Requirements prior to excavation for all subsurface work on all sites at the former Oakland Army Base
Applicable to all subsurface work including, but not limited to, grading, foundation work, utility installation and all other excavation on all sites at the former OAB including within the public right of way.

January 28, 2019

This document outlines the requirements prior to excavation for all subsurface work on all sites at the former Oakland Army Base (OAB). It is applicable to all subsurface work including, but not limited to, grading, foundation work, utility installation and all other excavation on all sites at the former OAB including within the public right of way. **The requirements below are applicable to the following Accessor Parcel Numbers (APN's) and to the public right-of-way adjacent to or abutting these parcels:**

018-0508-001*	018-0507-001-02*
018-0508-002*	018-0507-001-08
018-0508-003*	018-0507-001-09
018-0508-004*	018-0507-002
018-0508-005	018-0507-003
018-0508-006	018-0507-004-03
018-0508-007	018-0507-009
018-0508-008	
018-0508-009	
018-0508-010	
018-0508-011	
018-0508-012	
018-0508-014	
018-0508-015	

* Right-of-Way parcels

Risk Management Plan (RMP) for the Oakland Army Base (OAB) (EKI, 2002), as amended, applies to all subsurface work (such as grading, excavation, or foundation/utility installation) at the former OAB. RMP is on file with the City of Oakland Remediation Manager in the Environmental Services Division of Public Works (Mark Arniola 510-238-7371, marniola@oaklandca.gov) and available on-line at the Department of Toxic Substances Control (DTSC) EnviroStor website.

Excavators shall follow the excavation protocols of the RMP including the following:

When excavation is proposed, applicant must submit to the City of Oakland Environmental Services Division Remediation Manager at least ten (10) business days in advance of excavation the following information: location of proposed excavation, an Environmental Health and Safety Plan (EH&SP)

prepared by a Certified Industrial Hygienist in accordance with Section 7.1 of the RMP that addresses the Chemicals of Concern in Table 3 of the RMP (attached) and provides for a qualified environmental observer.

NOTE that the EH&SP will be forwarded by the City to the DTSC and **that approval must be secured from both the City's Environmental Services Division and the DTSC prior to the start of subsurface work.**

Maintain a copy of the EH&SP at the construction site and brief employees on its contents.

Implement dust control, decontamination, storm water pollution prevention and dewatering protocols in Section 7.2 of the RMP including the following mitigation measures during construction:

- Control excavation activities to minimize dust and mist or spray water while performing excavation activities and loading transportation vehicles.
- Cover with plastic sheeting any soil stockpiles generated by excavation
- Decontaminate construction vehicles that contact soil prior to leaving the construction site
- Construct berms or silt fences to divert runoff
- Implement storm water pollution prevention measures such as placement of straw bale barriers around entrances to storm drains and catch basins

If newly exposed soil is encountered that is visibly stained, discolored, shiny, oily, has evidence of burn activities, has noticeable solvent-like or hydrocarbon odor, appears to be debris or slag, then suspend work, secure the site, contact City of Oakland Remediation Manager and have an environmental professional obtain two samples for testing as instructed by City's Remediation Manager; provide test results to City and if testing reveals contamination in excess of the RMP standards, complete all remediation activities pursuant to a work plan approved by the City and DTSC.

If dewatering is necessary, groundwater samples shall be collected and tested in accordance with the requirements of discharge permit(s) obtained from the pertinent agencies.

Analytical results of sampling shall be reported to the City of Oakland Remediation Manager and permitting agencies, with the proposed disposal location.

Approval from the City of Oakland Remediation Manager and East Bay Municipal Utility District (EBMUD) shall be obtained prior to discharge of extracted groundwater to the sanitary sewer.

Approval from the City of Oakland, EBMUD, Regional Water Quality Control Board (RWQCB), and DTSC shall be obtained prior to discharge to the storm drain.

Provide completion report to the City of Oakland Remediation Manager City detailing compliance with these measures within ten (10) business days of completion of work. The City will forward the completion report to DTSC for their review and approval.

NOTE that geotechnical and ground water investigation and monitoring may be required.

