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# TECHNICAL MEMORANDUM REGARDING HISTORY OF SOLID WASTE MANAGEMENT UNIT 10 PETROLEUM CONTAMINATION AT NSA PANAMA CITY FL

1/4/2013

TETRA TECH INC

TETRA TECH

**For:** Partnering Team

**From:** Larry Smith

**Subject:** **SWMU 10**

**Date:** January 4, 2013

**History:**

SWMU 10 is a former oil-water separator system near Building 363. The OWS system began operation during or before 1968 and consisted of a 6,000 gallon underground waste oil tank; a 10,000 gallon fiberglass reinforced plastic (FRP) oily waste holding tank; and the OWS pumps, controls, and associated piping. Sampling performed at the OWS during a Contamination Assessment in 1992 confirmed the presence of chlorinated solvents in soil and groundwater. An RFI for SWMU 10 was completed in January 1996, and an RFI Addendum was completed in May 2003. Following completion of the investigation, the RCRA permit required the facility to develop a Corrective Measures Study (CMS) to identify and discuss various remedies for addressing contamination detected at SWMU 10. The original CMS was completed in April 1997 and a CMS Addendum was completed in January 2004.

A Statement of Basis has been subjected to public scrutiny and was approved by FDEP in 2008. The Statement of Basis identifies proposed corrective measures to address the contamination, provides an explanation for the particular choice of corrective measures, and describes alternative corrective measures considered during the selection of the corrective measure .

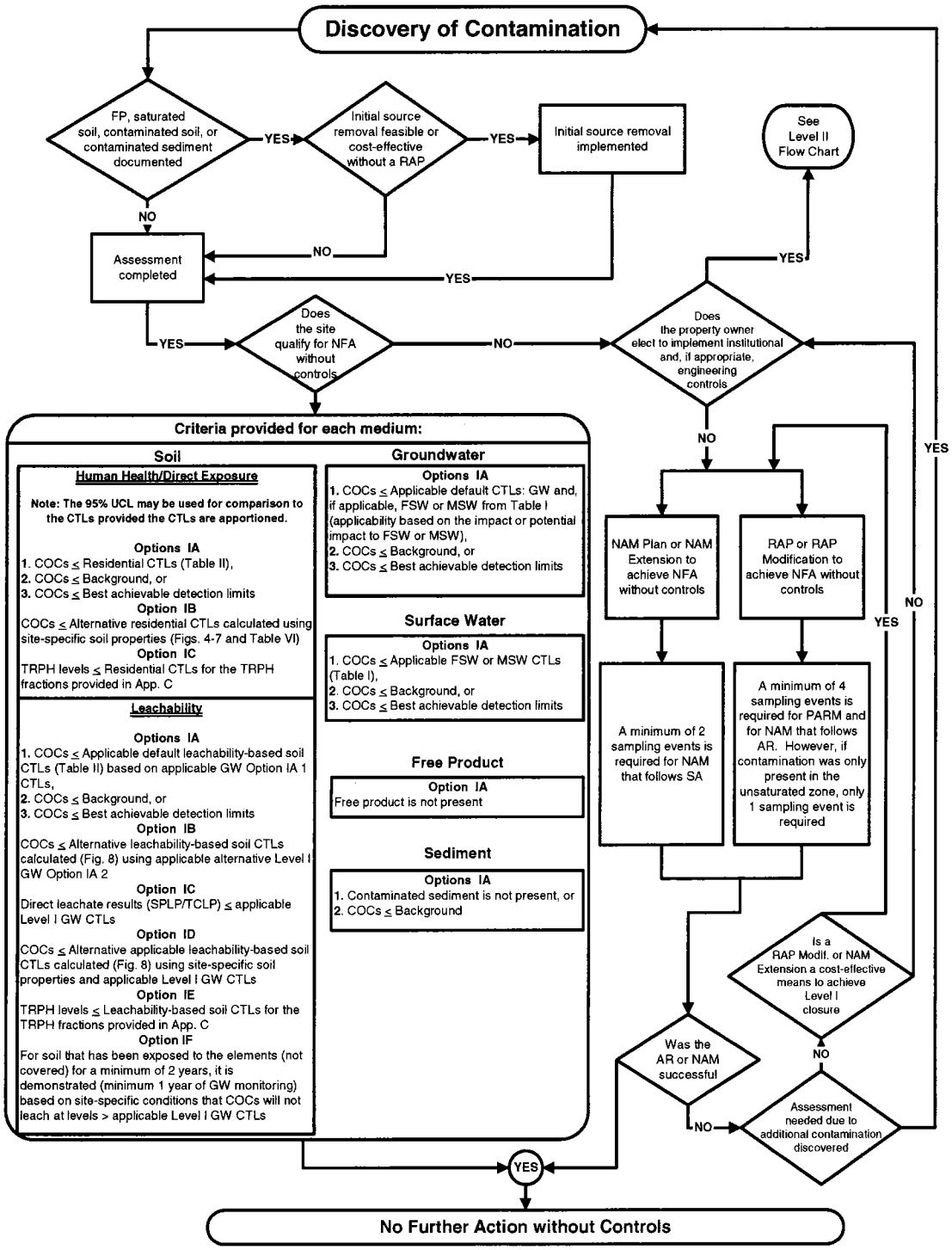
The selected corrective measure for SWMU 10 is Monitored Natural Attenuation (MNA) and Land Use Controls designed to prevent unacceptable exposure to potentially contaminated soil and groundwater. In the late 1990s and early 2000s multiple fuel-related semivolatile organic compounds (SVOCs) were detectable at concentrations greater than FDEP groundwater and surface water target cleanup levels (GCTLs and SWCTLs, respectively). After approval of the Statement of Basis, a Corrective Measures Implementation Plan (CMIP) was written, approved by FDEP, and implemented. The most recent LTM data have shown all targeted groundwater Chemical of Concern (COC) concentrations to be less than the FDEP GCTLs and SWCTLs. Arsenic (a non-COC) was noted to have elevated concentrations compared to the arsenic GCTL but the elevated arsenic concentrations were attributed to geochemically reducing conditions created by the presence of organic contaminants that cause leaching of naturally occurring arsenic from soil to groundwater. Over time, as organic contaminant concentrations decrease, the geochemical conditions are expected to become less favorable to leaching.

