

**ATTACHMENT E****GOVERNMENT OF THE DISTRICT OF COLUMBIA****District Department of the Environment****Underground Storage Tank Program****CORRECTIVE ACTION PLAN (CAP) PROTOCOL****PURPOSE**

The objectives of the Corrective Action Plan (CAP) sometimes called as Cleanup Action Plan, or Remedial Action Plan, are to summarize and document all of the activities and decisions made to date, and to describe in detail the corrective action plan chosen for the site along with the rationale for that selection. The introductory section of the document provides a brief overview of the site history, site characterization, initial response and abatement measures, free product removal activities and comprehensive site assessment. Since the CAP will be made available for public comment, the document should be written in a form readily understood by the public.

**I. SUBMISSION AND APPROVAL OF CAP****A. Scope**

At any point after reviewing the Comprehensive Site Assessment (CSA), the LUST Case Manager may require the responsible party to submit additional information or to develop and submit a CAP for responding to contaminated soils and/or ground water. If a CAP is required, the responsible party shall submit the plan according to a schedule and format established by the LUST Case Manager.

Submission of a CAP shall be mandatory in the following circumstances:

- 1) If groundwater is adversely affected;
- 2) If free product is present in the subsurface; or
- 3) If there is evidence that contaminated soils are in contact with groundwater.

The responsible party may, after fulfilling the initial response, initial abatement, removal of free product and CSA requirements, voluntarily submit a CAP for responding to contaminated soil and ground water.

The responsible party shall submit a plan that provides for adequate protection of both human health and the environment, as determined by the LUST Case Manager, and shall modify the corrective action plan as necessary to meet this standard.

## B. Surface Water, Ground Water, and Soil Quality Standards

- 1) The standards for **surface water quality** are the District of Columbia Water Quality Standards.
- 2) The standards for **groundwater quality** are:
  - a) **No more than 1 ppm total petroleum hydrocarbons (TPH)** for ground water contaminated by non-gasoline petroleum contamination, and
  - b) The standards for ground water quality for specific inorganic and organic compounds are the District of Columbia Water Quality Standards for Ground Water (21 DCMR Chapter 11, published at 40 D.C. Register 4203, July 2, 1993).  
The maximum concentrations for the most common compounds of interest at LUST investigations: **Lead, 50 ppb; Benzene, 5 ppb; Toluene, 1,000 ppb; Ethylbenzene, 700 ppb; and Total Xylenes 10,000 ppb.**
- 3) The standards for **soil quality** are no more than:

The Petroleum Contaminate Soil Quality Standards have been developed pursuant to the District of Columbia Underground Storage Tank Management Act of 1990, as amended, D.C. Law 8-842: D.C. Code §6-995; and the District of Columbia Underground Storage Tank Regulations, 20 DCMR Chapters 55-70, effective October 1, 1999 (46 DCR 7699). As a result, new DC Underground Storage Tank Regulations were published on October 1, 1999 in the fiscal year 2000. As per the §6209.2 of this regulation, the following list are the soil quality standards for petroleum chemicals necessary to protect human health and the environment from the petroleum releases, as outlined in the Risk Based Decision Making Guidance Document published by the Department on December 11, 2001.

**Petroleum Contaminated Soil, Surface Water and Ground Water Quality Cleanup Standards for the District of Columbia, Underground Storage Tank Program**

Contaminant of Concern	Soil Standards 2003 Revision		Surface & Ground Water Standards 2003 Revisions	
	mg/kg (PPM)	ug/kg (PPB)	mg/l (PPM)	ug/l (PPB)
Benzene	0.157	157	0.005	5
Benzene Upper Concentration Limit			15	15,000
Toluene	125	125,000 (1.25E <sup>+5</sup> )	1	1,000
Ethylbenzene	1,160	1,160,000 (1.16E <sup>+6</sup> )	0.7	700
Xylenes	504	504,000 (5.04 E <sup>+5</sup> )	10	10,000

