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NSA PANAMA CITY
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TECHNICAL MEMORANDUM REGARDING HISTORY OF SOLID WASTE MANAGEMENT UNIT 2 AT NSA PANAMA CITY FL

1/6/2013

TETRA TECH INC

TETRA TECH

For: Partnering Team

From: Larry Smith

Subject: **SWMU 2**

Date: January 6, 2013

History:

SWMU 2, Landfill B, Burn and Landfill Area, covers approximately 11 acres located in the central part of NSA Panama City. This area is surrounded by an open storage area on the northeast, Building 455 on the southeast, the Base Exchange to the west, and recreational facilities including a softball field to the southwest and a Boy Scout trailer to the south. The SMWU 2 area is relatively flat.

Waste disposal took place at SWMU 2 in the late 1940s and early 1950s but major operations did not begin in 1957 at which time the area was used as a general burn and disposal area. Five areas, one of which was never found, were reported to have been used at SWMU 2. Wet household waste was disposed in one area; the Burn Area apparently received household garbage, tires, wood, metal, etc. An ash disposal area is presumed to have received ash of unknown origin. A red lead paint area was reportedly used for the burial of 2 to 4 tons of read lead-based paint in 1946 and 1947 but after a thorough search for this area it was not found. A one-time base cleanup disposal area located east of the present open storage area is non-contiguous with the rest of SWMU 2. Wastes from a general base cleanup were disposed there between 1970 and 1975. In 19892, approximately 30 miles of cable and other wastes including tin, copper, wood and cardboard boxes were removed from all areas to a depth of about 2 ft. and SWMU 2 was graded.

A Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI), completed in 1995, identified the presence of contaminants in select environmental media. A soil removal was completed in 1997 to remove contaminated surface soil identified in the RFI. Additional soil and groundwater sampling was completed and summarized in a 2006 RFI Addendum.

The RFI addendum concluded that residual PCB, PAH, and possibly metals and other contaminants are believed to remain in the surface soil at concentrations that could pose unacceptable levels of risk to humans if the land were used for residential or residential-like purposes. Benzene, aluminum, antimony, iron, and manganese were detected at concentrations that exceeded FDEP criteria and also posed a risk to discharging into nearby surface water.

Decision Document, Current Site Conditions and Monitoring

A Corrective Measure Study (CMS) and Statement of Basis (SB) were both completed in August 2007. Corrective measures recommended in the CMS and selected in the Statement of

Basis were LUCs, groundwater monitoring, and surface water monitoring. LUCs are in place to prevent exposure to contaminated SWMU 2 soil and groundwater underlying SWMU 2. Semi-annual groundwater and surface water monitoring were initiated in September 2007 but were discontinued following the round 3 sampling event in September 2008. Aluminum, antimony, and benzene were eliminated as COCs, leaving iron as the only COC for groundwater. The round 3 LTM data showed that the iron contamination is not a threat to surface water and only wells within or immediately downgradient of the SMWU exhibited exceedances of Groundwater Cleanup Target Levels (GCTLs). Current LUCs prevent unacceptable levels of exposure to iron in groundwater. FDEP concurred with the LTM Round 3 recommendation that groundwater and surface water monitoring were no longer required and the LUC boundary for groundwater should be reduced to reflect current site conditions. LUCs will be maintained until the concentrations of COCs in the soil and groundwater are at such levels to allow for the unrestricted use and unlimited exposure of the SWMU 2 property as determined by the FDEP. A recommendation was made in the LTM Round 3 report to abandon wells at SWMU 2.