TABLE 3
REMEDIATION GOALS FOR CHEMICALS OF CONCERN
IN SOIL AND GROUNDWATER

Oakland Army Base, Oakland, California

Chemical of Concern	Soil Remediation Goal at HI=1 or Risk = 10^{-6} (mg/kg)	Population or Pathway Governing Soil Remediation Goal (see Table 7-10)	Groundwater Remediation Goal at HI=1 or Risk = 10^{-6} (µg/L)
Metals			
Antimony	280	Construction Worker	(a)
Arsenic	20	Construction Worker	(a)
Barium	43,000	Construction Worker	(a)
Beryllium	1,300	Construction Worker	(a)
Cadmium	150	Construction Worker	(a)
Chromium (III)	MAX(100,000); (f)	--	(a)
Chromium (VI)	86	Construction Worker	(a)
Chromium, Total	600 (e)	Construction Worker	(a)
Cobalt	42,000	Construction Worker	(a)
Copper	26,000	Construction Worker	(a)
Lead	750 (h)	See Note (h)	(a)
Manganese	25,000	Construction Worker	(a)
Mercury	60	Construction Worker	(a)
Molybdenum	3,500	Construction Worker	(a)
Nickel	14,000	Construction Worker	(a)
Selenium	3,500	Construction Worker	(a)
Silver	3,500	Construction Worker	(a)
Thallium	49	Construction Worker	(a)
Vanadium	4,900	Construction Worker	(a)
Zinc	MAX(100,000)	--	(a)
Volatile Organic Compounds			
1,1,2,2-tetrachloroethane	3.8	Leaching to Groundwater (b)	1,900
1,1,2-trichloroethane	2.7	Indoor Worker	2,800
1,1-dichloroethane	2.1	Leaching to Groundwater (b)	6,700
1,1-dichloroethene	1.7	Leaching to Groundwater (b)	33,000
1,2,3-trichloropropane	0.2	Indoor Worker	100
1,2,4-trimethylbenzene	170	Construction Worker	18,000
1,2-dichloroethane	0.8	Indoor Worker	1,900
1,2-dichloropropane	0.1	Indoor Worker	110
1,3,5-trimethylbenzene	87	Construction Worker	25,000
Acetone	0.5	Leaching to Groundwater (b)	86,000,000
Benzene	0.3	Indoor Worker	420
Bromodichloromethane	0.7	Indoor Worker	850
Carbon disulfide	950	Indoor Worker	230,000
Carbon tetrachloride	0.1	Indoor Worker	72
Chloroform	0.9	Leaching to Groundwater (b)	2,500

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Volatile Organic Compounds			
Dibromochloromethane	2.0	Leaching to Groundwater (b)	2,100
cis-1,2-dichloroethene	18	Leaching to Groundwater (b)	180,000
trans-1,2-dichloroethene	38	Leaching to Groundwater (b)	190,000
Ethylbenzene	24	Leaching to Groundwater (b)	4,200,000
Isopropylbenzene (Cumene)	SAT(3,800); (g)	--	1,800,000
Methyl ethyl ketone	13	Leaching to Groundwater (b)	160,000,000
Methyl isobutyl ketone	4	Leaching to Groundwater (b)	5,300,000
Methyl tertiary butyl ether	1	Leaching to Groundwater (b)	120,000
Methylene chloride	4.8	Leaching to Groundwater (b)	19,000
n-butylbenzene	550	Construction Worker	95,000
n-propylbenzene	350	Construction Worker	100,000
p-cymene (p-isopropyltoluene)	SAT(3,700)	--	1,000,000
sec-butylbenzene	200	Leaching to Groundwater (b)	77,000
tert-butylbenzene	290	Construction Worker	75,000
Tetrachloroethene	2.8	Leaching to Groundwater (b)	960
Toluene	8.4	Leaching to Groundwater (b)	1,600,000
Trichloroethene	2.5	Indoor Worker	2,800
Trichlorofluoromethane	3,600	Indoor Worker	2,800,000
Vinyl chloride	0.05	Indoor Worker	32
Xylenes, Total	1	Indoor Worker	28,000,000
Semi-volatile Organic Compounds			
Acenaphthene	16	Leaching to Groundwater (b)	25,000,000
Acenaphthylene	120	Leaching to Groundwater (b)	(a)
Anthracene	2.9	Leaching to Groundwater (b)	330,000,000
Benzidine	0.02	Construction Worker	(a)
Benzo(a)anthracene	7.6	Construction Worker	(a)
Benzo(a)pyrene	0.8	Construction Worker	(a)
Benzo(b)fluoranthene	7.6	Construction Worker	(a)
Benzo(b,k)fluoranthene	7.6	Construction Worker	(a)
Benzo(g,h,i)perylene	5.3	Leaching to Groundwater (b)	(a)
Benzo(k)fluoranthene	7.6	Construction Worker	(a)
Bis(2-ethylhexyl)phthalate	SAT(100)	--	(a)
Chrysene	4.7	Leaching to Groundwater (b)	(a)
Dibenz(a,h)anthracene	2.2	Construction Worker	(a)
Fluoranthene	60	Leaching to Groundwater (b)	(a)
Fluorene	5.1	Leaching to Groundwater (b)	38,000,000

