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<p>Landfill No. 29 (LF-29) (OU: MARBO Annex)</p>	<p>garbage. Dates of operation are unknown.</p>	<p>detected in trace amounts. Soil: Trace amounts of VOCs were detected. Metal concentrations at LF-29 included antimony, chromium at 860 ppm and lead at 1,100 ppm at levels above CVs.</p>	<p>layer of recemented limestone and several inches of soil and the surface of the landfill was vegetated. An estimated 13,000 cubic yards of lead- and antimony-contaminated soil is being excavated, treated to reduce leachability of the metals, and then transported to Andersen AFB Landfill for disposal.</p>	<p>29. All detected contaminants are below ATSDR's drinking water CVs. Soil: Access to LF-29 is restricted; therefore, past, current, and future exposures to the general public are not expected. No completed exposure pathway to site contaminants exists, and no public health hazard is associated with this site.</p>
<p>Site No. 25 Fire Training Area No. 1 (FTA-1) (OU: Main Base)</p>	<p>From 1945 to 1958, waste solvents and contaminated fuels were used at FTA-1.</p>	<p>Groundwater: No groundwater contamination has been associated with FTA-1. Soil: Seven surface soil samples were analyzed for SVOCs, PAHs, pesticides, PCBs, and metals. Aluminum exceeded the CV for a child, but all other concentrations were below ATSDR's CVs for a child and adult.</p>	<p>Current Status: A NFRAP is recommend by the Air Force for this site based on the results of historical records search, document review, field investigations, and a risk assessment.</p>	<p>Groundwater: No public health hazard is associated with this site. Soil: No public health hazards are associated with soil at this site. The site is generally inaccessible to the public and only low levels of contaminants were detected in soil.</p>
<p>Site No. 26 Fire Training Area No. 2 (FTA-2) (OU: Main Base)</p>	<p>Between 1958 and 1988, contaminated JP-4, Mogas, diesel, waste POL, and solvents were spilled at FTA-2.</p>	<p>Groundwater: TCE and PCE were detected. BTEX (benzene, toluene, ethylbenzene, and xylene) were present at concentrations up to 7,200 ppb at levels above CVs. Soil: Dioxins (up to 19,000 ppm), VOCs (up to 109 ppm), SVOCs (up to 6.8 ppm), TPH, pesticides, and metals were detected at levels above CVs.</p>	<p>Corrective Activities: The Air Force has not used FTA-2 since December 1988 due to closure by GEPA. Current Status: Bioventing will be used to remediate a subsurface plume of VOCs and BTEX compounds.</p>	<p>Groundwater: No public health hazard is associated with FTA-2 because no on-site production wells exist. FTA-2 is no longer in use, so toluene levels can be expected to decrease in the future. Soil: Access to FTA-2 is highly restricted; therefore, past, current, and future exposures to the general public are not expected.</p>
<p>Site No. 27 Hazardous Waste Storage Area No. 1 (HW-1)</p>	<p>Beginning in 1950 and continuing through the 1970s, POL and solvents were stored at HW-1. From the late 1970s to 1983, HW-1 was used to</p>	<p>Groundwater: Groundwater data from downgradient wells have reported only trace amounts of VOCs (TCE). Soil: Trace amounts of VOCs and SVOCs</p>	<p>Current Status: HW-1 is a NFRAP site. Site investigations indicate that no contaminants above residential soil standards exist in surface soil, ;</p>	<p>Groundwater: No public health hazard is associated with this site. Soil: Access to HW-1 is restricted and contamination was limited to the</p>

