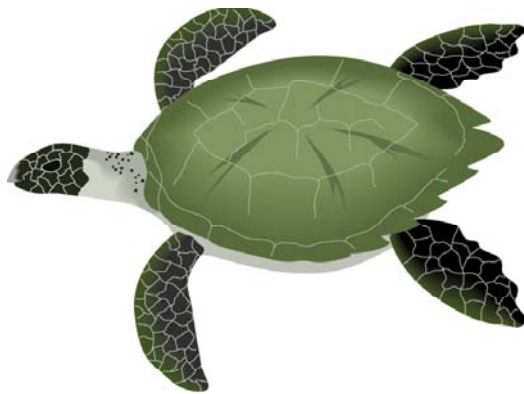




**United States Air Force  
15th Air Base Wing  
Environmental Restoration Program**

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***Final*  
WORK PLAN  
FOR REMOVAL SITE EVALUATION  
AT PIER DUMP SITE (LF24)  
Bellows Air Force Station  
Oahu, Hawaii**



**TABLES**

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TABLE 1-1

## Rare, Threatened, Endangered, and Other Wildlife Species Observed or Potentially Occurring at Bellows

*Pier Dump Site RSE, Bellows AFS*

Scientific Name	Common Name	Hawaiian Name	Federal Status
<b>Mammals</b>			
<i>Felis domesticus</i>	cat		
<i>Lasiurus cinereus semotus</i>	Hawaiian hoary bat	'ope'ape'a	E
<i>Monachus shauinslandi</i>	Hawaiian monk seal	'ilio-holo-i-ka-uaua	E
<i>Megaptera novaeangliae</i>	humpback whale	kohola	E
<i>Herpestes auropunctatus</i>	mongoose		
<i>Mus sp.</i>	mouse		
<i>Suoidea sp.</i>	pig		
<i>Rattus sp.</i>	rat		
<b>Birds</b>			
<i>Tyto alba</i>	barn owl		
<i>Nycticorax nycticorax hoactli</i>	black-crowned night-heron	'auku'u	
<i>Himantopus mexicanus knudseni</i>	black-necked stilt	ae'o	E
<i>Sula leucogaster plotus</i>	brown booby	'a	
<i>Bubulcus ibis</i>	cattle egret		
<i>Lonchura malacca</i>	chestnut mannikin		
<i>Gallinula chloropus sandwichensis</i>	Hawaiian gallinule, mudhen	'alae 'ula	E
<i>Acridotheres tristis</i>	common myna		
<i>Estrilda astrild</i>	common waxbill		
<i>Alauda arvensis</i>	Eurasian skylark		
<i>Fergata minor palmerstoni</i>	great frigatebird	'iwa	
<i>Fulica americana alai</i>	Hawaiian coot	'alae kea, 'alae ke'oke'o	E
<i>Anas wyvilliana</i>	Hawaiian duck	koloa maoli	E
<i>Asio flammeus sandwichensis</i>	Hawaiian short-eared owl	pueo	SOC
<i>Carpodacus mexicanus</i>	house finch		
<i>Passer domesticus</i>	house sparrow		
<i>Cettia diphone</i>	Japanese bush-warbler		
<i>Zosterops japonicus</i>	Japanese white-eye		
<i>Padda oryzivora</i>	java sparrow		
<i>Sula dactylatra</i>	masked booby	'a	
<i>Puffinus newelli</i>	Newell's shearwater or puffin	'a'o, li'o	T
<i>Cardinalis cardinalis</i>	northern cardinal		
<i>Minus polyglottus</i>	northern mockingbird		
<i>Lonchura punctulata</i>	nutmet mannikin		
<i>Pulvialis fulva</i>	Pacific golden plover	kolea	
<i>Paroaria coronata</i>	red-crested cardinal		
<i>Sula sula rubripes</i>	red-footed booby	'a	
<i>Pycnonotus cafer</i>	red-vented bulbul		
<i>Phasianus colchicus</i>	ring-necked pheasant		
<i>Colombia livia</i>	rock dove		
<i>Arenaria interpres</i>	ruddy turnstone	'akekeke, keke	
<i>Sicalis flaveola</i>	saffron finch		
<i>Calidris alba</i>	sanderling	hunakai	
<i>Streptopelia chinensis</i>	spotted dove		

