials or product components.

ADDITIONAL TOXICOLOGY INFORMATION:
This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY
The toxicity of this material to aquatic organisms has not been evaluated. Consequently, this material should be kept out of sewage and drainage systems and all bodies of water.

ENVIRONMENTAL FATE
This material is not expected to be readily biodegradable.

SECTION 13 DISPOSAL CONSIDERATIONS

Oil collection services are available for used oil recycling or disposal. Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.
DOT Shipping Name: NOT REGULATED AS A HAZARDOUS MATERIAL FOR TRANSPORTATION UNDER 49 CFR
DOT Hazard Class: NOT APPLICABLE
DOT Identification Number: NOT APPLICABLE
DOT Packing Group: NOT APPLICABLE
Additional Information: NOT HAZARDOUS BY U.S. DOT. ADR/RID HAZARD CLASS NOT APPLICABLE.

IMO/IMDG Shipping Name: NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORTATION UNDER THE IMDG CODE
IMO/IMDG Hazard Class: NOT APPLICABLE
IMO/IMDG Identification Number: NOT APPLICABLE
IMO/IMDG Packing Group: NOT APPLICABLE

SECTION 15 REGULATORY INFORMATION

SARA 311/312 CATEGORIES: 1. Immediate (Acute) Health Effects: NO
2. Delayed (Chronic) Health Effects: NO

3. Fire Hazard: NO
4. Sudden Release of Pressure Hazard: NO
5. Reactivity Hazard: NO

REGULATORY LISTS SEARCHED:

4_I1=IARC Group 1	15=SARA Section 313
4_I2A=IARC Group 2A	16=CA Proposition 65
4_I2B=IARC Group 2B	17=MA RTK
05=NTP Carcinogen	18=NJ RTK
06=OSHA Carcinogen	19=DOT Marine Pollutant
09=TSCA 12(b)	20=PA RTK

No components of this material were found on the regulatory lists above.

Zinc dialkyldithiophosphate	15

CHEMICAL INVENTORIES:
AUSTRALIA: All the components of this material are listed on the Australian Inventory of Chemical Substances (AICS).
CANADA: All the components of this material are on the Canadian DSL or have been notified under the New Substance Notification Regulations, but have not yet been published in the Canada Gazette.
EUROPEAN UNION: All the components of this material are in compliance with the EU Seventh Amendment Directive 92/32/EEC.
JAPAN: All the components of this product are on the Existing & New Chemical Substances (ENCS) inventory in Japan, or have an exemption from listing.
KOREA: This material contains components that require notification before sale or importation into Korea.
PHILIPPINES: All the components of this product are listed on the Philippine Inventory of Chemicals and Chemical Substances (PICCS).
UNITED STATES: All of the components of this material are on the Toxic Substances Control Act (TSCA) Chemical Inventory.

NEW JERSEY RTK CLASSIFICATION:
Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows: PETROLEUM OIL (Grease)

WHMIS CLASSIFICATION:
This product is not considered a controlled product according to the criteria of the Canadian Controlled Products Regulations.

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 0 Flammability: 1 Reactivity: 0
HMIS RATINGS: Health: 1 Flammability: 1 Reactivity: 0
(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT: This revision updates the following sections of this Material Safety Data Sheet: 1-16

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV	-	Threshold Limit Value	TWA	-	Time Weighted Average
STEL	-	Short-term Exposure Limit	PEL	-	Permissible Exposure Limit
			CAS	-	Chemical Abstract Service Number
NDA	-	No Data Available	NA	-	Not Applicable
<=	-	Less Than or Equal To	>=	-	Greater Than or Equal To

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by the ChevronTexaco Energy Research & Technology Company, 100 Chevron Way, Richmond, California 94802.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

MONSANTO COMPANY

Safety Data Sheet
Commercial Product

1. PRODUCT AND COMPANY IDENTIFICATION

Product name
AquaMaster® Herbicide

EPA Reg. No.
524-343
Product use
Herbicide
Chemical name
Not applicable.
Synonyms
None.
Company
MONSANTO COMPANY, 800 N. Lindbergh Blvd., St. Louis, MO, 63167
Telephone: 800-332-3111, **Fax:** 314-694-5557
E-mail: safety.datasheet@monsanto.com
Emergency numbers
FOR CHEMICAL EMERGENCY, SPILL LEAK, FIRE, EXPOSURE, OR ACCIDENT Call CHEMTREC - Day or Night: 1-800-424-9300 toll free in the continental U.S., Puerto Rico, Canada, or Virgin Islands. For calls originating elsewhere: 703-527-3887 (collect calls accepted).
FOR MEDICAL EMERGENCY - Day or Night: +1 (314) 694-4000 (collect calls accepted).

2. HAZARDS IDENTIFICATION

Emergency overview
Appearance and odour (colour/form/odour): Colourless - Amber / Liquid, (viscous) / Odourless

CAUTION!

Potential health effects
Likely routes of exposure
Skin contact, eye contact, inhalation
Eye contact, short term
Not expected to produce significant adverse effects when recommended use instructions are followed.
Skin contact, short term
Not expected to produce significant adverse effects when recommended use instructions are followed.
Inhalation, short term
Not expected to produce significant adverse effects when recommended use instructions are followed.
Single ingestion
Not expected to produce significant adverse effects when recommended use instructions are followed.

Refer to section 11 for toxicological and section 12 for environmental information.

OSHA Status
This product is not hazardous according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Active ingredient

Isopropylamine salt of N-(phosphonomethyl)glycine; {Isopropylamine salt of glyphosate}

Composition

COMPONENT	CAS No.	% by weight (approximate)
Isopropylamine salt of glyphosate	38641-94-0	53.8
Water	7732-18-5	46.2

4. FIRST AID MEASURES

Use personal protection recommended in section 8.

Eye contact
If in eyes, hold eye open and rinse slowly and gently for 15-20 minutes. Remove contact lenses, if present, after first 5 minutes, then continue rinsing. Call a poison control center or doctor for treatment advice.

Skin contact
Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
Wash clothes and clean shoes before re-use.

Inhalation
If inhaled, move person to fresh air. If person is not breathing, call emergency number or ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for treatment advice.

Ingestion
Call poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison center or doctor. Do not give anything by mouth to an unconscious person.

Advice to doctors
This product is not an inhibitor of cholinesterase.

Antidote
Treatment with atropine and oximes is not indicated.

5. FIRE-FIGHTING MEASURES

Flash point
Does not flash.

Extinguishing media
Recommended: Water, foam, dry chemical, carbon dioxide (CO2)

Unusual fire and explosion hazards
None.
Minimise use of water to prevent environmental contamination.
Environmental precautions: see section 6.

Hazardous products of combustion
Carbon monoxide (CO), phosphorus oxides (PxOy), nitrogen oxides (NOx)

Fire fighting equipment
Self-contained breathing apparatus.
Equipment should be thoroughly decontaminated after use.

6. ACCIDENTAL RELEASE MEASURES

Environmental precautions
SMALL QUANTITIES:
Low environmental hazard.
LARGE QUANTITIES:
Minimise spread.
Keep out of drains, sewers, ditches and water ways.

Methods for cleaning up
SMALL QUANTITIES:
Absorb only in non-combustible material.
Sweep, scoop or vacuum to remove.
LARGE QUANTITIES:
Absorb in earth, sand or absorbent material.
Dig up heavily contaminated soil.
Collect in containers for disposal.
Flush residues with small quantities of water.
Minimise use of water to prevent environmental contamination.
Refer to section 7 for types of containers.

Refer to section 13 for disposal of spilled material.
Use handling recommendations in Section 7 and personal protection recommendations in Section 8.

7. HANDLING AND STORAGE

Good industrial practice in housekeeping and personal hygiene should be followed.

Handling
Avoid contact with eyes, skin and clothing.
When using do not eat, drink or smoke.
Wash hands thoroughly after handling or contact.
Wash contaminated clothing before re-use.
Thoroughly clean equipment after use.
Do not contaminate drains, sewers and water ways when disposing of equipment rinse water.
Refer to section 13 of the safety data sheet for disposal of rinse water.
Emptied containers retain vapour and product residue.

Storage
Minimum storage temperature: -15 °C
Maximum storage temperature: 50 °C
Compatible materials for storage: stainless steel, fibreglass, plastic
Incompatible materials for storage: galvanised steel, unlined mild steel, see section 10.
Keep out of reach of children.
Keep away from food, drink and animal feed.
Keep only in the original container.
Keep container tightly closed in a cool, well-ventilated place.
Partial crystallization may occur on prolonged storage below the minimum storage temperature.
If frozen, place in warm room and shake frequently to put back into solution.
Minimum shelf life: 5 years.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne exposure limits

Components	Exposure Guidelines
Isopropylamine salt of glyphosate	No specific occupational exposure limit has been established.

Water	No specific occupational exposure limit has been established.

Engineering controls
No special requirement when used as recommended.

Eye protection
No special requirement when used as recommended.

Skin protection
No special requirement when used as recommended.

Respiratory protection
No special requirement when used as recommended.

When recommended, consult manufacturer of personal protective equipment for the appropriate type of equipment for a given application.

9. PHYSICAL AND CHEMICAL PROPERTIES

These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

Colour/colour range:	Colourless - Amber
Odour:	Odourless
Form:	Liquid, (viscous)
Physical form changes (melting, boiling, etc.):	
Melting point:	Not applicable.
Boiling point:	No data.
Flash point:	Does not flash.
Explosive properties:	No data.
Auto ignition temperature:	No data.
Specific gravity:	1.206 @ 20 °C / 15.6 °C
Vapour pressure:	No significant volatility; aqueous solution.
Vapour density:	No data.
Evaporation rate:	No data.
Dynamic viscosity:	No data.
Kinematic viscosity:	No data.
Density:	1.206 g/cm3 @ 20 °C
Solubility:	Water: Completely miscible.
pH:	4.6 - 4.8 @ 63 g/l
Partition coefficient:	log Pow: < 0.000 (active ingredient)

10. STABILITY AND REACTIVITY

Stability
Stable under normal conditions of handling and storage.

Oxidizing properties
No data.

Materials to avoid/Reactivity

Reacts with galvanised steel or unlined mild steel to produce hydrogen, a highly flammable gas that could explode.

Hazardous decomposition
Thermal decomposition: Hazardous products of combustion: see section 5.

Self-accelerating decomposition temperature (SADT)
No data.

11. TOXICOLOGICAL INFORMATION

This section is intended for use by toxicologists and other health professionals.

Data obtained on product, similar products and on components are summarized below.

Mutagenicity
Micronucleus test(s):
Not mutagenic.
Ames test(s):
Not mutagenic with and without metabolic activation.

Isopropylamine salt of glyphosate (62%)

Data obtained on product and components are summarized below.

