



INTERIM LAND USE CONTROL IMPLEMENTATION PLAN



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION CAPE CANAVERAL AIR FORCE STATION BREVARD COUNTY, FLORIDA

FACILITY: Launch Complex 34
Solid Waste Management Unit CC054
CONTAMINANTS: Volatile Organic Compounds in Groundwater
CONTROL: Prohibit Groundwater Use

PURPOSE OF LAND USE CONTROL IMPLEMENTATION PLAN

This Interim Land Use Control Implementation Plan (LUCIP) has been prepared to inform current and potential future users of Launch Complex 34 (LC34) of institutional controls that have been implemented at the site¹. Although there are no current unacceptable risks to human health or the environment associated with LC34, institutional land use controls (LUCs) are necessary to prohibit future use of groundwater at the site. Controls will include periodic inspection, condition certification, and agency notification.

WHY LAND USE CONTROLS ARE NEEDED

From 1960 to 1968, during the operation of National Aeronautics and Space Administration's (NASA's) Apollo Space Program, the LC34 launch pad was used for launching Saturn rockets. Launch operations included the storage, transport, and use of nitrogen, helium, liquid oxygen, RP-1 fuel, liquid hydrogen, hydrazine, and nitrogen

tetroxide. Historical information suggests that rocket engines and other parts were cleaned at the site using solvent degreasers, most notably trichloroethene (TCE). It is speculated that releases of solvents occurred during cleaning operations through both intentional and unintentional discharges to nearby areas. Based on groundwater and soil sampling data, these releases occurred primarily in the immediate vicinity of the Engineering Services Building (ESB). Chlorinated solvents are present at trace to high concentrations in dissolved form, and TCE is also present as a dense non-aqueous-phase liquid (DNAPL) adjacent to the ESB. The Corrective Measures Study conducted from 2004 to 2007 identified low- and high-concentration plumes and a DNAPL source zone at LC34.

SITE DESCRIPTION

Solid Waste Management Unit (SWMU) CC054 consists of the LC34 launch pad and associated facilities. Following the deactivation of the launch pad in 1968, LC34 has remained largely inactive, although several buildings remained operational. Most

¹ This Interim LUCIP summarizes institutional controls regarding the NASA LC34 site. For detailed information on the site, consult the LC34 administrative file, which is available for review by contacting the KSC Environmental Assurance Branch at telephone number (321) 867-8402.

operational equipment, including service towers, fuel storage tanks, and piping, was dismantled, and the majority of the on-site buildings and structures were abandoned in place. A number of site investigations, engineering studies, and pilot-scale in-situ remedial technology demonstrations have been performed since site investigation initiation in 1993. A hydraulic control system is currently operating in the DNAPL source zone area and deep high-concentration plume with TCE concentrations greater than 300 µg/L, adjacent to the ESB. Groundwater extracted from the hydraulic containment system is treated via an air stripper and polished through liquid-phase granular activated carbon. Offgas laden with VOCs are then treated through a catalytic oxidizer and scrubber system. The primary contaminants at LC34 are trichloroethene (TCE) and degradation daughter products.

SITE LOCATION

LC34, which includes a launch pad and associated buildings surrounded by grassy and dense forested areas, is located on Cape Canaveral Air Force Station (CCAFS) and is bordered by the Atlantic Ocean to the east (Figure 1). LC34 is found in Section 6, Township 23S, Range 38E, as shown on the 7.5-minute False Cape topographic quadrangle map. The groundwater use

control area covered by this Interim LUCIP is shown on Figure 2. Coordinates of the corners of the LUC area are provided on Figure 2 in the State Plane Coordinate System, North American Datum (NAD) 1983, Florida East, meters.

SITE CONTAMINATION AND CONTROL

Groundwater at the site contains VOCs at concentrations greater than Florida Department of Environmental Protection (FDEP) Groundwater Cleanup Target Levels. The past, current, and projected future land use of LC34 is industrial in nature. LUCs are required to prohibit the use of groundwater at the site until cleanup levels are achieved. The current and projected land use of LC34 does not include the use of site groundwater; therefore, there is no current or projected future exposure risk.

DECISION DOCUMENT

The Kennedy Space Center (KSC) Remediation Team determined that interim institutional controls should be implemented at LC34. The interim institutional controls are temporary while investigation, interim measures, and corrective measures are in progress.

² By separate MOA effective February 23, 2001, with the EPA and FDEP, KSC, on behalf of NASA, agreed to implement Center-wide, certain periodic site inspections, condition certification, and agency notification procedures designed to ensure the maintenance by Center personnel of any site-specific LUCs deemed necessary for future protection of human health and the environment. A fundamental premise underlying execution of that agreement was that through the Center's substantial good faith compliance with the procedures called for herein, reasonable assurances would be provided to EPA and FDEP as to the permanency of those remedies which included the use of specific LUCs.

Although the terms and conditions of the MOA are not specifically incorporated or made enforceable herein by reference, it is understood and agreed by NASA KSC, EPA and FDEP that the contemplated permanence of the remedy reflected herein shall be dependent upon the Center's substantial good faith compliance with the specific LUC maintenance commitments reflected herein. Should such compliance not occur or should the MOA be terminated, it is understood that the protectiveness of the remedy concurred in may be reconsidered and that additional measures may need to be taken to adequately ensure necessary future protection of human health and the environment.