TABLE 1-1

Rare, Threatened, Endangered, and Other Wildlife Species Observed or Potentially Occurring at Bellows  
Pier Dump Site RSE, Bellows AFS

Scientific Name	Common Name	Hawaiian Name	Federal Status
<i>Heteroscelus incanus</i>	wandering tattler	'ulili	
<i>Lonchura malabarica</i> (cantans)	warbling silverbill		
<i>Puffinus pacificus</i>	wedge-tailed shearwater	'ua'u kani	
<i>Copsychus malabaricus</i>	white-rumped shama		
<i>Serinus mozambicus</i>	yellow-fronted canary		
<i>Geopelia striata</i>	zebra dove		
<b>Reptiles</b>			
<i>Chelonia mydas</i>	green sea turtle	honu	T
<i>Eretmochelys imbricata</i>	hawksbill turtle	'ea	E
<i>Chrysemys scripta elegans</i>	red-eared slider turtle		
<b>Amphibians</b>			
<i>Rana</i> sp.	frog		
<i>Bufo marinus</i>	marine toad		
<b>Fish</b>			
<i>Acanthurus achilles</i>	Achilles tang	paku'iku'i	
<i>Upeneus taeniopterus</i>	bandtail goatfish	weke pueo	
<i>Stethojulis balteata</i>	belted wrasse	'omaka	
<i>Gomphosus varius</i>	bird wrasse	'akilolo	
<i>Lutjanus fulvus</i>	blacktail snapper	to'au	
<i>Thalassoma ballieui</i>	blacktail wrasse	hinalea luahine	
<i>Parupeneus cyclostomus</i>	blue goatfish	moano ukali	
<i>Plectroglyphidodon johnstonianus</i>	blue-eye damselfish		
<i>Acanthurus nigroris</i>	blueline surgeonfish	maiko	
<i>Naso unicornis</i>	bluespine unicornfish	kala, umaumalei	
<i>Lutjanus kasmira</i>	blue-stripe snapper	ta'ape	
<i>Acanthurus nigrofuscus</i>	brown surgeonfish	ma'i'i'i	
<i>Scarus sordidus</i>	bullethead parrotfish	uhu	
<i>Thalassoma trilobatum</i>	Christmas wrasse	'awela, hou	
<i>Acanthurus triostegus</i>	convict tang	manini	
<i>Poecilia vittata</i>	Cuban molly		
<i>Misgurnus anguillicaudatus</i>	dojo loach		
<i>Parupeneus bifasciatus</i>	doublebar goatfish	munu	
<i>Acanthurus dussumieri</i>	eyestripe surgeonfish	palani	
<i>Neomyxus leucisus</i>	false mullet	uouoa	
<i>Pervagor spilosoma</i>	fantail filefish	'o'ili'uwi'uwi	
<i>Bothus</i> spp.	flounder	paki'i	
<i>Caranx ignobilis</i>	giant trevally	ulua aukea, ulua kea	
<i>Awaous guamensis</i>	goby	nakea, 'o'opu nakea, 'o'opu 'akupa, 'o'opu naniha	
<i>Ctenochaetus strigosus</i>	gold-ring surgeonfish	kole	
<i>Abudefduf sordidus</i>	gray damselfish	kupipi, 'o'onui	
<i>Sphyrna barracuda</i>	great barracuda	kaku	
<i>Labroides phthirophagus</i>	Hawaiian cleaner wrasse	hinalea	
<i>Dascyllus albisella</i>	Hawaiian dascyllus	'alo'ilo'i	
<i>Kuhlia sandvicensis</i>	Hawaiian flagtail	ahole, aholehole	

TABLE 1-1

Rare, Threatened, Endangered, and Other Wildlife Species Observed or Potentially Occurring at Bellows  
Pier Dump Site RSE, Bellows AFS