Acute oral toxicity
Rat, LD50 (limit test): > 5,000 mg/kg body weight
Practically non-toxic.
FIFRA category IV.
No mortality.
Mouse, LD50 (limit test): > 5,000 mg/kg body weight
Practically non-toxic.
FIFRA category IV.
No mortality.
Acute dermal toxicity
Rabbit, LD50 (limit test): > 5,000 mg/kg body weight
Practically non-toxic.
FIFRA category IV.
No mortality.
Skin irritation
Rabbit, 6 animals, Draize test:
Days to heal: 3
Primary Irritation Index (PII): 0.0/8.0
Essentially non irritating.
FIFRA category IV.
Eye irritation
Rabbit, 6 animals, OECD 405 test:
Days to heal: 0
FIFRA category IV.
Acute inhalation toxicity
Rat, LC50, 4 hours, aerosol: > 4.24 mg/L
Practically non-toxic.
FIFRA category IV.
No mortality. Maximum attainable concentration.
Skin sensitization
Guinea pig, 3-induction Buehler test:
Positive incidence: 0 %

N-(phosphonomethyl)glycine; { glyphosate}

Mutagenicity
In vitro and in vivo mutagenicity test(s):
Not mutagenic.
Repeated dose toxicity
Rabbit, dermal, 21 days:
NOAEL toxicity: > 5,000 mg/kg body weight/day
Target organs/systems: none
Other effects: none
Rat, oral, 3 months:
NOAEL toxicity: > 20,000 mg/kg diet
Target organs/systems: none
Other effects: none
Chronic effects/carcinogenicity
Rat, oral, 24 months:
NOAEL toxicity: ~ 8,000 mg/kg diet
Target organs/systems: eyes
Other effects: decrease of body weight gain, histopathologic effects
NOEL tumour: > 20,000 ppm
Tumours: none
Toxicity to reproduction/fertility
Rat, oral, 2 generations:
NOAEL toxicity: 10,000 ppm
NOAEL reproduction: > 30,000 mg/kg diet
Target organs/systems in parents: none
Other effects in parents: decrease of body weight gain
Target organs/systems in pups: none
Other effects in pups: decrease of body weight gain
Effects on offspring only observed with maternal toxicity.
Developmental toxicity/teratogenicity
Rat, oral, 6 - 19 days of gestation:
NOAEL toxicity: 1,000 mg/kg body weight
NOAEL development: 1,000 mg/kg body weight
Other effects in mother animal: decrease of body weight gain, decrease of survival
Developmental effects: weight loss, post-implantation loss, delayed ossification
Effects on offspring only observed with maternal toxicity.
Rabbit, oral, 6 - 27 days of gestation:
NOAEL toxicity: 175 mg/kg body weight
NOAEL development: 175 mg/kg body weight
Target organs/systems in mother animal: none
Other effects in mother animal: decrease of survival
Developmental effects: none

12. ECOLOGICAL INFORMATION

This section is intended for use by ecotoxicologists and other environmental specialists.

Data obtained on components are summarized below.

Isopropylamine salt of glyphosate (62%)

Aquatic toxicity, fish
Bluegill sunfish (Lepomis macrochirus):
Acute toxicity, 96 hours, static, LC50: > 1,000 mg/L
Practically non-toxic.

Rainbow trout (Oncorhynchus mykiss):
Acute toxicity, 96 hours, static, LC50: > 1,000 mg/L
Practically non-toxic.

Aquatic toxicity, invertebrates
Water flea (Daphnia magna):
Acute toxicity, 48 hours, static, EC50: 930 mg/L
Practically non-toxic.

Aquatic toxicity, algae/aquatic plants
Green algae (Scenedesmus subspicatus):
Acute toxicity, 72 hours, static, EbC50 (biomass): 72.9 mg/L
Slightly toxic.

Soil organism toxicity, invertebrates
Earthworm (Eisenia foetida):
Acute toxicity, 14 days, LC50: > 5,000 mg/kg dry soil
Practically non-toxic.

N-(phosphonomethyl)glycine; {glyphosate}

Avian toxicity
Bobwhite quail (Colinus virginianus):
Dietary toxicity, 5 days, LC50: > 4,640 mg/kg diet
No more than slightly toxic.
Mallard duck (Anas platyrhynchos):
Dietary toxicity, 5 days, LC50: > 4,640 mg/kg diet
No more than slightly toxic.
Bobwhite quail (Colinus virginianus):
Acute oral toxicity, single dose, LD50: > 3,851 mg/kg body weight
Practically non-toxic.

Arthropod toxicity
Honey bee (Apis mellifera):
Oral, 48 hours, LD50: 100 µg/bee
Honey bee (Apis mellifera):
Contact, 48 hours, LD50: > 100 µg/bee
Practically non-toxic.

Bioaccumulation
Bluegill sunfish (Lepomis macrochirus):
Whole fish: BCF: < 1
No significant bioaccumulation is expected.

Dissipation
Soil, field:
Half life: 2 - 174 days
Koc: 884 - 60,000 L/kg
Adsorbs strongly to soil.
Water, aerobic:
Half life: < 7 days

13. DISPOSAL CONSIDERATIONS

Product
Not classified as hazardous waste by the Resource, Conservation and Recovery Act (RCRA), 40 CFR 261.
Keep out of drains, sewers, ditches and water ways.
Recycle if appropriate facilities/equipment available.
Burn in proper incinerator.
Follow all local/regional/national/international regulations.

Container
Dispose of as non hazardous industrial waste.

See the individual container label for disposal information.
Emptied containers retain vapour and product residue.
Observe all labelled safeguards until container is cleaned, reconditioned or destroyed.
Empty packaging completely.
Triple or pressure rinse empty containers.
Pour rinse water into spray tank.
Do NOT contaminate water when disposing of rinse waters.
Do NOT re-use containers.
Store for collection by approved waste disposal service.
Follow all local/regional/national/international regulations.

Use handling recommendations in Section 7 and personal protection recommendations in Section 8.

14. TRANSPORT INFORMATION

The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

Not hazardous under the applicable DOT, ICAO/IATA, IMO, TDG and Mexican regulations.

15. REGULATORY INFORMATION

TSCA Inventory
All components are on the US EPA's TSCA Inventory

SARA Title III Rules
Section 311/312 Hazard Categories
Not applicable.
Section 302 Extremely Hazardous Substances
Not applicable.
Section 313 Toxic Chemical(s)
Not applicable.

CERCLA Reportable quantity
Not applicable.

16. OTHER INFORMATION

The information given here is not necessarily exhaustive but is representative of relevant, reliable data.
Follow all local/regional/national/international regulations.
Please consult supplier if further information is needed.
For more information refer to product label.
Please consult Monsanto if further information is needed.
In this document the British spelling was applied.
® Registered trademark of Monsanto Company or its subsidiaries.

	Health	Flammability	Instability	Additional Markings
NFPA	0	1	1	

0 = Minimal hazard, 1 = Slight hazard, 2 = Moderate hazard, 3 = Severe hazard, 4 = Extreme hazard

Full denomination of most frequently used acronyms. BCF (Bioconcentration Factor), BOD (Biochemical Oxygen Demand), COD (Chemical Oxygen Demand), EC50 (50% effect concentration), ED50 (50% effect dose), I.M. (intramuscular), I.P. (intraperitoneal), I.V. (intravenous), Koc (Soil adsorption coefficient), LC50 (50% lethality concentration), LD50 (50% lethality dose), LDLo (Lower limit of lethal dosage), LEL (Lower Explosion Limit), LOAEC (Lowest Observed Adverse Effect Concentration), LOAEL (Lowest Observed Adverse Effect Level), LOEC (Lowest Observed Effect Concentration), LOEL (Lowest Observed Effect Level), MEL (Maximum Exposure limit), MTD (Maximum Tolerated Dose), NOAEC (No Observed Adverse Effect Concentration), NOAEL (No Observed Adverse Effect Level), NOEC (No Observed Effect Concentration), NOEL (No Observed Effect Level), OEL (Occupational Exposure Limit), PEL (Permissible Exposure Limit), PII (Primary

Irritation Index), Pow (Partition coefficient n-octanol/water), S.C. (subcutaneous), STEL (Short-Term Exposure Limit), TLV-C (Threshold Limit Value-Ceiling), TLV-TWA (Threshold Limit Value - Time Weighted Average), UEL (Upper Explosion Limit)

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABELING (attached to and accompanying the product container). This MSDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course. Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of federal law to use a pesticide product in any manner not prescribed on the EPA-approved label.

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, MONSANTO Company or any of its subsidiaries makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for the purposes prior to use. In no event will MONSANTO Company or any of its subsidiaries be responsible for damages of any nature whatsoever resulting from the use of or reliance upon information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR TO THE PRODUCT TO WHICH INFORMATION REFERS.

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ATTACHMENT 7

PROJECT-SPECIFIC CHEMICAL PRODUCT HAZARD COMMUNICATION FORM

This form must be completed prior to performing activities that expose personnel to hazardous chemicals products. Upon completion of this form, the SSC shall verify that training is provided on the hazards associated with these chemicals and the control measures to be used to prevent exposure to ADC and subcontractor personnel. Labeling and MSDS systems will also be explained.

Project Name: _____ **Project Number:** _____

MSDSs will be maintained at the following location(s): Field Office, project file box

Hazardous Chemical Products Inventory

Chemical	Quantity	Location	MSDS Available	Container labels	
				Identity	Hazard

ATTACHMENT 7

CHEMICAL-SPECIFIC TRAINING FORM

Location: _____ Project # : _____

SSC: _____ Trainer: _____

TRAINING PARTICIPANTS:

NAME	SIGNATURE	NAME	SIGNATURE

REGULATED PRODUCTS/TASKS COVERED BY THIS TRAINING:

CHEMICAL SPECIFIC TRAINING FORM

CONTINUED

The SSHO shall use the product MSDS to provide the following information concerning each of the products listed above.

☐ Physical and health hazards

☐ Control measures that can be used to provide protection (including appropriate work practices, emergency procedures, and personal protective equipment to be used)

☐ Methods and observations used to detect the presence or release of the regulated product in the workplace (including periodic monitoring, continuous monitoring devices, visual appearance or odor of regulated product when being released, etc.)

Training participants shall have the opportunity to ask questions concerning these products and, upon completion of this training, will understand the product hazards and appropriate control measures available for their protection.

Copies of MSDSs, chemical inventories, and written hazard communication program shall be made available for employee review in the facility/project hazard communication file.

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ACRONYMS AND ABBREVIATIONS

ADC	Agribusiness Development Corporation, Department of Agriculture
AHA	Activity Hazard Analysis form
ANSI	American National Standards Institute
APP	Accident Prevention Plan
CFR	Code of Federal Regulations
CPR	Cardiopulmonary resuscitation
CSIR	Contractor Significant Incident Report
dB(A)	Decibel A weighted
DOT	Department of Transportation
FM	Factory Mutual
GFCI	Ground fault circuit interrupter
HAZCOM	Hazard communication, 29 CFR 1910.1200
HAZWOPER	Hazardous Waste Operations and Emergency Response, 29 CFR 1910.120
HR	Heart rate
kV	Kilovolt
msl	Mean sea level
MSDS	Material Safety Data Sheet
MSHA	Mine Safety and Health Administration, US Dept of Labor
Navy	United States Navy
NIOSH	National Institute for Occupational Safety and Health, Centers for Disease Control & Prevention
O&M	operation and maintenance
OSHA	Occupational Safety and Health Administration, US Dept. of Labor
PAR	Performance Assessment Representative
PFD	personal floatation device
PMRF	Pacific Missile Range Facility
QA/QC	quality assurance/quality control
SOP	Standard Operating Procedure
SSHO	Site Safety and Health Officer
UIAGM	International Federation of Mountain Guides
UL	Underwriters Laboratories

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1.0 Signature Sheet

This site-specific APP has been written for use by ADC only. ADC claims no responsibility for its use by others unless that use has been specified and defined in project or contract documents. The plan is written for the specific site conditions, purposes, dates, and personnel specified and must be amended if those conditions change.

1.1 Original Plan

Prepared By: **Date:**

Phone:

Wendy L. Gady, Program Manager, ADC

Approved By: **Date:**

Phone:

Wendy L. Gady, Executive Director, ADC

Phone:

Site Safety and Health Officer

1.2 Revisions

Revisions Made By: **Date:**

Revisions to Plan:

Revisions Approved By: **Date:**

2.0 Background Information

This Accident Prevention Plan (APP) will be maintained at the site during field activities and will be reviewed by field personnel as necessary. The APP will be amended or revised as project activities or conditions change, or when supplemental information becomes available. This APP adopts procedures in the Project Maintenance Plan. The Site Safety and Health Officer (SSHO) is to be familiar with these standard operating procedures (SOPs) and the contents of this plan. All project team members and subcontractors must sign the Employee Signoff Form in Attachment 1 of this APP.