<p>1) (OU: Main Base)</p>	<p>store hazardous wastes.</p> <p><i>Agent Blue</i> →</p>	<p>were detected. Metals concentrations in surface soil were below background concentrations. Metal concentrations at HW-1 in the shallow subsurface soil included arsenic (up to 201 ppm), chromium (up to 1,300 ppm), and lead (up to 8,600 ppm) at levels above CVs.</p>	<p>therefore, no further response actions were recommended.</p>	<p>inaccessible subsurface soil; therefore, past, current, and future exposures to the general public are not expected.</p>
<p>Site No. 28 Chemical Storage Area No. 1 (CS-1) (OU: Main Base)</p>	<p>In the early 1970s, the site may have been used for the disposal of waste petroleum, oils, lubricants, and chlorinated solvents. About 70% of the site is filled material covered with vegetative cover.</p> <p><i>Agent Blue</i> →</p>	<p>Groundwater: No groundwater contamination has been associated with CS-1. Soil: SVOCs and PAHs were detected in low concentrations. Metals, including arsenic (up to 15 ppm) and lead (up to 770 ppm), exceeded CVs.</p>	<p>Current Status: CS-1 is a NFRAP site. Based on the results of a human health risk assessment indicating that exposure to surface soil would not increase the likelihood of non-cancer effects or cancer for residents, no further response actions were recommended.</p>	<p>Groundwater: No public health hazard is associated with this site. Soil: No public health hazard is associated with soil at CS-1. Although metals were detected in soil at levels above health-based guidelines, no exposure is occurring or is likely to occur. The site is generally inaccessible to the public due to heavy vegetative growth, which prevent contact with soil contamination.</p>
<p>Site No. 29 Waste Pile No. 2 (WP-2) (formerly known as Chemical Storage Area 2) (OU: Main Base)</p>	<p>Deteriorating drums of asphaltic tar are located at WP-2. Dates of operation are unknown.</p>	<p>Groundwater: TCE, PCE, toluene, lead, and other organics were detected in trace amounts. Soil: SVOCs were detected at levels up to 0.26 ppm. With the exception of chromium (up to 950 ppm) metal concentrations were below CVs.</p>	<p>Current Status: Cleanup is complete at WP-2.</p>	<p>Groundwater: No public health hazard is associated with this site. Contaminants were detected below ATSDR's drinking water CVs. Soil: Access to this site was restricted; therefore, past exposures to the general public were not expected. No current or future exposures are likely because contaminated media has been cleaned up at WP-2.</p>
<p>Site No. 30 Waste Pile No. 4</p>	<p>From 1950 to 1970, UXO was disposed in WP-4. In addition, the site was reportedly</p>	<p>Groundwater: Groundwater collected from downgradient monitoring wells</p>	<p>Current Status: WP-4 is a NFRAP sites. A risk assessment indicated that exposure to</p>	<p>Groundwater: No public health hazard is associated with this site. Contaminants were detected below</p>

<p>(WP-4) (formerly known as Chemical Storage Area 3) (OU: Northwest Field)</p>	<p>used for the disposal of waste oils and solvents.</p>	<p>contained VOCs and metals. Chromium and nickel possibly related to corrosion of the steel pump and screens in wells exceeded EPA's MCLs. Soil: PAHs were detected at levels up to CVs. Chromium concentrations in soil reached 2,200 ppm, levels above CVs.</p>	<p>surface soil posed non-cancer and cancer risk for trespassers and potential future residents. However, soil contaminant concentrations were consistent with regional background concentrations; therefore, no further response actions were recommended.</p>	<p>ATSDR's drinking water CVs. Soil: Access is restricted to assigned military personnel or authorized visitors and currently no people work or live on or near the site. Furthermore, the soil at the site is covered with mixed vegetation. Therefore, past, current, and future exposures to the general public are not expected.</p>
<p>Site No. 31 Chemical Storage Area No. 4 (CS-4) (OU: Northwest Field)</p>	<p>From 1952 to 1956, waste oils and solvents were stored at CS-4. <i>NO burning in this area</i></p>	<p>Groundwater: No groundwater contamination has been associated with CS-4. Soil: Dioxins (up to 130 ppm), VOCs (up to 1 ppm), TPH, and lead (up to 3,100 ppm) were detected at levels above CVs.</p>	<p>Current Status: Cleanup is in progress at CS-4. Approximately 420 cubic yards of lead-contaminated soils will be excavated and disposed of.</p>	<p>Groundwater: No public health hazard is associated with this site. Soil: Access to this site is restricted; therefore, past, current, and future exposures to the general public are not expected.</p>
<p>Site No. 32 Drum Storage Area No. 1 (DS-1) (OU: Main Base)</p>	<p>DS-1 is an vehicle wash area, landfill, and drum storage area for POL products and solvents. The area consists of a 1-acre square asphalt foundation equipped with a vehicle wash rack and drainage system, leach field, and dump pit bounded by chain link fencing.</p>	<p>Groundwater: No groundwater contamination has been associated with DS-1. Soil: SVOCs and pesticides were detected.</p>	<p>Current Status: DS-1 is still active and was transferred to the Environmental Compliance Program Upon transfer, the IRP made recommendations for further soil sampling.</p>	<p>Groundwater: No public health hazard is associated with this site. Soil: Access to DS-1 is highly restricted; therefore, past, current, and future exposures to the general public are not expected.</p>
<p>Site No. 33 Drum Storage Area No. 2 (DS-2) (OU: Main Base)</p>	<p>DS-2 is an active drum storage area for asphalt, paint, oil, tar, and contaminated soil from underground storage tank (UST) removals. It is about 4,000 feet from the nearest housing and is</p>	<p>Groundwater: TCE, PCE, lead, and other organics were detected. PCE concentrations slightly exceeded the ATSDR drinking water CV. Soil: Pesticides were detected.</p>	<p>Current Status: DS-2 is still active and was transferred to the Environmental Compliance Program because of the lack of evidence suggesting that hazardous material was present at the site prior to 1984. Upon transfer,</p>	<p>Groundwater: No public health hazard is associated with this site because no production wells are located in this area and no one is exposed to contaminated groundwater. Soil: Access to DS-2</p>

