Department of Toxic Substances Control

NASA Ames Research Center
Moffett Federal Airfield, CA

Areas of Investigation Program Overview

Program Fact Sheet No. 1

Department of Toxic Substances Control
Berkeley, California

Berkeley Office
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I. INTRODUCTION

The National Aeronautics and Space Administration Ames Research Center (NASA Ames) has entered into a Voluntary Cleanup Agreement with the **Department of Toxic Substances Control (DTSC**) to conduct investigations on releases of hazardous substances to the environment and to develop remedies for addressing these releases. DTSC will also oversee the implementation of the cleanup remedy.

This introductory fact sheet provides an overview of the NASA Ames site and background on **the Areas of Investigation (AOI)** subsurface investigations program. Twelve AOIs have been designated for the site, but only five of these are under the oversight of the DTSC.

For these AOIs a specific removal or remedial plan and a fact sheet, detailing the contamination and proposed removal or remedial actions, will be prepared and submitted to the public. It is anticipated that the first AOI-specific fact sheet will be circulated within six months. DTSC will determine on a case-by-case basis if there is need for a public meeting.

Words in **bold typeface** are defined in the Glossary.

II. SITE HISTORY

NASA Ames Research Center is a federal facility located near San Francisco Bay in California (Map #1). NASA Ames comprises 440 acres of the 1800 acre Moffett Field site. The remainder of Moffett Field is occupied by Moffett Federal Airfield (formerly Naval Air Station, Moffett Field).

There are 102 buildings at NASA Ames, primarily located in the southern portion of the property, consisting of major technical facilities and laboratories used for information systems, and aeronautical, physical, space, earth system, and life sciences research in addition to general administrative support buildings and structures.

The northern part of NASA Ames is mainly undeveloped, consisting of non-tidal marshlands and uncultivated fields previously leased for agricultural use. Some of the marshlands and grasslands at NASA Ames have been defined as wetlands. According to the NASA Ames Master Plan, no future development is planned for the wetland areas of NASA Ames.

Operations at NASA Ames have used various hazardous substances including heavy metals, solvents, fuels, oils, **polychlorinated biphenyls (PCBs)**, acids, bases, and radioactive materials. Previous investigations report that some of these materials were released into the soil and/or groundwater at NASA Ames.

Records of spills and releases occurring since 1988 are relatively complete. Information on spills and releases prior to 1988 are not well documented. Pre-1988 areas of concern were identified through the review of historical aerial photographs and other documents, as well as interviews with long-time and previous employees.

III. SITE HYDROGEOLOGY

The **groundwater** flow direction beneath NASA Ames and Moffett Federal Airfield property is generally to the north, toward San Francisco Bay, at a gentle gradient. The subsurface has generally been divided into three aquifer zones: the "A", "B", and "C" aquifer zones.

In general, the A-aquifer zone extends from the ground surface to approximately 50 feet below ground

surface; the B-aquifer zone extends from approximately 70 to 130 feet below ground surface; and the C-aquifer zone begins at approximately 160 feet below ground surface. The C-aquifer zone is the shallowest aquifer generally used for drinking water.

IV. NASA AREAS OF INVESTIGATION

Due to the size, the number of buildings, and the variety of activities that have occurred at NASA Ames, twelve AOIs were identified at the facility to allow for a more focused investigation of each selected area (Map # 2). The delineation of AOIs was based upon physical layout, historical activities, and/or known or suspected environmental contamination.

Soil or groundwater contamination has either been detected or is suspected at each of the AOIs. Each site is being assessed on an individual basis to determine the extent of contamination. Removal or remedial workplans will be developed for each AOI. When published, these documents will be available for public review and comment.

V. PROJECT OVERSIGHT

DTSC is overseeing the cleanup efforts on the western side of NASA Ames. Voluntary Cleanup Agreements between DTSC and NASA are in place for sites 4, 5, 8, 10, and most AOI 11 tank sites.

A fact sheet addressing the cleanup of AOI 4 is expected to be released within the next six months. All cleanup activities are expected to be completed within the next four years.

The U.S. Environmental Protection Agency oversees the cleanup efforts of the sites overlying the Middlefield-Ellis-Whisman (MEW) plume, discussed in Section V11. These include AOIs 1, 2, 3, 6, 7, 9, two of the AOI 11 tank sites, and AOI 12.

VI. NATURE AND EXTENT OF CONTAMINATION

The Centerwide Sampling and Analysis Program, completed in 1994, was designed to systematically evaluate the overall NASA Ames site for potential soil and groundwater issues.