Project Information and Description

CONTRACTOR: ADC

PROJECT NO: Contract No. N62478-26-T-2424

CLIENT: Pacific Missile Range Facility (PMRF)

PROJECT/SITE NAME: Operation and Maintenance of Drainage Canals and Pumps at PMRF, Kauai, Hawai'i.

SITE ADDRESS: Highway 50, Kekaha, Hawai'i 96752.

ADC PROGRAM MANAGER: Wendy Gady

ADC OFFICE: 235 South Beretania Street, Room 235, Honolulu, Hawai'i 96813

DATE ACCIDENT PREVENTION PLAN PREPARED: December 4, 2013

DATE(S) OF SITE WORK: Year-round operation and maintenance.

SITE ACCESS: Restricted access (Military pass and ID required). Scheduled visits are approved by PMRF Public Works Office.

SITE TOPOGRAPHY: Generally flat with gentle grade to the Pacific Ocean.

PREVAILING WEATHER: Temperature averages a high and low of 80 to 70 degrees Fahrenheit. Precipitation ranges from 2 inches to 6 inches all year around. The subject area is located on the leeward, drier side of island. However, storms can deposit rain quickly causing flooding.

SITE DESCRIPTION AND HISTORY. Flooding has long been a problem in the Mana Plain located on the west side of the island of Kauai (Figure 2-1). An extensive network of interconnected drainage channels, ditches, and storage reservoirs, along with the cultivated fields themselves, serve to collect, store, and convey both irrigation and excess drainage water. In addition to lowering the groundwater level during dry weather, the pumping stations, drainage channels, and cultivated fields also played an important role in mitigation of flooding in the Mana Plain region. The PMRF (a/k/a Barking Sands) is a major United States Navy (Navy) testing and training range located along the western shoreline of the Mana Plain. The facility is bounded along the eastern boundary by the vast expanse of agricultural land.

Modern Hawai'i agriculture was traditionally large plantations of sugar cane or pineapple. Over 100 years ago, plantations on the west side of Kauai dewatered the wetlands of the Mana Plain to create additional farm land. They employed a series of ditches and pumps to

accomplish this. Until recently, this system was operated by the AMFAC plantation managers. With the demise of sugar (and AMFAC), the land reverted to the State of Hawai'i, Department of Land and Natural Resources (DLNR) and finally to ADC.

ADC is a State of Hawai'i agency, charged with helping farmers utilize former plantation lands. ADC, along with a co-op of farmers on the former plantation land, have continued to operate the system of pumps and ditches. It should be noted that the PMRF is located seaward of the former plantation land, and also benefits from the dewatering the pumps and ditches provide. After 11 September 2001 terrorist attacks, PMRF sought to increase a buffer area for its facility. As a result, the Navy entered into negotiations to take over the lease of a portion of land mountain-ward of the base. This land area includes the lower ditch system and pumping stations (Figure 2-2). The Navy has contracted ADC operate the system, with health and safety and quality assurance/quality control (QA/QC) requirements.

CONTRACTOR ACCIDENT EXPERIENCE: ADC will maintain an OSHA 300 Log and review safety onsite. Prior to the Navy contract, no accidents were reported to ADC at the PMRF Pump Stations sites.

DESCRIPTION OF SPECIFIC TASKS TO BE PERFORMED: The following is a general summary of project-specific tasks to be performed in support of this work effort:

- Vegetation control;
- Maintenance and repair of pumps and pumping stations;
- Maintenance and repair of power poles, transmission lines, and pole transformers; and,
- Maintenance of flap gates and a flood gate.

Figure 2-1: Locations of Canals, Pump Stations, Flap Gates & Flood Gate

Figure 2-2: Kawaiele and Nohili Pump Stations

3.0 Statement of Safety and Health Policy

Agribusiness Development Corporation (ADC) is committed to providing a safe and healthy workplace and to eliminating conditions and incidents that could result in personal injury or ill health. ADC requires all activities to conform to relevant state and federal occupational health regulations and established management practices. ADC's health and safety program includes training, maintenance of training records; and providing of all personnel with guidance on and training in the identification, assessment, and control of hazards in the workplace.

4.0 Responsibilities and Lines of Authority

4.1 Identification and Responsibilities

The Program Manager is responsible for ensuring that ADC and subcontractor personnel are aware of appropriate health and safety procedures, and thus ensuring that projects are performed with the utmost regard for health and safety of all personnel involved. The appropriate project personnel will have received the required health and safety training. All project personnel have a responsibility for accident prevention by following the established safety procedures necessary to perform assigned work without injury. Violations, which endanger lives, health, or welfare, will not be tolerated.

The Program Manager is responsible for the following: (Comment: Sam Lee is the Kauai Property Manager, a designated ADC representative.)

- Making decisions necessary for implementing and enforcing policies contained in this plan.
- Ensuring that all project personnel are aware of and comply with the provisions of the plan,
- Halting the project for non-compliance with the plan,
- Auditing for compliance with the policies and procedures detailed in this plan,
- Ensuring the training and re-training of personnel as necessary, and
- Ensuring that subcontractor personnel comply with this plan.

The day-to-day health and safety authority is delegated to the Site Safety and Health Officer (SSHO) or their designate. The SSHO's responsibilities include:

- Equipment inspections
- Monitoring weather conditions,
- Conduct of safety meetings and inspections,
- Proper notification of ADC and PMRF personnel,
- Response and investigation of accidents and injuries, and
- Authority to stop fieldwork if necessary.

SSHO will conduct monthly inspections of work and work sites for operation and maintenance work, and weekly inspections of work and work sites during canal dredging work.

The project personnel for the lines of responsibility are provided below:

Employee Name	Office	Phone	Responsibility
Wendy Gady	Honolulu	808-586-0186	Program Manager
Sam Lee	Kauai	(808) 742-6898 / cell (808) 635-4438	Kauai Property Manager
Dan Lord	Kauai	(w) 808-332-8652 (c) 808-639-0742 (h) 808-332-5985	O&M Contractor
Brian Tuzon	Kauai	(c) 808-639-1772 (w) 808-332-8652	O&M Contractor's Competent Person
Archie Yu	Honolulu	808-383-5511	SSHO

The client contacts for PMRF relating to this project are presented below:

- Performance Assessment Representative (PAR) Contact Name: Thomas Esclito
  Phone: (808) 474-3383
  Ranold Fujioka
  Phone: (808) 471-1588
- PMRF Public Works Department Contact Name(s): Leland Tottori, Deputy Public Works Officer
  Phone: (808) 335-4213
  Rod Martin
  Phone: (808) 471-6352 / cell: (808)639-4763

Cell phones will be used for emergency communications at the site. The SSHO is responsible for contacting the Program Manager in the event a health and safety issue arises. In general, the Program Manager will contact the client. The Kauai Property Manager should also be contacted as appropriate. The Program Manager is responsible for implementing the overall site strategy. The Kauai Property Manager provides project management as needed and directed by the ADC and is an alternate point of contact for the PMRF personnel. The Kauai Property Manager observes fieldwork as it is performed and reports activities to the ADC. Comment: Sam is not responsible for resolving technical issues—his background is land agent for the State.

5.0 Subcontractors

Protection of the health and safety of subcontractor personnel (TBD) is provided by ensuring that individuals employed by the subcontractor are aware of potential risks and hazards associated with their assigned activities. Subcontractor personnel must also be properly trained, and comply with the appropriate requirements of this Site-Specific APP. Copies of this Site-Specific APP will be made available to subcontractor personnel.

Subcontractors may develop additional APPs and Activity Hazard Analysis forms (AHAs) for use on-site, as long as they receive approval from ADC and the Navy prior to implementation.

All subcontractor personnel involved in work activities on and adjacent to the site or operation must:

- Understand that the work is to be performed on a known operation and that protective clothing and respiratory protective devices may be required.
- Have been trained on the applicable sections of EM 385-1-1
- Agree to work under the direction of the ADC SSHO.
- Ensure that all safety equipment used by subcontractor personnel is NIOSH or Mine Safety and Health Administration (MSHA) approved, as appropriate, and is in working condition, as specified by the manufacturer.
- Ensure that all subcontractor respiratory and personnel protection programs that apply to the site or operation are in compliance with EM 385-1-1.

Subcontractors will be coordinated by ADC and will be inspected by ADC personnel or designate (e.g., contractually by the Program Manager, and onsite by the Kauai Property Manager and SSHO) to ensure compliance with Health and Safety procedures and this plan.

6.0 Employee Medical Surveillance and Training

This project does not involve tasks regulated by OSHA under 29 CFR 1910.120, HAZWOPER.

An SSHO (performing safety and occupational health management surveillance, inspections, and safety enforcement) shall be at the work site during operation and maintenance, at least once a month. During major repairs that are considered hazardous, requiring two or more persons onsite 8-hours per day, the SSHO will be onsite daily. During canal dredging work, the SSHO will be onsite weekly.

The SSHO shall meet the following requirements: A minimum of 10 years safety work of a progressive nature with at least 5 years of experience on similar projects. 30-hour OSHA construction safety class or equivalent within the last 5 years. An average of 24 hours of formal safety training each year for the past 5 years with training for competent person status for at least the following four areas of competency: excavation; scaffolding; fall protection; hazardous energy; confined space; health hazard recognition; evaluation and control of chemical, physical, and biological agents; and personal protective equipment and clothing to include selection, use, and maintenance.

Field personnel shall be fully knowledgeable of all safety and environmental requirements associated with the work they perform. Personnel shall speak, read, and comprehend English to the extent that they can read warning signs and understand printed regulations, detailed written orders, operating procedures, and training and instruction materials.

When a medical facility or physician is not accessible within 5 minutes of an injury to a group of 2 or more employees for the treatment of injuries, at least two employees on each shift shall be qualified to administer first aid and CPR. Individuals who are required to work alone in remote areas shall be trained in first aid and provided an effective means of communication to call for assistance in the event of an emergency.

The SSHO or their designate will conduct onsite tailgate meetings at least once a month during operation and maintenance work and daily during dredging of canals, to ensure that all personnel working onsite have appropriate training, have reviewed this plan, and understand the safety precautions to be taken while completing the work tasks of the day. This information will be recorded on the daily tailgate form, presented in Attachment 2.0.

7.0 Safety and Health Inspections

Internal health and safety inspection procedures will be instituted to ensure the highest possible quality of performance of its employees. The health and safety inspections are designed to evaluate site health and safety compliance and identify areas requiring improvements; inspections and follow-up/corrective actions will be documented in a logbook. Day-to-day type safety inspections will be conducted by the SSHO or a designate at least once a month during operation and maintenance work and daily during canal dredging work. Further compliance-type inspections will be conducted by the Kauai Property Manager and/or Program Manager. In the event that non-compliance items are encountered by the SSHO, they will be corrected immediately and recorded on the daily tailgate log (so that they are also corrected/performed correctly the next day) and log book, and the Program Manager will be notified. In the event that a non-compliance item is significant (e.g., not having the correct equipment), the project will be shutdown until the correction is made. A follow-up inspection will be made prior to work commencing. The results of all inspections will be forwarded to the Program Manager for review and action, if necessary.

8.0 Safety and Health Expectations, Incentive Programs and Compliance

ADC is administratively attached to the Hawaii State Department of Agriculture (HDOA) and follows HDOA's Safety Policy and Program, which states that:

"The Department of Agriculture has the fundamental obligation to safeguard the health, safety and welfare of its employees; to conserve property and human resources; and to promote an attitude of safety consciousness throughout the Department.