Under current land use no unacceptable human health or ecological risks are anticipated. No future ecological risks are anticipated, either. Based on data obtained prior to 2008, cancer risks were estimated for a hypothetical future residential land use that involves drinking the groundwater, dermal contact with soil, and incidental soil ingestion. Cancer risks of 8 in 1,000,000 from exposure to surface soil, 5 in 1,000 from exposure to groundwater, and 7 in

1,000,000 from exposure to surface water were predicted. Because COC concentrations have decreased since 2008, the cancer risks are expected to be less today but these risks have not been re-estimated. A non-cancer Hazard Index under the hypothetical future residential land use was estimated to be 10.4 (as compared to a maximum acceptable HI of 1). Because of the decreased COC concentrations, the HI estimate would be expected to be less if estimated today.

Routine LTM has ceased because COC concentrations have decreased to less than GCTLs and soil is largely covered with pavement to prevent exposure to soil. Groundwater and soil LUCs remain active. Current human health and ecological risks are acceptable. Before the SWMU 10 land use could become unrestricted, however, additional monitoring would be required to determine whether site conditions have changed sufficiently to cause arsenic concentrations to decrease to acceptable levels. The additional monitoring would include soil verification samples to verify whether soil meets SCTLs, especially in the former UST area.

# Petroleum Risk Based Corrective Action (RBCA) Flow Process
## Chapter 62-770, F.A.C. Risk Management Options - Level I
## December 23, 2004




**Definitions**

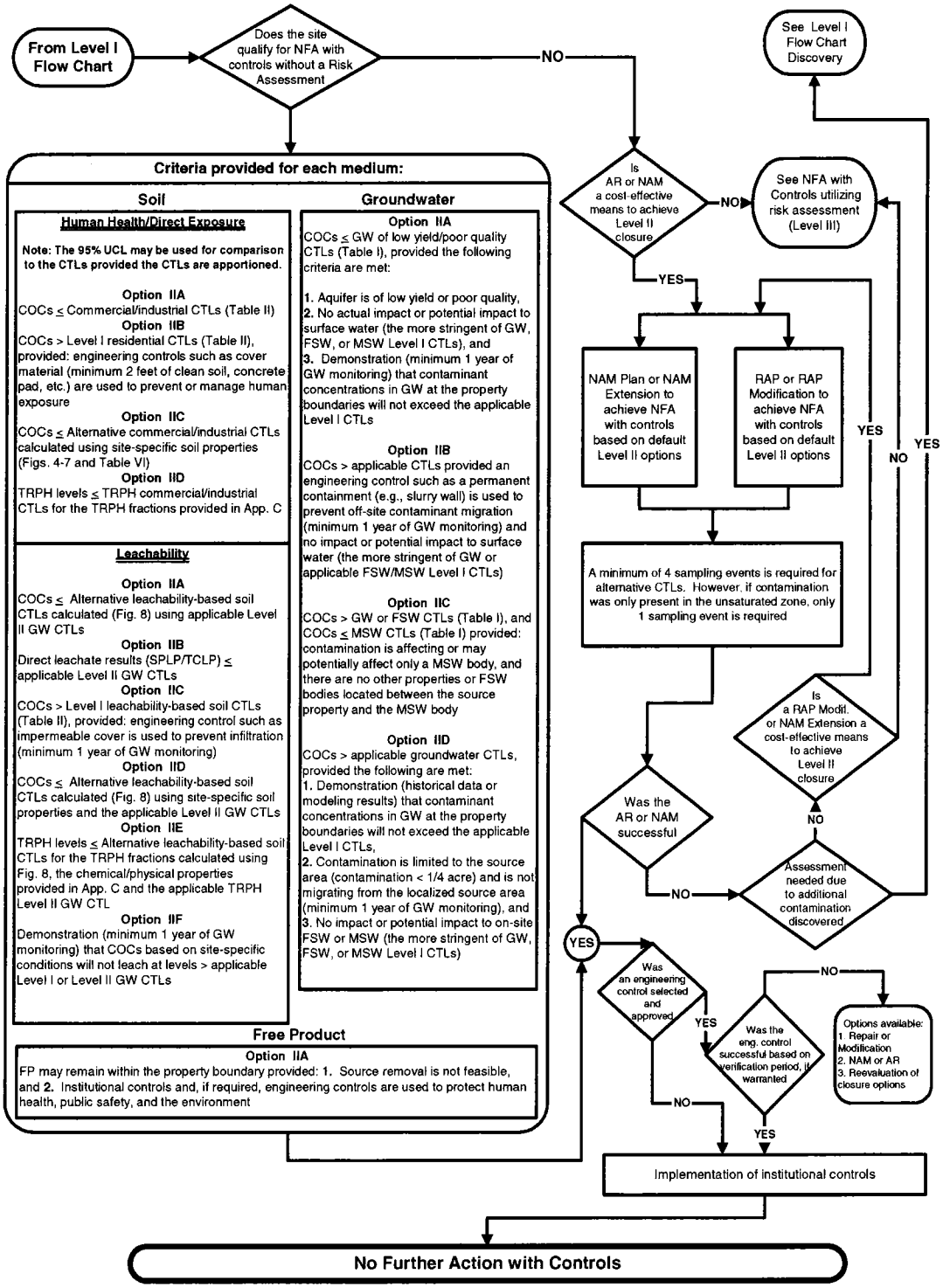
**Apportioned:** The adjustment of CTLs such that for non-carcinogenic contaminants that affect the same target organ(s), the hazard index is 1 or less, and for carcinogens, the cumulative lifetime excess cancer risk is 1.0 E-6; **AR:** Active Remediation; **COCs:** Contaminants of Concern; **CTLs:** Cleanup Target Levels; **FP:** Free Product; **FSW:** Freshwater Surface Water; **GW:** Groundwater; **MSW:** Marine Surface Water; **NAM:** Natural Attenuation Monitoring; **NFA:** No Further Action; **PARM:** Post Active Remediation Monitoring; **RAP:** Remedial Action Plan; **SA:** Site Assessment; **SPLP:** Synthetic Precipitation Leaching Procedure; **TCLP:** Toxicity Characteristic Leaching Procedure. **TRPHs:** Total Recoverable Petroleum Hydrocarbons. **UCL:** Upper Confidence Limit of the arithmetic mean.