Scientific Name	Common Name	Hawaiian Name	Federal Status
<i>Abudefduf abdominalis</i>	Hawaiian sergeant	mamo	
<i>Apogon kallopterus</i>	iridescent cardinalfish	'upapalu makanui, 'upapalu	
<i>Sphyræne helleri</i>	Japanese barracuda	kawele 'a	
<i>Scomberoides lysan</i>	leatherback	lai	
<i>Poecilia sphenops</i>	liberty molly		
<i>Forcipiger</i> spp.	long-nose butterflyfish	lauwiliwili	
<i>Parupeneus multifasciatus</i>	manybar goatfish	moano kea	
<i>Chaetodon miliaris</i>	milletseed butterflyfish	lauwiliwili	
<i>Cheilio inermis</i>	mongoose wrasse, cigar wrasse	kupou, kupoupou	
<i>Zanclus comutus</i>	moorish idol	kihikihi	
<i>Gambusia affinis</i>	mosquitofish		
<i>Chaetodon multicinctus</i>	multiband butterflyfish	kikakapu	
Belonidae (2 species)	needlefish	'aha'aha, 'aha	
<i>Acanthurus olivaceus</i>	orangeband surgeofish	na'ena'e	
<i>Stegastes fasciolatus</i>	pacific gregory		
<i>Scarus psittacus</i>	palenose parrotfish	uhu	
<i>Cephalopholis argus</i>	peacock grouper, roi		
<i>Xyrichtys pavo</i>	peacock razorfish		
<i>Anampses curvier</i>	pearl wrasse	'opule la uli	
<i>Acanthurus blochii</i>	ringtail surgeonfish	pualu	
<i>Oxycheilinus unifasciatus</i>	ringtail wrasse		
<i>Thalassoma duperrey</i>	saddle wrasse	hinalea lau wili	
<i>Cirripectes vanderbilti</i>	scarface blenny	pao'o	
<i>Aluterus scriptus</i>	scrawled filefish	loulu	
<i>Parupeneus pleurostigma</i>	sidespot goatfish	malu	
<i>Myripristis</i> spp.	solderfish	'u'u	
<i>Arothron meleagris</i>	spotted puffer	'o'opu hue	
<i>Ostracion meleagris</i>	spotted trunkfish	moa	
<i>Calotomus sandwicensis</i>	stareye parrotfish	ponuhunuhu	
<i>Arothron hispidus</i>	stripebelly puffer		
<i>Mugil cephalus</i>	striped mullet	'ama'ama	
<i>Xiphophorous helleri</i>	swordtail		
<i>Polydactylus sexfilis</i>	threadfin	moi	
<i>Tilapia</i> spp.	tilapia		
<i>Gymnothorax undulatus</i>	undulated moray		
<i>Acanthurus leucopareus</i>	whitebar surgeonfish		
<i>Zebрасoma flavescens</i>	yellow tang	lau'ipala, lau'ipala, la'ipala	
<i>Acanthurus xanthopterus</i>	yellowfin surgeonfish	pualu	
<i>Gymnothorax flavimarginatus</i>	yellowmargin moray		
<i>Mulloidichthys flavolineatus</i>	yellowstripe goatfish	weke'a, weke'a'a	
<i>Eleotris sandwicensis</i>		o'opu 'akupa, 'okuhe, 'akupa, 'apoha, kuhe	
<i>Stenogobius hawaiiensis</i>			

TABLE 1-1

Rare, Threatened, Endangered, and Other Wildlife Species Observed or Potentially Occurring at Bellows  
Pier Dump Site RSE, Bellows AFS

Scientific Name	Common Name	Hawaiian Name	Federal Status
<b>Crustaceans</b>			
<i>Thalamita crenata</i>	blue-pincher crab		
<i>Macrobrachium grandimanus</i>	prawn	'opae 'oeha'a	
<i>Scylla serrata</i>	Samoan crab		
<i>Atyoida bisulcata</i>	shrimp	'opae kala'ole	
<i>Panulirus marginatus</i>			
<b>Echinoderms</b>			
<i>Echinothrix calamaris</i>	black long-spined urchin	wana	
<i>Tripneustes gratilla</i>	collector urchin	wana	
<i>Echinometra mathaei</i>	rock boring urchin	wana	
<i>Holothuria atra</i>	sea cucumber		
<i>Holothuria nobilis</i>	sea cucumber		
<i>Diadema paucispinum</i>	sea urchin	wana	
<i>Echinostrephus aciculatus</i>	sea urchin	wana	
<i>Echinothris disdema</i>	sea urchin	wana	
<i>heterocentrotus mammillatus</i>	sea urchin	wana	
<i>Linckia multifora</i>	starfish	pe'a, pe'ape'a, 'ope'ape'a, hoku kai	
<i>Linckia diplax</i>	starfish	pe'a, pe'ape'a, 'ope'ape'a, hoku kai	
<b>Mollusks</b>			
<i>Euglandia</i> sp.	African snail	kamaloli, pupu, homeka	
f. <i>Ampularidae</i>	apple snail	kamaloli, pupu, homeka	
<i>Melanoides</i> sp.	thiarid snail	kamaloli, pupu, homeka	
<b>Coelenterates</b>			
<i>Charybda</i> spp.	box jellyfish	pololia	
<i>Aurelia aurita</i>	moon jellyfish	pololia	
<i>Physalia physalis</i>	Portuguese man-o-war	manuwa, manua, pa'imalau, po'imalau	