IMPLEMENTATION

Institutional controls will be implemented by the KSC Environmental Assurance Branch in accordance with their Resource Conservation and Recovery Act (RCRA) permit and a Land Use Control Assurance Plan included in a Memorandum of Agreement (MOA)² between NASA, FDEP, and United States Environmental Protection Agency (EPA), effective February 23, 2001. Property transfer (if conducted in the future) will be conducted in accordance with Section X of the MOA.

KSC's Environmental Assurance Branch will provide KSC's Master Planning Office and CCAFS Installation Restoration Program with survey coordinates of the LC34 LUCs. Restrictions will specify limitations on development and reuse for the area for as long as LUCs are necessary to protect human health and the environment.

MONITORING

Quarterly inspections to monitor that the LUCs specified herein are in place and operating and will be conducted by KSC's Environmental Assurance Branch. The inspections will verify that no groundwater use is occurring at LC34.

REPORTING

KSC's Environmental Assurance Branch will submit annual reports to FDEP certifying retention of the implemented LUCs.

ENFORCEMENT

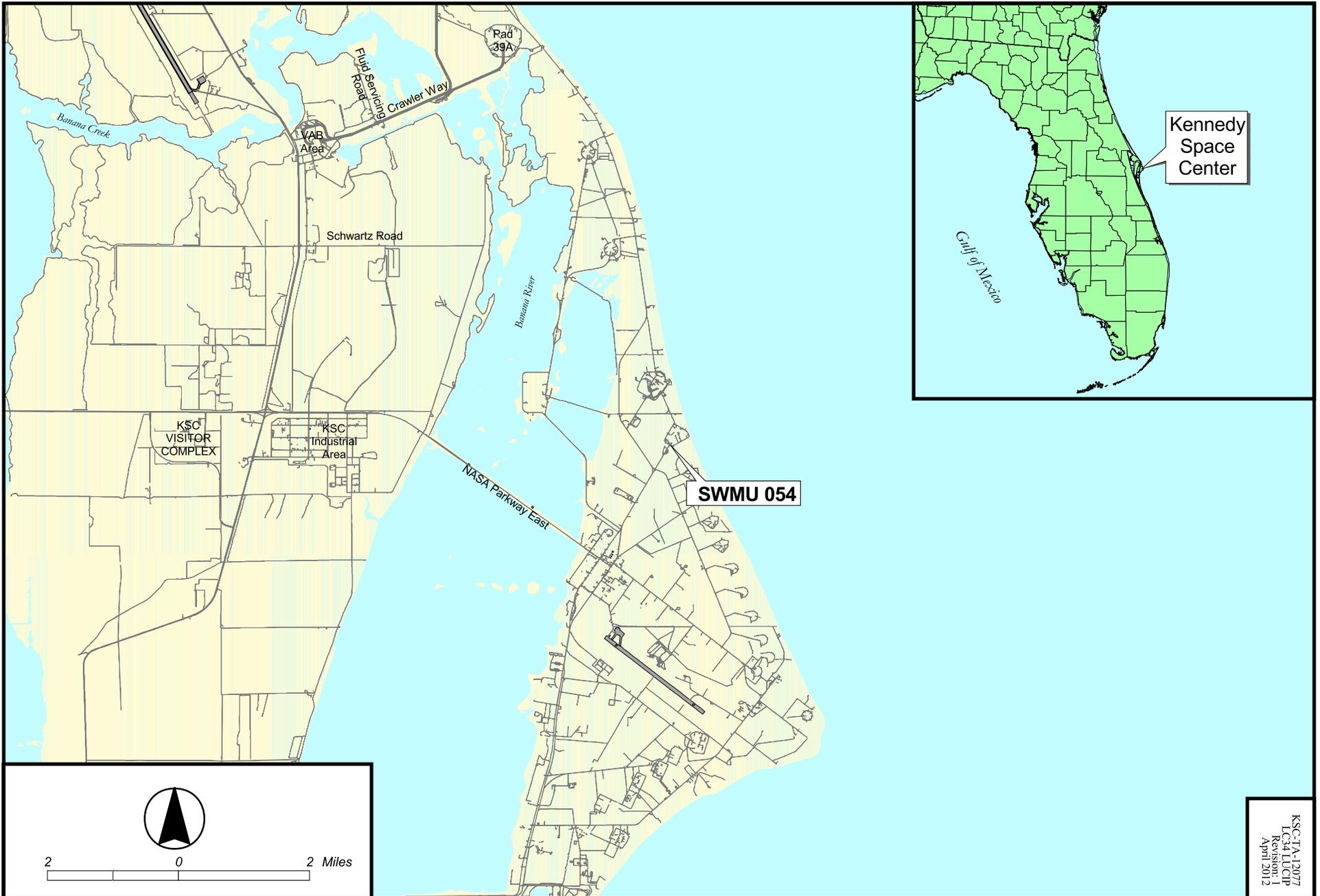
KSC's Environmental Assurance Branch will be responsible for stopping any activities at

KSC that are not compliant with this Interim LUCIP.

MAINTENANCE

The Interim LUCIP shall remain in place until a land use change is implemented or the concerns managed by the Interim LUCIP are mitigated, or until there is a discovery, based on analytical evidence, that scenarios managed by the Interim LUCIP are no longer a concern.

FIGURE 1 LOCATION OF KENNEDY SPACE CENTER AND SWMU CC054
SWMU CC054 - LAUNCH COMPLEX 34, KENNEDY SPACE CENTER, FLORIDA



4

FIGURE 2 GROUNDWATER LAND USE CONTROL AREA
SWMU CC054 - LAUNCH COMPLEX 34, KENNEDY SPACE CENTER, FLORIDA