Therefore, within the framework of the State's Safety Program, the policy of the Department of Agriculture is:

1. To develop in the entire working force a wholesome regard for safety in operations and for sanitary working conditions;
2. To encourage and promote safety consciousness among employees, supervisors, and administrators;
3. To provide training, counseling, and other activities that promote safety, develop safe working habits, and assure maximum competence;
4. To create and maintain safe working conditions;
5. To comply with all safety standards and requirements of Hawaii Occupational Safety and Health, and bargaining unit contracts."

ADCs safety program goal is to have zero accidents, injuries and near-misses, and for each person working on an ADC project to use safe procedures all of the time. Previously, at the Nohili and Kawaiele pump stations, one minor incident involving an excavator boom hitting a power line was recorded. Personnel working on the ADC project should continue to strive to maintain this record. Non-compliance with safety provisions will be handled in the following manner:

Initial, non-significant violations will be given a warning with correct procedure information provided. This will be recorded in the field book. Second violations (non-significant) will be handled similarly, with the addition of re-training and a memo to the Program Manager. Third safety violations including significant incidents will include removal from the project with retraining and a memo to the Program Manager. Only with successfully demonstrated re-training, should a person be allowed back on the job site.

The primary responsibility for ensuring that safety and health procedures and policies are adhered to on ADC projects is assigned to the Program Manager. The Program Manager is responsible for ensuring that the Kauai Property Manager and SSHO are implementing the appropriate safety and health procedures for the project. The SSHO is responsible for ensuring that personnel working on the project are utilizing the appropriate safety and health project procedures. Also, personnel working on the project must ensure that they adhere to proper safety procedures for the project, and work with managers to maintain or improve safety onsite.

9.0 Accident Reporting

In terms of accident reporting, the SSHO and/or their designate will complete the following:

- Upon any project incident (fire, spill, injury, near miss, death, etc.), immediately notify the ADC Program Manager.
- A Contractor Significant Incident Report (CSIR) needs to be completed for all OSHA recordable accidents; property damage is in excess of $2,000, weight handling equipment (WHE) accidents, or near miss/high visibility mishaps. A copy of the CSIR and associated instructions is provided in Attachment 3.
- For ADC work-related injuries, or illnesses, contact the ADC Program Manager.
- For ADC subcontractor incidents, contact the ADC Program Manager.
- Notify and submit reports to PMRF as required in contract.

The CSIR is due to the Program Manager within 48 hours of occurrence.

10.0 Medical Support

Medical support is listed here, but can also be found in Section 12.1 Site Control Plan, under emergency response procedures. The procedures listed below may also be applied to non-emergency incidents. Injuries and illnesses must be reported to Program Manager. If there is doubt about whether medical treatment is necessary or if the injured person is reluctant to accept medical treatment, contact the ADC Program Manager. Follow these procedures as appropriate:

- Notify appropriate emergency response authorities.
- The SSHO will assume charge during a medical emergency until the ambulance arrives or until the injured person is admitted to the emergency room. If the SSHO is not on site, then the site Worker's supervisor should assume charge until the ambulance arrives. The SSHO should be contacted in such cases.
- Prevent further injury.
- Trained personnel are encouraged, but not required, to render first aid and CPR.
- Get medical attention immediately.
- Perform decontamination where feasible; lifesaving and first aid or medical treatment take priority.
- Make certain that the injured person is accompanied to the emergency room.
- When contacting the medical consultant, state that the situation is an ADC matter, and give your name and telephone number, the name of the injured person, the extent of the injury or exposure, and the name and location of the medical facility where the injured person was taken.
- Report incident as outlined in Section 9.

11.0 Personal Protective Equipment (PPE)

Personal protective equipment selection for this project is based on information regarding potential hazards and chemicals of concern as described in Section 12 of this APP. The following tables list PPE that will be utilized during field activities and reasons for upgrading or downgrading level of protection, respectively.

Table 11-1. PPE Specifications [a]

Task	Level	Items Required	Head[b]	Floatation[c]
General site entry, and Operations and Maintenance	D	Work clothes; steel-toe, safety shoes; work glove.	Hard hat Safety glasses Ear Protection	Type III or IV USCG-approved vests will be worn on structures or equipment near or over water, when working alone or at night, and when a drowning hazard exists.

[a] Modifications are as indicated.

[b] Hard hat and safety glasses should be worn around heavy equipment and when there is a potential hazard for head and eye injury. Ear protection is worn when conversations can't be held at distances of 3 feet or less without shouting.

[c] Except where guardrails, personal fall protection system or safety nets are provided for employees.

Table 11-2. Reasons for Upgrading or Downgrading Level of Protection

Upgrade[a]	Downgrade
Request from individual performing tasks. Change in work tasks that will increase contact or potential contact with hazardous materials. Known or suspected presence of dermal hazards.	New information indicating that situation is less hazardous than originally thought. Change in site conditions or implementation of control measure that decreases risk of exposure and/or reduces the hazard. Change in work task that will reduce contact with hazardous materials.

[a] Performing a task that requires an upgrade to a higher level of protection is permitted only when the PPE requirements have been approved by the Program Manager, and an SSHO qualified at that level is present.

Limitations of PPE. ADC and contractor personnel will adhere to manufacturers' recommendations regarding the use and limitations of the selected PPE, and the SSHO will be consulted if additional guidance is necessary to supplement the PPE program.

All PPE described in this APP will be worn when appropriate to the task at hand. It is anticipated for surveillance and O & M activities that the PPE will remain in the Level D (see PPE specifications above).

11.1 Evaluation of PPE

It will be the SSHO's responsibility to monitor the site workers and site conditions by direct observations to assess the appropriateness and effectiveness of the PPE in use, based on manufacturers' specifications, and anticipated site conditions (historical analytical data and other background information). Site workers will be instructed to notify the SSHO if any site conditions change. The SSHO will assess any changes in condition and determine if the current PPE is adequate. If the SSHO determines that the current PPE is not adequate, field activities will be halted until such a time when upgraded PPE can be employed. PPE protection can only maintain its specific manufacturer's rating when in "good" operating condition. Cut, torn, overly soiled, broken, or defective PPE will be discarded and new PPE will be donned.

11.2 Decontamination

This project does not involve tasks that require decontamination for personnel and/or equipment. Workers are encouraged to wash after work and dispose of trash appropriately to maintain safe and healthy working conditions.

12.0 Plans, Programs and Procedures Required

12.1 Site-Control Plan

The elements of the site control plan are presented below. These include Site-control procedures, pre-emergency planning, emergency equipment and supplies, incident response, emergency medical treatment, evacuation and a fire-fighting response plan. Emergency contacts are presented in Attachment 4.

12.1.1 Site-Control Procedures

The following procedures shall be followed when fieldwork is performed:

- The SSHO will conduct a site safety briefing (see below) before starting field activities, once a month or as tasks and site conditions change.
- Topics for briefing on-site safety: general discussion of the APP and the AHA applicable to the day's tasks, including site-specific hazards; locations of work zones, PPE requirements, equipment, special procedures, and emergencies.
- The SSHO will record attendance at safety briefings in a logbook and document the topics discussed.
- Post the OSHA job-site poster in a central and conspicuous location.
- Establish onsite communication consisting of the following:

  -- line-of-sight and hand signals;

  -- air horn; or

  -- two-way radio or cellular telephone if available
- Establish offsite communication.
- Establish and maintain the "buddy system", where appropriate.
- The SSHO is to conduct periodic inspections of safety practices to determine the effectiveness of this plan. Deficiencies are to be noted, reported to the Kauai Manager and/or Program Manager, and corrected.

12.1.2 Pre-Emergency Planning

- The SSHO performs the applicable pre-emergency planning tasks before starting field activities and coordinates emergency response with ADC onsite personnel, the facility, and local emergency-service providers as appropriate.
- Review the facility emergency and contingency plans where applicable.
- Determine what onsite communication equipment is available (e.g., two-way radio, air horn). ADC will use cell phones for emergency communications at the site.
- Determine what offsite communication equipment is needed (e.g., nearest telephone, cell phone).
- Confirm and post emergency telephone numbers, evacuation routes, assembly areas, and route to hospital; communicate the information to onsite personnel.

- Review changed site conditions, onsite operations, and personnel availability in relation to emergency response procedures.
- Where appropriate and acceptable to the client, inform emergency room and ambulance and emergency response teams of anticipated types of site emergencies.
- If appropriate, designate one vehicle as the emergency vehicle; place hospital directions and map inside; keep keys in vehicle during field activities.
- Inventory and check site emergency equipment, and supplies.
- Communicate emergency procedures for personnel injury, exposures, fires, explosions, and releases.
- Rehearse the emergency response plan procedures before site activities begin, including driving route to hospital.
- Brief new workers on the emergency response plan.
- The SSHO will evaluate emergency response actions and initiate appropriate follow-up actions.

12.1.3 Emergency Equipment and Supplies

Table 12-1 Emergency Equipment and Supply Locations

Emergency Equipment and Supplies	Location
20 lb (or two 10 lb) fire extinguisher (A, B, and C classes)	Support Area/Heavy Equipment
First aid kit	Support Area/Field Vehicle
Eye Wash (from contractors if necessary)	Support Area/Field Vehicle
Potable water (from contractors if necessary)	Support Area/Field Vehicle
Bloodborne pathogen kit (from contractors if necessary)	Support Area/Field Vehicle
Additional equipment as needed	Pump Stations/Field Office

[a] Support zone is the location of the first aid kit, plans, supplies, etc.

12.1.4 Incident Response

In fires, explosions, or chemical releases, actions to be taken include the following:

- Shut down ADC operations and evacuate the immediate work area.
- Notify appropriate response personnel.

- Account for personnel at the designated assembly area(s).
- Assess the need for site evacuation, and evacuate the site as warranted.
- Instead of implementing a work area evacuation, note that small fires or spills posing minimal safety or health hazards may be controlled.

12.1.5 Emergency Medical Treatment

The procedures listed below may also be applied to non-emergency incidents. Injuries and illnesses must be reported to Program Manager. If there is doubt about whether medical treatment is necessary or if the injured person is reluctant to accept medical treatment, contact the ADC Program Manager. Follow these procedures as appropriate:

- Notify appropriate emergency response authorities.
- The SSHO will assume charge during a medical emergency until the ambulance arrives or until the injured person is admitted to the emergency room. (See Section 10 comments)
- Prevent further injury.
- Trained personnel are encouraged, but not required, to render first aid and CPR if necessary.
- Get medical attention immediately.
- Perform decontamination where feasible; lifesaving and first aid or medical treatment take priority.
- Make certain that the injured person is accompanied to the emergency room.
- When contacting the medical consultant, state that the situation is an ADC matter, and give your name and telephone number, the name of the injured person, the extent of the injury or exposure, and the name and location of the medical facility where the injured person was taken.
- Report incident as outlined in Section 9.

12.1.6 Evacuation

- Evacuation routes and assembly areas (and alternative routes and assembly areas) are specified on the site map.
- Evacuation route(s) and assembly area(s) will be designated by the SSHO before work begins.
- Personnel will assemble at the assembly area(s) upon hearing the emergency signal for evacuation.
- The SSHO and a "buddy" will remain on the site after the site has been evacuated (if safe) to assist local responders and advise them of the nature and location of the incident.
- The SSHO will account for all personnel in the onsite assembly area.
- A designated person will account for personnel at alternate assembly area(s).

- The SSHO will write up the incident report as soon as possible after it occurs and submit a report to the Program Manager.