**Notes:**

Federal Status Codes:

E = Endangered

T = Threatened

SOC = Species of Concern

Sources: *Integrated Natural Resources Management Plan*, EA, January 1997.

*Fishes of Hawai'i*, Hawaii Coral Reef Network (derived from the Department of Land and Natural Resources, State of Hawai'i), [Online:] <http://www.coralreefnetwork.com/marlife/fishes/hname.htm> (December 10, 2001).

*Hawaii Fish Species Reference*, Reef Environmental Education Foundation, [Online:] <http://www.reef.org/data/haw/fishsp.htm> (December 10, 2001).

*Hawaiian Dictionary*, Revised and Enlarged Edition, Mary Kawena Pukui and Samuel H. Elbert, Honolulu, HI: U of Hawai'i Press, 1986.

TABLE 3-1  
 Site Inspection Analytical Data Summary and Data Gap Summary for Pier Dump Site  
 Pier Dump Site RSE, Bellows AFS

SI Analytical Data Summary	SI Data Quality/Representativeness Summary	How to Address Data Gaps
<b>Surface Soil</b>		
<p><b>Number of samples:</b> 6</p> <p><b>Constituents analyzed:</b> SVOCs, PAHs, pesticides, PCBs, herbicides, cyanide, metals, dioxins, and TPH.</p> <p><b>Constituents detected:</b> Metals, PAHs, TPH, cyanide, SVOCs (1 phthalate), dioxins, MCPP (only metals, dioxins, and MCPP above RLs).</p> <p><b>Constituents exceeding screening levels:</b> Arsenic, cadmium, and lead</p> <p><b>Constituents of Interest:</b> Cadmium and lead</p>	<p><b>Data Quality:</b> Inadequate. Rejected data for pesticides, PCBs, herbicides, and SVOCs – SVOCs not considered problematic as very few analytes were detected, at very low concentrations; although also infrequently detected, and at low concentrations, pesticides are of interest as they were detected in groundwater at concentrations exceeding screening levels.</p> <p><b>Chemical representativeness:</b> Inadequate due to rejected data for pesticides, PCBs, and herbicides.</p> <p><b>Exposure representativeness:</b> Adequate.</p> <p><b>Spatial representativeness:</b> Marginal.</p> <p><b>Temporal representativeness:</b> Adequate.</p>	<ul style="list-style-type: none"> <li>• Collect representative surface soil samples and analyze for metals to further evaluate screening-level exceedances for cadmium and lead and to supplement existing spatial coverage.</li> <li>• Collect representative surface soil samples and analyze for pesticides, PCBs, herbicides, to fill data gaps due to SI rejected data and to supplement existing spatial coverage.</li> </ul>
<b>Subsurface Soil</b>		
<p><b>Number of samples:</b> 15 (representing 7 locations)</p> <p><b>Constituents analyzed:</b> VOCs, SVOCs, PAHs, pesticides, PCBs, herbicides, cyanide, metals, and TPH.</p> <p><b>Constituents detected:</b> VOCs, metals, PAHs, pesticides, cyanide, metals, dioxins, and TPH (only methylene chloride, styrene, PAHs in one sample, and metals above RLs).</p> <p><b>Constituents exceeding screening levels:</b> Methylene chloride (present in blanks), dibenz(a,h) anthracene, cadmium, lead, and arsenic</p> <p><b>Constituents of Interest:</b> Lead</p>	<p><b>Data Quality:</b> Inadequate. Rejected data for pesticides, PCBs, herbicides, and SVOCs – SVOCs not considered problematic as very few analytes were detected, at very low concentrations; although also infrequently detected, and at low concentrations, pesticides are of interest as they were detected in groundwater at concentrations exceeding screening levels.</p> <p><b>Chemical representativeness:</b> Inadequate due to rejected data for pesticides, PCBs, and herbicides.</p> <p><b>Exposure representativeness:</b> Adequate for evaluating potential risk to receptors exposed to subsurface soil.</p> <p><b>Spatial representativeness:</b> Marginal.</p> <p><b>Temporal representativeness:</b> Adequate.</p>	<ul style="list-style-type: none"> <li>• Collect representative subsurface soil samples and analyze for metals to further evaluate screening-level exceedances for lead and supplement existing spatial coverage.</li> <li>• Collect representative subsurface soil samples and analyze for PAHs to supplement existing spatial coverage.</li> <li>• Collect representative subsurface soil samples and analyze for dioxins/furan if ash is encountered, to supplement existing spatial coverage.</li> <li>• Collect representative subsurface soil samples and analyze for pesticides, PCBs, herbicides, to fill data gaps due to SI rejected data and to supplement existing spatial coverage.</li> </ul>