Approximately 60 underground storage tanks (USTs) are known to have existed at NASA Ames. At least 50 of these tanks have either been removed or closed-in-place over the past several years. Some have been removed and replaced with new tanks.

The following chemicals have been detected in the soil and groundwater at NASA Ames:

- total petroleum hydrocarbons (TPH), i.e., fuels such as gasoline, diesel fuel, motor oil, and jet fuel
- chlorinated **volatile organic compounds (VOCs)** commonly used as solvents
- PCBs, formerly used in transformers and other electrical equipment;
- various heavy metals

VII. OFFSITE SOURCES OF CHEMICALS

In addition to onsite sources of chemicals, chemical plumes in groundwater extend from their sources at sites located adjacent to NASA Ames. The two sites, Moffett Federal Airfield and the Middlefield-Ellis-Whisman Study Area, are undergoing their own investigation and remediation activities. As stated in Section V, these plumes do not extend to the AOIs in the DTSC oversight area.

Moffett Federal Airfield
(formerly Naval Air Station, Moffett Field)

Chemicals leaked or spilled near the NASA-Moffett property line may have directly affected soil at NASA Ames. Due to the north/northeast groundwater gradient in the area, chemical sources on the west side of Moffett Field most directly impact NASA Ames; those on the east side of Moffett Field are unlikely to have affected NASA Ames.

For more information about environmental investigations at Moffett Federal Airfield, please refer to the U.S. Navy's information repository at the Mtn. View Public Library, or contact Don Chuck of the Navy Environmental Office at (415) 603-9834.

Middlefield-Ellis-Whisman Study Area

Both soil and groundwater contaminated with VOCs from upgradient (south) sources have been investigated under the guidance of the federal Environmental Protection Agency (EPA) and California's DTSC for several years.

The MEW Superfund Study Area is comprised of facilities owned or operated by approximately 20

companies, including Fairchild Semiconductor Corporation, Intel Corporation, and Raytheon Company (EPA 1989). These investigations have indicated that VOCs originating at the MEW Study Area are migrating downgradient (north) in the shallow groundwater beneath Moffett Field-NASA Ames.

For more information about Middlefield-Ellis-Whisman Study Area investigations, please refer to the MEW repository established at the Mt. View Public Library.

GLOSSARY

Area of Investigation (AOI)
A localized area in which soil and/or groundwater contamination is being investigated and remediated. The NASA Ames Research Center site contains a total of twelve AOIs.

Department of Toxic Substances Control (DTSC)
A department within the California Environmental Protection Agency, it is the lead government agency overseeing soil and groundwater investigation and cleanup activities on the west side of NASA Ames Research Center.

Groundwater
Water beneath the ground surface that flows, usually at slow rates, through soil and rock openings.

Heavy metals
A group of metals which are commonly used but have toxic properties at low concentrations, these include lead, mercury, chromium, and cadmium.

Polychlorinated biphenyls (PCBs)
PCBs are a group of chlorinated organic compounds in wide use as coolants and insulation fluids. PCBs were produced in the United States from 1929 until 1979. Concern for PCBs arose because of their extreme toxicity and their stability, lasting presence, in the environment.

Removal Action Workplan (RAW)
A plan, approved by the DTSC, that evaluates cleanup alternatives and outlines specific actions to be taken to remediate a contaminated site.

Volatile Organic Compounds (VOCs)
Carbon-containing chemical compounds that evaporate readily. These compounds are found in industrial solvents, degreasers, and paint thinners.

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Mailing List

If you would like to be added to (or removed from) the NASA Ames Research Center subsurface investigations program mailing list, please complete, detach, and mail this form to Teresa Alvarado at NASA Ames Research Center (address shown on the opposite page). Thank you.

Name: _____ ☐ ADD

Address: _____ ☐ REMOVE

City: _____ State: _____ Zip: _____ ☐

CHANGE

INFORMATION REPOSITORY

NASA's *Centerwide Sampling and Analysis Plan*, EKI, March 1994, AOI-specific workplans, and all reports related to environmental investigations at NASA Ames are available for your review at the Sunnyvale Public Library. The full administrative record is available at DTSC's Berkeley office.

Sunnyvale Public Library
665 W. Olive Avenue
Sunnyvale, CA
(408) 730-7300

Hours:
Mon.-Thurs. 10 a.m. - 9 p.m.
Fri.-Sat. 10 a.m. - 6 p.m.
Sunday Noon - 8 p.m.

PUBLIC PARTICIPATION

DTSC encourages the exchange of information with interested members of the community. Your interest and involvement will help ensure a thorough review of the information gathered and the alternatives considered. If you have any questions on the NASA Ames Areas of Investigation program, please contact any of the following.

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