TABLE 3
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Chemical of Concern	Soil Remediation Goal at HI=1 or Risk = 10^{-6} (mg/kg)	Population or Pathway Governing Soil Remediation Goal (see Table 7-10)	Groundwater Remediation Goal at HI=1 or Risk = 10^{-6} (µg/L)
Semi-volatile Organic Compounds			
Hexachlorobutadiene	46	Leaching to Groundwater (b)	(a)
Indeno(1,2,3-c,d)pyrene	7.6	Construction Worker	(a)
Naphthalene	4.9	Leaching to Groundwater (b)	100,000
Phenanthrene	11	Leaching to Groundwater (b)	520,000,000
Pyrene	55	Leaching to Groundwater (b)	200,000,000
Total Petroleum Hydrocarbons			
TPH Diesel	8,000 (c)	See Note (c)	9,600 (c)
TPH Gasoline	2,400 (c)	See Note (c)	7,280 (c)
TPH Motor Oil	58,000 (c)	See Note (c)	(a)
TPH Recoverable	(d)	--	(a)
PCBs, Pesticides, and Herbicides			
Aldrin	1.2	Construction Worker	(a)
Alpha BHC	7.1	Construction Worker	(a)
Alpha endosulfan (Endosulfan I)	1,300	Construction Worker	(a)
Alpha chlordane	16	Construction Worker	(a)
Gamma chlordane	16	Construction Worker	(a)
Dieldrin	0.002	Leaching to Groundwater (b)	(a)
Endosulfan sulfate	1,500	Construction Worker	(a)
Endrin	0.001	Leaching to Groundwater (b)	(a)
Endrin aldehyde	91	Construction Worker	(a)
Endrin ketone	91	Construction Worker	(a)
Gamma BHC (Lindane)	17	Construction Worker	(a)
Heptachlor	0.013	Leaching to Groundwater (b)	(a)
Heptachlor epoxide	0.014	Leaching to Groundwater (b)	(a)
4,4'-DDD	89	Construction Worker	(a)
4,4'-DDE	54	Construction Worker	(a)
4,4'-DDT	4.3	Leaching to Groundwater (b)	(a)
Pentachlorophenol	42	Leaching to Groundwater (b)	(a)
Toxaphene	1.4	Construction Worker	(a)
PCB-1248 (Aroclor 1248)	1.8	Construction Worker	(a)
PCB-1260 (Aroclor 1260)	1.8	Construction Worker	(a)
Dioxin-like Compounds			
2,3,7,8-tetrachlorodibenzo-p-dioxin	0.0001	Construction Worker	(a)

TABLE 3
REMEDIATION GOALS FOR CHEMICALS OF CONCERN
IN SOIL AND GROUNDWATER

Oakland Army Base, Oakland, California

Notes:

(a) This table was copied from Table 7-11 of the RAP (EKI, 2002). Vapor intrusion is the only potentially complete exposure pathway for COCs in groundwater. Consequently, as described in Table 7-9 of the RAP, risk-based remediation goals for non-volatile compounds in groundwater were not calculated. However, the narrative goal is to prevent further significant increases of metals and other non-volatile COC concentrations in groundwater.

(b) A more detailed evaluation should be considered if remediation goals based on leaching to groundwater govern the need for future remediation at RAP sites or RMP locations.

(c) The Army's Fuel Storage Tank Sites Cleanup Levels (IT, 2000n) have been adopted as the site-specific remediation goals for petroleum hydrocarbons in soil and groundwater at the OARB.

(d) No site-specific goal established for "TPH recoverable", which is general considered to be weathered, high molecular weight residual TPH. TPH recoverable is normally managed to control nuisance conditions (e.g., odor or deficiency of impacted soil for structural purposes).

(e) The remediation goal for total chromium was calculated from the chromium (III) and chromium (IV) remediation goal assuming a 1:6 ratio of chromium(VI) to chromium(III), consistent with U.S. EPA Region IX Preliminary Remediation Goals (U.S. EPA, 2000).

(f) Prefix "MAX" denotes that the calculated risk-based concentration is 100,000 mg/kg or greater. A non-risk based "ceiling limit" concentration for metals and certain SVOCs that are solids at ambient temperatures is given as 100,000 mg/kg, consistent with U.S. EPA Region IX Preliminary Remediation Goals (U.S. EPA, 2000).

(g) Prefix "SAT" denotes risk-based value exceeds calculated soil saturation concentration, thus, the estimated saturation value is listed inside the parenthesis.

(h) The U.S. EPA Region IX Preliminary Remediation Goal (U.S. EPA, 2000) has been adopted as the site-specific remediation goal for lead in soil.