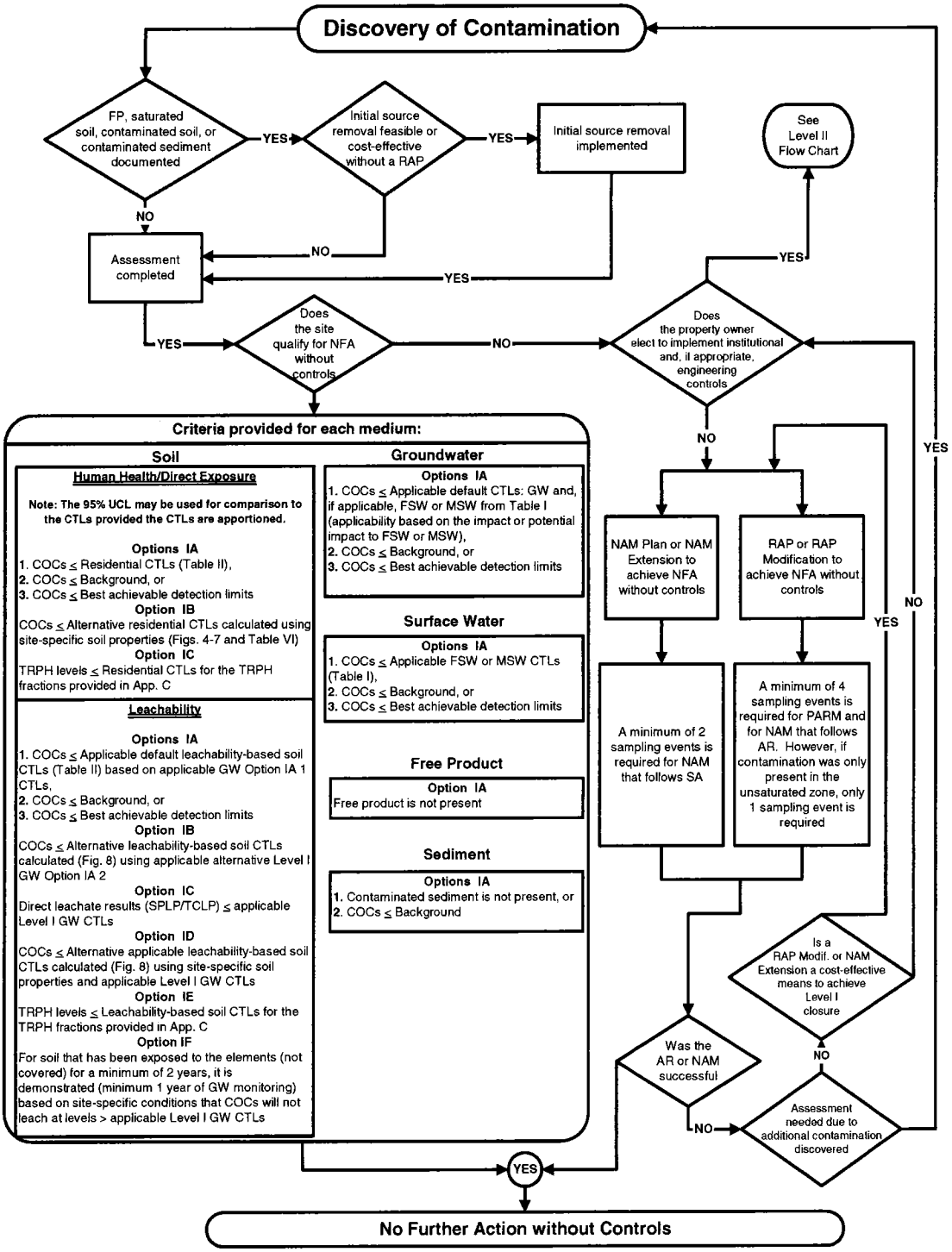
Navy plans to continue to use SWMU 2 for industrial operations. A table detailing the COCs for their respective media is presented below:

SWMU 2 COCs

Groundwater COCs	**FDEP GCTL[1] (µg/L)**
Iron	300[2]
Soil COCs	**FDEP SCTL[1,3] (mg/kg)**
Aroclor-1248	0.5
Aroclor-1254	0.5
Arsenic	2.1
Benzo(a)anthracene	#
Benzo(a)pyrene	0.1
Benzo(b)fluoranthene	#
Dibenzo(a,h)anthracene	#

Notes:
1 = As provided in Chapter 62-777, Florida Administrative Code (F.A.C.)
2 = Based on Residential Direct Exposure scenario
3 = Health based value, which is consistent with background levels, is 4,200 ug/L (F.A.C. 62-777 Table 7)
# = Site concentrations for carcinogenic polycyclic aromatic hydrocarbons must be converted to Benzo(a)pyrene equivalents before comparison with the appropriate direct exposure SCTL for Benzo(a)pyrene using the approach described in the February 2005 'Final Technical Report: Development of Cleanup Target Levels (CTLs) for Chapter 62-777, F.A.C.'

