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NSA PANAMA CITY
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TECHNICAL MEMORANDUM REGARDING PATH FORWARD TO ESTABLISH NORTHERN
LAND USE CONTROLS BONDARY FOR AREA OF CONCERN 2 SOUTH DOCK AT NSA
PANAMA CITY FL
5/20/2010
TETRA TECH INC



For: Partnering Team
From: Larry Smith
Subject: South Dock
Date: May 20, 2010

Overview: South Dock over lies floating product which has been determined to be technically impractical to remove. FDEP will allow the product to remain if LUCs are established.

Goal: Determine the northern extent of dissolved groundwater contamination to establish a northern LUC boundary for groundwater. This line will likely be located south of AOC2 since groundwater there is known to be contaminant free.

Path forward: Review currently available data to establish Northern LUC boundary. If addition data becomes available reestablish boundary.

History: AOC 2 is located in a highly developed area at the southern end of the facility. The site includes a large asphalt/concrete paved parking area and is surrounded by offices, maintenance and storage buildings with the Explosive Ordnance Disposal Compound to the west. AOC-2 extends southward along a utility corridor to the South Dock. A former AST (AST 11), constructed in 1943, was previously located at AOC-2. It was originally used to store diesel fuel. Petroleum products were transferred to the AST from the South Dock via a 6-inch diameter underground transfer line connected to a pump house at the South Dock. A smaller, 3-inch diameter transfer line connected AST 11 to a fuel pump house located approximately 100 feet (ft.) to the northwest of the tank (the current location of Building 543). A circular earthen berm spaced approximately 60 ft. from the tank provided secondary containment.

The pump house associated with AST 11 was used to distribute fuel from AST 11 and tanks associated with the former fuel dispensing facility located approximately 200 ft. to the northwest of AST 11 (the current location of Building 400). Two parallel 3-inch diameter transfer lines distributed diesel fuel and gasoline from the pump house to the South Dock. Additional smaller diameter fuel lines may have been used to distribute fuel to other locations in the vicinity of AST 11. The former fuel dispensing station included two USTs, UST 12 and UST 13, which were removed in the early 1970s. No documentation is available for the condition of the tanks during removal.

Approximately 50,000 gallons of diesel fuel were reportedly released from the tank system in 1953. The exact location of the leak and whether or not the underground piping had failed is unknown. AST 11 was completely refurbished in 1957, including replacement of 28 bottom plates. The tank was then reportedly used to store gasoline, aviation fuel, diesel fuel, and waste oil. Numerous small leaks, primarily at the tank seams, were reported to have occurred both before and after the tank had been refurbished. In the mid-1960s, an estimated 10,000 gallons of product were released from ruptured fuel transfer lines located between the dock and storage tank. Following the rupture, seepage of product was observed in Alligator Bayou at the South Dock bulkhead.

AST 11 and the containment berm were removed in 1979. Reportedly, the bottom plates of the tank had completely deteriorated. The transfer piping from the tank wall to the containment berm was removed. The remaining piping was capped and abandoned in place. Based on utility drawings, the fuel dispensing station was removed after 1984. Building 400 was built in the area of the former fuel dispensing station. Building 543 has recently been constructed in the area of the former fuel pump house, and the Special Operations Facility has recently been constructed near AOC 2. All of these areas are likely to have contributed to the contamination found at AOC 2.

South Dock

The South Dock is the Southern-most reach of AOC-2 and is at the southern end of the facility along Alligator Bayou. The site consists of an asphalt/concrete paved elongated area adjacent to the pier to the south and bounded by office, storage and ship maintenance buildings to the north.

During reconstruction activities in 2009, floating product was observed beneath the South Dock relieving platform. The relieving platform is a concrete structure located 7 feet below the deck of the South Dock and adjoins the head wall. It runs the length of the head wall, and extends 25 feet inland from the head wall. During reconstruction, the relief platform with inter connected support structures were left in place without alteration with the exception of a few temporary holes drilled through the platform in order to anchor the new head wall to the platform. It was determined that the petroleum product found beneath the relieving platform was inaccessible and technically impractical to address due to the presence of the complex and numerous beams, support cables, cathodic protection wiring, and pilings that provide the structural integrity of the dock and relief platform. Additionally, it was not considered feasible that the product would migrate through the new head wall to Alligator Bay; therefore, the product could be left in place if LUCs are established. However, the product will continue to act as a source of dissolved petroleum compounds to the local groundwater and this dissolved groundwater contamination may form a dissolved front which will migrate to the north (inland) away from the dock.