	fenced. No evidence exists that the area was used for storage of hazardous substances before 1984.		the IRP made recommendations for further assessment of the site.	is highly restricted; therefore, past, current, and future exposures to the general public are not expected.
Site No. 34 PCB Storage Area (OU: Main Base)	The PCB Storage Area is no longer in use, but its dates of operation are unknown. This area was used for storage purposes and for the removal of oil from electrical equipment.	Groundwater: No groundwater contamination has been associated with the PCB Storage Area. Soil: SVOCs (up to 2 ppm) and PCB (up to 19 ppm) were detected at levels above CVs.	Current Status: Cleanup is in progress at the PCB Storage Area.	Groundwater: No public health hazard is associated with this site. No contaminants were detected above background concentrations. Soil: Access to the site is highly restricted; therefore, past, current, and future exposures to the general public are not expected. No completed exposure pathway exists.
Site No. 35 Waste Pile No. 1 (WP-1) (OU: Main Base)	Several thousand deteriorated drums of asphaltic tar from unknown dates are located at WP-1.	Groundwater: TCE, PCE, toluene, lead, pesticides, and other organics were all detected below ATSDR drinking water CVs. Soil: Dioxins (up to 87 ppm), SVOCs (up to 0.27 ppm), TPH, and metals (chromium levels up to 1,550 ppm) were detected at levels above CVs.	Current Status: Asphalt removal and excavation began in 1997. Drums containing asphalt material were emptied into trenches. Asphalt in about 3,000 drums has been processed and recovered at an on-site asphalt recovery system. About 3,000 cubic yards of asphalt debris and about 8,000 drums remain stockpiled at the site. A pilot study was planned to evaluate the disposal of the remaining debris.	Groundwater: No public health hazard is associated with this site. Contaminants were detected below ATSDR's drinking water CVs. Soil: No public health hazard is associated with soil at this site. Confirmatory soil sampling conducted after asphalt debris removal activities found no elevated levels of organic compounds. Physical Hazards: Due to site access restrictions, no hazards exists to the general public. Only trained personnel conducting work in accordance with OSHA requirements for health and safety are allowed access.
Site No. 36 Ritidian Waste Pile	The dates of operation and contents of the Ritidian Waste Pile are unknown.	Groundwater: No groundwater contamination has been associated with the Ritidian Waste Pile. Soil: Soil sampling is	Current Status: An EE/CA is underway.	Groundwater: No public health hazard is associated with this site. Soil: Access to LF-36 is restricted; therefore, past,