**Note 1:** Best achievable detection limit shall be the practical quantitation limit (PQL).

**Note 2:** Figures 1, 2, 3A, 4, 5, 6, 7, and 8, and Tables I, II, and VI are provided in Chapter 62-777, FAC. Appendix C is provided in the technical report.

**Note 3:** Flow Process provided to assist in understanding the Petroleum RBCA flow process. Chapter 62-770, FAC, shall be utilized for final interpretation of the rule and requirements.

# Petroleum Risk Based Corrective Action (RBCA) Flow Process
# Chapter 62-770, F.A.C. Risk Management Options - Level II
# December 23, 2004



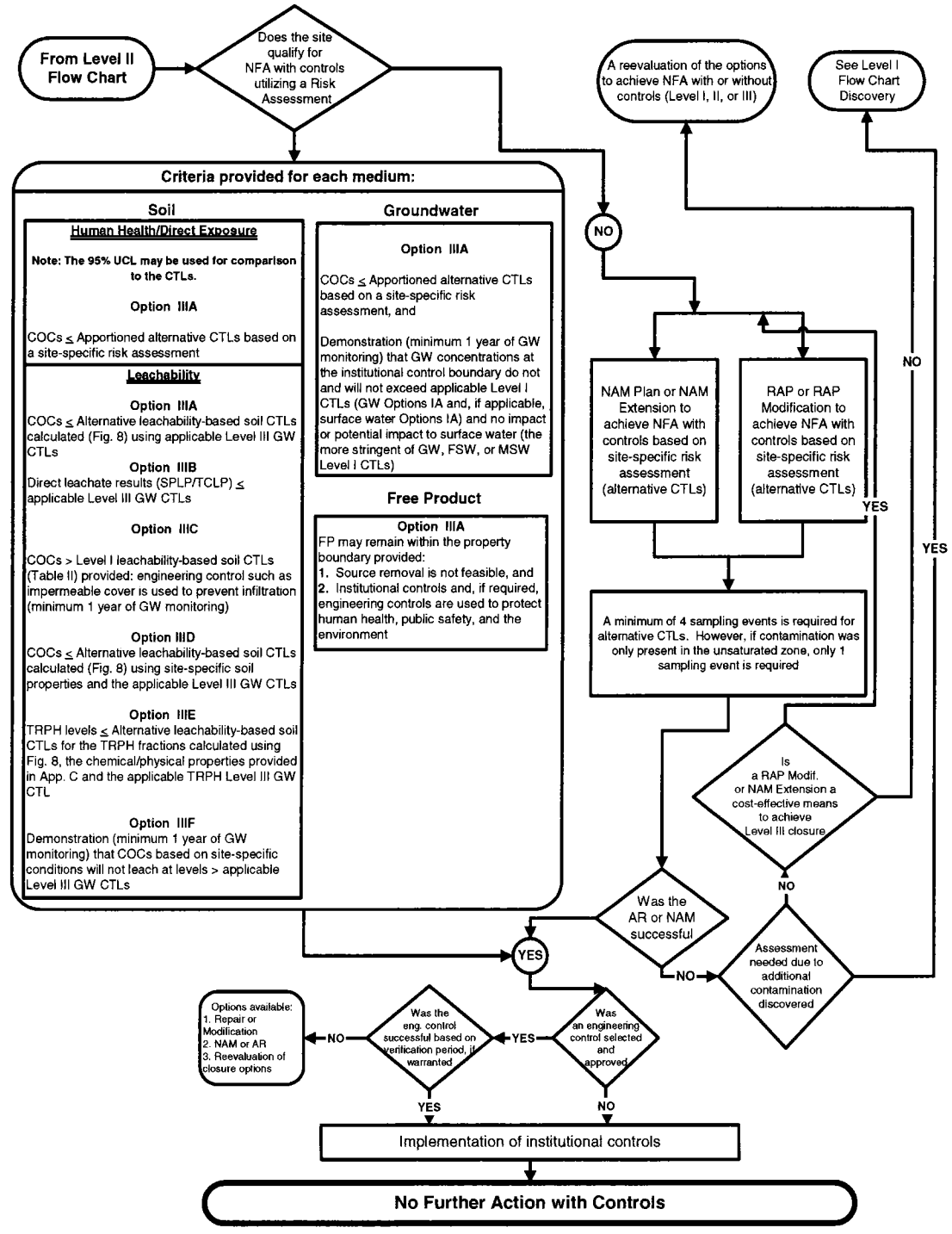

**Definitions**

**Apportioned:** The adjustment of CTLs such that for non-carcinogenic contaminants that affect the same target organ(s), the hazard index is 1 or less, and for carcinogens, the cumulative lifetime excess cancer risk is 1.0 E-6; **AR:** Active Remediation; **COCs:** Contaminants of Concern; **CTLs:** Cleanup Target Levels; **FP:** Free Product; **FSW:** Freshwater Surface Water; **GW:** Groundwater; **Low Yield:** Aquifer that has an average hydraulic conductivity of less that 1 ft/day and a maximum yield of 80 gals/day; **MSW:** Marine Surface Water; **NAM:** Natural Attenuation Monitoring; **NFA:** No Further Action; **Poor Quality:** Affected groundwater with background concentrations that exceed any of Florida's Primary or Secondary Drinking Water Stds; **RAP:** Remedial Action Plan; **SPLP:** Synthetic Precipitation Leaching Procedure; **TCLP:** Toxicity Characteristic Leaching Procedure. **TRPHs:** Total Recoverable Petroleum Hydrocarbons. **UCL:** Upper Confidence Limit of the arithmetic mean.