MTBE	1,440	1,440,000 (1.44E <sup>+6</sup> )	0.05	50
Napthalene	706	706,000 (7.06E <sup>+5</sup> )	0.73	730
GRO	814	814,000 (8.14E <sup>+5</sup> )	7.3	7,300
DRO	960	960,000 (9.6E <sup>+5</sup> )	3.57	3,570
NA - Not applicable, we did not have standards at the time				
Above are Tier 1 Screening Levels, for Soil, Ground Water and Surface Water, adopted from the Risk Based Corrective Action Guidance 2001, are the most recent and applicable standards for case closure/NFA, 20 DCMR 6208-6210. Tier 2 (site-specific cleanup target levels) and completion of RBCA Report with the relevant forms are acceptable for cases on a site-by-site basis, that are eligible for the RBCA Program, 20 DCMR 6206.				
<b>For Clarification Contact: <a href="mailto:ust.ddoe@dc.gov">ust.ddoe@dc.gov</a>, Tel 202-535-2600 for 202-535-1383</b>				

The site must be remediated to achieve these soil quality standards. However, an alternate Site Specific Clean-up Target level may be developed on a site-by-site basis, if the facility is eligible to enroll in the DC Risk Based Corrective Action Program as required under Title 20, DCMR, §6206 of the Underground Storage Tank Management Regulations.

### C. Corrective Action Proposal (6207)

The CAP must propose a corrective action option for the site which will:

- 1) Remediate the site within a reasonable period of time based on the best available technology;
- 2) Ensure that non-aqueous phase liquids will not exist or are no longer recoverable at the site; and
- 3) Accomplish one of the following:
  - a) Reduce the contaminant levels to achieve the standards set forth in section I.(B) above, and any other applicable District of Columbia or federal regulations;
  - or
  - b) Where no standards have been established by regulation, reduce the contaminants to levels which the LUST Case Manager deems to be adequately protective of human health and the environment based upon the available data;
  - or
  - c) If it is not feasible to meet the requirements of (a) or (b), monitor the site over time to provide technically-based assurance that the site contamination is controlled under natural conditions and that those conditions will not now, or at some future time, adversely impact human health, safety or the environment.

**D. Contaminant Disposal (§ 6207.4)**

A corrective action plan shall provide for proper removal disposal of the contaminated soils removed from the ground to a disposal facility equipped to accept contaminated materials. DDOE shall not permit the placement of contaminated soils **that exceed Tier 0** standards back into the ground for the purposes of in situ remediation or storage, unless specifically agreed to by the **LUST Case Manager**.

**E. Quality Assurance/Quality Control (§6207.5)**

A site-specific Quality Assurance/Quality Control (QA/QC) Plan for the activities to be carried out during implementation of the CAP must be prepared prior to the implementation of any site activities. The QA/QC Plan shall cover all actions proposed in the CAP, and comply with any Departmental guidelines.

**F. CAP Approval (§ 6207.7 – 6207.9)**

The approval of the LUST Case Manager shall be required for each CAP. Approval shall be given to a plan only after the LUST Case Manager determines, to his or her satisfaction, that implementation of the plan will adequately protect human health, safety, and the environment. In making this determination, the LUST Case Manager should consider the following factors, as appropriate:

- 1) The physical and chemical characteristics of the regulated substance, including its toxicity, persistence, and potential for migration;
- 2) The hydrogeologic characteristics of the facility and the surrounding area;
- 3) The proximity, quality, and current and future uses of nearby surface water and ground water;
- 4) The potential effects of residual contamination on nearby surface water and ground water;
- 5) An exposure assessment; the existing and future land use of the site and nearby locations.
- 6) The estimated timetable for completion of the remediation; and
- 7) Any other information assembled in compliance with release reporting, initial abatement, free product removal or site assessment requirements.

The LUST Case Manager's approval shall contain a determination as to whether the proposed corrective action is **an active or passive corrective action**. Passive corrective action shall include the following technologies:

- 1) Monitoring of natural attenuation;
- 2) Non-pressurized positive or negative subsurface venting;
- 3) A single injection of biological or chemical agents designed to enhance attenuation of subsurface contamination;
- 4) Any other technology involving limited activity, as determined by the LUST Case Manager.