<p>(OU: Northwest Field)</p>		<p>underway; therefore, the results are not yet available.</p>		<p>current, and future exposures to the general public are not expected. However, ATSDR will review soil data when available to further assess potential public health hazards.</p>
<p>Site No. 37 War Dog Borrow Pit (WDBP) (OU: MARBO Annex)</p>	<p>WDBP is an abandoned quarry. Its dates of operation and contents are unknown.</p>	<p>Groundwater: TCE was detected above the ATSDR drinking water CV. PCE, TCA, chloroform, toluene, xylene, lead, and other organics were detected in trace amounts. Soil: TPH (dioxin levels up to 94 ppm) and metals were detected were detected at levels above CVs.</p>	<p>Current Status: NFRAP.</p>	<p>Groundwater: No apparent public health hazard is associated with this site. TCE concentrations are diluted by the military's water distribution system. No public or private production wells are or have been contaminated by TCE from WDBP, and all other detected contaminants are below ATSDR's drinking water CVs. Soil: Access to WDBP is highly restricted; therefore, past, current, and future exposures to the general public are not expected.</p>
<p>Site No. 38 MARBO Laundry Facility (MLF) (OU: MARBO Annex)</p>	<p>The MARBO Laundry Facility is a former laundry facility.</p> <p><i>No burring at this location</i></p>	<p>Groundwater: PCE was detected above the ATSDR drinking water CV. TCE, CCl₄, chloroform, toluene, xylene, lead, pesticides, and other organics were detected in trace amounts. Soil: TPH (dioxin levels up to 120 ppm) and metals (lead levels up to 15,700 ppm) were detected at levels above CVs.</p>	<p>Current Status: Cleanup is complete at MLF.</p>	<p>Groundwater: No public health hazards are associated with PCE-contaminated groundwater underlying the MARBO Laundry Facility because no production wells are located in this area and no one is exposed to contaminated groundwater. The MARBO Laundry Facility appears to be the main source of the YU-1 plume that may potentially contaminate downgradient production wells with PCE. Other chemicals concentrations at this site remain below</p>

				<p>ATSDR's drinking water CVs and are not associated with any public health hazards.</p> <p>Soil: Access to this site was restricted; therefore, past exposures to the general public were not expected. No current or future exposures are likely because contaminated soil has been cleaned up at MLF.</p>
<p>Site No. 39</p> <p>Harmon Substation</p> <p>(OU: Harmon)</p>	<p>The dates of operation and waste contents at the Harmon Substation site are unknown.</p>	<p>Groundwater: No groundwater contamination has been associated with the Harmon Substation.</p> <p>Soil: Dioxins (up to 0.78 ppm), VOCs (up to 9.8 ppm), SVOCs (up to 1.8 ppm), pesticides (up to 12 ppm), and metals (chromium levels up to 830 ppm) were detected, some at levels above at CVs.</p>	<p>Current Status: Cleanup is complete at HSS.</p>	<p>Groundwater: No public health hazard is associated with this site.</p> <p>Soil: Access to this site was restricted; therefore, past exposures to the general public were not expected. No current or future exposures are likely because contaminated media has been cleaned up at HSS.</p>

Sources: SAIC 1991; USAF 1992a, 1996, 1997, 2000. Andersen AFB 1998b, 1998c, 1998d; Andersen AFB 1999c, 1999d, 1999e, 1999f, 1999g; Andersen AFB 2000b, 2000c.

*Groundwater results are for monitoring and production wells located immediately downgradient of each site.

APPENDIX B: GLOSSARY

Background Level:

A typical or average level of a chemical in the environment. *Background* often refers to naturally occurring or uncontaminated levels.

Biota:

Plants or animals. Refers to those organisms collected and hunted for food.

Carcinogen:

Any substance that may produce cancer.

Comparison Values:

Estimated contaminant concentrations in specific media that are not likely to cause adverse health effects, given a standard daily ingestion rate and standard body weight. The *comparison values* are calculated from the scientific literature available on a contaminant's exposure and health effects.

Concentration:

The amount of one substance dissolved or contained in a given amount of another. For example, sea water contains a higher concentration of salt than fresh water.

Contaminant:

Any substance or material that enters a system where it is not normally found or found in greater concentrations than background levels.

