

## Changes in Document Organization

RECAP 2003	DRAFT RECAP 2014
Section 2.2	Omitted
Sections 2.3, 2.4, 2.5, 2.6.2	Moved to Section 2.2 Data Requirements
Sections 2.6, 2.7, 2.8, 2.9, 2.10, 2.11	Moved to Section 2.3 Exposure Assessment
Section 2.15	Moved to Section 2.4 Toxicity Assessment
Sections 2.12, 2.13, 2.14	Moved to Section 2.5 Risk Characterization
Sections 2.16, 2.17, 2.19	Moved to Section 2.6 Corrective Action
Section 2.18	Section 2.8
Section 2.20	Section 2.9
Sections 3.4, 4.3, 5.4, 6.9	Table 5 Submittal Requirements
Section 8.0	Omitted
Figures 2, 3, 5 through 19	Omitted
Appendix A	Omitted
Appendix B air sampling guidance	Moved to Appendix G Vapor Intrusion Pathway
Appendix G	Examples omitted; guidance on addressing additivity moved to Section 2.5 Risk Characterization
Appendix G Table G-1	Table 4 SO, MO-1, and Appendix H MO-2 Noncarcinogenic Targets
Appendix H equations	Appendix A
Appendix H text for identification of LRS	Moved to Sections 3.3, 4.3, 5.3, 6.3
Appendix I	Appendix H

## Technical Changes and Changes that affect RECAP Requirements/Implementation\*

DRAFT RECAP 2014 Topic/Location in Document	DRAFT RECAP 2014 Proposed Change
Use of conceptual site model	Omitted
Industrial land use NAICS codes (Section 2.3.1.1)	Minor revisions
Calculation of soil AOIC (Section 2.3.1.3)	ProUCL or equivalent software shall be used to calculate AOIC; AOIC shall be based on the UCL-AM recommended by the software
Identification of Soil Source Area (Section 2.3.1.4)	New section of text to provide clarification on identifying the soil source area
Groundwater Classification (Section 2.3.2)	1) Alternate means of groundwater classification may be considered by the department 2) Data from nearby site(s) may be used for classification of groundwater if data requirements are met
Groundwater 3 CC (Section 2.3.2.4)	UCL-AM concentration may be used instead of max concentration
Fish/Shellfish (Section 2.3.4)	Evaluation of fish/shellfish shall be based on methods in the state fish consumption advisory protocol
Toxicity values (Section 2.4.1)	1) New hierarchy and guidance on the selection and use of toxicity values 2) Route-to-route extrapolation omitted
RECAP Standards (Section 2.5.3)	1) New acronym for soil leachate standard (Soil <sub>LSS</sub> , Soil <sub>LS</sub> ) 2) Soil gas standards (ESG, SSSG) 3) Acronym for indoor air changed from C <sub>a</sub> to IA 4) Soil <sub>es</sub> , GW <sub>es</sub> , GW <sub>air</sub> , Soil <sub>ni</sub> -PEF, Soil <sub>i</sub> -PEF omitted 5) State background levels based on 2012 USGS soil survey data
Background (Section 2.5.3.9)	Some literature references may be approved by the department for use in establishing background
Corrective Action (Section 2.6)	New guidance on CAS and CAP
Conveyance Notice (Section 2.6.4)	New requirement for department approval of a conveyance notice prior to filing