While active corrective action include soil excavation, pump and treat, etc. which result in faster remediation.

#### **G. Interim CAP Implementation (§ 6207.9)**

In the interest of minimizing environmental contamination and promoting more effective corrective action, the responsible party may begin remediation of soil and ground water before the submitted corrective action plan is approved, provided, that the responsible party:

- 1) Notifies the LUST Case Manager of his or her intention to begin remediation and provides the LUST Case Manager with an opportunity to inspect the site before the CAP is implemented;
- 2) Complies with any conditions imposed by the LUST Case Manager, including halting remediation or mitigating adverse consequences from clean-up activities;
- 3) Incorporates these self-initiated remediation measures in the CAP that is submitted to the LUST Case Manager for approval.

## **II CAP REPORT FORMAT (§ 6208.10)**

The CAP received in conjunction with the remediation of LUST sites in the District of Columbia should be presented in the format, which follows. Please be advised, however, that this model includes references to various environmental media and treatment alternatives, which may not be applicable to every site. Additionally, please include in your plans any additional information not specifically cited in this model, which you feel may be pertinent to the evaluation of the proposed remedial plan.

#### **A. Introduction - Background**

Brief description of all studies performed prior to this plan submittal (record search, site assessments, pilot studies, etc.)

#### **B. Comprehensive Site Assessment (CSA) Summary**

Using the information gathered during the CSA activities and any other previous investigations, briefly review and describe the current conditions.

- 1) *Site description:*
  - a) Location (including map).
  - b) Past and present site usage.
    - i. Tanks on site.
    - ii. Other activities which may have contributed to contamination on site.
- 2) *Review of data collection activities:*
  - a) Summary of borings, wells, soil gas, other field activities (including map).
  - b) Analytical results summary (no need to attach laboratory sheets if the results have been submitted previously).
- 3) *Discussion of site conditions:*
  - a) Geology and hydrogeology of site.
  - b) Extent of contamination and contaminant concentrations in various media.
  - c) Areas targeted for remediation.

## **C. Corrective Action Proposal**

Technology(ies) proposed for remediation of impacted media (including a discussion of selected criteria for choosing proposed method over other potential remedial options). Given the current site conditions, identify, describe and evaluate potentially applicable technologies that are capable of remediating the site, based on the proposed time lines. Evaluate the positive and negative aspects of each option from the standpoint of technical merit, its ability to be implemented, economic and temporal feasibility, and immediate/future beneficial results.

- 1 Implementation of selected technology (ies) at site.
  - I. Complete description of proposed remedial plan, including but not limited to the following:
    - a) Soil removal (including lateral and vertical extent and disposal and treatment options).
    - b) Extraction wells (ground water or soil vapor) with approximate extraction rates, drawdowns, radii of influence, etc. - include diagrams.
    - c) On site treatment units for extracted ground water, soil vapor, or soils.
    - d) Discharge points for treated air, water (anticipated permit limitations and sampling needs).
    - e) Injection wells or galleries, with approximate injection rates (permits obtained or pending from EPA)

f) Off site treatment or disposal options.

II. Diagrams of proposed system (schematics are O.K.), detailed specifications of system will be reviewed during permit approval process).

**D. Timetable**

- 1) Time to begin system set-up following permit approval.
- 2) Time to system start-up.
- 3) Anticipated time for completion of remediation.
- 4) Anticipated time to begin and completion construction activities, if this site is undergoing redevelopment.
- 5) Proposed date for facility opening and operation

**III. IMPLEMENTATION OF CORRECTIVE ACTION PLAN (§§6207.11~ 6207.15)**

After approval of the CAP, the responsible party (RP) shall begin implementation of the plan, including modifications to the plan made by the LUST Case Manager. Within 30 days after CAP approval, the RP shall submit a copy of all required permit applications. Within 90 days after CAP approval, the remediation system shall be installed on-site and operational, unless an extension is granted by the LUST Case Manager.