**Note 1:** Figures 1, 2, 3A, 4, 5, 6, 7, and 8, and Tables I, II, and VI are provided in Chapter 62-777, FAC. Appendix C is provided in the technical report.

**Note 2:** Flow Process provided to assist in understanding the Petroleum RBCA flow process. Chapter 62-770, FAC, shall be utilized for final interpretation of the rule and requirements.

# Petroleum Risk Based Corrective Action (RBCA) Flow Process
# Chapter 62-770, F.A.C. Risk Management Options - Level III
# December 23, 2004




**Definitions**

**Apportioned:** The adjustment of CTLs such that for non-carcinogenic contaminants that affect the same target organ(s), the hazard index is 1 or less, and for carcinogens, the cumulative lifetime excess cancer risk is 1.0 E-6; **AR:** Active Remediation; **COCs:** Contaminants of Concern; **CTLs:** Cleanup Target Levels; **FP:** Free Product; **FSW:** Freshwater Surface Water; **GW:** Groundwater; **MSW:** Marine Surface Water; **NAM:** Natural Attenuation Monitoring; **NFA:** No Further Action; **RAP:** Remedial Action Plan; **SPLP:** Synthetic Precipitation Leaching Procedure; **TCLP:** Toxicity Characteristic Leaching Procedure. **TRPHs:** Total Recoverable Petroleum Hydrocarbons. **UCL:** Upper Confidence Limit of the arithmetic mean.

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