Tables 1, 2, and 3	<ol style="list-style-type: none"> <li>1) A few COC were omitted due to lack of toxicity values</li> <li>2) A few COC added</li> <li>3) All SS and RS were revised</li> <li>4) <math>10^5</math> mg/kg ceiling limit for soil was added</li> <li>5) State background levels used for those metals without tier 1 or 2 toxicity values</li> </ol>
Methods for development of SS and RS (Appendix A)	<ol style="list-style-type: none"> <li>1) Equations and physical/chemical properties obtained from EPA Region 6 (Mid-Atlantic Regional SL tables)</li> <li>2) EPA Mid-Atlantic Regional calculator replaces DEQ spreadsheet except for <math>GW_3</math> and <math>Soil_{GW3}</math></li> <li>3) <math>Soil_{ni}</math> and <math>Soil_i</math> includes inhalation of particulates</li> <li>4) <math>GW_1</math> and <math>GW_2</math> noncarcinogenic RS based on child receptor</li> <li>5) Age dependent adjustment factors added to address mutagens</li> <li>6) Addresses COC with multiple SFs</li> <li>7) <math>RfDi</math> and inhalation rate replaced by <math>RfC</math></li> <li>8) <math>SFi</math> and inhalation rate replaced by IUR</li> <li>9) <math>Soil_{gw}</math> for metals based on soil/water partition coefficient equation</li> <li>10) <math>Soil_{gw}</math> Method 2 TCLP back calculation omitted</li> <li>11) <math>Soil_{gw}</math> Method 4 site-specific partition coefficient omitted</li> <li>12) Table A-1 Toxicity values for SS, MO-1 RS, Appendix G IA, and MO-2 Appendix H RS</li> <li>13) Table A-2 Physical/chemical parameters for SS, MO-1 RS, Appendix G IA, MO-2 Appendix H RS</li> <li>14) Table A-3 Analytical reporting limits used as RS in Tables 1, 2, and 3</li> </ol>
Groundwater classification (Appendix B Section 2.4.6)	Added requirements for using data from nearby site(s) for groundwater classification
Fish/Shellfish sampling (Appendix B section 2.4.10)	Requirement to follow state protocol added
RECAP Forms (Appendix C)	<ol style="list-style-type: none"> <li>1) RECAP Forms 7, 8, 9 omitted</li> <li>2) New RECAP Form for NFA-ATT</li> </ol>
Petroleum Hydrocarbons (Appendix D)	<ol style="list-style-type: none"> <li>1) EPA PPRTV approach replaces TPHCWG approach</li> <li>2) New EPA toxicity values and noncarcinogenic targets</li> <li>3) Fractions remain the same; indicator COC slightly different</li> <li>4) EPA Method 8015 and TPH-GRO, TPH-DRO, TPH-ORO omitted</li> <li>5) 10,000 ppm cap omitted</li> <li>6) <math>Soil_{sat}</math> values for the fractions were added</li> <li>7) Alternate methods of addressing <math>Soil_{sat}</math> may be approved by the department</li> </ol>
cPAHs (Appendix D)	Addition of the option to use Benzo[a]pyrene Equivalent (BAPE) to evaluate anthropogenic background levels of cPAH in soil
Produced Water	Addition of COC list for addressing produced water releases

(Appendix D)	
Sodium Chloride (Appendix D)	1) Addition of soil leachate and groundwater SS and MO-1 RS 2) Guidance on site-specific evaluations under MO-2 and MO-3
Lead (Appendix D)	Adult lead model inputs revised; Soil <sub>ssi</sub> and Soil <sub>i</sub> revised;
Dioxins (Appendix D)	1) TEFs revised to the WHO 2005 values 2) Dioxin-like PCB congeners added to the evaluation of the total TEQ 3) SS and MO-1 soil RS added for TCDD/Total TEQ
Mutagens (Appendix D)	Guidelines on addressing mutagens in the development of SS and RS were added
Nitrogenous compounds (Appendix D)	1) Guidelines on addressing ammonia/nitrite/nitrate added 2) SS and MO-1 RS added for soil and groundwater
Sulfates (Appendix D)	1) Guidelines on addressing sulfates added 2) SS and MO-1 RS added for soil leachate and groundwater
Acids and Caustics (Appendix D)	1) Guidelines on addressing pH added 2) SS and MO-1 RS added for soil and groundwater
Contaminants not addressed by RECAP (Appendix D)	Guidelines added on addressing contaminants not addressed by RECAP
NAICS	NAICS updated to 2012 listing
Aquifer Tests (Appendix F)	Revised guidance on conducting groundwater pumping tests
Vapor Intrusion Pathway (Appendix G)	1) Approach to evaluating the vapor intrusion pathway was revised to be consistent with most current EPA draft guidance and recommendations in the literature 2) Guidelines specific to chlorinated constituents 3) Guidelines specific to UST including screening criteria 4) Soil <sub>es</sub> and GW <sub>es</sub> RS omitted 5) Table G-1 IA RS - indoor air RS revised 6) Table G-2 SSSG RS – new RS for sub-slab soil gas evaluation 7) Table G-3 ESG RS – exterior soil gas RS revised; new alpha factors
MO-2 Evaluation for typical UST sites and other small petroleum hydrocarbon release sites (Appendix H)	1) Revised to include the evaluation of other small petroleum hydrocarbon release sites 2) Revised to include 7 categories of RS based on varying f <sub>oc</sub> ranges and a source area of 0.5 acre 3) Appendix H MO-2 RS were revised 4) New guidelines and screening criteria for the evaluation of the vapor intrusion pathway 5) See revisions to Appendix D

\*Includes most proposed revisions; other minor text edits, additions, omissions may have an effect on technical approach(es) and/or RECAP requirements/implementability.