The RP shall notify the LUST Case Manager and the Fire Chief at least seven (7) calendar days prior to initiating operation of the remediation system, and provide the LUST Case Manager with an opportunity to inspect the site prior to operation.

The RP shall monitor, evaluate, and report the results of implementing the plan in a format established by the LUST Case Manager, at least quarterly, or in accordance with a time schedule approved in the CAP.

If the LUST Case Manager determines that the implementation of corrective actions are not achieving adequate protection of human health and the environment, the Department may require additional responses to be taken.

**IV. COMPLIANCE MONITORING REPORTS (§ 6207.16)**

1. Outline a monitoring plan for the selected strategy to demonstrate compliance with the clean-up standards and objectives (sampling frequency, locations, parameters, levels, field and laboratory quality assurance and control.) Note that chain of custody should be followed during sampling and laboratory analysis, samples bottles/containers should be sealed during delivery.
2. The RP must evaluate the effectiveness of the corrective action program after one (1) year of implementation to determine whether additional measures must be implemented to effectively reduce the contaminant levels.

3. After one (1) year of passive corrective action as referred to above in section I.(F), the RP must either apply for site closure, or obtain written consent from the LUST Case Manager for its continuation.
4. The RP and/or their consultants, representatives are welcome to meet Staff of the UST Program at anytime to discuss plans for and status of remediation and monitoring at LUST sites.

## **V. CASE CLOSURE REQUIREMENTS (§6211)**

### **A. Scope**

Prior to approving a request for closure, the LUST Case Manager shall be satisfied of the following:

- 1) That the corrective action plan has been properly implemented;
- 2) That all corrective action plan objectives have been met;
- 3) That all free product has been removed;
- 4) That the site does not pose a threat to human health and the environment;
- 5) That soil contaminant levels have been reduced to District of Columbia standards set forth in section I.(B)(3) above, or to levels approved by the LUST Case Manager;
- 6) That surface water contaminant levels have been reduced to District of Columbia standards set forth in section I.(B)(1); and
- 7) One of the following:
  - a) That the remediation standards for ground water set forth have been met;
  - or
  - b) That it is unfeasible to reduce groundwater contaminant levels further.

8) Site specific: Confirmatory soil samples at least from three (3) locations maybe needed.

If a RP requests case closure, while claiming that it is technically unfeasible to reduce groundwater or soil contaminant levels to the standards set forth in section I.(B) above, the LUST Case Manager may also require an exposure assessment as defined in these regulations in compliance with Departmental protocols.

### **B. Application (§6211.1)**

The RP shall submit a request for site closure signed by the RP or his or her authorized representative. The request for closure shall include a summary of major events and accomplishments during the investigation/remediation process, including to the extent possible:

- 1) The cause of the release if known;



- 2) The estimated amount and type of product released; and
- 3) The estimated amount of product recovered.

**C. Documentation (§6211.2)**

Closure documentation shall include a demonstration and analysis that clean-up objectives for the site have been met as outlined in section I.(C), above. The RP shall also submit all documents (permits, certificates, approvals, etc.) relating to the transportation and disposal of wastes from the site (i.e., tanks, soils, product, water).

All records documenting the transport and disposal of any free product, contaminated water and soil, or other waste that is generated at the site while the corrective action plan is being performed, shall be maintained by the RP for a period of at least three years from the date of transport and disposal.

**D. Closure Application Approval (§6211.5)**

The LUST Case Manager shall review each request for closure. If the LUST Case Manager is satisfied that the requirements for case closure set forth above have been met, the LUST Case Manager shall prepare a letter of case closure or No Further Action (NFA), with a case close out form justifying reasons for closure, for approval by the UST Branch Chief. The closure approval shall not absolve the RP from previously incurred or potential future liability.

**E. Post Closure Activities (§6211.7)**

Upon receiving notice from the UST Program that the closure requirements have been met, the RP shall remove all equipment, and ensure that all wells are closed down and removed, grouted and sealed, unless otherwise authorized by the LUST Case Manager. After completion of post closure a notice shall be given to the UST Program to verify compliance.

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**For Additional Information or Clarifications please contact:**

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