Table 12-2 Evacuation Signals

Signal	Meaning
Grasping throat with hand	Emergency-help me.
Thumbs up	OK; understood.
Grasping buddy's wrist	Leave area now.
Continuous sounding of horn	Emergency; leave site now.

12.1.7 Firefighting Response Plan

In the event of an explosion or fire on the site, the SSHO should take the following minimum actions:

- Evacuate all unnecessary personnel to the pre-arranged emergency assembly point.
- Request emergency response assistance from the fire department, hospitals, poison control centers, and any other emergency service that may be necessary.

Notify the ADC Kauai Property Manager and ADC Program Manager.

12.2 Description of Tasks

The following is a general summary of project-specific tasks to be performed in support of this work effort:

- Vegetation control;
- Maintenance and repair of pumps and pumping stations;
- Maintenance of canals, culverts, and embankments;
- Clearing (dredging) of canals and culverts;
- Maintenance and repair of power poles, transmission lines, and pole transformers; and
- Maintenance of flap gates and flood gate.

The Activity Hazard Analysis Forms for these tasks are presented in Attachment 5.

This project does not involve tasks regulated by the Occupational Safety and Health Administration (OSHA) under 29 Code of Federal Regulations (CFR) 1910.120, Hazardous Waste Operations and Emergency Response (HAZWOPER). A general description of operation and maintenance (O&M) tasks is provided below. A hazard analysis (Section 12.3)

has been performed for each task and is incorporated in this plan through task-specific hazard controls and requirements for monitoring and protection. Tasks other than those listed above require an approved amendment or revision to this plan before tasks begin.

Vegetation Control. Vegetation control is to ensure protection against contact with electrical power lines, and to assure good housekeeping at the pump stations. Compliance with all Federal, State, or local regulations is required if chemicals are used to control vegetation.

Operation, Maintenance and Repair of Pumps and Pumping Stations. A total of six pumps at two pumping stations operate as necessary to lower the level of water at their respective wet wells to a minimum of -2.0 feet mean sea level (msl). All infrastructure that supports the pumps at the pumping stations shall be maintained.

Maintenance and Repair of Power Poles, Transmission Lines, and Pole Transformers. The electrical power lines will be maintained such that there shall be no loss of power to the pump stations. The maintenance of the power poles will include pole transformers, guy wires, cross arms, and insulators and any other related items that made the power transmission possible. This would include any tree trimming to avoid contact with the power lines. No major repair work is required other than periodic preventive maintenance.

Maintenance of Flood Gates. The Dry Ditch and Kinikini Ditch flap gates and the flood gate shall be maintained and operational at all times.

12.3 Task Hazard Analysis

The following table lists potential hazards and the associated tasks related to this project. A mark (X) indicates that the particular hazard for that task could be encountered during the field work.

Table 12-3 Task Hazards Analysis

TASK HAZARD	OPERATION, MAINTENANCE, AND REPAIR ACTIVITIES					VEGETA-TION CON-TROL	DREDG-ING
	ROADS	PUMPS & PUMP STATIONS	POWER POLES, TRANSMISSION LINES, AND POLE TRANSFORMERS	CANALS, CULVERTS, AND EMBANKMENTS	FLOOD GATES		
NOISE	X	X		X		X	X
SUSPENDED LOADS		X					X
FALLING DEBRIS/OBJECTS			X	X		X	
ELECTRICAL		X	X		X		
BURIED UTILITIES, ETC.	X						
SLIP, TRIP, FALL	X	X	X	X	X	X	X
BACK INJURY (MANUAL LIFTING)	X	X		X	X	X	X
CRANES AND HOISTING		X					
CHAIN SAW / CHIPPER OPERATION				X		X	
CONFINED SPACE ENTRY							
TRENCHES/EXCAVATION				X			X
TREE TRIMMING AND PRUNING						X	
ELEVATED WORK AREAS/FALLS		X	X		X	X	
HEAT STRESS	X	X	X	X	X	X	X
BIOLOGICAL HAZARDS	X	X	X	X	X	X	X
HEAVY EQUIPMENT	X	X	X	X			X
HAND AND POWER TOOLS	X	X		X	X		
VEHICLE TRAFFIC	X		X				
DROWNING HAZARDS (WORKING NEAR WATER)		X		X	X		X
WORKING AT NIGHT							
WELDING AND CUTTING		X					
CHEMICAL HAZARDS			X			X	
RESPIRATORY HAZARDS		X					

12.4 Hazard Identification and Control Measures

This section provides safe work practices and control measures used to reduce or eliminate potential hazards. These practices and controls are to be implemented by the party in control of either the site or the particular hazard. ADC staff and subcontractors must remain aware of the hazards affecting them regardless of who is responsible for controlling the hazards. ADC staff and subcontractors who do not understand these provisions should contact the SSHO for clarification.

12.4.1 Project-Specific Hazards

The work to be performed for this project requires execution of activities that have specific hazards associated with the tasks. These project-specific hazards and control measures are presented below.

12.4.1.1 Noise

Noise can interfere with normal communication between personnel and may startle or distract personnel. Noise can also result in physical damage to the ear that may cause pain and temporary or permanent hearing loss.

There are three general classes of noise that are typically associated with site operation, maintenance and repair activities: continuous noise, intermittent noise, and impact-type noise. Continuous noise is heard when a truck or backhoe is running; intermittent noise occurs when compressors or other equipment are in use; and an impact-type noise is produced by equipment such as percussion hammers and driving tools, as well as by aircraft (e.g., sonic boom) and detonations and explosions (e.g., artillery, ordnance). Noise varies in intensity and is measured in decibels (dBA). Prolonged exposure to noise above 85 dBA from heavy equipment can cause hearing loss characterized by the inability to hear certain sounds.

Ear plugs or ear muffs will be issued by the contractors and must be worn when personnel are required to work around heavy machinery and impact tools. Hearing protection must comply with OSHA 29 CFR 1910.95.

12.4.1.2 Suspended Loads

A backhoe may be used during dredging activities (see Section 12.4.1.11) and a crane may be used in support of pump repair or replacement (see Section 12.4.1.8); presenting overhead and suspended load hazards. The following control measures shall be implemented when equipment is in operation:

- All personnel shall wear an American National Standards Institute (ANSI) Z89.1-1986 or OSHA 29 CFR 1910.135-compliant hard hat at all times.
- All personnel shall exercise extreme caution when equipment is in operation, such as keeping a safe distance from the equipment.
- Personnel shall take measures to be visible to machine operator at all times when equipment is in operation and to maintain eye contact with the operator.
- Personnel shall not turn their back on the operating equipment.

12.4.1.3 Falling Debris/Objects

All personnel shall don ANSI-compliant hardhats and safety glasses to protect the head and eyes from potential airborne debris/objects during tree trimming and pole and transmission line inspection/repair activities.

12.4.1.4 Electrical Hazards

Operation, maintenance, and repair activities will include work associated with operating pumps, pump station and flood gate controls, and inspection and periodic preventive maintenance of power poles, transmission lines, and pole transformers. The following precautions shall be observed when operating or maintaining electrical equipment.

- Only properly trained and qualified personnel will be permitted to work on unprotected energized electrical systems.
- Only authorized personnel will be permitted to enter high-voltage areas.
- Workers shall not tamper with electrical wiring and equipment unless qualified to do so. All electrical wiring and equipment must be considered energized until lock-out/tag-out testing procedures are implemented.
- Workers shall inspect electrical equipment, power tools, and extension cords for damage prior to use. Workers shall not use defective electrical equipment. If found to be defective, electrical equipment will be removed from service.
- All temporary wiring, including extension cords and electrical power tools, will have ground fault circuit interrupters (GFCIs) installed.
- Extension cords will be:
  - equipped with third-wire grounding;
  - covered, elevated, or protected from damage when passing through work areas;
  - protected from pinching if routed through doorways; and
  - not fastened with staples, hung from nails, or suspended with wire.
- Electrical power tools and equipment will be effectively grounded or double-insulated and Underwriters Laboratories (UL) or Factory Mutual (FM) listed.
- Workers shall operate and maintain electric power tools and equipment according to manufacturers' instructions.
- Workers shall maintain safe clearance distances between overhead power lines and any electrical conducting material unless the power lines have been de-energized and grounded, or where insulating barriers have been installed to prevent physical contact. Maintain at least 10 feet of distance from overhead power lines for voltages of 50 kilovolts (kV) or less, and 10 feet plus 1 inch for every 1 kV over 50 kV.
- Temporary lights shall not be suspended by their electric cord unless designed for suspension. Lights shall be protected from accidental contact or breakage.
- **Workers shall protect all electrical equipment, tools, switches, and outlets from environmental elements.**

The requirements of this section are to be followed by ADC or contractor employees who may be involved with or in close proximity to equipment requiring lockout/tagout for maintenance.

- Only authorized personnel may lockout or tagout machines or equipment in order to perform service or maintenance on that machine or equipment.
- Only qualified personnel may work on energized equipment that is not being controlled by lockout/tagout procedures.
- Standard lockout/tagout procedures include the following six steps: (1) notify all personnel in the affected area of the lockout/tagout; (2) shut down the equipment using normal operating controls; (3) isolate all energy sources; (4) apply an individual lock and tag to each energy isolating device; (5) relieve or restrain all potentially hazardous stored or residual energy; and (6) verify (test or try) that isolation and de-energization of the equipment has been accomplished. Once verified that the equipment is at the zero energy state, work may begin.
- All safe guards must be put back in place when lockout/tagout is completed and all affected personnel must be notified that locks and tags have been removed.
- Controls shall be positioned in the safe mode prior to lockout/tagout removal.
- Only the individual who applied the lock and tag may remove them.
- Lockout is a more reliable means of de-energizing equipment than tagout and should always be the preferred method. Except for limited situations, the use of lockout devices will provide a more secure and effective means of protecting employees from the unexpected release of hazardous energy or startup of equipment.
- Use of master or duplicate keys with locking devices shall be prohibited.
- For unusual circumstances when authorized employees cannot be located to remove lockout/tagout devices, that employee has to be notified, then the lockout/tagout device may be removed by the supervisor.
- Hazardous energy control must be coordinated among work groups when multiple employers are involved in large projects. Each authorized employee provides his or her own lockout/tagout device on a hasp.

12.4.1.5 Buried Utilities

Buried utilities may be present, and may include electrical, water, sewer, cable, gas, and others. Prior to commencing any excavation, including dredging, the PMRF Public Works Department must be notified. Coordination must occur to ensure that the area is clear of all buried utilities.

12.4.1.6 Slip, Trip, and Fall Hazards

Falls as a result of slipping or tripping are generally the most common form of injury on project sites. These injuries typically are a result of poor housekeeping, lack of attention to detail, or simple carelessness. For this project, personnel may be working out doors during wet conditions and in the vicinity of embankments, culverts, canals, as well as on platforms and overhanging gangways. Personnel shall take precautions when working in areas where

slip, trip, and fall hazards exist by watching their footing and being aware of their surroundings at all times.

Work areas shall be kept clear of trash, debris, and hand tools that are not in use; and personnel shall inform one another of any significant terrain hazards (e.g., ledges, sink holes, pits) in the immediate work area. Such hazards shall be marked as necessary with a traffic cone, CAUTION tape, or similar warning to avoid slips, trips, and falls.