Groundwater Sampling Objectives:

The Navy intends to place the South Dock under LUCs. The LUC boundary for groundwater will extend from the South Dock concrete deck northward (inland) to uncontaminated groundwater known to exist at Site AOC 2. In order to determine a reasonable boundary for the groundwater LUCs, groundwater sampling is planned at locations extending northward from the South Dock.

Groundwater Assessment

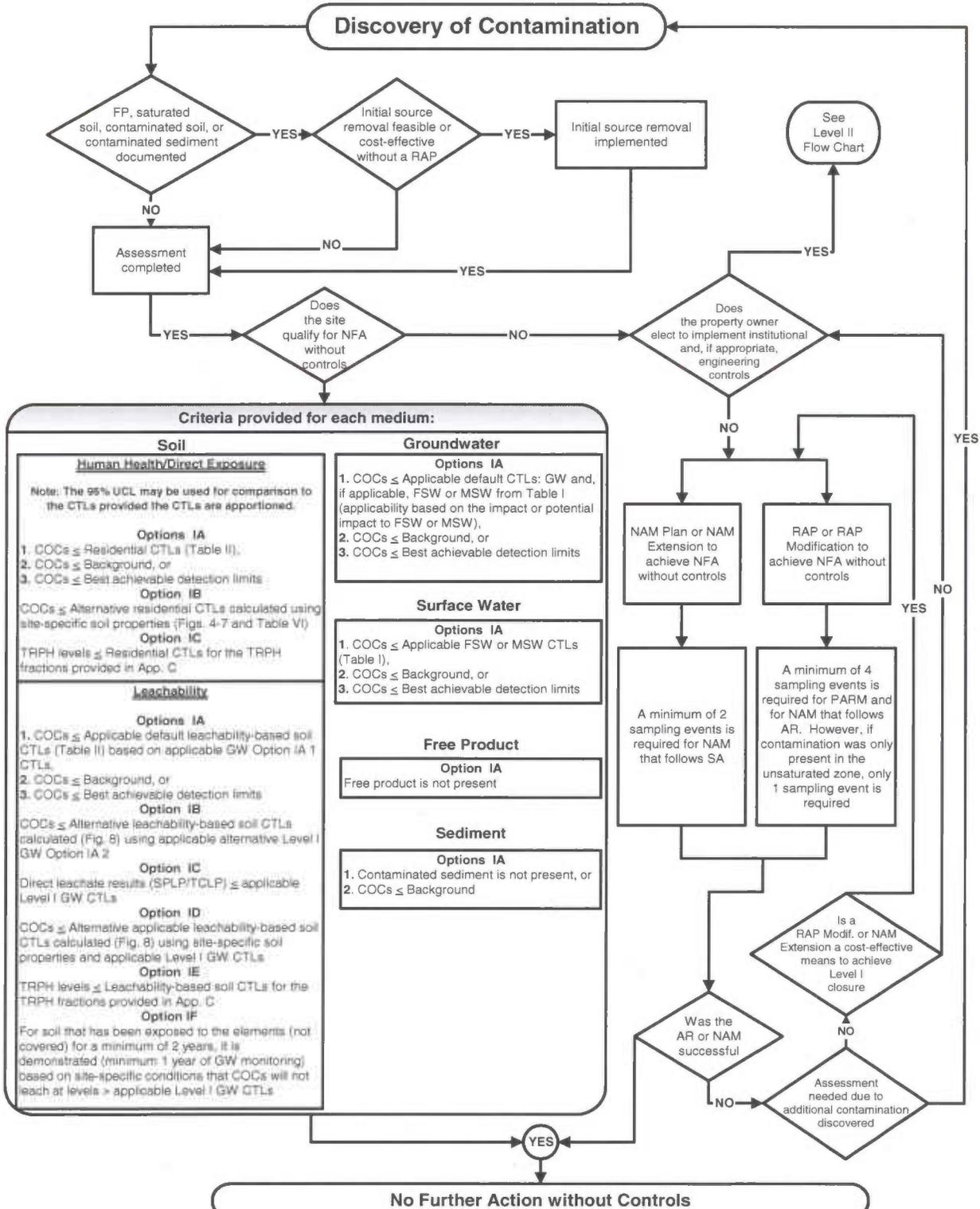
Groundwater sampling was performed at planned locations northward from the South Dock in order to determine a reasonable boundary for groundwater LUCs in this area. Seven temporary micro wells or well points using a DPT rig were established and groundwater samples were collected and analyzed. Each temporary well was advanced to a depth of approximately 12 feet bls and screened across the water table developed by pumping with a peristaltic pump until it produces non-turbid water and sampled. The locations of micro well installation are shown on Figure 8.