TABLE 3-1

Site Inspection Analytical Data Summary and Data Gap Summary for Pier Dump Site  
*Pier Dump Site RSE, Bellows AFS*

SI Analytical Data Summary	SI Data Quality/Representativeness Summary	How to Address Data Gaps
<b>Groundwater</b>		
<p><b>Number of samples:</b> 6</p> <p><b>Constituents analyzed:</b> VOCs, SVOCs, PAHs, pesticides, PCBs, herbicides, cyanide, metals, and TPH.</p> <p><b>Constituents detected:</b> VOCs (toluene and tert-butylbenzene), SVOCs (2 phthalates), PAHs, pesticides, metals, dioxins, and TPH (only 3 metals and dioxins above RLs).</p> <p><b>Constituents exceeding screening levels:</b> Endrin</p> <p><b>Constituents of Interest:</b> None</p>	<p><b>Data Quality:</b> Inadequate. Rejected data for pesticides, PCBs, herbicides, and SVOCs – SVOCs not considered problematic as very few analytes were detected, at very low concentrations; although also infrequently detected, and at low concentrations, pesticides are of interest as they were detected at concentrations exceeding screening levels.</p> <p><b>Chemical representativeness:</b> Inadequate due to rejected data for pesticides, PCBs, and herbicides.</p> <p><b>Exposure representativeness:</b> Adequate.</p> <p><b>Spatial representativeness:</b> Marginal.</p> <p><b>Temporal representativeness:</b> Adequate.</p>	<ul style="list-style-type: none"> <li>• Collect representative groundwater samples and analyze for metals since they were detected in subsurface soil at concentrations exceeding screening levels, and also to supplement existing spatial coverage.</li> <li>• Collect representative subsurface soil samples and analyze for pesticides, PCBs, herbicides, to fill data gaps due to SI rejected data and to supplement existing spatial coverage.</li> </ul>

**Notes:**

PAHs = polynuclear aromatic hydrocarbons  
 PCBs = polychlorinated biphenyls  
 RL = reporting limit  
 SI = Site Inspection  
 SVOCs = semivolatile organic compounds  
 TPH = total petroleum hydrocarbons  
 VOCs = volatile organic compounds

TABLE 3-2  
 Data Quality Objectives and Associated Removal Site Investigation Tasks for Pier Dump Site  
 Pier Dump Site RSE, Bellows AFS