12.4.1.7 Back Injury

Personnel will plan storage and staging of equipment and materials to minimize lifting and carrying distances. Personnel should use their best personal judgment in determining loads that they can lift safely. In general, individuals should not attempt to lift loads of 50 pounds or more without the assistance of another individual or appropriate lifting equipment (e.g., platform hydraulic lift, forklift). When possible, loads should be lifted with two hands, without rotation of the trunk, using the leg muscles (not back muscles) for elevation. Loads should also be lifted so that the center of mass is stable during the initiation and throughout the duration of the lift. Floor or ground surfaces should be in good condition (i.e., clear of obstacles, level, dry). During times of heavy or prolonged lifting, personnel and supervisors should increase rest duration and frequency as necessary to reduce injury potential.

Repetitive lifting increases the potential for injury. Ambient temperature should also be considered if lifting requires repetitive motion.

As mentioned earlier, field personnel should use their own judgment when lifting heavy objects as dexterity and muscle conditioning varies between individuals. The following recommendations should be considered when lifting or preparing to lift a heavy load:

- Split heavy loads into smaller loads, and reduce the size of individual loads.
- Bring the load close to the body.
- Remove any horizontal barriers.
- Avoid lifts near the floor or ground surface.
- If loads near the floor or ground surface cannot be avoided, the load should fit easily between the legs.
- Raise/lower the origin/destination of the lift.
- Reduce trunk rotation by rotating the feet.
- Reduce the lifting frequency and duration.
- Provide longer recovery periods.
- Provide new containers with adequate handles.
- Eliminate the need for lifting by redesigning or modifying the container characteristics.
- Use mechanical lifting aids whenever possible.
- Have someone assist with the lift -- especially for heavy or awkward loads.
- Make sure the path of travel is clear prior to the lift.

12.4.1.8 Cranes and Hoisting

Pump repair or pump replacement may require use of a crane. The following precautions shall be observed when involved with, or in close proximity to crane, hoisting, and rigging operations:

- Cranes shall only be operated by certified crane operators who meet the physical qualifications described in ANSI B30.5 Section 5-3.1.2. A Certificate of Compliance for each crane entering an activity is required to ensure the crane and rigging meet applicable OSHA regulations. This includes certification that the crane operator is qualified and trained in operation of the crane to be used.
- Cranes shall have a current annual inspection (within the last 12 months) that includes load test certification meeting all state and federal safety standards. Crane operations manuals and load charts specific to each crane shall be on site and accessible.
- Accessible areas within the swing radius of the rear of the rotating superstructure of the crane, either permanently or temporarily mounted, shall be barricaded in such a manner as to prevent an employee from being struck or crushed by the crane.
- A competent person shall inspect cranes daily to ensure that they are in safe operating condition.
- All parties involved in that day's crane operation shall conduct a prelift meeting.
- Cranes are designed for vertical lifts only and should only be used for that purpose. Attempting to pull objects along the ground from side to side, toward, or away from the crane may result in crane failure.
- Never allow any part of the crane to come within 10 feet of overhead electrical power lines rated at 50 kV or less. For lines over 50 kV, increase clearance distance by 4 inches for every 10 kV over 50 kV.
- All personnel in the vicinity of the crane should make eye contact with the operator prior to passing through or near crane operations so as to make the operator aware of their presence.
- Only one person shall signal the crane operator. This person shall be thoroughly familiar with all of the crane's operation and shall be able to communicate with the crane operator with the appropriate hand signals.
- Cranes shall not swing booms or loads over live roadways, railways, industrial processes, or occupied buildings.
- No personnel shall be permitted on or under a load lifted by crane or hoist at any time.
- Crane operators shall sound an alarm or horn blast when the load is about to be lifted.
- Always consider weather conditions when lifting operations are to be performed. Lifting operations should be reevaluated whenever wind speeds exceed 25 miles per hour, or if other environmental conditions could hinder those operations.

12.4.1.9 Chain Saw / Chipper Operation

Vegetation control, including maintenance of roads, canals, culverts and embankments may require use of chain saw and wood chipper equipment. Personnel using this equipment must observe the following precautions.

- Only authorized personnel shall be permitted to operate chain saws or chipper equipment (authorized personnel will have previous experience and be designated by the SSHO).
- Check chain saw or chipper to ensure that all safety features are operational, (e.g., chain brake, chain blade guard, handles).
- Ensure that the chain saw or chipper is operated per the manufacturer recommended procedures, e.g., maintain sharp chain, proper chain tension and lubrication, and observe manufacturer warnings.
- Always start the chain saw on the ground; DO NOT place the chain saw on your knee when starting it.
- Always wear appropriate personal protective equipment (PPE) including hardhat, safety glasses (goggles are preferred), face shield, and hearing protection as well as work gloves, protective chaps, and steel-toed boots.
- Do not wear loose-fitting clothing or other items such as rings or watches that could get caught in moving parts. Long hair shall be restrained.
- Do not operate the chain saw with the engine above shoulder height.
- Keep the nose of the bar clear of objects to prevent kickback.
- A fire extinguisher is required when operating chain saws or chippers. A small extinguisher that fits in the chainsaw gear bag (as available from saw dealers) should be adequate.
- Never refuel a chain saw or chipper until the muffler has been allowed to cool for 10 minutes. This practice routinely starts fires and injures people.
- Chains must be guarded whenever the saw is not in use. Chain saws, gas, and oil must never be transported in the passenger compartment of vehicles unless they are adequately tied down.

12.4.1.10 Tree Trimming and Pruning

Vegetation control will include tree trimming and pruning activities. Personnel responsible for performing these activities must observe the following precautions:

Brush hooks, machetes, limb saws and similar tools used to cut brush and branches should be kept sharp. Always use leather work gloves when using sharp tools. Wear safety glasses and face shield when cutting brush to prevent eye injuries.

- Sharp cutting edges should always be guarded when transporting tools. Always carry cutting tools at your side with the cutting edge away from your body. Machetes should always be kept in sheaths when not in use. Brush hooks, machetes, and hatchets must never be transported in the passenger compartment of vehicles unless they are adequately tied down

12.4.1.11 Trenches / Excavation

Excavation (dredging) activities will be periodically performed along existing canals using backhoe/excavator equipment, as required to maintain specified widths and depths. The following precautions shall be observed when involved with, or in close proximity to excavation operations:

- Competent person will have training, experience, and knowledge of soil analysis, use of protective systems; have the ability to detect conditions that could result in cave-ins, failures in protective systems, and other hazards; and have the authority to take prompt corrective measures to eliminate existing and predictable hazards and stop work when required.
- Prior to digging, the appropriate dig permit must be obtained and all underground utilities clearly identified. Digging within 2 feet or less of a known utility must be performed by hand digging.
- Accessible areas within the swing radius of the backhoe or excavator shall be barricaded in such a manner as to prevent an employee from being struck or crushed by the equipment.
- All personnel shall don ANSI-compliant hardhats and safety glasses to protect the head and eyes from potential airborne debris/objects.
- Test the soil to find out if it is stable or likely to collapse.
- Use a protective system to shore, brace, or slope the sides of the trench. Manufacture tabulated data a specifications for shoring or benching will be readily available onsite for review.
- All personnel in the vicinity of the backhoe/excavator should make eye contact with the operator prior to passing through or near equipment operations so as to make the operator aware of their presence.
- Only one person shall signal the backhoe/excavator operator. This person shall be thoroughly familiar with all of the equipments operation and shall be able to communicate with the equipment operator with the appropriate hand signals.

12.4.1.12 Elevated Work Areas / Falls

Access to existing pumps and flood gates may require work around elevated platforms and gangways which can constitute a fall hazard. Additionally, maintenance activities around canals and embankments present a potential slip and corresponding water hazard (see Section 12.4.1.17). The following precautions shall be observed when working in elevated work areas:

- Fall protection systems must be used to eliminate fall hazards of 6 feet or greater.
- Personnel exposed to fall hazards must receive project-specific fall protection training. Personnel may not use fall protection systems on which they have not been trained.
- All components of the personal fall arrest system must be inspected for proper working condition prior to each use.

- Personal fall arrest system anchorages must be capable of supporting 5,000 pounds per individual.

12.4.1.13 Heavy Equipment

Drivers and/or operators of motor vehicles and heavy equipment must have the appropriate qualifications, training, and licensing (as necessary based upon State or local requirements) to drive or operate each specific vehicle or machine. Drivers of vehicles must take responsibility for ensuring the safety of all passengers and the stability of equipment and materials being hauled or transported. Passengers in vehicles must have a safe place to ride, and the use of seat belts will be mandated on-site.

Vehicles and equipment should be inspected by the SSHO prior to use and periodically during the on-site field activities (see Attachment 6, Heavy Equipment Safety Checklist). Operators should perform daily inspections of their own equipment and machinery and should maintain documentation of these inspections. These records, as well as the owner's manual for the equipment, should be made available to the SSHO upon request. Vehicles and heavy machinery/equipment should be utilized only for the purpose they were designed and should be operated in accordance with the manufacturer's recommendations and specified limitations.

Unattended vehicles and machines should not be left running. If the equipment operator must exit the cab or control area of the equipment, it must be properly shut down and secured before he or she exits. The extensions, arms, blades, and buckets of hydraulic equipment such as backhoes and drill rigs must be lowered, physically locked, or otherwise appropriately blocked when the operator leaves or the equipment is not being used.

The field team leader and other site personnel (including subcontractors) should coordinate the orderly flow of traffic on the job site. Vehicles entering or leaving the work area should proceed slowly and visually verify a clear path before moving in any direction. Vehicle and equipment access areas should be kept free and clear of tools, small equipment, materials, and debris in order to facilitate safe movement around the work area. The subcontractors supplying vehicles and heavy equipment to the site should provide adequate traffic signage and/or personnel as necessary to protect site personnel and/or the public.

Personnel in the direct vicinity of heavy equipment shall take precautions to stay out of harm's way when equipment is in operation. Eye contact shall be made with operators when field personnel are coming in close contact with equipment, as to minimize the potential for injury.

12.4.1.14 Hand and Power Tools

Use of hand and power tools will be required in support of routine maintenance and repair activities. Safe work practices will be used when hand and/or power tools are in use.

- Hand and power tools shall be used, inspected, and maintained in accordance with the manufacturer's instructions and recommendations and shall be used only for the purpose for which designed. A copy of the manufacturer's instructions and recommendations shall be maintained with the tools.

- Hand and power tools will be inspected, tested and determined to be in safe operating condition before use; continuing periodic inspections will be made to assure safe operating condition and proper maintenance.
- Hand and power tools will be in good repair and with all required safety devices install and properly adjusted; tools having defects that will impair their strength or render them unsafe shall be removed from service.
- Power tools designed to accommodate guards shall be equipped with such guards.
- Reciprocating, rotating, and moving parts of equipment shall be guarded if exposed to contact by employees or otherwise create a hazard.
- When work is being performed overhead, tools not in use shall be secured in place in holders.
- Throwing tools or materials from one location to another or from one person to another, or dropping them to lower levels shall not be permitted.
- Loose and frayed clothing, loose long hair, dangling jewelry (including dangling rings, chains, and wristwatches) shall not be worn while working with any power tool.
- During the use of hand tools personnel will wear appropriate work wear, ANSI-compliant hard hat and safety goggles. Safe work practices will be used when hand tools are in operation.

12.4.1.15 Vehicle Traffic

Required maintenance and repair work may occur in areas where vehicular traffic can pose a hazard. Orange Department of Transportation (DOT) traffic cones will be placed around the perimeter of the working area in order to direct traffic around the work area. All ADC personnel in and around the work area shall don an ANSI class 2 reflective vest to increase visibility to passing traffic when working in these areas. Personnel shall also exercise caution and be aware of their surroundings at all times. Work will not be performed in heavy vehicle traffic areas after dark.

12.4.1.16 Welding and Cutting

Potential welding and machining activities required in support of pump maintenance and repair will most likely be performed off site. However, workers who may be involved in welding and cutting activities or overseeing subcontractor performing welding and cutting will adhere to the following precautions.