Groundwater Sampling

Each micro well or well point was purged with a variable speed, peristaltic pump, using low-flow technique. Field parameters (including temperature, pH, specific conductance, and turbidity) were measured at the initiation of the purging process. When field parameters stabilize and water turbidity is less than 5 nephelometric units (NTU), the groundwater sample will be collected. This numeric value is less than the FDEP stabilization criteria of 20 NTU because samples will be analyzed for metals (lead).

Groundwater samples were collected from the temporary micro wells with Teflon® tubing and a peristaltic pump, using low flow/low stress sampling techniques. Groundwater samples for VOC analyses were collected directly from the inserted tubing using the straw or reverse flow method and analyzed as described in FDEP SOPs. Following the investigation, the tubing and down-hole components were withdrawn and the boreholes backfilled, from bottom to top, with appropriate soil cuttings.

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



Criteria provided for each medium:	
<p>Soil</p> <p><u>Human Health/Direct Exposure</u></p> <p>Note: The 95% UCL may be used for comparison to the CTLs provided the CTLs are apportioned.</p> <p>Options IA</p> <p>1. COCs ≤ Residential CTLs (Table II),</p> <p>2. COCs ≤ Background, or</p> <p>3. COCs ≤ Best achievable detection limits</p> <p>Option IB</p> <p>COCs ≤ Alternative residential CTLs calculated using site-specific soil properties (Figs. 4-7 and Table VI)</p> <p>Option IC</p> <p>TRPH levels ≤ Residential CTLs for the TRPH fractions provided in App. C</p> <hr/> <p><u>Leachability</u></p> <p>Options IA</p> <p>1. COCs ≤ Applicable default leachability-based soil CTLs (Table II) based on applicable GW Option IA 1 CTLs,</p> <p>2. COCs ≤ Background, or</p> <p>3. COCs ≤ Best achievable detection limits</p> <p>Option IB</p> <p>COCs ≤ Alternative leachability-based soil CTLs calculated (Fig. 8) using applicable alternative Level I GW Option IA 2</p> <p>Option IC</p> <p>Direct leachate results (SPLP/TCLP) ≤ applicable Level I GW CTLs</p> <p>Option ID</p> <p>COCs ≤ Alternative applicable leachability-based soil CTLs calculated (Fig. 8) using site-specific soil properties and applicable Level I GW CTLs</p> <p>Option IE</p> <p>TRPH levels ≤ Leachability-based soil CTLs for the TRPH fractions provided in App. C</p> <p>Option IF</p> <p>For soil that has been exposed to the elements (not covered) for a minimum of 2 years, it is demonstrated (minimum: 1 year of GW monitoring) based on site-specific conditions that COCs will not leach at levels > applicable Level I GW CTLs</p>	<p>Groundwater</p> <p>Options IA</p> <p>1. COCs ≤ Applicable default CTLs: GW and, if applicable, FSW or MSW from Table I (applicability based on the impact or potential impact to FSW or MSW),</p> <p>2. COCs ≤ Background, or</p> <p>3. COCs ≤ Best achievable detection limits</p> <p>Surface Water</p> <p>Options IA</p> <p>1. COCs ≤ Applicable FSW or MSW CTLs (Table I),</p> <p>2. COCs ≤ Background, or</p> <p>3. COCs ≤ Best achievable detection limits</p> <p>Free Product</p> <p>Option IA</p> <p>Free product is not present</p> <p>Sediment</p> <p>Options IA</p> <p>1. Contaminated sediment is not present, or</p> <p>2. COCs ≤ Background</p>