Problem Statement	Decision to be Made	Inputs to the Decision	Decision Rule	Removal Site Evaluation Tasks
<b>Surface Soil (0 to 6 inches bgs)</b>				
Constituents may be present in surface soil at concentrations that potentially pose unacceptable risks to construction workers at the site.	Decide whether construction workers may be exposed to constituent concentrations in surface soil from the site that potentially pose unacceptable risks.	<ul style="list-style-type: none"> <li>Conceptual site model</li> <li>Surface soil analytical data (including SI data)</li> <li>Human health risk and hazard index estimates</li> </ul>	If construction workers at the site are exposed to constituent concentrations that potentially pose unacceptable risks, this pathway will be addressed as part of an FS.	<ul style="list-style-type: none"> <li>Sample surface soil from 15 locations at the site. Analyze for pesticides, PCBs, herbicides, and metals</li> <li>Conduct the baseline risk assessment</li> </ul>
Constituents may be present in surface soil at concentrations that potentially pose unacceptable risks to military personnel training at the site.	Decide whether military training personnel may be exposed to constituent concentrations in surface soil from the site that potentially pose unacceptable risks.	<ul style="list-style-type: none"> <li>Conceptual site model</li> <li>Surface soil analytical data (including SI data)</li> <li>Information on military training activities at the site</li> <li>Human health risk and hazard index estimates</li> </ul>	If military personnel training at the site are exposed to constituent concentrations that potentially pose unacceptable risks, this pathway will be addressed as part of an FS.	<ul style="list-style-type: none"> <li>Sample surface soil from 15 locations at the site. Analyze for pesticides, PCBs, herbicides, and metals</li> <li>Evaluate information on military training frequency</li> <li>Conduct the baseline risk assessment</li> </ul>
Constituents may be present in surface soil at concentrations that potentially pose unacceptable risks to recreational visitors at the site.	Decide whether recreational visitors may be exposed to constituent concentrations in surface soil from the site that potentially pose unacceptable risks.	<ul style="list-style-type: none"> <li>Conceptual site model</li> <li>Surface soil analytical data (including SI data)</li> <li>Information on site access by recreational users</li> <li>Human health risk and hazard index estimates</li> </ul>	If recreational visitors at the site are exposed to constituent concentrations that potentially pose unacceptable risks, this pathway will be addressed as part of an FS.	<ul style="list-style-type: none"> <li>Sample surface soil from 15 locations at the site. Analyze for pesticides, PCBs, herbicides, and metals</li> <li>Evaluate information on site access by recreational users</li> <li>Conduct the baseline risk assessment</li> </ul>
If significant terrestrial habitat for ecological receptors of concern exists, constituents may be present in surface soil at concentrations that potentially pose unacceptable risks to these receptors.	Identify potential ecological receptors of concern and decide whether terrestrial habitat exists for those receptors.	<ul style="list-style-type: none"> <li>Conceptual site model</li> <li>Site reconnaissance by biologist</li> </ul>	If terrestrial habitat exists for ecological receptors of concern, then this pathway will be addressed as part of the RSE.	<ul style="list-style-type: none"> <li>Conduct a biological reconnaissance site walk to evaluate habitat and identify potential receptors of concern.</li> </ul>

TABLE 3-2  
 Data Quality Objectives and Associated Removal Site Investigation Tasks for Pier Dump Site  
 Pier Dump Site RSE, Bellows AFS