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 (POL).

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

From Level I Flow Chart

Does the site qualify for NFA with controls without a Risk Assessment

NO → See Level I Flow Chart Discovery

Criteria provided for each medium:

Soil

Human Health/Direct Exposure

Note: The 95% UCL may be used for comparison to the CTLs provided the CTLs are apportioned.

Option IIA
COCs ≤ Commercial/industrial CTLs (Table II)

Option IIB
COCs > Level I residential CTLs (Table II), provided: engineering controls such as cover material (minimum 2 feet of clean soil, concrete pad, etc.) are used to prevent or manage human exposure

Option IIC
COCs ≤ Alternative commercial/industrial CTLs calculated using site-specific soil properties (Figs. 4-7 and Table VI)

Option IID
TRPH levels ≤ TRPH commercial/industrial CTLs for the TRPH fractions provided in App. C

Leachability

Option IIA
COCs ≤ Alternative leachability-based soil CTLs calculated (Fig. 8) using applicable Level II GW CTLs

Option IIB
Direct leachate results (SPLP/TCLP) ≤ applicable Level II GW CTLs

Option IIC
COCs > Level I leachability-based soil CTLs (Table II), provided: engineering control such as impermeable cover is used to prevent infiltration (minimum 1 year of GW monitoring)

Option IID
COCs ≤ Alternative leachability-based soil CTLs calculated (Fig. 8) using site-specific soil properties and the applicable Level II GW CTLs

Option IIE
TRPH levels ≤ Alternative leachability-based soil CTLs for the TRPH fractions calculated using Fig. 8, the chemical/physical properties provided in App. C and the applicable TRPH Level II GW CTL

Option IIF
Demonstration (minimum 1 year of GW monitoring) that COCs based on site-specific conditions will not leach at levels > applicable Level I or Level II GW CTLs

Groundwater

Option IIA
COCs ≤ GW of low yield/poor quality CTLs (Table I), provided the following criteria are met:

1. Aquifer is of low yield or poor quality,
2. No actual impact or potential impact to surface water (the more stringent of GW, FSW, or MSW Level I CTLs), and
3. Demonstration (minimum 1 year of GW monitoring) that contaminant concentrations in GW at the property boundaries will not exceed the applicable Level I CTLs

Option IIB
COCs > applicable CTLs provided an engineering control such as a permanent containment (e.g., slurry wall) is used to prevent off-site contaminant migration (minimum 1 year of GW monitoring) and no impact or potential impact to surface water (the more stringent of GW or applicable FSW/MSW Level I CTLs)

Option IIC
COCs > GW or FSW CTLs (Table I), and COCs ≤ MSW CTLs (Table I) provided: contamination is affecting or may potentially affect only a MSW body, and there are no other properties or FSW bodies located between the source property and the MSW body

Option IID
COCs > applicable groundwater CTLs, provided the following are met:

1. Demonstration (historical data or modeling results) that contaminant concentrations in GW at the property boundaries will not exceed the applicable Level I CTLs,
2. Contamination is limited to the source area (contamination < 1/4 acre) and is not migrating from the localized source area (minimum 1 year of GW monitoring), and
3. No impact or potential impact to on-site FSW or MSW (the more stringent of GW, FSW, or MSW Level I CTLs)

Free Product

Option IIA
FP may remain within the property boundary provided: 1. Source removal is not feasible, and 2. Institutional controls and, if required, engineering controls are used to protect human health, public safety, and the environment

Is AR or NAM a cost-effective means to achieve Level II closure

NO → See NFA with Controls utilizing risk assessment (Level III)

YES →

NAM Plan or NAM Extension to achieve NFA with controls based on default Level II options

RAP or RAP Modification to achieve NFA with controls based on default Level II options

A minimum of 4 sampling events is required for alternative CTLs. However, if contamination was only present in the unsaturated zone, only 1 sampling event is required

Is a RAP Modif. or NAM Extension a cost-effective means to achieve Level II closure

YES → See Level I Flow Chart Discovery

NO → Assessment needed due to additional contamination discovered

Was the AR or NAM successful

NO → Assessment needed due to additional contamination discovered

YES → Was an engineering control selected and approved

YES → Was the eng. control successful based on verification period, if warranted

NO → Options available:
1. Repair or Modification
2. NAM or AR
3. Reevaluation of closure options