Definitions

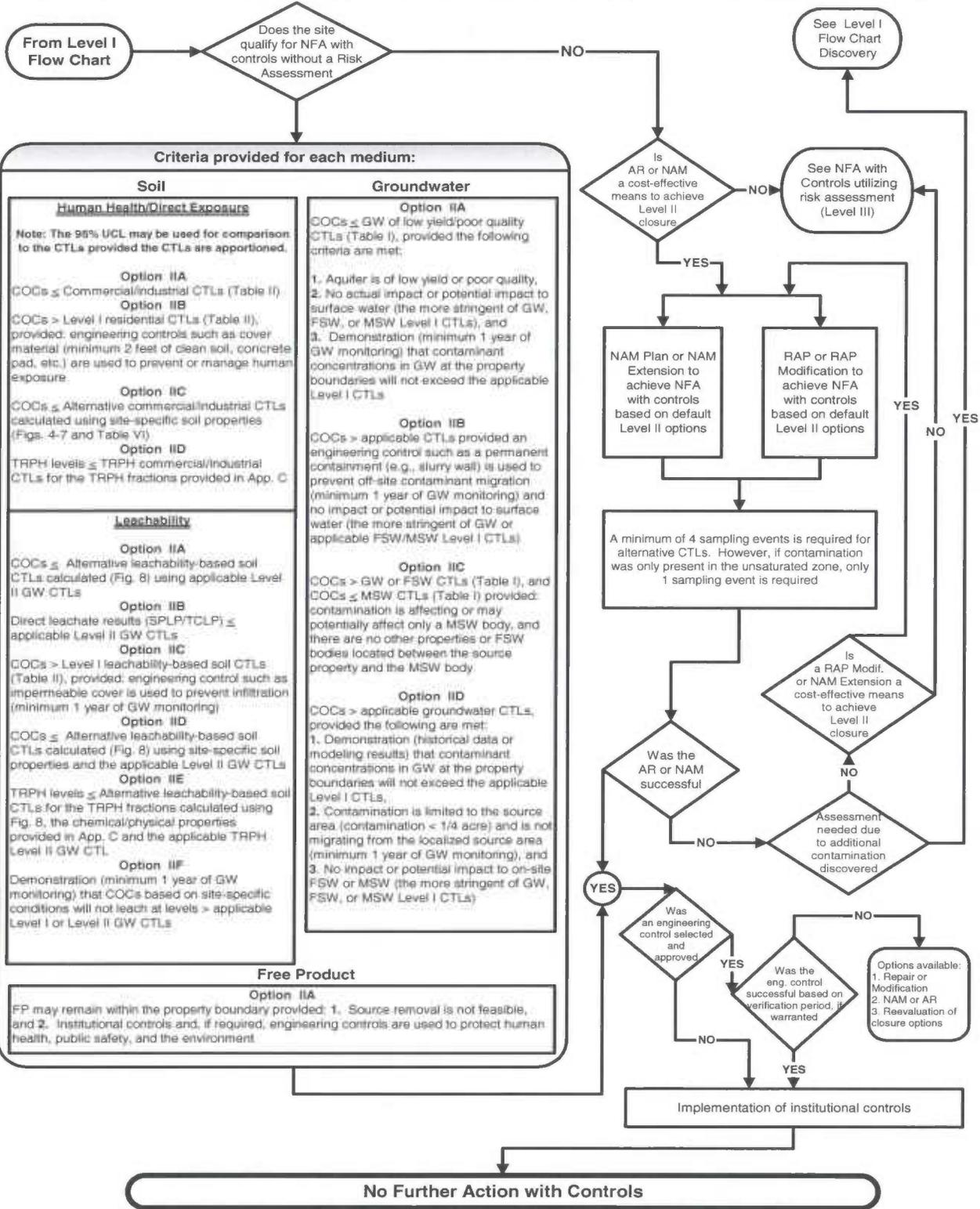
Apportioned: The adjustment of CTLs such that for non-carcinogenic contaminants that affect the same target organ(s), the hazard index is 1 or less, and for carcinogens, the cumulative lifetime excess cancer risk is 1.0E-6. **AR:** Active Remediation; **COCs:** Contaminants of Concern; **CTLs:** Cleanup 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, F.A.C. 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, F.A.C. 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