Dose:

The amount of substance to which a person is exposed. *Dose* often takes body weight into account.

Environmental contamination:

The presence of hazardous substances in the environment. From the public health perspective, *environmental contamination* is addressed when it potentially affects the health and quality of life of people living and working near the contamination.

EPA's Reference Dose (RfD):

An estimate of the daily exposure to a contaminant unlikely to cause non-carcinogenic adverse health effects over a lifetime of exposure. Like ATSDR's MRL, EPA's RfD is a dose expressed in mg/kg/day.

Exposure:

Contact with a chemical by swallowing, by breathing, or by direct contact (such as through the skin or eyes). *Exposure* may be short term (acute) or long term (chronic).

Hazard:

A source of risk that does not necessarily imply potential for occurrence. A hazard produces risk only if an exposure pathway exists, and if exposures create the possibility of adverse consequences.

Indeterminate Public Health Hazard:

The designation given to sites for which no conclusions about public health hazards can be made because data are lacking.

Ingestion:

Swallowing (such as eating or drinking). Chemicals can get in or on food, drink, utensils, cigarettes, or hands where they can be ingested. After *ingestion*, chemicals can be absorbed into the blood and distributed throughout the body.

Maximum Contaminant Levels (MCLs):

MCLs are legal drinking water quality standards defined by the Safe Drinking Water Act. MCLs represent contaminant concentrations in drinking water that someone could be exposed to on a daily basis over a life time without adverse health effects.

Media:

Soil, water, air, plants, animals, or any other parts of the environment that can contain contaminants.

Minimal Risk Level (MRL):

An *MRL* is defined as an estimate of daily human exposure to a substance that is likely to be without an appreciable risk of adverse effects (noncancer) over a specified duration of exposure. *MRLs* are derived when reliable and sufficient data exist to identify the target organ(s) of effect or the most sensitive health effect(s) for a specific duration via a given route of exposure. *MRLs* are based on noncancer health effects only. *MRLs* can be derived for acute, intermediate and chronic duration exposures by the inhalation and oral routes.

National Priorities List (NPL):

EPA's listing of sites that have undergone preliminary assessment and site inspection to determine which locations pose an immediate threat to persons living or working near the release. These sites are most in need of cleanup.

No Apparent Public Health Hazard:

The designation given to sites where human exposure to contaminated media is occurring or has occurred in the past, but the exposure is below a level of health hazard.

Plume:

An area of chemicals in a particular medium, such as air or groundwater, moving away from its source in a long band or column. A *plume* can be a column of smoke from a chimney or chemicals moving with groundwater.

Potentially Exposed:

The condition where valid information, usually analytical environmental data, indicates the presence of contaminant(s) of a public health concern in one or more environmental media contacting humans (e.g., air, drinking water, soil, food chain, surface water), and there is evidence that some of those persons may have an identified route(s) of exposure (e.g., drinking contaminated water, breathing contaminated air, having contact with contaminated soil, or eating contaminated food).

Public Health Assessment:

The evaluation of data and information on the release of hazardous substances into the environment in order to assess any current or future impact on public health, develop health advisories or other recommendations, and identify studies or actions needed to evaluate and mitigate or prevent human health effects; also, the document resulting from that evaluation.

Public Health Hazard:

Sites that pose a public health hazard as the result of long-term exposures to hazardous substances.

Reference Concentration (RfC):

A concentration in air expected to be associated with no deleterious health effects over a lifetime of exposure, assuming default body weights and inhalation rates.

Risk:

The probability that something will cause injury, combined with the potential severity of that injury.

Route of Exposure:

The path in which a person may contact a chemical substance. For example, drinking (ingestion) and bathing (skin contact) are two different *routes of exposure* to contaminants that may be found in water.

Volatile organic compound (VOC):

Substance containing carbon and different proportions of other elements such as hydrogen, oxygen, fluorine, chlorine, bromine, sulfur, or nitrogen; these substances easily become vapors or gases. A significant number of the VOCs are commonly used as solvents (e.g., paint thinners, lacquer thinner, degreasers, dry cleaning fluids).

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