- Workers designated to operate welding and cutting equipment shall have been properly instructed and qualified to operate such equipment.
- Before welding or cutting is permitted, the area shall be inspected by the individual responsible for authorizing the welding or cutting operation. Prior to performing "Hot Work" or operating other flame- or spark-producing devices a written permit shall be requested from the PMRF Fire Division.
- Suitable fire extinguishing equipment shall be immediately available in the work area, including at least two 20 lb 4A:20 BC rated extinguishers for normal "Hot Work".

- Flame-resistant blankets shall be used to control sparks produced by welding and cutting operations from traveling to lower levels or adjacent surfaces.
- Combustible materials less than 35 feet away must be removed prior to the start of any hot work. If combustible materials cannot be removed, then they must be covered with flame-proofed cover.
- A fire watch with a fire extinguisher must stand by during the hot work and stay on site for 30 minutes after the hot work is completed when there are appreciable combustible materials less than 35 feet away.
- If the valve on a fuel-gas cylinder is found to leak around the valve stem, the valve shall be closed and the gland nut tightened. If this does not stop the leak, the cylinder is to be tagged and removed from service.
- Nothing should be placed on top of a cylinder or manifold that will damage it or interfere with the quick closing of the valve.
- Flow gages and regulators shall be inspected prior to use and removed from cylinders when not in use.
- Hoses, leads, and cables shall not be routed through doorways and walkways unless covered, elevated, or protected from damage. Where hoses, leads, and cables pass through wall openings, adequate protection shall be provided to prevent damage.
- Fuel gas and oxygen cylinders shall be stored separately (at least 20 feet away) or provided with a 1½ -hr rated fire barrier, which is at least 5 feet high.
- Flash arresters shall be installed at the torch handle.
- Hot electrode holders shall not be dipped in water to cool them.
- Arc welding electrodes shall not be struck against compressed gas cylinders to strike an arc.
- All arc welding or cutting operations shall be shielded by noncombustible or flame resistant screens to protect employees or other persons in the vicinity from the direct rays of the arc.
- Proper ventilation shall be provided so as to maintain the level of contaminants in the breathing zone of welders below applicable permissible exposure limits.
- Arc welding equipment exposed to unusual service conditions shall require specifically designed equipment. Chief among these conditions are corrosive fumes, steam, excessive humidity, oil vapor, flammable gases, vibration or shock, dust, exposure to weather, and seacoast or shipboard conditions.

12.4.1.17 Drowning Hazards

While the majority of the canals and culverts in the subject area are gently sloped, during routine maintenance activities and/or during periods of potentially high flow, sites may pose a potential hazard of slipping from the bank into the water. In addition, work around platforms and gangways may also pose a potential trip and slip hazard. If any O&M activity is located over or adjacent to a drop-off into deep waters, the following precautions will be considered.

- Where the hazard of drowning exists, fall protection should be provided to prevent personnel from falling into water. Fall protection systems must be used to eliminate fall hazards of 6 feet or greater. Personnel exposed to fall hazards must receive project-specific fall protection training. Personnel may not use fall protection systems on which they have not been trained.
- Where fall protection systems are not provided and the danger of drowning exists, U.S. Coast Guard-approved personal floatation devices (PFDs), or life jackets, shall be worn.
- Inspect PFDs prior to use. Do not use defective PFDs.
- A minimum of one ring buoy with 90 feet of 3/8 inch solid-braid polypropylene (or equal) rope must be provided for emergency rescue.
- Use all equipment according to the manufacturer's instructions.

Assessment of the need of fall/slip arrest protection will be made in the field by each field crew leader. Canal flow, height (with respect to normal bank conditions) and bank slope / condition / stability will factor into the decision to upgrade the slip protection measures. The upgrade level of slip protection will include a two person team approach. One crew member will don a seat harness [either ANSI or International Federation of Mountain Guides Association (UIAGM) rated for worker protection or climbing protection] and will attach a life line (braided kern mantle synthetic rope, clean and abrasion / cut free) to the harness with an over-sized locking "D" style carabineer. The second crew member will act as a safety/belay person and will meter out the life line rope, keeping a constant light pressure on the rope and sampler via a belay device rated for such use (i.e., figure eight, stitch plate, etc.) The life line and belay device will be securely attached to a tree, sampling van, bridge abutment or other object that has the minimum capacity of holding at least a 2,000 lb pull weight force. Should a slip occur the belay person would be able to arrest the slip and either hold the sampler or tie off the line to aid in their recovery. Additionally a spare life line will be on site and used as needed in any rescue operations.

12.4.1.18 Chemical Hazards

There are no fuel products stored or distributed on site. The only chemicals identified for project-related use are lubricants used for general maintenance and Roundup™ herbicide used for vegetation control. All products are used in accordance with manufacturers' instructions. Material safety data sheets (MSDS) are maintained and are readily available for all chemicals used and stored onsite (see Attachment 6). The Project Specific Chemical Product Hazard Communication Form and the Chemical-Specific Training Form are presented in Attachment 7. The following precautions concerning chemical hazards will be followed.

- Employees will read MSDS for the hazardous materials that will be used on site.
- PPE will be chosen based on recommendations from the MSDS and the label.
- If airborne hazards are possible from chemical spray application evaluate to see if a respirator or supplemental ventilation is needed.

If a worker is exposed to chemicals, the following procedures shall be administered as applicable.

- Eye Exposure - If a contaminated solid or liquid gets into the eyes, wash eyes immediately at an emergency eyewash station (or portable eyewash) using large amounts of water and lifting the lower and upper eyelids occasionally. Obtain medical attention immediately.
- Skin Exposure - If a contaminated solid or liquid gets on the skin, remove contaminated clothing and wash the contaminated skin promptly using soap or mild detergent and water. Obtain medical attention immediately if there are symptoms of exposure.
- Inhalation - If a person inhales large amounts of gas or vapor, move him/her to fresh air at once. If he/she cannot breathe, provide artificial respiration. Keep the affected person warm and at rest. Obtain medical attention immediately.
- Ingestion - If a contaminated solid or liquid has been swallowed, contact the Poison Control Center at 1-800-222-1222. Obtain medical attention immediately.

12.5 General Hazards

The following sections present a listing of preventative measures associated with general hazards that may be encountered during the field effort.

12.5.1 Stairways and Ladders

- Stairway or ladder use is generally required when a break in elevation of 19 inches or greater exists.
- Personnel should avoid using both hands to carry objects while on stairways; if unavoidable, use extra precautions.
- Personnel must not use pan and skeleton metal stairs until permanent or temporary treads and landings are provided the full width and depth of each step and landing.
- Ladders must be inspected by a competent person for visible defects prior to each day's use. Defective ladders must be tagged and removed from service.
- Ladders must be used only for the purpose for which they were designed and shall not be loaded beyond their rated capacity.
- Only one person at a time shall climb on or work from an individual ladder.
- User must face the ladder when climbing; keep belt buckle between side rails.
- Ladders shall not be moved, shifted, or extended while in use.
- User must use both hands to climb; use rope to raise and lower equipment and materials
- Straight and extension ladders must be tied off to prevent displacement.
- Ladders that may be displaced by work activities or traffic must be secured or barricaded.
- Portable ladders must extend at least 3 feet above landing surface.
- Straight and extension ladders must be positioned at such an angle that the ladder base to the wall is one-fourth of the working length of the ladder.
- Stepladders are to be used in the fully opened and locked position.

- Users are not to stand on the top two steps of a stepladder; nor are users to sit on top or straddle a stepladder.
- Fixed ladders $\geq$ 24 feet in height must be provided with fall protection devices.
- Fall protection should be considered when working from extension, straight, or fixed ladders greater than six feet from lower levels and both hands are needed to perform the work, or when reaching or working outside of the plane of ladder side rails.

12.5.2 Working at Night

Work activities will be routinely conducted during daylight hours. However, emergency maintenance activities associated with pump station failure and/or flood prevention may require activities to be performed at night or during the early morning hours. Sufficient lighting (enough to read field documents, labels, placards, and warning signs) must be provided when working in low light conditions. All workers are required to don an ANSI class 2 reflective vest.

12.5.3 Heat Stress

When working in hot climates, the following precautions shall be implemented.

- Contractors are required to provide potable water for their employees. Drink 16 ounces of water before beginning work. Disposable cups and water maintained at 50^{o}F to 60^{o}F should be made available to all workers. Under severe conditions, drink 1 to 2 cups every 20 minutes, for a total of 1 to 2 gallons per day. Do not use alcohol in place of water or other nonalcoholic fluids. Decrease or eliminate your intake of coffee and caffeinated soft drinks during working hours.
- Acclimate yourself by slowly increasing workloads (e.g., do not begin with extremely demanding activities).
- Use cooling devices such as cooling vests to aid natural body ventilation. These devices add weight, so their use should be balanced against efficiency.
- Use mobile showers or hose-down facilities where available to reduce body temperature and cool protective clothing.
- Conduct field activities in the early morning, and rotate shifts of workers if possible.
- Avoid direct sun whenever possible, as exposure can decrease physical efficiency and increase the probability of heat stress. Take regular breaks in a cool, shaded area. Use a wide-brim hat or an umbrella when working under direct sun for extended periods.
- Provide adequate shelter/shade to protect personnel against radiant heat (e.g., sun, flames, hot metal).
- Maintain good hygiene standards by frequently changing clothing and showering.
- Observe one another for signs of heat stress. Persons who experience or observe in others the signs and symptoms of heat syncope, heat rash, or heat cramps should immediately notify the SSHO so that progression of heat-related illness can be prevented.

The following table describes the symptoms and treatment for heat stress.

Table 12-4 Symptoms and Treatment of Heat Stress

SYMPTOMS AND TREATMENT OF HEAT STRESS					
	Heat Syncope	**Heat Rash**	**Heat Cramps**	**Heat Exhaustion**	**Heat Stroke**
Signs and Symptoms	Sluggishness or fainting while standing erect or immobile in heat.	Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure.	Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours.	Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid pulse and low blood pressure; oral temperature normal or low.	Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature.
Treatment	Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.	Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection.	Remove to cooler area. Rest lying down. Increase fluid intake.	Remove to cooler area. Rest lying down, with head in low position. Administer fluids by mouth. Seek medical attention.	Cool rapidly by soaking in cool–but not cold–water. Call ambulance, and get medical attention immediately!

The following monitoring activities and work modification procedures should be considered when the ambient air temperature exceeds 70^{o}F, the relative humidity is high (e.g., >50 percent), or when workers exhibit symptoms of heat stress.

The heart rate (HR) should be measured by taking the radial pulse for 30 seconds, as early as possible in the resting period. The HR at the beginning of the rest period should not exceed 100 beats/minute, or 20 beats/minute above resting pulse. If the HR is higher, the next work period should be shortened by 33 percent, while the length of the rest period stays the same. If the pulse rate still exceeds 100 beats/minute at the beginning of the next rest period, the work cycle should be further shortened by 33 percent. The procedure is continued until the rate is maintained below 100 beats/minute, or 20 beats/minute above resting pulse.

12.5.4 Biological Hazards

12.5.4.1 Spiders

Spiders do not represent a significant threat in the subject area. The Cane Spider may be encountered during routine maintenance activities; and although this species rarely bites, it can inject venom. The spider's bite is small and usually does not result in significant or long-term health risks. If bitten by a spider, wash and disinfect the wound, cover it, and apply ice. Watch for allergic reaction or infection; seek medical attention if a reaction or infection develops.