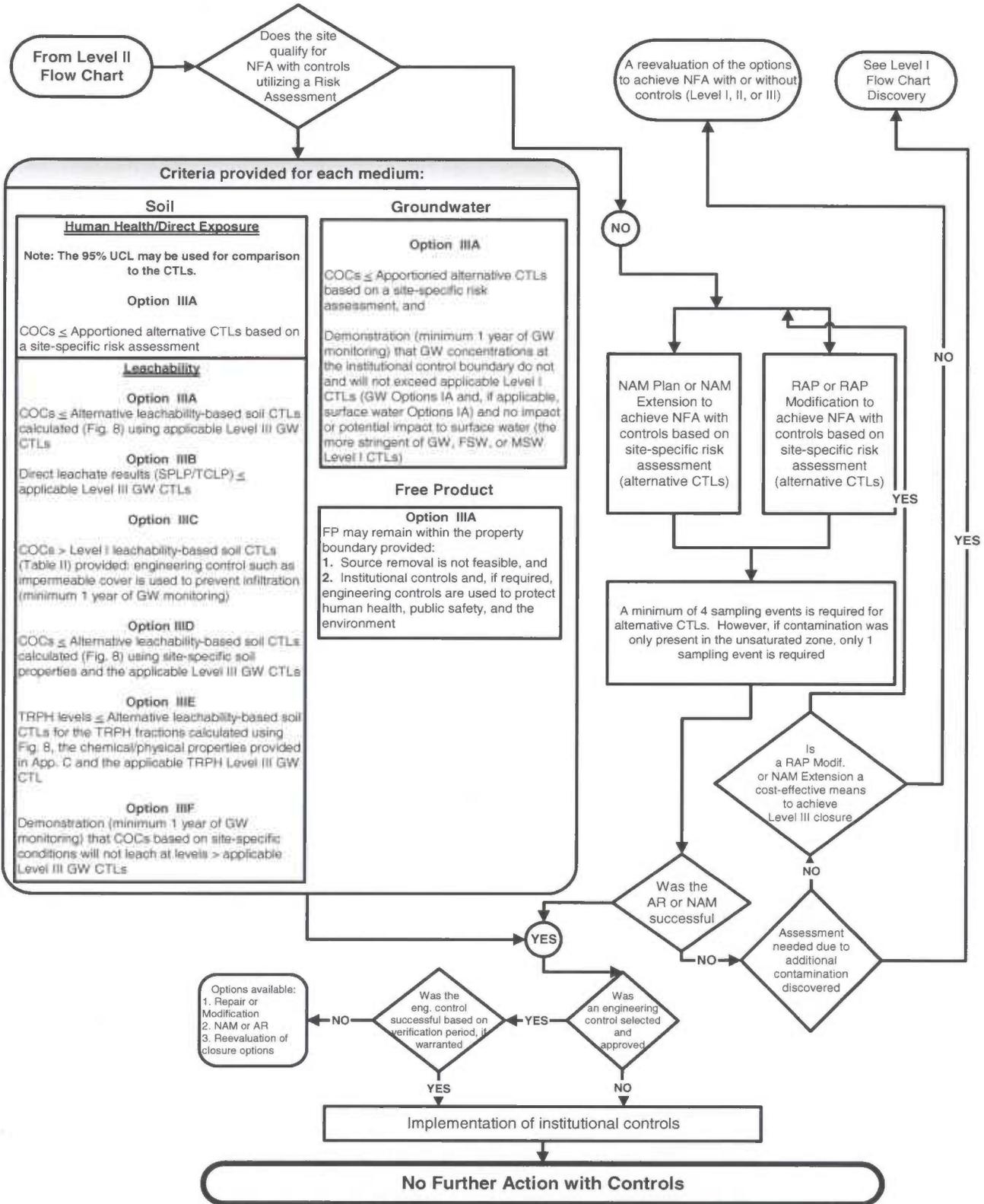
Definitions

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 than 1 ft/day and a maximum yield of 80 gal/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 Standards. **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, F.A.C. 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, F.A.C. 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.

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.

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