Problem Statement	Decision to be Made	Inputs to the Decision	Decision Rule	Removal Site Evaluation Tasks
<b>Subsurface Soil (6 inches to top of water table)</b>				
Constituents may be present in subsurface soil at concentrations that potentially pose unacceptable risks to construction workers at the site.	<ul style="list-style-type: none"> <li>Decide whether construction workers may be exposed to constituent concentrations in subsurface soil from the site that potentially pose unacceptable risks.</li> </ul>	<ul style="list-style-type: none"> <li>Conceptual site model</li> <li>Subsurface soil analytical data (including historical data of sufficient quality)</li> <li>Human health risk and hazard index estimates</li> </ul>	If construction workers at the site are exposed to constituent concentrations that potentially pose unacceptable risks, this pathway will be addressed as part of an FS.	<ul style="list-style-type: none"> <li>Collect up to 10 subsurface soil samples from four trenches. Analyze for PAHs, metals, pesticides, PCBs, and herbicides. If ash is encountered, analyze for dioxins and furans</li> <li>Sample subsurface soil from 4 locations at the site. Analyze for PAHs, pesticides, PCBs, herbicides, and metals</li> <li>Conduct the baseline risk assessment</li> </ul>
<b>Shallow Groundwater</b>				
Constituents may be present in shallow groundwater at concentrations that potentially pose unacceptable risks to construction workers at the site.	Decide whether construction workers may be exposed to constituent concentrations in shallow groundwater from the site that potentially pose unacceptable risks.	<ul style="list-style-type: none"> <li>Conceptual site model</li> <li>Shallow groundwater analytical data (including SI data)</li> <li>Human health risk and hazard index estimates</li> </ul>	If construction workers at the site are exposed to constituent concentrations that potentially pose unacceptable risks, this pathway will be addressed as part of an FS.	<ul style="list-style-type: none"> <li>Sample groundwater from four wells to be installed at the site. Analyze for pesticides, PCBs, herbicides, and dissolved metals</li> <li>Conduct the baseline risk assessment</li> </ul>
Constituents may be present in shallow groundwater at concentrations that potentially pose unacceptable risks to recreational visitors at the site (assuming they were swimming in offsite surface water).	Decide whether recreational visitors may be exposed to constituent concentrations in shallow groundwater from the site that potentially pose unacceptable risks.	<ul style="list-style-type: none"> <li>Conceptual site model</li> <li>Shallow groundwater analytical data (including SI data)</li> <li>Information on site access by recreational users</li> <li>Human health risk and hazard index estimates</li> </ul>	If recreational visitors at the site are exposed to constituent concentrations that potentially pose unacceptable risks, this pathway will be addressed as part of an FS.	<ul style="list-style-type: none"> <li>Sample groundwater from four wells to be installed at the site. Analyze for pesticides, PCBs, herbicides, and dissolved metals</li> <li>Evaluate information on site access by recreational users</li> <li>Conduct the baseline risk assessment</li> </ul>
Constituents may be present in shallow groundwater at concentrations that potentially pose unacceptable risks to aquatic resources in offsite surface water.	Decide whether constituents are present in shallow groundwater at concentrations that may discharge to offsite surface water at concentrations that potentially pose unacceptable risks.	<ul style="list-style-type: none"> <li>Conceptual site model</li> <li>Shallow groundwater analytical data (including SI data)</li> <li>Ecological risk estimates</li> </ul>	If aquatic resources in offsite surface water are exposed to constituent concentrations that potentially pose unacceptable risks, this pathway will be addressed as part of an FS.	<ul style="list-style-type: none"> <li>Sample groundwater from four wells to be installed at the site. Analyze for pesticides, PCBs, herbicides, and dissolved metals</li> <li>Evaluate information on aquatic resources</li> <li>Conduct the baseline risk assessment</li> </ul>

TABLE 3-2  
 Data Quality Objectives and Associated Removal Site Investigation Tasks for Pier Dump Site  
*Pier Dump Site RSE, Bellows AFS*

Problem Statement	Decision to be Made	Inputs to the Decision	Decision Rule	Removal Site Evaluation Tasks
<b>Limited Debris Removal and Remedial Option Evaluation</b>				
The nature and extent of the dump materials has not been adequately characterized.	Decide which remedial options are most appropriate and feasible (as part of an FS, if further remedial action is warranted).	<ul style="list-style-type: none"> <li>• Geophysical survey results</li> <li>• Observations made during trenching</li> <li>• Soil lithologic logging results</li> </ul>	If the nature of the landfill materials and volume estimates are identified, cost estimates and remedial options can be supported as part of an FS, if further remedial action is warranted.	<ul style="list-style-type: none"> <li>• Perform a geophysical survey to locate buried metallic debris and define the lateral extent of dump materials</li> <li>• Excavate up to four trenches (based on geophysical survey; along the length of the dump and three perpendicular to the first)</li> <li>• Perform limited removal of subsurface debris encountered in trenches</li> </ul>

**Notes:**

bgs = below ground surface  
 DPS = direct-push sampling  
 FS = Feasibility Study  
 PAHs = polynuclear aromatic hydrocarbons  
 PCBs = polychlorinated biphenyls  
 SI = Site Inspection

**TABLE 3-3**

Approximate Number of Samples by Medium and Analytical Method  
*Pier Dump Site RSE, Bellows AFS*

Medium	Analytical Methods					
	PAHs (SW8270SIM)	Organochlorine Pesticides (SW8081A)	Chlorinated Herbicides (SW8151A)	PCBs (SW8082)	Priority Pollutant Metals (SW7000/ SW6010B)	Dioxins/ Furans (SW8290A)
Surface Soil		18	18	18	18	
Subsurface Soil (Trenching)	13	13	13	13	13	13 <sup>c</sup>
Subsurface Soil (DPS)	6	6	6	6	6	6 <sup>c</sup>
Groundwater		7	7	7	7 <sup>b</sup>	
<i>Equipment Blank</i>		1	1	1	1	
<b>TOTAL<sup>a</sup></b>						
<b>Soil</b>	<b>19</b>	<b>37</b>	<b>37</b>	<b>37</b>	<b>37</b>	<b>19<sup>c</sup></b>
<b>Water</b>	<b>0</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>0</b>