NO → Implementation of institutional controls

YES → Implementation of institutional controls

Implementation of institutional controls

No Further Action with Controls

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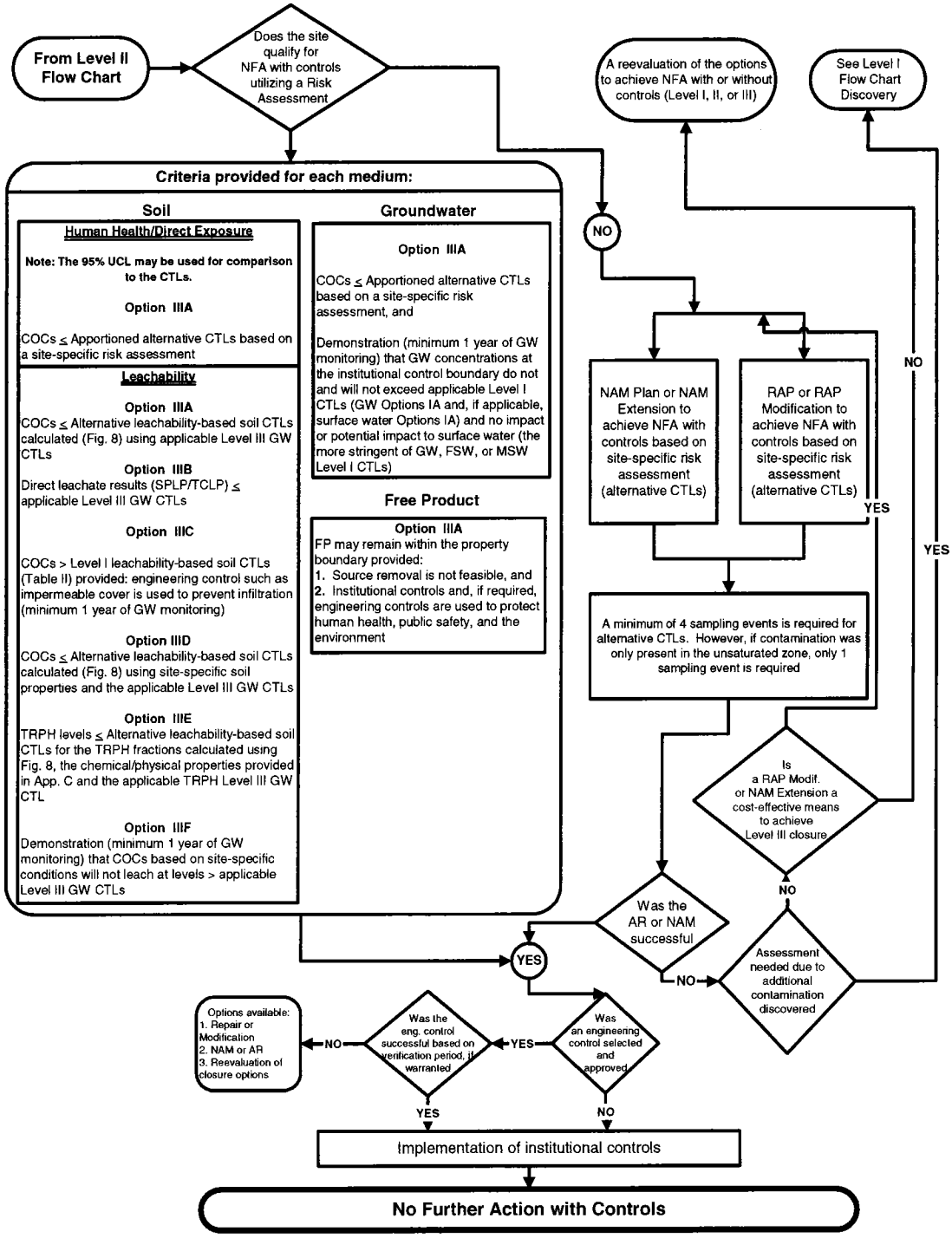
Petroleum Risk Based Corrective Action (RBCA) Flow Process
Chapter 62-770, F.A.C. Risk Management Options - Level III
December 23, 2004



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