12.5.4.2 Bees and Other Stinging Insects

Bees and other stinging insects may be encountered almost anywhere and may present a serious hazard, particularly to people who are allergic. Watch for and avoid nests. Wear light colored clothing, and avoid perfume or colognes. Keep exposed skin to a minimum. If you have had allergic reactions in the past, have your doctor prescribe a supply of epinephrine and a syringe for your kit, and have your kit available at all time, and inform the SSHO. If stung by a bee or other insect and if the stinger is present, remove it carefully with tweezers. Wash and disinfect the wound, cover it, and apply ice. Watch for allergic reaction; seek medical attention if a reaction develops.

12.6 General Control Measures

12.6.1 General Practices and Housekeeping

- Site work should be performed during daylight hours whenever possible. Work conducted during hours of darkness requires enough illumination intensity to read a newspaper without difficulty.
- Good housekeeping must be maintained at all times in all project work areas.
- Common paths of travel should be established and kept free from the accumulation of materials, tools, and equipment.
- Keep access to aisles, exits, ladders, stairways, scaffolding, and emergency equipment free from obstructions.
- Provide slip-resistant surfaces, ropes, and/or other devices to be used.
- Specific areas should be designated for the proper storage of materials.
- Tools, equipment, materials, and supplies shall be stored in an orderly manner.
- As work progresses, scrap and nonessential materials must be neatly stored or removed from the work area.
- Containers should be provided for collecting trash and other debris and shall be removed at regular intervals.
- All spills shall be quickly cleaned up. Oil and grease shall be cleaned from walking and working surfaces. Sorbent material will be maintained in the work vehicle. Incidental spills will be contained with sorbent and disposed of properly.

12.6.2 Fire Prevention

Workers shall take all necessary precautions to prevent and suppress fire in the work area. Fire extinguishers shall be provided so that the travel distance from any work area to the nearest extinguisher is less than 100 feet. All vehicles shall be equipped with fire extinguishers for use at areas that are greater than 100 feet from an accessible building that is equipped with portable extinguishers, such as some of the more remote areas that will encountered during the groundwater monitoring activities. If the vehicle cannot access the work area, the vehicle or the extinguisher, must be located within 100 feet of the work area. Some clearing of vegetation may be necessary if it presents a fire hazard. When 5 gallons or more of a flammable or combustible liquid is being used, an extinguisher must be within 50 feet. The following requirements must be met where fire extinguishers will be maintained and used:

- Extinguishers must be maintained in a fully charged and operable condition.
- Extinguishers must be visually inspected each month and undergo a maintenance check each year.
- The area in front of the extinguisher(s) must be kept clear.
- In fixed facilities, employees must post "Exit" signs over exiting doors, and post "Fire Extinguisher" signs over extinguisher locations.
- Combustible materials stored outside should be at least 10 feet from any building.
- Solvent waste and oily rags must be kept in a fire resistant, covered container until removed from the site.
- Flammable/combustible liquids must be kept in approved containers, and containers must be stored in an approved storage cabinet.

12.6.3 Radiological Hazards and Controls

No radiological materials or radioactive wastes are expected to be encountered during the O & M activities at Pacific Missile Range Facility (PMRF).

12.6.4 Hazard Communication

The SSHO is to perform the following:

- Complete an inventory of chemicals brought on site using Attachment 7.
- Confirm that an inventory of chemicals brought on site by ADC subcontractors is available.
- Request or confirm locations of MSDSs from the client, contractors, and subcontractors for chemicals to which on-site personnel potentially are exposed.

The contractor is to perform the following:

- Label chemical containers with the identity of the chemical and with hazard warnings, and store properly.
- Give employees required chemical-specific hazard communication (HAZCOM) training.

- Store all materials properly, giving consideration to compatibility, quantity limits, secondary containment, fire prevention, and environmental conditions.

12.6.5 Compressed Gas Cylinders

Compressed gas cylinders such as oxygen and acetylene are not used on site.

12.6.6 Confined Space Entry

There are no known activities for this project that will require confined space entry.

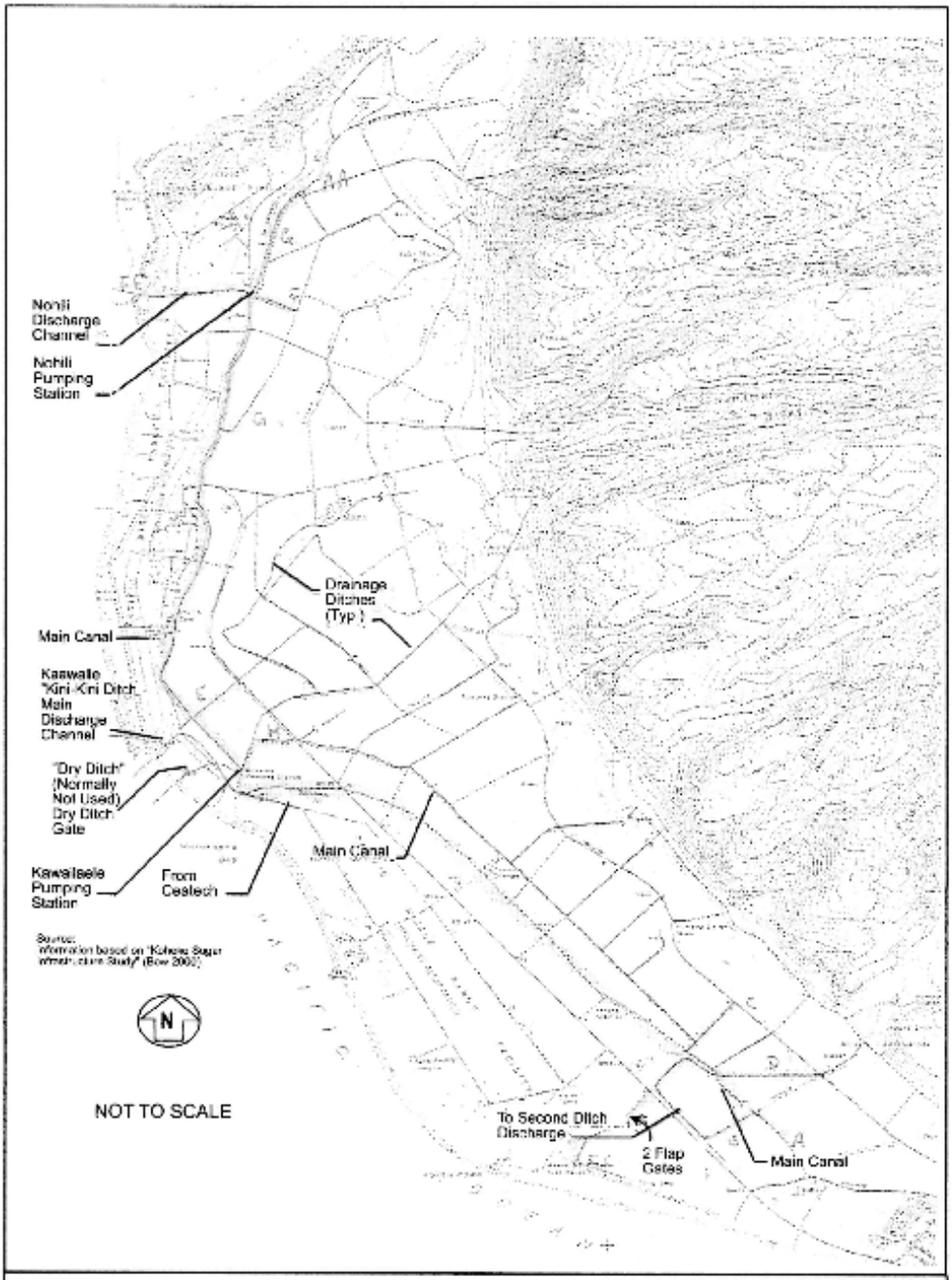

Figure 2-1
Locations of Canals, Pump Stations, Flap Gates & Dry Ditch Gates

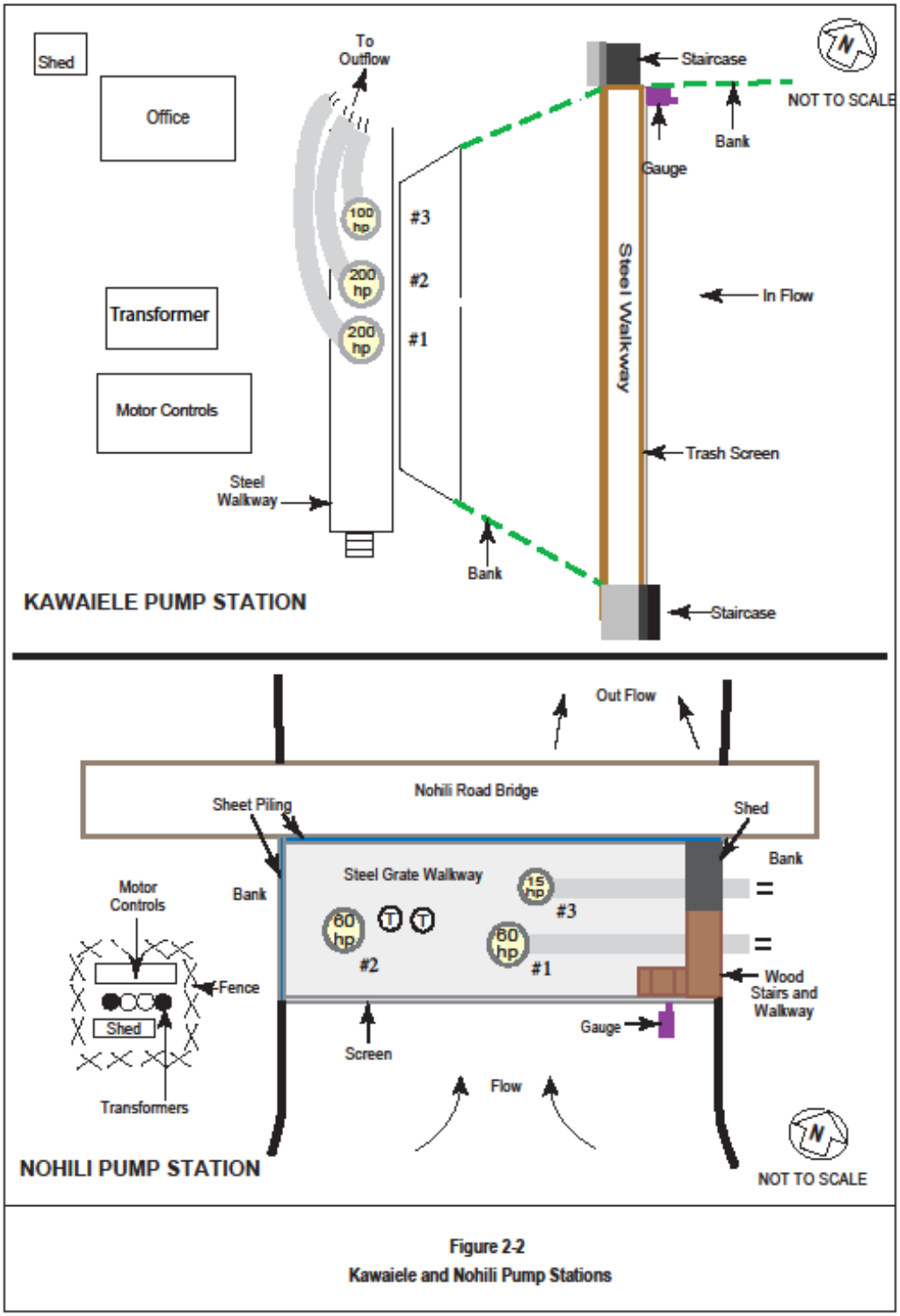

Figure 2-2
Kawaiele and Nohili Pump Stations