**Notes:**

<sup>a</sup> Totals include normal samples, field duplicates, and MS/MSD samples

<sup>b</sup> Dissolved (field filtered)

<sup>c</sup> To be analyzed if evidence of burning encountered during trenching investigation

PAHs = polynuclear aromatic hydrocarbons

PCBs = polychlorinated biphenyls

DPS = direct push sampling

TABLE 3-4

Protocol for Unexploded Ordnance or Pressure Tank Discovery

*Pier Dump Site RSE, Bellows AFS*

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In the unlikely event that a suspected pressurized tank or Unexploded Ordnance (UXO) is discovered during the course of fieldwork anywhere on Bellows AFS, the following protocol will be used:

1. **Stop work and evacuate work area.** Site workers will stop all work and withdraw from the area containing the suspected tank or UXO along pre-determined, cleared evacuation paths. All personnel will be accounted for at the designated assembly area(s). The UXO specialist shall clearly mark the area containing the suspected tank or UXO. Assess the need for site evacuation and evacuate the site as warranted. Work may recommence only after approval to proceed is provided by Air Force Personnel.
2. **Notify appropriate response personnel.** The Site Safety Coordinator (SSC) or Field Team Leader (FTL) will notify the Bellows Security Control Center (808-259-4200). This initiates the Air Force chain-of-command response to the event. The Hickam EOD can only respond to a UXO discovery through this chain; therefore, it is imperative that this notification is made as soon as possible after a discovery. While waiting for the EOD to arrive, the SSC or FTL will apprise the Project Manager and the Project H&S Manager of the discovery. The SSC or FTL will be prepared to provide the information listed below at this time.
  - Date and local time of the discovery
  - Location of the discovery
  - Quantity and type of items discovered
  - Description of the way the pressurized tank or UXO was discovered
  - Description of personnel casualties and/or injuries (if any)
  - Required medical service or facilities (if any)
  - Description of property damage (if any)

If a UXO specialist is on the site, this individual has responsible charge and final authority for all matters regarding UXO / OEW / CWM (suspected or otherwise). The UXO specialist or designee must remain at the assembly area until EOD arrives and takes control of the item(s). No pressurized tank (suspected or otherwise) will be moved from the site, buried, or handled in any way that could potentially risk the safety of the site workers or compromise its identification and handling.

3. **Assessment by EOD.** After the EOD has arrived and has assessed and taken control of the item(s), the EOD will advise if, when, and where work may commence. EOD will make the final determination of the actual presence of CWM. At its discretion, the EOD may require supplemental onsite ordnance hazard avoidance support. If the EOD determines that the suspected pressurized tank is considered CWM, the EOD is responsible for neutralizing the tank and its contents. If the EOD determines that the suspected pressurized tank is not CWM, the tank will be disposed of by a subcontractor with expertise in neutralizing suspected pressurized tanks.
4. **Disposition of Waste.** If waste is still unidentified, a plan is made for the disposition of waste. The site will remain secured (with appropriate fencing and signage) while the plan is developed and approved. The plan for disposition of waste will include review of applicable regulations. Appropriate notification of governing agencies will be conducted (Air Force, HDOH, HDOT, etc.).
5. **Execute Disposition.** Proper notification of the execution of waste removal will be performed prior to waste handling. Security will be notified and the site will remain secured.
6. **Outbrief and Documentation.** Proper briefings and documentation will be prepared following final disposition of waste.

**TABLE 4-1**  
**Subcontractors for Bellows Pier Dump RSE**  
*Pier Dump Site RSE, Bellows AFS*

<b>Subcontractor</b>	<b>Services</b>
Columbia Analytical Services	Laboratory analysis of soil and groundwater samples
Donaldson Enterprises Inc. (DEI)	Unexploded ordnance monitoring
Valley Well Drilling, Inc.	Vegetation clearing and grubbing Monitoring well drilling and installation
Philip Services Corporation (PSC)	Disposal of IDW and waste hauling
R.M. Towill, Inc.	Land Surveying of permanent monitoring wells
T.S. Dye and Colleagues, Archaeologists, Inc.	Archaeological monitoring of test pit excavation